EFFECTS OF THE SUPERFLEX™ CURRICULUM ON THE SOCIAL COGNITION OF PRIMARY STUDENTS WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER AND AUTISM SPECTRUM DISORDERS

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Mild/Moderate Disabilities

By

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I dedicate this thesis to my amazing husband, Dan. I would like to extend my deepest expression of love and appreciation for the encouragement that you gave me, and the sacrifices you made during this graduate program. Thank you for your endless love and support.
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ABSTRACT

EFFECTS OF THE SUPERFLEX™ CURRICULUM ON THE SOCIAL COGNITION OF PRIMARY STUDENTS WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER AND AUTISM SPECTRUM DISORDERS

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Students with ASD and ADHD often require intervention in social and perspective taking skills due to deficits in social cognition. Intervention must be provided in a small group setting, using explicit instruction, frequent opportunities for practice, and immediate teacher reinforcement. A large number of materials and intervention programs have been developed to target the social skills of students with disabilities. The Superflex™ Curriculum (SC) is an intervention program that uses pre-made lessons to teach children to identify social expectations, monitor their behaviors, and modify them as needed. This study analyzed what effects students and teachers feel the SC has on the social and perspective taking skills of students with ASD and ADHD. Teachers and students report the SC is an effective intervention program. Behavior observations and teacher reports reflect an overall improvement in students’ social and perspective taking skills. Differences between behaviors and suggestions for future research are discussed.

Keywords: Superflex, social skills intervention, perspective taking, ASD, ADHD
Chapter 1: Introduction

Students with attention deficit hyperactivity disorder (ADHD) and students with autism spectrum disorders (ASD) often have deficits in social cognition. These children struggle to share space effectively, read hidden social rules, and adapt to others across multiple environments and situations, which directly impacts their academic achievement and peer relations (Hume, Loftin, & Lantz, 2009; Mackay, Knott, & Dunlop, 2007; Rao & Gagie, 2006). As a result, educators face the challenge of providing students with specialized instruction in social skills that is fun, motivating, and effective.

The prevalence of students with ASD is increasing; the number of children in schools with ADHD is also increasing. According to the Centers for Disease Control and Prevention (CDC, 2011b), an average of 1 in 88 U.S. children have ASD. The CDC also reported approximately 5.4 million children between the ages of 4 and 17 have been diagnosed with ADHD (2011a). When parent surveys between the years of 2003 and 2007 were compared, parent-reported diagnosis of ADHD increased by 21.8% (CDC, 2010). Of all the developmental disabilities, the number of children with ASD has had the greatest increase in prevalence (Boyle et al., 2011). In a span of 12 years, the number of children diagnosed with ASD increased from 0.19% to 0.74% (Boyle et al.).

As a result, a larger number of students in U.S. classrooms are struggling with social communication deficits. In order to ensure students are successful in home, school, and community settings, teachers must explicitly teach, model, and provide opportunities to practice social skills. Positive interactions with peers are integral to ensuring a healthy emotional development during the adolescent years (Sibley, Evans, &
Serpell, 2009). Thus, it is essential that early intervention be provided for students with deficits in social cognition to ensure their future success.

Students may receive social skills intervention across a range of settings using a variety of materials. The Superflex™ Curriculum (SC) (Madrigal & Garcia, 2008) is one example of a program that can be used in a classroom setting to provide social skills intervention. This thesis addresses students’ and teachers’ opinions of the effectiveness of the SC on students’ social and perspective taking skills when used for intervention in a small group setting. This study will answer the following research question: What effects do students and teachers feel SC has on the perspective taking and social skills of students with ASD and ADHD? Whether or not students like using the program, and whether students and teachers think the SC improves students’ social skills and interactions with others will be addressed specifically.
Chapter 2: Literature Review

Cognitive Theories

Three major theories attempt to explain the difficulties students with deficits in social cognition experience (Winner, 2007). They are the Central Coherence Theory, Executive Dysfunction Theory, and Theory of Mind (Winner). Some researchers believe there is a link between Theory of Mind and the level of deficits in central coherence or executive functioning (Winner).

Central Coherence Theory

The Central Coherence Theory hypothesizes students with ASD have a “weak coherence” meaning they focus on details rather than seeing the big picture (Happe & Frith, 2006). According to Winner (2007), students with ASD think in parts and struggle to relate their thoughts or information to a concept of a larger whole as a result of deficits in central coherence. Specifically, students can learn rote information but exhibit difficulty making inferences and analyzing new information to connect it to what they already know (Winner). However, research suggests deficits in weak coherence are not related directly to deficits in social cognition (Happe & Frith).

Executive Dysfunction Theory

The Executive Dysfunction Theory describes students with ASD and ADHD as having weaknesses in executive functioning (Semrud-Clikeman, Walkowiak, Wilkinson, & Butcher, 2010; Winner, 2007). Executive functioning involves working memory, organization, planning, self-regulation, emotional self-control, quick retrieval of information, and problem solving. Students with ASD and ADHD exhibit deficits in communication, social problem solving, organization, and flexibility as a result of deficits
in this area of executive functioning (Winner). Semrud-Clikeman et al. found children with ADHD and ASD also struggle with self-monitoring behavior in the area of emotional control. Additionally, students with ASD struggle to monitor others and plan appropriate responses, while simultaneously adjusting their behavior to meet the changing demands of their social environment (Semrud-Clikeman et al.).

