

6-11-2004

## Use of the Power Card Strategy as an Intervention with an Elementary School Student with Asperger Syndrome: Increasing On-Task Behavior in the General Education Setting

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Use of the Power Card Strategy as an Intervention  
with an Elementary School Student with Asperger Syndrome:  
Increasing On-Task Behavior in the General Education Setting

by

Jane M. Devenport

A thesis defense in partial fulfillment  
of the requirements for the degree of  
Master of Arts in Applied Behavior Analysis  
College of Graduate Studies  
University of South Florida

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Date of Approval:  
June 11, 2004

Keywords: use of special interests or obsessive preoccupations to increase acceptable behavior, visually based strategies, cognitive behaviorally based strategies, rule governed behavior, mediated generalization

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Jane Devenport

ABSTRACT

It has been slightly more than a decade since Asperger syndrome was recognized as a distinct sub-category of autism disorder and was first given a diagnostic category in the DSM-IV. An abundance of suggestions, ideas, and recommendations for treatment have been offered, yet there is only a limited amount of research that empirically evaluates these interventions. This study explores an intervention, the Power Card Strategy (PCS), previously demonstrated to be effective with improving social behaviors with a young girl with autism, by employing the student's area of special interest. An advantage to this intervention is it is relatively easy to implement, requires minimal time, and the cost is virtually nil. This study used a reversal design to investigate the utility of the Power Card Strategy to increase on-task behavior during teacher-directed math instruction in a general education class. The results of this study suggest that the PCS was effective for increasing on-task behavior with this student. An upward trend was observed in the student's on-task behavior during the intervention condition. Upon return to the baseline condition, the student's on-

task behavior stabilized at levels observed during intervention, suggesting that skills acquired during the intervention phase maintained.

## Chapter One

### Introduction

Hans Asperger (1906-1980), a Viennese physician who specialized in pediatrics, is credited for giving the first insights into Asperger Syndrome. Asperger observed that a select group of boys, with whom he came into contact, demonstrated notably unusual characteristics of social peculiarities and social isolation, although their cognitive and language development appeared within normal limits (Myles & Simpson 2002; Gutstein & Whitney, 2002). Along with these peculiarities, Asperger recognized positive attributes, including a high level of independent thinking and a propensity for special achievement (Cumine, Leach, & Stevenson, 1998). Of further interest to Asperger was the impact the boy's behavior appeared to have on others with whom the boys interacted, especially their parents and teachers, and the boy's susceptibility to bullying and teasing by peers (Cumine, Leach, & Stevenson, 1998).

In 1944 Asperger presented his paper, "Autistic psychopathies in childhood" explaining this developmental condition (Cumine, Leach, & Stevens, 1998). However, his work went unnoticed due to complications presented by World War II. The fact that Asperger's paper was written in German further prolonged English speaking clinicians from having access to this information (Henderson, 2001; Safran, Safran, & Ellis, 2003). It was not until 1981 when Wing introduced literature on Hans Asperger's vital work, along with her own, that this syndrome began to receive increasing attention (Myles, 2002; Safran, Safran, & Ellis, 2003). Another influential variable that further advanced the

recognition of this syndrome as a distinct sub-category of autism was the translation and publication of Hans Asperger's paper into English in 1991 (Cumine, Leach, & Stevenson, 1998); and in 1994, the inclusion of the disorder as a diagnostic category in the Diagnostic and Statistical Manual of Mental Disorders- Fourth Edition (DSM-IV; American Psychiatric Association, 1994) (Henderson, 2001; Smith Myles & Simpson, 2002).

Griswold, Barnhill, and Smith Myles (2002), discussed the prevalence of Asperger Syndrome (AS) indicating that according to Kadesjo, Gillberg, and Hagberg (1999), of every 10,000 births there are 48 cases of AS, and it appears to occur more frequently in males, with a likely ratio of 10 boys to every girl (Cumine, Leach, & Stevenson, 1998). The DSM-IV-TR Manual indicates that Asperger Syndrome falls under the main category of Pervasive Develop Mental Disorders and distinguishes the syndrome from Autism Disorder pointing out that, in contrast to Autism Disorder, there are no clinically significant delays in language, cognitive development, or in the development of age-appropriate self-help skills, adaptive behavior areas (social interactions being the exception), and no significant lack of interest in the environment. The manual gives the diagnostic criteria for Asperger's Disorder as the following:

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

- 1) marked impairment in the use of multiple nonverbal behaviors such as eye-to- eye gaze, facial expression, body postures, and gestures to regulate social interaction

- 2) failure to develop peer relationships appropriate to developmental level
- 3) a lack of spontaneous seeking to share enjoyment, interests, or achievements with other people (e.g., by a lack of showing, bringing, or pointing out objects of interest to other people)
- 4) Lack of social or emotional reciprocity

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

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

C. The disturbance causes clinically significant impairment in social, occupational, or other important areas of functioning.

D. There is no clinically significant general delay in language (e.g., single words used by age 2 years, communicative phrases used by age 3 years).

E. There is no clinically significant delay in cognitive development or in the development of age-appropriate self-help skills, adaptive behavior

(other than in social interactions), and curiosity about the environment in childhood.

F. Criteria are not met for another specific Pervasive Developmental Disorder or Schizophrenia.

There is debate within psychiatry and mental health fields as to whether Asperger Syndrome can actually be differentiated from High Functioning Autism (HFA) (McLaughlin-Cheng, 1998; Safran, 2001; Meyer & Mineshew, 2002). An article published in 1995 by Klin, Volkmar, Sparrow, Cicchetti, and Rouke examined the validity of AS by comparing the neuropsychological profiles in this condition and HFA. The study suggested that an empirical distinction existed because the group differentiated significantly in eleven neuropsychological areas. As pointed out by Safran, 2001, there have been a number of studies investigating various characteristics of the disorder, such as pragmatics, pedantic speech, and interpersonal awareness. The outcomes of these studies generally support differential diagnosis. However, Safran (2001) refers to Szatmari's (1998) literature review on this topic. Szatmari concludes that data relating to differential diagnosis of AS from HFA are conflicting. Safran (2001) refers to Kunc and Mesibov (1998) to bring a level of resolve to this issue, stating:

While the stigma of labeling has been debated for decades in special education, understanding and awareness of AS by educators and parents is the crucial first step. Accurate diagnosis therefore serves as a vehicle to convey information, but does not substitute for individualized instruction. Without diagnosis, however, adults may view AS-related behaviors as being intentional,

blaming youngsters for failing to control their often socially undesirable actions. Further, without appropriate educational supports, students may be left to fend for themselves in a world where social cues hold little meaning, where repeated failure in interpersonal relationships creates anxiety and social rejection. Until demonstrated otherwise, individualized programming accompanied by understanding of the syndrome remains the recommended course of intervention (p.153).

Currently there is no clear-cut assessment procedure that can definitively confirm the diagnosis of Asperger Syndrome. The diagnosis must be inferred through careful interpretation of behavior patterns and various types of assessment including intellectual ability, academic achievement, developmental history, adaptive behavior, and motor skills (Cumine, Leach, & Stevenson, 1998; Myles & Simpson, 1998). Myles and Simpson (2002) indicate that it is common for most clinicians and other professionals to use the DSM-IV-TR criteria for the purpose of making a diagnosis. They conclude, however, that this source falls short in providing a broad and complete understanding of the disorder, in that it fails to thoroughly address the characteristics that most directly relate to and affect school performance. Therefore, Myles and Simpson (2002) stress the importance of educators having a solid understanding of this disorder in order to effectively meet the needs of these students. They state “school professionals must have a working knowledge of the school-related social, behavioral/emotional, intellectual/cognitive, academic, sensory, and motor

characteristics of students with AS to effectively meet these individuals' complex and variable school, home and community needs" (p.2).

In an attempt to give a clearer picture of the social, academic, and behavioral experiences of children identified with Asperger syndrome Church, Alisanski, and Amanullah (2000) conducted a study involving 40 children with AS between the ages of 3 and 15 years. The study illustrated that both across time and within age groups the children had unique but similar developmental paths. These variances, as well as, consistencies were apparent in their social, academic, and behavioral experiences. This study by Church, et al., demonstrated several important points worth noting. First, they emphasized very specific problems that appeared to correlate to stages of maturation:

The behavioral issues and early sensory issues of preschoolers were felt to be dramatic. During elementary school, many of the children were diagnosed with Asperger syndrome as their social skills deficits became more prominent. During middle school, children began feeling their differences and expressed sadness, anxiety, and rejection. Teenagers faced increasing anxiety, obsessive-compulsive tendencies, behavioral challenges, and ever-changing social skills deficiencies. These age-related areas of difficulty need to be targeted for intervention (p. 20). Secondly, social skills abilities among the 40 children in the study were wide-ranging, but remained the most profoundly challenging area of concern for all involved (Church, Alisanski, & Amanullah, 2000). Cumine, Leach, & Stevenson (1998) point out that many children with Asperger syndrome can develop interpersonal skills, usually between the ages of 9 and 14. However,

this is believed to be a significant delay when compared to typical children who usually develop these skills by age 4. The literature suggests that much of the social ineptness on the part of AS children may, in part, be due to “Mind Blindness”. In 1985, Baron-Cohen, Leslie and Frith theorized that individuals with autism suffer from a form of ‘Mind Blindness’ or lack, of what they refer to as, ‘Theory of Mind’ (Cumine, Leach, & Stevenson, 1998; Myles & Simpson 2002). The premise of this purports that children with autism display a significant deficit in their ability to recognize or “read” the feelings, thoughts, beliefs, and intentions of other people and to respond accordingly (McAfee, 2002). Regarding children identified with AS, Neihart, Billings and Montana (2000) state:

Theory of mind also subsumes the ability to take perspective; to be aware of oneself and to take another perspective at the same time. Children with AS have great difficulty understanding the perspective of others which is what makes their social adjustment so challenging (p. 224).

