The Effects of Self-Monitoring and Performance Feedback on the Treatment Integrity of Behavior Support Plan Implementation

by

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Abstract

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This study evaluated methods to improve and maintain treatment integrity (TI) for behavior support plans (BSP) for children with Autistic Disorder. While performance feedback (PFB) has been identified as the most effective method to support TI, it is time-consuming and expensive. This study examined self-monitoring (SM) as a way to maintain target levels of TI, possibly better than a PFB package that does not include SM. This study also examined generalization effects of training to a BSP for which no training occurred. Finally, this study explored the relationship of TI to student behavior. A four-tiered multiple baseline design with changing conditions was used to evaluate the effectiveness of SM compared to SM and PFB. Eight students with BSPs participated in the study. Teachers were trained with SM and PFB for four of the students' BSPs; the remaining four students were used to assess generalization effects of the training. Results indicate that SM was effective for two teachers to maintain target levels of TI following PFB, and sufficient for one teacher to achieve target levels of TI with no PFB. One teacher in the study required additional PFB to attain target levels of TI. Findings indicate that three of the four teachers generalized BSP implementation without additional training. It was also found that TI and student behavior are highly correlated.

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CHAPTER I

Students with developmental disabilities often evidence considerable problem behaviors that can interfere with their ability to learn and access educational and community settings (Dunlap & Kern, 1993). Autistic Disorder (AD) is a pervasive developmental disorder that affects different areas of functioning; these individuals often present with substantial problem behaviors. As defined in the Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition (DSM-IV TR) (American Psychiatric Association [APA], 2000), the diagnostic criteria for AD include deficits in social interaction, communication, and behavior. While there may be several reasons why students with AD engage in problem behavior, some authors suggest that these students often lack functional language skills and utilize problem behavior to communicate their needs and wants (Carr & Durand, 1985).

Problem behavior can interfere with academic and social development necessitating the development of a behavior support plan (BSP). The ultimate goal of a BSP is to render an interfering behavior ineffective, irrelevant, and inefficient through interventions that modify the environment, while consistently maintaining appropriate reactions to the interfering behavior that prevent it from functioning successfully (Snell & Brown, 2006).

BSPs require a great deal of management to ensure that the team members implement them with treatment integrity (also referred to as treatment fidelity.) Treatment integrity (TI) refers to the proper implementation of interventions or treatments (Gresham, 1989; Moncher & Prinz, 1991). It is only with correct

implementation of the behavioral plan that one can evaluate its effectiveness (Gresham, 1989).

The responsibility for implementation of the BSP generally belongs to the classroom teacher and related service personnel (McDougal, Clonan, & Martens, 2000). Results of previous studies indicate that the initial TI of BSPs is high, but there is a significant decrease in TI levels over time in the absence of supervision and follow-up (Noell, Duhon, Gatti, & Connell 2002; Noell, Witt, LaFleur, Mortenson, Ranier, & LeVelle, 2000). Telzrow (1995) suggests that in order to maintain TI, a supervisor must provide support to personnel implementing BSPs.

The literature identifies methods to improve TI of BSPs include teacher training (Taylor & Miller, 1997), treatment manuals (Ehrhardt, Barnett, Lentz, Stollar, & Reifin, 1996), guided practice (Hirallal & Martens, 1998), self-report (Wickstrom, Jones, LaFleur, & Witt, 1998), data review (Noell et al., 2002), negative reinforcement, (DiGennaro, Martens, & McIntyre, 2005), and performance feedback (Noell et al., 2005). Of these, research shows that performance feedback is a particularly promising procedure to improve the behavioral consultation process (Noell et al., 2005).

Performance feedback (PFB) refers to the monitoring and provision of feedback related to the implementation of BSPs (Mortenson & Witt, 1998). Substantial research identifies the use of PFB as an essential tool necessary to maintain appropriate levels of TI (Gillat & Sulzar-Azaroff, 1994, Martens & Witt, 1988; Noell et al., 2002; Noell, Witt, Gilbertson, Ranier, & Freeland, 1997).

Currently, the literature on PFB focuses on component analyses (i.e., determination of the effective elements of TI) in order to streamline the process and make

its use more feasible in applied settings (Mortenson & Witt, 1998; Noell et al, 2002; Witt, Noell, LaFleur, & Mortenson, 1997). One reason that researchers conduct component analyses is that implementation of PFB packages can be rather time-consuming, thereby potentially presenting a barrier to effective consultation (Constenbader, Swartz, & Petrix, 1992). Researchers search for time-efficient ways to improve TI.

Another component that deserves examination is the identity of the feedback delivery person in relation to the intervention implementer. In the previous literature, two different persons (i.e., the school psychologist and the teacher, respectively) performed these two roles separately with the school psychologist providing PFB to the teacher; but no one has investigated if the implemented and supervisor can be the same person. One way to help the development of the feedback delivery person role is through the use of self-monitoring. Self-monitoring (SM) is the recognition of the occurrence of a behavior as well as the maintenance of an accurate record of the behavior (Bandura, 1986) by the individual himself or herself. Bandura (1986) identifies three major components of SM: observation, judgment, and reaction. Several authors have used SM to produce positive behavior changes in children with behavior disorders (Lam, Cole, Shapiro, & Bambara, 1994; Rhode, Morgan, & Young, 1983), autism (Coyle & Cole, 2004), internalizing problems (Shapiro & Cole, 1994), academic difficulties (Lam et al., 1994), and learning disabilities (Harris, 1986). SM has also effected positive behavior changes in residential staff (Burgio et al., 1990; Richman, Riordan, Reiss, Pyles, & Bailey, 1988) and school staff (Petscher & Bailey, 2006).

Addressing generalization of teacher skills without provision of specific training would decrease training time needed for each student with a BSP. Additionally,

maintenance of TI through SM would also make supervision more effective and efficient, as teachers would need less training and supervision to maintain high levels of TI.

Purpose of the Present Study

The main purpose of this dissertation was to evaluate if SM could improve TI of BSPs. While research supports the effectiveness of PFB in improving TI, there are several weaknesses associated with PFB: it can be time consuming, it is subject to effects of reactivity, it is resource intensive as it requires the identification of a supervisor, it has poor maintenance data, and it is sometimes unacceptable to teachers (Mortenson & Witt, 1998). SM has shown some potential to improve TI in non-special education settings (Burgio et al., 1983; Petscher & Bailey, 2006). Given the preliminary success of SM on staff behavior, it might be useful to determine if SM can be used to not only increase TI in BSPs, but to improve generalization and maintenance of gains in TI. If successful, SM would address the current limitations associated with providing individualized, consistent PFB and therefore would be an important tool for school psychologists to aid in monitoring the TI of BSPs. If effective, SM procedures could extend the resources of school psychologists, decrease time necessary to monitor TI, limit concerns of reactivity to an outside observer, prove to be more acceptable to teachers than direct monitoring by school psychologists, and improve maintenance of TI over time. The goals of this dissertation attempt to address the deficits of PFB through the addition of SM training for teachers.

The first goal was to evaluate if training teachers to self-monitor their own implementation of BSPs would improve TI to acceptable levels. Training teachers to self-monitor their own implementation would address the time-consuming nature of PFB.

While PFB might still be necessary to bring teachers to target levels of TI, PFB may be faded more quickly if SM is incorporated which would mean less supervision is necessary.

The second goal was to evaluate if training teachers to self-monitor their implementation of BSPs in addition to PFB would improve the maintenance of TI once PFB was removed. As the literature is currently looking at components that enhance PFB (Mortenson & Witt, 1998; Noell et al, 2002; Witt, Noell, LaFleur, & Mortenson, 1997), SM may be a component that fills addresses the deficits of poor maintenance of TI once PFB is removed. This also addresses the third goal of the study which was to evaluate if SM would not only improve the maintenance of TI, but if it would improve maintenance of TI to greater levels than a PFB package that did not incorporate SM as part of the package.

A fourth goal of this study was to evaluate if teachers can generalize skills they were trained on from one student's BSP to another student's BSP without child-specific training. Another missing component in previous research on TI is that there has been limited investigation of maintenance and generalization of teacher skills (Mortenson & Witt, 1998). If it were identified that teachers could in fact generalize their skills in BSP implementation from one student to another, this would have implications for training in schools. Teacher generalization of skills from one BSP to another would mean that school psychologists and consultants would not have to spend time training teachers on each BSP; instead they could train the teacher on one BSP and that teacher would then generalize the implementation to other similar plans in the classroom. The addition of

SM may improve generalization effects of BSP implementation, as the teacher would already be taking responsibility for her own implementation of BSPs and monitoring TI.

The final goal of this study was to examine the relationship of TI to student's behavior. Theoretically, if a BSP targets the function of a student's problem behavior, the correct implementation of that plan would decrease the problem behavior and increase this or her appropriate behavior; however this depends on TI. If a BSP implemented with high TI does not improve a student's behavior, it needs to be modified. Tracking student behavior in addition to tracking TI would support modifying ineffective plans or maintaining effective plans. This again speaks to the need to maintain high levels of TI in order to identify the effectiveness of a plan. This monitoring could also be used in teacher training to illustrate the importance of TI, which could also impact teacher's correct implementation of the BSP.

Current Findings

Four teachers participated in the study with varying results. SM training with no PFB was only able to bring one out of the four teachers to target levels of TI. However three out of the four teachers were able to maintain target levels of TI once PFB was removed, relying only on SM as support. The levels of TI of these plans were also maintained at higher levels when PFB was removed than what has been identified in the literature which implies that the use of SM will in fact help teachers maintain higher levels of TI once PFB is removed, more so than a PFB package that does not include SM. The fourth teacher required additional PFB and was not able to achieve target levels of TI through SM. It appears that SM is a component that can enhance the effectiveness of a

PFB package, however this might also be specific to unique characteristics of the teacher and setting.

This study also found that three out of the four teachers that participated were able to generalize their training to other student's BSPs in the classroom. These were BSPs for which the teachers had not received PFB nor had been trained to self-monitor the implementation of these plans. This implies that less time can be spent training teachers on individual student's behavior support plans as they can generalize their skills independently. The use of SM may also play a role in this, supporting generalization of skills through SM.

Finally, for all four teachers and their respective students, there was a strong correlation between BSP implementation and student behavior. As TI improved, so did student behavior, and when TI was low, student's on-task behavior decreased. This further supports the need to maintain appropriate levels of TI in order to identify the effectiveness of a BSP.

CHAPTER II

Literature Review and Rationale

The following is a detailed literature review of the issues, concerns, and research relevant to the current study. This literature review will begin with the diagnostic criteria and characteristics of autistic disorder according to the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision* (DSM-IV-TR; APA, 2000). Following this there will be a discussion of the specific deficit in the domain of communication and its relationship to problem behavior that children with Autistic Disorder often evidence that interferes with appropriate social and learning development. The chapter then presents a review of the process used to address the interfering behavior (i.e., behaviors that interfere with individuals' ability to participate in and attend to learning opportunities presented in their school and natural environment). This presentation will lead to the primary focus of the literature review: the analysis of the current methods used to facilitate TI with implementation of BSPs.

Pervasive Developmental Disorders

Pervasive Developmental Disorders (PDD) as defined by the DSM-IV-TR (APA, 2000) represents a spectrum of disorders characterized by severe and pervasive impairment in several areas of development: social interaction, communication skills, and/or the presence of stereotyped behavior, interests, and activities. Several disorders meet these requirements and comprise the PDD category: Autistic Disorder (AD), Rett's Disorder (RD), Childhood Disintegrative Disorder (CDD), Asperger's Disorder (AS), and Pervasive Developmental Disorder Not Otherwise Specified (PDD-NOS). Symptoms of these disorders are usually evident within the first few years of life and may be

accompanied by mental retardation. This section reviews PDD disorders other than AD to illustrate the PDD spectrum. The section following this one reviews AD in depth, as youth with AD are the focus of this dissertation.

Rett's Disorder. Rett's Disorder has many behavioral similarities to AD. In Rett's disorder there is generally a 6-18 months period of typical development followed by substantial and sudden loss of skills and mobility. This disorder's link to a single gene defect distinguishes it from other PDDs. Additionally, Rett's Disorder differs from AD in that it is present only in girls, and the course of the disorder affects physical development resulting in widespread loss of appropriate hand-use, coordination, and gait, and the ability to ambulate becomes increasingly compromised (APA, 2000).

Childhood Disintegrative Disorder. Substantial deficits in communication, socialization, and narrow interests characterize Childhood Disintegrative Disorder (CDD). While these characteristics are similar to those found in children diagnosed with AD, the courses and etiologies of the disorders differ (APA, 2000). Children with CDD generally appear to have typical development until the age of 2 years. After this point, the children experience immediate loss of previously acquired skills (e.g., bladder control, adaptive behavior, expressive receptive language, motor skills, etc.). Some evidence suggests that CDD affects children more substantially than AD and includes a more extensive impairment in communication skills (Volkmar & Rutter, 1995).

Asperger's Disorder. Typical language development without any apparent delays in communication characterizes Asperger's Disorder (AS). While communication development in early childhood appears typical, there are evident delays in language in adolescence and adulthood. Individuals with Asperger's Disorder may have high verbal

ability and knowledge in a particular subject matter; however, they appear to lack social aspects of languages including non-verbal behavior and gestures, eye contact, reciprocal nature of conversation, and listening skills. Whereas in AD communication skills appear to be the primary deficit and they have an impact on socialization, in Asperger's Disorder socialization deficits appear to be the most important deficit and impediment to success (APA, 2000). Children with Asperger's Disorder may have difficulty assessing the impact of their language on others, which leads to lack of friendship development and a tendency to alienate themselves in social situations (APA, 2000).

Pervasive Developmental Disorder – Not Otherwise Specified. Pervasive Developmental Disorder – Not Otherwise Specified (PDD-NOS) is used as a diagnosis when children meet some of the PDD criteria, but not enough to meet the criteria for a particular disorder. In children diagnosed with PDD-NOS, there is a presence of deficits or atypical development similar to AD in communication, socialization, and behavior.

In summary there are several disorders and presentations of characteristics under the umbrella of PDD. Of these disorders, AD has been an important focus of the PDD literature and strategies to support children with AD academically, socially, and behaviorally have a considerable amount of research. Interventions focusing on problem behavior found in children with AD are the focus of this literature review and research proposal. Thus, an in depth discussion of AD follows.

Autistic Disorder (AD)

AD (a.k.a., autism) differs from other types of PDD. Readers should note that this dissertation uses the terms autism and AD interchangeably. As compared to children with AS and PDD-NOS, children with AD have more noteworthy impairments in

communication and social skills, and have more limited interests and behavior repertoires. Compared to children with RD and CDD, children diagnosed with autism have the potential to make sizeable gains in language, social, and behavior domains (APA, 2000).

AD is a PDD that affects several different areas of functioning. As defined in the DSM-IV-TR (APA, 2000) the diagnostic criteria for AD include deficits in social interaction, communication, and behavior. These deficits are often accompanied by deficiencies in cognitive functioning, learning, attention, and sensory processing (APA).

While the etiology of autism is unclear, research suggests that AD is neurological in origin (APA, 2000). AD occurs more often in males than in females and in families of all socioeconomic and ethnic backgrounds (Fombonne, Simmons, Ford, Meltzer, & Goodman, 2001). While there are discrepancies among various reporting sources, generally accepted prevalence rates of children with autism spectrum disorder indicate that 1 in 110 children have a PDD, which includes AD, AS, CDD, PDD-NOS, and RD (Centers for Disease Control [CDC], 2007).

AD typically develops within the first three years of life. A diagnosis of AD is made when there are a specific number of characteristics listed in the DSM-IV-TR present. The criteria for a diagnosis of AD are two areas of deficit in social interaction, one area of deficit within communication development, and one area of deficit within the behavior domain (APA, 2000).

Social symptoms. Individuals with AD have substantial impairments in social development. This is generally evidenced by a decreased use of non-verbal behavior and language (e.g., eye contact, expressions, gestures), difficulty or failure to develop

friendships with peers, and a general lack of interest in peers and people. For example, individuals with AD may have difficulty engaging in reciprocal enjoyment, interests, and sharing of experiences and achievements. As a result, they may prefer to play or engage in solitary activities rather than interact with others (APA, 2000).

As per the DSM-IV (APA, 2000), in order to meet criteria for AD, at least two of the following social skill deficit must be present: (a) marked impairments in the use of nonverbal behaviors (e.g., eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction); (b) failure to develop peer relationships appropriate to developmental level; (c) lack of spontaneous seeking to share enjoyment, interests, or achievements with other people; or (d) lack of social or emotional reciprocity (p. 71).

Communication symptoms. Individuals with AD have considerable impairments and delays in the development of both verbal and non-verbal communication skills. This may present as a delay in, or a complete lack of, verbal language. Additionally, individuals with AD who have verbal ability evidence difficulty initiating and sustaining conversation with others, engage in odd or repetitive language, and may present with awkward pitch, intonation, and inappropriate stress in spoken language. Syntax and grammar usage may be inappropriate and awkward, and may include rote phrases memorized from prior conversations, movies, television shows, or songs. Comprehension is an area of significant impairment, and individuals with AD may not understand questions, directions, contextual cues, and implications of demands not explicitly stated.

In order to meet criteria for AD, at least one of the following must be met within the communication domain (APA, 2000): (a) delay in or total lack of development of

spoken language, (b) if speech is present, marked impairment in the ability to initiate or sustain a conversation with others, (c) stereotyped and repetitive use of language or idiosyncratic language, and/or (d) lack of varied, spontaneous make-believe play or social imitative pay appropriate to developmental level.

Behavior symptoms. Individuals with AD engage in restricted and repetitive behaviors. In order to meet criteria for AD, at least two of the following must be met (APA, 2000): (a) preoccupation with one or more stereotyped and restricted patterns of interest that is abnormal either in intensity or focus, (b) apparently inflexible adherence to specific, nonfunctional routines or rituals, (c) stereotyped and repetitive motor mannerisms, and/or (d) persistent preoccupation with parts of objects. Individuals with AD often focus on a narrow and restricted range of interests, insist upon sameness in their routines, engage in stereotypy (e.g., rocking, hand flapping, finger-flicking, toe-walking, and odd hand movements), and demonstrate fascination with part of objects and movement of objects (e.g., spinning wheels).

A severe and pervasive impairment in several areas of development (i.e., social interaction, cognitive functioning, communication, and repetitive patterns of behavior and activities) characterizes AD (APA, 2000). Based on the DSM-IV-TR (APA, 2000) criteria, researchers have identified both social and educational deficits. One of the most prominent characteristics of children with autism is their inability to acquire appropriate and functional speech (Kanner, 1943). Even when children with autism do acquire expressive verbal language skills, they rarely exhibit spontaneous speech or initiate conversations with others (Krantz & McClannahan, 1993). This lack of fluent and

spontaneous speech leads to frustration in communication, often resulting in problem behavior.

Associated problem behaviors. Deficits in social, linguistic, and play in children with autism present significant challenges for educators and therapists and can be difficult to manage in the classroom (Jarrold, Boucher, & Smith, 1996). As a result of skill deficits, specifically within the communication domain, students with developmental disabilities and autism often evidence substantial problem behavior that can interfere with their ability to learn and access educational and community settings (Dunlap & Kern, 1993). A wide range of problematic behavior can interfere with a child with AD's ability to learn in the natural environment and to respond to instruction, including tantrum behavior, dropping to the floor, screaming, kicking, flailing arms, aggressive behaviors (e.g., scratching, pinching, hair-pulling), and self-injurious behaviors (e.g., scratching, skin-picking, hair-pulling, and head-directed self-injury) (Buschbacher & Fox, 2003). These behaviors in isolation are enough to interfere with an individual's ability to learn. However, in AD several of these behaviors can present themselves together, compounding the challenges to modify them and the degree to with which they interfere with learning (Buschbacher & Fox, 2003).

Functions of Problem Behaviors

Although though there are several reasons why students with disabilities may engage in problem behavior, some researchers have suggested that for students with AD, a primary reason for their displays of problem behavior is the absence of functional language skills (Carr & Durand, 1985). That is, children with AD may utilize problem behavior to communicate their needs and wants, such as escaping or avoiding an

undesirable stimulus, accessing preferred attention or a tangible item, attenuating pain, or receiving automatic or sensory stimulation (Iwata, Vollmer, Zarcone, & Rodgers, 1993). As discussed later in this review, investigators refer to these reasons for engaging in problem behavior as *functions* of behavior. Functions of behavior generally fall into five categories: *medical* (e.g., seeking relief of pain), *escape/avoidance* (e.g., leave a non-preferred activity), *attention* (e.g., praise), *tangible* (e.g., food, toy or preferred activity), and *sensory* stimulation, (e.g., pressure) (Iwata et al., 1993). When developing interventions to target interfering or problem behavior, psychologists observe and analyze the problem behavior to identify the function of the behavior. Identification of the behavior's function helps the interventionist, therapist, or school psychologist to identify an appropriate intervention, thereby directly linking treatment to the reason, or function, of the problem behavior. The following paragraphs will describe how each need (i.e., medical, escape/avoidance, and attention/tangible, automatic) can be functionally linked to problem behavior for children with AD.

Relieving pain is considered to be a *medical* function of behavior as it communicates discomfort and desire to alleviate discomfort. A problematic behavior may occur to lessen the pain the individual is experiencing. For example, an individual with communication impairment may engage in violent head-directed behavior in order to relieve the pain of a headache or toothache. If observation and analysis identify that the function of a problem behavior is to relieve pain, then school psychologists should seek medical treatment for the child in addition to, or in replacement of, behavioral programming (Iwata, Dorsey, Slider, Bauman, & Richman, 1994).

As previously indicated, some problem behaviors may emerge in order to *escape* or *avoid* something undesirable. An individual who has a deficit in communication may engage in hitting or kicking behavior to avoid being in a room with a lot of people (Iwata et al., 1994). That is, because the child is unable to communicate to a teacher that he or she is afraid or anxious in a roomful of people, he or she engages in problem behavior to avoid entering the room.

Problem behavior may also function for an individual to access something preferred, including *attention* (e.g., negative or positive, from adults or peers) or some type of *tangible* (e.g. preferred food, toys, activities, items). A student may hit another student playing with a toy in order to gain access to that toy. Once again, many researchers argue that because the student is not able to make requests of his or her classmate to play with or share the toy the student engages in problematic behavior in order to have access to the toy (Durand & Carr, 1985; Iwata et al., 1994). In another situation, a child may not have the skills to engage in a friendly conversation, or initiate a greeting, and instead will cry in order to gain the attention of his teacher, parent, or peer (Iwata et al., 1982).

Finally, problem behaviors that psychologists often observe in children with AD may result from the need to access sensory stimulation. Due to the lack of skills that a child with autism has, not only social and communication, but also play skills, the child evidences other types of self-stimulation (Quill, 1997). In order to keep themselves occupied, entertained, or to stimulate themselves independently, children with AD may engage in self-stimulatory behavior in order to receive sensory feedback that is pleasurable and calming. Examples of sensory-seeking behavior may include, but are not

limited to, running in circles, hand-flapping, closing their eyes for visual stimulation, rhythmic body-rocking, repeatedly watching credits to movies, and making non-contextual vocalizations (Turner, 1999). Turner (1999) provided an example of child who repeatedly opened and closed the door to his bedroom while keeping one eye at the opening, watching the images appear and disappear for over two hours.

Although one goal of behavioral programming and assessment is to identify the reason most likely associated with problem behavior, it is important to note that often, problem behavior may be the result of multiple functions or reasons (Iwata et al., 1993). For example, a child may bite in order to escape an activity *and* to receive attention from the teacher. Additionally, the function of behavior may change over time (Lerman, Iwata, Smith, Zarcone, & Vollmer, 1994). While a child may initially play the piano in order to avoid disapproval from parents, the child may later play piano to receive attention from an audience or peers.

Applied Behavior Analysis

As the interfering behaviors (i.e., behaviors that prevent children from accessing social and academic opportunities in their schools and natural environments) often present in children with autism are challenging to modify and impact learning, researchers must identify methods to provide support to these students so that they may learn and progress. Several authors have identified behavior intervention based on Applied Behavior Analysis (ABA) as the most effective group of interventions to teach appropriate behavior and to modify and decrease inappropriate behavior in children with autism (Buschbacher & Fox, 2003; Carr, Dunlap, & Horner, 2002; Eber, Sugai, & Smith, 2002; Sugai & Horner, 2002). That is, these researchers have analyzed the

aforementioned reasons for or functions of problem behavior and provided corresponding treatments using the techniques described as ABA.

Different researchers describe and define ABA from varying perspectives. Sulzar-Azaroff and Mayer (1991) define ABA as the systematic study of variables that influence the behavior of an organism. Cooper, Heron, and Heward (2007) term ABA as, "The science in which the tactics derived from the principles of behavior are applied to improve socially significant behavior and experimentation is used to identify the variables responsible for the improvement in behavior" (p. 16). Similarly, Alberto and Troutman (2006) define ABA as "…the systematic application of behavioral principles to change socially significant behavior to a meaningful degree." (p. 22). In summary, the essential components of ABA must include an adherence to the principles of behavior (e.g., reinforcement, shaping, and extinction), systematic application of these principles, and a system to monitor the relationship between the application of the principles and the change in an organism's socially relevant behavior. ABA has as its focus to change the environment in order to decrease interfering behavior and promote success in life goals that include learning, accessing friends, accessing employment, and participating in the community (Carr & Durand, 1985). Therefore, not only are ABA professionals interested in reducing maladaptive behaviors, they are simultaneously focused on shaping children's strengths to create and promote adaptive behaviors. That is, the goal of ABA is to help the child function as independently as possible while rendering the inappropriate and interfering behaviors irrelevant, inefficient, and ineffective.

Behavior interventions such as ABA have a large body of literature to support their effectiveness in decreasing inappropriate behavior in children with autism. Studies

report successful reduction of specific behaviors often exhibited by children with autism, including self-injurious behavior (Iwata et al., 1994; Kahng, Iwata, & Lewin, 2002), aggressive behavior (DeLeon, Fisher, Herman, & Crosland, 2000), and stereotypy (Ahearn, Clark, Debar, & Florentino, 2005; Durand & Carr, 1997). Several reviews of the literature have outlined and summarized the effectiveness of behavior interventions to reduce problem behavior and to increase appropriate skills for individuals with AD (Horner, Carr, Strain, Todd, & Reed, 2002; Kahng et al., 2002). For example, Horner et al. (2002) conducted a review of 41 studies on behavior interventions targeting interfering behavior in children with autism. Interfering behaviors commonly reported in children with AD (0-8 years) included aggression, tantrum, self-injury, and stereotypy. This review supported the use of behavior analysis, including the analysis of biological events, antecedents in the environment, and maintaining consequences, and interventions based on this analysis effectively decreased targeted behaviors in children with autism.

Several studies have also identified behaviorally based interventions effective in teaching academic and social skills (Krantz & McClannahan, 1998; Lovaas, 1987; McGee, Morrier, & Daly, 1999) to children with AD. Studies report the increase of specific behaviors including replacement communication skills (Carr & Durand, 1985; Durand & Carr, 1992; Hagopian, Fisher Sullivan, Acquisto, & LeBlanc, 1998; Kahng et al., 2002: Roane, Lerman, & Vorndran, 2001; Wacker et al., 1990), daily living skills (Cuvo, Jacobi, & Sipko, 1981), and academic skills (Anderson, Avery, DiPietro, Edwards, & Christian, 1987; Birnbrauer & Leach, 1993; Daly & Martens, 1994; Fenske et al., 1985; Lovaas 1987; McEachin, Smith, & Lovaas, 1993). Moreover, meta-analyses show that, collectively, studies focusing on behavior interventions based on operant

learning were more effective for teaching individuals with autism and developmental delays than alternative methods (Bushbacher & Fox, 2003; Didden, Duker, & Korzilius, 1997). An important component of the literature supporting behavioral interventions is that these procedures are not only effective across target behaviors but also in school and home settings (Harding et al., 1999).

