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Pairing Social Stories and Contingency Mapping: Reducing Social Anxiety in

Students with Autism Spectrum Disorder

Holly C. Eisen

Submitted in partial fulfillment of the
requirements for the degree of
Master of Arts in Education

AUGSBURG COLLEGE
MINNEAPOLIS, MINNESOTA

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MASTER OF ARTS IN EDUCATION
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CERTIFICATE OF APPROVAL

This is to certify that the **Action Research Final Project** of

Holly C. Eisen

has been approved by the Review Committee, and fulfills the requirements for the Master

of Arts in Education degree.

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Abstract

Students who receive special education services for Autism Spectrum Disorder (ASD) all share similar characteristics, but to different degrees. These characteristics include impaired social interaction, impairment in communication, and restrictive and repetitive interests and activities. The challenges students with ASD have can often result in stress and anxiety in school. This stress can cause students to have negative behaviors such as verbal and/or physical escalations or shutdowns. (Mesibov et al. p.26)

Students with ASD learn differently than typical students. They also interpret the school environment and the situations that arise very uniquely. Because of this, some authors have said that it is imperative that teachers have knowledge of have an understanding of how students with autism learn and think. Teachers may benefit from learning more about effective ways to teach and communicate with students with ASD to reduce anxiety and promote effective learning. Many teachers do not have a good understanding of what ASD is or ways to more effectively teach or communicate with a student with ASD. (Mesibov et al p.25). The significant issues that need to be addressed for education of children with ASD are successful teaching methods/tools, effective forms of communication, and a better understanding of how a person with ASD functions or thinks.

This study's intent was to investigate how different teaching and communication styles affect the anxiety level of students with ASD and identify environmental factors that contribute to an increase in discomfort in students with ASD. It also examined tools to help the students become more comfortable and independent in the school environment. Results from social stories and contingency mapping interventions indicate that these strategies are effective in reducing problem behaviors in students with autism.

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Introduction

Children with Autism Spectrum Disorder are currently increasing dramatically in numbers. In Minnesota alone, the number of students diagnosed with Autism Spectrum Disorder has increased greatly. In 1996 the there were 959 children with ASD and 2005 this number increased to 8,678. ASD is the fastest growing category of developmental disorder in the United States (Minnesota Department of Education - MDE, 2005). Autism spectrum disorder (ASD) is a term that describes the varying degrees of Autism ranging from severely Autistic to High-Functioning Autism (HFA). ASD also refers to the classifications of Asperger Syndrome (AS), Rett's Syndrome (RS) and Pervasive Developmental Disorder—Not Otherwise Specified (PDD-NOS) (Diagnostic and Statistical Manual IV, 2005). People classified under ASD all share similar characteristics but to different degrees. These characteristics include impaired social interaction, impairment in communication, and restrictive and repetitive interests and activities (MDE, 2005). These patterns of behavior all impact students with ASD in the educational setting.

Mesibov, Shea and Schopler (2004) observe that students with ASD often experience anxiety in the classroom setting. It can come from misinterpreting social situations or communication interactions. They have difficulty understanding what is expected of them and what is happening around them. This anxiety can often lead to undesirable behaviors in the classroom setting. These behaviors may include shutdowns; unusual, repetitive and perseverative movements; verbal and/or physical escalations; extreme tantrums; or other forms of acting out behavior. The individual's inability to accurately process what is going on around him/her, the unpredictability in the school environment, and the anxiety that arises because of these factors also facilitates a dependency on teachers and para-professionals. Students frequently look to

these adults for assistance in navigating through the school setting, which prevents them from functioning independently. Children with ASD need structure and organizational tools to help them throughout the school day, but they also require more support in developing and using these tools to reduce anxiety and acting out behaviors (Mesibov et al., 2004).

The purpose of this study was to identify times in the school day that contribute to an increase in discomfort and stress in students with ASD and determine tools and practices which will decrease these factors in order to reduce anxiety and the problem behaviors that arise from the anxiety. Such information is salient to the daily work of the thousands of teachers who work with students with ASD on a daily basis.

Literature Review

The research reviewed below examines how students with Autism Spectrum Disorder (ASD) think and learn, reasons for stress and/or anxiety, and interventions that can be done to help students with ASD to reduce anxiety and replace problem behaviors with positive behaviors.

Learning and Thinking in Students with Autism Spectrum Disorder

Students with ASD are often very dependent on adults for guidance on what is expected at school. Bryan and Gast (2000) conducted a study that examined the use of visual activity schedules with children who are diagnosed with ASD and how the use of visuals affected on-task and on-schedule behaviors. The authors reported that students with ASD often need cues or reminders to stay on task. Cues are especially needed during transition times. Bryan and Gast found that one goal of educators is to find ways to help students with ASD to be more independent because they may miss natural cues in the school day. In their report they stated, "It is important for educators to develop strategies for decreasing student's prompt dependence on adults and facilitate independence" (Bryan & Gast, 2000, p. 533). The authors also acknowledged that visual prompts "have been used successfully to teach students with disabilities to follow activity schedules" (2000, p. 554). Bryan and Gast's study on the effectiveness of visual support schedules also found the following:

> (a) students quickly learned the mechanics of the picture-activity schedule via the graduated guidance procedure that was easily faded; (b) students maintained high levels of independent on-task and on-schedule behaviors with the picture book alone; and (c) high levels of on-task behavior with appropriate scheduled materials correlated with a decrease in nonscheduled behaviors. (p.563)

Picture schedules helped the students with ASD engage in appropriate, task-related behaviors more independently (Bryan & Gast, 2000). The students could interpret and understand the visual picture schedules in a more efficient way. Additional meaning was derived when the information was presented visually.

Tissot and Evens (2003) conducted another study on the use visual strategies for children with ASD. They found that traditional classroom teaching approaches are not meeting the educational needs of a large portion of children with ASD. The authors described traditional classroom approaches as, "spoken teacher instruction directing child activity" (p.425). They also noted that students with ASD need alternative teaching methods to better meet their educational and learning needs. For example, the authors explained how directions can be modified to fit the needs of students with autism:

> Although a child may have difficulty associating meaning with verbal instructions, this is not necessarily true of instructions that take a more visual form. These are generally two-dimensional (i.e., written words, icons or pictures) but can also be three-dimensional (i.e., gestures, expressions). (p. 425-426)

Typically, learners with ASD can be classified as visual learners, meaning they learn in pictures. Such students are able to process information quicker and more efficiently when it is presented visually. Tissot and Evens described two different visual systems: movement-based systems which include sign language, gestures and expressions and material-based systems. The material-based systems are all programs that incorporate pictures, graphics or icons in educating and communicating with children with Autism. Tissot and Evens report that there are three points to remember when working with visual strategies:

- Visual strategies do not exclude vocal exchange. The limited use of key words is frequently used to try and reinforce the receptive meaning of spoken words.

- Visual strategies should be viewed as a temporary support mechanism for communication and reduced when appropriate to the individual.

- The goal of visual strategies is to enhance the meaning of communication for the child. No one particular approach is right for every child in this subgroup and alternative types of visual strategies may need to be tried before a 'best' approach is discovered for any one individual child. (p. 426)

Tissot and Evens' research validates Bryan and Gast's findings that using visuals in teaching is often effective when working with children diagnosed with Autism.

Stress and Anxiety in Students Diagnosed with Autism Spectrum Disorder

Carrington and Graham (2001) conducted a qualitative study to better understand perceptions and challenges of teenage boys diagnosed with Asperger Syndrome (a subgroup of ASD). The study also looked at the perceptions of their mothers. One major theme that emerged from this study was stress. "An inability to cope with or adjust to social situations often causes children with Asperger syndrome to be easily stressed and emotionally vulnerable" (Carrington & Graham, p. 43). The main times in the school day that caused stress were social situations and social interactions. Carrington and Graham described the social needs in students with Asperger syndrome:

Students with Asperger Syndrome need help to cope with the demands of the regular classroom. They can become anxious and upset and may be prone to depression. In adolescence, when peer relationships are vitally important, students with Asperger syndrome have an increased need for social support and understanding. During their

teens, these students generally become more aware of their "differentness." They want to

"fit in" but don't know how. (p. 44)

When students become aware of being different this can cause more stress and social anxiety.

Stress can also result in negative or undesirable behaviors that may stem from the

unpredictability of the social world (Carrington & Graham, 2001).

Bellini (2006) conducted a study on the development of social anxiety in students with

ASD. He examined characteristics of students with ASD and the relationship these

characteristics have to the development of social anxiety disorder. Social anxiety is an intensified

fear of social situations where embarrassment may occur. Bellini's study found that adolescents

with ASD have high physiological arousal and deficits in social skills. These two factors have a

powerful impact on social anxiety. This can be seen in Bellini's developmental pathways of

social anxiety in Figure 1.

Figure 1

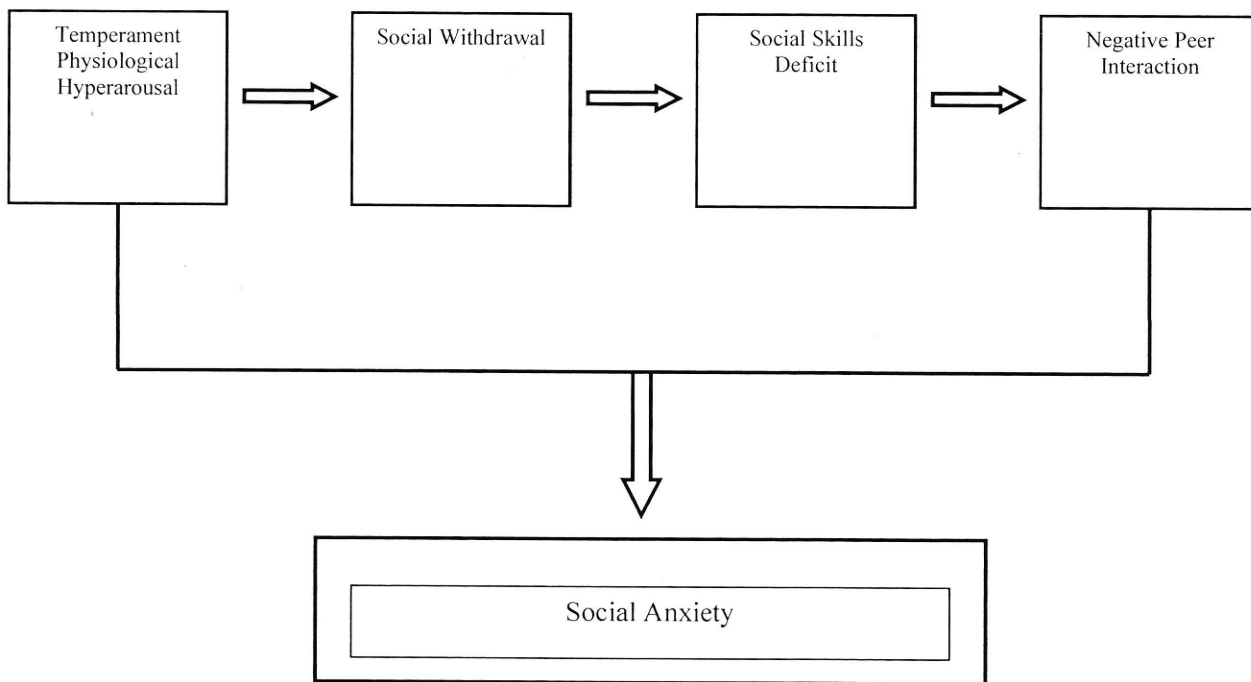*Bellini's Developmental Pathways of Social Anxiety*

Figure 1 shows that social skills deficits play a large part in the development of anxiety in students with ASD. According to Bellini, adolescents with ASD need social skills training to overcome their anxiety of social situations. "The training should focus on developing effective social interaction skills, thereby reducing the potential for negative peer interaction" (Bellini, 2006). Because of the high correlation between social anxiety disorder and ASD, Bellini posited that there is a need for interventions to be put in place to address student anxiety and gain a better understanding of social situations. Two interventions that have been tried are social stories and contingency mapping. These strategies help students with ASD understand situations, perspectives and appropriate behaviors and reactions.

Interventions for Students with Autism Spectrum Disorder

Social Stories

Social situations and interactions are times in the school day that are associated with anxiety and stress in students with ASD. These times often result in inappropriate or anti-social behaviors. Particular times that problem behaviors arise are recess, choice time, and transition times. These times are unstructured, unpredictable and social. Because of this, students with ASD may have difficulty interpreting the situations and experience higher anxiety.

Research also exists on the effectiveness of social stories to help children understand everyday activities and situations. Bradys, Gouvousis, VanLue and Waldron (2004) stated, "A social story is a short story that describes social situations in terms of relevant cues and often defines appropriate responses for children diagnosed with autism" (p. 87). Bradys et al. (2004) found that a "social story intervention was a useful tool in decreasing socially inappropriate behaviors" (p. 93).

