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Social Competence Intervention in Autistic Spectrum Disorders
(ASDs)- A Case Study

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Social Competence Intervention in Autistic Spectrum Disorders (ASDs) - A Case Study

Noor A. Amin

Abstract

The purpose of this case study was to determine the effectiveness of a combined intervention in remediating the social skills in a first-grader with a disorder from the autism spectrum disorders (ASDs). The researcher also aimed to identify the changes observed during the intervention period. The combined intervention consisted of reading personalized Social Stories that targeted specific social skills and peer mediated intervention. The intervention took place for a period of eight weeks. In order to determine the effectiveness of the intervention, the researcher compared the teachers' ratings on the Social Behaviour Assessment Inventory (SBAI) (Stephens, 1992), data gathered from the Conditional Probability Record (Steege, & Watson, 2009), and informal interviews conducted with the teachers and mother before and after intervention. The results showed that the combined intervention did improve the targeted social skills; there was an increase in target behaviours post intervention and a minimal improvement in the rating scales. Based on the results, implications and recommendations for future research were drawn.

Keywords: Autism Spectrum Disorders (ASDs), Social Stories, Peer Mediated Intervention, Social Behaviour Assessment Inventory (SBAI), and Conditional Probability Record.

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CHAPTER ONE

INTRODUCTION

In a school that is an advocate for inclusion, it is normal to see all children interacting with each other. You see both the mainstream and special needs children sitting next to each other in class, sharing their supplies, and whispering or giggling at times when something funny takes place. During recess, it is also common to see them sitting together on a bench sharing their meals, or even playing tag. However, not all students with special needs are able to socialize with their peers, especially the ones with deficits in social skills. They tend to sit alone during lunch break, are likely to observe others as they play, or may simply sit on the grass and browse through a book. These common behaviors are usually manifested in children diagnosed with any disorder from the Autistic Spectrum Disorders (ASDs).

A spectrum disorder is a group of disorders with similar features. The five forms of ASDs are the following: classic autism, Asperger's syndrome, childhood disintegrative disorder, Rett's disorder, and pervasive developmental disorder not otherwise specified (PDD-NOS) (Sicile-Kira, 2004). ASDs are neurodevelopmental conditions characterized by lifelong, chronic, and severely debilitating symptoms (Bray, Hanley-Hochdorfer, Kehle, 2010). People diagnosed with this disorder often suffer from impairments in social interaction and communication; they are unable to sustain friendships and social activities are limited (Krauss, Orsmond, Seltzer, 2004). Unfortunately, there is no test to accurately diagnose ASDs. Any diagnosis is usually based on observable characteristics that a person exhibits. Additionally, it should be noted that doctors may be skeptical about the diagnosis since it tends to be based on

observations, which may be somewhat subjective because there is no clear set of criteria that lead to a differential diagnosis (Sicile-Kira, 2004).

The term Asperger's Syndrome (AS) was named after the Viennese pediatrician Hans Aspergers who conducted his initial study in 1944. He documented the unusual behavior of four boys who showed problems in social interaction and communications, had little empathy towards others, and were physically clumsy (Attwood, 1997; Gutstein, & Whitney, 2002). Asperger's has previously been defined as a difficulty with social relationships including problems with nonverbal behaviors (eye contact, facial expression, and body gestures), difficulty sustaining peer relationship, and problems with social reciprocity (Clikeman, 2007). Although it was once considered a rare disorder, today the prevalence of AS is estimated between 30-60 in 10,000 cases (Finkelmeyer, Sebrechts, Stewart, Trepangnier, Woodford, 2006). Originally AS was diagnosed in males only, but more recent research has confirmed its presence in both genders.

AS is a disorder that is not well characterized. Previous work has shown no clear-cut distinction between AS, High Functioning Autism (HFA), and Nonverbal Learning Disorder (NLD) (Yalof, 2007; Clikeman, 2007). Children with HFA have problems with social interaction; lacking a close circle of friends doesn't seem to bother them. On the other hand, children with NLD and AS desire social interaction with friends (Clikeman, 2007). According to Clikeman (2007) NLD overlaps considerably with Asperger's but not as much with HFA.

Regardless of the diagnosis, it is clear that these children have social skills deficits. Most of the special education programs in Lebanon focus on the child's academic performance and neglect the student's social life. Some of our schools use

research based programs to remediate reading, writing, or spelling, and they rarely use research based social skills intervention programs. According to the holistic approach to teaching, it is vital for special educators to remediate both the academic and social skills of children with LD for them to develop holistically and become active members in our schools.

Purpose and Rationale

Recent research conducted in the U.S. has suggested that the number of students identified with AS and HFA has increased dramatically over the last few years, especially in general education settings (Myles, 2005; Sansosti & Powell-Smith, 2006; Steyaert & Marche, 2008). Thus, it is crucial for special educators to familiarize themselves with effective research based strategies that benefit these children who are strong academically, but have social skills deficits. The purpose of this case study was to remediate social skills in a first grader who attends a mainstreamed classroom (inclusive setting) in an urban school in Beirut. The researcher intended to examine the effectiveness of social stories and peer mediated intervention in increasing target behaviors in a child diagnosed with a form of ASDs. Although this child was assessed three times by several specialists, his diagnosis was still somewhat inconclusive. It is hypothesized that he has AS.

Many researchers have documented the effectiveness of peer mediated intervention programs that improve social skills, such as LEGO (LeGoff 2004; LeGoff and Sherman 2006) and Social Use of Language Programme (SULP) (Baron-Cohen, Granader, Humphery, Owens, 2008). Research showed that peer mediated intervention, such as peer tutoring and cooperative learning groups tend to improve social competence and increase participation (Barbetta, Delquadri, Kamps, Leonard, 2002). An increase in the amount of time engaged in social interactions was also

documented in various studies (Constantino, Friesen, Przybeck, & Todd, 2000). Therefore, the first intervention that was used in this study was peer mediated intervention. This peer mediated intervention consisted of monitored cooperative group work on academic based tasks, mainly on school projects.

Social stories are short stories that describe specific social situations and appropriate responses (Gray, 1998). Social stories were chosen as a second intervention since it was shown to improve targeted social skills in children with ASDs, namely greeting people appropriately, improving positive social interaction, asking for help, and increasing the frequency of social communication through eliminating problematic behaviors such as spitting and yelling (Sansosti & Powell-Smith, 2006). Lastly, stories teach the child how to identify social cues that are prerequisites to specific desired behaviors (Greenway, 2000). Although social stories have been found to be beneficial, empirical evidence supporting the use of social stories to increase social behavior in school settings is somewhat limited (Hanley-Hochdorfer, 2010). The purpose behind choosing social stories and combining it with peer mediated intervention was to give the child a chance to apply what he has learned in the stories through incidental learning. The results of the study enabled the researcher to test if this combined intervention improved the child's initiation and contingent responses to peers.

The following questions were explored:

1. What are the effects of a combined intervention consisting of peer mediated intervention (pairing social and average to high achieving children with a child with impaired social skills on school projects) and reading personalized Social Stories (that target student's class participation) on a child with impaired social skills?

2. What are the observable changes during the intervention period and hypothesized explanations?

Hypothesis

It was hypothesized that using an intervention composed of peer mediated intervention on academic tasks and reading social stories improves targeted social skills in this particular first grader. It was hypothesized that there will be an improvement in the teachers rating scale after completing the intervention.

Operational Definitions

Autism spectrum disorder (ASD) is viewed as a term that includes Rett disorder, childhood disintegrative disorder (CDD), autistic disorder, pervasive developmental disorder not otherwise specified (PDD-NOS), and Asperger syndrome (Ben- Arie & Miller, 2009). The common characteristics between people on this spectrum are that they have difficulties in social interaction, communication, and imaginative thinking (Pittman, 2007). Additionally, AS is currently understood as "a developmental disorder characterized by significant difficulties in social interaction and emotional relatedness and by unusual patterns of narrow interests and unique stereotyped behavior" (Church, Alisanski, & Amanullah, 2000, p. 12). Children with deficits in social competence demonstrate a restricted range of social communication skills such as limited ability to (a) initiate and maintain conversations, (b) request information/materials from teachers and/or peers, (c) listen to and respond to teachers and/or peers, and (d) interact in basic games or other activities (Carter, Klin, Ornstein-Davis, Volkmar 2005).

Peer mediated intervention involves the use of socially competent peers to model and reinforce appropriate social behaviors in natural settings. In this pairing,

socially competent peers are paired with a child with ASD to promote social skills through incidental learning (DiSalvo & Oswald, 2002).

Social Stories are individualized short stories that describe specific social situations and provide specific desired responses (Gray, 1998). These short stories are used to help individuals with ASDs interpret and understand situations that may be confusing to the child (Kincaid, Powell-Smith, Sansosti, 2004). The selected social stories were designed or chosen depending on the target skills that need remediation. The target skills were identified after gathering information about the student's behavior from observations conducted by the examiner and interviews with the parents and teachers.

Methodology

Design. In this intrinsic case study, A-B-A Single- Subject Design was used to study changes in the behavior of a student with ASDs who was exposed to a social intervention program.

Participants. The primary participant was a seven-year old (first grader) boy with ASD, who is referred to as Adam. The secondary participants were: three of his classmates from Grade 1 who participated as typically developing peers who were both socially active and average to high achievers academically, his homeroom teachers, special educator, and mother. The peer participation was based on session-by-session voluntary participation on school projects during enquiry sessions. The children who participated did so whenever they wanted to, without constraint, thus reflecting natural school interactions.

Adam is a Lebanese student who lives with his family consisting of his parents and two siblings. Adam is currently attending a regular first grade class (inclusive

setting). He also receives help from a special educator twice a week. Adam has been assessed three times; twice by educational psychologists and once by a speech therapist. In the three assessment reports, there was a general agreement that Adam appears to meet the criteria for Autistic Disorder.

Consent was given by Adam's parents and staff at the school, in accordance with the usual procedure for ethical guidelines.

Instrumentation. Teachers were asked to complete a rating scale immediately before and after intervention period which was the Social Behavior Assessment Inventory (SBAI) (Stephens, 1992). The SBAI consists of 136 items that describe social skills commonly observed in the classroom. A teacher or counselor who has observed a student's behavior rates each item on a 4-point scale describing both the presence and level of the behaviors exhibited by the student. The rating scale is divided into six sections which include: Following Directions (FD), Group Activities (GP), Independent Work (IW), On Task Behavior (OT), Performing Before Others (PF), and Quality of Work (QW).

The Functional Behavioral Assessment (FBA) process was used to identify and evaluate the variables that trigger particular behaviors. Both an indirect and direct FBA were conducted. The indirect FBA consisted of gathering information through semi-structured interviews and through the SBAI rating scale. The direct FBA consisted of using the Conditional Probability Record (CPR) to monitor the child's behavior. CPR was used to observe and record the antecedents and consequence of a behavior. This type of observation is usually beneficial when the researcher wants to examine the likelihood of the occurrence of particular behaviors (Steege & Watson, 2009).

Lastly, a journal was used to note the child's behavior during observation and intervention sessions. The researcher used the journal to document Adam's behavior during reading sessions and cooperative group work activities. The child's verbal initiation and contingent responses to peers and teachers was also highlighted.