For example, Roane et al. (2001) used a behavior intervention designed according to the ABA principles to decrease the screaming of an individual with autism, while teaching an appropriate replacement behavior. Roane et al. identified that the individual screamed and threw materials when presented with a non-preferred task or activity. While the individual did not have verbal ability within his repertoire, Roane et al. successfully taught him to place a plastic block in a bucket to signify "I need a break" in order to effectively communicate his displeasure with the activity.

Kahng et al. (2000) successfully implemented the behavior intervention of non-contingent reinforcement (NCR) in order to decrease the interfering behavior (i.e., aggression and self-injury) in three individuals with autism and developmental disabilities. Following an analysis of the function of the behavior (i.e., attention-seeking), the researchers provided the individuals with non-contingent attention throughout the day. Following this intervention, all three individuals had significant decreases in both self-injury and aggression across multiple settings.

In summary, behavior intervention and its application in ABA is the most promising intervention to decrease inappropriate problem behavior in individuals with developmental disabilities and autism (Bushbacher & Fox, 2003; Didden et al., 1997).

Behavior Support Plans and Functional Behavioral Assessment

As a result of the evidence in support of behavior intervention to decrease interfering behaviors and increase appropriate replacement behavior in individuals with AD and other disabilities (e.g., developmental disabilities, behavior disorders), the 1997 amendment to the Individuals with Disabilities Education Act (IDEA; P.L. 105-17) requires that school personnel implement Behavioral Intervention Plans (referred to in the literature and from hereon in as Behavior Support Plans) (BSP) with students identified as exhibiting inappropriate behavior in school. The law states that once school personnel identify a problem behavior that interferes with academic development, they must implement a BSP based on a functional behavior assessment (FBA) (IDEA, 1997).

Behavior intervention and ABA also meets the requirements set forth in the No Child Left Behind Act (NCLB; P.L. 107-110, 2001). The main purpose of the NCLB is to increase educational accountability for states, school districts, and schools. Of the four main areas within NCLB (teacher quality, student testing, scientifically-based research, and school choice), scientifically-based research is germane to this review. ABA, as discussed earlier in this paper, is scientifically based and has substantial literature to support its use as an effective methodology to modify problem behavior for children with autism and developmental disabilities. As the literature identifies this behavior intervention as the most effective intervention, it is the responsibility of professionals in education to utilize ABA when working with children with autism within the public education system to decrease problem behavior that interferes with academic success.

The process of developing a BSP has several stages as outlined by Bambara and Kern (2005). While members of a school-based support team (e.g., school psychologist,

teachers, social worker, related service providers) all collaborate on the FBA and BSP, the school psychologist and behavior consultant typically conduct the assessment, coordinate plan development, and supervise plan implementation. Initial steps in this process require the team to prioritize and define the target problem behavior. Next, the team conducts a FBA in order to identify the function of the behavior (i.e., why the behavior occurs). Following the FBA, the team develops several hypotheses based on the FBA, and may engage in hypothesis testing in order to identify the function of the student's target behavior. Once the team has identified one or more hypotheses, the team members develop a BSP that addresses antecedents and setting events that trigger and occasion the behavior, teach appropriate alternative or replacement behavior, and outline response strategies should the problem behavior occur. The final and ongoing stage of the BSP development is to evaluate its implementation integrity and effectiveness.

Functional behavior assessment. FBA is a process used to determine how conditions in the environment influence and support a student's behavior (McDougal et al., 2000). In order to identify these conditions, school psychologists collect vital information from a variety of sources in order to identify the context in which the behavior occurs, using direct assessment information from observations and indirect assessment information from informant data in order to identify the purpose or function of the problem behavior (Carr & Durand, 1985; Sugai et al., 2000). As discussed earlier, problem behavior has five categories of function (medical, escape/avoidance, attention, tangible, sensory). By identifying the function of the problem behavior through an FBA, school psychologists can distinguish environmental modifications, teaching strategies, and replacement strategies that support the problem behavior. Through this accumulation

of information, the FBA will help professionals to generate hypotheses as to the function of the behavior.

Direct assessment methods included in an FBA are event-recording and time interval sampling (Cooper, Heron, & Heward, 2007). Event recording focuses on recording the target behavior each time it occurs. There are several event-recording methods: a narrative ABC record, a frequency count, and a scatter-plot analysis. A narrative ABC record tracks the antecedent (A) to the problem behavior, the actual behavior (B), and the consequence (C) that followed the problem behavior. This tool is useful in identifying what occasions the problem behavior to occur and what consequences may be maintaining the behavior. A frequency count records the behavior each time it occurs. A frequency account gives information as to how often the behavior occurs. It does not provide much information about what contingencies may affect the behavior; however, it provides the assessor with information regarding rate and frequency that the assessor can used as a baseline for the current rate of behavior. A scatter-plot analysis is used to determine patterns in behavior. The school psychologist tracks the occurrence of each behavior on a grid that incorporates time of day and day of the week. This tool gives useful information about when and where the behavior is more likely to occur.

Interval sampling is used to track behaviors that occur at a high rate by breaking down observations into manageable intervals (Cooper, Heron, & Heward, 2007). Types of interval sampling include whole-interval recording, partial interval recording, and momentary time-sampling. Whole-interval recording requires the school psychologist to indicate if the target behavior occurred throughout the entire interval. Partial interval

recording requires psychologists to indicate if the behavior occurred at all during the interval. Momentary time-sampling requires that the observer note at pre-specified times if the behavior occurred at the exact time of the observation.

Indirect assessment methods include the use of self-report, rating scales completed by self or others, and interviews with parents and professionals. Interviews used to collect information usually include a discussion about the target behavior, when it appears to occur more often, and under what circumstances it occurs. School psychologists often use structured interviews to obtain informant information. Once psychologists have accumulated information from the FBA, they develop an hypothesis as to the function of the behavior and based on the hypothesis, a BSP.

A substantial amount of research indicates that BSPs derived from FBAs tend to evidence more success when applied to students with considerable problem behaviors than do other interventions (Carr & Durand, 1985; Dunlap, Kern-Dunlap, Clarke, & Robbins, 1991; Sugai, et al. 2000). In a review of the research, Repp, Karsh, Johnson, and VanLaarhoven (1994) found that interventions based on an FBA tend to be more successful than interventions that were not functionally relevant. Similarly, DuPaul and Eckert (1997) conducted a review of the literature for interventions for children with ADHD and also identified that interventions based on an FBA were more effective than interventions based solely on response cost or reinforcement.

Behavior support plans (BSPs). Once the school psychologist has prioritized and defined the target behavior, completed an FBA, and developed hypotheses, the psychologist can develop a BSP. Common components of a BSP include: (a) antecedent

and setting event strategies, (b) replacement and alternative behavior teaching strategies, and (c) response strategies (Bambara & Kern, 2005; Carr & Durand, 1985).

Antecedent/setting event strategies (Bambara & Kern, 2005) are supports that specifically address antecedents to problem behavior. The focus is on reducing problem behavior through prevention in order to provide more teaching opportunities for the new and replacement behaviors. Antecedent or setting event strategies (a) prevent problem behavior from occurring, (b) quickly modify the environment to provide the student with success, (c) correct a faulty environment, and (d) enhance instructional environments. Antecedent strategies accomplish these things by restructuring the environment to prevent problem behavior from occurring.

Some examples of antecedent strategies are written rules to provide visual supports for challenging tasks (Chandler & Dalquist, 2006), outlines or task analyses for a new task (Chandler & Dalquist, 2006), social stories to review prior to activities that elicit problem behavior (Gray & Garand, 1993), reminders of forthcoming positive contingencies (Chandler & Dalquist, 2006), quiet for task completion (Horner, Day, Sprague, O'Brien, & Heathfield 1991), removal or modification of antecedents (Horner et al., 1991), and modification of mode of instruction. When events that school psychologists are not able to modify (e.g., divorce, medication) occasion problem behavior, they can modify the interaction with the student by reducing noise level, removing distracting stimuli, and alternating between difficult and easy tasks (Horner et al., 1996).

Teaching strategies are critical components of a BSP (Bambara & Kern, 2005). FBA identifies inappropriate behaviors as communicative in function, and school

psychologists need to teach students how to achieve the same outcomes through alternative communicative skills that are more effective, efficient, and socially acceptable than the current interfering and problematic behavior. School psychologist need to teach replacement skills for use in the same situations that elicit the problem behaviors, in conjunction with antecedent strategies, and should target the replacement skills prior to the occurrence of the target behavior (Carr, Dunlap, & Horner, 2002; Carr & Durand, 1985). School psychologists need to assure that the effort required for the student to perform the alternate behavior is comparable to the effort required to execute the problem behavior, that the quality of the outcome is the same or better than the problem behavior outcome, that reinforcement is immediate and consistent, and that there is a diminished probability of punishment (Bambara & Kern, 2005). Additional examples of skills that school psychologists can target for instruction as part of a BSP include teaching functional communication to a student in order for him or her to communicate more effectively (Bambara & Kern, 2005). For example, a psychologist can teach a child wishing to escape a non-preferred activity to appropriately reject the activity, ask for help, or request a break. A psychologist can teach a child who is using problem behavior currently to access a tangible to obtain preferred materials independently, request assistance to access the item, or request the item to be readily available after he completes the work. If a child is engaging in problem behavior to receive attention, the psychologist can teach him appropriate methods to access attention by saying “look” or providing a tap or sign to receive attention.

BSPs might include teaching strategies that are specific to the function of the behavior. Researchers have used several strategies to target the problem behavior when

they have identified the function of the problem behavior as escape. Some examples of these strategies or interventions are modification of demand difficulty (Gunter & Denny, 1996), building preferred activities into the assigned activity (Dunlap & Kern, 1993; Dunlap et al., 1994), decreasing task length (Dunlap et al., 1991), modify mode of task completion (Dunlap et al., 1991), increasing predictability of activities (Clarke, Worcester, & Dunlap, 2002), using behavioral momentum (Horner et al., 1991), and increasing the functionality of goals that may prevent the individual from wanting to escape (Dunlap et al., 1991). Examples of strategies that target behavior that functions to access an item or activity can include providing a warning of the upcoming transition, warning of upcoming loss of the activity (Mace, Shapiro, & Mace, 1998), and using a transition activity (e.g., a preferred item that the child can access during a transition (Dunlap et al., 1994)). For behaviors that appear to have a sensory or self-stimulatory function, school psychologists can provide an alternate mode of sensory stimulation (Luiselli, 1994), can enrich the environment with sensory stimulation accessible with ease (Luiselli, 1994), and can provide sensory stimulation on a set schedule allowing the child to access massage, visual stimulation, vibration pillows, and other sensory materials (Kern, Koegel, Dyer, Blew, & Fenton, 1982).

Should the problem behavior occur, the staff working with the student need to exhibit a consistent response to the problem behavior. The goals of response interventions include a reduction of outcomes for problem behavior, prevention of escalation of problem behavior, allowing for natural consequences of inappropriate behavior, and teaching alternative appropriate behavior within the context of the problem behavior in certain situations (Bambara & Kern, 2005). School psychologists need to

provide support for appropriate behavior while withdrawing current supports for the challenging behavior (Chandler & Dalquist, 2006). Examples of reactive or response strategies include removing the supports that currently maintain the problem behavior (extinction), providing reinforcement for appropriate behavior, redirecting inappropriate behavior to engage in appropriate behavior, or ensuring loss of a preferred item or activity contingent upon the inappropriate behavior (Alberto & Troutman, 2007).

Given the research available, it is clear that school personnel can effectively treat many of the primary (social and communication problems) and secondary (aggression, self-injury, etc.) problems experienced by children with AD using ABA. Specifically, the cited research demonstrates that an FBA that identifies the root reason for the problem behavior may be a necessary component to generating an effective behavior plan.

Implementation of Behavior Support Plans

Research demonstrates that following a specific protocol, which includes conducting an FBA to generate a BSP, leads to decreases in severe problem behaviors and increases in appropriate behaviors for children with AD and other disabilities (Bambara & Kern, 2005). Of course, this process requires that school professionals effectively employ the intervention plan. Once they complete the plan, school professionals need to create a system to implement the plan correctly, monitor the plan's effectiveness, and modify the plan as needed. While there are different methods to monitor the implementation of BSPs, direct consultation from a school psychologist, behavior consultant, or teacher supervisor is the method used most frequently (Noell et al., 2006). A confounding variable in the implementation of BSP is that the individuals implementing the plan (e.g., classroom teachers, teacher assistants) may have had the

least input into the BSP development (Noell et al., 2006). This is a concern, as the teachers and assistants may have limited understanding of the components of the plan, and may have less practice than plan developers in implementing plan components, which may impact the accurate implementation of the BSP. Thus, consultation from the school psychologist or professional responsible for generating the FBA and BSP is necessary to monitor teacher implementation of BSPs (Mortenson & Witt, 1998). Monitoring of a BSP is a necessary component in the evaluation of treatment effectiveness and of effective classroom consultation (Mortenson & Witt, 1998). There needs to be a supervisor to monitor the proper implementation of the BSP in order to identify the effectiveness of the plan, the need for a plan change or modification, or development of a new plan. Adherence to a treatment plan by the person implementing the plan (usually the classroom teacher) is called TI (Gresham, 1989).

Behavior consultation is a model in which a psychologist or consultant works in collaboration with a teacher in order to develop, implement, and evaluate a BSP for a student (Erchul & Martens, 2002). Within behavioral consultation, the teachers and classroom staff are responsible for BSP implementation (Gutkin & Curtis, 1999). While this is a model commonly used, there are several limitations associated with this process. First, BSP implementation training is not sufficient to maintain TI (Green & Reid, 1991; Kovaleski, Gickling, Morrow, & Swank, 1999; Noell, Gansle, & Allison, 1999). Second, there is no system within behavior consultation that assures sustained implementation of a BSP (Happe, 1982). Jones, Young, and Friman (2000) found that teacher compliance with BSPs did not improve with consultation alone, and teachers demonstrated increased TI only when provided with feedback about their specific performance. Third, a direct

examination of the standard behavior consultation model and its comparison with two additional support strategies illustrated that behavior consultation alone is not sufficient to improve TI (Noell et al., 2005).

TI refers to the proper implementation of interventions (Moncher & Prinz, 1991) or the degree to which the teacher implements a plan as intended (Gresham, 1989). It is imperative to have good TI in order to determine the effectiveness of a BSP (Gresham, 1989). It is only with correct implementation of the plan that one can determine the effectiveness of the plan (Gresham, 1989). Without the proper implementation of an intervention, it is not possible to interpret an intervention as effective or ineffective, or to determine if poor outcomes are a result of poor TI (Gresham et al., 1993). Without clear evidence of implementation of the independent variable (i.e., the plan) as intended, there can be no definitive conclusions regarding an FBA (Johnston & Pennypacker, 1980).

Gresham (1989) identified three steps to use to design a system to assess TI. First, one must identify and define the components of the treatment or intervention plan in an observable and measurable way. The three levels of component identification that Gresham outlined include: global, intermediate, or molecular. On a global level, one identifies components of an intervention plan broadly. In the example of a child who engages in pinching behavior, a school psychologist may generate a BSP that contains the following global components: (a) a token system, (b) a visual schedule, (c) functional communication training of break, and (d) scheduled attention as part of his BSP. At this level, the BSP would consist of four parts that psychologists would observe to ascertain TI. On an intermediate level, a school psychologist may measure each of these four components for TI with more specificity. For example, the psychologist may break the

token system into several components to analyze, such as identifying the reinforcers, providing praise, and reviewing implementation of reinforcers at the end of the day. On a molecular level, the psychologist would identify and break down each step of each intermediate component into even smaller steps. For example, while on an intermediate level, the psychologist identifies three components of the token system (reinforcer identification, provision of praise, and provision of reinforcers), on a molecular level, the psychologist would further divide the components of the token system to include every step necessary to properly implement the token system. This may include minor components such as the creation of the materials, selection of tokens, location and storage of materials, specification of the rapidity for providing reinforcement, and designation of the rate of exchange for tokens.

Second, after the school psychologist has identified components of the plan, he or she must observe and record their accurate implementation. The psychologist can accomplish this by measuring occurrence, non-occurrence, and inaccurate implementation of the plan (Codding et al., 2005). Third, the psychologist computes the percentage of plan components implemented correctly as written. Typically, the psychologist displays these data visually by graphing the percentage of correct implementation across observation sessions (Noell et al., 2002).

Results of several descriptive studies suggest that as TI increases, desired behavior change will also increase. The success of strategies addressing anxiety (Vermilyea, Barlow, & O'Brien, 1984), the use of peer tutors (Greenwood, Tercy, Arreagu-Mayer, & Finney, 1992), social skills training, (McEvoy, Shores, Wehby, Johnson, & Fox, 1990), and multiple component plans (Henggler, Melton, Brondino,

Scherer, & Hanley, 1997) support this assertion. Despite the necessity for teachers to implement treatment plans as written in order to determine the effectiveness of a BSP, it is challenging to achieve high levels of TI. Foxx (1996) argues that TI for any intervention, either academic or behavioral, is a more substantial challenge than the development of the intervention itself. Variables that affect TI can be grouped into variables specific to the person (person variables) and variables specific to the intervention plan (plan variables).

Within the group of person variables, adult behavior change is needed to implement BSPs, which may create more complicated variables that confound adherence to the plan (Noell et al., 2005). In other words, school psychologists must train adult teachers in behaviors necessary for plan implementation. This usually requires teachers to learn new ways of behaving toward the child. Factors that may be unique to adult behavior change include the newness of the target behavior, the effort involved in engaging in the target behavior, lack of skill and/or resources for each individual, and working in an environment that has multiple demands that compete for adult attention (Noell et al., 2005). Plan variables present additional challenges. One may address many of these challenges by considering the complexity of a plan, time required to implement a plan, number of materials required, and treatment agents needed (Gresham, 1989).

Complexity of treatment refers to the number of components of a plan and the skills required to implement the plan (Gresham, 1989). As plans become more complicated, with larger number of components and strategies that require additional training and skill, TI decreases (Yeaton & Sechrest, 1981). For example, TI would be

higher on a 5-step BSP that a trained and experienced teacher implemented than TI for an inexperienced para-professional implementing a 15-step BSP.

Another factor linked to TI is the time required to implement a strategy or plan component. If a plan component requires a substantial amount of time to implement, taking away from time in the classroom, it may decrease the probability that the teacher will implement that portion of the plan appropriately, if at all (Gresham, 1989). The availability of additional resources needed to implement a plan may also compromise TI. Interventions that required the teacher to create, access, buy, or locate additional resources have lower levels of TI (Bergan & Neumann, 1980).

The cost of plan components (e.g., reinforcers for a reward system) tends to negatively influence TI (Gresham, 1989), because teachers are responsible for the maintenance and distribution of reinforcers. As supplies run low (reinforcers are used up and not replaced), teachers may not implement the reinforcement component of the behavior support correctly, thereby affecting TI of the plan.

Plans that require more than one treatment agent reduce TI because these plans also tend to be more complex (Gresham, 1989). For example, a plan that requires both parent and teacher involvement may be more complex, time-consuming, and difficult to coordinate, compromising TI and thereby compromising the effectiveness of the plan. Based on this literature, consultants who generate BSPs that include fewer components, using materials already present in the school environment, and consider the efficacy with which teachers can implement these plans in the classroom will obtain better teacher TI.

In addition to these contextual variables, the treatment agent's perception of the effectiveness of the plan and his or her motivation to carry out the plan (Gresham, 1989)

can also influence TI. Likewise, the opposite is true. If a teacher disagrees with a plan and believes that it will not be effective, her motivation to implement it as needed may affect TI (Witt & Elliott, 1985). This is linked to another factor that affects TI: addressing the motivation of the treatment agent. The teacher's motivation to implement the plan may play a factor in either increasing or decreasing TI. If the motivation of the teacher is to remove the student from her class due to interfering behavior that she cannot manage within the classroom, she may be less motivated to implement a plan that may reduce the child's interfering behavior (Ysseldyke, Christenson, Pianta, & Algozzine, 1983).

The literature reviewed in this section highlights the various factors that may hinder proper implementation of BSPs in schools (e.g., complexity of plan, perceived effectiveness of plan, motivation of teacher, training of professionals, etc.). Due to the difficulty of acquiring and maintaining TI and the many variables that may decrease it, Noell et al. (2002) and Noell et al. (2000) suggest that school psychologists must provide supports in order to create an environment that fosters the proper implementation of BSPs.

Behavioral Consultation

Several methods and strategies have targeted improving TI of BSPs including behavior consultation (Reschly & Wilson, 1995), teacher training (Taylor & Miller, 1997), use of treatment manuals (Ehrhardt et al., 1996), guided practice with supervisor support (Hirallal & Martens, 1998), self-reports (Wickstrom et al., 1998), direct observation (Gresham, 1993), data review with the consultee (Noell et al., 2002), and PFB (Noell et al., 2005). Researchers have explored different levels of support as

effective methods to improve TI along a continuum from the least support to the most support. The least support that one can give is no support. In this situation, the consultant creates the BSP and provides it to the classroom teacher, but provides no follow-up support.

Several authors identify behavior consultation as the most widely used model to address behavioral concerns in classrooms (Sheridan & Steck, 1995; Watkins, Crosby, & Pearson, 2001). In their review of the literature, Sheridan and Steck (1995) found that, while there were limitations in many models of consultation, all areas of school consultation had studies with negative effects *except* for studies employing behavior consultation models. Sheridan and Steck (1995) explored the acceptability of conjoint behavior consultation among 409 school psychologists. Conjoint behavior consultation is a collaborative model of behavior consultation that includes the parents and teachers in a collaborative process together with the school psychologist to address a child's academic and behavioral deficits. They used a consultant questionnaire to assess the acceptability of behavior consultation. While results showed that the behavior consultants and school psychologists believed that inclusion of parents in this model was challenging, the principles of behavior consultation were overwhelmingly acceptable to school psychology practitioners.

In another survey of 522 school-based professionals comprised of teachers, administrators and psychologists, Watkins et al. (2001) explored how school psychologists prioritize their roles and responsibilities. They conducted the study in southern Texas. Watkins et al. provided school psychologists, teachers, and administrators with surveys assessing the importance of the different roles of a school

psychologist within the school. Among the top priorities for roles and responsibilities were behavior management and behavior consultation, indicating that not only are these acceptable practices in schools, but they fulfill necessary and valued roles and services as well.

Various researchers have explored several strategies or models within the behavior consultation model: staff training (Taylor & Miller, 1997), training with periods of observation (Green, Reid, Perkins, & Gardner, 1991), additional trainer training (Gonzalez, Hanson, & Costanzo, 1988), reciprocal obligations (Noell et al., 2005), and weekly meetings (Noell et al., 2005). Additionally, studies have used broad supervision to oversee the implementation of BSPs. Telzrow (1995) suggests that in order to maintain TI, a supervisor must provide support to personnel implementing BSPs; more specifically, the supervision should be the responsibility of the school psychologist. As teachers tend to be the primary staff members who implement BSPs, supervision of teachers' adherence to the BSP is necessary (McDougal et al., 2000).

Taylor and Miller (1997) assessed the effectiveness of BSPs utilizing time-out procedures. They provided training to three teachers at the start of the intervention; however, they did not provide additional feedback on the implementation of the time-out procedure. Taylor et al. discussed possible study limitations relative to the inconsistent results of the study. The authors mainly focused on the lack of an FBA prior to the development of the BSP. However, an additional limitation of the study was a lack of a system to monitor TI of the intervention. The authors noted that more staff training would be necessary for proper treatment implementation. Taylor et al. did not identify

poor TI as the most important limitation of their study, and it was unclear how TI might have affected the outcome of the study.

Green et al. (1991) also utilized a behavior staff training model to support four staff members in the appropriate implementation of work responsibilities and BSPs in a residential facility for 20 individuals with developmental disabilities. Green et al. also incorporated the use of staff observations during work time in addition to the staff training. The authors identified periods of the work day when they could provide training without interfering with the attention and support that the residents of the facility required. The authors conducted observations of TI on a variable schedule throughout the day. The staff members were not aware of the times when the observations would occur, but were aware that there would be observations of their work behavior daily. Observations focused on on- and off-task behavior of the residential staff. The use of observations in conjunction with the staff training appeared promising, with staff members showing an increase in on-task behavior during observations; however, because observers were present and visible to staff when collecting data on the target on-task behavior, reactivity may have affected the results in a manner that is unclear. Additionally, there was limited follow-up on the maintenance of staff performance (i.e., on-task behavior).

Noell et al. (2005) explored the use of reciprocal obligations to increase TI. This study compared several strategies designed to enhance behavior consultation, including the use of PFB and social influence (i.e., commitment emphasis), in order to assess the effects of these variables on TI. Participants included 48 teachers and 8 trained behavior consultants. In the weekly meeting, consultants conducted component, problem

evaluation interviews, a standard component of the four-step behavior consultation model, with the teachers. During this meeting, consultants discussed a brief review of the week and answered any questions about the plans. They did not review materials and data unless the consultees specifically asked for clarification or assistance.

Commitment emphasis was a social influence technique during which the consultant led each teacher through a discussion of five aspects of commitment (Noell et al., 2005). First, the consultant reminded the teacher of the frequency commitments that the teacher made and then broke. Second, the consultant highlighted the importance of the commitment not only to the consultant relationship, but also to the family and child. Third, the consultant discussed the loss of credibility as a result of broken commitments. Fourth, the consultant discussed the important of TI and the necessity for a commitment to TI. Finally, the teacher and consultant discussed steps that the teacher could take to support her own commitment, and how to access the support she needed.

The PFB package included weekly meetings between the consultant and consultee, graphical review of student data, graphical review of TI data, and review of any permanent products (i.e., checklists). Following discussion of the graphical displays, the consultant reviewed and discussed any missed steps and answered questions.

Results of the study showed that PFB maintained the highest levels of TI, with commitment emphasis demonstrating the second highest levels of integrity, and weekly meetings representing the lowest level of TI (Noell et al., 2005). However, the authors cautioned that the difference between the commitment emphasis condition and the use of the PFB package was not statistically significant, and recommend further research in the use of social influence to maintain TI.

This research shows that there are various ways to follow a behavior consultation model; however, it is evident that some form of supervision and feedback is necessary in order to maintain TI (McDougal et al., 2000). The findings by Noell and colleagues (2005) illustrate that, while behavior consultation (in its various forms) is a valued and acceptable model to provide support to classroom teachers in the implementation of BSPs (Sheridan & Steck, 1995; Watkins et al., 2001), there are several limitations to the behavior consultation model (Gresham & Kendell, 1987; Noell et al., 2002, Noell & Witt, 1996; Sheridan & Gutkin, 2000), and school psychologists need to address these limitations to enhance this model (Reschly &Wilson, 1995).

Gresham and Kendell (1987) discussed several limitations to a traditional behavior consultation model, including its non-experimental nature. Their discussion points to the lack of data collection to monitor the effectiveness of the recommendations provided by the consultant or school psychologist, in addition to the lack of data (or evidence) that the teacher has implemented the intervention as written, and the lack of data concerning the effectiveness of the intervention. Overall, the lack of data collection within the behavior consultation model is disconcerting and represents a practice that school psychologists need to change.

Although there is considerable research support for the behavioral consultation model as a means to collaborate with school professionals to generate effective and contextually relevant treatment plans (Green et al., 1991; Noell et al., 2005), recent research demonstrates that behavioral consultation, although necessary, is not sufficient to ensure that teachers implement the plans generated as intended (Sheridan & Gutkin, 2000). Rather, the research suggests that a there must be a specific system in place to

monitor TI and provide ongoing support to school professionals (Mortenson & Witt, 1998; Noell et al., 2000; Reschly &Wilson, 1995).

Methods to Enhance Behavior Consultation and Increase TI

As described earlier, considerable research has found the behavioral consultation model to be the most effective version of consultation. That being said, behavioral consultation is limited in the following ways: a general lack of procedural detail in behavior consultation, a lack of systematic feedback, a lack of systematic methods of staff training, and a lack of a systematic method to monitor treatment plan implementation (Noell et al., 2002). Recently, Noell and colleagues have raised particular concerns regarding whether plan implementation meetings are sufficient to ensure TI (Noell et al., 2002; Noell et al., 2005). The findings from these preliminary studies suggest that behavioral consultation needs to be enhanced with a specific focus on facilitating TI. Some specific ways in which the consultation process can be enhanced that are germane to this review and study include providing PFB.

