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### Effective Interventions for Students with Asperger's Syndrome in the General Education Classroom

Amber Marsh

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This starred paper submitted by Amber L. Marsh in partial fulfillment of the requirements for the Degree of Master of Science at St. Cloud State University is hereby approved by the final evaluation committee.

SYNDROME IN THE GENERAL EDUCATION CLASSROOM

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# EFFECTIVE INTERVENTIONS FOR STUDENTS WITH ASPERGER'S SYNDROME IN THE GENERAL EDUCATION CLASSROOM

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## Chapter I

### INTRODUCTION

Over the past several years, the number of students identified with Asperger's syndrome has increased dramatically (Minnesota Autism Project, 2000). In November, 2000, the Minnesota Autism Project stated that the incidence rate of autism spectrum disorders has increased an average of 32% annually for the past 9 years, which is consistent with national and international data. Some researchers have speculated increased awareness, improved assessment, and better-trained professionals could be contributing to the increase of autism cases (Minnesota Autism Project, 2000).

According to Ernsperger (2006), children with Asperger's Syndrome have no clinically significant delay in language, delay in cognitive development, delay in developmentally appropriate self-help skills, adaptive behaviors, or curiosity about the environment during childhood. Students with Asperger's often have similar characteristics to those diagnosed with autism. Specifically, they also have distinct features including social interaction impairments, speech and communication characteristics, cognitive and academic characteristics, and physical and motor-skills anomalies (Myles & Simpson, 1998). A combination of the aforementioned characteristics and the complexities of the school environment may contribute to

social and academic failure for students with Asperger's syndrome. Although students with Asperger's may have average-to-advanced capabilities in different areas, multiple environmental stressors may mask their ability to demonstrate their full potential.

A number of interventions and accommodations can enable students with Asperger's to reach their cognitive, social, academic, and behavioral potential at school. In this starred paper, I reviewed the literature that investigates the effectiveness of educational accommodations for students with Asperger's syndrome in the general education classroom.

### Historical Background

In 1943, Leo Kanner, a child psychiatrist, first coined the term *autism* from the Greek word *autos*, meaning self (Ozonoff, Dawson, & McPartland, 2002). Kanner described a variety of different behaviors exhibited by children who took minimal interest in others, wanted routine, and made unusual body movements. In addition to rare behavior, the children also had varying learning problems. These characteristics range from mild to severe, and are what is now described as the *autism spectrum*.

During the same time period that Kanner was conducting his pioneering work on autism, Viennese pediatrician Hans Asperger identified consistent patterns of abilities and behaviors in subjects, predominantly boys, he was observing. Some of the behaviors were a lack of empathy, inability to create friendships, one-subject conversations, preoccupation with a special interest, and clumsy movements (Attwood, 1998). The children studied by Asperger displayed characteristics similar

to those that Kanner had researched, but the individuals appeared to be more able and the symptoms less severe.

In the 1970s, Asperger's article about the children he studied was translated into English. After reading the article, Lorna Wing labeled the disorder *Asperger's syndrome* (Church, Alisanski, & Amanullah, 2000). Wing described the main features of Asperger's syndrome as:

- lack of empathy
- naïve, inappropriate, one-sided interaction
- little or no ability to form friendships
- pedantic, repetitive speech
- poor nonverbal communications
- intense absorption in certain subjects
- clumsy and ill-coordinated movements and odd postures, (as cited in Attwood, 1998, p. 15)

These characteristics make social situations difficult for students with Asperger's syndrome. In order to enhance the educational experience and the quality of life for individuals with Asperger's, educators and other professionals must develop effective interventions and learning accommodations.

### Theoretical Background of Effective Accommodations

The basis for accommodations has a long history in federal law. In this section, I discuss the rights of individuals to be educated in the general education setting using effective, scientific and evidence-based practices.

The history of federal law and accommodations for individuals with disabilities began with The Education for All Handicapped Children Act of 1975.

This legislation was enacted to:



1. Guarantee that a free appropriate education, including special education and related service programming, for all children and youth with disabilities who require it.
2. Ensure that the rights of children and youth with disabilities and their parents or guardians are protected (e.g., fairness, appropriateness, and due process in decision-making about providing special education and related services to children and youth with disabilities).
3. Assess and ensure the effectiveness of special education at all levels of government.
4. Assist the efforts of state and local governments in providing full educational opportunities to all children and youth with disabilities through the use of federal funds (National Information Center for Children and Youth with Disabilities [NICHCY], 1996).

This act was followed by several amendments in 1983, 1986, 1990, 1997, and 2004. In 1990 the name of the act was changed to Individuals with Disabilities Education Act (IDEA). Each of the subsequent amendments brought significant changes to the federal law that strengthened the original legislation and emphasized increasingly pupils' access to curriculum and classrooms.

The laws have led to increases in the number and quality of special education programs, better trained professionals, continuous research in education, information dissemination and technical assistance, and the collaboration between parents and professionals to obtain the best education possible for the nation's children and youth with disabilities (NICHCY, 1996). In spite of these achievements, Simpson (2005)

remarked that the use of purported miracle cures and unproven methods have kept students with an autism spectrum disorder from making academic, behavioral, and/or social progress.

The No Child Left Behind Act (NCLB) of 2001 mandated the use of scientifically proven practices and programs (Yell, Drasgow, & Lowrey, 2005). This mandate also applies to the interventions and instructional practices for students with autism spectrum disorders, including Asperger's syndrome. NCLB is another addition to the history of special education reform in the United States, designed with the idea that students with special needs are receiving the best practices to enable them to be successful in the classroom.