In the winter of 2003, Hou Kuoch and Pat Mirenda reported on the effectiveness of social story interventions. They stated, "Social stories are often written to help an individual adjust to changes (i.e., in routines), to provide insight about what others are thinking or feeling, or to teach specific social skills as alternatives to problem behaviors" (Kuoch and Mirenda, 2003, p. 220). Kuoch and Mirenda studied three boys ages 3-5. In all 3 cases, immediate reduction in the problem behaviors occurred with the implementation of social stories. The stories helped the boys understand social situations and gave them the tools to act in socially appropriate ways.

Frank Sansoti and Kelly Powell-Smith (2006) did a similar study of social stories, only their research participants were children diagnosed with Asperger syndrome. They also found social stories to be effective. There were positive, abrupt changes in behavior after social stories were implemented. Sansoti and Powell-Smith reported, "This research demonstrates the potential benefits of using social story interventions to teach new prosocial behaviors to children with AS" (2006, p. 53). Research supports the use of social stories, but it has also shown that many children with ASD are visual learners and they often think in pictures. Therefore, contingency mapping is a second strategy that has been shown to hold promise in the literature.

Contingency Mapping

A new type of visual support that is only beginning to be researched is contingency mapping. Brown and Mirenda (2006) are among the first to have research published on the use of contingency maps with students with ASD. Brown and Mirenda describe contingency mapping as:

> The aim of a contingency map is to make a behavior support plan more transparent by graphically depicting both the current and the alternative antecedent-behavior-consequence pathways related to the problem behavior. As such, contingency maps must

represent all of the relationships between--the following components: (a) the common antecedent that precedes both the problem and the replacement behavior, (b) the topography of both the problem and the replacement behavior, (b) the topography of both the problem and alternative behavior, (c) the functional reinforcer that will be provided contingent on alternative behavior, and (d) the previously available functional reinforcer that will no longer be provided contingent on problem behavior. (p. 156)

Brown and Mirenda found that using a contingency mapping intervention showed a decrease in the participants' problem behavior and proved to be more effective than verbal contingency alone. The effectiveness of the visual support of concept mapping supports Tissot and Evens' (2003) findings that many student's with ASD learn and understand better when information is presented in pictures. Bryan and Gast (2000) also found that students were more on-task when they had a visual picture schedule which is confirmed with Brown and Mirenda's (2006) results on the effectiveness of visual modes of communication.

Research Purpose and Questions

As noted above, social situations and interactions are times in the school day that are associated with anxiety and stress for students with ASD. These situations often result in problem behaviors. Particular times that problem behaviors arise are recess, choice time and transition times. These times are unstructured, unpredictable and require social skills. Because of this, students with ASD have difficulty interpreting the situations and have higher anxiety. Research on students with ASD demonstrates that supports in the classroom can reduce stress and promote independence. These visual support systems include, but are not limited to, visual schedules, visual cues, and visual prompts.

Two strategies that have been demonstrated to be effective are 1) Social Stories and 2) Contingency Mapping. Although there is a more research support for the effectiveness of social stories to help children understand everyday activities and situations, there is an emerging consensus the effectiveness of contingency mapping. Contingency mapping visually depicts situations, behaviors, and outcomes.

The purpose of this study was to examine whether the use of social stories *paired* with the visual strategy of contingency mapping will effectively reduce anxiety and acting out behaviors in children with ASD during unpredictable times in the school day. The specific research questions were (a) To what extent will contingency mapping paired with social stories reduce acting out behaviors in students with ASD in unpredictable, unstructured times in the school day? (b) To what extent is the use of social stories paired with contingency mapping successful in replacing undesirable behaviors with desirable behaviors in high anxiety situations? and (c) To what extent are social stories paired with contingency mapping more effective at reducing undesirable behaviors than an intervention using social stories alone?

Research Methodology

Rationale

This study is an action research project using qualitative action research methodology (Mills, 2007). I conducted case studies on two male students who were 11 years in age at the time of the study, and diagnosed with Autism Spectrum Disorder. Case study methodology was used in order to investigate the participants in detail and give me the opportunity to do an in-depth analysis of the cases and the results of pairing social stories and contingency mapping. Case study methodology allowed an in-depth look at multiple sources of information from the research participants.

Research Participants

Participants were identified based on characteristics that they share. Participants were two male students (both 11 years of age) enrolled in the Communication Interaction Program (CIP) at a suburban elementary school in Minnesota. CIP is a center-based program designed for high-functioning students with an educational diagnosis of Autism Spectrum Disorder (ASD). Students were selected based on social emotional needs and goals, i.e., they were selected as participants because I believed they would benefit from any positive effects associated with social stories and contingency mapping. The students' Individualized Education Plan (IEP) goals focused on understanding social situation more proficiently and also objectives that call for the students to choose replacement behaviors or positive coping strategies in frustrating situations. Only students who volunteered and received parental consent were chosen. Both participants will remain anonymous to protect the confidentiality students. A signed consent form was collected from both participants (see Apendix A).

Participants consisted of two elementary school boys, with the pseudonyms Fin and Brady. Both boys were in 5th grade at the time of the study. Participants were members of a center-based autism classroom in the Communication Interaction Program (CIP). Both Fin and Brady spend over 50% of their day in the small group CIP setting.

Participant #1: Fin

Fin was diagnosed with ASD as a first grade student and was placed in CIP. He has a pleasant smile and is generally a happy child. He has little or no eye contact and he does not like loud noises. Fin doesn't understand social aspects of situations. He rarely takes initiative for social interactions and does not understand personal space boundaries or issues. He will say things to people that are hurtful, not understanding how that would make the person feel. Fin is also easily distracted. He has some friends at school but he participates in parallel play with peers, showing minimal imagination. Fin often does not respond to his name being called. He will tantrum five to six times per week when things upset him. During these tantrums, he may display a loud voice, complaints, throw objects, hit his head, or threaten others.

Emotionally, Fin becomes most upset when he receives a negative consequence for breaking a rule. He will often yell or argue with the adult administering the consequence, claiming that "it is not fair!" He will sometimes stomp his feet, pound his fists, pout, or cry when he receives a consequence he perceives as being unfair. At school there have been several reports of Fin bullying other students. The bullying usually involves teasing or tricking someone, but has also involved pushing, kicking or hitting. Fin has also been observed grabbing other students. When Fin is feeling frustrated by something he is working on, he may do one of the following: whine, complain, ignore directions and refuse to work, or may become defiant and/or angry toward the adult working with him.

Fin has been working on processing feelings and to develop coping strategies when dealing with uncomfortable feelings. Fin has refuses to consult verbally with teachers about uncomfortable feelings and states that they are "too personal." He refuses to use visuals and concept maps or verbally talk about stressful situations and how to cope with them appropriately. When prompted to complete an activity not of his choosing, he usually says "I'm not doing it" or "this is stupid" and will sometimes add in behavioral responses such as pounding/kicking the table and throwing objects. If prompted further, he tends to escalate and can become explosive. To reduce these behaviors, the CIP teacher has developed a series of consequences for when Fin is uncooperative and explosive and this has appeared to improve his behavior. Overall, Fin appears to have extreme difficulty discussing his feelings and being comfortable enough to talk about and process situations that cause him to feel frustrated, angry, and overwhelmed.

Participant #2: Brady

Brady was evaluated for special education services when he was in kindergarten. He did not qualify for any special education services at that time. He was further evaluated by a psychological testing center during his first grade year (in November of 2002). At that time, his parents' concerns were related to his difficulty following directions, distractibility, poor academic performance and short-term memory. The psychological testing center diagnosed Brady with Attention Deficit Hyperactivity Disorder, primarily the Inattentive type. Brady was assessed further at school in January 2003 in the areas of speech and language. Due to the diagnosis of ADHD from the testing center, Brady met the criteria for Other Health Impairment (OHI). In May 2003, Occupational Assessment revealed difficulties with sensory integration and fine motor skills. Brady attended a charter school for second grade and his family moved to the Middle East for his third grade year. His teacher during this time sent an observation summary to

be included in his evaluation stating that he had a difficult year with making friends and was bullied by other students. She added that he had difficulty being accepted by his classmates and this had a negative impact on his academic progress. Brady's family moved back to the US before beginning Brady's fourth grade year in 2005. Brady's mother requested a reevaluation in the fall of 2005 due to increasing academic and social concerns. As a result of that evaluation, Brady met criteria for Autism Spectrum Disorder and was placed in a small group, center-based classroom (CIP).

Brady likes attention and responds well to compliments. He enjoys creating projects and drawing. His interests include Pokemon, cartoons, and action movies. He has a sweet disposition and likes to please adults. Brady's strengths are in the areas of math, reading comprehension and music. He does well in these areas and feels successful. When Brady feels that he is successful he is able to focus better and attend to tasks. He works independently and does not need a lot of redirection.

During other times in the day, Brady struggles with paying attention in class and attending to tasks. He needs constant redirection when working in a small or large group setting and learns best in small group instruction with a quiet environment where visuals are used. He has needs in the academic, social, behavior and communication areas. Work completion is very difficult for Brady, and short assignments may take him a long time to complete. He is easily distracted during work time and needs several reminders to attend to the task at hand. Receptive language skills are a high need area for Brady.

Brady communicates better with adults than peers, but he can be immature at times. Brady has frequent peer conflicts and it appears that he has a difficult time reading social cues. He has been involved in three physical altercations with his classmates this school year and he

needs constant redirection throughout his day. Brady also displays impulsive behaviors and often acts sneaky. He has been caught stealing from peers and teachers. He also brings items when asked not to and keeps them hidden. When he makes a mistake or does something by accident he tries to keep it hidden

Brady has worked on social communication skills in the areas of emotion awareness and management, conversation skills and social problem solving. He has difficulty explaining and inferring the cause or reason of others' feelings in situations where he may be involved in peer disputes or interpretations of a peer's intension or motives in an interaction. At times, Brady requires maximum adult support, cues and guidance in explaining his own reason or cause for an emotion. During on-task times of the day Brady is able to focus on academic assignments and be helpful and respectful to his peers. Brady tries to be friendly and wants to fit in with the other students. His attempts at friendly interactions are genuine and sweet.

Setting and Instruments

The research was conducted in Fin and Brady's center-based CIP classroom during social skills time and free choice time. Social Skills is a 25-minute class the students attend daily with the speech and language pathologist. During this time, students work on communication, problem-solving, decision making, self-management, and peer relations that allow them to initiate and maintain positive social relationships with others. The students in CIP have deficits in social behavior that interfere with learning, teaching, and the classroom's orchestration and climate. The students work on social competence, which is linked to peer acceptance, teacher acceptance, inclusion success and post-school success. Free choice time is a time that the students are allowed to choose an activity such as a card game (Uno), computer, reading, drawing or some craft. It is an unstructured time in the classroom that allows students to socially

interact with one another. Social skills class takes place at a large table as a whole group setting. The students are in close proximity of one another. The students interact as a social group. During free choice time the students are permitted to either sit at their desks, sit at the group kidney table or sit on beanbag seats in the library area of the classroom.

For social skills, students are expected to follow three general rules: 1) Listen to the teacher, 2) Use kind and friendly words, and 3) Use a quiet voice. If these rules are followed with two or fewer reminders, the students receive a marble that goes into a jar in which the students fill to earn a "marble party." If the students are not following the rules they receive reminders. If the students receive three or more reminders for a rule they do not earn the marble for that rule. For choice time, the students have a choice to use cards, paper, writing materials, books, or the computer.

In addition, five social stories were created for the study, one for each target behavior. Three stories were created for Fin and two for Brady. Along with these stories, contingency maps were also created for Part Two of the intervention. The social stories were created using Microsoft Word using Comic Sans 12 point font and printed on 8x11 paper. The contingency maps were created using *Boardmaker* (Mayer-Johnson). Each contingency map contained seven 1.75 x 1.75 inch square cells with Picture Communication Symbols (PCS) (Mayer-Johnson) representing each component of the map. The pictures were accompanied by written text describing the picture/action. The first PCS contains the usual antecedent of the problem or target behavior. Branching off the antecedent were three PCS representing the problem behavior and its related consequences and three PCS representing the alternative or replacement behavior and its related consequences. The maps were printed on 8x5.5 paper and laminated for durability. Examples of these are found in Appendix J, K, L, and M.

Data Collection and Procedures

Data collection happened in three phases. Phase one consisted of initial interviews and observations to determine times throughout the school day that were difficult and times when the student(s) displayed undesired behaviors. One-on-one taped interviews were conducted privately to determine times in the school day that the students found difficult. Observations were conducted for two weeks using Antecedent, Behavior, Consequence (ABC) forms and Frequency of Behaviors forms to determine negative ore inappropriate social reactions (see Appendix C and E). The ABC form allowed for the observer to identify target behaviors and look at events that precede and follow the behaviors. It also gave the observer a clearer picture of the function of behaviors. The Frequency of Behaviors forms allowed the observer to keep track of the frequency of target behaviors throughout the school day. The students were also asked to identify their arousal or stress level on a 5-point Likert scale given different social situations. The 5-point scale is a tool that the students are very used to using in the CIP classroom. On a 5-point scale, 1 is "no worries", 2 is a "little stressed/worried", 3 is "worried or stressed but still manageable", 4 is "too stressed out" and 5 is "VERY STRESSED and I am ready to shut/break down," (See Appendix B).