Cumine, Leach, and Stevenson (1998) refer to Jordan and Powell (1995) who identify a number of educational implications associated with ‘Theory of Mind’ insufficiencies, such as: difficulty with predicting and reading intention or understanding motives behind the behavior of others, leading to fear and avoidance of other people; difficulty in understanding the emotions of others, as well as their own, leading to the inability to empathize; difficulty understanding that behavior affects how others think or feel, leading to a lack of motivation to please. These are just some of examples of the hurdles with social impairment as they are presented in AS. Therefore, it has been proposed that it is not the

lack of desire for social engagement, on the part of the individual with AS, but a triad of impairments that result in an underlying social deficit (Cumine, Leach, & Stevenson, 1998), leaving the AS individual ill-equipped to handle various social situations. All too frequently, the result of this is social isolation (Neihart, Billings & Montana 2000).

Cumine, Leach, and Stevenson (1998) explore two other theories, Central Coherence Deficit and Executive Functioning Deficit, in an attempt to further explain features that contribute to impaired functioning in students with Asperger syndrome. Cumine, Leach, and Stevenson (1998) site the work of Uta Frith (1989) who describes “central coherence” as the ability to pull together assorted information to generate higher-level meaning in context. Some characteristics of “Central Coherence Deficit”, includes the insistence on sameness, attention to detail rather than the whole, obsessional preoccupations, and the existence of special skills (Cumine, Leach, & Stevenson, 1998). Executive Functioning Deficit can be described as the ability to plan and organize tasks, monitor one’s own performance, control unsuitable responses, accept constructive criticism or feedback, and suppress distracting stimuli (McAfee, 2002). McAfee points out that the educational implications of deficits in executive functioning are immense as they frequently affect the AS student’s ability to accomplish many of the work and self-help tasks associated with success in school environments.

As the number of children being identified with Asperger syndrome continues to grow, educational professionals are finding that their ability to effectively serve this population is an extremely challenging endeavor (Myles &

Simpson 2002). The literature suggests that much of the difficulties stem from an inadequate understanding related to the perplexities of this disorder and the seemingly contradictory characteristics of AS (Myles & Simpson 2002; McAfee, 2002; Neihart & Billings, 2000). Myles and Simpson (2002) offer one such example, suggesting that educators find it challenging to separate the AS student's ability for verbosity from a true understanding of language. In other words, AS students tend to sound more competent than they really are, potentially leading to inaccurate assumptions of the student's academic and social abilities. Cumine, Leach, and Stevenson (1998) point out that the AS student may have a wealth of knowledge, but may lack the ability to apply the knowledge in meaningful way. Finally, Church, Alisanski, and Amanullah (2000) advise the child with AS may yet face another challenge, "looking normal"; implying that disabilities are typically judged by society on outward appearances. Therefore, the literature suggests that the first step towards planning effective interventions for the student with Asperger syndrome is to have a comprehensive understanding of the educational implications associated with the psychological theories of Theory of Mind, Central Coherence Deficit, and, Executive Functioning Deficit (Cumine, Leach, & Stevenson, 1998). Because the diagnosis of Asperger syndrome as a distinct sub-category of Autism Disorder is relatively new, limitations of time have impacted the extensive development of intervention programs specifically designed and empirically researched for these students (support this notion, suggesting that the research in the area of Asperger syndrome is in its early stages, especially when it comes to an understanding of

the academic achievements of individuals with this disorder. They contend that further research is needed to develop an empirical foundation for understanding the academic characteristics of student with AS; and in order for educators to identify and implement the best instructional methods for students with AS.

Safran, et al (2003) suggest that, in fact, most AS specific interventions are from descriptive, anecdotal reports and that the majority of the practices that assert to be research-based are actually generalized from studies with related disability groups. Therefore, Safran, et al (2003) recommend that in order for professionals to develop acumen for the best school based approaches, they must combine the most relevant research with carefully reported case studies.

The best knowledge-based practice according to Safran, et al (2003) includes intervention strategies in the context of Academics, Behavior, and Communication. Simpson and Smith Myles (1998) discuss ways to structure the environment for social success. They suggest that the AS student responds best when clear instructions for appropriate social behaviors are provided and accompanied by models clearly demonstrating the acceptable behavior, when opportunities are offered to practice the acceptable behavior, and when feedback is given for acceptable and unacceptable social performance (Simpson & Smith Myles, 1998). They also recommend building on the AS students preference for predictability, order and consistency, by offering a schedule that outlines the daily events and forewarns of any change in routine can assist in setting up a successful environment for the AS individual. While data are limited on the effectiveness of the following strategies, there is descriptive literature that

suggest that social skills training, social stories, and structured teaching may be useful for, and merits more research for students identified with Asperger syndrome (Safran, 2001).

The descriptive literature suggests that social stories aid in addressing the “theory of mind” deficits frequently apparent with student with AS (Golden-Edelson, 2003). According to Swaggart, Gagnon, Jones Bock, Earles, Quin, Smith Myles, and Simpson (1995), a social story describes social situations in terms of relevant social cues and appropriate responses (p.1). Golden Edelson (2003) explains that Carol Gray, the developer of ‘social stories’ seeks to include answers to questions that these students need to know to allow for appropriate interactions in social situations. Hagiwara and Smith Myles (1999) refer to the work of Gray and Garand (1993), who emphasize that this instructional technique, which uses pictures or symbols along with short sentences put in a small book format, provides a means to reduce the confusion for individuals with autism that is brought on by verbal instructions and social interactions. Social stories include four types of sentences: 1) Descriptive sentences are utilized to describe what people do in particular situations; 2) Directive sentences direct the student to an appropriate preferred response; 3) Perspective sentences present others’ reactions to a given situation in order to teach the AS person how others’ perceive various events; and, 4) Control sentences are used to identify strategies the person can use to help maintain memory and comprehension of the social story (Swaggart, Gagnon, Bock, Earles, Quinn, Smith Myles, & Simpson, 1995). Golden Edelson (2003) points out that a benefit of social stories is that they are

constructed to address the specific needs of the individual, and, also, they are especially useful in teaching routines, how to complete various activities, how to ask for assistance, and how to behave when confronted with feelings of frustration and anger.

Although no specific study involving persons identified with AS has been located, a study by Lorimar, Simpson, Smith Myles, and Ganz (2002) was conducted to determine the efficacy of a social story intervention in a home setting with a five-year-old boy with autism. However, consistent with students identified with AS, this boy's cognitive ability was estimated to be in the average to above average range, he could communicate his wants and needs within normal limits for his age-range, his main speech deficits were in the area of social pragmatics, he exhibited some obsessive compulsive behavior, and received occupational therapy to address fine motor skills development and sensory integration concerns. Using an ABAB design the intervention was constructed with the goal of decreasing precursors to tantrum behavior. Two social stories were presented and withdrawn while using an event recording procedure in which the frequency of interrupting verbalizations, determined to be precursors to tantrum behavior, were tallied. Results revealed a dramatic decrease in interrupting verbalizations and tantrums when the social stories were initially introduced following the baseline condition, a return to baseline condition resulted in a clear upward trend in target behaviors, and finally, upon reintroduction of the social story intervention, the target behaviors took a dramatic downward trend.

There is a vast collection of literature on the use of social skills training for individuals with various disabilities and a wide range of ages. However, according to Barnhill, Cook, Tebbenkamp, and Smith Myles (2002) few studies have been carried out that exclusively focus on social interventions for children with AS. Marriage, Gordon, and Brand (1995) carried out the only social skills training group in the research literature specifically designed for students with AS. Their research was a descriptive study that included eight boys diagnosed with AS between the ages of 8 and 12. The study utilized role-playing, video taping, and game playing. For the purpose of measuring improvement, parents were asked to complete a pre- and post-rating scale. The results of the parent feedback did not indicate that the participants successfully generalized the skills to home, school, or community settings. However, researchers noted improvements in the acquisition of some specific social skills with most of the participants.

In 2002, Barnhill, Cook, Tebbenkamp, and Smith Myles conducted a study to investigate the usefulness of a social skills intervention targeting nonverbal communication (deciphering varying tones of voice and rates of speech, understanding nonverbal sound patterns, gaining meaning from others' marked emphases in speech, and facial expressions of others). The participants included eight adolescents with AS and related pervasive developmental delays. To assess the participants' nonverbal language skills a diagnostic tool, The Diagnostic Analysis of Nonverbal Accuracy 2 (DANVA2; Nowick 1997) was utilized. The DANVA2 included a pre- and posttest measure. Training was

conducted over an eight-week period and employed several teaching strategies that included role-playing, modeling, and reinforcement through feedback. The first four weeks focused on teaching paralanguage; the last four weeks emphasized identifying and responding appropriately to the facial expressions of others. The results of the study demonstrated statistically insignificant gains in nonverbal communication skills development. However, the researchers indicated that two major outcomes emerged that were encouraging: 1) Some social relationships between the participants developed and maintained after the study was concluded; and, 2) Following intervention several of the participants continued to demonstrate the ability to identify the facial expressions of others they encountered in the natural community settings, although they did not appear to respond appropriately to the emotions being expressed (Barnhill, et al, 2002).