Performance feedback (PFB). PFB is the most effective way to enhance the behavioral consultation model. In fact, some authors suggest that PFB is an essential tool necessary to maintain appropriate levels of TI (Mortenson & Witt, 1998; Noell et al., 2005). PFB refers to the monitoring of and providing of feedback on the implementation of BSPs (Mortenson & Witt, 1998). A study by Mortenson and Witt (1998) illustrates the application of PFB with BSPs.

Mortenson and Witt (1998) implemented PFB to improve the TI of a reinforcer-based classroom intervention for four student-teacher dyads. The experimenters observed TI for the intervention. Once they observed that TI percentages were stable or

decreasing, they implemented the PFB phase. PFB consisted of weekly observations and meetings at the beginning of the day with teachers. These weekly meetings consisted of several components. First, the consultant presented the teacher with TI percentage and student performance data. Then the consultant provided positive feedback regarding proper implementation of the treatment, followed by corrective feedback on omitted or incorrect steps of the intervention. Following this review, the consultant and teacher discussed the teacher's questions, and the teacher gave a verbal commitment to continue to try to implement the procedure correctly. At the end of the meeting, they scheduled the next meeting. Each meeting averaged 6 minutes in duration.

Following the intervention, the consultant implemented PFB. Mortenson and Witt (1998) modeled PFB after previous research exploring the use of PFB to increase TI. The PFB package in this study included brief meetings with the teacher, review of checklists and additional permanent products that resulted from the intervention, graphs of student behavior, and graphs of the teacher's level of TI. At BPS meetings, the consultant provided the teacher with positive and corrective feedback about implementation of the steps of the intervention. The teacher and consultant engaged in problem-solving strategies on how the teacher consultee could avoid making the same treatment implementation errors in future and schedule the next meeting. In this study, the consultant implemented PFB daily until TI was at optimal levels and then faded PFB systematically.

Others have used PFB to improve TI in the implementation of BSPs with professionals that have varying levels of training and across different settings that included school teachers (Martens et al., 1997) and residential staff (Guercio et al., 2005).

Using a single-subject design, Martens et al. (1997) successfully incorporated PFB to increase teacher use of praise statements to effectively decrease student problem behavior. The teacher and researcher agreed on individual goals of how many praise statements to provide each target student throughout the day. Following observation by the researcher, the researcher provided written feedback to the teacher indicating if she met her goal for that day or if she needed to improve her TI. The written feedback included suggestions and reminders as to how to the meet the goal in the instance that it was not met. Results indicated that problem behavior in two target students with emotional and behavior disorders decreased.

PFB has also shown efficacy in improving the behavior of 30 staff members in a residential facility (Guercio et al., 2005). Guercio et al. utilized several components in a PFB package in order to increase the implementation of behavior programs in a residential facility for individuals with acquired brain injury. The experimenters used individual public posting and group public posting of TI data. During the baseline condition, the authors observed staff during work hours while implementing behavior programs for the residents. Following baseline, staff participated in training. At this time, consultants modeled appropriate implementation of the plans, answered questions, and provided opportunities for staff to discuss the intervention and to make suggestions as to what other strategies they believed would help the residents. During the third phase, investigators posted group TI data publically in the staff office. The fourth phase maintained the group posting, but added information concerning individual staff members' implementation of the behavior programs. Finally, consultants transferred responsibility of the feedback and public posting to the residence supervisors. The

researchers successfully improved behavior program implementation, although it is unclear what effect the sequencing of the interventions may have had and which component of PFB was the more effect component.

Investigators have used PFB to improve TI of interventions targeting increases in behaviors, such as academic performance (Mortenson & Witt, 1998; Witt et al., 1997), peer tutoring (Noell et al., 2000), and praise statements (Cossiart, Hal, & Hopkins, 1973; Jones et al., 1997; Martens et al., 1997). For example, Witt et al. (1997) used daily PFB with four elementary school teachers working with four students for an academic intervention using task analyses. They trained teachers in the target intervention and provided them with all the materials they would need to implement the intervention effectively. The authors used PFB to improve TI for all four participants in the study.

In a slightly different vein from Witt et al. (1997), who targeted the implementation of a strategy to teach a specific skill, Noell et al. (2000) used a PFB package to address academic concerns for students whom teachers referred for academic intervention in order to improve TI in a classroom based peer tutoring intervention. The PFB incorporated a phase for teacher training and brief contact with the teacher following the observation to review the intervention and student performance. Results indicate that PFB was successful at improving TI for four of the five teachers.

In addition to targeting TI in the implementation of academic interventions, researchers have used PFB to target teacher implementation of BSP in general education class. Noell et al. (2002) used PFB to increase TI of behavior treatment plans for six second-grade students with behavior concerns. They trained teachers in the implementation of the plans and used graphical supports to display the increase of TI

over time. Results indicated that while the authors provided PFB, TI remained at high levels.

Cossiart et al. (1973) successfully used PFB to increase three elementary school teachers' positive statements to students. The researchers noted positive teacher statements and provided the teachers with feedback on the frequency and quality of each instance of praise. PFB paired with social praise produced positive changes in the praising behavior of the teachers. Jones et al. (1997) found similar results when using PFB to successfully increase the praise behavior of three teachers working with three students in student-teacher dyads. When experimenters provided specific feedback regarding the frequency of positive statements to their students, teachers increased frequency of praise to students. This increase in teacher praise behavior also appeared to have a positive impact on student behavior. Collectively, research suggests that school psychologists can use PFB to increase TI of intervention plans targeting a variety of behaviors.

Variations of performance feedback. As the above research has identified PFB as an effective and necessary strategy to increase and maintain TI of BSPs, other research has analyzed which are the necessary PFB components to include in order to create the most effective and streamlined PFB package for appropriate use in applied settings (Mortenson & Witt, 1998; Noell et al., 2002; Witt et al., 1997). Within PFB, research has explored level of initial teacher training (Noell et al., 1997, Witt et al., 1997), schedules used to provide feedback (Codding et al., 2005; Mortenson & Witt, 1998; Noell et al., 1997; Constenbader et al., 1992), inclusion of a review of student data (Noell et al., 2002;

Noell et al., 1997; Noell et al., 2000; Witt et al., 1997), and duration of contact between the consultant and consultee (Jones et al., 1997; Noell et al., 2000).

Although the occurrence of some formal training is implied when teachers implement a BSP or academic intervention in the classroom, researchers have also incorporated initial training into PFB packages. Witt et al. (1997) included a teacher-training component in their PFB package to help ensure proper implementation of the intervention. Prior to the start of the study, the consultant worked in the classroom and trained the teacher in the proper implementation of the intervention to ensure accuracy of the intervention. While initial training appears to be a necessary part of PFB, it is not a sufficient component to support high levels of TI.

Another variation in the PFB literature is the latency with which consultants provide PFB. Variations include the provision of PFB immediately following observation (Noell et al., 1997); in the same day, but not immediately after observations (Noell et al., 2002; Noell et al., 2000); the following day (Witt et al., 1997); on a weekly basis (Mortenson & Witt, 1998); and bi-weekly (Codding et al., 2005). For example, Mortenson and Witt (1998) deduced that weekly feedback was less effective than daily feedback. However, while the most positive changes are associated with the most frequent feedback provided (Mortenson & Witt, 1998), less frequent PFB has also effected and maintained positive changes in TI (Codding et al., 2005).

Researchers have incorporated corrective feedback into PFB packages; however, research has not identified the effects of positive feedback compared to negative feedback. In fact, some research has found that teachers will increase TI in order to avoid consultation meetings that required practice of the incorrect BSP component (DiGennaro

et al., 2005). The implication of this research is that teachers view the consultation as aversive, a view that might result from the consultant's corrective feedback. In an effort to improve the consultee/consultant relationship by focusing on positive PFB, my pilot study (Mouzakitis & Codding, 2006) explored the efficacy of including corrective feedback in a PFB package in a self-contained school for students with AD. Three student-teacher dyads participated in the study. All three students had BSPs based on FBAs that teachers were already implementing in the classrooms prior to the start of the study, and teachers had been trained by in-school classroom supervisors to implement these BSPs. However, there was no system to monitor TI of the plans. The study used a multiple baseline with changing conditions design. Phases of the intervention consisted of baseline, PFB with positive feedback only (PFB-P), and PFB with positive and corrective feedback (PFB–PC). I counterbalanced phases across dyads in order to identify any sequence effects.

During baseline, I conducted observations on each student-teacher dyad and completed the TI data sheet with no PFB provided. During the PFB-P phase, I provided teachers with positive written feedback only on components that they implemented correctly, while ignoring incorrectly implemented components. During the PFB-PC phase, I gave teachers written feedback, providing positive statements for components implemented correctly and corrective statements for how to improve missed or incorrectly implemented components. A checklist that corresponded to the students' behavior support plans provided the written feedback. I observed dyads three times a week for 30-minute intervals each and provided written PFB to teachers on a TI data sheet. The data sheet included positive statements and corrective statements. An

example of a positive statement was, “You provided each choice for the token board very clearly and waited for the student to make a selection with no error.” An example of a corrective statement was, “While you provided him with a choice, you prompted him to make a selection without giving him time to choose his reinforcer. Next time give him 5 seconds to make the choice.”

I calculated percent of components completed correctly as TI. For example, if a plan had 20 components, and the teacher implemented10 of them correctly, TI was 50%.

Results varied among the three dyads. I ordered Dyad 1’s phases as follows: baseline, PFB-P, baseline, PFB-PC. The teacher demonstrated stable rates of TI during baseline, with TI averaging 32%. During PFB-P, TI increased from an average of 32% to an average of 67%. This implies that positive feedback was effective for improving TI; however, TI did not rise to acceptable levels (80%; e.g., Codding, Feinberg, & Pace, 2005). Return to baseline showed a decrease in TI (from 67% to 56%). During the final phase of PFB-PC, there was a significant increase in TI from an average of 56% accuracy to an average of 89% accuracy.

I counterbalanced intervention phases for Dyad 2 as follows: baseline, PFB-PC, baseline, and PFB-C. During baseline, Teacher 2 showed a mean of 49% accuracy TI. When I implemented the PFB-PC, TI increased to a mean of 92%. By the end of this phase, TI had reached 100% accuracy across 3 days. Return to baseline showed no effect, as this teacher maintained accurate BSP implementation without PFB.

Dyad 3 followed the same sequence as Dyad 1 (baseline, PFB-P, baseline); however, due to time constraints, I had no opportunity to implement the PFB-PC phase.

During baseline, Teacher 3 averaged 41% TI. During PFB-P, TI increased to 69%. However, there was no change in mean TI with return to baseline.

This dissertation will extend the pilot research by analyzing the components of corrective feedback. Research in PFB has incorporated corrective feedback as part of a PFB package; however, it has not isolated corrective feedback as a component of PFB. The pilot results appear to show that corrective feedback is a necessary component in a PFB. Furthermore, the results demonstrate that positive feedback alone does not increase TI to acceptable levels (i.e., 80%). While positive feedback did appear to increase TI across all three dyads, positive feedback alone was not enough to bring TI to appropriate levels.

Another variable of interest in the PFB literature is the duration of contact between the consultant and the teacher. Research has explored duration of contact between consultant and teacher as a possible factor that may affect TI. Noell et al. (2000) began consultation and PFB by providing daily observations and daily PFB for 3-5 five minutes, while Jones et al. (1997) provided teachers with shorter contact only during set observation periods. Although there are clear variations in the literature regarding duration of contact, no one has made direct comparisons among durations, and therefore, one cannot draw conclusions regarding optimal duration of consultation contact and TI.

Although there are variations in the presentation of PFB that including variations in frequency and duration of contact, latency of provision of feedback, and presentation of data, it is evident in the research that PFB is an effective intervention to utilized to increase TI for behavior and academic interventions. While it is an effective

intervention, there are limitations to PFB. Of most concern is the poor maintenance of high levels of TI once PFB is withdrawn.

Follow-up and maintenance strategies. Researchers have consistently found that when they remove PFB, TI decreases, although there is variability among individuals. Noell et al. (1997) found that while PFB effectively increased TI, when the consultant removed PFB, TI levels dropped significantly, occasionally falling to baseline levels of TI. Witt et al. (1997) also show large decreases in TI following the removal of PFB. Although two out of four teachers in this study maintained acceptable levels of TI post PFB, follow up data were limited and it is unclear how long acceptable levels of TI would be maintained in the absence of PFB. Other studies (e.g. Jones et al., 1997; Martens et al., 1997) do not report on maintenance of TI, limiting conclusions that one can draw.

To avoid the return to baseline levels of TI, Noell et al. (2000) employed a systematic fading of PFB in an attempt to maintain acceptable levels of TI. While they were able to maintain integrity levels above baseline level, substantial follow up data were only available for one out of five teachers, limiting the generalization of these findings. Similarly, DiGennaro et al. (2005) included a dynamic fading procedure in order to fade out PFB. In this study, the researchers initially provided PFB daily, and as teachers maintained TI, the researchers faded PFB to every other day, to weekly, and finally to bi-weekly. However, the researchers did not report on the specifics of the thinning schedule, if there was variation among the teachers, and if all teachers reached the level of bi-weekly feedback.

While the literature is clear on the effectiveness of the use of PFB to increase TI, maintenance of gains in TI is inconsistent with some studies reporting drastic decreases in TI (Mortenson & Witt, 1998; Noell et al., 2002; Noell et al., 1997; Noell et al, 2000; Witt et al, 1997). It is evident that in PFB, higher frequency of contact is more effective than less frequent contact (Mortenson & Witt, 1998) and a comprehensive feedback package is more effective than other interventions (Noell et al., 2005). However, in the schools, it is not always feasible to maintain this high level of supervision to ensure proper implementation of BSPs. It is necessary to find additional supports to the PFB package in order to maintain appropriate levels of TI.

An area that is lacking in the research reviewed is the generalization of teacher TI for other BSPs. For example, if a teacher receives training and PFB on a particular student's BSP, it would be important to note if the teacher's TI would be high on other BSPs on which she received no PFB. If this turns out to be the case, it would mean that there could be less training and PFB required for all BSPs for each classroom. Thus, investing comprehensive PFB on one BSP class would substantially decrease training and feedback required for each student.

The most salient challenge in implementing PFB in order to increase TI is the time-consuming nature of providing feedback (Constenbader et al., 1992). While PFB is an effective means to maintain high levels of TI (Noell et al., 2005), the rigor with school psychologists need to apply it may not be realistic in settings with limited resources. As resources and supports may not always be available in certain settings, compromising the quality of services provided to children who have BSPs, researchers need to identify other methods to maintain high levels of TI.

The research repeatedly states that there is a need to identify effective and time-efficient strategies to improve TI (Mortenson & Witt, 1997; Noell et al., 2002; Witt et al., 1997). In order to decrease the time-consuming nature of PFB without comprising its effectiveness, a future direction for research is to teach skills of self-monitoring (SM) to teachers in order to eliminate the need for intensive and frequent PFB (Noell et al., 2005).

Self-monitoring (SM). In order to work with the limited supports available in many schools, it is important to identify methods that will help teachers monitor their own behavior in the implementation of BSPs. If staff could acquire skills that would assist them in managing their own work-related behaviors in the absence of supervisory personnel, less professional time and financial investment might be required to effect desired behavior changes (Gladstone & Sherman, 1975). Additionally, staff members may be the most effective agents for changing their own performance, since they have more immediate and continuous access to their own behavior than a supervisory agent. It is hypothesized that participative management training, such as SM, may provide an individual with a generic set of skills to facilitate later program implementation (Thoresen & Mahoney, 1974).

SM is recognizing the occurrence of a behavior and recording it (Bandura, 1986). Bandura (1986) identifies three major components of SM: observation, judgment, and reaction. In order to accurately self-monitor one's own behavior, the individual needs to be aware enough to observe the behavior, judge the accuracy or inaccuracy of the behavior, and react to the behavior in a corrective or reinforcing manner. Benefits of SM include an emphasis on an individual's control over her own behavior, continuous and

immediate feedback, and a thorough and constant documentation of the target behavior (Bornstein et al., 1986).

SM has produced positive behavior changes in children with behavior disorders (Rhode et al., 1983; Lam et al., 1994), autism (Coyle & Cole, 2004), internalizing disorders (Shapiro & Cole, 1994), academic difficulties (Lam et al., 1994), and learning disabilities (Harris, 1986). Researchers have also used SM to effect a positive behavior change in residential staff (Richman et al., 1988) and school staff (Burgio et al., 1983; Petscher & Bailey, 2006).

Given the interest in using SM to change adult behaviors when implementing support plans, the following is a review of related articles. Richman et al. (1988) explored the effects of SM and supervisor feedback on staff performance in a residential setting. The purpose of the study was to determine if an SM procedure, with minimal supervisory involvement, would increase staff adherence to scheduled activities and increase on-task behavior. Following a baseline assessing current rates of on-task behavior, researchers provided staff with in-service training providing guidelines for SM. They trained staff to carry with them activity cards to reference and use to monitor their own on-task behavior. Following the training, researchers gave each participant a schedule and checklist to check off responsibilities completed, at which time the researchers provided no feedback. Following a period of SM with no consultant feedback, researchers paired SM with feedback two times a day. Results showed lower levels of TI during the SM alone phase but higher levels of TI when researchers provided feedback with SM. However, it is unclear how much of an effect was due to sequencing of the phases. Another limitation of this study is the lack of follow-up data, allowing for

limited generalizability of the findings over longer periods of time and maintenance of behavior.

Petscher and Bailey (2006) used tactile prompts (vibrating buzzer) and SM in combination with accuracy feedback to improve TI in the teacher implementation of a classroom token economy. Teachers received a routine training in the implementation of the intervention. One additional session of training followed baseline on TI. Researchers then monitored TI until teachers established a stable level of responding. Following this trend, the researchers applied the intervention of prompting, SM, and accuracy feedback to the first behavior. They provided teachers with a vibrating buzzer that the consultant controlled. In the first phase of the intervention, the consultant provided a tactile cue in the presence of an opportunity to implement the token economy in addition to an SM component of the consultee's own behavior. After a session, consultants gave participants an SM form. The experimenter and participant compared SM notes. Following a stable trend in the SM condition paired with the tactile prompt, the consultant removed the tactile prompt. The consultant provided feedback following the completion of the SM form. Results of the study showed that the use of tactile prompts paired with SM paired with accuracy feedback improved TI for the implementation of the classroom token economy. It is unclear if was the tactile prompt or the SM was responsible for the behavior change as there may have been a sequencing effect to the intervention. Although there were effects for the training procedures, maintenance of TI was not as strong for each behavior targeted. Results suggest that tactile prompts were effective in bringing the attention of the participants to the correct behavior. For several participants, SM and accuracy feedback alone were not sufficient to maintain behavior

change. More research is needed to determine the long-term utility of the treatment package.

Similarly, Burgio et al. (1983) developed a staff training and management program to improve praise statements in staff working with adults with developmental disabilities in a residential setting. However, in their staff training system, they included a self-management training package that included SM as part of the package. Burgio et al. used a multiple-baseline design across staff members to evaluate the effectiveness of the self-management program.

Prior to the study, supervisors reported that positive interactions between staff and clients (residents) had decreased to non-existent levels. During baseline, supervisors conducted normal supervisory staff actions, with occasional informal feedback provided daily and staff meetings monthly. The intervention, termed *participative management,* had four components. First, consultants asked staff members to identify a personal daily goal for number of positive interactions with residents. Second, consultants taught staff members how to count their own behaviors using a clicker device to keep track of their progress. Third, consultants instructed staff members to graph their own frequency of positive interactions and statements. Finally, during meetings, consultants encouraged staff members to self-praise their adherence to their stated goals or progress toward reaching their goals. Additionally, at the request of the staff, consultants provided staff members with graphs of the residents' behavior. The final phase of the study was a partial withdrawal, where the conditions remained the same as during the intervention, with the exception that consultants removed the graphs of the residents' behaviors.

Results of this study indicated that the self-management program paired with graphical representation of the residents' problem behavior increased positive interactions between staff and residents while decreasing supervisory contact. The implication is that staff behavior can be improved while decreasing supervision. This has important implications as one of the criticisms of PFB is the need for high levels of supervision, which can be challenging if supervisory resources are not available (Witt et al., 1998). In this study, all staff showed significant increases in positive interactions, although there was variability in the level of increase across participants. Although this study achieved positive results, the many self-management components incorporated make it difficult to identify which component may have been effective in producing a change in staff behavior. It is possible that SM alone may have produced a significant change and would have required less training and would have been less time consuming.

Some studies have explored how psychologists can use fading and supervision to maintain appropriate levels of TI ($\geq$ 80%). This is an important consideration as time constraints of supervisors limit the likelihood that PFB and supervision will occur on a consistent basis (Mortenson & Witt, 1997; Noell et al., 2002; Witt et al., 1997). Therefore, Burgio et al. (1983) explored the effectiveness of a self-management program that gradually decreased, or faded, the level of supervision provided to staff. Prior to the intervention, consultants provided staff with a review of the procedures they had been implementing, including a review of the accuracy of implementation of these behavior interventions and quality of life modifications for the residents of the facility. Consultants reviewed job expectations and provided strategies on how to follow these expectations. Consultants completed baseline observations following the training during

specific times on a daily basis. The intervention that followed baseline was a self-management program that included several components: goal setting, SM checklist, self-graphing of compliance to work expectations, and self-praise for appropriate implementation of work expectations. In addition to the self-management, supervisors provided feedback on a weekly basis and reviewed individual performance graphs.

Results from this study suggest that intense supervision is not necessary to effect behavior change by staff in the presence of a SM system (Burgio et al., 1983). Behavior change in staff compliance was evident and maintained on follow-up, but staff did not maintain compliance at the same rates as during the intervention, which included supervisor feedback. Additionally, variability among the participants made conclusions regarding the general effectiveness of this strategy difficult.

Summary

Recent legislation encourages school psychologists and teachers to implement evidence-based treatments for all children who experience behavior problems in schools. A necessary component when implementing and evaluating effective treatments is TI. Unless school psychologists examine some measure of TI, it is impossible to verify whether intervention effects are the results of the intervention, or some other confounding variable. Research on TI shows that, although behavior consultation is more effective than other school-based consultation models, behavior consultation alone is not sufficient to ensure that teachers implement evidence-based interventions as written (Noell et al., 2002). Consequently, researchers within the fields of school and organizational psychology have investigated methods to enhance this consultation model. One of the most successful and frequently examined strategies used to facilitate TI is PFB. Research

shows PFB to be effective across special and general education students (Mortenson & Witt, 1998; Noell et al., 2002); when provided daily, weekly, and bi-weekly (Codding et al., 2005; Mortenson & Witt, 1998; Noell et al., 1997; Noell et al., 2002); and across simple (Mortenson & Witt, 1998) and complex treatment plans (Codding et al., 2005). However, there are several concerns with this literature (Mortenson & Witt, 1998) including reactivity to the supervisor or observer, the time-intensive nature of PFB, the resource intensive nature of PFB, limited evidence of maintenance of skills following removal of PFB, some lack of acceptability of PFB by teachers, and difficulty identifying a supervisor to sustain PFB.

Reactivity is the phenomenon that occurs when the observee's behavior changes simply because he or she is being observed by an outside observer or by him or herself (Kazdin, 1982). Reactivity is a concern with the implementation of BSPs as it becomes difficult to identify if the teacher is implementing the plan correctly in the absence of a supervisor. Training teachers and staff members to self monitor their own behavior will limit the need for supervisor observation, thereby minimizing the concern for reactivity.

Researchers also report that PFB is quite time-intensive (Mortenson & Witt, 1998; Noell et al., 2005). This is a problem for several reasons. First, the time-consuming nature of PFB may take classroom time from the staff while the consultant or supervisor is providing feedback to the teachers. Additionally, it may be challenging to identify a professional in the school with time available to provide PFB for each student who has a BSP on a consistent basis. SM may address these concerns as well. Training teachers and staff to effectively monitor their own behavior limits the amount of time that a

supervisor needs to provide ongoing feedback and limits the school's need to identify additional support service to provide feedback.

There is limited evidence of the long-term maintenance of TI once supervisors remove PFB. This may be because teachers and staff become dependent upon the supervisor to provide the feedback, causing maintenance in the absence of feedback to be lower. By training staff to self monitor their own behavior; teachers may maintain higher levels of TI, as they will not be dependent on outside feedback to maintain appropriate levels of TI.

Although it is not a specific limitation of PFB, the PFB literature has not explored the possible generalization of BSP implementation skills on BSP plans provided without specific feedback. This is an important avenue to explore as it addresses the time-intensive nature (and limitation) of PFB. If generalization of treatment across TI occurs without specific training, this will minimize the time-intensive nature of providing PFB.

Some researchers have raised concerns that teachers may prefer to maintain high levels of TI in order to avoid PFB (DiGennaro et al., 2005). This implies that teachers and staff perceive the consultation and feedback provided in PFB as negative. This is another possible limitation of PFB that teaching teachers and staff to monitor their own implementation of behavior support plans would address. Teachers can be taught to evaluate their own progress and may perceive self-evaluation as more positive than receiving PFB from consultants.

In the staff training literature reviewed, SM demonstrated potential to improve staff performance. In fact, Suda and Miltenberger (1993) found that combining direct training, a review of antecedent procedures, consequence procedures, and incorporating

SM procedures was most effective for increasing positive interactions among staff members and clients in a residential setting. Using a multiple baseline design across staff members, they implemented the research in several phases: a baseline phase, a training and instruction phase, a self-management phase, and for some staff members, an additional PFB phase. Results indicate that while staff training improved following instruction, there were greater improvements during the self-management, and four of the six staff members maintained these gains. However, the results were somewhat confounded as the authors' implemented additional PFB phases for three of the six participants. While the researchers did not specifically address the TI of interventions, this study shows the potential for SM to increase appropriate work-related behaviors in staff member working with individuals with disabilities. This model is consistent with the PFB literature that includes training (antecedent procedures), feedback (consequence procedures), and SM procedures that show promise in retaining higher rates of TI (Burgio et al., 1983; Petscher & Bailey, 2006; Richman et al., 1988).

Dissertation Purpose

While PFB is an effective method for improving TI, and SM as part of a PFB package has preliminary research support, there is need for further study in this area to explore SM with teachers in the implementation of BSPs, and there are limitations in the research and current models that additional research needs to address. The literature review highlighted these limitations that include the limited support of PFB in regard to maintenance of TI, the lack of research addressing the generalization of teacher skills to other students, the time-intensive nature of PFB packages, the possible negative role that PFB may have from the perspective of teachers and staff, and the lack of clarity as to how

effective SM is as a component of PFB. This dissertation will address these shortcomings in the research by examining whether training teachers to self-monitor BSP implementation will improve TI to acceptable levels (80%) without the use of PFB and will compare the rate of improvement to a condition that combines PFB and SM. This study will also investigate whether providing teachers with support with plan implementation through PFB and SM leads to TI maintenance over time and generalization to BSPs for other students. Specifically, the study will investigate whether training provided on one student's plan leads to leads to improved implementation on a second students' plan that is not subjected to the treatment conditions. Finally, this study will also examine the relationship between treatment implementation and student behavior.

Based on the literature reviewed above, this study will investigate the following hypotheses:

HO1: Training teachers to self-monitor their implementation of BSPs will improve TI to acceptable levels (80%).

HO2: Training teachers to self-monitor their implementation of BSPs in addition to providing PFB will improve TI over time following fading of the treatment plan.

HO 3: The treatment packages will improve TI to a BSP that was not specifically trained (generalization).

HO 4: Training teachers to self-monitor their implementation of BSPs will lead to maintenance of TI percentages that are higher than maintenance TI rates achieved with a training package incorporating PFB and no SM component.

HO 5: As TI improves, the target behavior of the *target student* will decrease.

CHAPTER III

Method

The following is a detailed methods section, outlining the methods and procedures that I used to implement this study. This section will begin with a discussion of the participant selection, a review of the procedures to conduct and implement FBAs and BSPs, summaries of the results of the FBAs and BSPs for each student, materials, and the procedures of the study. Finally, I present a graph of hypothetical data for participant response to the study to illustrate the expected results prior to the implementation of the study.