Procedures

Baseline. The researcher gathered information about the student's behavior through informal and semi-structured interviews with the teachers and school counselor. Additionally, the special educator and two regular teachers were asked to fill out a SBAI rating scale. Finally, the target behaviors or skills that needed remediation were also taken from child's school records.

Additionally, the researcher observed Adam during the course of his usual school activities. The observation took place twice a week for two weeks. The students were observed for 15 minutes, during different times of the day. The observer used a 15 second interval while recording the data. Additionally, the observer was required to mark the occurrence of target behaviors using the Conditional Probability Record (CPR) (Steege & Watson, 2009).

Intervention. After the first two weeks of initial observations (the baseline phase), a transition was made to the intervention phase. The researcher used social stories and cooperative group work during this phase. Once a week, a personalized social story was read to the student. The social story targeted the specific skills that need remediation. They were designed in accordance with research based guidelines and recommendations (Gray, 1993; Denning, 2007).

Moreover, once a week, the teacher grouped Adam with 3 typically developing peers on a group project. The teacher took 10 minutes to explain what the project was about and assigned roles for each group member. The assigned roles were

changed each week. Cooperative learning groups were based on incidental teaching, making use of academic projects using simple peer modeling, with the use of direct instructions and guidance of the special educator. Each project required verbal and non-verbal communication, collaboration, joint problem solving, joint creativity and joint attention to the task. The teacher was the mediator between the children. She also emphasized the importance of certain behaviors while the students were working. The purpose behind this was to take advantage of this natural setting to positively reinforce Adam's behavior verbally or simply give direct instructions to guide him. Implementation of the social stories and peer mediated intervention also took place for a period of eight weeks.

Follow-Up. A week after discontinuing the intervention, Adam's social behavior was observed both in the classroom and on the playground. The observation took place three times a day; two days per week, for two weeks. The observer was required to mark the occurrence of targeted behaviors using 15 second partial interval recording (similar to that used during the baseline phase).

Additionally, during the post-assessment phase, three teachers were asked to fill out a SBAI rating scale. Also, an informal interview was conducted with the teachers and parent in order to get more details on their feedback.

Data Analysis

This section explicitly described the social behavior of Adam during class and recess. A detailed description of the observation during the baseline phase, change of behavior during intervention, and a description of the changes that were maintained after the intervention period had ended (generalization period) were provided. Graphs with the student's behavior during baseline, intervention, and generalization period

were also provided. Additionally, an analysis of the documented data in the journal was presented. Finally, the last section discussed the results that were collected from the rating scales.

Assumptions

It was expected that Adam's social skills and social interaction with peers will increase from the pre-intervention phase, and will be maintained after stopping the intervention. It was also expected that there will be a difference (improvement) in the teachers rating scale after the intervention has ended.

CHAPTER 2

REVIEW OF LITERATURE

According to previously conducted research, there is general agreement that children with Autistic Spectrum Disorders (ASDs) have difficulties establishing and maintaining social relationships with their peers. These difficulties may be due to an inability or lack of desire to interact with others (Attwood, 2000; Volkmar & Klin, 2000). This chapter provides a synthesis of the recent available research on ASDs. The primary resources used in this review were books and research articles from American and British journals. Some of the research articles were qualitative while others are quantitative. The articles included various experimental research and case studies. The first part of the literature review included the definition and prevalence of ASD. A brief description of the similarities and differences between AS, High Functioning Autism (HFA), and Nonverbal Learning Disabilities (NLD) were provided. The second part of the literature review described the academic and behavioral characteristics of these individuals as well as the impairments in nonverbal communication and social skills were also discussed. The last part focused on recommended interventions when working with children with ASDs, with emphasis on interventions that address remediation of social skills.

Autistic Spectrum Disorders

Autistic spectrum disorders (ASD) is viewed as a term that includes Rett disorder, childhood disintegrative disorder (CDD), autistic disorder, pervasive developmental disorder not otherwise specified (PDD-NOS), and Asperger syndrome (AS) (Ben-Arieh & Miller, 2009). ASDs are classified by DSM-IV-TR (APA 2000)

as pervasive developmental disorders characterized by the presence of three core features: qualitative impairments in communication and in social interaction and the presence of repetitive behavior and restricted interests (Moss & Howlin, 2009).

History & Prevalence

In the early 1940s, Leo Kanner and Hans Asperger were the pioneers in the field of autism (Sicile-Kira, 2004). Kanner, an Australian psychiatrist, was the first to identify autism as a distinct neurological condition. In 1944, Asperger, a pediatrician from Vienna, conducted a study where he documented the "unusual" behavior of four boys. These boys showed problems in social interaction and communications, had little empathy towards others, and were physically clumsy (Gutstein, & Whitney, 2002). Both Asperger and Kanner described children who developed special interests while having difficulties in social interactions and communication. Kanner described children with severe autism, while Asperger's description was of more able children (Sicile-Kira, 2004). Thus, the term Asperger's Syndrome (AS) was named after Hans Asperger.

ASDs occur in up to 1% of children in the general population (Baird, Chandler, Loucas, Merdrum, Pickles, Simonoff, 2006). Various recourses reported an increase in the prevalence of autism in the general population. According to the National Institutes of Health (NIH), approximately 400,000 people in the U.S. have autism, making it the third most common developmental disorder (Ben- Arie & Miller, 2009). Various explanations have been given in order to explain the increase in prevalence of the disorder. Some believe it is due to better diagnosis of the condition, while others suggest it is because people are more willing to accept the label (Ben- Arie & Miller, 2009). According to DSM-IV (APA, 2000), AS has been

estimated to occur in as many as 48 per 10,000 children with the mean age for diagnosing this disorder beginning eight years of age (Caterino, Chao, Elder, Shacknai, Simone, 2006).

Prognosis

Although ASDs are generally regarded as a lifelong disability, the variability and severity of the symptoms make it challenging for specialists to determine the prognosis of the disability (Ben- Arie & Miller, 2009). However, there is general agreement that IQ, language skills prior to the age of five, degree of disability, early intervention, and level of available therapy are all indicators of the prognoses of the disability (Ben- Arie & Miller, 2009).

Theoretical Explanations

According to the research, there are two main theories that attribute to social competence difficulties in children with AS (Beaumont & Newcombe, 2006). The first is the Theory of Mind, which was discussed by Uta Frith, Simon Baron-Cohen, and Francesca Happé, attributes social impairments to difficulties in ascribing mental states to one's self and others. These researchers hypothesized that individuals with autism and AS have difficulty in the ability to "mind read" (Beaumont & Newcombe, 2006). The Theory of Mind (ToM) states that their peers are usually able to understand that other people have thoughts, feelings, beliefs, and are able to explain their behavior; however, children with autism and AS are not able to do so. These children tend to have trouble in conceptualizing and appreciating the feelings and thoughts of others (Attwood, 2000). These particular weaknesses have an effect on the child's social reasoning skills and behavior.

The second theory is the Weak Central Coherence theory (WCC), which states that individuals with ASD fail to make use of context in understanding their environment (Happé, 1994). This theory suggests that children with autism and AS process information in a piecemeal fashion thus become over-focused on details, leading them to miss the full picture (Frith, 1989). In brief, they believe the core deficits in autism are due to a failure to integrate local details into a global entity (Frith, 1989).

Similarities and Differences Between AS, HFA, and NLD

As mentioned earlier, the most distinctive characteristic that is present in children with ASDs is their inability to develop social competence (Gutstein, & Whitney, 2002; Myles 2005). Individuals require this social competence in order to develop meaningful friendships, or simply to interact with others in a constructive way. Unfortunately, deficits in social interaction have also been identified as key symptoms in high-functioning autistics (HFA) and in people with nonverbal learning disabilities (NLD), which has led to difficulties in diagnosis. HFA is characterized under autism. Individuals with HFA have similar characteristics to autistics however they tend to be more capable; HFA are the individuals with autism that are not mentally retarded ($IQ \leq 70$) (Koyama, Kurita, Tachimori, Takeda, & Osada, 2007). On the other hand, individuals with NLD have strong verbal abilities but have a wide variety of non-verbal deficits (Telzrow & Bonar, 2002; Jantzen, Kelso, Olvera, Steinberg, & Tuller, 2007). The following paragraphs will discuss the similarities and differences between AS, HFA, and NLD in the following domains: IQ, behavior, social functioning, language abilities, speech, academics, and motor skills. A

summary of the similarities and differences is also presented in Table 1 (see Appendix D).

According to the literature, there is no clear cut distinction between AS and HFA. In fact, some research suggests that AS may be somewhat similar to HFA (Volkmar et al., 2000). One study based on parents' reports found that children with HFA and AS are similar in some behaviors, such as the inability to maintain eye contact, initiate conversation, and join in on activities; however, children with AS seemed to be more competent in these behaviors (Macintosh, & Dissanayake, 2006). Both children with AS and HFA seem to be aware of their social skills deficit, and this is mainly attributed to their high levels of intelligence (Beidel, Murray, Rao, 2007). In an attempt to examine the similarities or differences in repetitive movement between HFA and AS, Cuccaro et al. (2007) compared thirty-three IQ and age matched individuals with AS and HFA. According to the results of the study, there were no differences on the Repetitive Behavior Scale and Aberrant Behavior Checklist, which measure stereotypical behavior and restricted interests respectively; the results of this study were consistent with previous findings.

Recent studies showed that neuropsychological differences were found between children with HFA and AS (Clikeman, 2007; Yalof, 2006). Children with AS scored higher on adaptive functioning tests, especially in areas related to socialization, communication, and daily living skills. On the other hand, children with HFA showed deficits in tasks that involved perspective taking and verbal memory (Clikeman, 2007). Additionally, Ghaziuddin, Leininger, and Tsai (1995) used the Rorschach test to understand the similarities in personalities between NLD and AS. In brief, participants with AS scored higher on measures of self-image, conventionality, and

number of primary content categories on the Rorschach test. When compared to participants with HFA, those with AS were more introversive and tended to over incorporate stimulus information. Although there were no differences on the majority of variables, results suggested differences in how the two groups adapted to novel situations (Yalof, 2006).

According to the research, there are also similarities between AS and NLD. In most cases, children from both groups show stronger verbal than performance skills (Clikeman, 2007). Both conditions are known to be characterized by significant deficits in social function, pragmatic language, and motor skills (Anderson, Ryburnh, & Wales, 2009). In relation to social functioning, it is noted that children with AS tend to have somewhat rigid social conventions while communicating with others. Again, it seems as though both children with AS and NLD tend to notice that they are different than others, which may lead to anxiety and depression (Ryburnh et al., 2009).

Rourche et al. (2002) noted that people with NLD and AS exhibited clumsiness, difficulties with visual-spatial tasks, and poor social competence. They also noted that participants with AS tended to have more differences in communication and extensive knowledge on specific topics based on rote memory of facts, compared to children with NLD.