Charlop and Milstein (1983) suggested that as a teaching tool, modeling is cost-efficient and convenient. As an instructional method, modeling is one procedure that has shown promise for promoting the acquisition of new skills and generalization for autistic children (Charlop & Milstein, 1989). Currently, the use of video technology is growing as a promising instructional tool with children with a variety of disabilities (Strumey, 2003). Since its inception it has been utilized in the field of exceptional student education to advance behavioral interventions in areas such as social skills training (D'Ateno, Mangiapanello, & Taylor, 2003), language acquisition (Wert & Neisworth, 2003), and academic performance (Kinney, Vedora, & Stromer, 2003). However, using this technology to create interventions has not been specifically targeted for use with the AS population,

therefore, it is necessary to review research involving individuals within a closely related disability group, such as high functioning autism. In 1989, Charlop and Milstein conducted a study using a video modeling procedure. The participants in the study were three boys with autism. Based on their assessed mental ages, presence of speech and evidence of some social skills, all three boys were considered to be high functioning. In spite of these findings the boys rarely asked questions, participated in spontaneous speech, or engaged in conversation, and their history of generalizing newly acquired speech skills was poor. Though attempts had been made to teach conversational skills through traditional prompting and reinforcement procedures, the boys failed to acquire the skills. The study required the boys to watch videotaped conversations consisting of two individuals discussing particular toys. When the boys had met the criteria that had been set for learning (vocal response that were the same or similar as those presented in the video model), generalization of the conversational skills acquired was then assessed. This was accomplished by presenting untrained topics of conversation, a different toy, unfamiliar persons, and different settings. The results of the study supported the use of video modeling to promote conversational speech, and the children were able to generalize and maintain the skills learned over a period of 15-months.

Keeling, Smith Myles, Gagnon, and Simpson (2002) refer to a study done by Mercier and colleagues (2000) whose investigation concluded that individuals with autism spectrum disorders who have narrowly framed areas of interest find these special interests highly reinforcing. Working from this premise, Keeling et

al, investigated a technique called the Power Card Strategy (Gagnon, 2001) in order to empirically examine the use of a special interest or obsessive preoccupation to increase socially acceptable behavior.

The Power Card Strategy is a visually based strategy that consists of two parts: a personalized script and a Power Card. The script, which is typically read to the individual prior to the problematic event, contains the following components: 1) A brief scenario, written at the individual's comprehension level that focuses on the person's special interest and the behavior of concern or troubling circumstance. If pertinent, visual representations of the special interest may be included; 2) The scenario presents a solution to the problem, similar to the one experienced by the individual, but is implemented through the special interest model or hero; 3) Also, the scenario gives a rationale for why it is in the best interest of the special interest hero or model to use a positive behavior; 4) The problem-solving method is outlined by presenting the brief, three to five step strategy used by the special interest model or hero, including how success is experienced by the model or hero; and, finally, 5) A motivational note to the individual that encourages the use of the new behavior that was demonstrated to be successful when implemented by the special interest model or hero (Keeling, Smith Myles, Gagnon, & Simpson, 2003). The participant in the study by Keeling et al, was a 10-year-old girl with a diagnosis of autism who had a significant interest in Power Puff Girls. The girl exhibited poor sportsmanship behaviors, in the form of disapproving vocalizations, whining, and screaming, when she lost a leisure or academic game, resulting in her peers avoiding

playing games with her. This study employed a single-subject, multiple-baseline-across-conditions design. Duration data were collected on the target behaviors across three game conditions. During baseline, the girl engaged in the targeted inappropriate behaviors across all settings. During intervention, when the power card script and card, featuring the Powder Puff Girls, were introduced the behaviors steadily decreased resulting in no display of the target behaviors by the final phase of the study (Keeling, Smith Myles, Gagnon, & Simpson, 2003). As Keeling, et al, (2003) suggest, perhaps the most significant result of this study was related to the issue of generalization. Anecdotal reports indicated that the student began to independently transfer the new responses to novel game situations with peers.

According to Keeling, Smith Myles, Gagnon, and Simpson (2003) the Power Card Strategy appears to propose an adaptable and resourceful process by which appropriate replacement behaviors can be taught. Keeling, et al, also, emphasize that particularly with students who have a hyper-focus in a special interest area, such as students with AS, and who tend to respond well to cognitively oriented and cognitive behaviorally based intervention, the Power Card Strategy has wide-ranging potential.

The literature with regards to AS consistently emphasizes that students identified with this disorder often lack the skills necessary to manage the day-to-day routines and social demands presented by the school environment (Cumine Leach & Stevenson, 1998). The interventions mentioned above all appear to offer viable solutions to many of the behavioral dilemmas presented by students

identified with AS. However, when determining the appropriateness of any behavioral intervention, one must consider the context in which it will be implemented. Because of their average to above average intelligence, the research suggests that students identified with Asperger Syndrome are often served in a general education setting (Neihart & Billings, 2000). That being the case, it is known that the circumstances faced by most general education teachers typically involve large class sizes, limited resources, and little time for planning. Therefore, it is imperative that practicality, utility, and feasibility be of utmost importance when choosing an intervention under these conditions. Of the interventions that were explored, the Power Card Strategy appeared to meet these requirements, as it is relatively simple to develop, the time and training requirement for implementation is minimal, and the cost is virtually nil. Therefore, the goal of the present study was to assess the effectiveness of using the Power Card Strategy to emphasize specific behaviors to promote successful classroom functioning in a general education classroom with an elementary student diagnosed with Asperger Syndrome.

## Chapter Two

### Method

#### Participants and Setting

The Coordinator for Exceptional Student Education (ESE) services is responsible for programming for Autistic Programs in St. Johns County School District, and she suggested potential participants for this study. She identified five potential participants, and a screening took place using a teacher questionnaire. This was developed by the researcher to address issues relevant to the criteria needed for participation in this study (see Appendix A). In order for the students to be included in the study, the teacher had to answer affirmatively to all questions. The researcher predetermined that confirmatory answers were necessary for inclusion in this study for the following reasons: 1) the Power Card intervention hinges on using the student's area of special interest or a highly admired person to influence behavior change; 2) noncompliance associated with classroom expectation is an essential component to the study, with regards to functioning within the general education classroom, and finally, 3) this procedure uses visual cues to prompt behavior. These areas are addressed on the questionnaire and therefore support the rationale for using this questionnaire to screen potential participants (see Appendix A).

From the five potential participants, two elementary students with a medical diagnosis of Asperger Syndrome (AS) were identified as meeting the criteria to participate in this study. Documentation of this diagnosis was included in the student's school records. Both participants attended two different public

schools in a medium size school district in a metropolitan area in a southern state. The students had been identified as eligible for exceptional student education services, but received the majority of their instruction in the regular education setting.

The first participant, Steven, was a 10-yr-old Caucasian boy who had been determined to be eligible for two exceptional education programs: Autistic and Gifted. Steven has a full-scale intellectual quotient of 135. Steven has attended a mainstream campus for his entire educational career. During his fourth grade year he briefly attended a program for gifted students at another school. While in the gifted program, his teachers found it difficult to address his inability to conform to the classroom expectations and routines associated with the gifted program. After several months, his parents withdrew him from the gifted program and returned him to the general education setting with Exceptional Student Education (ESE) support. During the 2003 – 2004 school year, Steven received all of his instruction in grade five in the general education classroom with consultative support from the ESE teacher. Typically the ESE teacher was utilized for test-taking situations (Steven came to her class to take tests), for assistance in finishing incomplete assignments, and for social skills training. Informed consent was obtained from this participant and his parents, as well as the teacher, following the Institutional Review Board guidelines of the University of South Florida

Initially, a second potential participant was identified. However, in the process of obtaining informed consent from this participant and his parents, the

parents opted out of this study as they concurrently had been pursuing intervention recommendations from a private source and decided that this study could potentially interfere with this pursuit. Consequently, this study only involved one participant, Steven. Due to the low prevalence of AS, it was not possible to identify a second participant.

The study was conducted in Steven's general education classroom at an elementary school in a small city in a southern state. The school serves approximately 600 students, grades K through 5. Steven's general education classroom had a total of twenty-three students. Of the twenty-three students, six were also identified as exceptional education students. Steven's general education teacher had been employed as an instructor at the school for ten years and held a Bachelor of Arts degree in Elementary Education, and a Master's degree in Educational Leadership. She was certified in the area of Elementary Education by the Florida Department of Education.