### Importance of the Paper

It is important that all students have the opportunity to be successful in the general education classroom. General education teachers must be able to accommodate the academic, behavioral, and social needs of students with Asperger's using interventions that make the student's educational experience a positive one.

### Focus of Review

In this starred paper I reviewed several evidence-based accommodations and interventions that can be implemented by the general education teacher. To be included in this review, the interventions must have reliable evidence that the program or practice works. In addition, the method must pertain to the academic, behavioral, and social skills that can be implemented by the general education teacher. Because individuals with autism spectrum disorders are also referred to as having high-

functioning Autism, I used the term high-functioning autism when conducting my search of the literature.

### Definition of Terms

In this section, I define key terms used throughout this paper.

*Asperger's Syndrome.* Asperger's syndrome is a developmental disability associated with significant deficits in the areas of social and communication skills (Gerhardt, 2000). Asperger's syndrome is a pervasive developmental disorder and on the autism spectrum of disorders. Individuals with Asperger's syndrome typically are high-functioning with deficits in communication and social skills.

*Autism Spectrum Disorders.* According to the Minnesota definition of Autism Spectrum Disorders (Minnesota Department of Education, 2000), autism spectrum disorders is an umbrella term for a variety of pervasive developmental disorders that negatively affect a student's functioning, and result in a need for special education services. The characteristics of autism spectrum disorders vary, making the range of disabilities a continuum of mild to severe. Common characteristics of this category are social skills deficits, language difficulties, and patterned behavior with a preoccupation or interest. Less severe cases are often diagnosed as a Pervasive Development Disorder (PDD), Asperger's Syndrome, or High-functioning Autism.

*High-functioning Autism.* According to Ernsperger (2006), high-functioning autism is not a standardized medical or educational term. It is a term that has been accepted within the community of parents and professionals in the field of autism.

There is no clear definition, but is usually attributed to individuals who match the criteria for autism and have a normal to high intelligence quotient.

*Scientifically Based Research.* The No Child Left Behind Act defined scientifically based research (SBA) as research that “involves the application of rigorous, systematic, and objective procedures to obtain reliable and valid knowledge relevant to educational activities and programs” (Simpson, 2005, p. 141).

Scientifically based research validates the effectiveness of practices and programs prior to being implemented in an educational setting. Peer reviews and other strategies are used to assure that these educational strategies are scientifically sound.

*Social Stories.* A social story describes social situations specific to individuals and circumstances. The story uses a description of the youth, the setting, the peers and adults associated with the setting, and the youth's feeling and perceptions about the setting (Myles & Simpson, 1998). According to Gray and Garand (1993), a social story is an intervening method to teach children with autism how to read social situations. It explains reactions that others may have in a social situation and provides information on appropriate social responses and social cues. Social stories utilize the visual learning abilities of students with Asperger's and allow these individuals to learn social skills in a less obtrusive manner than having to interact with others in an effort to learn social skills.

## Chapter II

### REVIEW OF THE LITERATURE

Students with Asperger's Syndrome need effective academic, behavioral, and social accommodations that enable them to succeed in the general education classroom. The purpose of this chapter was to review studies that evaluate the effectiveness of recommended interventions.

#### Academic Accommodations

In this section, I evaluated the effectiveness of interventions designed to improve academic performance. Although I had hoped to find both reading and mathematics strategies for students with Asperger's, I was able to locate only two empirical studies that addressed reading comprehension, and I was unable to locate a study that addressed mathematics.

Students with Asperger's Syndrome are generally above average in intelligence, and often fall in the gifted range for intelligence quotients (Myles & Simpson, 1998). Because of this, these students are often held to the same academic standard as their peers. However, despite their measured abilities, they often experience difficulties with reading comprehension (O'Connor & Klein, 2004).

Children with Asperger's are often hyperlexic (O'Connor & Klein, 2004). According to O'Connor and Klein, hyperlexia is the ability to decode fluently when

reading, often phonetically decoding large, challenging words with ease. However, their level of encoding, or reading comprehension, is low. Many students with hyperlexia use memorization and rote strategies in place of true comprehension (Ozonoff, Dawson, & McPartland, 2002).

O'Connor and Klein (2004) conducted a research study with 20 participants from a large-scale, longitudinal study pertaining to the development of students with autism spectrum disorders. The participants were chosen for displayed moderate to high levels of decoding combined with lower levels of reading comprehension. Researchers used five stories adapted from a sixth-grade level reading series that contained nonfiction content. The passages were modified to maintain similarity between total number of words, grade level, and sentence length. Four versions of each passage were prepared, with one unaltered version for the control. The versions were comprised of a cloze exercise, anaphoric cuing, pre-reading condition, and controlled. In Table 1, I describe each of the different versions.

Table 1

## Reading Comprehension Strategies

<i>Control Version</i>	<i>Unaltered passage</i>
<i>Cloze Exercise</i>	<i>Twelve blanks distributed evenly throughout the text. Each blank replaced a word, other than a pronoun, that could be completed by referring to information within the previous three sentences.</i>
<i>Anaphoric Cuing</i>	<i>Twelve instances of pronouns, evenly distributed throughout the passage, were selected and underscored. Three possible referent words appeared under each blank: One was inappropriate, one was sentence-appropriate but not story-appropriate, and one was story-appropriate. All three choices were of correct syntactic class; the order of the choices was randomized.</i>
<i>Pre-reading Condition</i>	<i>Five questions were designed intended to elicit common knowledge and experiences relevant to the main ideas of the story. The questions were sequences from general to specific to increase the probability of eliciting some response even from participants with limited relevant background knowledge.</i>

The students were asked to read aloud carefully and to pay close attention to what they were reading. Each student read five stories, one in each of the reading conditions and two in the control conditions. The sequence of the readings was random and balanced among the student participants. Students were given breaks between the third and fourth passages. The total session was approximately 60 minutes, with each passage and break requiring about 10 minutes.