Research showed that children with HFA, when compared to those with NLD and AS, tended to have problems in social interaction and language development (Clikeman, 2007). In many cases, these children desired to be apart from other children. Children with HFA had strengths in visual-spatial skills, but these strengths declined when the tasks became more abstract and complex (Clikeman, 2007). These children also seemed to have more difficulties in tasks that do not have clear set rules

and required independent problem solving. When the three groups were compared academically, children with NLD and HFA showed strengths in reading and spelling; however, they were not as competent in reading comprehension. Differences in the area of mathematics were also present; children with NLD tended to have more difficulties than those with HFA (Clikeman, 2007).

In relation to the cognitive profile of individuals with AS, research showed that there does not appear to be a distinctive cognitive profile, but rather behavioral and academic characteristics served as better diagnostic indicators (Barnhill, Hagiwara, Myles, Simson, 2000). It was common for subjects to obtain high scores on the Block Design (which indicates good nonverbal reasoning and visual-motor-spatial integration), Information (general knowledge and long-term recall), Similarities (verbal conceptualization), and Vocabulary (indicator of good range of knowledge or information and memory) subtests (Barnhill et al. 2000). Low scores were found on the Coding, Arithmetic (due to poor visual-motor coordination and distractibility), and Comprehension (poor social judgment) subtests. All of the above mentioned subtests were part of the Wechsler Intelligence Scale for Children. The low scores on Coding were attributed to distractibility, poor pencil control, disinterest, tiredness, excessive concern to detail, or visual memory difficulties (Barnhill et al., 2000). In sum, the academic profile of children with ASDs may vary from one child to another (Elder et al., 2006).

Children with AS have impairments in social reciprocity, understanding, and preoccupation with an item or concept; however, these children have average to superior literal language ability (Clikeman, 2007). Further characteristics included significant impairment in nonverbal behaviors such as eye contact, facial expressions, body postures and social gestures, failure to develop appropriate peer relationships,

lack of attempt to seek or share enjoyment, and the absence of social/emotional reciprocity (i.e., sharing interests, achievements, etc) (APA, 2000; Elder et al. 2006). In addition, the following behaviors were noted: repetitive and stereotypical behaviors, restricted interests and activities, abnormal preoccupation with certain topics of interest (such as science or history), inflexibility in rituals or routines, motor mannerisms (i.e. complex whole-body movements, or hand or finger flapping or twisting), and persistent preoccupation with parts of whole. While these children did not have a clinically significant delay in language, there was a deficit in pragmatic language (the function or social use of language, used in conversation, turn-taking, understanding jokes, etc.), as well as nonverbal communication (i.e., social interaction, gestures, facial expression, eye contact, and/or body posture) as sighted in the DSM-IV, (APA, 2000).

Diagnosis and Recommended Interventions

AS is a chronic condition that affects an individual's social, emotional, and adaptive functioning. Although AS is recognized as a disorder, with the exception of the classification criteria from the *Diagnostic and Statistical Manual of Mental Disorders, text revision* (DSM-IV-TR) (APA, 2000), there is little clinical consensus on the diagnostic criteria for AS. Similarly, there is little clinical consensus on the nature of how, if at all, this disorder's characteristics differ from NLD and HFA (Clikeman, 2007; Yalof, 2006).

There is no specific test to diagnose ASDs. As such, any diagnosis is based on observable characteristics that a person exhibits. It should be noted that pioneers may be skeptical about the diagnosis since it tends to be based on observations, and observations may be somewhat subjective (Sicile-Kira, 2004). Additionally, one should be cautious when interpreting the results of any assessment reports. Certain

questions should be kept in mind such as how reliable are the instruments being used and how well do they reflect the child's ability (Ben- Arieche & Miller, 2009). There are also some concerns that are specific to children with ASDs; for example because of the child's language impairments, commonly used tools for assessing IQ, may fail to give an accurate measure of the child's intelligence (Ben- Arieche & Miller, 2009).

An eclectic approach is recommended when working with individuals with ASDs; these interventions include: individual and family psychotherapy, psychopharmacology, special education, occupational therapy, and speech and language therapy (Ben- Arieche & Miller, 2009; Elder et al., 2006). The research provided in this review focused on the recommended interventions for remediating social skill deficits by special educators.

Interventions that have addressed deficits in acquisition of social skills include social stories which aim at teaching the children explicit unspoken rules through stories and pictures (Ben- Arieche & Miller, 2009). Social stories may be applied to a wide range of social situations and can be created depending on the child's needs. These stories usually have descriptive sentences about the setting, characters, and their feelings; they also give direction in regard to the appropriate responses and behaviors (Sicile-Kira, 2004). Sansosti and Powell-Smith (2006) examined the effects of individualized social story interventions on the social behavior of three children with AS. The social stories were read, and a direct observation of the participants' was conducted three times per week during unstructured school activities, such as recess. Data revealed an increase in the social behavior of two of the three participants when the treatment was implemented.

Although several studies have found social stories to be an effective intervention when it comes to greeting people appropriately (Denning, 2007) and

reducing levels of inappropriate behavior (Scattone, 2002), many of the previously conducted studies aimed at increasing pro-social behaviors through decreasing problematic behaviors (Sansosti & Powell-Smith, 2006). Additionally, while social stories have benefited many students, there is little empirical evidence related to the use of social stories to increase social and communicative behavior in school settings (Hanley-Hochdorfer et al., 2010). For example, Delano and Snell (2006) used social stories as an intervention to increase social interactions in three elementary students. The intervention took place in a controlled resource room. The results of the study showed that the three participants demonstrated improvement in the resource room; however, two out of three generalized their social behaviors to the mainstream classroom.

Another type of intervention is through increasing fluency of appropriate social behaviors through exposure and practice using “social scripts,” where adolescents may carry index cards that include various responses for different situations. In one study, a group of adolescents with AS and HFA were assigned to groups (Fombonne, Meng, Strulovitch, Tagalakakis, & Tse, 2007). They met for two hours a week for a period of 14 weeks where they were taught social skills through role-play. The members practiced the new skill in pairs, one pair at a time, while the rest of the group watched and gave feedback. In brief, the results of this study indicated that participating in social skills groups can be effective in helping adolescents with ASD develop comfort and confidence in social interactions. Parents' positive feedback suggested generalization to other settings (Tse et al., 2007).

A study conducted by Bock (2007) examined the effect of the social behavior learning strategy SODA (Stop, Observe, Deliberate, and Act) with four elementary

school children diagnosed with AS. The students were required to read stories that incorporate the SODA strategy. After the intervention took place, maintenance probes occurred once a month for 5 months. The participants benefited from the SODA intervention; they showed good improvement in time spent learning cooperatively, playing organized sports games, and interacting with others during lunch time when SODA training began.

Another study was conducted to evaluate the efficacy of two social skills intervention programs that were implemented on 6 to 11 year old children with HFA and AS (Owens et al., 2008). The two programs were LEGO and Social Use of Language Program (SULP). SULP used a clear curriculum and a hierarchical learning approach to teach social and communication skills. Teaching started by reading novels about monsters that encounter social difficulties and progressed to adult modeling. The children then practiced and played games within the group setting and then moved on to new situations to encourage generalization (Owens et al., 2008). On the other hand, LEGO therapy was a social skills intervention for school-age children. The program was based on collaborative LEGO play, which used the child's natural interests to motivate learning and behavior change. A typical LEGO therapy project aimed to build a LEGO set, importantly with a social division of tasks. In a group of three people, the tasks were divided as following: one person is the "engineer", one the "supplier" and the other the "builder". Individuals had to communicate and follow specified rules to complete the LEGO build. Each collaborative activity required verbal and non-verbal communication, collaboration, joint problem solving, joint creativity and joint attention to the task. Therapy took place one hour a week for 13 weeks. Results showed that the children who participated in LEGO therapy

improved more than the other group on autism specific social interaction scores (Owens et al., 2008).

Bearing these studies in mind, research showed that natural teaching strategies used to improve social interaction between children with ASDs and their peers were designed on the basis of incidental teaching, 'social stories', and/ or simple peer modeling (Hyun-Jin Choi & Nieminen, 2008). A variety of peer-related strategies have been developed to improve the social functioning of children on the autism spectrum. Peer-mediated strategies typically involve the use of socially competent peers to model and reinforce appropriate social behavior (DiSavlo & Oswald, 2002). An example of peer mediated intervention was provided by Kamps et al. (1994) who examined the peer tutoring approach using a multiple baseline across participants with reversal design. Participants included three 8- and 9-year-old boys with autism who were high functioning in terms of language and intellectual abilities but lacked social competence, and all other children in a third-grade classroom. Each week, students were assigned a different tutoring partner. Tutoring sessions resulted in an increase in interaction from 80 to 120 seconds per 5-minute sample for the three children with autism. Additionally there was an increase in the mean interaction time of peers, and the children with autism displayed improved academic achievement (DiSavlo & Oswald, 2002).

Laushey and Heflin (2000) investigated this approach with two five-year-old children diagnosed with ASD. These children had adequate language skills and could read at the kindergarten level, but suffered from weak social competence. The results indicated that the children with autism increased their social interaction by 36% and 38% respectively during the treatment phase, as compared with the baseline phase, in

which children attended regular classes but were not assigned a buddy (DiSalvo & Oswald, 2002).

As presented above, there is no clear-cut distinction between children with AS, HFA, and NLD. Table 1 provides a summary of the similarities and differences found in this review of literature. Regardless of the differences found, there is general agreement that these children have difficulties in three areas which are social interaction, communication, and imaginative thinking (Pittman, 2007). Children with deficits in social competence demonstrate a restricted range of social communication skills such as limited ability to (a) initiate and maintain conversations, (b) request information/materials from teachers and/or peers, (c) listen to and respond to teachers and/or peers, and (d) interact in basic games or other activities (Carter et al., 2005). Various interventions were found to be effective in teaching social skills to children who have a disorder from the ASDs. Thus, a combined intervention consisting of social stories and peer mediated intervention will be used to remediate social skills in this case study.

CHAPTER 3

METHODOLOGY

This chapter describes in detail the methodology used in the study which includes design, participants, settings, materials and resources used, procedure and data analysis.

Design

An intrinsic case study, A-B-A Single- Subject Design, was conducted in order to determine the efficacy of social stories and peer mediated intervention in increasing socially appropriate behaviors in a child with ASD. A qualitative case study was chosen as the most suitable method for answering the research questions that guided this study. Thomas (2003) definition of case study is:

A case study typically consists of a description of an entity and the entity's actions. Frequently, case studies also offer explanations of why the entity acts as it does. Entities that are the focus of case studies can be of various sorts, such as individuals, groups... (p.61)

According to Merriam (1998), a qualitative case study is an "intensive, holistic description and analysis of a single entity, phenomenon, or social unit" (p.27). She also noted that "descriptive case studies are useful in presenting basic information about areas of education where little research has been conducted. Innovative programs and practices are often the focus of descriptive case studies in education" (p.38).