**Theory of Mind**

According to Baron-Cohen (1989) children with ASD have a significant deficit in Theory of Mind. Baron-Cohen describes Theory of Mind as perspective taking. It is the ability to think about what others know and to understand people have thoughts or beliefs about other people and/or experiences (Baron-Cohen). Winner (2007) further states these interactions may only be in space and may not involve conversational exchanges. Deficits in perspective taking can range from very mild to more severe (Winner).

**Impact of ADHD on Students’ Social Cognition**

Social problems impact the lives of children with ADHD negatively (Kofler, Rapport, Bolden, Sarver, Raiker, & Alderson, 2011; McConaughy, Volpe, Antshel, Gordon, & Eiraldi, 2001; Sibley et al., 2009). Although students with ADHD often have a positive self-esteem, they are reported to have fewer friends (McConaughy et al.). Their parents also report they struggle with family relationships (McConaughy et al.). They frequently have difficulty getting along with their siblings and maintaining positive relationships with their parents.

Children with ADHD often exhibit behaviors that are disruptive to their lives and the lives of those around them. According to the DSM-IV, students with ADHD may struggle to wait their turn, maintain attention, remain seated, and play quietly (American
Psychiatric Association [APA], 2000). They may have difficulty organizing, staying focused on a task, and completing a task (APA). Children with ADHD may also engage in behaviors that are considered socially unacceptable, such as excessive talking, difficulty playing quietly, blurting out, and interrupting or intruding on others (APA). These behaviors continue into adulthood and often result in negative interactions with peers, teachers, and/or family members (CDC, 2011a).

Additionally, students with ADHD exhibit deficits in social perspective taking (Marton, Wiener, Rogers, Moore, & Tannock, 2009). Winner (2007) defined perspective taking as recognizing that others have their own individual personality, feelings/emotions, desires, motives, and interests and being able to respond to those differences appropriately. It also involves using eye contact to maintain interaction, considering varying social contexts of situations, recognizing the presence of others, and having a desire to learn about others (Winner). Children with ADHD struggle to use social perspective taking to understand the thoughts and feelings of their peers, which further impacts their peer relationships (Marton et al.). At times, they may rush to complete a task or impulsively respond to a peer in a social situation (Kofler et al., 2011; Marton et al.). As a result, their responses can be off-topic, misunderstood as interruptions, or lead to disagreements with peers, teachers, and family members.

Kofler et al. (2011) found students with ADHD can often identify the social rules of their environment, but they struggle to implement these rules when interacting with others. They have difficulty using information from their working memory, such as rules, while focusing on events in their environment simultaneously (Kofler et al.). As a result, it takes children with ADHD much longer to plan a verbal response (Marton et al.,
At times, they may react impulsively with physical actions, such as hitting, pushing, or biting, because they are unsure of an appropriate verbal response. When faced with a social problem, children with ADHD are impacted further by their inability to identify strategies to solve the problem (Marton et al.; Sibley et al., 2009).

**Impact of ASD on Students’ Social Cognition**

Students with ASD have deficits in joint attention, communication, and social skills (Hume et al., 2009; Rao & Gagie, 2006). According to the DSM-IV, children with ASD exhibit impairments in social interaction and communication in conjunction with a display of repetitive behavior (APA, 2000). Deficits in social interactions may include a lack of joint attention, limited or lack of friendships with peers, flat affect, or difficulty making eye contact (APA). Communication deficits may be evidenced by a delay or lack of language, echolalia, limited imitation of others, and difficulty engaging in imaginative play (APA).

Limited social skills are considered to be the greatest deficit children with ASD struggle to overcome (Mackay et al., 2007). Children with ASD must learn how to “read” other people’s non-verbal behaviors and social cues as they are unable to do so naturally (Hume et al., 2009; Mackay et al.; Winner & Crooke, 2011). They must understand another person’s social perspective or point of view of a situation and often cannot without adult prompting or intervention (Marton et al., 2009). Children with ASD exhibit significant deficits in perspective taking or thinking about what others are thinking (Winner, 2007). Specifically, they struggle to recognize that another person has his or her own set of emotions, desires, motives, and personality (Winner). Deficits in perspective taking also limit the ability of a child with ASD to adjust social behaviors and
conversations across social environments and use eye contact to maintain interaction (Winner).

Additionally, students with ASD frequently have limited ability to initiate discourse and struggle to engage in turn-taking conversation (Hume et al., 2009; Mackay et al., 2007). They specifically struggle to adapt the conversation to the listener (Mackay et al.). They may talk endlessly about the weather, animals, superheroes, or other preferred topics without regard for the participants’ interest. If a listener exhibits non-interest in the topic, such as yawning, looking away, or change of subject, they may fail to recognize the social cues and continue with a one-way conversation. This greatly impacts their social engagement and relationships.

Children with ASD also struggle to develop and maintain friendships (Hume et al., 2009; Mackay et al., 2007). Their social communication deficits impact their ability to initiate and engage in conversations, which are required to build friendships. It also impairs their ability to enter play, engage in play, and be flexible during playtime. Mackay et al. (2007) report these social deficits often continue throughout the lifetime of a child with ASD.