Participant Selection

Four teachers volunteered and were selected for the study. The study was conducted at a public elementary school in New York City. The teachers that were selected for the study all taught in collaborative team-taught (CTT) classrooms that specifically included specialized instruction for the inclusion of children with AD. The school housed 26 classrooms, grades Pre-Kindergarten through fifth grade, servicing a total of 345 students.

In each classroom that participated in the study, there were children who received regular education services and four children in each classroom that were identified with AD and had IEPs. The number of students receiving regular education varied by grade; however the number of children with ASD was four, regardless of the grade level. Each classroom was supported by two certified teachers; one certified in special education and one certified in regular education. Four teachers in four separate classrooms participated in the study: one kindergarten teacher, one first-grade teacher, one second-grade teacher,

and one third-grade teacher. As the grades increased, the number of students with AD in each class remained the same, however the number of typically developing students in each class increased. The kindergarten class had eight typically developing students and four students with AD; the first grade class had 12 typically developing students and four students with AD; the second and third grade class had 16 typically developing students and four students with AD. The curriculum followed in each of these classes was that required by the New York City Board of Education.

Students enroll in these inclusion classes at this school by referral from varying venues: through their Committee of Pre-school Special Education (CPSE) administrators and by independent contractor referrals. Generally, parents are referred to the program and the children are evaluated for the appropriateness of their academic, social, and behavioral functioning for this program. All children with AD that are accepted to these CTT classrooms are academically on par with their typically developing peers, but lack social skills and present with some behavior that interferes with learning, necessitating additional support of an inclusion classroom with teachers that are specially trained in AD education and behavior theory.

The ethnic breakdown of the students at the school is 37.7 Asian, 29.3% White, 20.6% Hispanic, and 9.3% Black. Most of the students at the school do not receive a free lunch program, and the SES level of the students varies from middle SES families to upper SES families.

I recruited teacher participants for the study by providing staff members with a letter informing them that the study will investigate different ways to help teachers implement BSPs in the classroom (see Appendix A for introduction letter). The letter

stated the requirements for participation in the study. The recruitment letter specified an informal meeting date during which I provided potential participants with more information about the study including what participation in the study would entail. Following the initial informational meeting, I provided interested teachers with a detailed consent form (see Appendix B for teacher consent form). Teachers interested in participating in the study returned letters of consent to me by leaving them in my mailbox in the main office.

The study required a minimum of four teachers (participants) up to a maximum of six staff members. Four teachers volunteered to participate in the study meeting the minimum requirements of the study. The study used a multiple baseline design. A multiple baseline design should have a minimum of two tiers, which in this study means two teachers, to provide strong support for the effectiveness of the independent variable (Cooper, Heron, & Heward, 2007). Multiple baselines that include three to five tiers are most common in the literature (Cooper et al.). This study used four tiers (i.e. one for each teacher). According to Cooper et al., this level of replication is more than sufficient to support a functional relationship between the dependent and independent variable. Teachers who volunteered for the study identified two students in their respective classrooms who engaged in problem behaviors that interfered with social and academic development. Once these students were identified as possible participants, I sent these parents a letter of introduction (See Appendix C for parent introduction letter) and a letter of consent (See Appendix D for parent consent letter) explaining the nature of the project. Teachers sent this letter home in the child's backpack. All children identified by the teachers came from families where the only language in the home was English; therefore

translation of the letter was not necessary. Parents interested in having their children participate in the study returned letters of consent to the researcher by sending them back to the school in the child's backpack. The study required a minimum of eight students (two for each teacher). Of the eight children that were identified by their teachers as possible participants in the study, all eight of their parents signed and returned consent forms volunteering participation in the study.

Teachers. The teacher participants in this study consisted of New York State certified special education teachers who co-taught in a classroom with a regular education teacher. The CTT classroom model was consistent across all four teachers: four students with AD in each classroom, staffed by a regular education teacher and special education teacher (the participant in this study). In addition to the training and education each teacher obtained through her study in her respective teacher-training program, each teacher completed a four-week course in autism and a three-week course in behavior theory prior to working in these CTT classrooms (as this was a requirement for all personnel working in these CTT classrooms). The courses gave each teacher background knowledge necessary to work with children with AD and the principles of behavior theory. (It is important to note the completion of this coursework in order to remind the reader that the teachers in this study were already familiar characteristics of children with AD, and the instructional and behavioral strategies that were effective to work with them in an inclusion classroom.)

Each CTT classroom also had the peripheral support of a speech therapist, occupational therapist, and an additional special education teacher that accompanied students to activities in their day that were not attended by the regular education teacher

and special education teacher. Although the classroom model, teacher training, and staff ratio was consistent for all teachers, there were slight variations in the culture of each classroom involving responsibilities for AD students, model of cooperative teaching each teaching team followed, and the level of training and years of experience teaching by each teacher. Below I briefly summarize the experience and background of each teacher and the model of CTT that I observed in her classroom. (See Appendix E for teacher information form). (Note: Throughout this paper, teachers are differentiated by a number: Teacher 1, Teacher 2, Teacher 3 or Teacher 4).

Teacher 1. Teacher 1 was a 40-year-old woman who taught in a first-grade CTT classroom with 16 students, four of which were diagnosed with AD. She held a master's in special education and was certified in special education, grades 1-6. This was her second year teaching first grade, and her first year teaching in this CTT model and working with students with AD. Her co-teacher was certified in regular education with eight years of teaching experience, three of which were in a CTT class with students with AD. This was her first year working with this co-teacher. Both teachers shared the responsibility of curriculum planning for the class. The regular education teacher predominantly supported the students without IEPs and Teacher 1 predominantly supported the students with AD and their academic and behavioral needs.

Teacher 2. Teacher 2 was a 30-year-old woman who taught in a second-grade CTT classroom with 16 students, four of which were diagnosed with AD. She held a master's in special education and was certified in special education, grades 1-6. She was in her third year of teaching, with all three years in a CTT class with children with AD. This was her second year in a row working with her co-teacher. Her co-teacher was

certified in regular and special education with five years of teaching experience, three of which were in a CTT class with students with AD. Both teachers shared the responsibility of curriculum planning for the class, and supporting the academic, social, and behavioral needs of all the students in the class.

Teacher 3. Teacher 3 was a 26-year-old woman who taught in a kindergarten CTT classroom with 12 students, four of which were diagnosed with AD. She held a master's in special education and was certified in special education, birth-grade 2. This was her first year teaching. Her co-teacher was certified in regular education with twenty years of teaching experience, five of which were in a CTT class with students with AD. (This regular education teacher did not complete the required coursework in autism and behavior theory.) Both teachers shared the responsibility of curriculum planning for the class. The regular education teacher predominantly supported the students without IEPs and Teacher 3 predominantly supported the students with AD and their academic and behavioral needs.

Teacher 4. Teacher 4 was a 27-year-old woman who taught in a third-grade CTT classroom with 20 students, four of which were diagnosed with AD. She held a master's in special education and was certified in special education, grades 1-6. She had three years of teaching experience, but this was her first year teaching in a CTT class with children included with AD. She worked with a co-teacher who was certified in regular education with two years of teaching experience, both of which were in non-CTT regular education settings. Both teachers shared the responsibility of curriculum planning for the class. Both teachers supported all the students in the class, with the regular education teacher predominantly supporting the more advanced learners (which included two

students with AD) and Teacher 4 supporting the less advanced learners (which also included two students with AD).

Students. One of the hypotheses of this study examined the ability for a teacher to generalize the training she received for one child's BSP to another child's BSP without specific training. Therefore, it was necessary that each teacher identify two students in her classroom that presented with interfering behavior: one of these student would be the *target student*, for which the teacher would receive PFB on the TI of his BSP, and the second student would be the *generalization student*, that I would observe in order to identify if the teacher generalized her implementation skills on his BSP, with no child-specific training. Each teacher identified two students, (a *target student* and a *generalization student*) in her classroom that exhibited behaviors that interfered with their ability to access social and academic opportunities. (The students are described below).

Eight children whose ages fell between five and ten-years-old, at the time of the start of the study served as student participants. The minimum criterion for selecting students was diagnosis of AD as defined by the DSM-IV-TR (APA, 2000). I identified this diagnosis from a record review of the volunteer student's file. I did not conduct any independent cognitive or diagnostic assessments to identify if the child had AD. All student participants in the study were in these inclusive classrooms because they were academically on par with their typically developing peers, however they had delays in social skills and pragmatic language. All eight students received related services of speech therapy and occupational therapy. In addition to a diagnosis of AD, I included students in the study that had similar functions to their interfering behavior. For example, all children selected in the study had predominantly escape-motivated (this means that the

children engaged in interfering behavior in order to escape an activity/environment/task. Once the students were identified, solicitation for consent procedure as stipulated above was followed. (Throughout this paper, as teachers are referred to by a number, their respective students are referenced with the label of "T" for "*Target student*" or "G" for "*Generalization student*" followed by the number that identified the teacher. For example, Teacher 1 worked with T1 and G1 (*target student* 1 and *generalization student* 1, respectively); Teacher 2 worked with T2 and G2 (*target student* 2 and *generalization student* 2, respectively), and so on.

Teacher 1. Teacher 1 taught a first grade CTT classroom.

T1. T1 was a 7-year-old Caucasian boy in a first grade classroom. Teacher 1 reported that he appeared constantly distracted in class, with limited attention to task, and as a result, did not participate in group lessons and discussions in addition to partner work with a peer. He engaged in non-contextual vocalizations and verbalizations during class discussion. Although he was academically on par with his peers at the start of the school year, Teacher 1 reported that his performance in his academic tasks had been deteriorating due to his time off task spent staring into space.

G1. G1 was a 7-year-old Caucasian boy in a first grade classroom. Teacher 1 reported that he had similar behaviors to T1, but was most concerned about his off-task behavior. Teacher 1 described the behaviors that interfered with his learning as playing with items at his desk and table, non-contextual verbalizations and vocalizations, and yelling in class. These behaviors interfered with his ability to engage in classroom activities and distracted his peers from completing their work in addition to preventing him from completing his own work.

Teacher 2. Teacher 2 taught in a second grade CTT classroom.

T2. T2 was an 8-year-old Caucasian boy in a second grade classroom. Teacher 2 referred him due to his interfering behavior of calling out, name-calling and unfriendly behavior towards peers, and outburst of crying and yelling. This behavior was interfering with his ability to stay on task and keep up with the academic work. His unfriendly behavior was preventing him from developing friendships in the class and his access to social opportunities. Additionally, his crying and yelling behavior often took over 10 minutes to de-escalate, which delayed him from joining the class in lessons, discussion, and partner work, further preventing him from completing his work and progressing academically.

G2. G2 was an 8-year-old Caucasian boy in a second grade classroom. Teacher 2 referred him due to his interfering behavior of staring off, latency to begin an activity, which caused him to leave his classroom incomplete. Although he had the skills to complete his work, his distractibility prevented him from doing so, impeding his academic progress. Additionally, his distractibility prevented him from maintaining conversational exchanges with his peers thereby making it difficult for him to initiate and maintain friend relationships.

***Teacher 3*.** Teacher 3 taught in a kindergarten CTT classroom.

T3. T3 was a 6-year-old Caucasian boy in a kindergarten classroom. His teacher referred him due to his interfering behavior of stereotypy, outburst of tantrums and crying, and distractibility. These behaviors made it difficult to participate group instruction, group activities, and partner work with his peers. As a result, he did not complete his work, and required substantial 1:1 support in order to participate in

classroom activities. Teacher 3 spent a substantial amount of her time redirecting and engaging him to join and participate in the group, which prevented her from providing the necessary support to other students in the classroom, in addition to preventing him from making progress academically and interacting with his peers in an age-appropriate manner.

G3. G3 was a 6-year-old Caucasian boy in a kindergarten classroom. Teacher 3 referred him due to his unfriendly behavior towards his peers, and yelling and screaming outbursts during group instruction, which often resulted in his removal from the group. As a result, he often did not complete his work, preventing academic progress. Due to his unfriendly behavior (name-calling, pushing, taking peers materials and belongings), his peers were no longer interested in interacting with him, which prevented him from sustaining friendly interactions in the classroom and accessing social opportunities.

Teacher 4. Teacher 4 taught in a third grade CTT classroom.

T4. T4 was a 9-year-old Black boy in a third grade CTT classroom. Teacher 4 selected him due to his interfering behavior of stereotypy, non-contextual verbalizations and vocalizations, and off-task behavior. His off-task behavior consisted of the above in addition to wandering around the classroom (both on his way to group instruction and leaving his desk during independent and partner work). He also engaged in high levels of whining and complaining which would get him off-task, and redirecting him to get back on-task required substantial 1:1 support. As a result of these behaviors, he had difficulty participating in group instruction, group activities, and partner-work and social exchanges with his peers.

G4. G4 was a 9-year-old Caucasian boy in a third grade CTT classroom. Teacher 4 selected him due to his non-contextual verbalizations, yelling and screaming outbursts, and unfriendly verbalizations towards teachers and peers. Although he was usually on-task and completed his work, his occasions of yelling and screaming were time-consuming, requiring substantial 1:1 support to help him calm down, resulting in a decrease in academic work and keeping up with the class following these outbursts. Additionally, as his outburst had become familiar to his peers in the classroom, they tended to shy away from his social initiations, which prevented him from maintaining friendly interactions and accessing social opportunities in the classroom. When his outbursts (screaming yelling, occasionally leading to a tantrum) occurred during group work, his behavior interfered with not only his ability to complete the task or activity, but it prevented his peers from completing their work as well, impeding their progress during that activity.

Functional Behavior Assessments (FBAs)

As part of the study, I completed an FBA and BSP for each *target student* and each *generalization student*, given research that suggests that BSPs based on FBAs are more effective than those not based on FBAs (Repp et al., 1994). I am a certified behavior analyst and have extensive training necessary to complete the FBA and develop the BSP. I did not incorporate BSPs that included aversive punishment procedures. FBAs included components consistent with the literature reviewed; unstructured interviews with team members; record review; informal classroom observation; formal observation; analysis of setting events, antecedents, and consequences. For each student, I conducted 2-4 sessions of observation and data collection in order to accumulate

enough information to develop hypotheses about the function of their behavior in order to develop BSPs that targeted this function. Following the completion of each FBA, I spent between 1-2 weeks collaborating with team members and analyzing the data in order to develop appropriate function-based BSPs.

Interviews. Interviews with team members included an initial discussion about each students behavior, guided by a structured functional assessment interview (O'Neill, Horner, Albin, Storey, & Sprague, 1990) that included a discussion of identification and prioritization of the target behaviors, estimated impact of the behaviors on the student's functioning, the student's communication ability, the student's preferences, times the target behavior tends to occur, physiological variables possibly relevant to the student's target behavior, and environmental variables that appeared to affect the student's behavior. (See Appendix F for an example of the functional assessment interview).

Record review. Record review involved reviewing the student's records for information regarding previous assessments in order to identify how long the student had exhibited the target behavior, if the teacher had implemented other interventions effectively or ineffectively, and any other notes that were relevant to the development of a BSP.

Informal observation. I conducted informal classroom observations in order to identify for each child, the setting where the behavior occurs, and what type of data to collect (i.e., to identify if frequency of the target behavior is a more appropriate measure as opposed to duration of the target behavior). I conducted informal observations 1-2 times prior to conducting formal classroom observation. (See Appendix G for an example). During informal observations, I sat in the corner of the classroom in order to

prevent my presence from obstructing the flow of the classroom, and took notes on the general setting of the classroom (noise level, number of students and staff, physical organization, types of activities) in order to identify possible factors that could be contributing to the interfering behavior.

Formal observation. Following informal observation, I conducted formal classroom observation including the collection of frequency of the referred interfering behavior, across multiple settings, time of day, and interactions with different staff members. In addition to frequency data, I collected antecedent-behavior-consequence (ABC) data to identify what settings and events occasion the behavior (antecedents) and which events appeared to maintain the behavior (consequences) in order to identify the function of the behavior (i.e., why the behavior occurred.) (See Appendix H for an example of the ABC data sheet).

Following completion of the FBA, I examined the information rendered for each child in order to develop a hypothesis of the function of each child's interfering behavior in order to develop a BSP. For the target behavior of each student, I analyzed the settings, interactions with teachers and peers, antecedents that occasioned the target behavior, and consequences to the students' behavior. Based on this information, I developed hypotheses regarding the function of the problem behavior and used the information garnered from the FBA and the hypotheses I developed to guide the development of the BSP (Bambura, 2005).

Behavior Support Plans (BSPs)

I created a BSP for each *target* and *generalization student* based on the results of their FBAs. The process to develop each BSP began with a team meeting with the

teachers and related services personnel to review the findings of the FBA, and discuss possible behavior strategies that were manageable in the classroom. With this information for consideration, I developed the BSP with consideration to the classroom environment, staffing ratio in the classroom, and teacher feedback from the meeting. Each BSP had the following components: operational definition of the target behavior, hypothesis for the function of the behavior, environmental/antecedent modifications, strategies to teach a replacement behavior, and consequence strategies to either reinforce or redirect the interfering behavior. (See Appendix I for a sample BSP outline). In the procedures section, I briefly discuss the components of each BSPs.

Operational definitions. The operational definition section defined the target behavior in a way that anyone observing the student would be able to identify the occurrence of the behavior.

Hypothesis. For each BSP, I included the hypothesis as to the function of the student's behavior based on the results from the FBA.

Environmental/antecedent modifications. I included modifications to the physical environment and presentation of demands in order to support appropriate student behavior (e.g. change of seating arrangement, altering proximity of teaching materials, personal schedule depicting the day's events.)

I outlined antecedent modifications to the setting or direction that I identified triggered the interfering behavior. For example, if a child appeared to engage in higher rates of problem behavior following the presentation of a particular demand, I asked the teacher to present the demand with a preferred activity in order to diminish the aversive quality of the demand.

Teaching/replacement strategies. Each BSP included teaching and replacement strategies focused on teaching appropriate replacement behavior that would serve the same function as the interfering behavior. (e.g. teaching a student to ask for a break).

Consequence strategies. For each BSP, I included consequence-based strategies in two categories: reinforcement strategies and redirection strategies. Reinforcement strategies involved adding something the child preferred to the environment following the occurrence of the appropriate replacement behavior (e.g. every time the child used a "break" card in lieu of engaging in inappropriate behavior to escape a task, he received his break, in addition to praise, and a sticker on a chart for using the replacement strategy.) The teacher response to appropriate and interfering behavior was outlined to help the teachers remain consistent in their responding to the student. For example, if the child engaged in the target behavior of leaving the class without permission, the teacher was directed to immediately redirect him back to the task at hand, without allowing him to access escape through the inappropriate behavior.

Materials

TI **data sheet.** I adapted a TI data sheet from Codding et al. (2005) to correspond to each student's BSP. Each data sheet had a 3-column grid. The first column listed the strategy, modification or response. The second column included steps to implement the strategy. The third column had space to enter the score for how the teacher implemented that step. The four options were: "implemented correctly," "implemented incorrectly," "missed opportunity to implement," or "no opportunity." (See Appendix J for a sample TI data sheet). This is the sheet that was used to complete each observation and calculate TI.

SM data sheet. I created an SM data sheet based on each child's BSP. The SM sheet was identical to the TI sheet with the exception that the scoring column only housed a box for the teacher to check off if she implemented that component that day or not. If the teacher completed a component, she placed a "√" in the box. If she didn't complete a component, she placed an "X" in the box. If she did not observe an opportunity to complete a component, she placed an "n/o" in the box to indicate "no opportunity." Each teacher participant used this sheet daily to monitor her own implementation of each component of the BSP for the *target student* in her classroom. (See Appendix K for a sample SM data sheet).

Student behavior data sheet. All student participants engaged in behavior that interfered with their on-task behavior (OTB). Therefore this target behavior measure was selected to track all eight student's behavior for the duration of this study. The behavior data sheet used to track OTB behavior was a four-column sheet with each column labeled time interval, *target student*, *generalization student* and comments, respectively. The label for column four was "comments" in order to give me space to note any special circumstances in the classroom that might impact the child's behavior apart from TI (e.g. a lice outbreak occurred in two of the classrooms causing a chaotic environment and change in schedule that impacted two of the student's behavior and substantially impacted the teacher's TI for that observation session). (See Appendix L for a sample behavior data sheet).

Measures of Treatment Acceptability

This study used the Intervention Rating Profile (IRP-15; Martens & Witt, 1988) to assess the acceptability of treatments to teachers in this study (see Appendix N for

treatment acceptability form). This instrument assessed the degree to which each participant found the two interventions appropriate, functional, and practical. The IRP-15 contains 15 questions addressing the usefulness and acceptability of an intervention on a Likert-type scale, ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). Higher scores indicate the more acceptable intervention. Teachers completed this scale after the study was complete: once for the SM intervention and once for the SM+PFB intervention in order to provide information to use to compare the acceptability of each intervention. Teachers did not place their names on the scales and put completed IRP-15s in my mailbox in a common area near the teacher's mailbox.

Independent Variables

The two independent variables in this study were SM and SM + PFB.

Self-monitoring (SM). I followed the format provided in Richman et al. (1988). I provided teachers with each *target* student's BSP in the form of a checklist and trained each teacher on how to use the SM checklist to monitor their own implementation of the *target student*'s BSP. This explanation constituted the SM training, which followed the completion of the baseline phase. I explained to each teacher, that throughout the day, that she should reference this checklist to help her monitor her own implementation of BSP components. I instructed the teachers to initial the box next to each BSP component that they implement correctly. At the end of the day, teacher participants submitted these SM checklist sheets to my mailbox located in the main office. While I collected teachers' TI data (see specification of TI data below) during the SM phase of this study, I did not provide them with PFB. (Although I provided the teachers with an SM checklist for both

the *target* and the *generalization student*s, I only trained the use of the SM sheet for the *target student* and only collected the *target student* SM sheet.)

SM + PFB. SM+PFB consisted of a combination of the previous independent variable (see SM directly above) with PFB. I observed each teacher participant implementing the BSP for the *target student* in her class. Following the observation, I completed the TI checklist. On the data sheet, I indicated teacher TI by checking one of four boxes: (a) implemented correctly, (b) implemented incorrectly, (c) opportunity missed to implement, or (d) no opportunity to implement observed. In addition to checking the appropriate box, I gave written feedback for correctly implemented specific steps (e.g., "Keep up the good work") and missed steps (e.g., "Don't forget to do that next time"). I provided more specific feedback for steps implemented incorrectly with directions as to how to remedy the error in the future (e.g., "Instead of giving him four choices for his reinforcer, provide him with only two in order to limit his frustration at having to make a complicated choice.") Finally, I provided words of encouragement to the teacher indicating that the teacher was capable of correctly implementing the component next time (e.g., "You are on the right track. Let's see how it goes tomorrow!") (DiGennaro, Martens, & Kleinmann, 2007). I placed the data sheet with checked boxes and written comments in the teacher's mailbox at the end of the school day so that she could review comments at her own convenience (see Appendix M for a completed sample SM+PFB sheet).

Dependent Variables

This study had four dependent variables: percentage of plan components implemented correctly as written for the *target student* (*TI)* identified through direct

observation, percentage of plan components implemented correctly as written for the *generalization student* (*generalization TI*) identified through direct observation, percent of OTB of *target student* (*target student OTB*) identified through direct observation, and percent of OTB for *generalization student* (*generalization student OTB*) identified through direct observation.

Target student **TI.** *Target TI* was the percentage of BSP components implemented correctly as written for the *target students*. I calculated percent of TI by dividing the teacher's number of correctly implemented components in the BSP by the number of total components of the BSP.

Generalization student **TI.** *Generalization TI* was TI calculated for the implementation of the *generalization students'* BSPs. I calculated percent of TI by dividing the teacher's number of correctly implemented components in the BSP by the number of total components of the BSP.

Target student **OTB.** While I collected TI data, a graduate student simultaneously monitored and collected percent of OTB for each *target student* that participated in the study. This graduate student was trained by me to appropriately collect the OTB using 1-minute momentary time-sampling procedure for OTB. Momentary time sampling requires an observer to record the student's behavior at timed intervals. For each observation of 30 minutes, 30 recordings (every minute, on the minute) were made and 'percent of time on-task' was calculated for each student by dividing the number of observations scored as on-task indicate by (+)'s, by 30 (for 30 minutes in the observation). For example, if out of the 30 observations within the half

hour, the student was on-task for 24 of the recordings, his percentage of 'percent of time on task' was calculated at 80%.

OTB was defined as "engaging in the activity that their peers in the classroom were expected to complete." For this study, every minute, on the minute, a graduate student marked (+) if the student was on task, meaning he was engaged in the same activity as his peers, and (-) if he was not engaged in the same activity as his peers. For example, if the class was directed to write a sentence about a personal moment, the student was marked (+) if he was writing or looking at his paper at that moment. If most of his peers were off task, distracted by the snow and looking out the window, he was marked (+) because he was engaged in the same behavior as his peers, since this was the norm for the class at that moment. If the students were all looking at the teacher during direct instruction, and the student was staring at his shoes and playing with his shoelaces, he was scored (-).

***Generalization* OTB.** The same procedures stipulated above for *Target* OTB were followed for *Generalization* OTB.

Research Design and Analysis

In this study I used a multiple-baseline single-subject design across four teachers, in addition to a change changing conditions design (Bailey & Burch, 2002) in order to demonstrate a functional relationship between independent and dependent variables.

The multiple baseline design is the most widely used design to evaluate the effects of an independent variable (treatment/intervention) in ABA (Cooper, Heron, & Heward, 2007). Baer, Wolf, and Risley (1968) first described the multiple baseline design as a design in which one identifies and measures multiple responses over time. In

this design, rather than reversing a change in the first tier (Teacher 1 in this study), one applies the intervention to the second tier after one identifies a change in behavior in the first tier. For example, as the participant in the first tier enters the first intervention phase (SM), and displays several days of substantial change in the behavior, the investigator applies the intervention to the participant in the second tier, who, up till this point, has continued in the baseline phase. This pattern is then followed for the remaining tiers. The multiple baseline design supports a functional relationship between the dependent and the independent variable by illustrating that a change in behavior coincides with the staggered implementation of the intervention.

In this study, in addition to using a multiple baseline design, I also included changing conditions across each tier. This means that each Teacher represented on each tier participated in different interventions. For example, instead of staggering one intervention across tiers, I also staggered the implementation of additional phases (i.e. baseline, training, SM, SM+PFB, and return to SM). This strengthened the analysis of each intervention because as behavior changed with the introduction of each condition, a functional relationship was supported; meaning the change in behavior was further attributed to the change in condition (Cooper, Heron, & Heward, 2007).

I used the multiple baseline design because it allowed for the simultaneous analysis of more than one dependent variable. "Baseline" refers to a description of the dependant variable prior to the implementation of the independent variable. I observed and collected baseline data on TI for all four teachers and their respective *target* and *generalization* BSPs. I implemented the interventions in a staggered manner as soon as I observed a stable baseline. Stable rates of responding (for baseline and intervention)

refer to a set of behavior over time that shows no evidence of an upward or downward trend, and all of the measures of the behavior fall within a small range of values (Cooper, Heron, & Heward).

As mentioned in the section describing the dependent variable, I measured the percent of TI across all teachers. I implemented the first intervention condition with Teacher 1 while the other three teacher-student dyads continued in the baseline phase. I selected Teacher 1 as the first to begin the SM intervention as her TI data was the most stable (Cooper, Heron, & Heward, 2007).

I continued to stagger the baseline across all four dyads and began intervention phases for the next teacher-student dyad once the previous dyad established stability of TI data for the *target student*s. This means, that decisions for the introduction of the next phase were based on stable rates of responding based on the TI percentage for the *target student* alone. I provided the teacher who exhibits the most stable TI data at baseline with the first implementation of the intervention (Cooper, Heron, & Heward, 2007). I determined transition from baseline to the SM condition (phase 1) based on the teacher's showing an established trend in the data for baseline (see Figure 1 above).

The PFB literature consistently uses 80% as a criterion for appropriate and realistic levels of TI (Codding et al., 2005; Noell et al., 2005). In this study I used 80% TI as the target criterion for appropriate levels of TI.