Prior to each intervention, the experimenter read the instructions, showed examples, and gave a practice question. Following each passage, the researcher asked questions verbally and the students responded verbally. Participants did not have access to the passages when they were answering the questions.

Overall, the findings of this study indicated that the intervention of anaphoric cuing produced the greatest effects and showed to benefit more than half of the students. The other interventions were less effective and lacked statistical significance. Seven of the 20 students exceeded their scores in the control condition when using the intervention of pre-reading questions. The cloze test intervention also resulted in 7 out of 20 students showing gains of more than .50 standard deviations relative to their own reading comprehension scores in the control condition. Results showed that the students completed 78% of the blanks with story-appropriate answers, 19% with sentence-appropriate but not story appropriate answers, and only 4% with inappropriate answers.

Myles, Hilgenfeld, Barnhill, Griswold, Hagiwaka, and Simpson (2002) conducted a study that examined the reading performance of 16 students with Asperger's syndrome. In this study all students had a formal diagnosis of Asperger's according to the criteria stated in the Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition (DSM-IV). The study included 14 boys and 2 girls ranging in ages 6 years, 6 months to 16 years, 9 months with a mean age of 9 years, 4 months. All students completed a reading inventory as an integral part of a comprehensive evaluation.

The Classroom Reading Inventory (CRI; Silvaroli) was administered to determine the participant's independent, instructional, and frustration reading levels. The CRI also provided information regarding each student's ability to decode words in and out of context, answer literal and inferential questions about the reading, and



evaluate the vocabulary level. In addition, the test evaluated each participant's use of auditory and visual cues when listening or reading visually.

The results of the study revealed that students with Asperger's syndrome were able to answer factual/literal questions that were rote or memorization-based. However, they had difficulty answering inferential questions.

The authors also indicated that when students engaged in reading independently, their comprehension was below grade level. However, when the participants read the material aloud or were read to, their comprehension levels increased. The authors cautioned that the differences could have been attributed to reading aloud or it could have been the result of increased attention and focus on the material being read.

### Behavioral and Social Interventions

Some individuals with Asperger's syndrome occasionally display challenging behaviors which are often displayed when the child is trying to express his or her needs or wishes to others (Ozonoff, Dawson, & McPartland, 2002). These behaviors can often be disruptive and need to be treated with behavioral interventions that can support the child and are compatible with the student's unique social characteristics (Myles & Simpson, 1998). In this section, I describe three different interventions: the Power Card strategy, social stories, and a problem-solving strategy.

#### Power Card Strategy

Keeling, Myles-Smith, Gagnon, and Simpson (2003) created a behavioral intervention that was designed to teach sportsmanship skills through the use of a

Power Card. A Power Card is a small card the size of a trading card and it includes a reference to a special interest and suggestions of the appropriate behavior as outlined in the Power Card script. This study examined the use of a special interest of a child with autism to teach her sportsmanship behaviors.

The participant in this study was a 10-year-old girl, Nancy, who had a diagnosis of autism. The participant was enrolled in a special education resource room and took part in general education activities with the aid of a paraprofessional. Her Individualized Education Plan (IEP) outlined the need for services in the areas of speech/language, reading, mathematics, written language, and social skills. She received a score of 100 on a norm-referenced intelligence examination, which was not specified. On the Ekwall Reading Inventory (Ekwall, 1986), Nancy's word identification was at a fourth-grade level, but her comprehension was at a second-grade level. Grammar was an area of weakness for her. She displayed strengths in mathematics, such as memorization of facts and geometry. Through the use of formal and informal assessments, researchers found that the participant had behavioral excesses and was lacking social skills.

The study took place in a kindergarten-grade 6 elementary school in a small classroom away from others to decrease distractions. The researcher used the following materials in this study: (a) a Power Card script, (b) a Power Card, and (c) a scorecard. When the researcher discovered that Nancy had a keen interest in the Power Puff Girls, she made the Power Puff Girls the behavioral models for appropriate game-playing behavior and developed a Power Card based on this interest.

Nancy and the first author interacted in a gross motor game and a card game daily for 20 sessions. During the first interactions, Nancy read the script prior to playing the gross motor game to remind her of appropriate game-playing behaviors. The script was always in view during the game and the scoring. The script explained how the Power Puff Girls play games and demonstrated alternate, appropriate behaviors both for winning and losing games. Later, Nancy was given the choice of reading the whole script or using the Power Card. The Power Card included a picture of the Power Puff Girls and references to the strategy learned from the script. In addition to the use of the Power Card or Power Script, the participant also used a scorecard to keep a visual representation of whose turn it was and gave a reminder of who had won and lost in previous games. The author recorded the duration of the whining or screaming episodes during the three game conditions using a stopwatch.

The authors of the study found that the Power Card strategy was effective in decreasing Nancy's whining and screaming when she lost a game. Although the investigation was created around the assumption that Nancy's screaming and whining was an effect of losing a game, observations did not confirm this. Nancy also whined for 10 seconds during session 2, because her opponent was not playing by the rules during the gross motor game. She also whined during sessions 3 and 10 when she did not make the goldfish matches, which seemed to be more important to her than actually winning the games.