**Elements of a Strong Social Intervention Program**

Madrigal and Garcia (2008) define good social skills as being able to identify the social rules for each situation and adjusting one’s eyes, body, emotions, verbal communication, and reactions to fit the context. In other words, one must be able to adapt to others across different situations and share space with others (Winner, 2007). This may or may not involve direct interaction (Winner).
Social skills have been defined as a set of behaviors that must be taught (Dowd & Tierney, 1992). Researchers have found instruction in social skills to be most effective when skills are taught explicitly (Marton et al., 2009). Additionally, social skills must be defined in a language that is specific, clear, and at the child’s level of understanding (Dowd & Tierney). It is imperative that teachers, staff members, and parents also establish a common vocabulary so skills can be reinforced during teachable moments across environments throughout the day (Winner, 2007). Additionally, teachers must explicitly describe and model the skill, provide opportunities to practice, give feedback, and reward/praise for demonstration of the skill (Dowd & Tierney; Goldstein, 1988). Hume et al. (2009) also recommend using video modeling to increase independence.

Dowd and Tierney (1992) suggest new skills should be introduced on a continuum from easiest to most difficult. Once students have mastered using an appropriate social skill in an intervention setting, they may still struggle to identify the appropriate time, place, or person to use the skill (Dowd & Tierney). As a result, the skills should be taught to a specific situation in which the child would use the skill (Dowd & Tierney). There is not one quick fix for teaching skills to improve social cognition and children must be given multiple opportunities to practice the skill over time (Winner, 2007).

According to Winner (2007), educators must teach students to think about what others are thinking prior to teaching individual skills. Students must first be taught why they need to demonstrate a skill and then how to execute it (Winner; Winner & Crooke, 2009). If students are able to understand and identify what others are thinking, they will learn new behaviors to adapt to their environment at a faster rate (Winner).
According to Rao and Gagie (2006), there is not one best instructional method or program for teaching social skills. A combination of strategies should be used based on the individual needs of each child (Rao & Gagie). Educators can gather information using observations, checklists, work samples, and interviews to determine what supports are needed and most effective for each child (Rao & Gagie). Mackay et al. (2007) found significant improvements in students’ perspective taking, conversation skills, and friendship skills when intervention was provided in small groups using games, discussion, role-play, and free time.

Students must also be motivated to learn a new skill (Dowd & Tierney, 1992). The skill must have a value to the child. Educators can establish this by explaining the benefit of using the skill to establish a purpose for the student (Dowd & Tierney). Research has found the child will only implement the skill if it has a value (Dowd & Tierney).

Early intervention is widely known as important to the development of students with disabilities. Many students who receive early intervention in social skills and social perspective taking make significant gains in their ability to adapt to and engage in their environment (Winner, 2007). Interventions must often be continued through the school years as skills take time to develop and student learning environments change. Although there are interventions for adults, there are limited services available to the adult community (Winner). Therefore, it is critical that educators provide as much support as possible to students with deficits in social cognition as early as possible and prior to students completion of high school (Winner).

The Superflex Curriculum
The SC was developed for educators, therapists, and parents by Stephanie Madrigal and Michelle Garcia Winner. The curriculum was created for children in kindergarten through grade 5 (Madrigal & Garcia, 2008). Madrigal and Garcia suggest the program is effective for students with a range of disabilities including ASD and ADHD. They also suggest it is beneficial for children without disabilities who are struggling with social skills (Madrigal & Garcia, 2008).

The purpose of the curriculum is to teach children to identify social expectations, monitor their behaviors, and modify them as needed using the “Superflexible” strategies taught in the curriculum (Madrigal & Garcia, 2008). Strategies are introduced using a cartoon superhero, “Superflex,” and his rivals, the “Unthinkables.” The 14 rival characters represent behaviors that students must use their brains to defeat when interacting in social environments (Madrigal & Garcia, 2008). Each rival character has a catchy name that connects him or her to the behavior. Characters include: Rock Brain™, Brain Eater™, Body Snatcher™, D.O.F. Destroyer of Fun™, Un-Wonderer™, Space Invader™, Glass Man™, Grump-Grumpaniny™, Topic Twister Meister™, Wasfunnyonce™, Energy Hare-y™, One-Sided Sid™, Worry Wall™, and Mean Jean™ (Madrigal & Garcia, 2008). In the curriculum, the hero, Superflex, teaches students to use their “social smarts” or perspective taking skills to adapt their minds and bodies to the hidden social contexts of varying environments (Madrigal & Garcia, 2008).

Pre-made lessons are outlined in the Superflex™ curriculum guide. In the first lesson, students are introduced to the characters and vocabulary of the curriculum using the colorful comic book, Superflex™ Takes on Rock Brain and the Team of Unthinkables…A New Beginning (Madrigal, 2008). Child friendly language is used to
introduce each character or anti-social behavior. For example, a picture of a rock with arms is shown with the following description, “Rock Brain - I make people get stuck on their ideas” (Madrigal, 2008, p. 2). The story follows Superflex, a young boy, and his dog as they help citizens of their town defeat the rival characters using “Superflexible” strategies taught by the curriculum (Madrigal & Garcia, 2008). Subsequent lessons use games, video modeling, and activities to keep the children engaged.