In Phase Two, social stories were introduced to help the students recognize negative behaviors and identify alternative behaviors for the target behaviors identified in Phase One. Observations were conducted for two weeks using Frequency of Behavior forms during the identified times in the school day.

Phase Three consisted of using contingency mapping along with the social stories. Observations using Frequency of Behavior forms were again conducted for two weeks to track targeted behaviors.

Data Analysis

Data were analyzed at all three phases. In phase one, interviews and observations were read and organized using coding techniques to determine the times in the school day that the students perceived as stressful or difficult. Problem behaviors were also identified in phase one. I examined the interviews, observational forms, and 5-point scales to uncover stressful situations, anxiety levels and negative behaviors that emerge from the data. Identifying these situations, behaviors, and frequency of behaviors, gave me situations to implement the interventions of social stories and contingency mapping.

In phases two and three, data were analyzed to determine frequency of negative behaviors, frequency of positive/replacement behaviors and levels of anxiety in identified situations. By comparing all data from phase one, two, and three, I was able to determine the extent to which interventions had an effect on students. I was also able to determine if social stories alone were more, less, or equally effective as social stories combined with contingency mapping. This was determined by comparing the frequency of behaviors in all phases. Behaviors were observed and charted in each phase to determine whether the interventions were able to decrease the occurance of negative behaviors.

Results

Phase One

Interview and Observations-Fin

During Fin's initial one-on-one initial interview, he was asked about his school day. Fin

expressed times in the school day that he liked and disliked. Fin was asked a series of questions

and shown a 5-point scale that depicts a stress scale. He answered most questions, but expressed

discomfort with a number of questions and chose to answer "I don't know." The following is the

result of Fin's one-on-one interview:

INTERVIEWER: What times in the school day do you like the best?

FIN: Computer time, recess, and free time

INTERVIEWER: What makes these times good?

FIN: I like to use the internet and there is no work to do. I get to play.

INTERVIEWER: What times in the school day are hard?

FIN: I don't know.

INTERVIEWER: What times do you not like?

FIN: Reading and math

INTERVIEWER: What makes them hard?

FIN: They're boring; too much work

INTERVIEWER: Look at the 5-point scale. Name a time in the school day when you are

at a 1.

FIN: Recess

INTERVIEWER: Name a time at school when you are at a 2.

FIN: Math; sometimes reading

INTERVIEWER: Name a time at school when you are at a 3.

FIN: I don't know.

INTERVIEWER: What is a time you start to get stressed or frustrated?

FIN: When people won't be quiet.

INTERVIEWER: When are people to loud?

FIN: Lunch, when I'm trying to do something, in social skills with Mrs. (teacher's name)

INTERVIEWER: Name a time at school when you are at a 4? When might you be getting really stressed?

FIN: When (student's name) talks all the time.

INTERVIEWER: Why does (student's name) bother you?

FIN: He says stupid stuff; He always tattles and tries to get me in trouble.

INTERVIEWER: Name a time at school when you are at a 5.

FIN: I don't know.

INTERVIEWER: What are some times that you feel like you are going to explode? What stresses you out or makes you really mad?

FIN: Uh, like when Mrs. (Teacher's name) won't listen, or when I get in trouble for stupid stuff that's not my fault.

INTERVIEWER: When you feel like you are stressed at a 4 or a 5, what things can you do to help yourself feel better? How can you get back to a 2 or a 1.

FIN: I don't know.

INTERVIEWER: What do you think you could maybe do?

FIN: Take a break

INTERVIEWER: What do you feel like when you are at a 4 or 5?

FIN: I don't know; like an explosion or really mad like my head has pressure.

INTERVIEWER: O.K. Thanks Fin, you can go work on your spelling. Thank you.

Overall Fin expressed that he enjoyed unstructured times within the school days such as recess and computer time and did not enjoy more academic times. Although he said that he did like recess he also expressed dislike or stress during times when others were too loud. Fin also seemed to feel easily frustrated if he felt that he was not listened to or bothered by other students and adults. Fin did not seem to have a clear idea of ways to come himself down. Following the interview, observational data was taken at different times with in Fin's day to observe the times mentioned in Fin's interview.

Fin was observed during several times within his school day for the first two week period. All observations were 20 minutes in length. He was observed during free choice, math, spelling, reading, social skills, and writing. Fin was observed in each of these settings in order to determine target behaviors and more difficult times within his school day. When observed in free choice time, Fin had a hard time making choices. During the 20 minute time period, Fin never participated in an activity for longer than 4 minutes. He was observed walking around the room, interacting with other students and adults, opening and closing cabinets, digging through his desk and watching other students on the computer. When directed to choose an activity, Fin's reaction would be to ignore the direction or respond with "There is nothing to do." When an adult would list activities, Fin would describe them as stupid or boring. Fin never settled on an activity and became frustrated when free choice time was over, stating that he did not get to do anything. Negative target behaviors that were observed were ignoring others when directly addressed, inappropriate interactions with peers and adults including teasing, insulting and threatening, arguing and immature noises and voices

Math takes place right after recess and lunch. When Fin was observed during math time, he did a nice job overall. The lessons were very structured and Fin responded well to this. He was given a task list with concrete assignments to finish. Negative behaviors observed were arguing and off-task behaviors such as talking, digging in his desk and doodling. At times, Fin would become frustrated if he did not know how to work out a problem to find a solution. At these times he responded well when given pressure to his shoulders and/or if an adult sat down and calmly and quietly worked out the problem with him. He would respond by quietly attending to adult prompts, his breathing would slow and the tension in his body would relax. During times of frustration, behaviors Fin displayed were excessive erasing of mistakes, ripping of paper, and throwing pencils.

Another observation took place first thing in the morning. When the students first arrive to school, their first task is to check in for the day and complete a spelling assignment. During this time, Fin would need several reminders to get on task and begin his assignment, but once he started his task he was focused and working to complete his assignment. If Fin completed his task quickly he would become restless during the down time until his next activity. During this time, Fin would display restless behaviors such as walking around, repeatedly asking to go on the computer (when the teachers' answer was "no"), and leaving the room.

During reading, Fin was observed during a structured reading group and less structured independent reading time. During the structured guided reading group, Fin was on task with minimal disruptive behaviors. His role in reading was clear and he did a nice job of reading aloud during his time and contributing to group questions and discussions. During independent reading time, the students are allowed to choose reading material of their choice from the classroom library and the area of the room that they would like to read. Fin spent most of time

wondering around, saying there was "nothing to read." When told to find something, Fin ignored the teacher and wandered the room. The majority of the time was spent off task. Behaviors observed during independent reading were: arguing with others by objecting to the suggestions from adults and telling peers to "shut-up", pacing, and inappropriate interactions with peers including teasing, insulting, and immature noises and voices.

Social Skills class takes place at the end of the day. The students participate in spontaneous and orchestrated social interactions. Fin displayed many behaviors during this time. When participating in spontaneous conversations with peers, Fin exhibited inappropriate interactions. He did not filter any comments to peers and frequently made hurtful comments to peers such as commenting there ideas were "stupid" or that they "don't make sense." During this time, Fin displayed a number of inappropriate behaviors. He became easily frustrated and when the teacher would try to work through inappropriate social interactions, Fin displayed many frustrated behaviors such as arguing, insulting, complaining, walking our of the room, throwing objects, yelling, and pounding on his head and the table.

During writing time, Fin was observed during journaling time and doing a worksheet in which he identified the simple subject and predicate of sentences. The assignment was clearly laid out for the students and the expectations were visually presented. Overall, Fin worked well and stayed on task. He occasionally got off task, talking to other students or asking questions that were off the subject.

After examining the observation notes, it was clear that difficult times in Fin's day were free choice time and Social Skills. These times were less structured times in the school day that were unpredictable. Situations or assignments were not clearly defined and Fin was expected to interact socially with others. Because of this, target behaviors that were identified were

inappropriate interactions with others such as arguing or complaining, insulting, and ignoring directions from adults. The most common antecedents that preceded these behaviors were task requests from adults. The perceived functions seemed to be attention seeking or avoidance of tasks that adults requested.

Interview and Observations-Brady

During Brady's initial one-on-one initial interview he was asked almost identical questions as Fin. Brady also expressed times in the school day that he liked and disliked. Like Fin, Brady was asked a series of questions and shown a 5-point scale that depicts a stress scale. He answered all questions willingly. The following are transcripts from Brady's one-on-one interview:

INTERVIEWER: What times in the school day do you like the best?

BRADY: Math, library, Free Computer time

INTERVIEWER: What makes these times good?

BRADY: I'm good at math and reading. I like to play Carmen San Diego and draw on KidPix. (computer programs)

INTERVIEWER: What times in the school day are hard?

BRADY: writing and social studies

INTERVIEWER: What times do you not like?

BRADY: writing and social studies

INTERVIEWER: What makes them hard?

BRADY: I don't know what to write when we do journals.

INTERVIEWER: What about social studies?

BRADY: There is too much homework and writing.

Look at the 5-point scale. Name a time in the school day when you are at a 1.

BRADY: Computer

INTERVIEWER: Name a time at school when you are at a 2.

BRADY: Math

INTERVIEWER: Name a time at school when you are at a 3.

BRADY: Ummmm, maybe recess.

INTERVIEWER: Does recess start to make you stressed or frustrated?

BRADY: Yah, like when (student name) follows me around, or when we play tag and

(student name) cheats.

INTERVIEWER: Does it help to find someone else to play with?

BRADY: No one else wants to play.

INTERVIEWER: That's hard. Look at the chart, when might you move to a number 4?

BRADY: Like when I get in trouble.

INTERVIEWER: What do you get in trouble for?

BRADY: Do you think I'm a bully?

INTERVIEWER: No, why do you ask?

BRADY: I don't know.

INTERVIEWER: O.K. When might you be at a 5?

BRADY: When teachers yell at me.

INTERVIEWER: How do you feel inside when teachers "yell"?

BRADY: Uh, like I'm stupid.

INTERVIEWER: When you feel like you are stressed at a 4 or a 5, what things can you

do to help yourself feel better? How can you get back to a 2 or a 1.

BRADY: Take a break or go to the quiet corner.

INTERVIEWER: What do you feel like when you are at a 4 or 5?

BRADY: Like everyone hates me and it is all my fault.

INTERVIEWER: Does that feel bad inside? What does your body feel like?

BRADY: Hard, like my muscles hurt or something like that.

INTERVIEWER: O.K. we are all done. Nice job Brady. Thank you.

Overall Brady expressed that he enjoyed computer time, library and math. He begins to become stressed when things are more unstructured and social interactions are expected. Brady expressed feeling like people (peers and adults) do not like him. He expressed feeling that things were his fault and this was stressful for him.

Following the interview, observational data was taken at different times within Brady's day to observe the times mentioned in his interview.

Brady was observed ten times throughout the first two weeks of research. Observations were twenty minutes in length. He was observed during check-in/spelling, writing, free computer time, math, reading and social skills. Observations were conducted during these times to identify target behaviors and times within Brady's school day that seem to be difficult for him.

As noted above, students in the CIP program begin their school day with checking in, sitting in their chairs and doing a spelling assignment. Brady entered the room and began immediately talking to the adults in the room, needing many reminders to check in and begin his work. Behaviors included excessive talking, interrupting others' conversations, blurting, and invasion of others' personal space (touching or grabbing objects on others' desks, touching or grabbing students while talking to them, and moving the other students' check-in names from their lunch choices).

During writing, Brady was expected to choose a topic for a descriptive essay. The only guideline was that it had to be either a place he loves, a place that scared him, or a storm. Brady had a hard time choosing a topic and was often off task. After choosing a topic, Brady was expected to fill out a graphic organizer thinking of words to describe his topic. Brady spent the majority of the observation off task. The behaviors observed were talking, asking questions, blurting, interrupting, singing and chewing on the pencil he was using after being asked not to. The pencils Brady used were shared in the classroom with other students and adults. Chewing on them can spread unwanted germs and is not allowed unless the pencils are their own. Brady was also observed arguing with another student.

Brady's schedule contains a time in his day where he is able to have free choice time on the computer. During this time he is able to choose from a variety of computer games. Brady was completely on task during this entire 20 minute time period. He chose a game quickly and played with little interaction. When told to shut his game down, Brady ignored the first request but shut down when asked a second time.

During Brady's math observation his tasks were a four-minute timed multiplication practice time and four pages in his math packet. The tasks were presented visually on the whiteboard with clear expectations. During the four-minute multiplication practice, the students are expected to work on fact fluency silently for four minutes. Brady blurted out twice during this time and displayed other off task behaviors such as doodling. He went back to his assigned task with reminders from the teacher. After multiplication practice, Brady was expected to work on two lessons in his math packet. He worked in a group with one other student and an adult. Brady needed many reminders to stay on task. Behaviors observed were excessive talking, arguing, name-calling and invasion of others' space which is described as touching other people

and/or other's property. It is also described as standing too close to another person when talking to them.