A single- subject design was specifically chosen for this study because it is commonly used to study changes in an individual's behavior while being exposed to

an intervention or treatment (Fraenkel, & Wallen, 2006). The primary benefit of using the A-B-A design is that the statement of change is strengthened when the behavior is maintained after stopping the intervention (Tillman & Burns, 2009). When comparing A-B-A to A-B design, the former design is more appropriate since the only conclusion that can be made from A-B design is that when the intervention took place, we observed (or did not observe) a change in target behavior. However, adding a verification phase (third phase) allows a second documentation of change in a predicted direction (Tillman & Burns, 2009). The maintenance in behavior, after stopping the intervention, increases the researcher's confidence that any change in target behavior was not coincidental. However, it should be noted that the change in behavior cannot be attributed solely to the intervention; replications of the study would need to be conducted in order to increase the validity of the results (Tillman & Burns, 2009).

In this intrinsic case study, an A-B-A Single- Subject Design was used to study changes in Adam's social behavior after implementing the intervention. In this study an initial baseline phase was designed to gather information about Adam's social behavior. During this phase Adam's teachers were asked to fill out the Social Behavior Assessment Inventory (SBAI) rating scale, the researcher observed and documented Adam's social interactions using the Conditional Probability Record (CPR), and informal interviews were conducted with the teachers and mother. Following this phase was the intervention phase that took place during eight weeks. During the intervention phase, the researcher read a social story with Adam every Tuesday, and a cooperative group work activity took place every Friday. Finally a week after discontinuing the intervention, a follow-up phase was conducted to measure the changes in Adam's social interaction. Similar tools to the ones used in the

baseline phase were used in the follow- up phase; these tools include the SBAI rating scales filled by the teachers and observing Adam and documenting his social behavior using the CPR.

Participants

The main participant in this case study is Adam (pseudonym). Adam is an 8 year old boy who attends first grade in a fully integrated private school in Beirut. A special educator assists him in the regular classroom for at least an hour a day, every day. Adam also attends one-on-one sessions with the special educator, twice a week, to reinforce what is being taught in class. Currently, she is working on his imagination and story writing. He attends one session a week with the school counselor; they usually work on expressing emotions, distinguishing facial expressions in pictures, cube imitation, and copying patterns. Adam also receives speech therapy once a week, and he has recently started seeing a psychotherapist who is working on self-defense strategies (for example, saying no and protecting yourself).

The criteria for eligibility to participate in this study were the following: (a) he has been diagnosed with a form of autism; (b) he displays weakness in social skills; (c) he demonstrates the basic reading skills necessary to read the social stories.

During early childhood, Adam displayed a delay in speech. As a result, his parents referred him to Makassed General Hospital where the physician noted that he had "a marked hypertrophy of the adenoids with a complete fullness of the air spaces of the petrosal bones in favor of a chronic antro-mastoiditis". Antro- mastoiditis is a chronic infection that can damage the entire eardrum and ossicles (small bones of hearing) leading to conductive hearing loss that will persist unless surgery is

performed (Holinger, n.d.). At that time, the physician noted that Adam's inability to hear properly due to the ear infection may explained his delay in speech.

Since then, Adam has undergone three assessments; two psycho-educational assessments done by specialists and one assessment done by a speech therapist. The first assessment was conducted by a psycho-educational therapist; the examiner used the Autism Behavioral Checklist (ABC), the Autism Screening Instrument, educational assessment, and observations. The second assessment was conducted by a speech therapist. The third and most recent assessment was conducted by a psycho-educational therapist; Adam was reassessed using the Autism Diagnostic Observation Schedule (ADOS) and an observation and interview were conducted with the mother.

The first assessment that was conducted by a psycho-educational therapist took place in December 2008. The evaluation consisted of a direct and indirect assessment. The direct assessment was conducted using the Autism Behavioral Checklist (ABC) which was completed by the mother and teachers using Autism Screening Instrument: Educational Assessment; while the indirect assessment consisted of a classroom observation. During the assessment, Adam was pulled out of his class and accompanied by his teacher. Initially, Adam was very quiet; however, he then became more comfortable and started to explore the room. He also felt comfortable enough to use the paper and crayons that were in the room. However, it was noted that Adam's face and body remained expressionless and he tended to repeat what the examiner said.

As mentioned above, the examiner used the Autism Behavior Checklist (ABC) to find out if Adam was experiencing problems in the following areas: sensory, social relations, body and object use, language, social and self help. This checklist is usually

used with individuals suspected of autism. An ABC total score of 87 or higher (Sensory ≥ 14 , Relating ≥ 28 , Body and Object Use ≥ 20 , Language ≥ 10 , Social and Self Help ≥ 14) has been selected as a high-probability cut-off point for the classification of autism.

The mean total score that was obtained by the three classroom teachers is a total score of 105. The following are the scores obtained in each subgroup: Sensory 18, Relating 34, Body & Object Use 20, Language 21, Social and Self-Help 13. In brief, during this assessment, teachers reported that Adam shows no startled response to loud noises and he frequently does not show any visual reaction to the presence of new people. He tended to stare into space for long periods of time and avoided eye contact. The teachers also noted that Adam resists being touched or held, and has not developed any friendships. In relation to the body and objects use, it was noted that Adam tends to spin and flap his hands a lot. He also has peculiar habits such as lining up objects. His reported symptoms of language include: speaking in atonal and rhythmic manner, echoing questions or statements, repeating sounds and words, and using at least 15 but less than 30 spontaneous phrases daily to communicate. Lastly, it was noted that Adam has "special abilities" in one area of development, which seems to rule out mental retardation. The special abilities refer to Adam's strengths in decoding and spelling. From the scores on the ABC checklist completed by three teachers and data collected from the teachers, one can deduce from that Adam has a high probability of having a disorder from the ASD.

On the other hand, the mean total score obtained by Adam's mother on the ABC is 44. The scores obtained on the subgroups are the following: Sensory 3, Relating 12, Body and Object Use 3, Language 23, Social and Self-Help 3. According

to the mother's scores, Adam only seems to have problems related to the language domain which includes speaking in an atonal and arrhythmic manner, echoing question or statements, making pronoun reversals (e.g., you for I), repeating sounds and words, and using at least 15 but more than 30 spontaneous phrases daily to communicate. It should be noted that there is a large discrepancy in scores between the teachers' scores and the mother's scores. One explanation could be that Adam tends to behave differently depending on the setting he is in. Another explanation could be that the teacher's observe Adams's behavior and compare him to his typically developing peers and to standardized benchmarks set by specialists; whereas his mother just sees the way her child behaves and compares his current level of behavior to the previous years. In any case, the data gathered from the observations and checklists showed that Adam has problems in sensory, verbal communication and social skills which seem to affect his academic performance. He also exhibited problems in the restricted repetitive and stereotyped patterns of behavior. Lastly, it should be noted that the assessor ended the report with some recommendations which included using social stories, establishing structured activities with peers, and providing direct instructions on how to interact with others.

A second assessment was conducted in September 2010 by a speech therapist. The purpose of this assessment was to reassess Adam's communication and language abilities. It should be noted that the report seemed more like a summary of his capabilities than an assessment report. No names of the administered tests were provided, and no scores were mentioned.

The report was divided into the following three domains: comprehension, expression, and communication. In relation to his comprehension level, Adam was

able to understand simple and complex sentences; however he was not able to understand certain metaphors and figures of speech. Adam's comprehension of adverbs was not appropriate for his age level. His comprehension of the prepositions of space and time were also slightly below age expectations. With regard to expression, his use of nouns, verbs, and adjectives was acceptable for his age; however the use of personal pronouns was slightly below his age level. Adam still repeats certain terms or phrases while playing for no communicative reason. In relation to his communication skills, Adam has shown some improvement in maintaining eye contact while communicating. He also started to engage in role-play and imaginative play.

Lastly, a more recent assessment was conducted in December 2010. The purpose of the diagnoses was to re-assess Adam who had been previously diagnosed with a disorder from the Autism and Autism Spectrum Disorders (ASD). During this assessment, Adam was observed, an interview was conducted with his mother, and the Autism Diagnostic Observation Schedule (ADOS) was administered. The ADOS consists of planned activities that allow the examiner to observe and rate behaviors that have been identified as important to the diagnosis of ASD. The overall rating for the ADOS is organized into the five following groups: Language, Reciprocal Social Interaction, Imagination & Creativity, Stereotyped Behaviors and Restricted Interests, and Other Behaviors. In relation to his communication skills, it was noted that Adam exhibited various promising skills such as speaking in phrases and using the plural form. He was able to name and describe the things he saw. However, he also showed some characteristics of autism. Adam's speech was somewhat jerky and he tended to repeat himself; he also occasionally repeated what the psychologist said. Although Adam appeared to listen to the given instructions, he tended to follow his own train of

thought and did not respond to the psychologist's requests. In relation to the reciprocal social interaction domain, Adam showed strength in some areas such as responding to his name and sharing toys with the psychologist. He also tried to turn the attention of the psychologist towards items that were out of reach by looking at the object then at the examiner, and back at the object. Nevertheless, Adam also showed some behaviors consistent with autism such as minimal eye contact and his facial expressions were not directed towards others. Additionally, the amount of reciprocal communication such as asking questions was less than typical for his level of development. In relation to play, Adam was able to play appropriately with a variety of toys. He showed some make-believe play but no pretend play. Lastly, it should be noted that Adam did not show any stereotyped behaviors or restricted interests, nor did he display any signs of anxiety or disruptive behavior. In sum, the diagnostic summary stated that Adam appears to meet the criteria for Autistic Disorder. However, the presence of speech, spontaneous communication, and the absence of stereotypic behaviors and co-morbidities are good signs which imply there is a chance that his communication and social skills will continue to improve.

Although different tools were used to assess Adam's behavior, and despite the fact that there was a discrepancy between the teachers' ratings and the mother's ratings of Adam's behavior, there was a common documentation of several problematic behaviors. In the above mentioned reports, there is general agreement that Adam has problems in expressive language skills which includes verbal communication; he tends to say statements that did not really make sense and repeats certain phrases, has weak social skills, and exhibits minimal eye contact and minimal reciprocal communication (such as asking questions).

Materials and Instruments

Social Stories

Social stories were designed to address the following identified target behaviors that need remediation: raising one's hand to ask a question, sharing items, talking to the teacher, asking questions, asking for help, greeting people and introducing one's self, and joining in on activities. The social stories were individualized booklets. Each booklet is 4 to 5 pages long; these pages include brief sentences and some pictures. The types of sentences used in the stories are the following: (a) descriptive sentences, which identify the contextual variables of the target situation (example: sometimes, recess is on the playground); (b) directive, which assist in describing a desired behavior in response to a social cue or situation (example: I will try to say things like "good job" or "nice drawing"); (c) prescriptive, which describe the reaction and feelings associated with the target situation (example: there are other kids who like to play with me during recess); (d) affirmative, which express shared belief within a given society (for example, this is a good habit) (Sansosti et al., 2004). The content of the stories was based on information collected through indirect measures such as interviews with teachers, observing the child in various settings, and data collected from the child's school records and assessment reports.

Social Story Journal

During or after each social story session, the researcher was asked to note the student's behavior. Keeping a journal allows the researcher to monitor Adam's progress, document the child's questions or responses, and record the level of difficulty he is experiencing.