The results revealed that the Power Card strategy was effective in decreasing her whining and screaming from 60 minutes down to no inappropriate behaviors. The study supported the idea that obsessive interests can be used in a positive manner to

improve behavior and thus, allow individuals to benefit from their preoccupations or obsessions. The researchers concluded that the Power Card strategy was an appropriate behavior replacement option.

### Social Stories

Social stories were developed by Carol Gray in 1981 (Gray & Garand, 1993). Since that time, they have become popular as an intervention for decreasing disruptive behaviors and increasing appropriate social behaviors of students with autism spectrum disorders. In this section, I reviewed four studies that evaluated the effectiveness of social story interventions.

Crozier and Tincani (2005) used social stories to decrease disruptive behavior in a child with autism. The participant in the study was an 8-year-old boy who had a formal diagnosis of autism. The criteria for including the child were (a) a diagnosis of autism, (b) the presence of prerequisite skills, and (c) the classroom teacher's willingness to use the intervention. The prerequisite skills were emergent literacy terms, and demonstrated the ability to sit and read a book with adult support.

Alex was administered the Analytical Reading Inventory (ARI; Woods & Monroe, 2003) which showed that he had solid beginning literacy skill, such as knowing all of his letters and was able to read 90% of the preprimer word list and 40% of the primer word list. He also correctly read 85% of the preprimer reading passage and answered 75% of the comprehension questions correctly, which included the interpretive question.

The intervention took place during a structured, independent activity time in a classroom with attendance ranging between 15 to 19 students. The students were expected to work quietly and independently on an activity of their choice. One of the researchers conducted the modified social story intervention sessions and collected observational data. The volunteer assistant and one of the teachers recorded inter-observer data.

Teachers were interviewed to identify Alex's disruptive behaviors and in which settings these behaviors were most likely to happen. They developed talking out as a disruptive behavior that was most likely to occur during independent work time, when he did not have the direct attention of teachers and staff.

A modified Social Story was developed to target disruptive behavior of talking out and describe functionally similar replacement behavior. The story utilized a variety of sentence styles, as well as illustrations that conveyed Alex's interests. The seven-page story included words with which Alex was familiar.

The experiment utilized the ABAC design. During the baseline phase, Alex was observed for 30 minutes in his general education classroom setting to evaluate the rate of the target behavior. Following the first baseline phase, the modified Social Story was read to Alex immediately before the observation period. After six sessions of Phase B, the intervention was removed to baseline conditions. In the second intervention phase, the Social Story intervention was re-established with the addition of verbal prompts.

Following the first treatment phase, the number of talkouts decreased from an average of 11.2 to 2.3. During the second baseline, talkouts increased to 8, but

following the intervention, they were reduced to .2 per 30-minute session. During two maintenance sessions, zero talkouts were recorded.

The results of the use of the modified Social Story showed that the intervention was effective for decreasing the disruptive behavior. Researchers indicated that the use of only six treatment periods was not sufficient to lower the disruptive behavior. The results also indicated that the use of verbal prompts was effective in reminding the student of classroom rules and to not engage in talking out. The researchers also contended that a modified Social Story was not only effective in reducing problem behavior but also could be incorporated into typical classroom routines.

Sansosti and Powell-Smith (2006) implemented a study that (a) examined the effectiveness of social stories designed to increase identified target behaviors in three children with Asperger's. The study involved three boys ages 9 years, 9 months to 11 years, 6 months with a mean age of 10 years, 5 months. For the participants to be eligible for this study, they had to (a) have a current diagnosis of Asperger's Syndrome, (b) display cognitive functioning levels of average to above-average range, (c) possess the ability to communicate orally with others, and (d) demonstrate basic reading skills necessary to read the social story.

The three participants were observed during regular school hours in the setting in which the identified behaviors were occurring for each individual. Darius, a 10-year-old boy, was described as having above average academic abilities, but struggled with group situations, especially when playing games. Francis, an 11-year-old boy, was described as a pleasant student and had high academic skills whose interpersonal skills were lacking. Francis often said or did things that offended others and was often

left out of activities by the other students. Angelo, a 9-year-old boy, was described as a pleasant, scientific child. He had many interesting hobbies, but lacked the ability to interact with others and make friends.

Three social stories were designed to address the target behavior for each participant. The social stories were individualized print books that the students could carry to and from school and use in multiple settings. Each book contained print and color Mayer-Johnson picture symbols. The content of each social story was based on data collected by the primary investigator from interviews, observations, and the environmental context in which the social skills occurred. In addition to the researchers interviewing and observing the participants and their parents, both were asked to keep a journal to keep a record of progress.

The procedure for the study began with a baseline condition in which the individuals were observed for their targeted behaviors. These baseline observations occurred three times per week for approximately 15-minute intervals. The observers had no knowledge of which participants received the social stories. Together, the child and the primary caregiver(s) read and reviewed the social story each day. During the intervention phase, the primary investigator contacted each family to make sure that the social story was being read and reviewed twice a day and that they were answering the journal sheet of questions provided by the investigator. They also discussed any problems associated with the social story.

Following the intervention phase, the social stories were faded over a period of 2 weeks. The participants were then observed at their school to gather follow-up data.

The effect of specific social story for each individual was evaluated by measuring the percentage of intervals of social engagement during observations. The data gathered from this experiment showed that 2 out of the 3 participants showed favorable improvement from the use of the social story intervention. That is, for Darius, his sportsmanship at baseline, was an average percentage of 59%, which increased to 92% during the intervention. In follow-up data, Darius maintained his improved average of sportsmanship behaviors and was at a similar level as his peers. Francis also showed improvements with the use of a social story for maintaining social behavior. At baseline, Francis obtained an average of 57% for maintaining conversation. During the use of the social story, Francis' targeted behaviors increased by 29%. Francis did not exhibit high rates during the follow-up. However, he showed higher rates of maintaining conversation than his baseline average and reached similar levels of the target behavior as his peers. Unlike the other individuals in the study, Angelo's data were not favorable. At baseline Angelo displayed appropriate joining-in behaviors 25% of the time. Subsequent to implementation of his social story, his behaviors increased a mere 9%. He was not able to reach similar levels of joining-in behaviors as his peers.