Brady was observed during a fifteen minute independent reading time. Brady went to the library student with three other students. There they read their books while seated on beanbags seats. Brady was observed bothering other students by interrupting their reading, invading their personal space and talking. An adult was needed to intervene and sit in close proximity of the students. Brady received redirection and was given the choice to read quietly or go sit at his desk. At that time, Brady chose to read quietly for the rest of the observation.

Brady was observed during social skills. The students were asked to check in and then do "good news, bad news." "Good news, bad news" is a common activity done on Mondays in which each student shares either a good news story or a bad news story from the weekend. The other students then ask questions about each student's topic. During this time, Brady was observed interrupting excessively, even after many reminders were given. He was also observed displaying frustrating behaviors when other students corrected him or did not listen to him. These frustrating behaviors included yelling, telling others to "shut-up" and grabbing students' arms and shushing them close to their faces.

After examining the observations, difficult times in Brady's day included check-in and Social Skills. Like Fin, Brady's difficult times were less structured times in the school day that were unpredictable (with the exception of free choice time, when Brady played games independently). During social times in the day, Brady struggles when he is expected to interact socially and appropriately. Target behaviors that were identified were inappropriate interactions with others such as invasion of others space, interrupting and blurting. The most common

antecedents that preceded these behaviors were others sharing a story or idea and asking Brady to focus on an academic task. The perceived function seemed to be gaining attention.

Statistical Data-Fin

After target behaviors were identified, Fin was observed using "Frequency of Behavior" forms (see Appendix E) to establish a baseline. Fin was observed during free choice time and social skills. These were times that were identified as difficult for Fin during prior observations.. Fin was observed three times a week in each setting for two weeks. Each observation was 20 minutes in length. Target behaviors observed were arguing/complaining, insulting others, and physical aggression defined as throwing objects, pounding desk or table, ripping paper and hitting himself in the head. No changes were made to the environment, routine or interaction patterns that typically occurred during these activities. The teachers and Program Support Assistants (PSA's) interacted with Fin and the other students as they normally did.

During the baseline, there was a stable pattern of target behaviors. Frequency of the target behaviors was established by determining how many periods these behaviors occurred. Periods were equal to minutes of observation. Frequency of periods was calculated taking the total number of periods or minutes the behavior occurred divided by the total number of periods or minutes of the observation. For example, if Fin complained for 10 minutes of the observation this would be equal to 10 periods. Ten would then be divided by 20, because each observation was 20 minutes or *periods* in length. This formula provided a percentage for each observation. These percentages were averaged to establish a mean percentage for each target behavior in each observational setting. Figures 2 and 3 show the average percent of periods/minutes spent displaying each target behavior in social skills and free choice time. On average, Fin is on task for 33% of his time in social skills and displays negative target behaviors 67% of the time.

During free choice time Fin is on task for 31% of the time and displaying negative target

behaviors 69% of the time.

Figure 2

Fin's Social Skills: Phase One
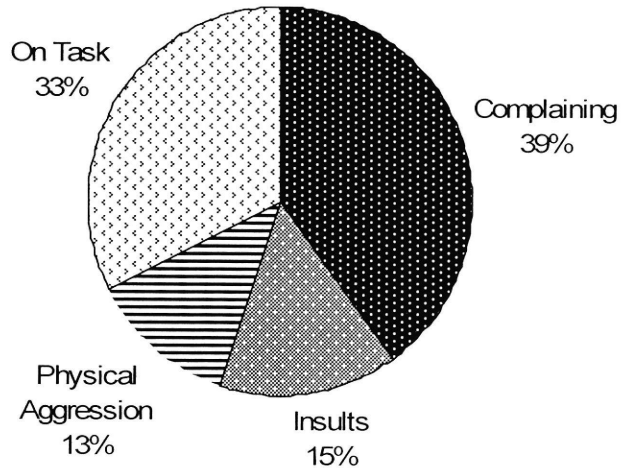
Figure 3

Fin's Free Choice Time: Phase One
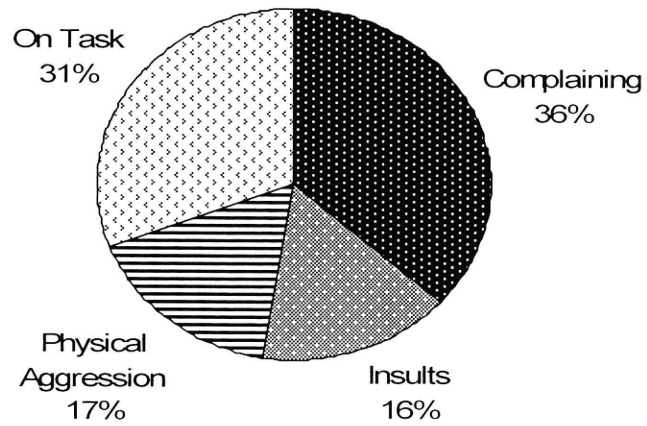
Statistical Data-Brady

After target behaviors were identified, Brady was also observed using Frequency of Behavior forms to establish a baseline. Brady was observed during check-in and social skills. These were times that were identified as difficult for Brady. Brady was also observed three times a week in each setting for two weeks. Each observation was 20 minutes in length. Target behaviors observed were inappropriate interactions with others such as invasion of others space, interrupting and blurting. No changes were made to the environment, routine or interaction patterns that typically occurred during these activities. The teachers and Program Support Assistants (PSA's) interacted with Brady and the other students as they normally did.

During the baseline, there was a stable pattern of target behaviors. Frequency of the target behaviors was established in the same way as described for Fin. The percentages were again averaged to establish a mean percentage for each target behavior in each observational setting. Figures 5 and 6 show the average percent of periods/minutes spent displaying each target behavior during check-in time and social skills. Brady's target behaviors were invading other's personal space, interrupting other students and adults and blurting out during class time. Brady is on task 18% of the time and displays negative target behaviors 82% of the time during check-in. Brady is on task 27% of the time in social skills and displays negative target behaviors 73% of the time.

Figure 4

Brady's Check-In Time: Phase One
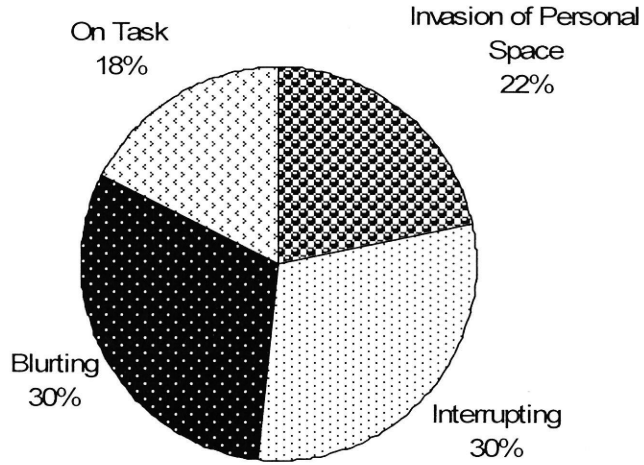
Figure 5

Brady's Social Skills: Phase One
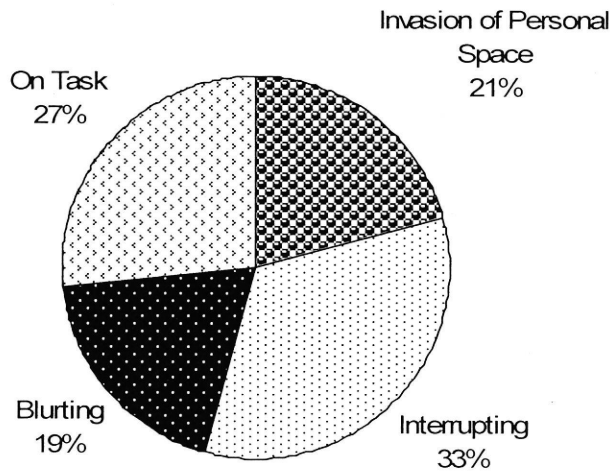
Phase Two

Social Skills Intervention

During Phase Two, social stories were introduced to Fin and Brady. A social story was written to facilitate student awareness of target behaviors. Fin was introduced to two social stories. One explained his target behaviors in terms of social skills and the other talked about his target behaviors in regards to free-choice time (See Appendix G and H). Brady was also introduced to two social stories, one for talking at school that addressed interrupting others and blurting and the other addressed personal space (See Appendix I and J). Each story was unique to the students' target behaviors, but similar in structure. Each story described the setting, the negative behaviors that the students display, other peoples' perception of their behavior and alternative behaviors that would be more appropriate. The stories were read each morning before Fin and Brady started their days. Included in Fin's social story for free choice was a visual choice chart depicting Fin's choices at this time. After reading the story in the morning, Fin was also required to choose an activity for free choice time (see Appendix I). Brady and Fin had their own copies of the stories that were kept at their desks. The students were given the choice to either read each story to an adult or have an adult read it to them in the morning before transitioning to their first activity for the day.

Statistical Data-Fin

Observations were continued during the two week period of phase two to determine the effectiveness of the social story intervention. Frequency of Behavior forms were used to determine the frequency of on task and negative target behaviors. Target behaviors were monitored to track the frequency of each behavior and the time Fin spent displaying socially inappropriate behaviors. After the two weeks of social story interventions, observations showed a

decrease in Fin's negative target behaviors and an increase of on task behaviors. Figures 6 and 7 illustrate the percent of time Fin was observed on task and the percent of time observed displaying negative target behaviors. Figure 6 shows how Fin spent his time in social skills after the socials stories were introduced and Figure 7 shows how Fin responded to the social stories during free choice time.

Figure 6

Fin's Social Skills: Phase Two

On Task 46%

Complaining 33%

Insults 13%

Physical Aggression 8%
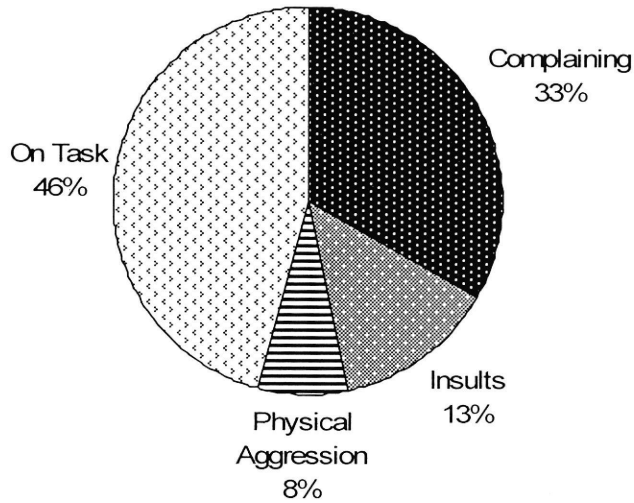
Figure 7

Fin's Free Choice Time: Phase Two
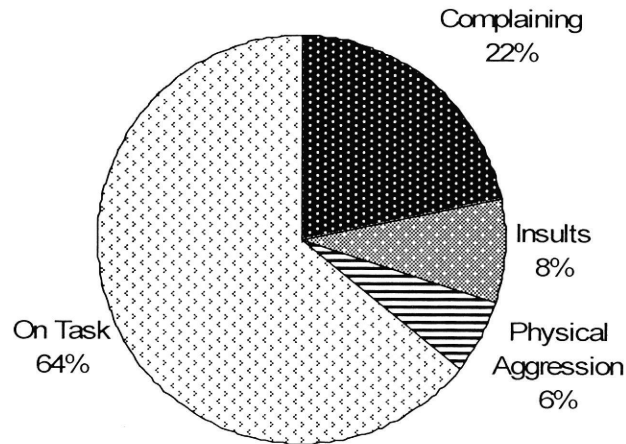
Statistical Data-Brady

     Observations were also continued with Brady during the two week period of phase two to determine the effectiveness of the social story intervention. Frequency of Behavior forms were used to determine the frequency of on task and negative target behaviors. Target behaviors were monitored to track the frequency of each behavior and the time Brady spent displaying socially inappropriate behaviors. After the two weeks of social story interventions, observations also showed a decrease in Brady's negative target behaviors and an increase of on task behaviors. Figures 8 and 9 illustrate the percent of time Brady was observed on task and the percent of time observed displaying negative target behaviors. Brady was on task 55% of the time. He spent 13% of his time invading others' space, 17% interrupting others and 15% blurting out at inappropriate times.