According to Madrigal and Garcia (2008), the program is divided into three levels:

Lessons 1 through 5 explore social thinking concepts and vocabulary related to Superflex and the Team of Unthinkables. Lessons 6 through 9 increase awareness of the child’s own social behaviors he or she is modifying and appropriate strategies. Lessons 10 through 13 address self-monitoring and modifying behaviors through the use of Superflex Strategies. (p. 18)

It should be implemented in a small group setting (Madrigal & Garcia, 2008). Each lesson also has a corresponding handout and take-home activity for reinforcement (Madrigal & Garcia, 2008). Additionally, props such as capes and miniature foam brains are recommended for use during each lesson to keep students actively engaged. Award certificates provided by the program are also given out at the end of each session to motivate and reinforce students for their hard work during the lesson.

A supplemental comic book, *Superflex Takes on Glassman and the Team of Unthinkables* (Madrigal & Garcia, 2009), can be used to further develop students’ social behavior. However, it is recommended that the Superflex curriculum be introduced first to ensure students have the background knowledge required to understand the vocabulary.
in the story (Madrigal & Garcia, 2009). In the book, children are taught how to be more flexible. Superflex, the comic book character, introduces strategies to use across multiple settings and situations to engage in flexible behavior. Opportunities for children to practice the strategy and questions to check for understanding are also included in the comic book. The authors are currently developing additional comic books for each rival character in the program.

Although social skill intervention programs have been the subject of a tremendous amount of research, limited evidenced-based research has been conducted on the effectiveness of the SC (Madrigal & Garcia, 2008). This study addresses students’ and teachers’ opinions of the effectiveness of the SC on students’ social and perspective taking skills when used for intervention in a small group setting.
Chapter 3: Methods

Participants

Four male students who receive special education services at a low-income school in a large U.S. city participated in this study. All four were enrolled in a resource specialist program (RSP). Students 1 and 2 were Hispanic and in the second grade. The primary language of student 1 was Spanish but he typically responded in English. The primary language of student 2 was English. Student 1 received RSP services for three years under the eligibility of autism and had a medical diagnosis of ADHD. Student 2 received services for three years under the eligibility of autism and received speech and language services (LAS) for deficits in pragmatics. Student 3 was an African American male in the third grade. He was eligible for special education services beginning in kindergarten; however, he did not receive services until last year as he was enrolled in a private school until the second grade. Since enrolling in a public school, he received RSP and counseling services for the past two years under the eligibility of other health impairment (OHI) due to hyperactivity and deficits in attention. Student 4 was a Hispanic male in the third grade. Although the primary language of student 4 was Spanish, he prefers to respond in English. He was enrolled in special education services for two years, and received RSP and counseling services under the eligibility of OHI due to hyperactivity, impulsivity, and attention deficits. Student 4 also had a medical diagnosis of ADHD-combined type. According to parent reports, student 4 was prescribed a stimulant medication for the diagnosis of ADHD and began taking one dose daily at home during the second to the last week of the study.
There were four adult participants who completed the teacher survey. Two were female and two were male. All adult participants taught general education classes and held a clear credential in general education. Each teacher had eight or more years teaching experience with the maximum being 22 years.

**Procedures**

Baseline data and post data were collected using a teacher questionnaire and classroom behavior observations of pre-selected social skills. The pre/post questionnaire and observations were completed to assess social skills in a natural classroom setting rather than assessing progress within the structured intervention sessions. Additionally, all four students completed a post-intervention questionnaire, which rated their behavior and opinions of the SC.

Classroom behavior observations were conducted prior to beginning the curriculum, at bi-weekly intervals during the implementation, and after completion of the intervention, for a total of five observations. During each observation, a frequency count was conducted within a 20-minute time period in the classroom setting. When a behavior was observed a plus sign (appropriate behavior) or minus sign (inappropriate behavior) was marked in the appropriate behavior category. The following behaviors were observed using the observation tool: listening to others, following instructions, completes tasks, and ignores distractions by others. The behaviors selected aligned with social concepts and strategies taught in the curriculum. Definitions of each behavior were adapted from Dowd and Tierney (1992) and outlined on the observation tool. A sample of the tool is provided in Appendix B. To establish reliability observations were initially
conducted by the special education teacher and special education aide. After reliability was established, the special education teacher conducted subsequent observations.

Each child’s general education teacher completed the teacher questionnaire. Students 1 and 3 attended a daily enrichment class with another general education teacher and student 4 also received daily English language development (ELD) instruction from an additional general education teacher during the school day. The enrichment or ELD teacher also completed a pre/post questionnaire for their student. The teachers were not compensated for participating in the study.

The questionnaire described social or perspective taking skills required for the classroom and asked the respondent to determine if the student “never,” “sometimes,” “often,” or “always” exhibits each behavior. Respondents were also provided with an open-ended space to write any additional comments or observations. A sample of the questionnaire is provided in Appendix A. The respondents were given the pre-questionnaire with a return envelope one-week prior to the initial group session. All questionnaires were returned in the envelope provided within the week. The post-questionnaire and envelope were provided to the respondents to complete at their discretion during the final week of the implementation of the curriculum. All questionnaires were returned the following day via the envelope provided.

The students also completed a post-intervention questionnaire (see Appendix C). The questionnaire required students to rate their behavior and the SC. Students were given the questionnaire and asked to circle one happy face to rate each description of a classroom behavior or his opinion of the program using the following scale: Most of the time ☺, Sometimes ☺, and Not at all ☺. At the end of the survey an open-ended question
required students to identify what they liked or did not like about the intervention program.