#### Target Behavior

Steven's teacher was interviewed for the purpose of identifying a target behavior. It was determined that Steven had difficulty with specific behaviors during whole-group, teacher-directed instruction time, more specifically, during math lessons. Prior to beginning this study, a functional behavior assessment was conducted by the district behavior specialist that included the completion of a teacher interview, a motivational assessment scale and a direct observation using an A-B-C recording format. It had been reported that math had always been Steven's least favorite subject. Though on occasion Steven would exhibit

difficulty with staying on-task during instruction that involved other subjects, this difficulty did not occur consistently or to such a marked degree that it interfered with his ability to make academic progress and to benefit from or hinder the learning of others in the general education setting. Based on all the information gathered, it was hypothesized that the off-task behavior functioned as a means to escape a non-preferred task / demand (math instruction) and was maintained by access to positive reinforcement (i.e., access to books, drawing / doodling, walking around the classroom, looking at objects, etc.).

#### Target Behavior Definitions

The target behavior for the student was on-task behavior. It was defined as: head oriented toward the teacher or on directed task / materials; at least one buttock maintaining contact with the chair. Target behaviors were also identified for the teacher. The purpose was to analyze whether or not teacher behavior impacted student responding. For the teacher, data were collected on the following three behaviors: 1) gesture behavior: any hand movement, or finger pointing directed at the student such as, teacher taps on the student's desk, a hand signal to sit down or return to seat, or any physical contact, such as, a tap on the shoulder, etc.; 2) verbal behavior: any vocalization directed at the student; 3) proximal behavior: the teacher moves within two-thirds of a meter of the student's desk and / or body.

## Materials and Procedure

Materials needed to conduct this study included three items: (1) Expectations Script (2) a Power Card script; and (3) a Power Card.

As the Power Card Strategy involved interaction between the teacher and student, a pre-intervention condition called the expectations phase was introduced in order to rule out increased teacher attention as a controlling variable. During this condition, the teacher introduced a script to the student, the length of which was approximately equivalent to the duration of time required for interaction during the intervention condition. This script emphasized the importance and rationale of following school expectations, and included behaviors such as, walking quietly in the hallway, staying in seat during instruction, attending to the teacher during lessons, and completing assignments. In other words, desired behaviors that help to maintain order in the school environment (see Appendix B). As in the intervention condition, the teacher was directed to approach the student within ten minutes of the beginning of the math lesson. She then gave the student the choice of having the script read to him or reading it aloud. After reading the script or listening to the student read it, the teacher instructed the student to return to his seat. The Power Card Strategy (PCS) uses an antecedent control procedure. A scenario was composed that described how the participant's highly admired person had himself or herself experienced the same problem situation that the participant was experiencing and offered a solution to the problem (Appendix C). Informal interviews with the parent and teacher, and personal observation by the researcher, provided the

information for determining the student's special area of interest and/or highly admired person. The parent was asked to identify the people, things, or activities that they observed the student consistently engaging with or talking about. Of these identified, the parent was asked to determine which was considered to be of strongest interest to the child. Once identified by the parent, the researcher interviewed the teacher to determine if the identified special interest area was also prevalent in the school environment.

The Power Card script and Power Card was developed using the procedure outlined by Gagnon (2001). This procedure consisted of writing a scenario and developing a Power Card that was consistent with the student's reading and comprehension level, and utilizing a print size that was individualized for the student. The script was written in first person and in the present tense. The first paragraph of the script summarized how the "hero" or special interest person related to the topic of concern, followed by a section that provided a solution to the problem. Next, the script incorporated a section that related this solution to the student's particular situation. The Power Card was composed on a 3" x 5" card and contained a synopsis of the alternative behaviors that had been identified for the student to engage in during the problem situation. The card also had a picture of the student's identified special interest person. In Steven's case it was Bill Nye the Science Guy (See Appendix D).

Because the problem behavior occurred during whole-group, teacher-directed math lessons, the teachers was asked to identify an observation time that met the following criteria: 1) for each observation session there would be an

equal opportunity for the occurrence or non-occurrence of the behavior, and 2) for each observation session the conditions would be consistent from one session to the next. Given these criteria, the teacher identified one time each school day that met these conditions. Therefore it was determined that the observations would occur each morning during the teacher-directed math lesson at approximately 10:30a.m., and would last for ten minutes in duration.

During the baseline phase of this study the normal classroom procedures were in effect. No changes occurred in the teaching procedures or instructional practices. Following the baseline and pre-intervention conditions, the script and the Power Card were introduced to the student. During this phase, the teacher was directed to approach the student within ten minutes prior to a group lesson, and then would ask the student if he preferred the script to be read to him or to read it aloud. Each day prior to the observation sessions, the student or the teacher read the script and then reviewed the Power Card. If the student chose to read the script, the teacher stayed and listened as it was read aloud. Following the reading of the script and review of the Power Card, the teacher directed the student back to his seat to prepare for the group lesson. She then placed the Power Card in close proximity to the student on a board approximately one meter from the side of his seat.

#### Experimental Design and Data Collection

This study employed a single-subject, A-B-C-A reversal design. Data collection occurred in the general education setting. A ten-second whole-interval recording procedure was implemented. This was determined to be the most

appropriate form of data collection because it produces an underestimate, rather than overestimate of the behavior (Cooper, Heron, & Heward, 1987). This being the case, after the observer(s) had been cued that an interval had begun, using a beep from a signaling device, the student's target behaviors had to be continuously present during the entire interval in order for the observer to record it as an occurrence of the target behavior. For the teacher's target behaviors (gesture, verbal, or proximal), a partial-interval recording procedure was implemented. Any occurrence of the target behaviors was recorded as an occurrence if observed during any time during the ten-second interval (see Appendix E).

#### Reliability

For Steven, the ESE teacher acted as the primary data collector and the principal investigator was the second observer, along with a trained school staff member who assisted when the principal investigator was not available. The principal investigator trained both observers. Prior to the implementation of the study, training was conducted on the data collection procedure. The primary and second observers were asked to observe the participant during whole-group instruction for math. Using the same data collection procedure and form that was used in the study, the observers were asked to collect data on the participants during 2-minute training sessions. The data collectors were required to demonstrate an average of 80% accuracy over five consecutive training sessions. For student behavior the primary data collector had a range of scores between 50 percent and 100 percent and a mean score of 90 percent. For

teacher behavior, the primary data collector had a range of scores between 60 and 100 percent and a mean score of 88 percent. The second back-up data collector had a range of scores for student behavior that ranged between 80 and 100 percent with a mean score of 96 percent. For teacher behavior, the second back-up data collector had a range of scores that ranged between 90 and 100 percent and a mean score of 96 percent.

During each session the observer(s) stood in the teacher planning area with the door slightly open, and observed through a one-way window. When a second observer was present, the observers stood at least three feet apart from one another. A low-volume beeping device signaled the start / end of each ten-second interval. Data collectors did not confer about data scoring. Treatment fidelity was assessed using task analysis of the behaviors the teacher(s) was directed to engage in, in order to adhere to the pre-intervention and intervention protocol (see Appendix F and G).

## Chapter Three

### Results

This study was designed to assess the influence that the Power Card Strategy could have on teaching on-task behaviors to a ten-year-old boy with Asperger Syndrome. Figure 1 gives a graphic display of the percentage of time Steven engaged in on-task behavior across the four conditions (baseline, pre-intervention, intervention and return to baseline) measured in this study.

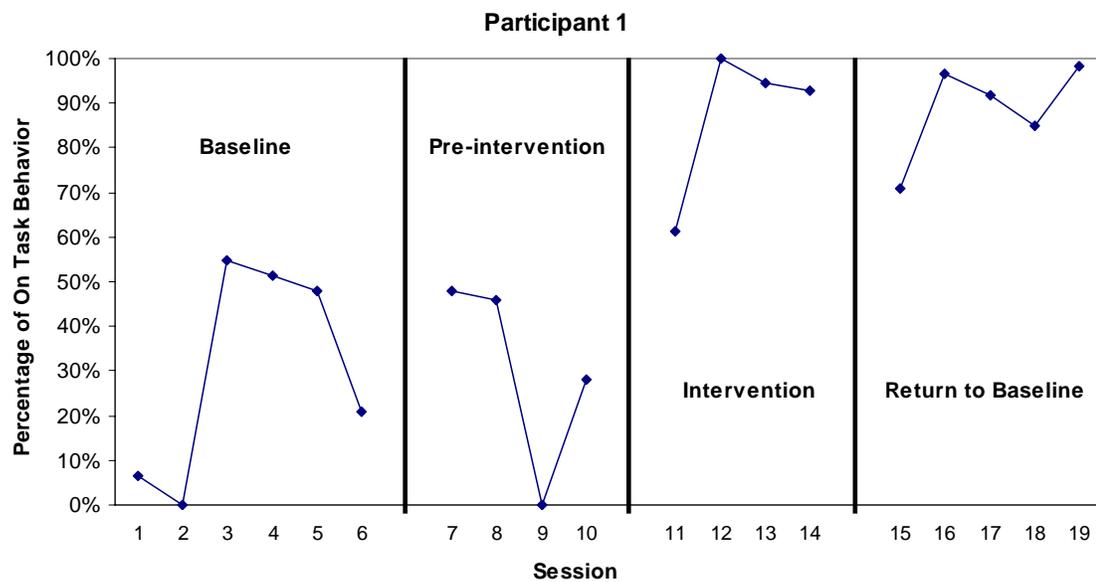


Figure 1: Illustration of the participant's behavior across the four study conditions.