Soenksen and Alper (2006) constructed a study to assess the effectiveness of a social story intervention to train a student with hyperlexia to get peer attention by saying a peer's name or by facing the peer while conversing.

The participant in the study was a 5-year-old boy, with hyperlexia, named TJ. The study took place in the participant's general kindergarten classroom where his general education teacher and a paraprofessional supported him. Mathematics time,



choice time, and recess time were selected as settings for the study to take place due to the necessity of verbal interaction between the participant and his peers.

A social story was created using verbal and written cues in a book format using Carol Gray's guidelines for writing social stories. The story was used with TJ, two boys, and two girls whom he had met prior to kindergarten. The group members changed throughout the experiment with two new students joining the group each Monday as two previous members left. The sessions were held at the beginning of each of the chosen settings. During the session, one of the authors and the group first read the social story together, and then TJ read it to the group. The first author also observed TJ during school day activities, which required peer interaction, such as mathematics, choice time, and recess. Positive displays of gaining a peer's attention were described as saying the peer's name or by looking at the peer while conversing with him or her. The observation periods occurred four times each week during 15-minute intervals.

TJ's baseline data showed an attempt average of zero for gaining the attention of a peer by saying his or her name. However, during the intervention, his average frequency increased to 2.9 and showed an increased improvement of 5.7, which was higher than his peers at 5.0. TJ also improved in attempting to gain a peer's attention by looking at a peer's face while talking. His baseline average was zero, while his intervention average increased to 4.2 and his maintenance average was similar to his peers at 5.4.

Adams, Gouvousis, VanLue, and Waldron (2004) studied the implementation of the social story process with by parents in their home environment. Peter, a 7-year-

old with an autism spectrum disorder, was the subject of the ABAB study. The researchers used social stories as an intervention to effectively lessen the frequency of inappropriate behaviors.

The study was comprised of 12 homework sessions in each of the four phases. These sessions were each videotaped by the subject's parents and the tapes were given to the researchers for review following every fourth session. During the initial baseline phase (A1), researchers observed that the most inappropriate frustration behaviors occurred during homework time. The behaviors consisted of crying, screaming, falling, and hitting. Crying was defined as crying with or without tears, and had ended when the crying had stopped and another behavior began. Falling was counted each time Peter fell from his chair or threw himself into his chair with force. Hitting was recorded each time he hit a person or object. Screaming was defined as loud vocalizations or verbalizations.

After the baseline phase (A1), a social story was developed to address the four targeted behaviors and was implemented during the treatment phase (B). The modified social story followed three of the four guidelines set forth by Carol Gray (Gray & Garand, 1993). The social story was written with the goal of addressing homework completion, the homework situation, and the problem behaviors. In addition to the aforementioned, the social story also described replacement behaviors.

Peter's parents and his first grade teacher completed surveys at the end of the B1 intervention phase. This phase was followed by a withdrawal baseline phase (A2), where the use of the social story was faded out. In the final phase (B2), the social story was once again implemented.

Peter's parents and his teacher indicated that they observed a decrease in unfavorable behaviors and that Peter was more likely to verbalize his frustrations and needs. With the use of the social story, Peter's crying behavior decreased 48% from the initial baseline to the final baseline. His screaming episodes occurred 51 times during the first baseline and decreased 61% by the end of the final phase. His falling episodes decreased 74% from baseline (A1) to the final intervention phase (B2). Four of the five homework sessions had no falling episodes. There was also a decrease in hitting episodes by 60%. This data indicated that this intervention was successful for Peter and his parents.

#### Problem-Solving Strategy

Problem-solving strategies are used with many students who engage in challenging behaviors. Bock (2001) described a social behavioral learning strategy that can guide social interactions for students with Asperger's. She described the SODA strategy, which consists of four components: (a) Stop, (b) Observe, (c) Deliberate, and (d) Act. Each component of the SODA strategy has a visual icon and three to five questions or statements for the individual. These questions or statements should be individualized to the specific needs and level of the individual using the strategy. The icons present a visual, ongoing cuing system. The educator or teacher initiating this strategy needs to not only individualize the strategy, but should also identify several videotapes, role plays, and other practice activities for the individual learning to use the SODA strategy. Bock also indicated that it would be beneficial to the student to review the previous session before starting the next session.

The teacher should only provide guidance to the individual as long as the student needs it. The goal of the strategy is to fade teacher guidance as soon as possible. Bock also implicated that it is preferable that the student, once he or she has shown proper use of the strategy, use the strategy in other settings outside of school.

The use of the SODA strategy allows an individual with AS to have a set of rules to follow for effective verbal and nonverbal social interactions. This strategy may also assist individuals in creating and maintaining friendships. Unfortunately, this strategy has not been evaluated empirically.