The survey took 15 to 20 minutes for students to complete. Students were asked to write their names on the back of surveys and their grade level on the front of surveys so their responses could be compared and analyzed. The directions were explained and the researcher read each question aloud to students to ensure their reading level did not impact their responses. A few of the students struggled to circle the smiley face in the appropriate row. They were directed to correct the mistake and given an index card to mark their place on future items.

**Intervention Description**

Students participated in the social skills intervention as part of services outlined by their Individualized Education Plan. Sessions were held in the small group setting of a resource classroom with a staff to children ratio of 1:4. The group met on a weekly basis after lunch for 30 to 45 minutes. Each session was led by a credentialed special education teacher. The students attended 12 consecutive sessions. All four students were present for each session with the exception of session 4 during which student 3 was absent.

The SC was implemented during each session as outlined in the curriculum guide. Each child was given a squishy brain to fidget with as needed during the lesson. The student capes identified as optional by the curriculum guide were not used in the intervention. Lessons were taught in the order they were presented in the curriculum guide. Lesson 7 was omitted as it focused on behaviors that were not being targeted during this study. It was replaced with a mini-lesson on “expected” and “unexpected”
classroom behaviors. During the lesson students completed a social behavior map and identified “expected” and “unexpected” behaviors in the classroom. A large poster of a blank map was placed on the board. Each student was given a copy of the map to complete. The map contained two tables side by side labeled as “Behaviors that are expected for the classroom” and “Behaviors that are unexpected for the classroom.” The first table was divided into four columns labeled: expected behaviors, how they make others feel, consequences you experience, and how you feel about yourself. The second table was divided into four columns labeled: unexpected behaviors, how they make others feel, consequences you experience, and how you feel about yourself. The instructor guided the students in completing the table. Following the group completion of the table the students participated in a follow-up activity.

During the follow-up activity, students were reminded that when people exhibit “expected” behaviors it makes others around them think “good thoughts” about the person; and when people exhibit “unexpected” behaviors it makes others think “weird” thoughts. Real life classroom scenarios with “expected” and “unexpected” behaviors were listed on individual index cards. Two jars were labeled “good thoughts” and “weird thoughts,” respectively. Students picked an index card from a pile and determined if it was an “unexpected” or “expected” behavior. Students then placed a marble in the jar that matched the behavior described on the index card.

Lessons 3, 5, 10, and 11 recommended the optional use of a video camera to extend the lesson. This was omitted due to time constraints. Students instead made observations at the end of each activity as outlined in the curriculum guide. At the end of
each session, students received a “Superflex Award” certificate to take home. The award identified one positive behavior or strategy the student exhibited during the session.

**Data Analysis**

The effectiveness of the intervention was assessed using participants’ social interactions observed, teacher ratings, and student opinions. The percentage was calculated for the appropriate behaviors observed during each 20-minute classroom observation. Percentages were compared across baseline, intervention, and post observations for each behavior category. Ratings given on the teacher questionnaire were assigned a point value, never-0, sometimes-1, often-2, and always-3. A half point was assigned to any ratings that fell between two values. For example, one teacher gave student 3 a rating between often and always for “follows teacher directions.” A score of 2.5 was assigned to this rating. The points across all eight items of the survey were totaled to form a behavior score for each teacher questionnaire completed. Pre and post behavior scores were analyzed and compared for all four students across individual and dual raters. Student responses were tallied for each statement of the student questionnaire. Student opinions’ of the program were also analyzed using the ratings from the student questionnaire.
Chapter 4: Results

Classroom Behavior Observations

The results of the classroom behavior observations are shown in Tables D1-4. An increase in the percentage of appropriate “listening to others” was observed in all four students from the baseline observation to the post observation (see Table D1). Although students 1 and 3 made a steady increase during the intervention, students 2 and 4 exhibited a slight decline during one bi-weekly observation. Student 1 exhibited the largest percentage increase in appropriate “listening to others.”

The percentage of appropriate “following instructions” observed increased in students 2 through 4 during the intervention (see Table D2). Student 3 maintained a percentage of 100% from the baseline to the post observation. Student 4 exhibited a steady increase in the percentage of appropriate “following instructions” throughout the intervention; whereas students 2 and 3 exhibited a decline in the percentage of demonstrating “following instructions” during one bi-weekly observation.

Student 2 increased in the percentage of observed “completes tasks” behaviors (see Table D3). Students 3 and 4 were observed to “complete tasks” on all opportunities during the pre and post observation; however there was a slight decline in the percentage of task completion for each student during one interval observation. Although student 1 was observed to appropriately “complete tasks” on observations 3 and 4, he exhibited a slight decline in the percentage observed when comparing the pre and post observation.

During multiple observations, “distractions by others” were not observed. A score of not observed (NO) was entered for those observations (see Table D4). Students 1 through 3 all had at least one observation in which the behavior was NO. When
analyzing the observations in which distractions by others were observed, there was not a steady increase in the percentage of appropriate ignorance of the distraction by any of the students.

**Teacher Questionnaires**

The results of the teacher questionnaires are shown in Figure D1. When student behavior rating scores were compared there was an increase from pre to post scores for all students across all raters with the exception of student 1.