Figure 8

Brady's Check-In Time: Phase Two

Invasion of Personal
Space
13%

Interrupting
17%

On Task
55%

Blurting
15%
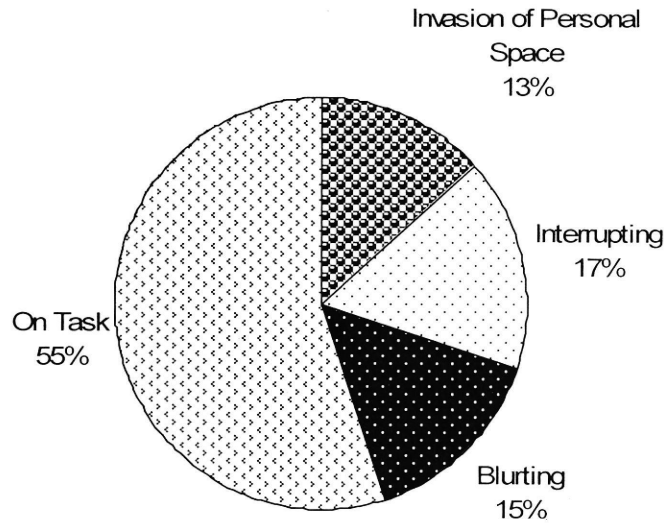
Figure 9

Brady's Social Skills Time: Phase Two

Invasion of Personal
Space
16%

Interrupting
14%

On Task
54%

Blurting
16%
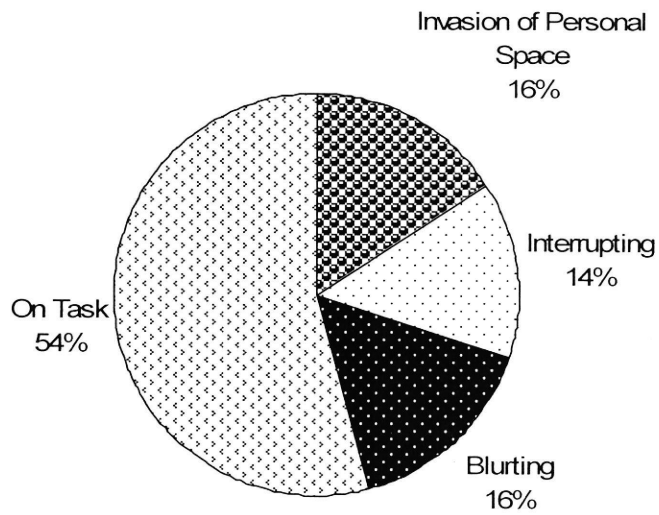
Phase Three

Contingency Mapping and Social Story Intervention

During Phase Three of the research process, a second intervention was introduced. Contingency maps were combined with the social stories. The contingency maps displayed peer reactions that were contingent on the students' behavior. Figure 10 illustrates an example of a contingency map used in this phase of the intervention. Figure 10 shows the student two behavior pathways. One way shows the consequences of using the negative target behavior and the other way shows the student the consequences of using the alternative behaviors. If the students displayed the negative target behaviors, the contingency map worked as a visual reminder of their peers' negative perception of them. The contingency map also shows alternative, socially appropriate behaviors from the social stories and the positive reaction or perceptions these behaviors may bring about in their peers. The contingency maps were similar to the social stories in that they provided pictorial representations of the social stories. Multiple copies of the contingency maps were printed and laminated for student use. One copy was paired with the social stories at the students' desks. The social stories were read during the two weeks of phase three and they were combined with the contingency maps. The maps worked as pictures for the story. The other copies of the contingency maps were distributed to the teachers and Program Support Assistants (PSA's). These staff used them as visual reminder cues for the students when negative target behaviors were observed during the school day.

Figure 10

Contingency Map
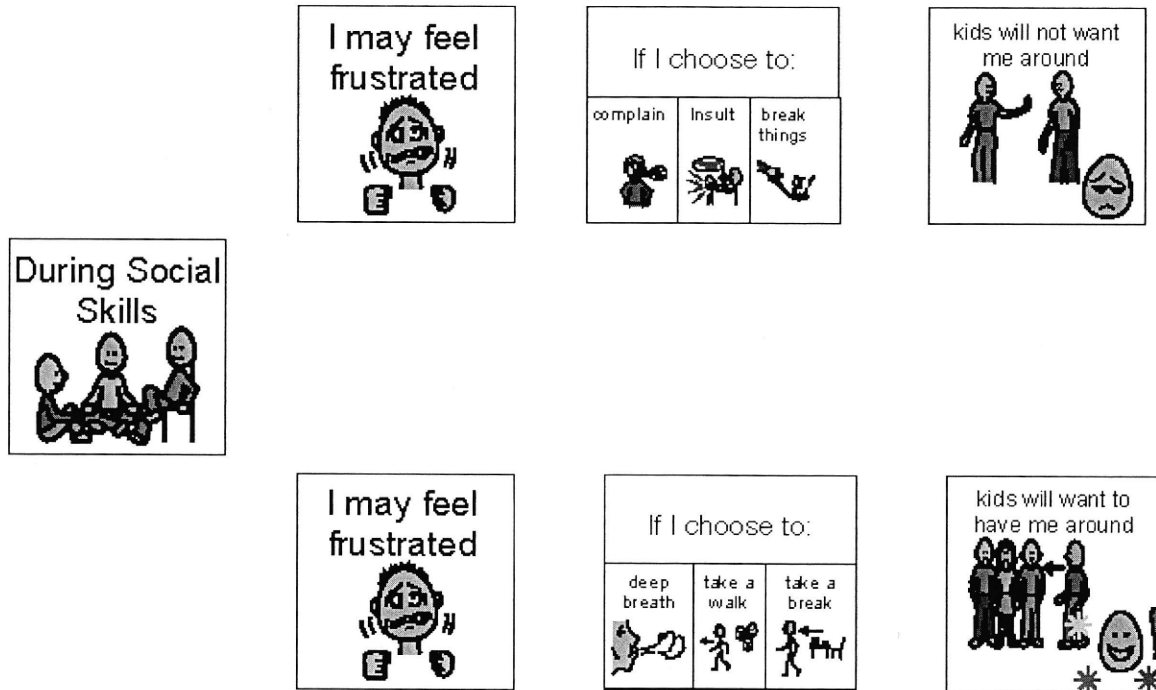
Statistical Data-Fin

Phase three consisted of two weeks of observations to determine the efficacy of the

intervention. Frequency of Behavior forms were again used to determine the effect of the

contingency map intervention paired with the social stories. Observational data showed a

decrease in overall targeted behaviors by Fin in both social skills and free choice time. Figures

11 and 12 illustrate the percent of time Fin was observed on task and the percent of time

observed displaying negative target behaviors.

Figure 11

Fin's Social Skills: Phase Three
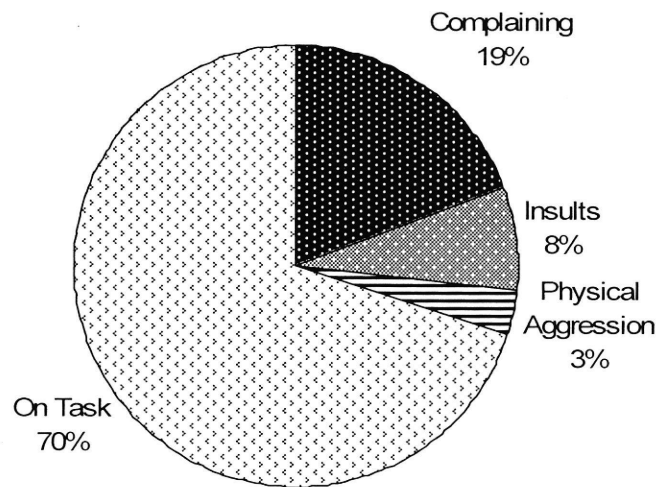
Figure 12

Fin's Free Choice Time: Phase Three
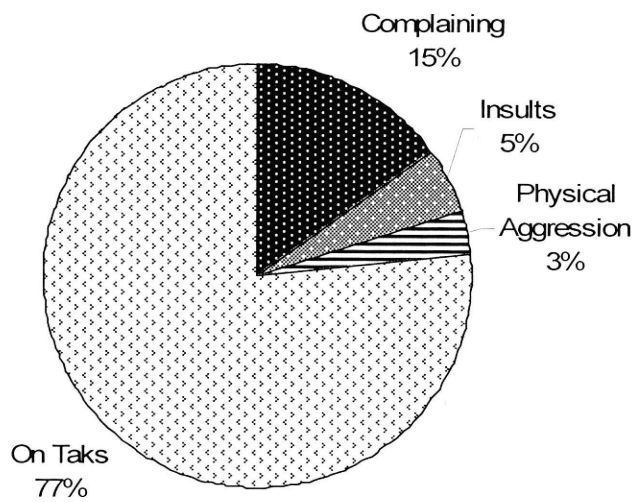
Statistical Data-Brady

Phase three also consisted of two weeks of observations to find out the frequency of negative target behaviors for Brady. Frequency of Behavior forms were again used to determine the effect of the contingency map intervention paired with the social stories. Observational data showed a decrease in overall targeted behaviors by Brady during check in time and social skills. Figures 13 and 14 illustrate the percent of time Brady was observed on task and the percent of time observed displaying negative target behaviors.

Figure 13

Brady's Check-In Time: Phase Three
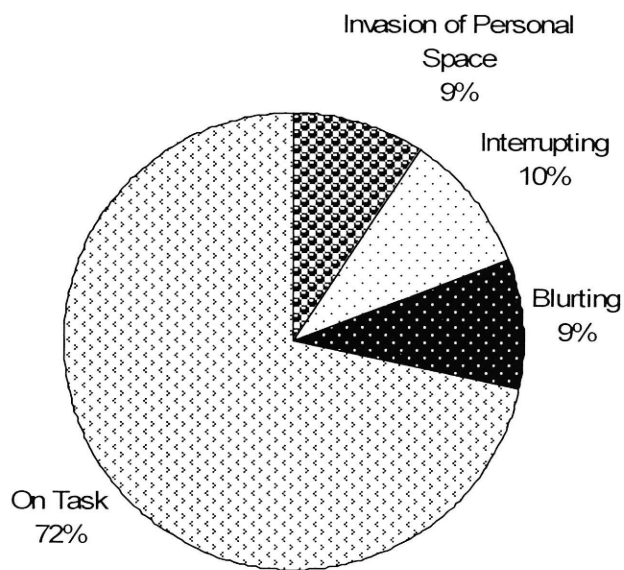
Figure 14

Brady's Social Skills: Phase Three

Invasion of
Personal Space
8%

Interrupting
8%

Blurting
7%

On Task
77%
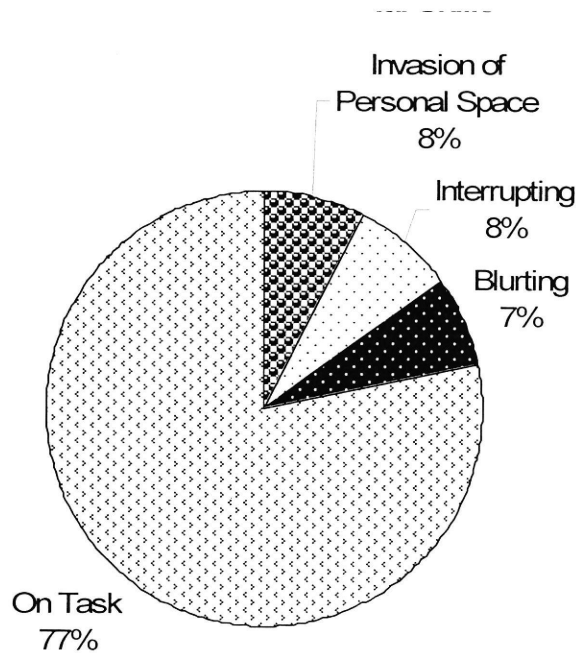
Comparative Analysis of All Phases

Observational Data

Brady and Fin were observed in two educational settings within a six week period. During the first two weeks (phase one) observational data was taken in multiple educational settings to determine difficult times within the school day and establish negative target behaviors. Following these two weeks, interventions were introduced to the students. Social stories were used for two weeks in phase two. During this time, Fin and Brady were observed in two settings to track their target behaviors. In Phase 3, contingency maps were paired with the social stories. Contingency maps were also used throughout the day as visual cues or reminders for the students. Throughout the six-week period, data were collected to determine the frequency of Fin and Brady's target behaviors in their chosen educational settings. Fin was observed during

social skills and free choice time. Brady was observed during check-in time and social skills. Observations showed a decrease in negative target behaviors in Fin and Brady.

Fin's negative target behaviors included complaining, insulting peers or adults and displays of physical aggression defined as throwing objects, pounding table or head, ripping paper or breaking pencils. Figure 15 shows the decrease in Fin's targeted behaviors throughout the three phases in social skills. On average in phase one, Fin spent 39% the time complaining, 15% of the time insulting others, and 13% of the time displaying his frustration or aggression physically. Overall, 33% of the time was spent on task, displaying appropriate behaviors during phase one. In Phase 2 there was a 7% decrease in complaining, 2% decrease in insults, and a 5% decrease in physical aggression. In Phase 3, there was an additional 14% decrease in complaining, 5% decrease in insults and a 5% decrease in physical aggression. On task behaviors increased to 70%.