Carter, Meckes, Pritchard, Swenson, Wittman, and Velde (2004) wrote an article describing The Friendship Club, which they developed as a group problem-solving intervention for students with Asperger's. Specifically, this program was designed to teach friendship skills to 8- to 15-year old children with Asperger's Syndrome. Two groups comprised this Friendship Club. The younger group included six children, ages 8 to 10 years, and the adolescent group was made up of four full-time participants, ages 11 to 15. Prior to the club's formation, students and parents were interviewed. The purpose of the interviews were to learn what the children and parents thought about specific details of friendship, such as what makes a good friend and why friends are important. The parents were also asked for suggestions for redirecting their child if he or she became frustrated or upset during the group sessions.

The program was conducted in two classrooms on consecutive Thursdays from 6:00-7:30 p.m. Two graduate students provided leadership in each group with a faculty member in the vicinity of the classrooms, but not present.

Groups participated in activities based on the interviews that were conducted in the beginning of the study. The weekly activities were used to facilitate social skills and social situations between participants and group leaders. The activities were planned in advance, but were flexible depending on feedback from the group members. The younger group began each session with a review of the rules written on a blackboard and ended the session by singing a song about friendship.

Throughout the duration of the Friendship Club, the students were asked for verbal feedback (younger group) and written feedback (adolescent group). Parents were also asked to respond to an email survey about the participant's use and/or improvement of social skills and if the learned skills had been generalized to other environments.

The overall feedback was positive. The children responded about what they liked the best about the activities, as well as made suggestions for changes. Three parents responded positively about their child's ability to make a friend during the Friendship Club, although three other parents did not notice any changes in their children. One parent reported an improvement between sessions 2 and 3. This individual initially would not enter the group's meeting room. However, an accommodation was made that allowed the child to sit on a mat at a distance of 8 feet from the group. Later, during the next three sessions, the individual entered the room on his own and interacted with the group 50-65% of the time. During the final two sessions, he participated actively in the club's meetings.

### Chapter III

#### SUMMARY AND CONCLUSIONS

The purpose of this literature review was to find scientific, evidence-based accommodations that could be implemented by the general education teacher.

According to Simpson (2005), students with autism spectrum disorders are often subjected to purported miracle cures and unproven methods that ultimately have held them back from progress and success. Simpson (2005) also emphasized that no one strategy is effective with all individuals with autism spectrum disorders because they have a variety of needs due to the broad autism spectrum.

In this review of literature I examined studies that evaluated evidence-based interventions for students with Asperger's syndrome. The interventions included two academic studies regarding reading comprehension interventions, five behavioral and social interventions. I also included one article that described a problem-solving strategy.

In my search for academic interventions, I hoped to find classroom accommodations that a general education teacher could utilize with students with students with Asperger's. I was able to find two articles regarding reading comprehension, but was unsuccessful in finding articles on increasing mathematic achievement.

The first article I reviewed examined three strategies to increase reading comprehension: cloze exercise, anaphoric cuing, and pre-reading condition (O'Connor & Klein, 2004). The results of this study indicated that anaphoric cuing was the most effective in increasing reading comprehension. I believe that this strategy would be beneficial to all students in a general education classroom, because it challenges the student to refer back to what they had already read, in order to comprehend the anaphora.

The second reading comprehension article that I reviewed (Myles, Hilgenfeld, Barnhill, Griswold, Hagiwaka, & Simpson, 2002) examined the ability of students with Asperger's syndrome to answer factual/literal and inferential questions. The outcome of the study revealed that students were more likely to answer factual/literal questions more accurately because they were able to memorize the answers, rather than synthesizing the material in the case of an inferential question. I found it interesting that students' levels of comprehension increased after reading aloud. I believe that it is important to provide a variety of reading techniques to take place in the general education classroom in order to facilitate comprehension and learning for all learners. The premise of the increase of comprehension due to reading aloud may tie into visual and auditory stimulation, which in term may increase attention and focus on the material at hand. Academic interventions such as these will encourage more positive behavior and social interaction.

Individuals with Asperger's syndrome are often described as deficient in age-appropriate, reciprocal social interaction skills (Smith, Myles, & Simpson, 1998). The inability to interact with others, lack of desire to interact with peers, lack of

appreciation of social cues, and socially or emotionally inappropriate behavior are all behaviors that may indicate a social deficit in individuals with Asperger's syndrome (Attwood, 1998). Providing teachers with strategies to enhance the social interaction skills of a person with Asperger's syndrome.

One strategy to increase appropriate behaviors was the Power Card strategy. This strategy used the interest of a child with autism, the Power Puff Girls, combined with a behavior script, reminded the individual of appropriate behaviors. In this article the target behavior was sportsmanship. The results were indicative of a successful intervention that could be used in the special education setting and the general education classroom.

In addition to the above behavioral modification strategy, I reviewed four articles that reviewed the effectiveness of social stories. All four articles revealed that social stories are an effective intervention in modifying behavior, while teaching appropriate replacement behaviors.

The first article I reviewed on the effectiveness of social stories utilized the intervention to decrease disruptive behavior in a child with autism (Crozier & Tincani, 2005). The authors used a modified social story to target the disruptive behavior. The story was comprised of a variety of sentences and included illustrations that conveyed the individual's interests. The experiment results indicated that the intervention was effective and did decrease the target behavior. In addition to this, the authors also contended that it is vital that teachers use verbal prompts and reminders of rules in conjunction with the use of the social story. I find it imperative that all students in the classroom be verbally prompted and reminded of classroom expectations as stated in



this study. I also think that the one-to-one attention while using this intervention is key while redirecting inappropriate behaviors with replacement behaviors.