Student 1’s overall behavior rating score increased from 2 to 6 when rated by his ELD instructor. However, it decreased from 12 to 9 when rated by his general education teacher. Student 1 started with one “always,” two “often,” and five “sometimes” on the pre questionnaire completed by his classroom teacher. At the end of the intervention, his classroom teacher gave him zero “always,” two “often,” five “sometimes” and one “never” resulting in a decline in his behavior rating score. Both his classroom teacher and ELD teacher reported on the open-ended question, Student 1 had a difficult time focusing. Although the general education teacher saw a decrease in student 1’s ability to “follow teacher directions,” his ELD teacher saw an improvement as evidenced by a change of rating from “never” to “sometimes.” Additionally, the ELD teacher rated student 1 as improving in his ability to complete assignments, quietly look at a person who is talking, and stay focused on work or tasks when others are distracting as evidenced by an increase in rating from “never” to “sometimes” on the pre/post questionnaires.

Only the classroom teacher completed rating scales for student 2. According to the questionnaires his classroom behavior rating score increased from 6 to 10. Student 2
increased or remained the same in all behaviors rated on the questionnaire. He began the intervention with three ratings of “never,” four ratings of “sometimes,” and one rating of “often.” His ratings increased to six “sometimes” and two “often.” Specifically, student 2 increased in his ability to complete assignments, not look at people or items that are distracting, quietly look at a person who is talking, and stay focused on work or tasks when others are distracting.

Both the general education teacher and enrichment teacher of student 3 rated him as increasing in his overall behavior. Student 3’s overall behavior rating scores increased from 8 to 10 and from 14.5 to 16 as rated by the classroom teacher and enrichment teacher respectively. Both teachers rated the student as improving in his ability to avoid fidgeting, giggling, or yawning when listening to others. According to questionnaires completed by the classroom teacher Student 3 began the intervention with the following scores: three “never,” two “sometimes,” and three “often”. He ended the intervention with zero “never,” six “sometimes,” and two “often.” As evidenced by the student scores, there was a positive increase in the rating of all behaviors on the questionnaire completed by the general education teacher. Although there was a decrease in three of the ratings given by the enrichment teacher, there was a positive increase in the rating of his ability to not look at people or items that are distracting; and avoid fidgeting, giggling, or yawning when listening to others. The enrichment teacher also reported Student 3 is “improving a lot” on the open-ended response question.

The overall behavior rating score of student 4 increased in both classroom settings. Student 4’s score improved in the general education setting from 8 to 11.5, and from 8 to 12 in his ELD classroom. Student 4 started the intervention with two ratings of
“never” by the ELD teacher and one rating of “never” by the general education teacher. At the conclusion of the intervention Student 4 received all ratings of “sometimes” or higher with no ratings of “never.” Both teachers rated Student 4 as improving in his ability to not look at people or items that are distracting and quietly look at a person who is talking. Additionally, both teachers rated Student 4 as maintaining the same score for waits until a person is finished talking before speaking; and avoids fidgeting, giggling, or yawning when listening.

**Student Questionnaires**

Table D5 displays the results of the student questionnaires. Students rated 27 statements as “most of the time” and eight statements as “sometimes.” “Not at all” was only identified for one item by one student. At the conclusion of the intervention, all of the students reported they like the characters of the SC and they like using the SC. Three out of four students also reported the SC helps them to pay attention and finish work “most of the time.” Additionally, three out of four students reported they like school, listen to mom and dad, and listen to teachers “most of the time.”
Chapter 5: Discussion

The purpose of this study was to identify the effectiveness of the SC on the social and perspective taking skills of students with ASD and ADHD. The study also analyzed whether students enjoyed using the curriculum. Additionally, it identified students’ and teachers’ opinions of the effectiveness of the intervention program.

The results of this study demonstrated student gains on all measures following the use of the intervention program. Specifically, the results of the behavior observations support the use of the SC to teach students to identify the hidden rules of social situations and adapt their bodies to the social environment. Following the intervention, all of the students increased in their ability to listen to others by actively looking at the person who is talking, sitting or standing quietly while listening, waiting for the person to finish before speaking, and showing they understand by verbally responding or nodding. Students also improved in their ability to follow instructions by looking at the person without making faces and nodding or responding in a pleasant voice.

Teacher questionnaires also supported the effectiveness of the SC on students social and perspective taking skills. Teachers reported enhanced levels of social cognition as evidenced by an increase in the overall behavior rating score for three students across all raters and one student by one rater. According to teacher surveys students improved in their classroom social and perspective taking skills. Specifically, ratings reflect improvement in students’ ability to complete assignments; quietly look at the person who is talking; stay focused on work or tasks when others are distracting; avoid fidgeting, giggling, or yawning when listening to others; and not look at people who are distracting.
Additionally, the data collected suggest students like using the SC and feel it improves their social and perspective taking skills. Students reported they liked the characters of the SC and enjoyed participating in the program. Three out of four students reported the SC improves their classroom behaviors “most of the time” and one student reported the program improves his classroom behaviors “sometimes.”

The literature suggests many students with ADHD and ASD struggle to establish and maintain positive relationships with peers and family members as a result of deficits in social cognition. The results of this study suggest the SC can improve the social and perspective taking skills of students with ASD and ADHD, and as a result their peer and family relationships.