During baseline, Steven's on-task behavior was well below expectation. The initial baseline condition took place over six sessions. There was little variability between the first two data points with measures ranging between zero percent and six percent; however, on session three a significant upward trend of the dependent measure was produced. Therefore, three more sessions took

place before a gradual decreasing variable trend was observed and a phase change was introduced. It should be noted that even the highest data point measured during this condition was far below a level considered acceptable for classroom behavior. The initial baseline mean was 41.6 percent for time on-task during six math instruction sessions. During the pre-intervention condition, when the Expectations Script was introduced, four data points were collected throughout sessions seven through ten. Initially, sessions seven and eight produced a stable level of responding, but more variable responding was measured in sessions nine and ten. Overall, a downward line of progress was produced across these four sessions and, therefore, the study proceeded onto the intervention condition. During the pre-intervention condition a baseline mean of 35.2 percent of time on-task was produced. Also, teacher / student contact time for presentation of the expectations script was measured during 50 percent of the pre-intervention sessions with times ranging between 102 seconds to 107 seconds.

During the treatment phase, sessions eleven through fourteen, an immediate upward trend of the dependent variable was exhibited. This was followed by a stable level of responding with little variability during the last three sessions of this phase. Throughout these four sessions, a significant improvement in on-task behavior was observed. An intervention mean of 87.2 percent of time on-task was measured during this condition. Again, teacher / student contact time was measured. During the intervention phase the presentation of the power card script and card to the student was measured

during 50 percent of the intervention sessions with times ranging between 110 seconds to 126 seconds in duration.

Following the treatment phase, the baseline condition was reintroduced. Initially, the first session resulted in a drop in the percentage of time on-task to 71 percent, which was still well above the baseline and pre-intervention conditions; and, an upward trend followed. All five sessions during this return to baseline phase resulted in a mean of 88.4 percent of time-on task.

Throughout this study specific teacher behaviors were also measured concurrently with student behavior during observation sessions. As seen in Figures 2, 3, and 4, with the exception of proximal behaviors, a low, stable level of responding was observed across all conditions. With regards to proximal

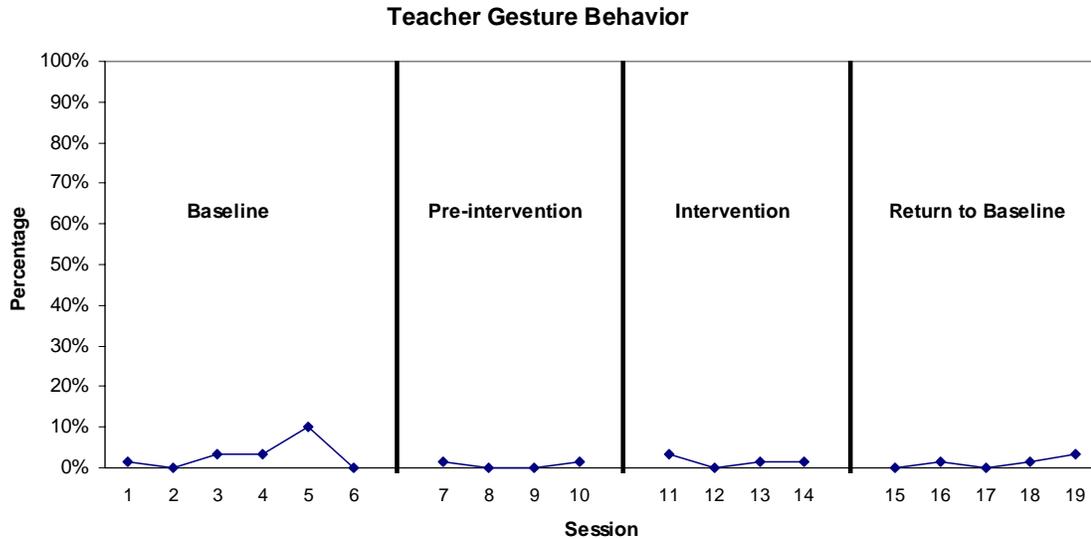


Figure 2: Illustration of the teacher's gesture behavior across study conditions

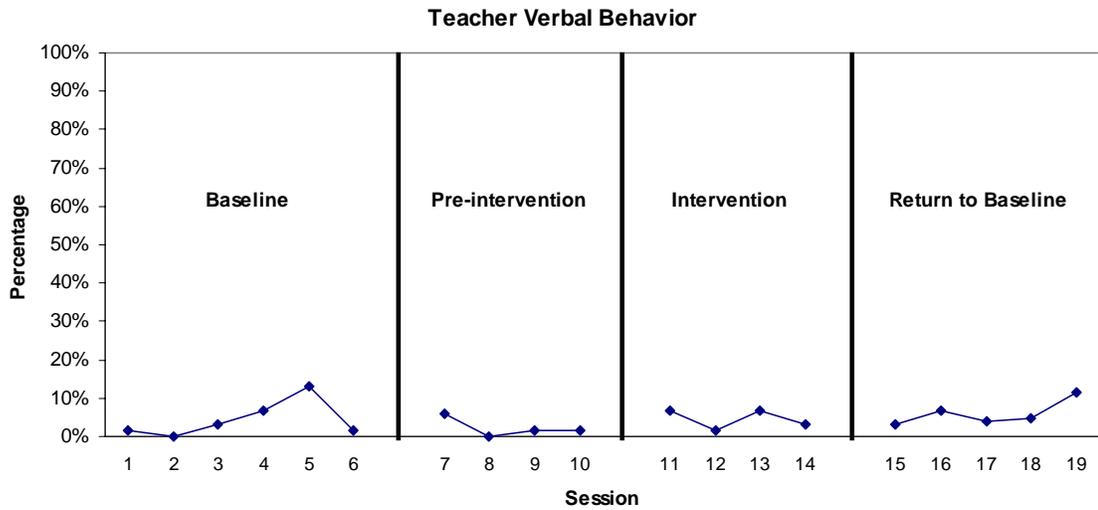


Figure 3: Illustration of the teacher's verbal behavior across study conditions

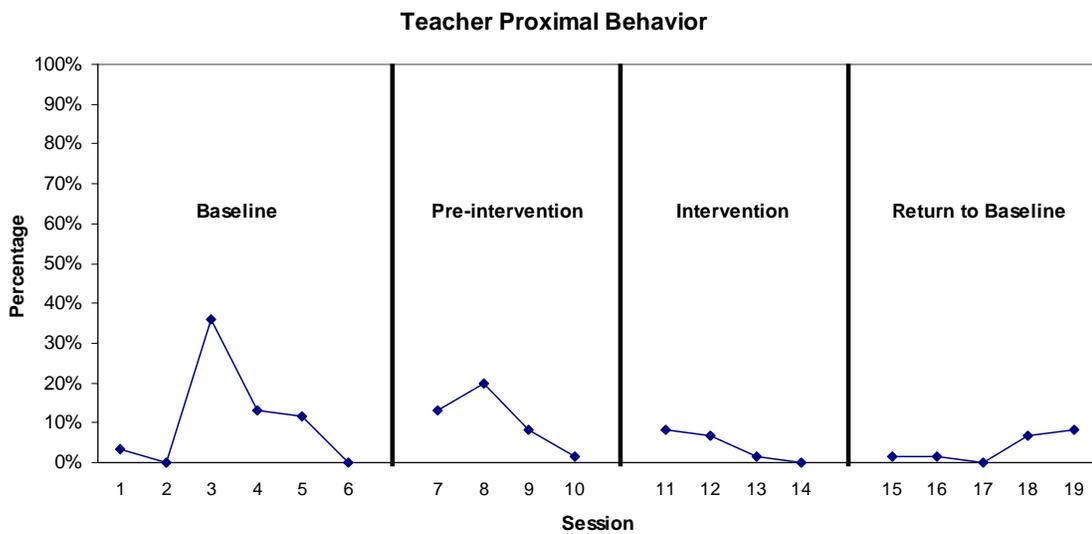


Figure 4: Illustration of the teacher's proximal behavior across study conditions

behavior, variability was present during baseline and pre-intervention conditions; however, during each of these conditions a downward trend was observed.

Upon visual analysis of the graphic displays, there was no convincing evidence

that teacher behavior had a correlation to changes in student behavior. Teacher fidelity to protocol for teacher / student interaction during the pre-intervention / expectations phase was also measured throughout 50 percent of the sessions with a mean score of 100 percent. Inter-observer agreement was measured during the expectations phase for 25 percent of the sessions with a mean score of 100 percent. Teacher fidelity to protocol was measured during 50 percent of the sessions during the intervention / power card strategy phase. Scores ranged between 67.2 and 100 percent, with a mean score of 83.6 percent for adherence to protocol. Inter-observer agreement on teacher fidelity to protocol was measured for 25 percent of the sessions with a mean score of 100% (See Table 1).

Due to the conclusion of the present school year, the study ended. It may be significant to note that even though the study was concluded in nineteen sessions the course of the study took place over a two month period. The discrepancy between sessions and school days was due to interruptions in the normal school schedule, such as testing, special events or holidays, as well as occasional absences on the part of the student or staff members involved with the study. Originally a single-subject, reversal design had been planned to demonstrate experimental control. This design is the most clear-cut and compelling single-subject design for demonstrating a functional relation between a treatment procedure and behavior (Cooper, Heron, & Heward, 1987). Prior to implementation it had been expected that the dependent variable would return to pre-intervention levels with the removal of the Power Card Strategy during the

last baseline condition, allowing a reintroduction of the intervention and presumably demonstration of experimental control. The fact that the target behavior maintained at levels above or commensurate with the intervention condition suggests that maintenance of acquired skills was demonstrated for the five days of the final baseline condition.