Figure 15

Comparative Analysis of Fin's Observations During Social Skills

	Complaining	Insults	Physical Aggression	On Task
■ Phase One	39%	15%	13%	33%
▢ Phase Two	33%	13%	8%	46%
▨ Phase Three	19%	8%	3%	70%
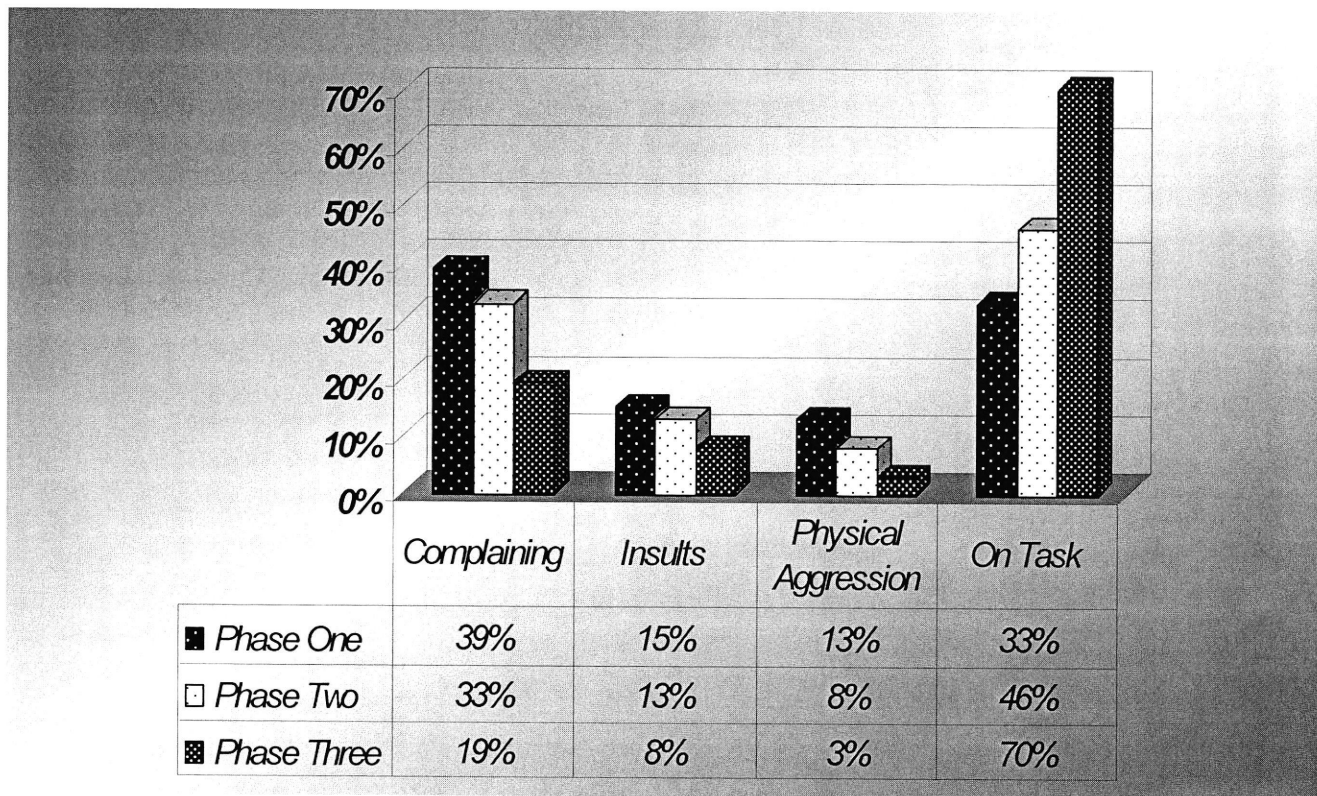
Figure 16 shows the decrease in Fin's targeted behaviors throughout the three phases during free choice time. On average in Phase 1, Fin spent 36% the time complaining, 16% of the time insulting others, and 17% of the time displaying his frustration or aggression physically. Overall, Fin spent 31% of the time during free choice time on task, displaying appropriate behaviors. In Phase 2 there was a 14% decrease in complaining, 8% decrease in insults, and a 11% decrease in physical aggression. In Phase 3 there was an additional 7% decrease in complaining, 3% decrease in insults and a 3% decrease in physical aggression. On task behaviors increased to 77%.

Figure 16

Comparative Analysis of Fin's Observations During Free Choice Time

	Complaining	Insults	Physical Aggression	On Task
■ Phase One	36%	16%	17%	31%
☐ Phase Two	22%	8%	6%	64%
▨ Phase Three	15%	5%	3%	77%
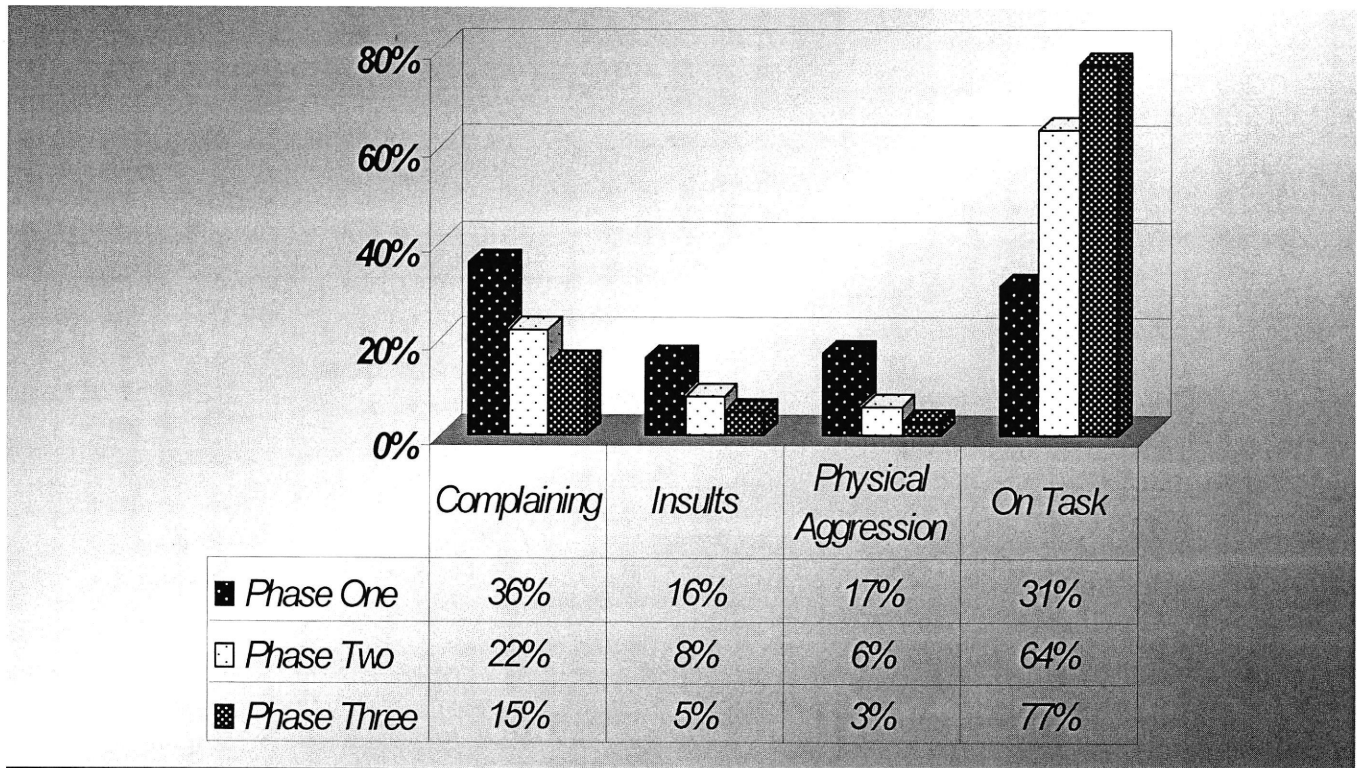
Brady's negative target behaviors included invading others' personal space and property, interrupting peers or adults and blurting out during quiet work or direct teaching time. Figure 17 shows the decrease in Brady's targeted behaviors throughout the three phases during check-in time. On average in phase one, Brady spent 22% the time invading others personal space, 30% of the time interrupting others, and 30% of the time blurting out. Overall, Brady spent 18% of check-in time on task, displaying appropriate behaviors. In Phase 2, there was a 9% decrease of invading others personal space, 13% decrease interrupting others, and a 15% decrease in blurting out. In Phase 3, there was an additional 4% decrease of invading others personal space, 7% decrease interrupting others, and a 6% decrease in blurting out. On task behaviors increased to 72%.

Figure 17

Comparative Analysis of Brady's Observations During Check-In Time

	Space Invasion	Interrupting	Blurting	On Task
■ Phase One	22%	30%	30%	18%
☐ Phase Two	13%	17%	15%	55%
▓ Phase Three	9%	10%	9%	72%
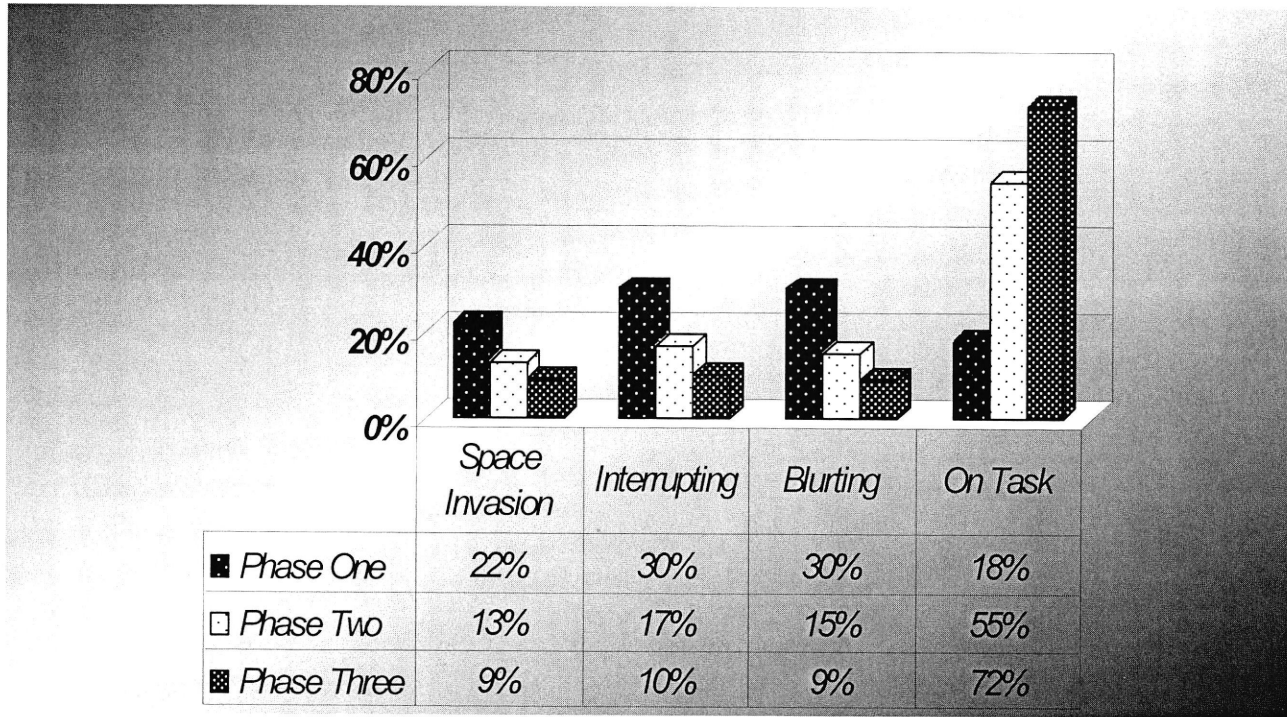
Figure 18 shows the decrease in Brady's targeted behaviors throughout the three phases during social skills. On average in phase one, Brady spent 21% the time invading others personal space, 33% of the time interrupting others, and 19% of the time blurting out. Overall, Brady spent 27% of check-in time on task, displaying appropriate behaviors. In phase two there was a 5% decrease of invading others personal space, 19% decrease interrupting others, and a 3% decrease in blurting out. In phase three there was an additional 8% decrease of invading others personal space, 6% decrease interrupting others, and a 9% decrease in blurting out. On task behaviors increased to 77%.