According to the literature a strong social intervention program models new social skills, explains why a skill is needed, provides students frequent opportunities for practice with teacher feedback, and includes frequent praise or rewards. The SC meets all of these criteria in a format that is engaging and fun for the students. The program’s use of a colorful cartoon “Superhero” and rival characters to introduce and teach social behaviors and strategies to students effectively grabs and maintains the attention of students resulting in positive outcomes.

**Limitations**

Although the data reveal positive results, these findings should be viewed cautiously. Further research is necessary as several factors limit generalization of the results. A limited number of students and teachers participated in this study and a control group was not included. In addition, the student sample is not diverse as it only
represents a select group of male students in one urban neighborhood of the western United States.

Another possible limitation to the internal validity of the study was that Student 4 began taking stimulant medication for his diagnosis of ADHD during the last two weeks of the study. However, the medication would have only had an impact on the final observation of the child.

**Future Research**

The SC suggests the program is effective for all children struggling with social skills, including those without disabilities. The literature suggests students’ benefit from peer models when learning social skills. Future studies may want to examine the effectiveness of the program when non-disabled peer models are included in the intervention groups.

Video modeling is a research-supported strategy for increasing the generalization of new social skills. The use of video modeling is imbedded in the SC. This research study did not include video modeling as it was optional; however, future studies may examine the benefits of using it.

**Conclusion**

In conclusion, the SC appears to be an effective intervention program for students with ASD and ADHD when implemented in a small group setting. Although student growth was achieved in social and perspective taking skills, mastery was not. Students with ADHD and ASD often exhibit deficits in social communication that continue throughout their lifetime. Interventions such as the SC must be included in the
educational program of students with ASD and ADHD to ensure their future academic and social success.
References


http://www.asha.org/publications/
Appendix A

Teacher Questionnaire

Evaluator’s Name: __________________________          Pre/Post

Student Name: ___________________________          Grade: _______________

Please circle your position:

   Classroom Teacher   ELD Teacher   RSP Teacher   Special Education Aide

Please rate the student by circling one response for each item:

N=Never     S=Sometimes   O=Often     A=Always

Follows teacher directions.                                N   S   O   A
Completes assignments.                                    N   S   O   A
Tries not to look at people or items that are distracting.
N   S   O   A
Begins working on tasks and stays focused until they are complete.
N   S   O   A
Quietly looks at a person who is talking.                   N   S   O   A
Waits until a person is finished talking before speaking.   N   S   O   A
Avoids fidgeting, giggling, or yawning when listening to others.
N   S   O   A
Stays focused on work or tasks when others are distracting.
N   S   O   A

Please write any additional comments or concerns regarding the child below.

_______________________________________________________________________
_______________________________________________________________________

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### Appendix B

Data Collection Sheet for Classroom Behavior Observations

<table>
<thead>
<tr>
<th>Social Skill</th>
<th>Behaviors</th>
<th>Frequency Count</th>
<th>Notes/Other Behaviors Observed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Listening to Others</strong></td>
<td>1. Looks at the person who is talking.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Sits or stands quietly; avoids fidgeting, yawning, or giggling</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Waits until the person is through before they speak</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. If necessary, shows that they understand (Ok, Thanks, I see, or Nodding)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Following Instructions</strong></td>
<td>1. Looks at the person (Doesn’t stare, make faces, or roll their eyes)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Says “Okay, Yes, or Nods clearly in a pleasant voice</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Completes Tasks</strong></td>
<td>1. Listens carefully to instructions or directions.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Assembles the necessary materials for the task.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Begins working carefully and neatly.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Remains focused on the task until it is completed.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. If necessary, checks back with teacher.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ignores Distractions by Others</strong></td>
<td>1. Tries not to look at people that are being distracting.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Stays focused on work or task.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Does not respond to questions, teasing, or giggling.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. If necessary, reports these behaviors to an adult.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Adapted from Dowd, T., & Tierney, J. (1992). Teaching social skills to youth a curriculum for child-care providers. Boys Town, NB: Boys Town Press.
## Appendix C

### Student Questionnaire

Date: _______________  
Grade: __________

Please tell me how you feel about each sentence by circling one smiley face.

<table>
<thead>
<tr>
<th></th>
<th>Most of the time 😊</th>
<th>Sometimes 😊</th>
<th>Not at all 😊</th>
</tr>
</thead>
<tbody>
<tr>
<td>I like school.</td>
<td>😊</td>
<td>😊</td>
<td>😊</td>
</tr>
<tr>
<td>I usually finish my work.</td>
<td>😊</td>
<td>😊</td>
<td>😊</td>
</tr>
<tr>
<td>I listen to my Mom and Dad.</td>
<td>😊</td>
<td>😊</td>
<td>😊</td>
</tr>
<tr>
<td>I listen to my teachers.</td>
<td>😊</td>
<td>😊</td>
<td>😊</td>
</tr>
<tr>
<td>I follow directions from adults the first time.</td>
<td>😊</td>
<td>😊</td>
<td>😊</td>
</tr>
<tr>
<td>I like the characters in the Superflex program.</td>
<td>😊</td>
<td>😊</td>
<td>😊</td>
</tr>
<tr>
<td>The Superflex strategies help me pay attention.</td>
<td>😊</td>
<td>😊</td>
<td>😊</td>
</tr>
<tr>
<td>The Superflex strategies help me finish my work.</td>
<td>😊</td>
<td>😊</td>
<td>😊</td>
</tr>
<tr>
<td>I like using Superflex.</td>
<td>😊</td>
<td>😊</td>
<td>😊</td>
</tr>
</tbody>
</table>