Social Behavior Assessment Inventory (SBAI)

The SBAI was designed by Thomas M. Stephens, Ed D. and Kevin D. Arnold, PhD, and published by Psychological Assessment Resources, Inc. The SBAI measures the level of social behaviors exhibited by children and adolescents in classroom settings. This assessment is appropriate for children between the ages of 5 and 15. It consists of 136 items that describe social skills commonly observed in the classroom. A teacher, counselor, or parent who has observed a student's behavior rates each item on a 4-point scale describing both the presence and level of the behaviors exhibited by the student. The rating scale is divided into four sections which include: Environmental Behaviors (ER), Interpersonal Behaviors (IP), Self-Related Behaviors (SR), and Task-Related Behaviors (TR) (Stephens, 1992). After the scores of each subgroup are added, a total score is calculated then marked on a grid. The total scores either fall in the "elevated" range or in the "within expectations" range (Stephens, 1992).

Conditional Probability Record (CPR)

CPR is part of the Functional Behavioral Assessment (FBA) process, and was used to document the nature under which the target behaviors take place. CPR was used to observe and record the antecedents and consequence of a behavior. The antecedent is what comes before the behavior or what causes it, while the consequence is what takes place after the target behavior (usually what reinforces the behavior). This type of observation is usually beneficial when the researcher wants to examine the likelihood of the occurrence of particular behaviors (Steege, & Watson, 2009). (See Appendix II for sample of CPR)

Procedures

The present study was conducted following the ethical guidelines set forth by the Council for Exceptional Children (CEC) (Rumrill & Cook, 2001). Prior to

initiating the study, a formal meeting was conducted with the child's parents, special educator, and homeroom teacher. The purpose of the meeting was to provide the parents and teachers with the purpose of the study, and a description of the procedure. The parents were informed about the benefits of the intervention, and were given the option of withdrawing their son from the study at any time and for any reason. After conducting the meeting, the parents were asked to sign an informed consent (see Appendix III). Privacy and confidentiality was also taken into account; the researcher used a pseudo name (Adam) when referring to the child so he remains unrecognizable.

Baseline

Prior to initiating the intervention, a brief meeting was conducted with Adam's parents in order to explain to them what the intervention consists of. After receiving their consent, The Functional Behavioral Assessment (FBA) process was used to identify and evaluate the variables that trigger and maintain specific behaviors. An indirect and direct FBA was conducted. The indirect FBA was conducted by gathering information about the student's behavior through informal and semi-structured interviews with the teachers and school counselor. Additionally, the special educator and regular teacher were asked to fill out a SBAI form in order to rate Adam's behavior.

During the baseline phase, Adam was observed for 15 minutes, twice a week for two consecutive weeks. The observation took place at different times of the day, during various activities. The primary setting where the observation took place was in his regular classroom. Adam was also observed once during Arabic class and recess. The observer used a 15 second interval while recording the data. The observer also

used the Conditional Probability Record (CPR) to record the occurrence of the target behavior. CPR was also used to observe and record the antecedents and consequence of a behavior. Thus, the observer observed the child every 15 seconds. If the child was engaged in a target behavior, the researcher would document the behavior, the setting it took place in, and the consequence of the behavior (example: feedback from peers or teacher). Additionally, two teachers and a special educator were asked to fill out the Social Behavior Assessment Inventory (SBAI).

Intervention

Two types of interventions took place in this study. During the first intervention, the examiner read social stories to Adam for a period of eight weeks. The social stories targeted the following social skills: raising one's hand to ask a question, sharing items, talking to the teacher, asking questions, asking for help, greeting people and introducing one's self, and joining in on activities.. The stories were usually read to the child in the library every Tuesday. Each session lasted about 20 minutes. The child would read the story to the teacher. After reading a few lines, the examiner asked Adam a few comprehension questions related to the text. When applicable, the examiner would ask Adam to act out certain things; for example Adam was asked to raise his hand to ask a question. Additionally, at the beginning of each session, the examiner would briefly go over the story that was read the previous session to make sure Adam still remembered what they read about. The examiner also kept a journal during the social stories sessions to document the length of time it took him to read the story, if he had any difficulties reading the story, the type of behavior he exhibited during the session, and if he was able to answer the comprehension

questions related to the text being read or the stories discussed in the previous sessions.

The second intervention, peer mediated intervention, took place every Friday, during "station time", in the regular classroom. During these sessions the teachers usually gave out the instructions orally, and then showed the students a sample of what is expected of them. The teachers then divided the students into groups. The groups usually consisted of three to four students with different learning abilities. The students expected to join efforts and work with their peers to complete the assigned task. While the students worked on their assignments, the teachers roamed around the classroom and gave their feedback.

Various activities were conducted during these sessions. For example, during one of the sessions, the students were placed in groups and were asked to complete a vocabulary sheet. The students were assigned roles: one student was the reader, the second was the cutter, and the third had to paste the papers. The main objective was for students to decide on the correct word that completes the sentence, cut the word, and then paste it in the blank space. Adam was able to work cooperatively with his group; he was responsible for pasting the papers.

In another session, the students were divided into groups of three. They had to make up a list of jobs people may hold in a community. After making the list, the group had to decide on one job they would like to present to their class. The children must describe what the person does and what tool he or she uses for his profession. One student was responsible for drawing the picture, while the second was responsible for writing a few lines about the profession, and the third had to present the drawing to the teachers and peers. The students chose to describe the job of a

teacher; Adam was responsible for drawing a picture. He was able to draw the picture; he also stood in front of his class and labeled the items he drew.

Follow-Up

A week after completing the intervention, Adam's social behavior was observed both in the classroom and on the playground. Follow-up data were collected in the same manner as the baseline data. The observer noted specific behaviors related to interacting with teachers (verbally or using gestures such as raising his hand) and with his peers. Interacting with peers was noted with the child initiated play, joined in on a game, or any verbal statement addressed to a classmate. Additionally, the special educator and two home-room teachers were asked to fill out the Social Behavior Assessment Inventory (SBAI). Lastly, informal interviews were conducted with the teachers and parent in order to get more details on their feedback.

Data Analysis

A detailed description of Adam's social behavior during the baseline phase was documented through observations (using the Conditional Probability Record), notes taken by the researcher, and informal interviews conducted with the mother and teachers. Based on the collected data, the target skills that need remediation were identified. The combined intervention was then implemented for a period of 8 weeks. The researcher used a journal to document Adam's behavior during the intervention phase. Finally, after completing the intervention, a second observation similar to the one conducted in the baseline phase was implemented and the teachers were asked to fill the rating scales for a second time. The differences in behavior and scores were documented. The changes that were maintained in Adam's behavior during the generalization period were provided. Moreover, visual illustrations were presented in

order to compare Adam's target behaviors pre and post intervention. The graphs were plotted based on the frequency of target behaviors. An analysis and synthesis of the documented data, in both the journal and graphs, was discussed. Lastly, a summary of the results collected from the rating scales filled by the teachers, observations conducted, and informal interviews was provided.

This chapter has presented the design used, participants, settings, materials and instruments used, procedure, and data analysis methods. The data analysis and results deduced from the study will be discussed in the following chapter.

CHAPTER 4

RESULTS

The present study intended to examine the effectiveness of a combined intervention in improving the social behavior in a child with impaired social skills; the intervention consisted of a peer mediated intervention and reading personalized Social Stories. The main objective of the study was to determine the effectiveness of the intervention in a particular child with Asperger's syndrome. The second objective aimed at identifying the main changes observed during the intervention period. Data related to the changes observed during the intervention period were collected from journals written by the examiner. The data during baseline and follow-up were collected using the Social Behavior Assessment Inventory (SBAI) which was filled out twice by the teachers; and the Functional Behavioral Assessment (FBA), specifically using the Conditional Probability Record (CPR). This chapter presents the results of the data analysis.

Behavioral Changes Observed During Social Stories Sessions

The researcher met with Adam once a week for eight weeks to read social stories. According to the data gathered from the journal, Adam was very cooperative throughout the story reading sessions. During the first few encounters, Adam was somewhat shy and reserved. However, towards the second week of one-to-one sessions, he became more outgoing. In almost every session, Adam would come to the classroom door and greet the researcher. He asked the researcher if they could go to the library and read a book several times too. Adam was capable of remembering the researcher's name by the second week.

During the story sessions Adam was capable of reading the stories fluently. He was able to recall the main ideas of previously taught stories. Adam also answered comprehension questions related to the text. For example, when asked, "How will Mrs. Rula feel if you raise your hand to ask a question; or how will she feel if you listen to her while she speaks?" He answered, "Happy". Adam was capable of answering the examiners questions most of the time; however it should be noted that he did not use complete sentences. It was much easier for him to give one word answers or fill in the blanks. For example, the researcher asked him "after borrowing something what do you do?" Adam looked and did not respond. However, when the question was rephrased to "after borrowing something, do you keep it or return it?" he said, " Give it back."

Adam was also capable of expressing himself using gestures. For instance, when he read the text related to asking questions, he raised his hand to show how he would ask his teacher a question. Also, when he saw a picture of a boy changing his clothes, he covered his mouth and said "impolite" in Arabic. However, he was not able to elaborate why it was impolite. In another session, Adam pointed to a picture of a child smiling and said "happy" while grinning, then pointed at a child frowning and said "sad" while pressing on his teeth.

At times, Adam made statements which didn't seem to make much sense and were out of context. Some of the statements that were documented in the journal are the following: "Can I make your bed?", "I'm ready", "fly", "where is Jude?", etc. He also tended to mumble words that were not clear to the examiner, and when asked to repeat what he said he would not. When the teachers were asked if they noted similar behaviors in the classroom, they mentioned that they did and they assumed that this

was because Adam was very much affected by the weather. His mood changed when it used to rain; he would become inattentive and somewhat restless. Based on the notes in the journal, Adam did become restless and distracted by the rain; however these "random statements" were not only made on rainy days.

During the library sessions, Adam tended to sit next to the researcher. He usually put his head on her shoulder and played with her scarf or sweater while reading the story. Adam was capable of asking if he could go to the restroom during one of the sessions. On one occasion, the researcher forgot her pen on the table after the session ended; so he walked back to the table and got it for her then said, "Your pen". The friendly relationship that was documented in the journal contradicted some of the information in one of Adam's assessment reports. For example, according to his report Adam avoided any physical contact and preferred sitting far from others; however, this was not the case during the library sessions. One possible explanation for his behavior during story reading sessions is that he felt comfortable with the reader and enjoyed the story sessions. Perhaps Adam became familiar with the routine that took place every Tuesday; which in turn, made him feel at ease. Another possible explanation is that some kids act differently when they are being observed by strangers in unfamiliar settings.

Towards the last few sessions, some minor changes were noticed in Adam's behavior. Adam became more expressive, and tried to initiate conversation on several occasions. For example, the researcher came to pick him up one day, so he grabbed her hand and walked her towards his desk. He then showed her a picture he drew of a fire with flowers and trees around it. He pointed at the drawing and labeled the items he drew and then said, "Forest." On another occasion, he pointed to spilt coffee on the

floor as he was walking to the library. Adam grabbed the researcher's hand, and said, "Look!!! Careful, it's dirty!" Additionally, on two separate occasions, Adam tried to express the way he feels; for example once he said he was tired and another time he told the researcher that he likes his new glasses. The researcher also noticed that Adam became friendlier towards others. For example, Adam started to greet the librarian upon entering the library. Also, on several different occasions, he greeted teachers walking in the hallway. However, it should be noted that Adam exhibited minimal eye –contact and used phrases (instead of complete sentences) while talking to others.