The research design also incorporated a changing conditions component embedded within the multiple baseline design. The sequence of the condition phases for each tier was: (a) no plan, with OTB data presented that I collected during FBA and BSP development to establish percent of OTB for students prior to the implementation of any

BSP (this phase is only presented on the graphs that represent OTB data with no data on TI) (b) baseline, (followed by SM training), (c) SM (Phase 1), (d) SM+PFB (Phase 2), and (e) SM (Phase 3, which reversed the SM+PFB condition by removing PFB). The sequence was the same for all four teachers and tiers. Following the implementation of the conditions, for Teacher 1, I added another condition of (e) SM+PFB due to her lack of maintenance target levels of TI.

Consistent with the literature in the analysis of single-subject design, I used visual analyses to interpret the data within and across conditions of the study (Horner et al., 2005). I used graphed the data on line graphs to support visual analysis and to answer the research questions (Horner et al., 2005; Kazdin, 1982). As part of the visual analysis, I examined magnitude of effect (incorporating changes in mean and level), changes in rate (incorporating changes in trend and latency of the data), and variability of the data across baseline and phases of the study.

I examined magnitude of effect, changes in rate, and variability of the data across all phases and tiers of the graphs depicting the results of the intervention (Kazdin, 1982). Analysis of the magnitude of effect focused on change in mean and change in level. Analysis of changes in mean across phases refers to shifts in the rate of performance. Analysis of change in level identifies whether or not the intervention produced reliable effects with the introduction of each condition/phase.

Analysis of change in rate focuses on the change in trend and latency of the data. The change in trend refers to systematic increase or decrease over time. Analysis of latency looks at the period between the start of the condition and the change in the data or performance. For example, if there is no change for several sessions after a condition

presenting a new independent variable is implemented, this implies that the independent variable may not be responsible for a change in the data.

To consider an effect reliable when using visual inspection, one needs to analyze the variability of the data. Variability refers to the stability of the data and a variability analysis examines data across baseline and intervention phases of the study.

In addition to visual analysis of the data, I computed the correlation coefficient (*r*) for three sets of dependent variables. I calculated *r* for TI and *target student* OTB and for TI and *generalization student* OTB in order to examine the extent to which more accurate TI resulted in higher percentages of OTB (DiGennaro et al., 2005). I calculated *r* in order to examine the relationship between TI for the *target student* and TI for the *generalization student* (Codding & Smyth, 2008).

Observation

Teachers implemented interventions for student target behaviors over the course of each school day. To obtain data on dependent variables, I conducted 30-minute observations 2-3 times a week, for each teacher. During each observation, I observed the teacher's implementation of the BSP with two students (*target student* and *generalization student*) and completed the TI checklist in order to identify the teacher's percent of TI for each BSP.

I took several steps in order to minimize reactivity to my presence in the classroom as the research (Codding, Livanis, Pace, & Vaca, 2008; Gresham, 1998; Kazdin, 1982). Reactivity is the phenomenon that occurs when the observee's behavior changes simply because he or she is being observed (Kazdin, 1982). In order to minimize this, first, I conducted the observations randomly during the first three hours of

the school day. Second, I observed from the back of the room, in order to minimize the impact of my presence in each classroom. Third, prior to the commencement of the study, I spent a minimum of three days a week in the classroom observing and working with the teachers and students to help them acclimate to my presence.

Procedures

This section integrates the information provided above into a sequential step-by-step procedure.

FBA and BSP Development. Each student in this study was referred due to their problem behavior that interfered with their ability to access academic and social opportunities throughout the school day. The FBA process discussed above outlines the observation and analysis strategies that were implemented to complete the FBA for each student and to develop hypotheses as to the function of their behavior. Following the analysis of the FBA, I designed and wrote BSPs for each student based on the observation, data accumulated, and hypothesis as to the function of his behavior. For each Teacher and her respective students, I spent 1-2 weeks (spanning 2-4 sessions) collecting information to complete the FBA and an additional 1-2 weeks (spanning 2-4 sessions) developing BSPs based on the FBAs. On the graphs presented in the results section, this period of FBA implementation and BSP plan development is labeled 'plan development' in order to indicate the duration of time spent on these plans in respect to the remainder of the intervention. Below I present for each student, brief summaries of each FBA and his resulting BSP, under the headings of his respective teacher.

Although the students in this study engaged in behaviors that varied by form (i. e. what the behavior looked like), consistent across all students, interfering behavior

appeared to be predominantly escape-motivated causing them to be off-task and therefore not part of the class activity. Therefore the intervention plans for each student focused on targeting escape-motivated behavior that lead to off-task behavior, and the target behavior targeted for increase across all students was OTB.

Teacher 1.

T1. Results from the FBA for T1 supported that he engaged in escape-motivated behavior from non-preferred activities and unclear expectations by engaging in stereotypy, staring at the wall, and playing with materials in his desk. Environmental modifications in his BSP included covering shelves with sheets (to decrease opportunities for distraction), a vibration cue from a Motivaider (to remind him to check that he is with the group) and a pack-up list for his backpack (to help him stay on task and avoid distraction). T1 was also taught to request breaks appropriately (to meet the function of the behavior of escape). Finally, response strategies were outlined to block escape from the activity through interfering behavior by non-verbally redirecting T1 to the group task or activity, thereby preventing escape. When T1 presented with the appropriate behavior, he was praised and received reinforcement on a schedule broken down by activity.

G1. Results from the FBA for G1 supported that he engaged in escape-motivated behavior from both non-preferred activities and unclear expectations by engaging in stereotypy (flapping and singing songs out of context), and playing with, hiding, and throwing pencils. Environmental modifications in his BSP included clearing his desk (to prevent pencil play), and a task list of academic and behavior expectations during group activities (to give him expectations of the environment). G1 was also taught to request breaks appropriately (to meet the function of the behavior of escape). Finally, response

strategies were outlined to block escape from the activity through non-preferred behavior by non-verbally redirecting G1 to the group task or activity. When G1 presented with the appropriate behavior, he was praised and received reinforcement on a schedule broken down by activity.

Teacher 2.

T2. Results from the FBA for T2 supported that he engaged in escape-motivated behavior from non-preferred activities and unclear expectations by calling out, yelling at his peers, and crying. Environmental modifications in his BSP included a task list, priming, and a timer (providing him with expectations of an activity's context, duration, and expectation). T2 was also taught to request breaks appropriately (to meet the function of the behavior of escape) and was provided a list of nice things to say to his peers (to replace the unfriendly remarks he made to his peers). Finally, response strategies were outlined to block escape from the activity through inappropriate behavior by non-verbally redirecting T2 to the group task or activity. When T2 engaged the appropriate behavior for a given activity, he was praised and received reinforcement (a sticker on a chart) for each activity during which he completed his work.

G2. Results from the FBA for G2 supported that he engaged in escape-motivated behavior from non-preferred activities and unclear expectations, by engaging in stereotypy, staring at the walls, and biting his shirt. Environmental modifications in his BSP included a vibration prompt from the Motivaider (to remind him to attend to his behavior in relation to the group), a task list for each activity, priming, and a timer set for the duration of the activity (providing him with expectations of an activity's content, duration, and expectation). G2 was also taught to request breaks appropriately (to meet

the function of the behavior of escape), to request gum (to replace biting his shirt), and to evaluate his own behavior and notify the teacher when his task list for each activity was completed (which resulted in reinforcement with a preferred activity). Finally, response strategies were outlined to block escape from the activity through inappropriate behavior by non-verbally redirecting G2 to the group task or activity. When G2 presented with the appropriate behavior for a given activity, the teachers provided praise and reinforcement for each activity.

Teacher 3.

T3. Results from the FBA for T3 supported that he engaged in escape-motivated behavior from non-preferred activities and unclear expectations, by engaging in stereotypy (flapping) and crying/yelling. Environmental modifications in his BSP included priming and task lists for activities (preparing him for expectations), preferred seat modifications (to pair the activities positively), and scheduled movement breaks. T3 was also taught to request breaks and help appropriately (to meet the function of the behavior of escape). Finally, I outlined response strategies to guide the teachers in how to respond to his interfering behavior consistently by not allowing him to escape the activity through inappropriate behavior by redirecting him back to the task and ignoring the inappropriate behavior. When T3 presented with the appropriate behavior for a given activity, his teacher praised him and provided tangible reinforcement in the form of a sticker on a chart every 20 minutes and a five-minute break with a preferred activity.

G3. Results from the FBA for G3 supported that he engaged in escape-motivated behavior from non-preferred activities and unclear expectations, in the form of stereotypy (non-contextual verbalizations), verbalizing unfriendly statements to peers, and yelling.

Environmental modifications in his BSP included priming and task lists for activities (preparing him for expectations), partner work guidelines (to outline expectations) and a visual cue for group activities indicating when it was okay to call out and when he needed to raise his hand. I outlined a process to teach G3 to request for breaks and help appropriately (to meet the function of the behavior of escape), and to teach him to engage his peers using friendly and polite statements (which resulted in reinforcement). Finally, I outlined response strategies to guide the teacher how to consistently respond to interfering behavior by non-verbally redirecting G3 to the group task or activity. When G3 presented with the appropriate behavior, the teacher praised him and provided him with tangible reinforcement of a sticker on a chart for his use of friendly statements to peers.

Teacher 4.

T4. Results from the FBA for T4 supported that he engaged in escape-motivated behavior from non-preferred activities and unclear expectations, by engaging in stereotypy (flapping), wandering, playing with items in his desk, and whining/crying/yelling. Environmental modifications in his BSP included providing him with additional choices throughout the day, a personal schedule and priming before activities (to inform him of expectations), desk organization/trays, (to help him avoid playing with materials in his desk), and schedules breaks (to give him opportunities to escape). I outlined a plan for the teacher to teach T4 how to request breaks and help appropriately (to meet the function of the behavior of escape). Finally, I outlined response strategies meant to block escape from the activity through inappropriate behavior by non-verbally redirecting T4 to the group task or activity. When T3 engaged

in the appropriate behavior, his teacher praised him and gave him a tangible reinforcement every 20 minutes for completing the target portion of his work.

G4. Results from the FBA for G4 supported that he engaged in escape-motivated behavior from non-preferred activities and changes in the environment (class behind in the class schedule or an change in the routine) by verbally perseverating on the change and outbursts of screams and tantrums. I outlined environmental modifications in his BSP including preparing him for changes in the class schedule, and keeping a visual card taped to his desk as a reminder that he could access the break area (to remind him of the option of a break when he was frustrated). I also outlined a plan to teach G4 to request breaks and/or more information about the schedule when the class was behind (in order to address the function of escape). Finally, I outlined response strategies for the teacher to implement to consistently to block his escape from the activity through inappropriate behavior by asking G4 to verbalize what is bothering him, providing him with more information, and non-verbally redirecting him to the group task or activity. When G4 engaged in appropriate OTB and requests, the teacher praised him and provided reinforcement of engaging with the teacher in a preferred topic conversation.

No-Plan. During the 2-4 weeks (6-9 sessions) during which I conducted the FBA and developed the BSP for each student, a graduate student collected percent of OTB during my observations in 30-minute increments using the time-sampling procedure outlined above, and the same OTB time-sampling procedure that was used to collect behavior date for each student for the duration of the study. I collected these data in order to demonstrate the baseline rate of student behavior with no behavior supports in place in order to have this data to compare to the OTB of each student to the various

phases of the study and to illustrate the impact of BSPs implemented (even with lower than optimal percent of TI) on student behavior.

BSP Initial Training. I conducted child-specific BSP training, adapted from Codding et al. (2005). I provided teachers individually with 2-4 sessions of training for the *target* and *generalization student*s' BSP prior to the implementation of the intervention. Training included review of each BSP, modeling of plan implementation, and verbal feedback while the teacher implemented the plan. Training was complete when the teacher could accurately explain the BSP and its implementation to me.

Baseline. During Baseline, I conducted observations and collected data on the TI on the BSP of the *target student* and *generalization student*. For each student, I collected the teacher's baseline TI data during two-three 30-minute observation periods each week. This procedure yielded two TI percentages for each teacher: one for the *target student* and one for the *generalization student*. I continued to collect TI data until the integrity percentages achieved stable responding across a minimum of three data points (Alberto & Troutman, 2007). At the same times that I collected baseline TI data, a trained graduate student collected data on the percent of OTB on the *target* and *generalization* student. I provided participating special education teachers with no PFB during baseline.

SM Training. After baseline data collection was completed, I trained teachers individually to use SM procedures. I adapted SM training from Richman et al. (1988). During the SM training, teachers learned to self-monitor implementation of BSPs following the SM data sheet. (See Appendix K) I reviewed the SM data sheet with each teacher, and showed her how to complete the data sheet. The teacher then used the data sheet in the classroom with the *target student* and I provided informal feedback on her

completion of the SM sheet at the end of a half-hour training session. SM training was complete when each teacher accurately monitored her own BSP implementation behavior with 90% accuracy. Each teacher required two sessions to achieve SM accuracy at or above 90%. I determined the teacher's SM accuracy by comparing her SM sheet with my own.

SM (Phase 1). During this phase, the teacher used the SM data sheet to monitor her own TI. Each teacher left her SM data sheet in my mailbox at the end of the day. As in baseline, I continued to conduct 2-3 observations a week in 30-minute increments and recorded each teacher's level of TI. Teachers received no feedback at this time. Simultaneously, a trained graduate student collected OTB data on each *target* and *generalization student* for each teacher according to procedures indicated above. Observations were conducted and data collected two-three days a week because this was manageable for the participants, it provided a representation of the dependent variables across each week, and was a realistic training protocol to follow in applied settings (Mouzakitis & Codding, 2006). This phase continued until the teacher's TI data reached stable rates of responding. I completed an analysis of the TI for all teachers and opted to begin the SM phase with the teacher that had the lowest TI, Teacher 1. At this time the other three teachers continued in baseline.

SM+PFB (Phase II). Following stable rates of responding I added PFB to the SM intervention. The teacher continued to use the SM data sheet to monitor her own TI. I continued to observe and record the teacher's TI after each observation during two-three 30-minute observations per week for each teacher. I provided written feedback (i.e., % of steps implemented as intended, praise, and error correction) to the teacher regarding TI of

the BSP on a checklist similar to the SM data sheet. This feedback sheet was left in the teacher's mailbox following the observation for the teacher to review. (See Appendix M for a sample feedback data sheet). In addition to the feedback I provided to the teacher, each teacher continued to complete the SM data sheet and leave it in my mailbox at the end of the day. (There was space on the SM data sheet for the teacher to comment or ask questions about the implementation of the components of the plan). I continued to observe, give feedback, and collect data two-three days a week as this was manageable to the participants, provided a representation of the behavior across each week, and was a realistic training protocol to follow in applied settings (Mouzakitis & Codding, 2006). There was space on the SM sheet for the teacher to comment. I returned to the SM condition (Phase III), following stable rates of responding in Phase II (i.e., discontinue SM+PFB).

SM (Phase III). During Phase III, I removed PFB and the teacher continued to complete the SM data sheets and monitor her own TI. Procedures followed those outlined in Phase I.

SM+PFB (Phase IV). For Teacher 1, I implemented a second condition of SM+PFB due to her lack of appropriate levels of TI following the second SM condition. Procedures followed those outlined in Phase II.

Inter-Observer Agreement

In addition to my own observations and data collection, there was a second observer present during at least 33% of the sessions for each participant and she collected inter-observer agreement (IOA) data on a separate clean TI data sheet for each BSP. The observer was given the specific scoring guidelines for each dependent variable and asked

to record her calculations in order to compare with the researcher's initial calculations. Following each inter-observer observation sessions, I met with the inter-observer and discussed the comparisons of our data. If our data didn't agree, I reviewed the components of the BSPs that did not match and we discussed the correct implementation of the BSP steps that we disagreed on in order to ensure that we agreed on the implementation for the next session. I chose to have the additional observer for 33% of session as current practice and recommendations in behavioral research suggest that one should calculate IOA for a minimum of 20% of a study's sessions and preferably between 25% and 33% of sessions (Cooper, Heron, & Heward, 2007). I calculated IOA by dividing the number of agreements per plan by the number of agreements plus disagreements per plan and multiplying by 100.

Procedural Integrity

Additionally, for 33% of sessions (15/46 sessions) for each teacher participant, an independent observer sat in the back of the room and rated my performance on all steps of the procedure and computed the % of steps implemented as described to determine procedural integrity of each intervention phase. (See appendix O for a sample of the procedural integrity checklist). Each section defined the steps that were required to implement the FBA, develop the BSP, implement the PFB and SM components according to the study, and decision making for phase changes. I calculated procedural integrity by dividing the total number of steps implemented correctly by the total number of applicable for implementation on the procedural integrity checklist and then multiplied by 100.

CHAPTER IV

Results

In this chapter I review the research questions, discuss procedural integrity, IOA, followed by data analysis of the results, and a final section on social validity.

The first hypothesis of this study was to identify if training teachers to self-monitor their implementation of BSPs will improve TI to acceptable levels (80%). Second, I hypothesized that training teacher to self-monitor their implementation of BSPs in addition to providing PFB will improve TI over time following fading of the PFB. Third, I anticipated that the treatment packages would improve TI to a BSP that was not specifically trained (generalization). Fourth, I thought that training teachers to self-monitor their implementation of BSPs will lead to maintenance of TI percentages that are higher than maintenance TI rates achieved with a training package incorporating PFB with no SM component. Finally, I hypothesized that as TI improves, the target behavior of the target student improves.

Procedural Integrity and Inter-Observer Agreement

An independent observer collected procedural integrity across 33% (15/46) sessions for each teacher. Procedural integrity for each teacher in the study averaged 100%. Additionally, an independent observer collected treatment integrity data for each teacher for 33% of the observations (15/46 observations) in order to calculate IOA. (See Table 1, (p.97), for a summary of IOA percentages for TI data of BSPs across teachers and phases.) In summary, IOA averages were for Teacher 1, 98.4% (range from 85%-100%), Teacher 2, 98.9% (range from 88%-100%), Teacher 3, 98% (range from 85%-100%), and Teacher 4, 97.8% (range from 88%-100%).

Table 1

IOA Average Percentages Across Sessions for TI for Target (T) and Generalization (G) students

	Baseline		SM		SM+PFB		SM		SM+PFB	
Participants	*T*	*G*	*T*	*G*	*T*	*G*	*T*	*G*	*T*	*G*
Teacher 1	98%	94%	100%	100%	100%	96%	100%	100%	100%	96%
Teacher 2	100%	97%	99%	99%	---	---	---	---	---	---
Teacher 3	97%	93%	97%	100%	99%	98%	100%	100%	---	---
Teacher 4	98%	90%	100%	96%	100%	100%	100%	98%	---	---

Note: Dash are inserted in the columns for phases in which each respective teacher did not participate.

The results for TI and behavior data are presented below. First I review the four-tiered MLB for TI on BSPs for the *target student* and *generalization student* across teachers. Following this analysis, I review the results for all four teachers the relationship of TI between *target student* and *generalization student*, and finally I review the relationship between TI and OTB for *target student*s and then *generalization student*s.

Treatment Integrity

Multiple baseline for TI across teachers. The study used a multiple baseline design across teachers was used to identify if a functional relationship existed for the independent variables and the dependent variables. In order to support the functional relationship, the data should have a change in level and trend, with no latency to illustrate that it was the intervention that was responsible for the change in data across settings. In Figure 1 (p. X), I summarize the TI data for *target* and *generalization student*s across the four teacher participants in the study. (See Table 2, p. 103, for descriptive statistics on TI.)

Baseline. The duration of baseline varied depending on the variability of each teacher's data. For all four teachers, initially TI was high and near or at target levels.

However by the end of the baseline phase the trend across all teachers was a steady decrease in TI.

Teacher 1. I collected baseline data for Teacher 1 for seven sessions. Of all the teachers, her TI started and ended at the lowest percentage, so I selected her to be the first teacher with whom to begin the SM phase. *Target student* TI slowly but steadily decreased from the start of baseline from 32% to 19%, and for the *generalization student*, integrity decreased rapidly from 70% to 15%. The decreasing trend was consistent across both students for this phase.

Teacher 2. I collected baseline data for Teacher 2 for nine sessions. For both students, there was some variability in Teacher 2's integrity data, with a similar pattern of implementation across both students. For the first four sessions, TI was stable for both students. On the sixth day of baseline, TI dipped for both students, from 30% to 0% for the *target student* and from 80 % to 53% for the *generalization student*. Following this momentary dip, TI increased again to previous levels for the following session. From the start of baseline to the end of the phase, *target student* TI decreased from 45% to 44% (the smallest decrease across teachers), and *generalization student* TI decreased from 85% to 68%.

Teacher 3. Teacher 3 had high TI at the start of baseline for both students. Following the first three sessions of > 80% TI, there was a sudden decrease from 84% to 53% for the *target student* and from 90% to 26% for the *generalization student*, and then for both students there was a slight increase with variability in the data. From the beginning of baseline to the termination of the phase, TI dropped from 85% to 48% for the *target student* and from 83% to 45% for the *generalization student*.

Teacher 4. The pattern in TI for Teacher 4 for was similar to that demonstrated by Teacher 3 in that there was high TI in the first few sessions with a sudden and steady decrease. *Target student* TI had decreased from 90% to 40% from the start to the end of the baseline and decreased from 88% to 48% for the *generalization student*. For both students, however, the TI data appeared to reach its lowest percentage in the middle of the phase, increasing slowly towards the end of the phase.

SM. With the introduction of the SM condition, there was a level change for all four *target student*s, and three out of four of the *generalization student*s. Although all teachers showed an increase in average percentage of TI for this phase, the trend varied by teacher.

Teacher 1. Teacher 1's data showed an immediate level change for the *target* and *generalization students* compared to the baseline phase. However over the six sessions of the baseline phase, TI steadily decreased from 60% to 17% for the *target student* and from 50% to 23% for the *generalization student*.

Teacher 2. The data Teacher 2 illustrate a level change for both *target* and *generalization students*. In the first seven sessions of this phase, TI data were variable, but higher than baseline conditions, and stabilized within seven sessions. There were two days when TI showed a downward trend, but for the rest of the sessions, TI approached target levels. Teacher 2 was the only teacher who did not move to the PFB phase as her TI reached criterion in the SM condition.

Teacher 3. The data for Teacher 3 yielded an initial level change for the *target student* reaching a peak of 84% towards the middle of the phase before decreasing to 64%. TI data for the *generalization student* were slightly more stable with an initial jump

from 60% to 80%, and then leveling off slowly decreasing to 68%. TI data for Teacher 3 were higher at the end of the phase than at the start of the phase for both the *target student* and *generalization student*, increasing 60% to 62%, and 60% to 68% respectively.

Teacher 4. The data for Teacher 4 demonstrated a substantial level change from the phase change from baseline to SM condition, increasing from 39% to 70% for the *target student* and 48% to 78% for the *generalization student*. During SM, TI for the *target student* was stable, slightly increasing towards the middle of the phase and then proceeding on a slow and minimal decrease toward the end of the phase. TI for the *generalization student* was higher, but slightly more variable with a substantial drop from 100% to 70% for sessions 31 and 32, but then a quick increase to 100% by the end of this phase.

SM+PFB. With the introduction of the SM+PFB condition, there was a consistent level change from the SM condition across the three teachers that were part of this phase.

Teacher 1. The data for Teacher 1 suggested there was an increase in TI both the *target* and *generalization students*. TI, for both students, yielded similar patterns of variability (i.e. sessions 25 and 29, TI decreases for both students, and towards the end of the phase, TI levels off.) For most of this phase, TI varied, with ranges of 22%-80% for the *target student* and 16% and 89% for the *generalization student*, throughout the phase. The last three sessions of this phase, however, showed very stable responding at target levels of TI.

Teacher 3. The data for Teacher 3 illustrated a level change in TI with the

introduction of the SM+PFB phase, which resulted in stable and high level responding for both students for the majority of the sessions. TI had low variability for both the *target* and *generalization students* (i.e. 80%-90% respectively). Percent of TI was high for the majority of this phase; TI for the *target student* was at or above the criterion of 80% for all but one session.

Teacher 4. The data for Teacher 4 illustrated a level change at the start of the SM+PFB phase of the study for the *target student* in the unexpected direction. At this time the Teacher notified me that she could no longer implement the plan as written. There was a break in the data while I modified the plan, and re-trained the teacher. Following the modification of the BSP, TI for the *target student* increased to 70% and ended the phase at 80%. TI for the *generalization student* at the start of this phase was at 80%, initially increasing to 100%, and then slowly decreasing to 80% at the end of the phase.

SM. Only three teachers participated in this phase transition. The data for Teachers 3 and 4 illustrated a slight level change from the SM+PFB phase to the SM phase, which was the desired response according to the hypotheses in this study.

Teacher 1. The data for Teacher 1 demonstrate an immediate decrease in TI for both the *target* and *generalization student* with the removal of PFB. Although the TI increased after a few sessions, it was variable. In the last three sessions of this phase, the TI data for the target student decreased in the unexpected direction from 70% to 49%, while the *generalization student'*s TI increased from 70% to 90%.

By the end of this phase, the *target student*'s TI was below the criterion of 80% and I made the decision to add an additional PFB phase to see if TI would increase back

to the levels of the previous phase. With the introduction of the second SM+PFB phase, there was a level change for the *target student* and TI steadily increased from 60% to 90%. The *generalization student*'s TI decreased from 80% TI at the start of the phase to 70% TI at the end of the phase. Comparing the second SM+PFB phase to the first, there was less variability and BSP implementation took fewer sessions to 80% TI.

Teacher 3. The data for Teacher 3 showed no level change with the transition to the SM phase, and stable rates of TI were maintained between 76% and 90% for both the *target* and the *generalization students* throughout the phase with TI data slightly lower for the *generalization student*. TI for the *target student* stayed between 80% and 90% and TI for the *generalization student*, although slightly lower, stayed between 75% and 86%.

Teacher 4. TI was maintained for the *target student* for four sessions at > 80% and was maintained for the *generalization student* between 80% and 90%.

Table 2

TI Averages for all Phases for Target (T) and Generalization (G) Students Across Teachers

	Baseline				SM				SM+PFB				SM				SM+PFB			
	T		G		T		G		T		G		T		G		T		G	
Participants	*M*	*(SD)*	*M*	*(SD)*	*r*	*M*	*(SD)*	*M*	*(SD)*	*r*	*M*	*(SD)*	*M*	*(SD)*	*r*	*M*	*(SD)*	*M*	*(SD)*	*r*	*M*	*(SD)*	*M*	*(SD)*	*r*
Teacher1	31	(6)	39	(24)	-*.04*	36	(17)	38	(13)	*.73*	64	(20)	66	(32)	*.80*	71	(11)	85	(8)	-*.37*	79	(10)	74	(17)	-*.30*
Teacher2	39	(16)	78	(14)	*.53*	87	(12)	88	(9)	*.31*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Teacher3	60	(17)	54	(23)	*.81*	74	(9)	73	(10)	*.71*	90	(5)	88	(9)	*.06*	89	(4)	84	(4)	*.41*	--	--	--	--	--
Teacher4	46	(16)	78	(14)	*.66*	74	(3)	87	(10)	-*.20*	83	(6)	92	(6)	-*.31*	85	(4)	92	(5)	*.54*	--	--	--	--	--

Note: Dash are inserted in the columns for phases in which each respective teacher did not participate.