What do you like or not like about Superflex? ______________________________

______________________________________________________________________

______________________________________________________________________

______________________________________________________________________

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**Appendix D**

Table D1

Classroom Behavior Observation Results “Listening to Others”

<table>
<thead>
<tr>
<th>Observation No.</th>
<th>Student 1</th>
<th>Student 2</th>
<th>Student 3</th>
<th>Student 4</th>
<th>Student 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5/11 (45%)</td>
<td>6/14 (42%)</td>
<td>5/11 (45%)</td>
<td>6/7 (85%)</td>
<td>2/2 (100%)</td>
</tr>
<tr>
<td>2</td>
<td>4/9 (44%)</td>
<td>8/15 (53%)</td>
<td>3/3 (100%)</td>
<td>4/9 (44%)</td>
<td>5/6 (83%)</td>
</tr>
<tr>
<td>3</td>
<td>3/6 (50%)</td>
<td>5/10 (50%)</td>
<td>4/7 (57%)</td>
<td>4/5 (80%)</td>
<td>2/2 (100%)</td>
</tr>
<tr>
<td>4</td>
<td>2/7 (28%)</td>
<td>2/8 (25%)</td>
<td>9/14 (64%)</td>
<td>3/3 (100%)</td>
<td>4/5 (80%)</td>
</tr>
</tbody>
</table>

Note: Appropriate behavior observed/total observed.
Table D2

Classroom Behavior Observation Results “Following Instructions”

<table>
<thead>
<tr>
<th>Student</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4/4 (100%)</td>
<td>8/9 (88%)</td>
<td>8/8 (100%)</td>
<td>6/8 (75%)</td>
<td>5/5 (100%)</td>
</tr>
<tr>
<td>2</td>
<td>2/3 (66%)</td>
<td>3/5 (60%)</td>
<td>4/5 (80%)</td>
<td>8/11 (72%)</td>
<td>2/2 (100%)</td>
</tr>
<tr>
<td>3</td>
<td>2/3 (66%)</td>
<td>2/2 (100%)</td>
<td>3/4 (75%)</td>
<td>7/9 (77%)</td>
<td>4/5 (80%)</td>
</tr>
<tr>
<td>4</td>
<td>6/9 (66%)</td>
<td>7/9 (77%)</td>
<td>5/6 (83%)</td>
<td>6/7 (85%)</td>
<td>3/3 (100%)</td>
</tr>
</tbody>
</table>

Note: Appropriate behavior observed/total observed
Table D3

Classroom Behavior Observation Results “Completes Tasks”

<table>
<thead>
<tr>
<th>Observation No.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student</td>
<td>1:</td>
<td>2:</td>
<td>3:</td>
<td>4:</td>
<td>5:</td>
</tr>
<tr>
<td>1</td>
<td>8/9 (88%)</td>
<td>6/8 (75%)</td>
<td>1/1 (100%)</td>
<td>3/3 (100%)</td>
<td>2/3 (66%)</td>
</tr>
<tr>
<td>2</td>
<td>3/4 (75%)</td>
<td>3/7 (42%)</td>
<td>4/4 (100%)</td>
<td>5/6 (83%)</td>
<td>2/2 (100%)</td>
</tr>
<tr>
<td>3</td>
<td>2/2 (100%)</td>
<td>3/5 (60%)</td>
<td>2/4 (50%)</td>
<td>5/6 (83%)</td>
<td>2/2 (100%)</td>
</tr>
<tr>
<td>4</td>
<td>1/1 (100%)</td>
<td>3/4 (75%)</td>
<td>NO</td>
<td>2/2 (100%)</td>
<td>2/2 (100%)</td>
</tr>
</tbody>
</table>

Note: Appropriate behavior observed/total observed; NO=not observed
Table D4

Classroom Behavior Observation Results “Ignores Distractions by Others”

<table>
<thead>
<tr>
<th>Student</th>
<th>Observation No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>NO</td>
</tr>
<tr>
<td>2</td>
<td>1/2 (50%)</td>
</tr>
<tr>
<td>3</td>
<td>0/1 (0%)</td>
</tr>
<tr>
<td>4</td>
<td>NO</td>
</tr>
</tbody>
</table>

Note: Appropriate behavior observed/total observed; NO=not observed
Table D5

Student Questionnaire Results

<table>
<thead>
<tr>
<th>Statement</th>
<th>Most of the time</th>
<th>Sometimes</th>
<th>Not at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>I like school.</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>I usually finish my work.</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>I listen to my Mom and Dad.</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>I listen to my teachers.</td>
<td>3</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>I follow directions from adults the first time.</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>I like the characters in the Superflex program.</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>The Superflex strategies help me pay attention.</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>The Superflex strategies help me finish my work.</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>I like using Superflex.</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>27</strong></td>
<td><strong>8</strong></td>
<td><strong>1</strong></td>
</tr>
</tbody>
</table>

Note: A total of four students were surveyed.
Figure D1. Line graph of students’ behavior rating scores across pre and post teacher questionnaires completed by the general education (General Ed) teacher and the enrichment or English language development (ELD) teacher if applicable. There was a positive increase in all student behavior rating scores across all teachers with the exception of the rating scores given by the general education teacher of Student 1.