In conclusion, the general impression obtained from the documented data in the journals is that Adam was somewhat shy and reserved at first. He exhibited minimal contact with the researcher; he was very quiet and avoided eye contact. After the first few encounters, Adam became more outgoing. He attempted to interact with the researcher on several different occasions. A difference in his pro-social behavior towards others was also noticeable; for example he started to greet the librarian towards the end of the intervention. Although some changes were observed in Adam's behavior towards others, one cannot conclude that the changes in behavior were caused solely by the intervention. Several external factors may have influenced Adam's behavior such as him becoming more comfortable with the researcher or even maturation.

Behavioral Changes in Response to Peer Mediated Intervention

Various activities were conducted during these sessions. During all activities, Adam was able to work cooperatively with his group members. He acted in a responsible way, and was able to do all the delegated tasks (such as cutting, pasting,

drawing, and labeling). Adam was also capable of standing in front of the rest of class, with his group members, to present what they had done. Although Adam seemed to be very confident and comfortable, he was not able to present his work in a fluent way. For example, on one occasion, Adam stood in front of his classmates and labeled the items he drew instead of talking about the drawing. Additionally, during another session, the students were working on a play related to the lifestyle of villagers. Adam was assigned the role of the farmer. As part of his role, Adam had to act like a farmer by digging, collecting fruits, and handing them to another group member. Adam was capable of doing so; however, he did not verbally interact with his peer while giving him the fruits. At one point during the play, one of his friends asked him what he was doing, so he simply replied "digging". When given oral prompts, Adam was able to answer questions. Adam's only verbal initiation was when he asked his friend what he was doing. Perhaps the reason he was able to do this is because he was asked this particular question several times.

Adam was more of a passive than active group member. It seems as though he benefited from group work because he was able to imitate his peers when he was not sure about what he was supposed to do. For example, during one session, the teachers read a story to the class about sign language. As an activity related to the story, the students were asked to create their own sign language. Adam was paired with his peer Mohammad. After they were given the assigned words, the boys stood in front of the class to act out the words. When the teacher read the word, Adam looked at his peer and then imitated him. For example, for the word "fly", Mohammad flapped his hands; Adam then looked at him and did the same. As an observer, one can deduce

that Adam was capable of completing the task; however he wasn't able to take the leading role in any of the group activities.

Adam's Social Communication Progress

Frequencies of the occurrence of targeted behaviors were gathered, through observations, using the Conditional Probability Record (CPR) which is part of the Functional Behavioral Assessment (FBA) process. During each observation, the researcher observed Adam for 15 minutes using a 15 second interval. So, every 15 seconds the researcher would look at Adam to see if he was engaged in a target behavior. If he was, the researcher noted the antecedent (what took place before the incident or what lead to it) and the consequence (what happened after the incident; for examples, feedback, reinforcement, activity taking place) (see sample of CPR in Appendix II). Figure 1 shows a summary of the CPR; the x-axis shows the four days the child was observed; the y-axis shows the number of times the target behaviors took place; baseline observation shows the frequency of target behaviors during the baseline phase and follow-up observation shows the frequency of target behaviors that took place during the follow-up phase.

Figure 1: Summary of frequency of target behaviors

As the data from the above figure shows, Adam had one social encounter during the observation that took place prior to the intervention phase. This incident took place during recess when Adam attempted to join in on a game. He ran towards one of his classmates and nudged his shoulder. During the intervention phase, Adam's social interaction fluctuated; there were minimal attempts at first, then the social interactions increased. In the observation conducted post intervention the examiner noticed several attempts and actual social interactions; however, the amount of interaction differed from day to day.

Perhaps the amount of interaction observed post intervention differed depending on the time of day and the activity that was taking place. According to the researcher's notes in the journal and CPR, there was only one social interaction during the observation conducted on day one; this observation was conducted during the first period while the students had a writing assignment to do. The social interaction was

when Adam looked at the examiner and waved hello. On the other hand, the other three observations took place during recess, lunch time, and carpet time (where students were free to do as they please). During these observations Adam made several interactions with his peers and teachers. He shared his snacks twice with two different peers; spoke to his friends twice during different encounters, tossed the ball back and forth to a friend, asked two of his classmates' questions at different times, greeted a teacher, greeted the observer during each encounter, and lastly raised his hand to ask a question. The child received positive feedback during all encounters except for one; which was when he asked his peer what he was looking at. During all other social encounters, Adam's peers responded in appropriate ways. For example, when he shared his snacks, his peers responded by saying thank you; on another occasion, when Adam tossed the ball to his peer, the child tossed the ball back to Adam.

SBAI Results

The Social Behavior Assessment Inventory was filled out by two homeroom teachers and the special educator who works with Adam on a regular basis. The teachers filled the forms once in February, prior to starting the intervention, and once in April after completing the intervention.

The SBAI consists of four sections that need to be filled by the teachers; these sections include the following: Environmental Behaviors (ER), Interpersonal Behaviors (IP), Self-Related Behaviors (SR), and Task-Related Behaviors (TR). Thus, the results of the inventory were classified in terms of the above mentioned subscales. After adding the scores, the total numbers were plotted on the SBAI Profile Grid. The total scores either fell in the "within expectations" range which means the behavior is

acceptable, or the "elevated" range which means the behavior is lower-than-acceptable level (Stephens, 1992). A decrease in score indicates a change in ratings and improvement of behavior; the lower the score becomes, the closer the behavior exhibited is to the acceptable level (Stephens, 1992).

Environmental Behaviors

According to results of the inventory that was filled out by the homeroom teachers before intervention, Adam exhibited some problems in his care for the environment; this included his ability to clean after himself, use the classroom materials in appropriate ways, and dispose of trash properly. He was also not able to deal with emergencies in an age-appropriate way. For example, he was not able to follow emergency rules and notify his teachers if there is any problem. Lastly, Adam did not show any disruptive behavior in the school premises; for example, he was capable of walking quietly through the hallways and did not disrupt the students when entering a classroom. Similar scores were obtained in the post-intervention.

According to the special educator's scores before the intervention took place, Adam did not exhibit any problems in this area. Similar scores were obtained in the post-intervention. Table 2 shows a summary of the scores obtained from the Environmental Behavior (ER) subscale that were completed pre- and post intervention for both the teachers and special educator.

Table 2

Homeroom Teachers' & Special Educator's Ratings on Environmental Behaviors (ER) Pre and Post Intervention

Subscale	T-Pre	RC	T-Post	RC	S-Pre	RC	S-Post	RC
Care for the Environment (CE)	4	E	3	E	4	WE	4	WE
Dealing with Emergencies (DE)	3	E	3	E	2	WE	2	WE
Lunchroom Behavior (LR)	3	WE	3	WE	2	WE	3	WE
Movement Around Environment (MO)	4	WE	3	WE	4	WE	4	WE

Note. T-pre= teachers' scores pre intervention; RC= Rating Category; T-post= Teachers' scores post intervention; S-pre= Special educator's scores pre intervention; S-post= Special educator's scores post intervention; WE= Within Expectations; E= Elevated.

Interpersonal Behavior (IP)

The results of the inventory scales filled out by both the homeroom teachers and special educator pre-intervention yielded similar results. Adam's overall scores in the Interpersonal Behavior subscale fell within the elevated range. According to the results, Adam was not capable of coping with conflict in appropriate ways; for example he was not able to respond to verbal or physical assault by leaving the situation or calling for help. Adam had difficulties in gaining his teachers' attention by raising his hand or approaching them and asking for help. Adam was capable of stating his name when asked, greeting adults and peers by their names, and responding to greetings by shaking hands and saying, "How do you do?" However, he was not capable of maintaining eye contact, introducing himself, or introducing people to each other. Adam could help his peers and teachers when asked, but he was not able to offer help. Adam exhibited play skills, such as turn taking and following rules, that are lower than the expectable level for his age. Lastly, he was capable of

distinguishing between what belongs to him and what belongs to others; however he was not capable of asking permission to use others belongings.

According to the data gathered in the post intervention, the total scores of the homeroom teachers' rating scales remained in the elevated range. However, the results showed a general improvement in some of Adam's interpersonal behaviors. The major improvements (decrease of 3 or more points) were present in the following subscales: Coping with Conflict (CC), Greeting Others (GR), and Making conversation (MC). The scores on Accepting Authority (AA) remained the same; while the remaining six subscales showed a decrease in one to two points. It should be noted that Adam's scores in Greeting Others and Property: Own & Others were borderline; a decrease in an additional point would lead the score fell into the within expectations range.

Similarly, there was a general improvement in the total post test scores obtained from the special educator's rating scales on IP. The major improvements (decrease of 3 or more points) were present in the following subscales: Coping with Conflict (CC), Greeting Others (GR), and Making conversation (MC). The scores on Accepting Authority (AA) remained the same; while the remaining six subscales showed a decreased one or two points. It should be noted that a decrease in an additional point on the GR subscale would lead the score fell into the within expectations range. Table 3 shows a comparison of the teachers' and special educator's rating scales that were obtained in the pre and post intervention.

Table 3

*Homeroom Teachers' & Special Educator's Ratings on Interpersonal Behaviors (IP)
Pre and Post Intervention*

Subscale	T-Pre	RC	T-Post	RC	S-Pre	RC	S-Post	RC
Accepting Authority (AA)	9	E	9	E	11	E	11	E
Coping with Conflict (CC)	16	E	9	E	11	E	8	E
Gaining Attention (GA)	13	E	12	E	14	E	11	E
Greeting Others (GR)	14	E	8	E	12	E	8	E
Helping Others (HP)	14	E	12	E	14	E	14	E
Making Conversation (MC)	19	E	16	E	16	E	13	E
Organized Play (OP)	9	E	8	E	7	E	6	E
Positive Attitude Towards Others (PA)	7	E	6	E	6	E	6	E
Playing Informally (PL)	10	E	9	E	14	E	12	E
Property: Own & Others (PR)	6	E	5	E	6	E	6	E

Note. T-pre= teachers' scores pre intervention; RC= Rating Category; T-post= Teachers' scores post intervention; S-pre= Special educator's scores pre intervention; S-post= Special educator's scores post intervention; WE= Within Expectations; E= Elevated.

Self-Related Behaviors (SR)

The scores of Adam's self-related behavior subscale on the teachers' ratings before intervention were all in the elevated range; except for his ability to take care of himself. His score on exhibiting responsible behavior fell in the "elevated" range; however a decrease in one point would lead the total score to be part of the "within expectation" range. Similarly, the special educator's ratings during pre-intervention were in the elevated ranges except for self-care and accepting consequence subscales.

The results of the teachers' rating scale post intervention showed a decrease in the total scores of the following subscales: Accepting Consequence (AC), Positive Attitude Toward Self (PA), and Responsible Behavior (RB). Adam's total score on Accepting Consequence became in the "within expectations" range after intervention.