## Chapter Four

### Discussion

The results of this study indicate that the Power Card Strategy (PCS) was effective in increasing the participant's on-task behavior. Although experimental control was not established the data obtained clearly displayed a significant improvement in on-task performance during and after intervention. The study was also successful in ruling out teacher attention during intervention as a controlling variable. In the absence of experimental control, this was especially useful in demonstrating that some variable within the intervention itself was responsible for the increase in the target behavior, as opposed to the increase in time the teacher spent in contact with the student during the presentation of the Power Card Strategy.

As previously stated, the functional behavior assessment identified the function of the inappropriate behavior during group instruction as escape from a non-preferred task; therefore, it is important to note that some change may have occurred with regards to the reinforcing effects of group instruction in order for the on-task behavior to increase during intervention, and then maintain after return to baseline. One explanation would be that natural consequences, such as positive social attention from the teacher and peers for answering correctly or asking relevant questions strengthened the target behavior, and reduced the aversive of effects formally associated with the non-preferred task, decreasing the need for escape.

Another positive point to emphasize about the Power Card Strategy is the many attractive aspects of utilizing this intervention. That is, it was easy to implement, required minimal time, and the cost was virtually nil. These are all characteristics of strategies that are appealing to most teachers; and, with the current push for inclusion in public education it is an especially desirable strategy for general education teachers who have little time to spend implementing time consuming and complicated interventions. This way of thinking was supported by Axelrod (1992) who pointed out that if we look closely at what teachers need and what behavior analysts tend to provide, we may find that what is often promoted is abstract ideas like fading stimuli and shaping responses while focusing on an isolated skill. If teachers are expected to develop strategies on their own this may hinder teachers from “buying into” a behavioral perspective. It would therefore behoove behavior analysts to develop materials that provide for the use of comprehensive, effective strategies and embed processes such as fading and shaping within the materials themselves (Axelrod, 1992).

Furthermore, regarding the issue of acceptance of the science of applied behavior analysis, Carl Binder (1994) offers some practical advice. He suggests that behavior analysts need to stop operating under the assumption that measured results will sell instructional methodology. He suggests that there may be advantages in adopting methods used in the private enterprise for the purpose of reducing the barriers often confronted when working in applied settings (i.e., schools and classrooms). The Power Card Strategy as an intervention offered many marketable characteristics often lacking in typical

interventions. This was confirmed by the positive comments regarding the intervention made by general education and exceptional education teachers' observations of this intervention (see question 1 on Tables 2 and 3).

Previous research had suggested that the success of the PCS hinged on the use of the student's special interest in a specific way, and supported the theory that obsessive interests, preoccupations, and special allurements can be used to produce positive behavior change (Keeling, Smith Myles, Gagnon, & Simpson, 2003.) However, the methods and results of the present study suggest that other variables may have contributed to the success of the intervention that were not just related to the use of this student's area of special interest. Though the following conjectures are based on anecdotal reports, they offer interesting observations that could be the focus of future research.

It was observed that the Steven's verbal behavior did not reflect the outcome of the study. Initially, when the PCS was introduced Steven protested placing the power card on his desk. He indicated that the other students would notice and stated that, "I am the only student with issues". The placement of the power card was negotiated to Steven's satisfaction, and instead of placement on or in his desk, the power card was placed on a board near his desk and in visual range. On several occasions Steven referred to the PCS in a negative manner, stating that, "It was really lame". This having been the case, it could have resulted in erroneously anticipating that the intervention would be ineffective.

One of the interesting aspects of the Power Card Strategy (PCS) as an intervention is the absence of programmed consequences. That is, no

reinforcement was provided for use of the PCS. The PCS is an antecedent control procedure. As such, the antecedent stimuli, in this case the special interest character, would theoretically have the ability to control a particular response because it has been associated with certain consequences in the past. It would then be assumed that the effectiveness of the intervention was due to the participant's history of reinforcement relative to the special interest person. In this case, speculation was raised about the reinforcing value of the power card. One could consider whether the reinforcing effects of having the student's special interest (Bill Nye the Science Guy) associated with the power card were competing with the potential aversive effects of "feeling" different or "singled out" from other students. However, despite the student's verbalizations that sounded negative, the PCS intervention was effective. Another explanation for the positive outcome of this study may be that during the expectations / pre-intervention condition the removal of a script was established as a negative reinforcer. During this phase a script about school expectations or rules was read each day with or by the student, just as in the intervention phase that followed. After a relatively short period of time (4 sessions), the script was removed. This may have established the removal of the script in the intervention condition (power card script and power card) as a negative reinforcer, possibly explaining the maintenance of on-task behavior after the removal of the intervention, in the second baseline condition.

It is of further interest that the teacher reported that out-of-seat behavior, which was addressed in the expectations / pre-intervention condition, decreased

after the introduction of the Expectations Script; however on-task behavior in general did not increase, during this condition. It is important to note that the power card script and the power card described the desired behavior(s) with greater specificity than the behaviors addressed in the Expectations Script. This leads one to consider the extent to which rule governance may have played a role in controlling the participant's increase in the target behavior and ultimately the success of the intervention. Therefore, another possible area of research would be to evaluate whether it is the review of a script and rules card immediately prior to the problem situation or the pairing of the special interest area with the script and rules card that is ultimately controlling the behavior.

Stokes and Osnes, (1989) referred to Skinner, (1953) who explained that "generalization is not an activity of the organism, it is simply a term that describes the fact that the control acquired by a stimulus is shared by other stimuli with common properties". This being the case, it is interesting to note that even despite the fact that programming for generalization was not explicitly addressed as a component of this study, reports by the general education and exceptional education teachers suggest that generalization of the target behavior and acquisition of untrained behaviors occurred following the implementation of the intervention. In response to a social validity questionnaire the general education teacher stated that following the intervention phase of the study she noticed the presence of "similar results" during group instruction of other subjects [Steven spent less time out of seat and engaged in fewer off-task behaviors] (see question 6c on Table 2). In reference to the issue of generalization, one could

speculate that induction had occurred. The case could be made that, the presence of the common properties (i.e., the same teacher, the same students, the presentation of information in a similar manner, the extraneous stimuli in the environmental surroundings, etc) were present during group instruction of other subjects, thereby, establishing the increased probability of the transfer of acquired behaviors in one situation (group math instruction) to another similar condition without specific programming.

Stokes and Osnes, (1989) discuss the topic of response generalization. They explain that when a behavior is reinforced there may be an increase in the frequency of other behaviors even in the absence of direct reinforcement of these behaviors. This appeared to be the case with Steven. When asked to respond to the question on the social validity questionnaire that asked, "After the implementation of the Power Card Strategy, did you notice any changes (increases or decreases) in the student's behavior (appropriate or inappropriate, social or academic) in other school environments?" the general education teacher stated that she observed: more participation in recess; participation in the class softball team for a tournament; an increase in the amount of work turned in for all subject areas; and, more positive interactions with classmates. The exceptional education teacher responded in a similar manner to the same question, stating that, "[this intervention] not only helped to alleviate 'bad' behaviors and promote 'good' ones, it also prompted a desire for social interaction (see question 8 in Table 4 and 5).

Stokes and Baer, 2003, stress the importance of programming for generalization rather than assuming it will be an automatic bi-product of the intervention. They state, "... generalization should not be considered merely a passive outcome or side effect of behavior interventions, left over by inefficient discrimination training. Generalization should be considered as an active process to be incorporated into applied behavior analysis procedures" (p. 126). Further examination of the issue of generalization relative to this intervention would be an interesting pursuit for a future study, as it would be important to establish if certain characteristics of the mediators used in this study were responsible for producing correct outcomes for the target behaviors in untrained conditions.

Furthermore, a future study could be beneficial on several levels. In Steven's case he expressed his discomfort with reading the script in the presence of other students and having the power card placed in a location that would make it obvious to the other students that it was specific to him. This response may not be isolated to Steven, especially at an age and/or grade level when the importance of peer acceptance seems to be magnified. Therefore, if presented with a case similar to Steven's, a study utilizing the Power Card Strategy could be modified to include all students in a classroom. Some advantages to an approach such as this are: (1) it would eliminate the potential negative effects of a specific student feeling 'singled out' or stigmatized; (2) it would establish the conditions for generalization programming by employing three areas of generalization principles identified by Stokes and Osnes (1989): a)

exploit current functional contingencies, b) train diversely, and c) incorporate functional mediators. Functional mediators are stimuli that are present between training and the experience of generalization and occur in such a way that aids or mediates that generalization, most likely as a discriminative stimulus for the performance of that behavior. Mediators can take different forms, such as physical, social, or verbal stimuli. Typically, a mediating stimulus is one that can be readily transported by the user to a multitude of conditions or is typically accessible in most environments other than the training situation (Stokes & Osnes, 1989). Stokes and Baer, (2003), refer to Baer (1982), who describes these procedures as ones that incorporate self control, self monitoring, and self selection. Stokes and Baer, (2003), emphasize that the successful use of functional mediators relies on their employment during the training process.