Figure 18

Comparative Analysis of Brady's Observations in Social Skills

	Space Invasion	Interrupting	Blurting	On Task
■ Phase One	21%	33%	19%	27%
☐ Phase Two	16%	14%	16%	54%
▨ Phase Three	8%	8%	7%	77%
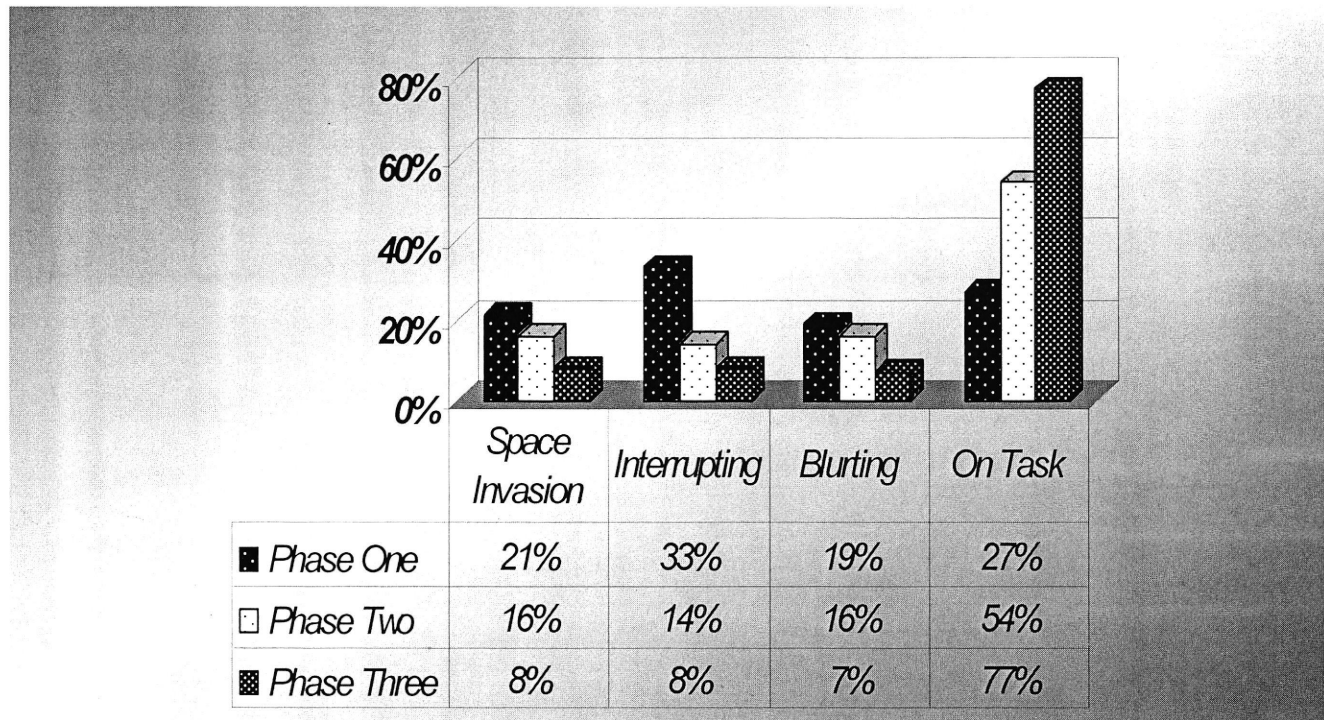
In summary these graphs show us that the interventions were successful. In phase two I saw a decrease in targeted problem behaviors with the introduction of the social story intervention. In phase three there was a further decline in targeted problem behaviors proving that the combination of the social stories and the contingency mapping was more effective. The use of a visual map helped the students process the behavior corrections quickly and efficiently. Contingency maps were used as a cue to remind the students of appropriate behavior choices which increased their time spent on task.

Implications and Conclusions

Discussion

  The primary focus of this study was to determine how effective social stories and contingency mapping were in reducing undesirable social behaviors in students with ASD. The specific questions addressed were: (a) To what extent will contingency mapping paired with social stories reduce acting out behaviors in students with ASD in unpredictable, unstructured times in the school day? (b) To what extent is the use of social stories paired with contingency mapping successful in replacing undesirable behaviors with desirable behaviors in high anxiety situations? and (c) To what extent are social stories paired with contingency mapping more effective at reducing undesirable behaviors than an intervention of social stories only? The results provide evidence that suggests contingency mapping paired with social stories reduces acting out behaviors in students with ASD in unpredictable, unstructured times in the school day and replacing these behaviors with desirable or on task behaviors in situations that may produce anxiety in students with ASD. Moreover, the social stories paired with contingency maps were more effective than the social stories alone. One possible reason for the success of the social stories and contingency maps could be that the students were introduced to visual supports to help them comprehend a situation.

  Using the intervention of social stories and contingency mapping introduced the students to a visual support that helped to explain situations that they had a hard time understanding. Before the interventions were in place, Fin and Brady were verbally redirected and cued. After the interventions they had concrete visual support systems. The social stories and contingency maps also made it easier for the students to interpret and understand the situations in a more efficient way. It seemed that additional meaning was obtained when the information was

presented visually. It is reasonable to believe that learners with ASD can typically be classified as visual learners based on results from this study and other findings in the literature. Most of my students learn best in pictures. When the information was presented in the form of a contingency map, they were able to process the information quicker and more effectively. Beyond presenting information in a visual manner, the social stories and contingency maps also helped to structure less structured and unpredictable times in the school day.

Check-in, free choice time, and social skills are difficult times for students with ASD in that they are more social times, making them unpredictable and at times unstructured. During check-in there are structures in place,, but there is also a level of non-structure in that it is a time when students and staff greet and talk with one another as the day gets started. Free choice time is probably the most unstructured and social time of the school day. The students make choices on what they want to do and they are allowed and encouraged to interact socially. Social skills lessons are structured, but social interactions, conversations and problems solving in social situations are expectations for this time, and are often difficult for students with ASD. By having social stories and contingency maps to refer to for these times, Fin and Brady were able to have a more structured framework on how to act during these unpredictable times. The environment was more comprehensible and expectations of behaviors were clearer. The contingency maps especially worked as a quick reference on appropriate and inappropriate behavior and the consequences of both.

During the research I observed that adding contingency mapping made the social story intervention more effective. I feel there are a few different reasons for this. First, as mentioned above, the contingency maps are a pictorial way to present information which allows the students to process it quicker and more efficiently. Students could look at the contingency maps and

understand behaviors and consequences in a fast, effective manner. The pictures helped them to comprehend different situations, their behaviors and others reactions. Second, the contingency maps were given to all the adults that worked with Fin and Brady. Instead of verbally prompting the students, the teachers and PSAs could use the maps as prompts or cues when needed. Lastly, because all of the adults had possession of the contingency maps, Fin and Brady were exposed to the information more frequently. The social stories were only read in the mornings. The contingency maps were used throughout the day to cue the students.

Questions for Future Research

During the course of this study and after reflecting on the findings many questions arose that would require more time and further research to begin to answer. One would be how dependent the students were on the prompts. Would the on task behaviors continue as the interventions were phased out or are the students dependent on the visual cues (contingency maps). Furthermore, I would like to know if the interventions allow the students to grasp and understand social situations and behavioral choices in a more comprehensive manner. Likewise, I am curious if the students would be able to generalize what they have learned in these settings to other educational or social settings. Can they generalize the appropriate behaviors? What training do teachers need to understand and implement contingency mapping in the classroom? Could students with ASD learn to play a more active role in problem solving and development of individual contingency maps? How effective are contingency maps independently? Did the students perceive a difference in their own anxiety level with the the interventions? There is very little research out there on contingency mapping. It is a new visual strategy only beginning to be used with students with ASD. Further study and research would be beneficial to find further uses and limitations of contingency maps.

Self Reflection

As a teacher who works directly and exclusively with students diagnosed with ASD, this research was directly linked to me personally. Over the years, I have been continually looking for information, strategies and techniques that would assist me in being a more effective and educated teacher for students with ASD. I have used social stories over the years but not to the extent that they were used in this study. Many times I will write a social story for a situation or student and after reading it a couple of times, discontinue use. Completing research in this area helped to remind me of the importance of continued implementation of interventions. Social stories have been a useful tool for me in the past. It was interesting to take continual data in order to see the effectiveness that social stories can have with students with ASD.

I believe that visual supports are crucial when working with students with ASD. There are many different visual supports that are available, but in order for any of them to work they must be unique to a student's situation. Before I began this research project, I was unaware of contingency mapping. When I came across it during my literature review, it completely changed my idea of how I wanted to structure my research. It was exciting to find a new visual support and after using it in the classroom I have found it is an effective tool that I can continue to use in the classroom. I also plan to share the visual support of contingency mapping with my colleagues. In the future, I hope to implement this visual support more and continue to take data on its effectiveness.

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Appendix A

CONSENT FORM

Pairing Social Stories and Contingency Mapping: Reducing Social Anxiety in Students with Autism Spectrum Disorder

You are invited to be in a research study looking at reducing anxiety in social situations. We ask that you read this form and ask any questions you may have before agreeing to be in the study.

This study is being conducted by me, Holly Eisen, as a part of my master's project in Education at Augsburg College. My advisor is Christopher Johnstone.

Background Information:
The purpose of this study is to examine whether the use of social stories paired with the visual strategy of contingency mapping will effectively reduce anxiety and acting out behaviors in children with Autism Spectrum Disorders during unpredictable times in the school day. The specific research questions are (a) Will contingency mapping paired with social stories reduce anxiety in students with ASD in unpredictable, unstructured times in the school day? (b) Is the use of social stories paired with contingency mapping successful in replacing undesirable behaviors with desirable behaviors in high anxiety situations? and (c) Are social stories paired with contingency mapping more effective at reducing anxiety and undesirable behaviors than an intervention of social stories only?

Procedures:
If you agree to be in this study, we would ask you to do the following things:
The use of the visual support of contingency mapping will be used along with social stories will be used with participants to help reduce stress/anxiety and promote desired behaviors during unstructured social times in the school day. Contingency maps are visual supports graphically depicting both the current and the alternative antecedent-behavior-consequence pathways related to the problem behavior. As part of this study I will be conducting a case study on your student. I will be conducting one on one taped interviews and recording observations using an Antecedent, Behavior, Consequence (ABC) form, and frequency of undesired behaviors form. The student will also use a 5-point scale to express his arousal/stress levels. This will go on over a 4 month period 2-3 times per week.

Risks and Benefits of Being in the Study:
There will be very minimal risk in this study which includes probing for personal information during one on one interviews. I will minimize this risk by assigning a student identification number to each student who I interview, and only my professor and I will know which name is associated with each number.

Indirect benefits to participation are contribution of knowledge in handling and reducing stress in students with Autism and help in identifying alternative behaviors during unfamiliar social situations and unstructured times in the school day. If this intervention is successful, it is likely that you (the student) will benefit from improved social awareness.

Confidentiality:
The records of this study will be kept confidential. If I publish any type of report, I will not include any information that will make it possible to identify you. All data will be kept in a locked file at school; only my advisor, Christopher Johnstone, and I will have access to the data and, any tape or video recording. If the research is terminated for any reason, all data and recordings will be destroyed. While I will make every effort to ensure confidentiality, anonymity cannot be guaranteed due to the small number to be studied.

Only I will have access to audio and videotapes and they will be kept private in a locked file.
They will be used for educational purposes only

Raw data will be destroyed by September, 2010.

Voluntary Nature of the Study:
Your decision whether or not to participate will not affect your current or future relations with Augsburg College or Westview Elementary School. If you decide to participate, you are free to withdraw at any time without affecting those relationships.

Contacts and Questions:
The researcher conducting this study is Holly Eisen.   You may ask any questions you have now. If you have questions later, you may contact me at Westview Elementary.

     Phone: (952) _____ .

     My advisor is Advisor's Name: Christopher Johnstone
Address: 3O Sverdrop, Campus Box 312
Department: Education
Telephone: (612) 330-1568
     Email:
johnstoc@augsburg.edu

You will be given a copy of this form to keep for your records.

Statement of Consent and Assent:

I have read the above information or have had it read to me. I have received answers to questions asked. I consent to participate in the study.

Student Signature _____
Date_____

[Signature of parent or guardian _____   Date_____]

[Signature of minor subject's assent _____   Date_____]

Signature of investigator _____   Date_____

I consent to be audiotaped or videotaped:

Signature _____ Date _____

I consent to allow use of my direct quotations in the published thesis document.

Signature _____   Date_____

     Please return this consent form and a copy will be sent back to you.

     Thank you,

     Holly Eisen

Appendix B
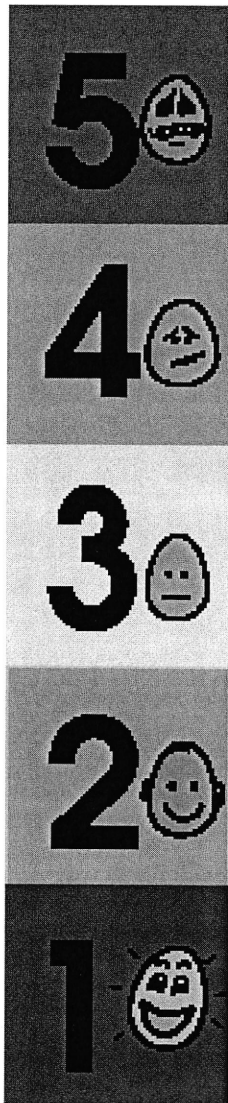
5	**EXTREMELY STRESSED OUT!** I am ready to blow up or shut down! I want to leave or go and hide!
4	To many worries. I am feeling stressed out by what is going on. I might make a bad choice.
3	A little stressed but I can handle it. I can manage my behavior, I feel O.K.
2	One or two worries but I feel pretty good. I am making good decisions.
1	No worries! I feel great. I am happy and doing my job.