The results of the special educator's rating scale post intervention also showed a decrease in the total scores of the following subscales: Accepting Consequence (AC), Expressing Feelings (EF), and Positive Attitude Toward Self (PA). Adam's scores on AC and EF became in the "within expectations" range post intervention. The total scores in the remaining subscales did not change. Table 4 shows a comparison of the teachers' and special educator's scores obtained before and after intervention.

Table 4

Homeroom Teachers' & Special Educator's Ratings on Self-Related Behaviors Pre and Post Intervention

Subscale	T-Pre	RC	T-Post	RC	S-Pre	RC	S-Post	RC
Accepting Consequence (AC)	5	E	3	WE	5	E	3	WE
Ethical Behavior (EB)	10	E	10	E	7	E	7	E
Expressing Feelings (EF)	4	E	4	E	4	E	2	WE
Positive Attitude Towards Self (PA)	11	E	9	E	6	E	5	E
Responsible Behavior (RB)	9	E	8	E	8	E	8	E
Self-Care (SC)	3	WE	3	WE	3	WE	3	WE

Note. T-pre= teachers' scores pre intervention; RC= Rating Category; T-post= Teachers' scores post intervention; S-pre= Special educator's scores pre intervention; S-post= Special educator's scores post intervention; WE= Within Expectations; E= Elevated.

Task Related Behaviors (TR)

In general, according to the teachers' and special educator's rating scales before intervention, Adam's scores on task related behaviors were in the elevated range. There was a conflict in scoring between the homeroom teachers' and special educator's scores in "Attending Behavior (AT)" subscale, which includes looking at teacher when instructed, quietly watching presentations, and listening to a class speaker. The homeroom teacher rated him as being in the acceptable range (score 3), while the special educator rated him in the elevated range (score 5). One explanation for the discrepancy in scores could be that Adam behaves differently depending on the setting he is in.

After discontinuing the intervention, Adam's scores on some of the subscales decreased. According to the results obtained from the homeroom teachers' rating scale, Adam showed improvement in the following subscales: Classroom Discussion (CD), Following Directions (FD), Group Activities (GP), Performing Before Others (PF), and Quality of Work (QW). The scores of the remaining six subscales did not change. Although there was a general improvement in the total scores of some of the subscales, the scores still remained in the elevated range. The only subscale that became in the "within expectations" range is Performing Before Others (PF).

The total scores on the special educator's rating scale post intervention also showed a general improvement. There was a decrease in the following subscales: Asking and Answering Questions (AQ), Classroom Discussion (CD), Following Directions (FD), and Independent Work (IW). The decrease in total scores was between one and two points. The scores of the remaining six subscales did not

change. A comparison of the teachers' and special educator's rating scales pre- and post intervention are presented in Table 5.

Table 5

*Homeroom Teachers' & Special Educator's Ratings on Task-Related Behaviors (TR)
Pre and Post Intervention*

Subscale	T-Pre	RC	T-Post	RC	S-Pre	RC	S-Post	RC
Asking & Answering Questions (AQ)	8	E	8	E	10	E	8	E
Attending Behavior (AT)	3	WE	3	WE	5	E	5	E
Classroom Discussions (CD)	12	E	10	E	17	E	16	E
Completing Tasks (CT)	6	E	6	E	6	E	6	E
Following Directions (FD)	6	E	5	E	6	E	4	E
Group Activities (GP)	12	E	8	E	7	E	7	E
Independent Work (IW)	8	E	8	E	7	E	6	E
On-Task Behavior (OT)	9	E	9	E	11	E	11	E
Performing Before Others (PF)	10	E	5	WE	6	E	6	E
Quality of Work (QW)	8	E	7	E	8	E	8	E

Note. T-pre= teachers' scores pre intervention; RC= Rating Category; T-post= Teachers' scores post intervention; S-pre= Special educator's scores pre intervention; S-post= Special educator's scores post intervention; WE= Within Expectations; E= Elevated.

In an attempt to see which subscales changed or stayed the same from the pre- to post intervention phase, a summary of the total scores are presented in Table 6 and Table 7; Table 6 lists the target subscales and Table 7 lists the non-target subscales. The subscales were divided into target and non-target depending on the behaviors that they represent. The selected target subscales are the following: in the Interpersonal

Behaviors category, the important subscales were: Coping with Conflict, Gaining Attention (examples: raising hand, using please and thank you, or asking peers for help), Greeting Others, Helping Others, Making Conversation, Positive Attitude Towards Others, and Playing Informally (example: joining in on play or sharing games); in the Self-Related Behaviors category, the following were selected: Expressing Feelings (example: describing own or others feelings or moods verbally) and Positive Attitude Toward Self (example: saying thank you and making positive statements about self); in the Task Related Behaviors category, the following were selected: Asking and Answering Questions, Classroom Discussion, Group Activities, and Performing Before Others.

Table 6

Summary of changes in target behaviors

Subscales	Change in teachers' total score	Change in range (teacher's score)	Change in special educator's total score	Change in range (special educator's Score)
Coping with conflict	< 7	–	< 3	–
Gaining attention	< 1	–	< 3	–
Greeting others	< 4	–	< 4	–
Helping others	< 2	–	–	–
Making conversation	< 3	–	< 3	–
Organized play	< 1	–	< 1	–
Positive attitude towards others	< 1	–	–	–
Playing informally	< 1	–	< 2	–

Expressing feelings	-	-	< 2	WE
Positive attitude toward self	< 2	-	< 1	-
Asking & answering questions	-	-	< 2	-
Classroom discussion	< 2	-	< 1	-
Group activities	< 4	-	-	-
Performing before others	< 5	-	-	-

Note. < = decrease in score; WE = changed to within expectations; - = no change.

Table 7

Summary of changes in non-target behaviors

Subscales	Change in teachers' total score	Change in range (teacher's score)	Change in special educator's total score	Change in range (special educator's Score)
Care for the environment	< 1	-	-	-
Dealing with emergencies	-	-	-	-
Lunchroom behavior	-	-	< 1	-
Movement around environment	< 1	-	-	-
Accepting Authority	-	-	-	-
Property: own & others	< 1	-	-	-
Accepting consequences	< 2	WE	< 2	WE

Ethical behaviors	-	-	-	-
Responsible behavior	-	-	-	-
Self-care	-	-	-	-
Attending behavior	-	-	-	-
Completing task	-	-	-	-
Following directions	< 1	-	< 2	-
Independent work	-	-	< 1	-
On-task behavior	-	-	-	-
Quality of work	< 1	-	-	-

Note. < = decrease in score; WE = changed to within expectations; - = no change.

The scores presented in Tables 6 and Table 7 show that Adam's target behaviors improved in all of the subscales; this was documented in either the teachers' rating scales, the special educator's ratings, or by both. Although Adam showed improvement in all of the target behaviors, his scores remained in the elevated range except for the special educator's score on expressing feelings. Adam also showed improvements in some of the non-target behaviors; however, not as much as the target behaviors. All scores that did improve remained in the elevated range.

Teacher' & Parent's Feedback

Towards the end of the intervention, an informal meeting was conducted with the teachers, special educator, and counselor to ask them about Adam's behavior in and out of class. According to his teachers, Adam is showing great improvement; he is interacting more with his peers during recess and group activities. However, the teachers' also noted that he still shows minimal verbal communication with others.

Adam's special educator believes that since it is the end of the year, Adam is more comfortable with his peers and teachers; and perhaps that is why he is showing more interaction with others. The school counselor noted that Adam is showing progress in her sessions; she also mentioned that he stopped her in the hallway to say "hi" on several different occasions.

An informal phone interview was conducted with Adam's mother to ask for her feedback; she noted that Adam's behavior towards his family is inconsistent. When the researcher asked her to elaborate, she mentioned that he exhibited friendly behavior towards his siblings at times, while he tended to ignore them or play alone at other times. However, Adam's mom mentioned that he became more comfortable interacting with their new cleaning lady. She also said that he greeted the doorman and their neighbors in the building on several different occasions.

CHAPTER 5

DISCUSSION

This chapter discusses the results obtained from this case study and relates it to previous research and findings. Additionally, the limitations of the study and further recommendations are presented.

The purpose of this study was to examine the effectiveness of a combined intervention in remediating specific social skills in a child with AS. The combined intervention consisted of peer mediated intervention (pairing social & average to high achieving children with a child with impaired social skills on school projects) and reading personalized Social Stories (that targeted student's class participation). The first aim of the study was to see if this intervention increased social behaviors in this particular child. The second aim was to identify the observable changes during the intervention period and provide possible explanations for the changes. The researcher hypothesized that there would be an improvement in Adam's targeted social skills after the intervention ends. It was also hypothesized that there will be an improvement in the teachers' rating scales post intervention. The following section discusses the findings of the study and relates them to previous research.

Discussion of Results

SBAI Results

The data gathered from the homeroom teachers' and counselor's SBAI rating scale that were completed pre and post intervention showed mixed results. The scores in some sub-categories remained the same, while the scores in other sub-categories decreased. According to the results presented in Table 6, Adam showed an

improvement in all targeted behaviors and a few of the non-targeted behaviors. There was agreement between the special and homeroom teachers' ratings, on Adam's improvement in most of the targeted behaviors. On the other hand, there wasn't an agreement on changes in non-target behaviors. For example, in relation to the non-targeted behaviors, the homeroom teachers noted changes in care for the environment while the special educator did not notice any changes. Additionally, some differences in ratings on targeted behaviors were found between the special and regular teachers; for example the teachers reported an improvement in Helping Others, Positive Attitude Toward Others, Group Activities, and Performing Before Others. On the other hand, the special educator reported an improvement in Asking and Answering Questions, while the regular teachers didn't. One possible explanation for the difference in ratings is that the Adam may act differently depending on the setting; for example he may behave differently if he is in his regular classroom with his peers than when he is having a one-on-one session with the special educator. Perhaps Adam feels more comfortable expressing himself when fewer people are around, or he might simply feel more comfortable talking to his special educator than his homeroom teachers. Delano and Snell (2006) also noted a difference in behavior from one setting to another. In their study, they attempted to use social stories to increase verbal initiations in three children with autism. The results indicated that the children showed improvement in the controlled setting; however, only two out of three were able to generalize their social behavior in the regular classroom.

Moreover, Bellini, Benner, Hope, & Peters (2007) attempted to examine the effectiveness of school-based social skills interventions for children and adolescents with ASD. They conducted a meta-analysis of 55 single-subject design studies. Results of the meta-analysis showed that maintenance and generalization effects were

significantly lower for interventions that took place in the resource room. On the contrary, interventions that were implemented in the regular classroom produced higher maintenance effects and higher generalization effects across participants and settings. Additionally, the results of the study implied that interventions implemented in the child's regular classroom produce higher intervention effects.

In sum, results from the rating scales presented in tables one through six confirmed the first assumption; there was improvement in scores on the post intervention ratings. However, it should be noted that although there was an improvement in the total scores of many of the subcategories on the SBAI rating scale, most scores still remained in the elevated range. One possible explanation may be that the duration between the time the first and second rating scales were completed was too short. Two months may not have been long enough for there to be a big difference in behavior.