Most, if not all, students could benefit from instruction in and reinforcement of attending skills, so the social relevance of such a study is justified, however, more importantly such an approach could be easily structured to promote generalization. For example, if all students were included in the study, the teacher could manipulate the conditions so that the special interest area for the student of concern was the focus of the script and power card. She could build interest about the special interest area with the other students by first incorporating it into different academic lessons and projects. This would also give the student an appropriate way to focus on the special interest area and build potential avenues for social interaction with the other students, and, potentially, increased interest in academic work (e.g., the student of concern

would then have a topic of conversation that he/she is very versed in to talk about with other students that now have a purpose for acquiring that information). Once the special interest area was established in this manner the Power Card Strategy could be introduced to the whole class. Then, before each lesson a different student could read the power card script and review the card instead of only the student of concern. Students could have their own power card to keep in, or on their desk along with a class power card to put up in the classroom. The teacher could use, and teach the students to use hand gestures that prompt attending behavior. Students could then be encouraged to use these hand gestures to help each other remember to attend. This would be especially useful if a group contingency was put in place to reinforce attending behaviors exhibited by the group. In this case, students would be more likely to prompt each other to attend as well as reinforce each other for exhibiting attending behaviors.

In conclusion, it could be said that more questions than answers were raised in the course of this study as it remains unclear what variable(s) relative to this intervention ultimately lead to its success in increasing on-task behavior for this student. However, the argument could be made that identification of relevant areas of exploration is equally valuable to the science of applied behavior analysis, as it is through these pursuits that that we are lead to a more complete technology for use in applied settings.

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## Appendices

Appendix A

**Student Name:** \_\_\_\_\_

Please indicate Yes or No to the following statements that apply to this student.	Yes	NO	Comments
1.) This student frequently talks about or engages in activities that focus on an area of special interest or an admired person (real or fictional character).			
2.) This student has difficulty with following classroom expectations, including during whole-group, teacher-directed instruction.			
3.) The student has difficulty remembering what to do, or <u>not</u> do without a prompt.			
4.) The student seems to perform better with a visual reminder to recall the behavioral expectation for a given situations.			

## Appendix B

### Pre-Intervention Script

#### Following the Classroom Expectations

When we are in school there are many expectations that we are asked to follow. Some reasons for school expectations are for safety, keeping order, accountability, and still others are to show consideration for other people.

For example, when we are moving about in the halls we are asked to walk. We walk because it is not safe to run. If we run we could easily trip and fall, possibly hurting ourselves, or we could bump into someone and accidentally knock them down. We are also asked to refrain from talking while in the halls. When we talk we make noise and the noise is likely to disturb others who are working in classrooms.

When we are having a class lesson and the teacher is talking, we are expected to stay in our seat and listen. This is expected because if everyone were allowed to get out of their seat it would be very disruptive. We are also asked to pay attention to the teacher. The teacher knows that we are hearing what she says when we look at her and when we raise our hand to make a comment or ask a question. These expectations help keep order in the classroom and show consideration for others.

Another school expectation is to complete our assignments. If we complete our assignments the teacher will know whether or not we are learning the skills she is trying to teach us. This expectation helps the teacher demonstrate accountability because she has a product that demonstrates our knowledge of particular information or skills

## Appendix C

### Power Card Script

#### Bill Nye Learns a Lesson About Learning a Lesson

Bill Nye is proud to be a scientist. He knows that good habits helped him achieve his dream of becoming a scientist. Bill did not always have good habits, though. When Bill was in elementary school he often did not attend during lessons he did not find interesting, like math. He, mistakenly, thought that because he was so smart he already knew everything he needed to know. During class lessons Bill would often leave his seat and look for other things to do instead, like reading a book. Sometimes he even made poor grades on his report card. Bill knew he was very smart and capable of doing much better. Bill asked his dad's friend, whom he admired and who was also a scientist, for advice. The scientist told Bill that it was important to have good attending skills in order to go into interesting careers, especially something like science. He told Bill to think like a scientist and apply this four step formula for good attending:

- 1) Clear your desk of all materials except what you need for the lesson (For example: Math book and pencil).
- 2) Stay in your seat during class lessons.
- 3) Think about what the teacher is saying by listening carefully and keeping your eyes and face toward the teacher
- 4) Participate by asking or answering questions when called on or doing what the teacher says to do (For example: completing a math problem(s), or looking at a page in a book).

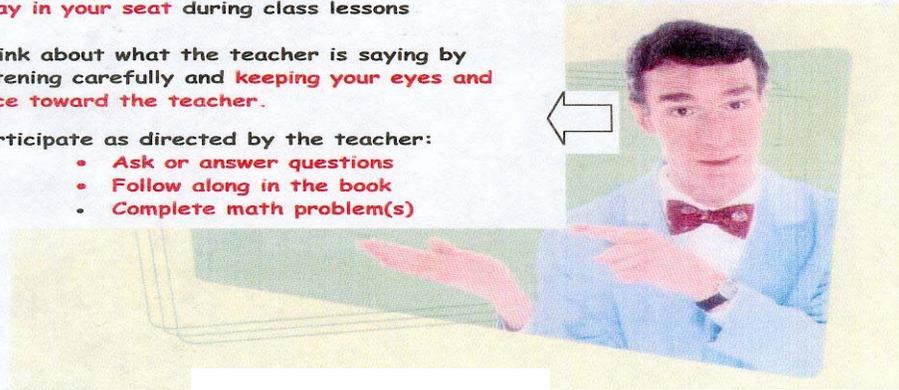
Bill used this formula to develop his attending skills and to go onto a cool career as a scientist. Maybe you want to do something really cool when you grow up. Remember this formula for attending and you can go far like Bill Nye the Science Guy!

## Appendix D

### Power Card

#### Bill Nye Says...

- 1) Clear your desk of all materials except what you need for the lesson  
(For example: **Math book and pencil**).
- 2) **Stay in your seat** during class lessons
- 3) Think about what the teacher is saying by listening carefully and **keeping your eyes and face toward the teacher**.
- 4) Participate as directed by the teacher:
  - **Ask or answer questions**
  - **Follow along in the book**
  - **Complete math problem(s)**



Copyright © 2002 Bill Nye Inc.  
Please do not duplicate.

Photo of Bill Nye the Science Guy  
Copyright © 2002 Bill Nye Inc.  
<http://www.billnye.com/splash.html>  
Please do not duplicate.

# Appendix E

Student / Teacher

Student: \_\_\_\_\_ School: \_\_\_\_\_ Observer Initials: \_\_\_\_\_

**MINUTE 1**

+	-	+	-	+	-	+	-
GVP							

**MINUTE 2**

+	-	+	-	+	-	+	-
GVP							

**MINUTE 3**

+	-	+	-	+	-	+	-
GVP							

**MINUTE 4**

+	-	+	-	+	-	+	-
GVP							

**MINUTE 5**

+	-	+	-	+	-	+	-
GVP							

**MINUTE 6**

+	-	+	-	+	-	+	-
GVP							

**MINUTE 7**

+	-	+	-	+	-	+	-
GVP							

**MINUTE 8**

+	-	+	-	+	-	+	-
GVP							

**MINUTE 9**

+	-	+	-	+	-	+	-
GVP							

**MINUTE 10**

+	-	+	-	+	-	+	-
GVP							

## Appendix F

### Data Collection Form Assessment of Teacher Fidelity to Pre-Intervention Protocol (Introduction of Expectations Script)

Observer Initials : \_\_\_\_\_ Teacher : \_\_\_\_\_

Date of observation: \_\_\_\_\_

Duration of Student / Teacher Interaction: \_\_\_\_\_

If the teacher was observed engaging in the step place a + in the **observed box** , if the teacher was not observed engaging in the step, place a — in the **did not observe** box.

Intervention Procedure	Observed	Did not Observe
<b>Step 1:</b> The teacher approached the student within 10 minutes of the whole-group lesson.		
<b>Step 2:</b> The teacher gave the student the choice of having the script read to him or to read it aloud.		
<b>Step 3:</b> The teacher read or listened to the student read the script.		
<b>Step 4:</b> The teacher instructed the student to return to his designated seat.		

## Appendix G

### Data Collection Form

#### Assessment of Teacher Fidelity to Intervention Protocol

Teacher: \_\_\_\_\_

Date of observation: \_\_\_\_\_

Duration of Student Teacher Interaction: \_\_\_\_\_

If the teacher was observed engaging in the step place a + in the **observed box** , if the teacher was not observed engaging in the step, place a — in the **did not observe** box.

Intervention Procedure	Observed	Did not Observe
<b>Step 1:</b> The teacher approached the student within 10 minutes of the whole-group lesson.		
<b>Step 2:</b> The teacher gave the student the choice of having the PC script read to him or to read it aloud.		
<b>Step 3:</b> The teacher read or listened to the student read the script.		
<b>Step 4:</b> The teacher reviewed the Power Card with the student by reading it to him, or having him read it aloud.		
<b>Step 5:</b> The teacher instructed the student to return to his designated seat.		
<b>Step 6:</b> The teacher placed the power card in close proximity and view of the student and stated, Now remember what _____ (student s special person) said to do.		