In the second article that I reviewed, Sansosti and Powell (2006), a similar strategy was used to teach appropriate behaviors for three students. A unique story was created for each individual based on the target behaviors that were to be addressed. This study, however, used a different manner of application. The procedure involved the parents of each individual and the intervention took place in the home. This is a unique procedure among the four articles that I reviewed; however, the outcomes had varying degrees of success. Only two of the three individuals showed favorable progress. In this study, I believe that the treatment approach for individuals with Asperger's Syndrome may have had differing outcomes due to the unknown circumstances of the home where the interventions were carried out. I do believe that the continuation of the use of social stories at home from school is favorable. A relationship and continuation of interventions between the individuals' main environments will encourage progress toward more favorable behaviors.

The third article I reviewed about social stories, Soenksen and Alper (2006), used a different procedure to administer the intervention. The article evaluated the effectiveness of social stories to teach appropriate attention-getting behaviors in a small group setting. The intervention was then tested for carry-over to the activities in the general education classroom to see if the replacement behaviors would be maintained in a natural setting. The results indicated that the intervention was highly successful. The use of a small group strategy in conjunction with the social story

intervention could be a combined effort between the individual's special education services and mainstream classroom, to teach appropriate interpersonal skills.

The final article that I reviewed regarding social stories evaluated the effect a social story intervention would have on problem behaviors that were the result of frustration during homework time. The authors developed a social story that addressed the problem behaviors and taught replacement behaviors. The data indicated that this intervention was effective. The replacement behaviors mentioned in the social story were maintained by the individual, in home and school settings.

Overall, the review of articles on social stories indicated that social stories are an effective intervention for students with autism spectrum disorders. Simpson (2005) regarded social stories as a promising practice for cognitive interventions and treatments. It would be ideal for general education teachers to utilize this strategy with students in their classrooms, however, with a classroom ratio of 25:1, students to teacher, I believe it would be difficult for a general education teacher to implement such a strategy. It would, however, be an intervention that could be successful if special education services and the general education teacher collaborated on such an effort.

In addition to social stories, problem-solving interventions also teach individuals with autism spectrum disorders strategies for solving conflicts and for appropriate behaviors in social settings. I reviewed two articles that addressed this topic. One article has been peer-reviewed and the other has no empirical data.

The first article that I reviewed explained a problem-solving strategy, but did not include any data. The SODA strategy (Bock, 2001) includes four steps: (a) Stop,

(b) Observe, (c) Deliberate, and (d) Act, are four components of social interaction that all individuals can utilize. It would be a strategy that any general education classroom teacher could implement with all students in their mainstream classroom. I think this strategy would hold all students accountable for their actions and would give them the tools necessary to think through their thoughts and feelings prior to acting on them.

The second article I reviewed involved a group problem-solving intervention called The Friendship Club (Carter, Meckes, Pritchard, Swenson, Wittman, & Velde, 2004). The strategy involved group activities that were based on student interests and were flexible based on the feedback of students and parents. The authors developed these activities to teach appropriate social skills to the individuals in the groups, in hopes of improvements in individual social skills and generalization to other environments. Data from this study were favorable, based on surveys and comments of parents. I feel that this study lacked the statistical significance of the other interventions that I reviewed, although I do think that facilitation of social groups in unison with another social skills intervention would further encourage development of appropriate social skills.

#### Recommendations for Future Research

After reviewing numerous articles on effective interventions and accommodations for students with Asperger's syndrome in the general education classroom, I found few that were empirically sound. Many of the articles were informative and included support information for a general education teacher, but lacked scientifically based interventions and accommodations (Simpson, 2005).

Included in many of the informative articles were non-scientific academic, social, and behavioral interventions and accommodations. It is beneficial for the general education teacher to have access and knowledge of a variety of strategies in order to accommodate the academic, behavioral, and social needs of students with Asperger's, in order to make their educational experience a positive one. Simpson (2005) stated, "It is...increasingly evident that there is no single best-suited and universally effective method for all children and youth with autism spectrum disorders" (p. 145). Due to this lack of sufficient data, further investigations in effective academic, behavioral, and social interventions and accommodations are necessary for general education teachers to provide a positive educational experience for students with Asperger's syndrome in the general education classroom.

I would also encourage the development of more studies on the use of social stories in the general education classroom and strategies to facilitate this intervention by the individual's general education classroom teacher.

Overall, the articles I reviewed were effective and some could be implemented in the general education setting. Utilizing and teaching these strategies will empower the students to learn and develop appropriate academic, behavioral, and social skills. It is my goal as an educator to raise up all students and make their educational experience a positive one. "You can't discipline out a disability-But you can teach an ability" (Ernsperger, 2004).

## REFERENCES

- Adkins, B., Goodwin, A., Varian, M., & Wajsbort, C. (2004). Social story interventions: Improving communication skills in a child with an autism spectrum disorder. *Focus on Autism and Other Developmental Disabilities, 19*(2), 27-34.
- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders (4<sup>th</sup> ed.)*. Washington, DC: Author.
- Attwood, T. (1998). *Asperger's syndrome: A guide for parents and professionals*. London: Jessica Kingsley Publishers Ltd.
- Autism Society of America. (1998). *Autism and Pervasive Developmental Disorders*. Retrieved October 29, 2005, from <http://www.autism-society.org>
- Boak, M. A. (2001). SODA strategy: Enhancing the social interaction skills of youngsters with Asperger's syndrome. *Intervention in School and Clinic, 36*(3), 272-278.
- Cartz, C., Macken, L., Pritchard, L., Swanson, N., Prince-Wittman, P., & Volk, B. (2004). The Friendship Club: An after-school program for children with Asperger's syndrome. *Family and Community Health, 27*(1), 143-149. Retrieved December 23, 2004, from the Academic Search Premier database.
- Church, C., Albrecht, S., & Anderson, S. (2008). The social, behavioral, and academic experiences of children with Asperger's syndrome. *Focus on Autism and Other Developmental Disabilities, 23*(1), 12-20.
- Crooks, S., & Thoma, M. (2007). Using a modified social story to decrease disruptive behavior of a child with autism. *Focus on Autism and Other Developmental Disabilities, 22*(3), 150-157.
- Ekwall, B. (1986). *The Self-evaluating inventory (2<sup>nd</sup> ed.)*. Boston: Allyn & Bacon.
- Emery, L. (2004). *Practical strategies for working with students with pervasive developmental disorders: Asperger's syndrome and high-functioning autism*. Belmont, MA: Center of Educational Research.