Conditional Probability Record (CPR) Results

The data gathered using the Conditional Probability Record (CPR) which is part of the Functional Behavioral Assessment (FBA) process confirmed the second assumption made by the researcher. The CPR record showed an increase in social engagement following the initiation of the social stories and peer mediated intervention.

Although Adam exhibited an increase in social interactions with others, his conversational skills and oral expression did not improve. Adam was able to interact with others by sharing his snacks, raising his hand, and playing in a friendly manner with his peers. However, Adam exhibited minimal verbal contact with others; he attempted to speak a few times, however, it seems as though he was mumbling and

the observer could not understand what was being said. Also, when Adam shared his snacks, he simply handed the cookie to his classmate without saying anything. When the classmate said thank you, Adam just smiled and did not respond.

Berry, Bodin, Gilmore, Klinger, Lee, Palardy (2003) documented similar results to those found in this study. They used social stories to teach the following social skills: greeting, conversation, and play to four children with HFA. The children were between the ages of 6 and 9. The intervention took place once a week for 8 weeks. Following each story session, the children were paired with other typically developing peers to do fun activities. These researchers used observation of the play sessions and rating scales as their assessment tools; the children were asked to complete the Social Support Scale for Children and the Loneliness Scale. The results of the study showed that these children improved; initiating and responding to greetings and play skills but not for conversational skills (Berry et al. 2003). The children also noted an increase in perceived social support from their peers post-intervention.

Behavioral Changes Observed During Intervention

The results of this study showed that reading social stories was beneficial. Adam was capable of reading the social stories on his own, and was able to answer the comprehension questions related to the text. Adam also showed an increase in social interactions such as greeting the researcher and other teachers such as the librarian. He was also capable of asking questions and sharing items; all of the above mentioned behaviors were discussed in the stories read during the story sessions. Denning (2007) found similar results, where the participants showed an increase in greeting people appropriately after reading social stories to children with Autism.

Moreover, the results support the study conducted by Thiemann and Goldstein (2001) who developed an intervention which consisted of reading social stories to a group of children with Autism. The results of their study showed an increase in targeted social behaviors. However, it should be noted that there was limited generalization and maintenance of social behavior. The authors hypothesized that this might have been due to the length of the intervention period. Lastly, Adams, Gouvousis, Waldron, & VanLue (2004) conducted an intervention with a 7-year-old participant with a disorder from the ASD which consisted of reading social stories. Although the intervention conducted by Adams et al. (2004) differed from the present study in that they had the parents read social stories to their child at home, the study yielded similar results. Adams et al. (2004) noted that reading social stories to the child helped him understand how to ask for help, thus increased his social interactions with the adults around him.

According to the data noted in the journal, Adam was capable of working cooperatively with his peers. He was able to perform the delegated tasks. During two of the sessions, Adam was required to stand and present what he has done in front of his classmates. He was capable of labeling the items he drew and acting out a given role. However, it should be noted that he was not capable of expressing himself in a fluent way. The teachers usually gave him probes or asked him specific questions in order for him to express himself orally. When comparing Adam to the peers in his group, it was noticeable that he still has not reached their level of oral expression. The researcher also noted that, apparently, the other students in class knew that Adam is somewhat "different". They attempted to assist him by asking if he needed help or by guiding him in what he should do on occasions. For example, the teacher called Adam

while he was working on a given task, so one of his group members came up to him and told him that the teacher was calling him; his peer then told him he should see what she wants.

A group of researchers attempted to examine the effectiveness of cooperative learning (CL) in increasing the level of social behaviors and task engagement in two high-functioning autistic students (Bruton, Daly, Grey, Hanan, & McGuinness, 2007). Both children were placed in groups which included three typically developing peers, one male and two females. The first child attended the CL session in the resource room, while the second in the regular classroom. According to the results of their study, the group work substantially increased the level of social engagement for both children. CL seemed to facilitate task engagement; additionally there was a decrease in passive task engagement.

Kamps et al. (1994) found peer mediated interventions to be effective in increasing social competence in children with disorders from the ASD. Their study included two HFA participants and all other children in a third-grade classroom. The two children with autism were 8- and 9-year-old boys; they were high functioning in terms of language and intellectual abilities but lacked social competence. The group sessions resulted in an increase in interaction from 80 to 120 seconds per 5-minute sample for the children with autism. Additionally there was an increase in the mean interaction time of peers, and the children with autism displayed improved academic achievement (DiSalvo & Oswald, 2002).

Additionally, Laushey and Heflin (2000) investigated the effects of a similar approach with two five-year-old children diagnosed with ASD. These children had adequate language skills and could read at the kindergarten level, but suffered from

weak social competence. The results indicated that the children with autism increased their social interaction by 36% and 38% respectively during the treatment phase, as compared with the baseline phase, in which children attended regular classes but were not assigned a buddy (Disalvo & Oswald, 2002). Moreover, many researchers have documented the effectiveness of peer mediated intervention programs that improve social skills, such as LEGO (LeGoff, 2004; LeGoff and Sherman, 2006) and Social Use of Language Programme (SULP) (Owens et al., 2008).

The results of the present study allow several conclusions. First, Adam showed an increase in social interaction, from pre to post intervention phase, which was documented using CPR. Although Adam exhibited an increase in social interactions, most of Adam's attempts to interact with others were not through verbal communication or through using complete sentences. Secondly, positive change was documented in the scores of the teachers and special educator on the rating scales; these changes were related to the skills targeted through the social stories. However, it should be noted that, although change was evident, most of his scores remained in the elevated range. It seems as though Adam enjoyed the social story session since he asked to go to the library on several different occasions. Additionally, Adam showed an increase in friendly behavior towards others during the intervention period. Peer mediated intervention, through cooperative group work also seemed to be an enjoyable activity for Adam and his peers. Adam was capable of working cooperatively; he also received positive feedback on various occasions which reinforces Adam's behavior. Peer mediated intervention also appeared to be beneficial in this particular case because it gave Adam the opportunity to practice what he was taught natural settings (versus un-natural settings such as the library). Lastly, the

effectiveness of this intervention was confirmed by the feedback obtained from Adam's teachers and mother.

Limitations

Although the study was found to be effective and Adam's social interactions with others increased, there are several drawbacks to the study. First, the study was implemented on one student, thus limited generalization can be made. Secondly, because it was a combined intervention, we cannot say which intervention caused the changes in Adam's behavior. Thirdly, the observation was conducted by the researcher, which might have created internal bias. Moreover, we cannot say with certainty that Adam will maintain his pro-social behavior since additional post-testing after longer periods was not conducted. Lastly, one limitation may be the age of the participant. This combined intervention was found to be enjoyable and effective with a first grader, however it might not be as effective for older students and adolescents.

Implications

Although various studies have found social stories to be effective in decreasing inappropriate behavior (Scattone, 2002; Sansosti & Powell-Smith, 2006; Scattone, Wilczynski, Edwards, and Rabian, 2002), the present study adds evidence to the effectiveness of social stories in increasing pro-social behaviors in children with ASD. Additionally, the mother's positive feedback implies that there may be a generalization of pro-social behavior to other settings.

This combined intervention is easy to implement in inclusive settings. It is not only beneficial, but also simple and enjoyable to the student. Additionally, the cooperative group work not only encourages the integration of children with special

needs with their regular peers, it also reinforces desirable behavior and provides the student with several opportunities to apply what was taught in the social stories.

According to the findings of this study, several components can aid teachers and special educators in remediating social skills in children with ASD. Some of these components are the following: (a) use social stories that describe specific situations and expected responses (refer to Gray, (1994)); (b) provide the reader with insight on how others would feel when they he/she acts in an appropriate way; (c) model the appropriate behavior expected of the child; (d) provide the child with ample opportunities to practice what was taught in the story. This can be done by involving peers through cooperative group work or involving the parents; (e) use positive reinforcement to encourage the reoccurrence of desired behaviors.

Recommendations for Future Research

Since social skills deficits create lifelong difficulties for children with ASD, it is essential for researchers to find ways to remediate these skills. Future studies should try to identify which elements in the combined intervention lead to the greatest change in behavior; they should also identify the appropriate time needed for the intervention to be effective. Perhaps future studies can extend the length of treatment or intensify the intervention by giving the child additional afterschool sessions. As mentioned earlier, although, the interventions need to be tailored to the child's specific needs, researchers should try to identify which individuals will benefit the most from such an intervention. Additionally, more research should be conducted in order to address the issue of maintenance and generalization of social skills. Perhaps future studies can conduct post tests after longer periods of time from discontinuing the intervention in order to see the long term effect of the combined intervention.

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APPENDIX I

Table 1

Summary of Similarities and Differences Between HFA, AS, & NLD

Disorder	HFA	AS	NLD
I.Q.	Normal range; PIQ>VIQ	Normal to superior; VIQ>PIQ	Normal to superior; VIQ>PIQ
Behavior	Inability to maintain eye contact, initiate conversation, & join in on activities	Problems with maintaining eye contact, facial expression, body posture, initiating conversation, & joining in on activities	Lack verbal communication skills
Social Functioning	Weak social skills; appear to ignore other & desire to be apart from others	Weak social skills; aware of the problem & desire social interaction	Weak social skills; aware of the problem & desire social interaction
Language	Weak with communication & language development	Poor pragmatics, particularly humor	Poor pragmatics
Speech	Delayed	No delay	Early speech & vocabulary development; highly verbal
Academics	Strong in decoding & spelling; weak in reading	No distinctive profile	Stronger in reading & spelling; weaker in reading comprehension &

	comprehension		math
Motor Skills	Fine motor Problems	Fine motor problems	Gross, fine, & visual- motor problems
Associated with	Inattentive, hyperactive, & impulsive behavior; anxiety & depression in adolescents	Inattentive, hyperactive, & impulsive behavior; anxiety & depression in adolescents	Inattentive, hyperactive, & impulsive behavior; anxiety & depression in adolescents; inappropriate affect
Interventions	Social skills training programs; social stories; peer coaching/tutoring	Use strategies that enhance cooperation, assertiveness, & self control; social skills training program; social stories; peer coaching/tutoring	Cognitive behavior intervention; problem-solving instructions; remedial intervention (e.g. handwriting); social stories; peer coaching/tutoring

APPENDIX II

Conditional Probability Record (CPR)

Student: _____

Date of observation: _____

Observer: _____

Setting: _____

Time of day: _____

Target behavior:

	Antecedents		Target Behaviors	Consequences		
	Activity	Teacher	Behavior	Teacher	Peers	Activity
0:15						
0:30						
0:45						
1:00						
1:15						
1:30						
1:45						
2:00						
2:15						
2:30						
2:45						
3:00						
3:15						

3:30						
3:45						
4:00						
4:15						
4:30						
4:45						
5:00						

Codes:

Activity: **R:** Reading **W:** writing **M:** math **A:** Arabic **R:** recess

L: lunch time

Teacher: **W:** walking around the classroom **VR:** verbal reprimand

PP: physical proximity to target student

PG: physical guidance to target student

Peers: **W:** working on a task **PS:** playing with target student

TS: talking to target student **AS:** avoiding target student

APPENDIX III