Tables

Table 1

<i>Baseline Condition</i>						
Dates of Sessions 1 — 6: 3/16, 3/22, 3/30, 4/1, 4/2, 4/15						
Inter-observer Agreement was obtained during 50% of the total number of sessions						
Observers	Date	Session #	Student On —Task	Teacher Gesture	Teacher Verbal	Teacher Proximal
NB & MG	*3/16	1	93%	98%	98%	93%
NB & MG	3/22	2	100%	100%	100%	100%
NB & MG	4/15	6	100%	100%	100%	100%
Agreement			<b>97.6%</b>	<b>99.3%</b>	<b>99.3%</b>	<b>97.6%</b>
<ul style="list-style-type: none"> <li>58 trials observed (for 2 trials 1 observer's vision was blocked)</li> </ul>						
<i>Pre-Intervention Condition / Expectations Phase</i>						
Dates of Sessions 7 — 10: 4/16, 4/20, 4/23, 4/27						
Inter-observer Agreement was obtained during 50% of the total number of sessions						
Observers	Date	Session #	Student On —Task	Teacher Gesture	Teacher Verbal	Teacher Proximal
NB & MG	4/16	7	100%	100%	100%	100%
NB & MG	4/23	9	100%	100%	100%	96%
Agreement			<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>98%</b>
<i>Intervention Condition / Power Card Strategy</i>						
Dates of Sessions 11 — 14: 4/29, 5/3, 5/4, 5/6						
Inter-observer Agreement was obtained during 75% of the total number of sessions						
Observers	Date	Session #	Student On —Task	Teacher Gesture	Teacher Verbal	Teacher Proximal
NB & JD	5/3	12	100%	100%	98%	86%
NB & JD	5/4	13	96%	98%	100%	100%
NB & JD	5/6	14	98%	98%	98%	91%
Agreement			<b>98%</b>	<b>98.6%</b>	<b>98.6%</b>	<b>92.3%</b>
<i>Baseline Condition</i>						
Dates of Sessions 15 — 19: 5/10, 5/11, 5/12, 5/14, 5/20						
Inter-observer Agreement was obtained during 60% of the total number of sessions						
Observers	Date	Session #	Student On —Task	Teacher Gesture	Teacher Verbal	Teacher Proximal
NB & JD	5/10	15	85%	100%	98%	100%
NB & JD	5/11	16	96%	100%	98%	100%
NB & JD	*5/12	17	87%	100%	98%	100%
Agreement			<b>89.3%</b>	<b>100%</b>	<b>98%</b>	<b>100%</b>
<ul style="list-style-type: none"> <li>24 trials (the time of the session was shortened due interruption)</li> </ul>						

Table 2

Completed by the General Education Teacher

*Note:* The bolded numbers reflect the responses completed by the general education teacher.

1.) The goals of this study were appropriate for the student asked to participate.

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
disagree	disagree somewhat	neither agree nor disagree	agree somewhat	agree

---

2.) I considered the goals of this study to be important.

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
disagree	disagree somewhat	neither agree nor disagree	agree somewhat	agree

---

3.) I considered the goals of this study to be practical.

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
disagree	disagree somewhat	neither agree nor disagree	agree somewhat	agree

---

4.) The outcome of this study fits with the study s original goals.

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
disagree	disagree somewhat	neither agree nor disagree	agree somewhat	agree

5.) I noticed improvement in this student s behavior after the study began.

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
disagree	disagree somewhat	neither agree nor disagree	agree somewhat	agree

---

6.) The outcome of the study made the procedures worthwhile.

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
disagree	disagree somewhat	neither agree nor disagree	agree somewhat	agree

---

Table 3

GOAL AND OUTCOME RATING SCALE  
Completed by the Exceptional Education Teacher

*Note: The bolded numbers reflect the responses completed by the exceptional education teacher.*

1.) The goals of this study were appropriate for the student asked to participate.

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
disagree	disagree somewhat	neither agree nor disagree	agree somewhat	agree

---

2.) I considered the goals of this study to be important.

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
disagree	disagree somewhat	neither agree nor disagree	agree somewhat	agree

---

3.) I considered the goals of this study to be practical.

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
disagree	disagree somewhat	neither agree nor disagree	agree somewhat	agree

---

4.) The outcome of this study fits with the study s original goals.

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
disagree	disagree somewhat	neither agree nor disagree	agree somewhat	agree

---

5.) I noticed improvement in this student s behavior after the study began.

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
disagree	disagree somewhat	neither agree nor disagree	agree somewhat	agree

---

6.) The outcome of the study made the procedures worthwhile.

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
disagree	disagree somewhat	neither agree nor disagree	agree somewhat	agree

---

Table 4

Social Validity Questionnaire  
Completed by the General Education Teacher

**1) Please describe your perspective regarding the ease or complexity, convenience or inconvenience of using the Power Card Strategy.**

The Power Card Strategy was easy to implement and convenient to use. In a relatively small amount of time (1-2 minutes before the lesson), the Power Card Strategy was able to significantly impact classroom behavior.

**2) On a scale of 1 -5, 1 being the least effective and 5 being the most effective, please rate the level of effectiveness of using this strategy with this student.**

I would rate the effectiveness of this strategy at a 5.

**3) Before this strategy was implemented ,using a scale of 1-5 (1 = completely off-task, and 5 =completely on-task how would you rate this students level of attending during whole-group math instruction?**

**a) Prior to implementing the strategy:**

I would rate the students level of attending at a 1.

**b) How would you rate it after the implementation of the Power Card Strategy?**

After implementing the strategy,

I would rate the students level of attending at a 4.

**4) Before implementation of this strategy what behaviors did you observe that interfered with this student's ability to attend during math instruction?**

Prior to implementation, this student would frequently engage in off-task behaviors such as getting out of seat during lessons, taking a novel out to read, doodling/drawing/writing on paper, and even tearing /cutting items and chewing them.

**5) During the Expectations Phase, where just the script was read, what, if any changes in on-task behavior did you observe?**

Less time out of seat, but student often off-task.

**6) After intervention what, if any changes in on-task behavior did you observe**

**a) during math instruction?**

Much more involved in lessons; assignments completed and turned in.

**b) or, any different behaviors in general during math instruction.**

Much less time out of seat; fewer off-task behaviors.

**c) during group instruction for other subjects.**

Similar results in other subject areas, but not as consistently as in Math.

**7) In the future if you had a similar issue with a student identified with Asperger Syndrome would you use the Power Card Strategy again?**

**If yes, why? If no, why?**

Yes, I would implement this strategy with another Asperger Syndrome student. It was not difficult or time consuming to implement, and improved the student s behavior/attention during lessons. Additionally, it impacted the student positively in other areas as well (see below).

**8) After the implementation of the Power Card Strategy, did you notice any changes in this student s behavior (good or bad...social or academic) in other school environments? Please specify.**

After implementation, I noticed changes in this student s behavior in the following areas:

- Participated more in recess
- Joined the class softball team for the tournament
- Increased the amount of completed work turned in for all subject areas
- More positive interactions with classmate

Table 5

Social Validity Questionnaire  
Completed by the Exceptional Education Teacher

1) Please describe your perspective regarding the ease or complexity, convenience or inconvenience of using the Power Card Strategy.

I myself didn't use the card with Steven, but from the observer's end, I thought the power card was extremely easy to use for the teacher.

2) On a scale of 1-5, 1 being the least effective and 5 being the most effective, please rate the level of effectiveness of using this strategy with this student.

5

3) Before this strategy was implemented, using a scale of 1-5 (1 = completely off-task, and 5 = completely on-task) how would you rate this student's level of attending during whole-group math instruction?

a) Prior to implementing the strategy:

1

b) How would you rate it after the implementation of the Power Card Strategy?

At this time, (3+4) before implementation of this strategy what behaviors did you observe that interfered with this student's ability to attend during math instruction?

- Out of seat behavior
- Off task
- Eating, picking at materials, objects
- Screaming out

5) During the Expectations Phase, where just the script was read, what, if any changes in on-task behavior did you observe?

During this phase, I did notice some changes but not as strongly as when concluded. Walking about room did seem to cease almost all together at that time.

6) After intervention what, if any changes in on-task behavior did you observe

a) during math instruction?

Subject seemed to be following along completing math instruction more successfully. At some points, it was noticed afterward that he had not been doing exactly the items told

b) or, any different behaviors in general during math instruction.

But he did not make a scene by screaming things out to others like "This is so easy a moron could do it."

c) during group instruction for other subjects.

Student was more focused while subject area discussions were taking place for example during social studies and or science instruction.

7) In the future if you had a similar issue with a student identified with Asperger Syndrome would you use the Power Card Strategy again?

If yes, why? If no, why?

Yes, Due to subject's excitement portrayed by him when he was participating in class discussions. I saw a look come over him that he seemed as though he were having more fun in class. Before, his head was down, area a mess, fiddling inside his desk-area or up touring the classroom.

8) After the implementation of the Power Card Strategy, did you notice any changes in this student's behavior (good or bad...social or academic) in other school environments? Please specify.

The best feeling I received from this study was during the final days of school, the subject requested to lead the classmates in a game of hangman. He had never wanted to participate with anyone. He always said, "no one likes me so he wouldn't even try to interact" — This one particular incident, he did play the game and called on peers in a very cordial, organized way. I even told him not to call on anyone that was screaming his name out to call on them. He laughed and said, "NO you shouldn't do that!" It was very enlightening experience. Seems as though this not only helped to alleviate bad behaviors and promote good ones, it also prompted a desire for social interaction.