## REFERENCES

- Adams, L., Gouvousis, A., VanLue, M., & Waldron, C. (2004). Social story intervention: Improving communication skills in a child with an autism spectrum disorder. *Focus on Autism and Other Developmental Disabilities, 19*(2), 87-94.
- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4<sup>th</sup> ed.). Washington, DC: Author.
- Attwood, T. (1998). *Asperger's syndrome: A guide for parents and professionals*. London: Jessica Kingsley Publishers Ltd.
- Autism Society of America. (1998). *Intensive behavioral intervention*. Retrieved October 29, 2005, from <http://www.autism-society.org>
- Bock, M. A. (2001). SODA strategy: Enhancing the social interaction skills of youngsters with Asperger's syndrome. *Intervention in School and Clinic, 36*(5), 272-278.
- Carter, C., Meckes, L., Pritchard, L., Swenson, S., Prince Wittman, P., & Velde, B. (2004). The friendship club: An after-school program for children with Asperger's syndrome. *Family and Community Health, 27*(2), 143-150. Retrieved December 23, 2005, from the Academic Search Premier database.
- Church, C., Alisanski, S., & Amanullah, S. (2000). The social, behavioral, and academic experiences of children with Asperger's syndrome. *Focus on Autism and Other Developmental Disabilities, 15*(1), 12-20.
- Crozier, S., & Tincani, M. (2005). Using a modified social story to decrease disruptive behavior of a child with autism. *Focus on Autism and Other Developmental Disabilities, 20*(3), 150-157.
- Ekwall, E. (1986). *The Ekwall reading inventory* (2<sup>nd</sup> ed.). Boston: Allyn & Bacon.
- Ernsperger, L. (2004). *Practical strategies for working with students with pervasive developmental disorders, Asperger's syndrome and high-functioning autism*. Bellevue, WA: Bureau of Educational Research.

- Gerhardt, P. F. (2000, Fall). Asperger's syndrome in adolescence and adulthood: Considerations for support and intervention [electronic version]. *NJ Psychologist Magazine*, pp. 14-17. Retrieved October 6, 2005, from <http://www.aspennj.org/ArticlesNJPsychFall2000.html>
- Gray, C. A., & Garand, J. D. (1993). Social stories: Improving responses of students with autism with accurate social information. *Focus on Autistic Behavior*, 8, 1-10.
- Keeling, K., Myles Smith, B., Gagnon, E., & Simpson, R. L. (2003). Using the power card strategy to teach sportsmanship skills to a child with autism. *Focus on Autism and Other Developmental Disabilities*, 18(2), 103-109. Retrieved October 17, 2005, from the Academic Search Premier database.
- Minnesota Autism Project (2000). *Promising practices for the identification of individuals with autism spectrum disorders*.
- Myles, B., Hilgenfeld, T., Barnhill, G., Griswold, D., Hagiwara, T., & Simpson, R. (2002). Analysis of reading skills in individuals with Asperger's syndrome. *Focus on Autism and Other Developmental Disabilities*, 17(1), 44-47. Retrieved February 23, 2006, from the Academic Search Premier database.
- Myles, B., & Simpson, R. (1998). *Asperger's syndrome: A guide for educators and parents*. Austin, TX: Pro-Ed.
- National Information Center for Children and Youth with Disabilities. (1996). Washington, DC: NICHCY.
- O'Connor, N. M., & Klein, P. D. (2004). Exploration of strategies for facilitating the reading comprehension of high-functioning students with autism spectrum disorders. *Journal of Autism and Developmental Disorders*, 34(2), 115-127.
- Ozonoff, S., Dawson, G., & McPartland, J. (2002). *A parent's guide to Asperger's syndrome & high-functioning autism: How to meet the challenges and help your child*. New York: The Guilford Press.
- Sansosti, F., & Powell-Smith, K. (2006). Using social stories to improve the social behavior of children with Asperger syndrome. *Journal of Positive Behavior Interventions*, 8(1), 43-57. Retrieved January 5, 2006, from the Academic Search Premier database.
- Silvaroli, N. (1993). *Classroom reading inventory* (8<sup>th</sup> ed.). Madison, WI: Brown & Benchmark.

- Simpson, R. L. (2005). Evidence-based practices and students with autism spectrum disorders. *Focus on Autism and Other Developmental Disabilities, 20*(3), 140-149.
- Soenksen, D., & Alper, S. (2006). Teaching a young child to appropriately gain attention of peers using a social story intervention. *Focus on Autism and Other Developmental Disorders, 21*(1), 36-44.
- Woods, M. L., & Moe, A. J. (2003). *Analytical reading inventory: Comprehensive assessment for all students including gifted and remedial*. Upper Saddle River, NJ: Pearson Education.
- Yell, M. L., Drasgow, E., & Lowrey, K. A. (2005). No child left behind and students with autism spectrum disorders. *Focus on Autism and Other Developmental Disabilities, 20*(3), 130-139.