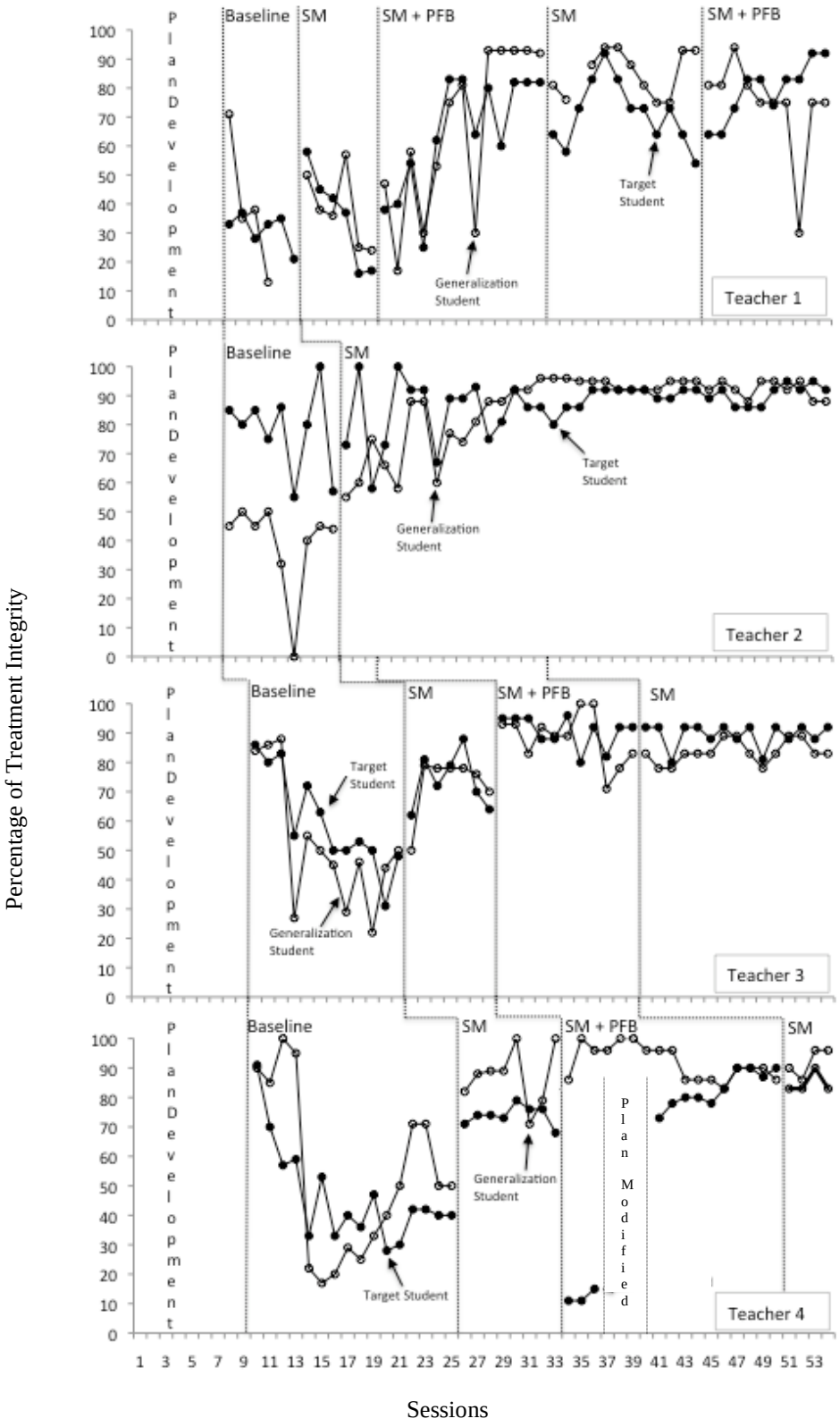

Figure 1. TI for *target* and *generalization student* across teachers.

Generalization of BSP Training

Below are the results from Figure 1, with each tier represented individually. In order to identify the strength of the relationship between the *target* and the *generalization student*s, I calculated the correlation between *target student* TI and *generalization student* TI for each phase. (See Table 2, p. 103, for the descriptive statistics.)

Teacher 1. During the baseline, (See Figure 2, p. 107), although both dependent variables show a decreasing trend, there was no correlation between them (r = -.04). For the SM phase however, the data have a very similar pattern with the exception of session 17 (r = .73). This pattern continued to the SM+PFB condition (r = .80). However data from the last three sessions broke this pattern; as the *target student*'s behavior decreased, the *generalization student*'s behavior increased, each of them 20% in the opposite direction. This inverse relationship is evidenced in the correlation coefficient (r = -.37). With the final replication of the SM+PFB phase, the relationship between the *target* and *generalization student*'s data also diminished (r = -.30); however, TI was high and reached criterion levels.

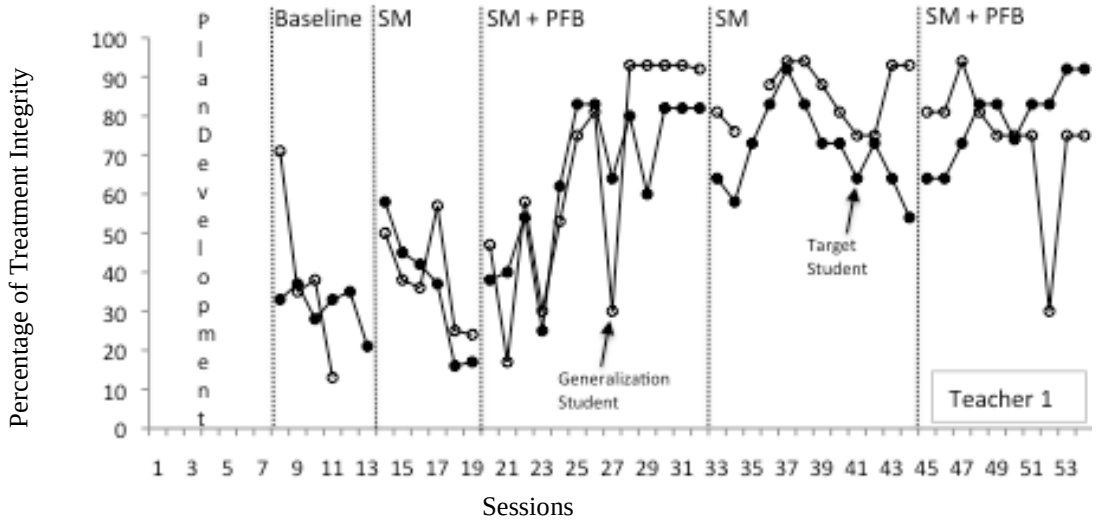

Figure 2: Teacher 1 TI for *Target student* and *Generalization student*

Teacher 2. During the baseline condition for Teacher 2 (See Figure 3, p. 106), there appeared to be a slight relationship between the two data paths and the phases. During baseline, here was high variability, with the *target student*'s TI ranging from 0-50% and the *generalization student*s' TI ranging 50% to 100% with a correlation of r = .53, showing that there was relationship between these two dependent variables. With the introduction of the SM phase, there existed a weaker relationship between the variables (r = .31). However, there are sessions when the data rise and fall together.

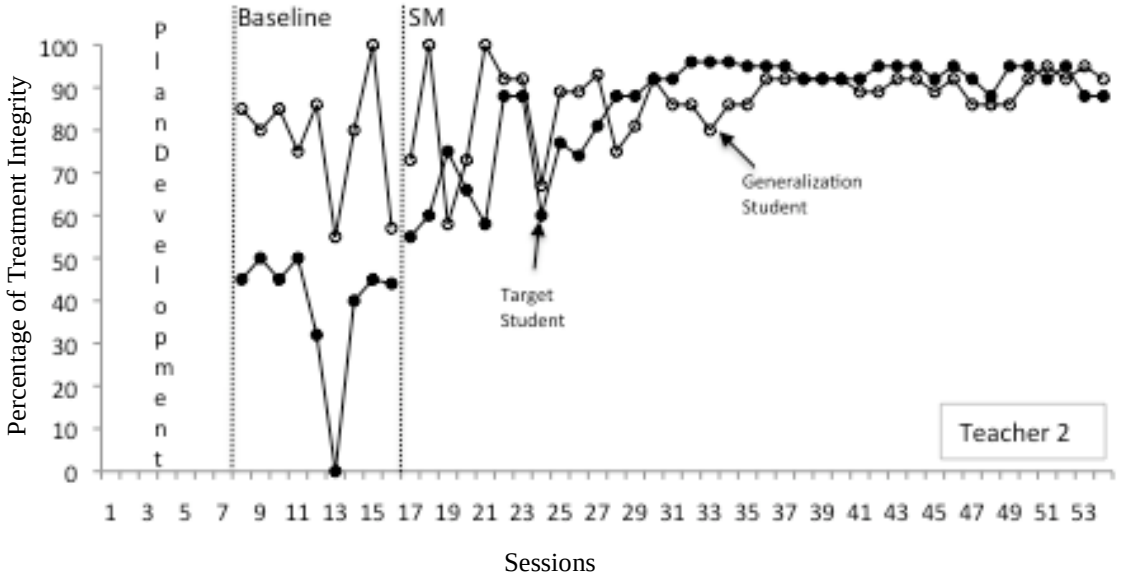

Figure 3: Teacher 2 TI Data for *Target student* and *Generalization student*

Teacher 3. During the baseline condition for Teacher 3 (See Figure 4, p. 107), TI data for the *target student* and the *generalization student* follow a similar pattern and had a correlation of r = .81. The correlation between generalization and target student's data was .71 for the SM phase but was only .06 for the SM+PFB phase, which is likely due to the high TI performance of the teacher. The replication of the SM yielded a correlation of .41 suggesting that the data were less variable while still reaching criterion.

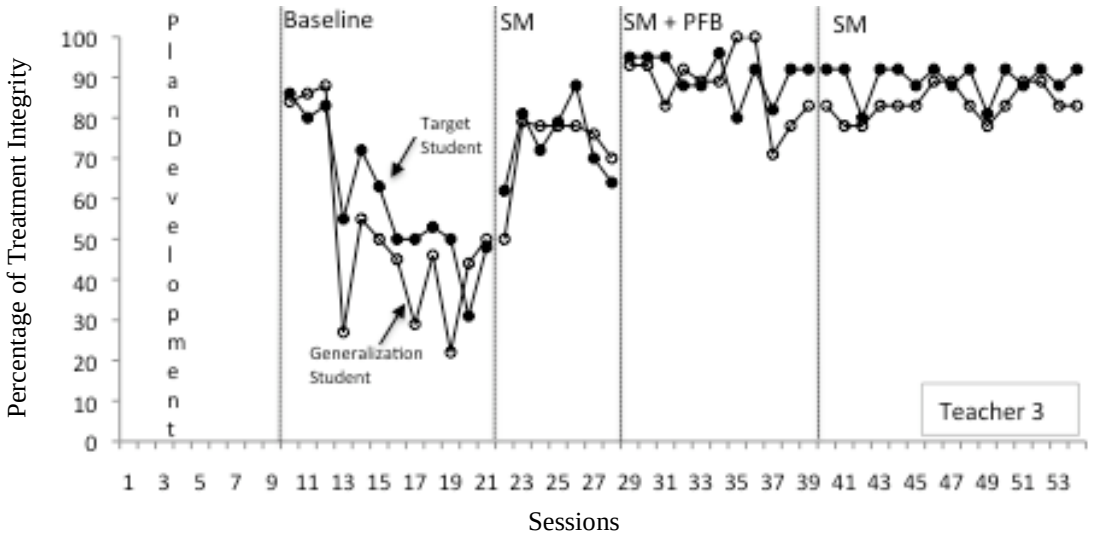

Figure 4: Teacher 3 TI Data for *Target student* and *Generalization student*

Teacher 4. During baseline for Teacher 4 (See Figure 5, p. 108), there appeared to be a strong relationship between the two data paths (r = .66). There was some variability for TI for each student, but the pattern of responding was similar, with both paths initially over 80%, then decreasing substantially (*generalization student* data 90% to 20% and *target student* data from 90% to 30%). Following this decrease, both data paths stayed within the same range for seven sessions before they slightly increased and leveled off. In the SM phase, a weaker and negative correlation existed (r = -.20). However, the data for the first four sessions followed a similar pattern and then both data paths increased. There were two sessions for the *generalization student* where TI decreased (i.e. sessions 31 and 32) away from the path of the *target student*. With the introduction of the SM replication, a stronger correlation emerged (r = .54)

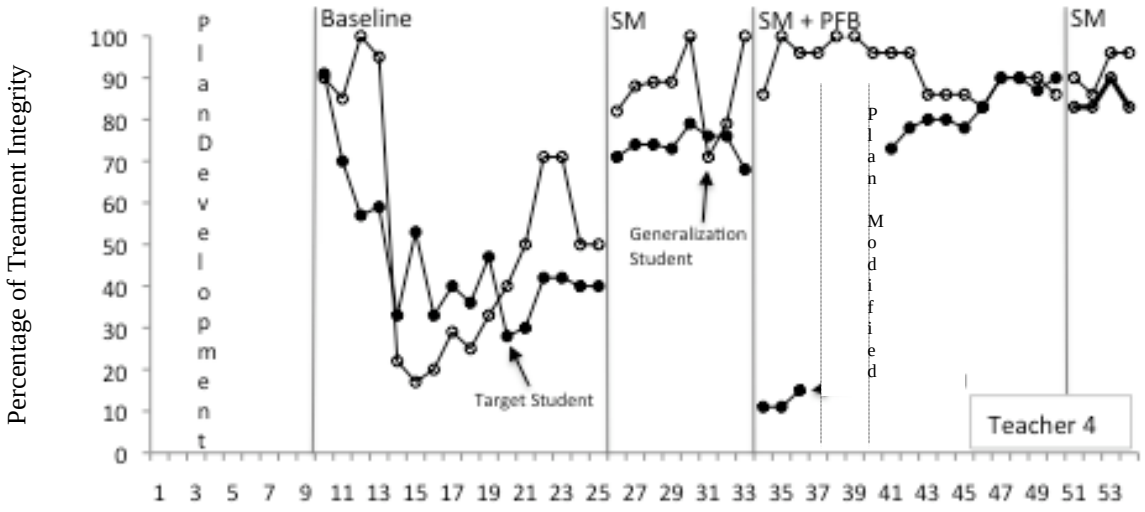

Figure 5: Teacher 4 TI Data for *Target student* and *Generalization student*

Relationship of TI and OTB

Target students. In this section I analyze the relationship between the TI and OTB for *target student*s. (See Table 3, p. 110, for the descriptive statistics.)

Teacher 1. For teacher 1, the *target student* OTB followed the path for the TI percentage of the teacher (See Figure 6, p. 109). The correlations of TI to OTB across the phases for Teacher 1 are as follows: baseline (r = -.10), SM (r =1.00), SM+PFB (r = .50), SM (r = .82), and SM+PFB (r = .79). During baseline, with the first day of implementation of the BSP, OTB increased from 30% to 50%. Following this initial increase in OTB, there was a peak at 100% OTB and then OTB decreased again towards the end of the session. Following SM training and with the introduction of the SM phase, there was an initial increase in TI and OTB. During the SM+PFB phase, TI and OTB followed a similar pattern. In addition, on days when TI decreased abruptly (sessions 23 and 29) OTB also abruptly decreased. With the replication of the SM phase, as TI

increased, OTB percentages increased. OTB data and TI data continued to increase in a similar pattern for the final SM+PFB phase.

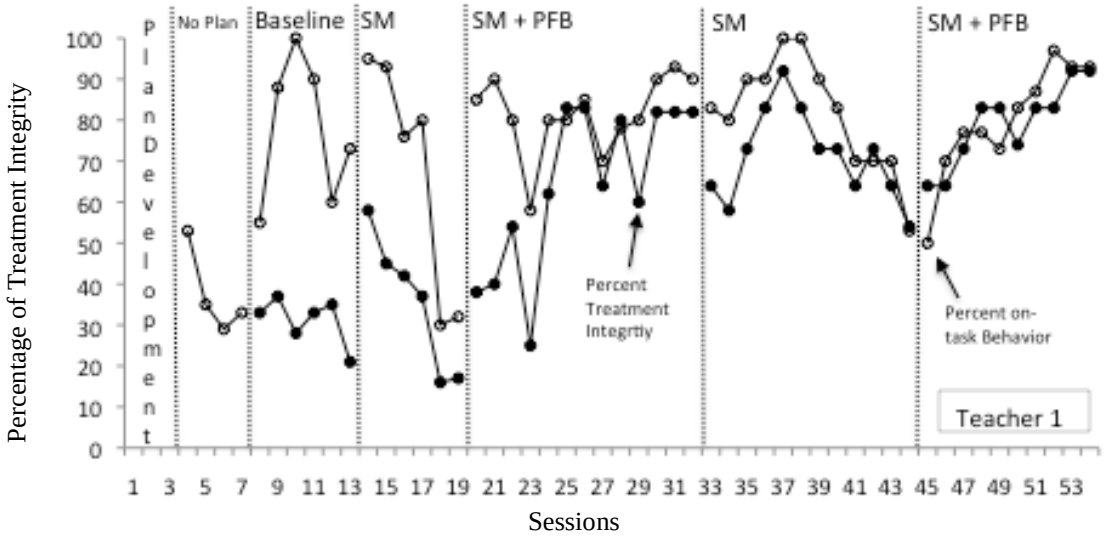

Figure 6: *Target student* TI Compared to OTB for Teacher 1

Table 3

Means and Correlations for TI and for Target Students Across Phases

	Baseline				SM				SM+PFB				SM				SM+PFB			
	TI		OTB		TI		OTB		TI		OTB		TI		OTB		TI		OTB	
Participants	*M*	*(SD)*	*M*	*(SD)*	*r*	*M*	*(SD)*	*M*	*(SD)*	*r*	*M*	*(SD)*	*M*	*(SD)*	*r*	*M*	*(SD)*	*M*	*(SD)*	*r*	*M*	*(SD)*	*M*	*(SD)*	*r*
Teacher1	31	(6)	78	(18)	*-.10*	37	(17)	68	(29)	*1*	64	(20)	81	(9)	*.50*	71	(11)	82	(14)	*.82*	79	(10)	80	(14)	*.79*
Teacher2	39	(16)	71	(17)	*.60*	87	(12)	90	(10)	*.64*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Teacher3	60	(17)	74	(15)	*.21*	74	(9)	73	(20)	*.55*	90	(5)	89	(6)	*.20*	89	(4)	85	(3)	*.39*	--	--	--	--	--
Teacher4	46	(17)	68	(14)	*.61*	74	(3)	71	(4)	*-.20*	83	(6)	53	(18)	*-.31*	85	(4)	69	(2)	*.54*	--	--	--	--	--

Note: Dash are inserted in the columns for phases in which each respective teacher did not participate.

Teacher 2. The correlations for TI to OTB across the phases for Teacher 2 were as follows: baseline (r = .60), and SM (r = .64). (See Figure 7, p. 111). During the baseline phase, with the initial implementation of the BSP, OTB increased from 50% to 70%. Following this initial increase in OTB, there was a peak at 100% OTB and then OTB started to decrease again towards the end of the session. During sessions 11-13, when TI was quickly decreased from 50% to 0% over three sessions, OTB also made a 50% drop over those same three sessions. Similarly, as TI increased 40% during the next session, OTB also increased substantially. In the SM condition, there was an initial increase in TI from 42% to 52% and an initial increase for OTB from 53% to 71%. For the first 15 sessions of the SM phase, both TI and OTB data were variable before both data paths stabilized 15 sessions into the phase.

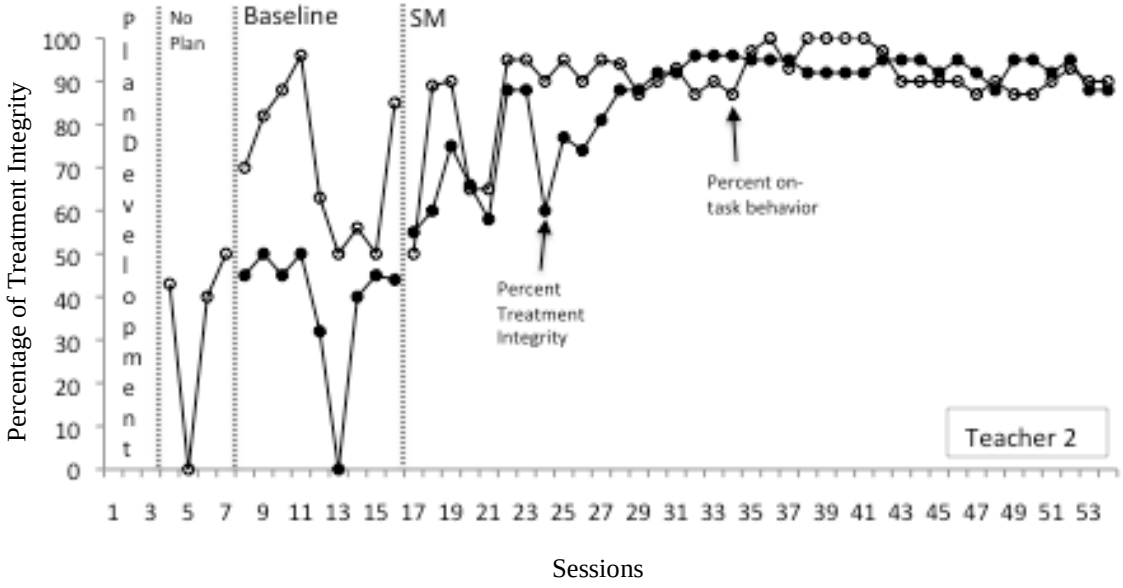

Figure 7: *Target student* TI Compared to OTB for Teacher 2

Teacher 3. The correlations of TI to OTB across the phases for Teacher 3 are as follows: baseline (*r* = .21), SM (*r* = .55), SM+PFB (*r* = .50), SM (*r* = .20) and SM+PFB (*r* = .39). (See Figure 8, p. 112). During baseline, there was a 50% level change in the *target student*'s OTB. With the first day of implementation, OTB increased 50% from having no plan. With the introduction of the SM phase, there was an initial increase in both TI and OTB at similar rates from 60% to 80% for TI and 70% to 90% for OTB. In the SM+PFB phase, TI and OTB both substantially improved 30%. Following this increase, both dependent variables were stable varying less than 10% across the 10 sessions in this phase. This pattern and 10% variation continued in the replication of the SM phase.

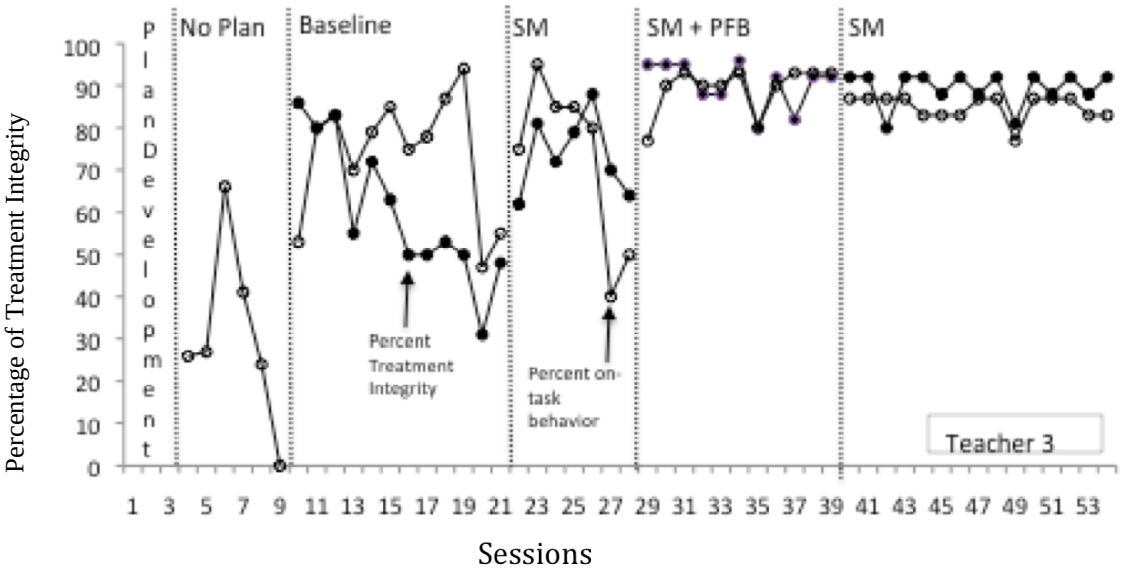

Figure 8: *Target student* TI Compared to OTB for Teacher 3

Teacher 4. For teacher 4, the *target student* OTB closely followed the TI. (See Figure 9, p. 113). The correlations of TI to OTB for Teacher 4 across phases were as follows: baseline (*r* = .61), SM (*r* = -.20), SM+PFB (*r* = -.31), and SM (*r* = .54). With

the start of baseline, OTB increased substantially from 21% to 80%, followed by a variable decrease at a similar rate for both dependent variables. During the SM phase, there was an initial increase in TI and OTB, and both data paths remained fairly stable with a range of 60% to 72% for OTB and 65% to 85% for TI. With the introduction of the SM+PFB phase, TI and OTB increased together. With the replication of the SM phase, the student's OTB percentages and the TI remained at approximately the same levels as the SM+PFB phase and stabilized.

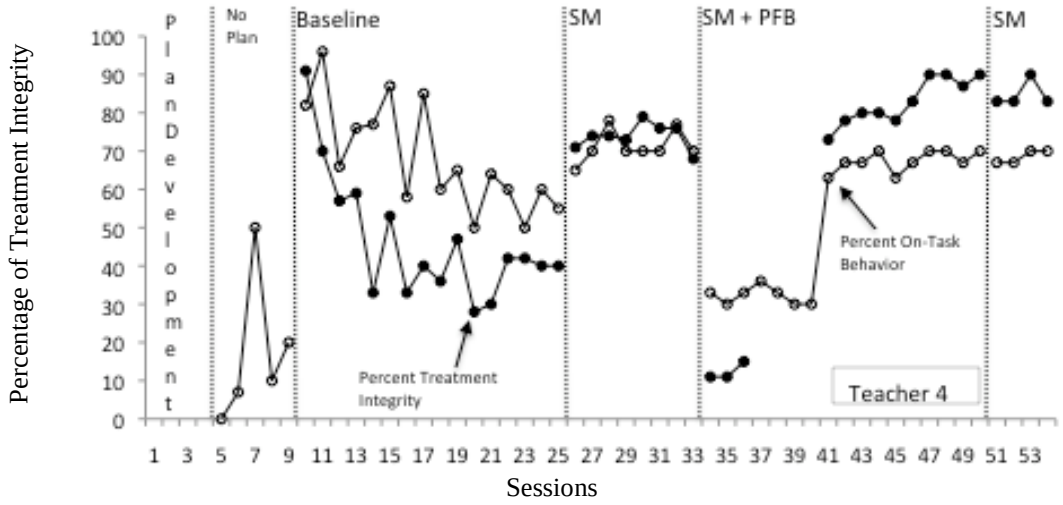

Figure 9: *Target student* TI Compared to OTB for Teacher 4

Generalization students. In this section I analyze the relationship between the TI and OTB for *generalization student*s. (See Table 4, p. 115, for the descriptive statistics.)

Teacher 1. For teacher 1, the *generalization student* OTB closely followed the path for the TI (See Figure 10, p. 114). The correlations of TI to OTB across the phases for Teacher 1 are as follows: baseline (r = -.88), SM (r = .75), SM+PFB (r = .72), SM (r = .66) and SM+PFB (r = .93). With the exception of baseline (during which the data

appeared to have an inverse relationship), there was a strong correlation between TI and OTB. Dips in the data on certain sessions also support this conclusion (e.g. session 27 and 52 where both TI and OTB substantially decrease). During the SM condition, TI and OTB both followed the same pattern, starting low at the start of the phase, and quickly improving together. During the SM+PFB phase, the pattern continued with TI and OTB strongly correlated. During session 27 there was a substantial decrease in both TI and OTB by 50%, followed by an increase of greater than 50% the next session. With the replication of the SM phase, TI and OTB followed the same pattern and remained closely correlated. During the replication of the SM+PFB phase (which was included due to the lack of TI for the *target student*) the pattern continued with the OTB of the student was correlating strongly with the TI of the teacher.

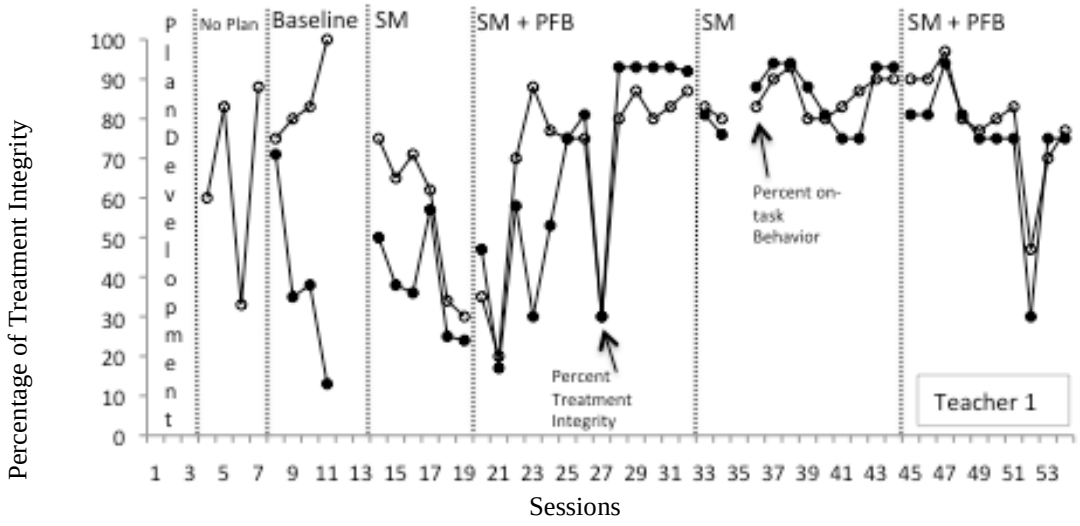

Figure 10: Generalization Student TI Compared to OTB for Teacher 1

Table 4

Means and Correlations for TI and for Generalization Students Across Phases

	Baseline			SM			SM+PFB			SM			SM+PFB		
	TI	OTB		TI	OTB		TI	OTB		TI	OTB		TI	OTB	
Participants	*M (SD)*	*M (SD)*	*r*	*M (SD)*	*M (SD)*	*r*	*M (SD)*	*M (SD)*	*r*	*M (SD)*	*M (SD)*	*r*	*M (SD)*	*M (SD)*	*r*
Teacher1	39 (24)	85 (11)	*-.88*	38 (13)	56 (19)	*.75*	66 (32)	68 (24)	*.72*	85 (8)	85 (5)	*.66*	74 (17)	79 (14)	*.93*
Teacher2	78 (14)	97 (5)	*.22*	88 (9)	95 (4)	*-.16*	-- --	-- --	--	-- --	-- --	--	-- --	-- --	--
Teacher3	54 (23)	84 (13)	*.43*	73 (10)	79 (12)	*.05*	88 (9)	96 (4)	*.57*	84 (4)	77 (4)	*.41*	-- --	-- --	--
Teacher4	53 (29)	87 (5)	*.04*	87 (10)	95 (5)	*.10*	92 (5)	99 (2)	*.59*	92 (5)	99 (2)	*.81*	-- --	-- --	--

Note: Dash are inserted in the columns for phases in which each respective teacher did not participate.

Teacher 2. For teacher 2, the *generalization student* OTB improved substantially following the implementation of the BSP (See Figure 11, p. 116). Although there did not appear to be a strong correlation between these two variables, the TI data for the teacher was above 75% for the majority of the baseline and SM condition, which may have been enough TI to support this students OTB. The correlations of TI to OTB across the phases for Teacher 2 were as follows: baseline (r = .22) and SM (r = -.16). During baseline, Teacher 2 had near target levels of TI for the *generalization student* for the first five sessions followed by variability in her implementation; however the student maintained OTB between 90% and 100% for the majority of the phase. Following SM training and with the introduction of the SM condition, TI was variable for the first 10 sessions; however OTB was fairly stable and continued to remain at high rates for the duration of the phase. As compared to the TI and OTB data from this same teacher and the *generalization student*, the same weaving pattern existed towards the end of the phase, with TI slightly increasing as OTB decreased.

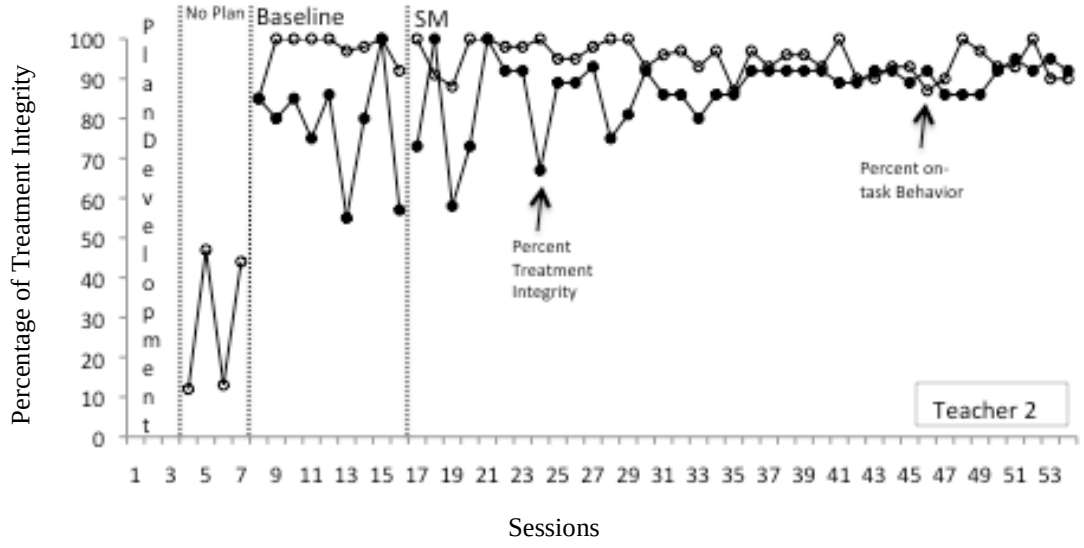

Figure 11: *Generalization student* TI Compared to OTB for Teacher 2

Teacher 3. For Teacher 3, OTB and TI correlated during baseline (r = .43) with a weaker correlation emerging during the SM phase (r = .05), and an improvement again in the correlation for the SM+PFB phase (r = .57) and SM phase (r = .44). (See Figure 12, p. 117). During baseline, the *generalization student* had variable OTB prior to the implementation of the plan, and this pattern continued through the study, as he occasionally was on task 100% of the time, with periods of variable and inconsistent behavior. This is evident in the first two phases, where the correlation is weaker. With the implementation of the SM phase, even though TI stabilized, OTB for the *generalization student* appeared to be still quite variable, and finally decreased towards the end of this phase. With the implementation of the SM+PFB phase, OTB and TI both improved by over 20% and had stronger correlation. With the replication of the SM phase, although both TI and OTB both decreased, they had a stronger correlation than the SM+PFB phase and stable rates of responding.

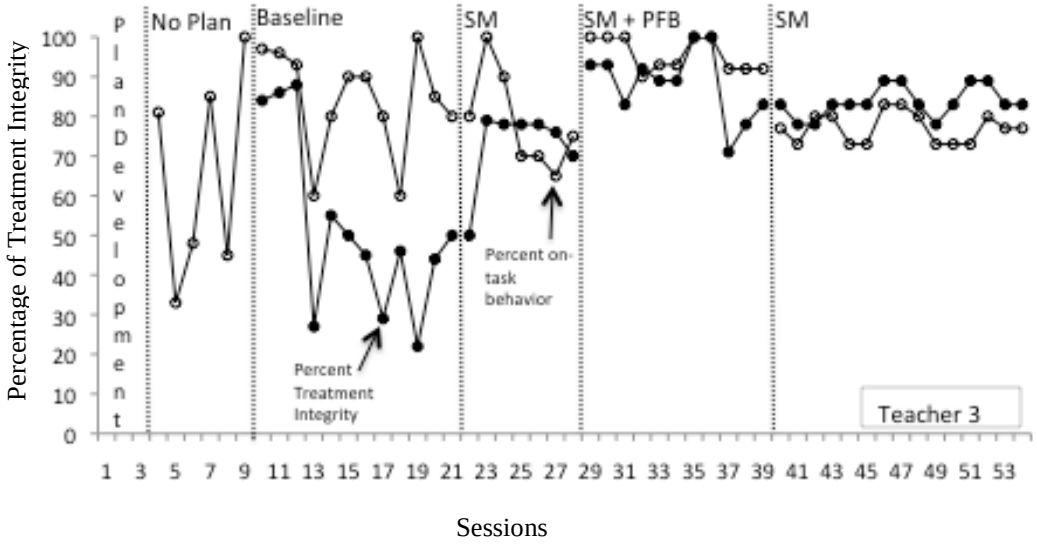

Figure 12: *Generalization student* TI Compared to OTB for Teacher 3

Teacher 4. For Teacher 4, the *generalization student's* OTB initially had a weaker correlation with TI, however with the addition of each phase, TI improved (See Figure 13, p. 118). The correlations of TI to OTB for Teacher 4 across phases were as follows: baseline (r = .04), SM (r = .10), SM+PFB (r = .59), and SM (r = .81). During baseline, the student demonstrated variable OTB within this phase; however, the TI for this teacher was also inconsistent that may account for the suddenly variable responding of the student. As the baseline phase continued, TI substantially dropped, as did student OTB, and then began a steady incline towards the end of the baseline session. Along with this steady incline of TI, OTB improved as well (See Figure 15). With the start of the SM condition, TI substantially improved, although it became more variable toward the end of the phase. With this increase in variability, OTB also became less stable. Both OTB and TI again increased at the end of the phase. With the addition of PFB, TI stabilized, as did student OTB with a higher correlation between the two variables than correlations during baseline and SM. With the replication of the SM phase, OTB and TI were both very stable and highly correlated.

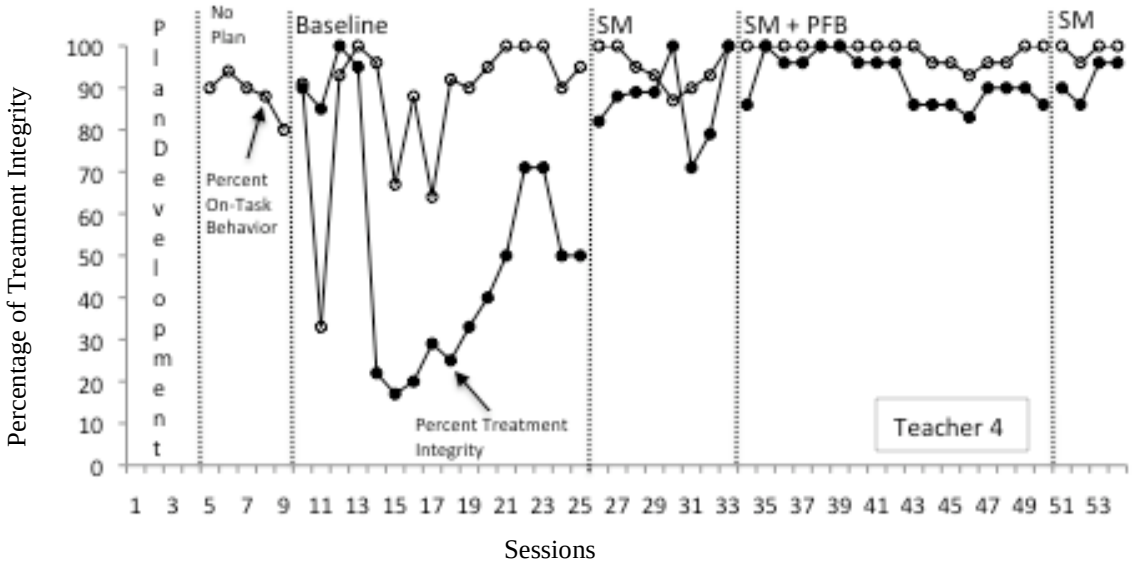

Figure 13. *Generalization student* TI Compared to OTB for Teacher 4

Social Validity

The IRP-15 assessed treatment acceptability for both SM and SM+PFB was for each teacher participant. Table 5 (p. 119) displays the findings for both interventions across participants. The range of scores for SM is 4.67 to 5.53 and for SM+PFB is 5.6 to 5.67. For both interventions, scores indicate that the intervention was acceptable: however, it appeared from the results of the IRP-15 that participants slightly preferred the SM+PFB condition to the SM alone condition.

Table 5

Mean acceptability scores on the IRP-15

	SM		SM+PFB	
Participants	*M*	*(SD)*	*M*	*(SD)*
Teacher1	5	(1.00)	5.6	(0.60)
Teacher2	5.53	(0.74)	5.67	(0.49)
Teacher3	5.47	(0.83)	5.6	(0.60)
Teacher4	4.67	(1.11)	5.67	(0.62)

CHAPTER V

Discussion

This chapter provides a summary and discussion of the results. Included is a discussion of the limitations of the present study and suggestions for future research. The purpose of this dissertation was to investigate five concerns. First, this study investigated if training teachers to self-monitor their implementation of BSPs would improve TI to acceptable levels (80%) by comparing phases of SM to a phase of PFB plus SM across four teachers. Second, the study examined whether training teachers to self-monitor their implementation of BSPs in addition to providing PFB would improve TI over time following fading of the treatment plan. This was explored through the removal PFB, and having teachers implement BSPs using only self-monitoring. Third, I investigated if treatment packages improved TI to a BSP for which a teacher was not specifically trained (generalization). I assessed generalization by observing the classroom implementation of another child's BSP for which the teacher had not received specific training , and evaluating if there was an improvement of TI for this other child's BSP based on feedback provided for the target child only. Fourth, I examined whether training teachers to self-monitor their implementation of BSPs would lead to maintenance of TI percentages that were higher than maintenance TI rates achieved with a training package incorporating PFB and no SM component. I analyzed this by comparing TI following the removal of PFB to results of studies from the existing literature that did not utilize SM as part of a package to maintain TI. Finally, this study looked at student behavior in relation to TI to determine if as TI improved, the OTB of the *target student* would improve.

The results from this study are consistent with results from previous studies cited in my review of the literature. Consistent with the literature, BSP implementation training was not sufficient to maintain TI (Green & Reid, 1991; Kovaleski, et al., 1999; Noell, Gansle, & Allison, 1999). As in these studies, all the teachers in my study initially had high TI following initial BSP training, but TI decreased substantially within three days. In order to fully examine the component of SM, I attempted to account for confounding variables that previous studies had identified as decreasing TI: minimal teacher participation in the BSP development (Noell et al., 2006), newness of target behavior (Noell et al., 2005), effort involved in the implementation of the BSP (Noelle et al., 2005), complex BSPs (Yeaton & Sechrest, 1981), time required to implement the BSPs (Gresham, 1989), cost of BSP components (Gresham 1989), the need for more than one treatment agent to implement the BSP (Gresham, 1989), and teacher disagreement with the BSP components (Witt & Elliott, 1985). In my study, the teachers participated in the development of the BSP, had the same global training in applied behavior analysis and ascribed to this orientation, had similar complexity of BSPs across students and effort required to implement the BSPs, paid no cost to purchase components to implement the BSPs, and all BSPs required only one treatment agent for implementation.

These TI data for the *target student* suggested a consistent initial effect for the SM alone condition, however, with one exception (Teacher 2), teachers did not maintain the initial increases in TI. Although the initial effect of SM was not maintained across three of the four teachers, all four teachers maintained TI at higher levels than other studies in the literature report for initial training alone, implying that SM is successful at improving TI; however, not to criterion levels (Green & Reid, 1991; Kovaleski, et al., 1999; Noell,

Gansle, & Allison, 1999). Although their teachers did not achieve criterion levels of TI during the SM condition, some of the students' OTB behavior improved substantially over baseline conditions, implying sufficient efficacy of SM improvements in TI to support increased OTB for these students.

For Teacher 2, the treatment phase of SM was enough to allow her to maintain criterion levels of TI for the duration of the study. This result may also be linked with the teacher's characteristics, collaboration with her co-teacher, and time management and organization skills (Noell et al., 2005). To my knowledge and in my review of the literature, there have been no studies that implemented an SM alone condition without performance feedback or ongoing training package. Richman et al. (1988) incorporated SM as part of a treatment package for teachers, however, weekly supervision meetings were also part of the study's SM condition, which differs from this study that provided no supervision or weekly feedback. Teacher's 2's positive response to the SM condition may be related to motivation to implement the BSP, which has been discussed in the literature (Gresham, 1989; Ysseldyke, et al., 1983). Teacher 2 appeared motivated to implement the plan and also evidenced a tendency to graph her own data. In addition, Teacher 2 was the only teacher in the study to work with a co-teacher who was not only certified in general education, but also certified in special education. This may have been a confound that led to higher TI. Gresham (1989) found that lack of access to support and services negatively influenced TI. Teacher 2, with a fellow certified special education teacher in her classroom, may have accessed support from her co-teacher leading to higher rates of TI. Additionally, Teacher 2 had the most years of experience of the four teachers and may have had more experience with some of the BSP components

in addition to higher fluency with implementation of the curriculum, and as a result her skills in multi-tasking were greater.

When PFB was added to SM, TI improved to criterion and was maintained for three of three teachers (as one of the teachers had never entered the PFB+SM phase), which is consistent with the literature and supports the need for PFB in order to attain criterion levels of TI (Jones et al., 2000: Mortenson & Witt, 1998: Noell et al., 2000).

When PFB was removed, two of the three teachers participating in the SM+PFB phase maintained TI at criterion levels. These data show promise for the use of SM as a component to aid in maintaining criterion levels of TI, as current research reports that, with the removal of PFB, TI decreases drastically (Mortenson & Witt, 1998; Noell et al., 2002; Noelle et al., 1997; Noell et al., 2000; Witt et al., 1997), and in some cases TI substantially decreases to baseline levels (Noell et al., 1997). For two of the three teachers participating in this phase of my study, I did not observe these substantial decreases; additionally, none of the three teachers decreased TI to baseline levels.

One of the three teachers who participated in the SM+PFB phase of the study did not maintain criterion levels of TI following the removal of PFB, and required PFB in order to perform the treatment plan consistently at criterion levels of TI. The variation in teacher response to TI interventions is also a consistent finding in the literature and may be linked to teacher characteristics (Burgio et al., 1983). A factor that may have impacted Teacher 1's response to the SM intervention, necessitating an additional phase of PFB, was a multi-tasking skill deficit. Noell et al. (2005) reported that multiple demands on a teacher and poor multi-tasking skills are confounds that negatively impact TI. During this study, Teacher 1's classroom appeared less organized and she exhibited

less fluency not only with the implementation of the BSP, but with implementation of the academic curriculum as well.

These data do suggest that SM might be useful for fading support, as two out of the three teachers who required PFB and participated in the PFB+SM phase were able to successfully maintain high levels of performance subsequently. As discussed earlier in this section, maintenance of criterion levels of TI following the removal of PFB was poor. While many studies reported the use of the fading of PFB procedures, I found a lack of follow up for teachers' responses to these fading procedures. Digennaro (2005) reported the use of dynamic fading of PFB, however, she did not report on the results of the dynamic fading procedure. Noell et al. (2000) attempted to follow up on a fading procedure for PFB; however, the follow up only included one out the five teachers in the study, which limits the generalizability of the findings. Thus, it is not possible to compare my findings to those of other studies that incorporated PFB fading procedures using SM.

SM Training as an Accommodation to Improve TI

The first hypothesis of this study investigated if training teachers to self-monitor their own BSP implementation would improve TI to criterion levels (80%). It appears that while training teachers to self-monitor their own implementation of BSPs is a useful component to add to BSP implementation and behavior consultation, this alone was not sufficient to allow them to reach and then maintain acceptable levels of TI.

SM in Combination with PFB to Maintain TI

The second hypothesis of this study sought to investigate if training teachers to self-monitor their behavior would improve the maintenance of TI following a period of

PFB. Based on the results of this study, it appears that SM did lead to greater maintenance of TI once PFB was no longer provided for two of the three teachers who participated in the SM+PFB phase.

Generalization of Training

The third hypothesis of this study examined the effects of generalization of skills for one student's BSP implementation to another student's BSP for which the teacher was not specifically trained. In my review of the literature, I did not identify research that examined the generalization effects of training. It appeared that all teachers were able to generalize feedback to other student BSPs for which they had not received specific training; however, this was not true for all student-teacher dyads and was somewhat inconsistent across phases. For example, in some instances, it seems that the opposite was true: teachers strived to improve their TI for the *target student* for whom they received feedback, and neglected the plan of the *generalization student*. However, it was not clear from the results, if in those instances when generalization was not apparent, the lack of teacher BSP implementation with another student was a generalization issue or a concern with multi-tasking. For example, Teacher 1, who also needed an additional phase of PFB, displayed variable TI, on some days showing high levels of TI for the *target student*, and high levels of TI for the *generalization student*. This implies that the skill of BSP implementation was present; however implementing both BSPs with integrity was more challenging for her. Therefore, it's possible that there was some generalization, even though it was not represented in the data for Teacher 1. Generalization of training was evident in the data of the other three teachers.

For all the teachers, as TI increased for the *target student*, it also improved for the *generalization student* as well, which supports one of the hypotheses of the study that training and feedback given for one student will generalize to other students with similar support plans in the classroom. This is consistent with few exceptions across all phases and levels of the MLB. As discussed earlier, for Teacher 1, this finding is similar with exceptions on certain days of the study where there appeared to be an inverse relationship between TI for the *target* and *generalization student.*

It is important to note that each teacher's *target* and *generalization* students evidenced similar functions for their problem behavior (e.g., escape from a non-preferred activity). This finding has implications for training teachers as well. These data support that the teachers in this study did in fact generalize BSP implementation to the *generalization student* on whose BSP they did not receive SM training and PFB. The generalization students' behavior exhibited functions similar to *target students'* behaviors. Therefore, the implication is that teachers need less training to provide BSPs for students whose problem behaviors serve similar functions. Training with regard to one student's behavior may be sufficient to allow a teacher to address the behavior of another student. This can make the training and consultation process more cost-effective as well. This positive finding can also be seen as a limitation in the study, because it is unclear if similar generalization would occur with students who exhibit problem behavior for different functions. Future research should examine whether SM and PFB can result in generalization of BSP implementation for students who exhibit problem behavior for different functions.

SM as an Accommodation to Increase Maintenance of TI

Another hypothesis of this study was to investigate if the inclusion of SM would lead to higher levels of maintenance of TI compared to results of PFB packages in the literature that did not include an SM component. Based on the literature review, it appeared that SM would be a promising component to include in behavior consultation to increase TI of BSP implementation (Burgio et al., 1983; Petscher & Bailey, 2006; Richman et al., 1988). It appears that the use of SM as a component served to maintain TI at higher levels than those reported in the literature for three out of the four teachers in this study.

The Relationship Between TI and OTB

The final hypothesis of this study was to investigate the relationship between TI and students' OTB. The data show that TI and OTB were highly correlated, which is consistent with research reviewed. This finding further supports the need to establish high levels of TI in order to support children's appropriate behavior in addition to identifying effective BSPs. A consistent pattern across all dyads was the improvement of OTB for all students in the baseline phase, directly following initial BSP training alone. This was most likely due to TI also being higher for the first three sessions of the baseline. However, even when TI decreased, student OTB did not return to levels observed prior to the baseline condition, indicating that less than criterion levels of TI may have a positive impact on student behavior, although it is clear from these data that higher TI is correlated with higher OTB.

An interesting pattern observed in the OTB data compared to the TI data was a weaving pattern: as OTB improved, within a few sessions, TI often decreased.

Following several more sessions, OTB would decrease and teachers would respond by improving TI. This pattern was evident across all four dyads. It is possible that teachers witnessed improvement in student behavior anecdotally and relaxed their implementation of the plan. Similarly, when they saw a decrease in student OTB, they improved their implementation of the plan in order to improve student behavior. This could have implications for the organization of BSPs to support appropriate fading. It is possible that teachers perceive components of BSPs with an all-or-nothing perspective. This could lead to teachers eliminating a component of a plan completely rather than fading the component.

Social Validity

Although the results from the comparison of the teacher scores on the IRP-15 are small, teachers did rate the SM+PFB condition as slightly more preferred than the SM condition. This could have been due to the additional support they received during the SM+PFB condition. This finding is interesting, as previous research has found that teachers may in fact perceive consultation as aversive and prefer to avoid it (DiGennaro et al., 2005).

Limitations and Implications for Future Research

The current study has some limitations that future research should address. First, I did not assess teacher specific variables and characteristics during the course of this study. Teacher characteristics may have impacted teacher TI and response to the treatment phases. I identified several teacher characteristics over the course of this study that may have influenced results. One variable was teacher experience. Some of the teachers in the study had more experience with the plans and with the curriculum, making

it easier to implement the BSP with higher TI. This appeared to be the case with Teacher 2.

Other variables that may have influenced results are organizational and multi-tasking skills. There were differences in the implementation of the skills, and some teachers exhibited the ability to handle multiple demands, while other teachers appeared overwhelmed with multiple demands, which others have also identified in the literature (Noell et al., 2006). These skills may have implications for future training in both behavior consultation and teacher preparation programs. Training in organization and multi-tasking may have generalizable positive effects on TI without specific BSP training. Future research should examine teacher training in classroom organization, time-management, and multi-tasking to identify the effect of this training on TI. Teacher experience may also have implications for initial intervention methods. For example, a teacher with more experience may have a first line of TI support as a self-monitoring procedure, decreasing the level of time and support that a school psychologist or behavior consultant would need to provide, thus making the consultation more cost-efficient.

A second limitation of this study was the setting. All the teachers in this study were in CTT classrooms that had specific characteristics that may have impacted the results and limit generalization of findings. For example, all of the classrooms had two teachers, which may have been an easier model in which to implement BSPs, as opposed to teachers in inclusion classrooms that do not have additional support in the class. Additionally, all the classrooms had fewer students than typical classrooms as this was an aspect of this CTT model. For example, the kindergarten class in this study (Teacher 3) had 12 students in the classroom, compared to the neighboring CTT class in the same

school that had 22 students in the class. Fewer students in the class may have impacted TI as the teachers in this study had fewer demands placed on them from the smaller class size, a confound that others have discussed in the literature (Noell et al., 2005; Gresham, 1989). Future research should explore the use of SM as a fading procedure for PFB for classrooms that may have less teacher support and/or larger class sizes.

Also, related to setting, was the level of training and support of the co-teacher. Although teacher specific characteristics affected TI, likewise, so could training and support of the co-teacher, which could limit generalization of findings from this study. Future research should examine the impact of co-teaching relationships on TI. This could also impact teacher training programs (e.g., to include specific coursework in collaborative relationships and interpersonal skills) and behavior consultation (e.g., to include general education teachers in the training and place responsibility for BSP implementation on both teachers as opposed to making it the responsibility of the special education teacher alone).

A third limitation of this study was the variation in the grades the each teacher taught. The teachers in this study each taught a different grade resulting in varying demands of the teachers. For example, Teacher 4 taught in a third grade classroom, and was responsible for state assessments, which may have added responsibilities and impacted her TI. Future research should examine characteristics of different grade levels and their impact on TI.

A fourth limitation of this study was reactivity. Although I made efforts to limit reactivity by randomizing observation sessions and observing from a remote location in the classroom, my presence in the classroom was evident and may have confounded the

results of the study and limited the generalizations of SM as a fading component. Additionally, although SM was self-directed, I required the teachers to submit the SM data sheets at the end of the day, making SM less self-directed and independent than solo self-monitoring. Future research should explore SM as a fading component for BSPs without this additional supervision component. This would identify if the self-monitoring alone accounts for TI effectiveness or if self-monitoring with a checklist that the teacher must submit to an outside observer results in better TI.

Although the positive correlation of OTB and TI was a strength in this study, it could also be a fifth limitation. For each student, the investigator conducted a thorough FBA to assess the student's problem behavior, and the investigator outlined a BSP that included modifications to the environment, instructional strategies to teach a replacement behavior, and guidelines to respond to problem behavior. It is unclear how the FBA and BSP completed by a certified behavior analyst with over 10 years experience confounds the results. The studies reviewed in the literature did not specify whether or how FBAs were completed for children with problem behavior. It is possible that the BSPs used in this study were more accurate than those used in other studies in addressing the students' behavioral needs, which may have led to high correlations of OTB and TI in the current study. Future research should examine level of expertise and experience of the clinician completing the FBAs and BSPs as a possible confounding variable.

A final limitation of this study was the lack of information on the accuracy of the SM implementation. In this study, I did not collect information to calculate the percentage of TI data from the teachers' SM checklists. I only examined anecdotal notes, and it is therefore unclear how accurate self-monitoring effects TI for BSPs. Future

studies should look at the relationship between SM accuracy and OTB.

In addition to limitations, there are several implications of the results from this study that can inform future interventions and research. One observation related to positive student response as a detriment to teacher TI, which resulted in a weaving pattern of the TI and OTB data paths. One of the implications of the weaving pattern between TI and OTB in the current data is that teachers' TI may decline when their students' behavior improves. Readers should note that there was a time lag between improved OTB and decreased TI. Thus, teachers' TI did not decline immediately after their students' behavior improved. This suggests that either they did not recognize immediately that students' OTB improved or they observed this improvement for a little while, perhaps to satisfy themselves that it was "real", before they reduced their TI. This time-lagged weaving of OTB and TI is an interesting finding that others should investigate to determine if it was unique to this study or represents a more general pattern. If it is a general phenomenon across studies, it has implications for teacher training.

Another factor that warrants further research is the use of 80% as the gold standard for TI. The data presented here indicate that students' OTB increased substantially, even when TI was below 80%. It is worth exploring whether or not it is necessary to meet or exceed 80% TI to achieve clinically significant positive changes in student behavior. If this study had not use 80% as the standard for target level of TI, the findings may have differed. For example, three of the four teachers achieved higher BSP TI, and their students exhibited increased OTB within the SM condition. If a lower

standard were deemed appropriate for TI, the SM condition may have been considered a successful strategy thereby averting the need for time-consuming and costly PFB.

Behavior improvement may also account for the sudden drop in TI during baseline levels of all the studies that I reviewed. Across all studies, TI was initially high, and then decreased to levels between 20-50%. In this current study, OTB was also immediately impacted by the implementation of the BSP. This pattern of positive student response may be one of the factors that cause TI to decrease substantially during baseline levels following initial BSP training.

A. Introduction letter for teachers

Dear Teachers, Assistants, and Related Service Providers

My name is Angela Mouzakitis. I am a doctoral student in the Ph.D. Educational Psychology Program at The Graduate Center of the City University of New York (CUNY). I am conducting a study looking at how direct service providers respond to feedback based on work performance in the implementation of behavior support plans. I am inviting you to participate in this research study. Involvement in the study is voluntary, so you may choose not to participate.

As part of this study, I will compare staff responses to performance-based feedback, to staff responses using self-monitoring to provide their own feedback. This feedback will target the proper implementation of behavior support plans. This investigation will help to identify the best way to monitor behavior support plan implementation. This will also support the success of your students.

Teachers, assistants and related service providers interested in this study should identify one student that they would like feedback and support in the implementation of that student's behavior support plan. The study will then focus on this teacher-student dyad. In addition, each provider interested in participating in this study should work in a classroom that has at least two students that require behavior support to function in the classroom.

The benefits of this research are that you will be helping to provide a model for monitoring appropriate implementation of behavior support plans and bettering educational progress of students. It will also directly help you, as it can help you develop your skills as an educator. Furthermore, it is assumed that proper behavior support plan implementation in your classroom will lead to fewer disruptive behaviors.

Participation in this study is completely voluntary. Individuals who agree to participate in the study, but later change their minds, will be allowed to discontinue participation without penalty. All information gathered during the course of the study will be kept completely confidential. No identifying information will be used and the results of the observations will be locked in a filing cabinet only accessible to the investigator. The results of this study may be published but no identifying information of the participants or children involved will be included.

If you are interested in participating in this study, please contact the investigator, Angela Mouzakitis at angela.mouzakitis@gmail.com or by phone at 718-564-5220. If you have any questions about your rights as a participant in this study, you can contact Kay Powell, IRB Administrator, The Graduate Center, CUNY, (212) 817-7525, kpowel@gc.cuny.edu.

Thank you very much for your time and consideration in this matter.

Sincerely,

_____

Angela Mouzakitis, Doctoral Student
CUNY Graduate Center.

B. Consent form for teachers

Informed Consent for Teachers and Related Service Providers

My name is Angela Mouzakitis and I am a doctoral student in the Ph.D. program at the Graduate Center of the City University of New York (CUNY) and the principle investigator in a study entitled, The Effects of Self-Monitoring Paired with Performance Feedback on the Treatment Integrity of Behavior Support Plan Implementation. This study is investigating teacher behavior and the implementation of student behavior support plans. I am inviting you to participate in this research study. Involvement in the study is voluntary, so you may choose not to participate.

As part of this study, I will compare the effects of providing feedback to service providers based on performance, to teaching service providers to self-monitor their behavior and provide their own feedback the proper implementation of behavior support plans. This information will help identify the most efficient way to ensure that your students' behavior support plans are meeting their needs. The results of this study will provide insight as to the type of feedback that direct service providers respond to with greater success. This in turn supports the success of your students.

Teachers, assistants and related service providers interested in this study will identify one student that they would like feedback and support in the implementation of that student's behavior support plan. The study will then focus on this teacher-student dyad. Four teachers, assistants, and related service providers will be targeted for this study.

The study involves several parts. The first part is a baseline condition, which will identify the current level of plan implementation. Next, each participant will be trained in the implementation of the *target student*'s behavior support plan. This training will continue until the implementation of the plan is 100%. The investigator will continue to observe you several times a week. After two weeks, the observations will include specific feedback provided in a written format and will be left in your mailbox.

The duration of this study will be variable, but is anticipated to last until the end of the school year, June 23, 2008. There will be no additional responsibilities requiring you to come in early or stay after school later than usual as a result of participation in this study.

The benefits of this research are that you will be helping to understand the most effective way to provide feedback regarding the proper implementation of a behavior support plan. Additionally, students can be ensured proper behavior support plan implementation. There are no identified risks of participating in this study, and no foreseen inconvenience to you. Each child's services and programs will not be modified or interrupted in any way as a result of participation in this study. All information will be kept strictly confidential. Your name will not be used and the results of this study will be kept in a locked filing cabinet accessible only to the investigator. The results of this study may be published but no identifying information from you will be included.

If you no longer wish to continue, you have the right to withdraw from the study, without penalty, at any time.

If you have any questions about this project please call me at (718) 564-5220 or email me at angela.mouzakitis@gmail.com. You can also contact my dissertation supervisor, Georgiana Tryon, Ph.D., by email at gtryon@gc.cuny.edu. If you have any questions about the rights of your student as a participant in this study you can contact Kay Powell, IRB Administrator, The Graduate Center, CUNY, (212) 817-7525, kpowell@gc.cuny.edu.

If you wish to participate, please sign this form and return it in the enclosed envelope. After receiving your permission you will be contacted by the investigator to review the process and to agree upon observation times.

I wish to participate in this research study.

_____ _____

Signature of Participant Date

_____ _____

Signature of Principal Investigator Date

Angela Mouzakitis

CUNY Graduate Center - Doctoral Student

❑ I wish to receive a copy of the findings of this study (please check).

C. Introduction letter for Parents

Dear Parent(s) or Guardian(s),

My name is Angela Mouzakitis. I am a doctoral student in the Ph.D. Educational Psychology Program at The Graduate Center, City University of New York (CUNY). I am interested in finding the best way to give direct care staff training information when working with children with disabilities. I am conducting a study that will look at staff behavior. I will try to identify the type of training staff members respond to better. While I observe staff members, your child will be observed also. I am inviting you to participate in this study. Involvement in the study is completely voluntary, so you may choose not to participate.

You and your child can withdraw from this study at any time without penalty. Any names and information I collect during these observations will be kept private. Your child's name will not appear anywhere in this study. All materials collected in this study will be locked in a filing cabinet. The results of this study may be published in a journal, but information about your child and your child's school will be kept private.

If you are interested in having your child participate, please complete the attached parent consent form. If you have any questions please contact me by e-mail Angela Mouzakitis at angela.mouzakitis@gmail.com or by phone at 718-564-5220. You may also contact my dissertation supervisor, Georgiana Tryon, Ph.D., by phone at 212-817-8285 or by email at gtryon@gc.cuny.edu. If you have any questions about the rights of your child as a participant in this study you can contact Kay Powell, IRB Administrator, The Graduate Center, CUNY, (212) 817-7525, kpowell@gc.cuny.edu.

Thank you very much for your time and consideration in this matter.

Sincerely,

_____

Angela Mouzakitis, Doctoral Student
CUNY Graduate Center.

D. Consent letter for Parents

My name is Angela Mouzakitis. I am a doctoral student in the Educational Psychology Ph.D. program at the Graduate Center of the City University of New York. I am conducting a study that will look at staff behavior. In this study, I will be observing staff members as they implement student behavior support plans. I am inviting you and your child to participate in this study. Involvement in the study is voluntary, so you may choose not to participate.

This study has several steps. First, staff will be observed working with your child. After they are observed, staff will be given training. Staff will continue to be observed until they are implementing the behavior support plan accurately. Finally, different methods of providing feedback will be tried in order to identify the method that staff members respond to best. It is anticipated that the study will continue for 2 months. Five students will be targeted for this study.

A benefit of this study is that you can help staff trainers identify the best way to provide training to staff members. Another benefit is that you can help find a way to ensure that behavior support plans are implemented correctly. There are no identified risks of participating in this study. Your child's services and programs will not be changed as a result of this study. All information will be kept private. The results of this study will be kept in a locked filing cabinet. The results of this study may be published, but all names and school information will be kept private. If you and your child no longer wish to continue, you have the right to withdraw from the study at any time.

If you have any questions please call me at (718) 564-5220 or email me at angela.mouzakitis@gmail.com. You can also contact my dissertation supervisor, Robin Codding, Ph.D., at 212-817-8285 or by email at gtryon@gc.cuny.edu. If you have any questions about the rights of your child as a participant in this study you can contact Kay Powell, IRB Administrator, The Graduate Center, CUNY, (212) 817-7525, kpowell@gc.cuny.edu.

If you wish to have your child participate, please sign this form and return it in the attached envelope. Children participating in the study will be asked to assent to the additional observations as well. As some of the children have limited verbal skills and may not be able to communicate their discomfort, their behavior will be closely monitored for signs of distress. If your child appears uncomfortable due to the additional observation, observation will stop immediately. Your child will not participate until you and your child provide permission.

I wish to participate and provide permission for my child, _____, to participate in this study.

_____ _____

Signature of Parent(s) or Guardian(s) Date

_____ _____

Signature of Principal Investigator Date

Angela Mouzakitis

CUNY Graduate Center - Doctoral Student

❑ I wish to receive a copy of the findings of this study (please check).

E. Teacher information sheet

Teacher	Years of Teaching Experience	Experience	Certification and Education	Ethnicity
1	1	CTT	MS Ed. Special Ed Special Ed. Certification (grades 1-6)	Caucasian
2	4	CTT	MS Ed. Special Ed Special Ed. Certification (Birth-2)	Caucasian
3	First year		MS Ed. Special Ed Special Ed. Certification (grades 1-6)	Caucasian
4	2	Self-contained class	MS Ed. Special Ed Special Ed. Certification (grades 1-6)	Caucasian

F. Informal Functional Assessment Interview

(Additional spaces for notes have been condensed in this Appendix for formatting purposes)

Student's name: _____ Date: _____
Interviewees: _____
Interviewer:_____

About The Behaviors of Concern

1. Target behaviors interfering with learning and social functioning (in order of priority):

		Approximations of:		
Target Behavior	**Description (topography)**	**Frequency**	**Duration**	**Intensity**
		Daily Weekly Monthly		High Medium Low
		Daily Weekly Monthly		High Medium Low

2. If multiple behaviors are listed, do these behaviors occur together? Describe.
3. What has been tried to address these behaviors?

Brief Description	What happened?	How long was it tried?

4. What are the student's academic, social, and other strengths?
5. What makes the student happy?
6. What makes the student unhappy?
7. What are the student's preferred academic, social, and other activities?
8. What are student's least preferred academic, social, and other activities?
9. How do you communicate with the student?
10. How do others communicate with the student?
11. How do others interact with the student? Do they interact freely with him/her?
    a. Peers?
    b. Teacher assistants?
    c. Siblings?
    d. Parents?
    e. Teacher?
12. When upset, how does the student calm him/herself?
13. What do you do to calm the student?

Physiological variables

14. Is the student taking any medications? What is the purpose of the medication?
15. What are the sleep patterns of the student?
16. Does the student have medical conditions that could be contributing to the target behavior?
17. Does the student have any sensory sensitivities?

Environmental Variables

18a. Briefly list the student's typical daily activities.

		Typically Engaged?	Problem Behavior ?			Typically Engaged?	Problem behavior?
6:00				2:00			
7:00				3:00			
8:00				4:00			
9:00				5:00			
10:00				6:00			
11:00				7:00			
12:00				8:00			
1:00				9:00			

18b. If problem behaviors were noted in the above activities, describe them here.

Problem Routine/Activity	What behaviors typically occur?	What happens right before the behavior?	What do you do to stop or interrupt the behavior?	How does he/she calm him/herself down?	Why do you think this happens?

19. The behavior is more likely to occur:
When: _____
Where: _____
With: _____
During: _____
When the environment is: crowded/empty noisy/quiet open/constricted

20. The behavior is least likely to occur:
When: _____
Where: _____
With: _____
During: _____
When the environment is: crowded/empty noisy/quiet open/constricted

21. How predictable is the student's day?

Communication function of the behavior

22. Mode of Communication

Intent	**How does the student indicate:**
I want attention	
No!	
Yes!	
I'm hungry/thirsty.	
I need a break.	

I want to be alone.	
I'm frustrated	
I'm hurt!	
Help!	
I want…	
I don't want to do it.	
I want affection.	
I need information.	
I love you.	
That's funny.	
Hello.	
I'm bored.	
I'm scared.	
I'm happy/having fun.	
I'm sad/offended.	
I'm trying to calm down.	

23. Does student have alternative ways to meet his/her needs that appropriately communicate their needs?
24. What is something that you predict? are sure would make the target behavior occur?
25. How can you tell the behavior is about to start?

Choice/Control Assessment

26. Can the student freely access preferred activities? What and how often?
27. Who is responsible for stopping the preferred activities?
28. What activities does the student have control of at school and at home? (e.g., break, eat, t.v., outside)
29. What opportunities for meaningful choices does the student have?
30. What meaningful relationships does the student have?

Teaching and Behavior Intervention Plan Considerations.

31. Is there currently a plan in place to address the target behavior(s)?
32. Who implements the plan and how are they trained?
33. Does the plan include steps to teach functional communication skills?
34. What is the purpose/goals of the plan?
35. Is there enough support at home to implement the plan?
36. How is the plan's implementation monitored?

G. Informal Behavior Observation Data Sheet

Student: ____________________________ Date: ______________

Time/ Activity	Observation	Comment

H. Formal Behavior Observation Data Sheet

Target Behaviors: _________________________
____
____

Student: _________________________

Date/ Time	**Setting Event –** What is happening recently, during the observed behavior.	**Antecedent-** What event appeared to occur immediately prior to the behavior (to set it off)	**Behavior** – what was the target behavior observed	**Consequence –** What event occurred directly following the behavior?	**Comment-** Any relevant information pertinent to the behavior (e.g. people in the room, temperature, etc.)	**Related Strategies**

I. Behavior Support Plan Template

Student: **Present Date:**

Operational Definition of Interfering Behavior:

FBA Summary: The following variables have been identified as impacting on the target problem behavior.

Setting Events: (Describes contexts in which problem behavior is more likely to occur.)

-

Antecedents: (An event that occurs immediately before a behavior.)

-

Function: The target behaviors appear to have the functions of **attention** and **escape/avoidance,** and often the behaviors appear to operate for both functions contiguously.

INTERVENTION STRATEGIES

A. Environmental Modifications

Antecedent	Environmental Modification

B. Teaching Strategies **– The following have been identified to teach appropriate skills.**

Skill area	Teaching strategies & methodologies

C. Reactive Strategies –

Behavior	Response Strategy

Continued Data Collection:

Daily:
Teaching strategies:
ABC data for tantrum episodes

Quarterly:
Frequency and content of spontaneous language
Frequency and duration of problem behavior

J. Treatment Integrity Data Sheet

Behavior Support Plan

Date: **1-18-10** Student: **G2** Staff**: Teacher 2** Observer: **M** Time Start: **9:00a** Time End: **9:30**

At the end of session, review the plan, and review implementation using the following symbols:
(√) = implemented as written (-) = implemented incorrectly (X) = missed opportunity (n/o) = no opp.

Modification	Description	Rating
Clear Desk	Ensure his area is clear of excess materials	
Corral	Provide corral for his work area during independent work at desk.	
Transitions	catch him up to what the class is doing	
Individual direction	1. When giving a direction to Peter, first obtain eye contact,	1
	2. give direction,	2
	3. have him repeat the direction	3
	4. praise and pump to start	4

Teaching	Description	Rating
Self-Monitoring	1. Give G2 the Motivaider during independent work activities	1
	2. Review Motivaider guidelines and what he has to do when he feels a buzz	2
	3. Show him the challenge card	3
	4. Fill in Challenge for that work area	4
	5. Have G2 select what he will earn for meeting challenge	5
	6. At the end of the activity, review the challenge card and his progress	6
	6a. If progress shown, praise on-task behavior and give him the reward	6a
	i. Following break, praise him	6a.i.
	6b. No progress, let him know he did not earn break: prime for next task	6b.
	7. Remove Motivaider when independent work is over	7

Comments:

Replacement	Description/Steps	Rating
Request for Break	1. In the morning, remind G2 that he has five break cards to use throughout the day.	1
	2. Remind him that he can take a break when frustrated or needs time away from work	2
	3. Remind him of break rules (time limit and behavior in break area).	3
	4. When he takes a break,	
	a. Set the timer	4a
	b. Praise him for making a choice to take a break.	4b
	c. When the time finishes, review what the class is doing	4c
	d. Pump him up for success	4d
	5. During down time, practice; help him give break card and take break	5

Comments:

Behavior	**Response**	**Rating**
	Interfering behavior	
Off-task	Redirect to challenge card if on challenge card	
Wandering	Remind of what he should be doing and help him get back on task	
	Desired Behavior	
On-Task	Praise him and give him attention when he is on-task with the class	
Challenge met	Praise him and give him a break with an activity when he meets his challenge card.	

Total Implemented Correctly:

Total Components with opportunity to implement: Percent Treatment Integrity:

K. Treatment Integrity Self-Monitoring Data Sheet

Date: Student: Staff**:**

At the end of session, review the plan, and review implementation using the following symbols:
(√) = implemented as written (-) = implemented incorrect (X) = missed opportunity (n/o) = no opp.

Modification	Description	Rating
Clear Desk	Ensure his area is clear of excess materials	
Corral	Provide corral for his work area during independent work at desk.	
Transitions	catch him up to what the class is doing	
Individual direction	1. When giving a direction to Peter, first obtain eye contact,	1
	2. give direction,	2
	3. have him repeat the direction	3
	4. praise and pump to start	4

Comments:

Teaching	Description	Rating
Self-Monitoring	1. Give G2 the Motivaider during independent work activities	1
	2. Review his Motivaider guidelines and what he has to do when he feels a buzz	2
	3. Show him the challenge card	3
	4. Fill in Challenge for that work area	4
	5. Have G2 select what he will earn for meeting challenge	5
	6. At the end of the activity, review the challenge card and his progress	6
	6a. If progress shown, praise on-task behavior and give him the reward	6a
	i. Following break, praise him	6a.i.
	6b. No progress, let him know did not earn break: prime him for next activity	6b.
	7. Remove Motivaider when independent work is over	7

Comments:

Replacement	Description/Steps	Rating
Request for Break	1. In the morning, remind that he has five break cards to use throughout day.	1
	2. Remind he can take break when frustrated or needs time away from work	2
	3. Remind him of the break area rules (time limit and behavior in break area).	3
	4. When he takes a break,	
	a. Set the timer	4a
	b. Praise him for making a choice to take a break.	4b
	c. When the time finishes, review with him what the class is doing	4c
	d. Pump him up for success	4d
	5. During down time, practice break; help him give break card and take break	5

Comments:

Behavior	**Response**	**Rating**
Interfering behavior		
Off-task	Redirect to challenge card if on challenge card	
Wandering	Remind of what he should be doing and help him get back on task	
Desired Behavior		
On-Task	Praise him and give him attention when he is on-task with the class	
Challenge	Praise and give him a break with an activity when he meets his challenge card.	

Comments:

L. Student OTB Data Sheet

Student: _____Staff: _____Researcher: _____Observer:_____Date: _____

Time	Setting	Student 1	Student 2	Comments
8:50				
51				
52				
53				
54				
55				
56				
57				
58				
59				
9:00				
01				
02				
03				
04				
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36				
37				

M. PFB Data Sheet - Sample of form with feedback

Date: **1-18-10** Student: **G2** Staff**: Teacher 2** Observer: **M** Time Start: **9:00a** Time End: **9:30**
At the end of session, review the plan, and review implementation using the following symbols:
(√) = as written (-) = implemented incorrectly (X) = missed opportunity (n/o) = no opportunity

Modification	Description	Rating
Clear Desk	Ensure his area is clear of excess materials	√
Corral	Provide corral for his work area during independent work at desk.	√
Transitions	him up to what the class is doing	n/o
Individual direction	1. When giving a direction to Peter, first obtain eye contact, 2. give direction, 3. have him repeat the direction 4. praise and pump to start	1 √ 2 √ 3 √ 4 √

Comments: *This was great. All the environmental modifications he needs were in place!*

Teaching	Description	Rating
Self-Monitoring	1. Give G2 the Motivaider during independent work activities	1 √
	2. Review his Motivaider guidelines and what he has to do when he feels a buzz	2 X
	3. Show him the challenge card	3 √
	4. Fill in Challenge for that work area	4 √
	5. Have G2 select what he will earn for meeting challenge	5 √
	6. At the end of the activity, review the challenge card and his progress	6 √
	6a. If progress shown, praise on-task behavior and give him the reward	6a N/O
	i. Following break, praise him	6a.i. N/O
	6b. No progress, let him know he did not earn break: prime for next activity	6b. √
	7. Remove Motivaider when independent work is over	7 X

Comments: *All of these were right on. However, you need to review the motivaider guidelines. He didn't earn his reward this time around and it could be that he lost track and forgot what to do when it buzzed.*

Replacement	Description/Steps	Rating
Request for Break	1. In the morning, remind that he has five break cards to use throughout day.	1 N/O
	2. Remind that he can take a break when frustrated	2 N/O
	3. Remind him of the break area rules (time limit and behavior in break area).	3 N/O
	4. When he takes a break,	
	a. Set the timer	4a √
	b. Praise him for making a choice to take a break.	4b X
	c. When the time finishes, review with him what the class is doing	4c X
	d. Pump him up for success	4d X
	5. During down time, practice break; help him give break card and take break	5 N/O

Comments: Its great that he took his break so it shows you are teaching him. Make sure he feels good about his break, so that he continues to take them. Praise him when he is done, help him back on track.

Behavior	**Response**	**Rating**
Interfering behavior		
Off-task	Redirect to challenge card if on challenge card	√
Wandering	Remind of what he should be doing and help him get back on task	√√√
Desired Behavior		
On-Task	Praise him and give him attention when he is on-task with the class	√
Challenge	Praise and give a break with an activity when he meets his challenge card.	N/O

Comments: This was stellar. You redirected him back on task, and praised him when he did great work!

Total Implemented Correctly: 18

Total Components with opportunity to implement: 23 Percent Treatment Integrity: 78%

N. Intervention Rating Profile – 15
(Martens & Witt, 1988)

The purpose of this questionnaire is to obtain information that will aid in the evaluation of the _____. Please circle the number which best describes your agreement or disagreement with each statement.

1 = Strongly disagree
2 = Disagree
3 = Slightly disagree
4 = Slightly agree
5 = Agree
6 = Strongly agree

1. The _____ would be an acceptable intervention for managing classroom behavior.	1 2 3 4 5 6
2. Most teachers would find the _____ appropriate for managing classroom behavior.	1 2 3 4 5 6
3. The _____ should prove effective in changing classroom behavior.	1 2 3 4 5 6
4. I would suggest the use of the _____ to other teachers.	1 2 3 4 5 6
5. The classroom behavior is severe enough to warrant use of the _____.	1 2 3 4 5 6
6. Most teachers would find the _____ suitable for managing classroom behavior.	1 2 3 4 5 6
7. I would be willing to use the _____ in the classroom setting.	1 2 3 4 5 6
8. The _____ would not result in negative side-effects for children.	1 2 3 4 5 6
9. The _____ would be appropriate for a variety of children.	1 2 3 4 5 6
10. The _____ is consistent with those I have used before in the classroom setting.	1 2 3 4 5 6
11. The _____is a fair way to handle classroom behavior problems.	1 2 3 4 5 6
12. The _____ is reasonable for managing classroom behavior.	1 2 3 4 5 6
13. I like the procedures used in the _____.	1 2 3 4 5 6
14. The _____ is a good way to handle classroom behavior.	1 2 3 4 5 6
15. Overall, the _____ would be beneficial for the classroom.	1 2 3 4 5 6

O. Procedural Integrity Checklist

Teacher Participant: _____
PI Observer:_____
Researcher: _____

Enter √ for correct step, X for incorrect step, / for not applicable

Date:																		
1a. FBA – Target Student (TS)																		
Researcher conducted an informal interview																		
Researcher conducted a record review																		
Researcher conducted informal observation																		
Researcher conducted formal observation																		
Researcher analyzed the results																		
1b. FBA – Generalization Student (GS)																		
Researcher conducted an informal interview																		
Researcher conducted a record review																		
Researcher conducted informal observation																		
Researcher conducted formal observation																		
Researcher analyzed the results																		
2a. BSP – TS																		
Researcher wrote operational definition																		
Researcher developed a hypothesis																		
Researcher included modifications																		
Researcher included replacement strategies																		
Researcher included consequence strategies																		
2b. BSP – GS																		
Researcher wrote operational definition																		
Researcher developed a hypothesis																		
Researcher included modifications																		
Researcher included replacement strategies																		
Researcher included consequence strategies																		
3. No Plan																		
Researcher collected OTB data for TS																		
Researcher collected OTB data for GS																		
4a. Initial BSP Training – TS																		
Researcher review the BSP with the teacher																		
Researcher modeled implementation of BSP																		
Researcher gave feedback after observation																		
4b. Initial BSP Training – GS																		
Researcher review the BSP with the teacher																		
Researcher modeled implementation of BSP																		
Researcher gave feedback after observation																		
5. Baseline																		
Second observer collected OTB for TS																		
Second observer collected OTB for GS																		
Researcher collected TI for TS																		
Researcher collected Ti for GS																		
Researcher decided about phase change																		
IOA data present for the week																		
SM Training																		
Researcher trained use of SM sheet for TS																		

Researcher gave feedback on implementation																		
Researcher continued till SM was at 90%																		
Researcher provided SM sheet for GS																		
SM																		
Researcher collected TI for TS																		
Researcher collected TI for GS																		
Second observer collected OTB for TS																		
Second observer collected OTB for GS																		
Researcher gave no PFB																		
Researcher collected SM data sheets																		
Researcher decided about phase change																		
IOA data present for the week																		
SM+PFB																		
Researcher collected TI for TS																		
Researcher collected TI for GS																		
Second observer collected OTB for TS																		
Second observer collected OTB for GS																		
Researcher provided written feedback for TS																		
Researcher left PFB sheet in mailbox																		
Researcher collected SM data sheets																		
IOA data present that week																		
Researcher decided about phase change																		
SM																		
Researcher collected TI for TS																		
Researcher collected TI for GS																		
Second observer collected OTB for TS																		
Second observer collected OTB for GS																		
Researcher did not provide PFB																		
Researcher collected SM data sheets																		
Researcher decided about phase change																		
IOA data present for the week																		
SM+PFB																		
Researcher collected TI for TS																		
Researcher collected TI for GS																		
Second observer collected OTB for TS																		
Second observer collected OTB for GS																		
Researcher provided written feedback for TS																		
Researcher left PFB sheet in mailbox																		
Researcher collected SM data sheets																		
IOA data present that week																		
Researcher decided about phase change																		
Total number checks																		
Total number applicable steps																		
Percent Correct																		

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