Appendix C

A-9A-2
8/03

ABC / Anecdotal Data Recording Sheet

Student: _____

Target Behavior: _____

Date: _____

Anecdotal Data (Describe setting, time, activity, teacher/learner/peer interactions, etc...): _____

Time	Antecedent (Slow/Fast Triggers)	Target Behavior	Consequences
			Reinforce/Punish: Function:
			Reinforce/Punish: Function:
			Reinforce/Punish: Function:

Appendix D

WESTVIEW ELEMENTARY SCHOOL

■ KAREN J. TOOMEY, PRINCIPAL

225 Garden View Drive
Apple Valley, Minnesota 55124-6724
Phone (952) 431-8380
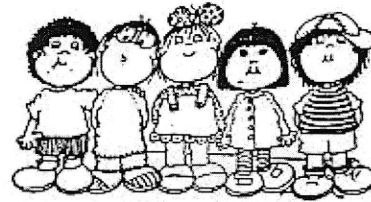
Children First

To Whom It May Concern:

This letter is to inform you that Holly Eisen, center-based special education teacher, has permission to conduct research on the topic of reducing anxiety and problem behaviors using social stories and contingency mapping in the Communication Interaction Program at Westview Elementary. She is approved to conduct interviews, and collect other necessary data on-campus at Westview Elementary School during the 2006-2007 school year. If you have any questions and/or concerns, please contact me directly at Westview Elementary, phone number: 952-431-8380.

Sincerely,

Karen Toomey

Karen Toomey, Supervising Principal

Educating our students to reach their full potential

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Serving Apple Valley, Burnsville, Coates, Eagan, Inver Grove Heights, Lakeville, Rosemount, and Empire and Vermillion Townships

Appendix_E

5 Day Data Collection Form

A-9A-3
8/03

Student: _____

Time	Target Behaviors	Date: _____ (Circle One) M T W Th F	Date: _____ (Circle One) M T W Th F	Date: _____ (Circle One) M T W Th F	Date: _____ (Circle One) M T W Th F	Date: _____ (Circle One) M T W Th F
		0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
		0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
		0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
		0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
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		0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
		0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5

Frequency by Period = $\dfrac{\text{Total Number of Periods Behavior Occurred}}{\text{Total Number of Periods}}$

Average Intensity = $\dfrac{\text{Sum of Numbers Marked}}{\text{Total Number of Periods}}$

Behavior Totals for 5 Days	Frequency	Average Intensity
Behavior #1	_____ % of Periods	_____
Behavior #2	_____ % of Periods	_____
Behavior #3	_____ % of Periods	_____

Behavior Totals By Day

						Frequency	Average Intensity
Behavior #1	M	T	W	Th	F	_____ % of Periods	_____
	M	T	W	Th	F	_____ % of Periods	_____
	M	T	W	Th	F	_____ % of Periods	_____
	M	T	W	Th	F	_____ % of Periods	_____
	M	T	W	Th	F	_____ % of Periods	_____
Behavior #2	M	T	W	Th	F	_____ % of Periods	_____
	M	T	W	Th	F	_____ % of Periods	_____
	M	T	W	Th	F	_____ % of Periods	_____
	M	T	W	Th	F	_____ % of Periods	_____
	M	T	W	Th	F	_____ % of Periods	_____
Behavior #3	M	T	W	Th	F	_____ % of Periods	_____
	M	T	W	Th	F	_____ % of Periods	_____
	M	T	W	Th	F	_____ % of Periods	_____
	M	T	W	Th	F	_____ % of Periods	_____
	M	T	W	Th	F	_____ % of Periods	_____

Behavior Totals by Time of Day

		Frequency	Average Intensity
Behavior #1	Time: _____	_____ % of Periods	_____
	Time: _____	_____ % of Periods	_____
	Time: _____	_____ % of Periods	_____
	Time: _____	_____ % of Periods	_____
	Time: _____	_____ % of Periods	_____
	Time: _____	_____ % of Periods	_____
	Time: _____	_____ % of Periods	_____
	Time: _____	_____ % of Periods	_____
Behavior #2	Time: _____	_____ % of Periods	_____
	Time: _____	_____ % of Periods	_____
	Time: _____	_____ % of Periods	_____
	Time: _____	_____ % of Periods	_____
	Time: _____	_____ % of Periods	_____
	Time: _____	_____ % of Periods	_____
	Time: _____	_____ % of Periods	_____
	Time: _____	_____ % of Periods	_____
Behavior # 3	Time: _____	_____ % of Periods	_____
	Time: _____	_____ % of Periods	_____
	Time: _____	_____ % of Periods	_____
	Time: _____	_____ % of Periods	_____
	Time: _____	_____ % of Periods	_____
	Time: _____	_____ % of Periods	_____
	Time: _____	_____ % of Periods	_____
	Time: _____	_____ % of Periods	_____
	Time: _____	_____ % of Periods	_____

Appendix F

Interview Questions

1. What times in the school day do you liked the best?

2. What makes these times good?

3. What times in the school day are hard?

4. What makes them hard?

5. Look at the 5-point scale. Name a time in the school when you are at a 1.

6. Name a time at school when you are at a 2.

7. Name a time at school when you are at a 3.

8. Name a time at school when you are at a 4.

9. Name a time at school when you are at a 5.

10. When you feel like you are stressed at a 4 or a 5, what things can you do to help yourself feel better? How can you get back to a 2 or 1?

11. What do you fell like when you are at a 4 or a 5?

*Additional questions may be added based on student responses and situations that may arise.

Appendix G

Social Skills: Fin

Everyday we have social skills. During social skills we do different activities. These activies usually have us talk or play with each other. We may also talk about how we feel during different situations. Sometimes this is hard to do. I don't always like to talk about feelings.

 During these times I may get angry or frustrated with my classmates or the teachers. When I am feeling frustrated or angry I might do things like complain, say insults or unkind words, or show my frustration physically by throwing things, pounding my head or the table, tearing paper or breaking pencils. This is not ok. When I do these things other people do not like it. My friends may be scared of me or get mad at me and they won't want to be around me. My teachers may feel upset and I will get in trouble. This is not good.

If I am feeling uncomfortable or frustrated during social skills I will try to choose other ways to handle it.   If I am uncomfortable or mad during social skills I can choose one of the following actions:

- Take a deep breath
- Ask a teacher to take a walk.
- Ask a teacher to take a break.

If I do these things my friends will feel better and want to hang out with me. My teachers will be happy. Everyone will be proud of me.

Appendix H

Free Choice Time: Fin

Everyday I get free choice time. During free choice time I can choose to do different activities. These activies include drawing, creating a craft, playing a game or going outside with a teacher. If I chose an inside activity I must be sitting down in the classroom.

Sometimes I don't know what I want to do or I may want to do something that is not a choice. If I can't do what I want or don't know what to do I feel bored.

When I am feeling bored I might do things like complain, say insults or unkind words, or show my frustration physically by throwing things, pounding my head or the table, tearing paper or breaking pencils. This is not ok. When I do these things other people do not like it. My friends may be scared of me or get mad at me and they won't want to be around me. My teachers may feel upset and I will get in trouble. This is not good.

I can make a choice for free choice time in the morning so I know what I am going to do. If I choose an activity in the beginning of the day I have something to look forward to and I won't be bored during free choice time. It is now my job to make a choice:

My Choice:

Now when I have free choice time I will:
1. Sit down during free choice time
2. Do my craft or activity
   or
3. Play a game that I have chosen

If I do these things my friends will feel better and want to hang out with me. My teachers will be happy. Everyone will be proud of me.

Appendix I

Keeping My Hands to Myself: Brady

I have my own special space bubble.

Others have their own space bubbles too.

When I am with others, I need to respect their space bubbles.

When I respect another student's space bubble, I do not touch their property.

When I respect another student's space bubble, I do not touch them.

I may say, "I like your shirt," or "I like your new Pokemon cards." When I respect another student's space bubble, I do not touch, them, their clothes, or anything on their desk.

Sometimes I ask another person a question. When I respect another person's space bubble, I do not continue to tap them until I get an answer.

Sometimes I need help. If I need help, I may ask someone to please help me.

Sometimes others need help. They will ask for help when they need help, too. When I respect another student's space bubble, I do not help them without being asked.

When I am at school, I am with other kids and teachers. When kids talk with me, they stand about the length of an arm away. When I talk with other kids, I should try to stand about an arm's length away too.

If I stand to close, I am in the personal space of other kids or teachers. They don't like it if I am in their personal space. They won't want to be around me.

I will try to respect others when I come to school by giving them personal space. I will try to respect other people's space bubbles. My teachers, and other students will be happy when I respect their space bubbles.

Appendix J

Talking at School

When I am at school, there are certain times I can talk. When I am outside for recess, I can talk and even yell. When I am at lunch, I may talk to my neighbor. I should use an inside voice. An inside voice is a quiet voice.

When I have free time in class, I may talk quietly.

When I raise my hand and the teacher calls on me, I may talk.

When I get permission to talk, I may ask a question about my work. I may answer a question. I may tell the teacher something about what we are talking about in class. If I just want to talk about my own subject, I should wait until after school.

I will try my best to only talk when I have permission.

I will try my best to talk about the subject. My teacher will be happy.

When I get permission first to talk. My teacher will be happy when I talk about the subject.

When I am at school, there are certain times I should not talk:

- When the teacher is talking, I should not talk or blurt out.

- When another student is telling the class something, I should not talk or interrupt.

- When other people are talking or sharing their ideas I should not interrupt.

- When it is time to work, I should not blurt out.

I will try my best to be quiet when it is not a time to talk. My teacher will be happy when I am quiet when it is not a good time to talk.
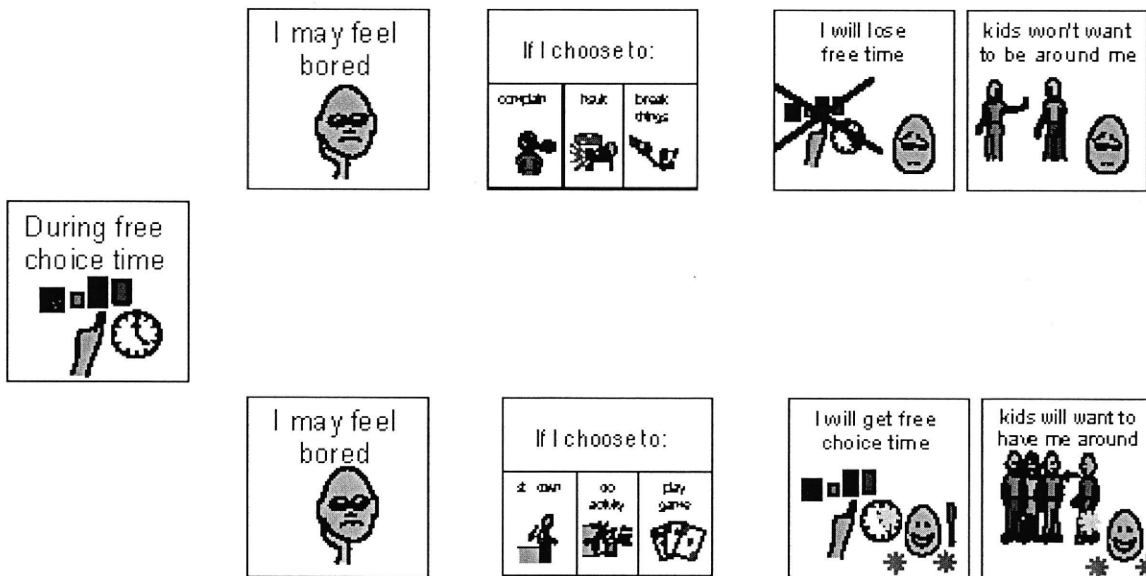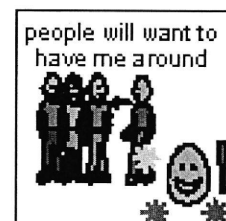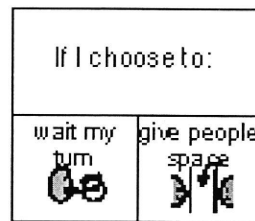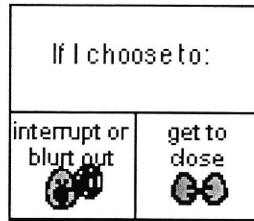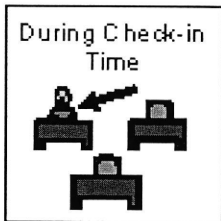
Appendix K

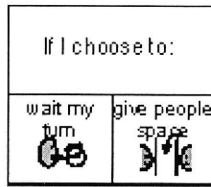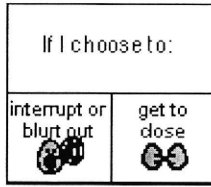Fin's Social Skills Contingency Map:
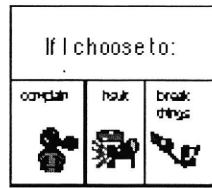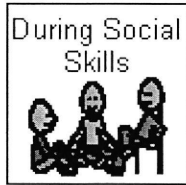
Appendix L

Fin's Free Choice Time Contingency Map:

Appendix M

Brady's Check-In Contingency Map:

Appendix N

Brady's Social Skills Contingency Map: