AN EXPERIMENTAL AND DESCRIPTIVE ANALYSIS OF A MULTILEVEL

CONSULTATION MODEL TO SUPPORT PARAPROFESSIONALS IN

IMPLEMENTING BEHAVIORAL INTERVENTIONS IN AN

EARLY CHILDHOOD SPECIAL EDUCATION SETTING

by

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DISSERTATION ABSTRACT

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Title: An Experimental and Descriptive Analysis of a Multilevel Consultation Model to Support
    Paraprofessionals in Implementing Behavioral Interventions in an Early Childhood Special
    Education Setting

Paraprofessionals spend the most time with the neediest students, but receive the least

amount of training and support. All target students in the study had developmental disabilities,

were between the ages of three and five, and had a history of challenging behavior.

Paraprofessionals in the study were recruited because they had the least experience and training

administering behavior support plans (BSPs) in their setting. A multi-level consultation model

was used to train paraprofessionals (i.e., teaching assistants) to implement individualized BSPs.

First, paraprofessionals were trained in a one-on-one setting how to implement the BSPs using

behavioral skills training. Next, adherence to the BSP was monitored by independent observers

and additional support was delivered contingent on meeting an adherence criterion. Through a

cascading logic, data showed that paraprofessionals engaged in immediately and significantly

higher levels of BSP adherence following application of the multilevel consultation model, and

as a result, students engaged in immediately and significantly lower rates of challenging behavior

(Tau-U = -.97 to -1), which maintained over time. Further, all adult participants rated the

procedures as highly acceptable. Thus, with minimal training provided to each paraprofessional

across the study ($M = 151.2$ minutes), and dramatic observed changes in challenging behavior,

the multilevel consultation model proved highly efficient, effective, and acceptable.

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CHAPTER I

INTRODUCTION

The purpose of this chapter is to review major issues discussed in the current study. First, basic terminology and a description of developmental disabilities will be reviewed. Then behavioral challenges exhibited by individuals with intellectual and developmental disabilities (IDD) will be discussed. Third, behavior analysis will be used as a conceptual framework for the assessment and treatment of challenging behavior for children with IDD. Fourth, issues of treatment acceptability and fidelity of implementation of behavioral supports will be reviewed. Finally, common implementation challenges and limitations to the extant literature will be presented as a means to present the current investigation.

Intellectual and Developmental Disabilities

Developmental disability is a term used to describe disabilities that appear before the age of 22, affect a range of developmental domains, and are likely to be lifelong conditions (American Association on Intellectual and Developmental Disabilities, 2013). Intellectual disability is a specific subtype of developmental disability characterized by significant limitations both in intellectual functioning (i.e., reasoning, learning, problem solving) and in adaptive behavior (i.e., a range of everyday social and practical skills). The quality of life for individuals with intellectual and developmental disabilities (IDD) is often limited by their disability and moderated by salient dimensions of available supports. There is a substantial evidence base promoting the use of a number of intervention strategies to support the behavior and learning of individuals with IDD (What Works Clearinghouse; Kratochwill et al., 2010). Thus, to maximize positive outcomes for individuals with IDD, service providers should deliver these evidence-based practices. According to the World Health Organization (2014), over 15%

of the world's population has a disability, and prevalence rates are increasing. Thus, the mission

of supporting individuals with IDD is a large-scale public health concern.

Individuals with IDD may be impacted by a number of impairments in behavior,

language, learning and physical domains (Centers for Disease Control and Prevention, 2013),

which may have major implications on a wide range of life outcomes. For instance, individuals

with IDD are placed in more restrictive educational settings when compared to individuals

without disabilities (Leinhardt & Pallay, 1982), experience worse postsecondary education and

employment outcomes (Trainor, 2008), engage in fewer extracurricular activities (Solish, Perry,

& Minnes, 2010), and often require residential support as adults (Sigafoos, Arthur, & O'Reilly,

2003). Understandably, outcomes are deteriorated further when individuals with IDD exhibit

challenging behavior (Sigafoos, et al., 2003). They can require more assistance with adaptive

(e.g., Ditterline, Banner, Oakland, & Becton, 2008) and communication skills (e.g., Sundberg, &

Partington, 1998), and may reside in more restricted institutional settings (Sigafoos et al., 2003).

Therefore, the difficulties experienced by individuals with IDD, and individuals in their

environment, may be worsened by concomitant issues with challenging behavior; consequently,

requiring intervention to reduce the impact of their disability on negative life outcomes.

Challenging Behavior in Children with IDD

Challenging behavior has been defined in terms of its destruction, harm, disruption, or

unacceptability that occurs either frequently or with high intensity and causes major concern to

other individuals or a social group within a given context (Sigafoos et al., 2003). Emerson et al.'s

(2001) findings from a sample of 264 individuals with IDD in England suggested that 79% of

individuals engaged in two or more specific forms of challenging behavior, and 19% engaged in

five or more specific forms of challenging behavior. Challenging behavior may emerge as early

as six months of age, but typically emerges when children are between two and three years old (Emerson et al., 2001; Feldman et al., 2000; Fodstad, Rojahn, & Matson, 2012), suggesting early childhood to be an optimal time for prevention and early intervention. Emerson et al. (2001) indicated that prevalence rates tend to increase significantly across childhood and adolescence, and an initial increase in prevalence may be a result of motor skill development. Developing repertoires of physical ability and challenging behavior are likely to be especially noticeable and concerning for caregivers during this time (Sigafoos et al., 2003). In effect, caregivers of children with IDD and challenging behavior report more stress than children with IDD alone (Baker, Blacher, Crnic, & Edelbrock, 2002).

Challenging behavior not only manifests early, it generally persists over time (Totsika & Hastings, 2009). For example, in a longitudinal study by Green, O'Reilly, Itchon, and Sigafoos (2005) similar levels of severe challenging behavior persisted for 13 preschoolers with IDD when assessed three years later. Kazdin (1993) discovered that as many as six percent of young children developed a conduct disorder (i.e., severe verbal and physical aggression, property destruction, and deceitful behavior that persists over time) in the absence of early intervention. He found that half of the sampled children maintained the disorder into adulthood, while the other half suffered significant adjustment problems (e.g., disproportionate levels of interpersonal discord and difficulty securing employment) during their adult lives. When this class of behavioral adjustment disorders is broadened to include oppositional defiant disorder (which often precedes and co-occurs with conduct disorder), estimates have been as high as 16% of the U.S. youth population (Eddy, Reid, & Curry, 2002). It should be noted that direct comparisons across the three aforementioned studies should be made cautiously, as dual diagnosis (i.e., behavior disorder and IDD) data were not available. Challenging behavior in children may be

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associated with different diagnoses depending on a child's cognitive and adaptive skills and other factors. Such diagnostic overshadowing in people with IDD has received empirical attention for several decades (Reiss, Levitan, & Szyszko, 1982). Irrespective of disability status, a strong knowledge base has been assembled on interventions that can head off this behavior or prevent it from strengthening (Loeber & Farrington, 2001). The implications are that challenging behavior is somewhat common and will generally persist if left untreated (Schroeder, Richman, Abby, Coutemanche, & Oyama-Ganiko, 2014). Furthermore, intervening as early as possible should be a priority to disrupt the development of destructive patterns of behavior (Walker, Ramsey, & Gresham, 2003).

Challenging behavior not only impacts the life of the individual, but also has adverse effects on caregivers at home and school. Prior research has demonstrated that teachers of individuals with IDD report poorer student-teacher relationships and that student-teacher relationships are further compromised when the student with IDD has challenging behavior (McIntyre, Blacher, & Baker, 2006). Additionally, challenging behavior in a classroom setting can be extremely disruptive to staff and other students (Walker, 1995). It has long been established that disruptive behavior within the classroom setting is predictive of less academic engagement time, lower grades, and poor performance on standardized tests (Shinn et al., 1987; Swift & Spivack, 1969). When disruptive behavior occurs in a general education classroom setting, a small number of students typically cause the majority of issues (Mayer, 1995). Socially, students with challenging behavior in the classroom are on a fast path to peer rejection (Reid, Patterson, & Snyder, 2002). For students with IDD, this can shorten the path to isolation from peers and can further damage their already limited contact with prosocial and typically-developing peers. These factors demonstrate a heightened need for effective prevention and early

intervention efforts in school settings for individuals with IDD who engage in challenging behavior. Moreover, in settings were fewer typically developing peers are present (e.g., special education classrooms), the proportion of students with IDD and challenging behavior is naturally increased, amplifying the need for effective and efficient assessment and intervention practices for challenging behavior in those settings.

Assessment of Challenging Behavior

Although it is a legal requirement for schools to find children who have disabilities and need services (i.e., Child Find; IDEA, 2004), the mechanism for identification is not well-established. Identifying children with IDD is an important first step toward eligibility to receive services in school. Children who exhibit challenging behavior in the school setting quickly rise to the attention of school staff. As such, children with IDD are sometimes assessed for needed special services for the first time because of the impact their challenging behavior has on their learning and the learning of others (Kauffman, 1999; Walker, Ramsey, & Gresham, 2003). In this sense, the externalizing nature of challenging behavior can serve as a clear signal and mechanism for accessing needed early intervention services.

Applied behavior analysis as the foundation. The extant literature on assessment and intervention for children with IDD supports the use of function-based behavioral treatments based on the principles of applied behavior analysis (ABA) (Dawson & Burner, 2011; Wong et al., 2014). Furthermore, federal agencies and professional organizations recommend ABA-based interventions for individuals with IDD (National Autism Center, 2015; National Center for Health Statistics, 1999) due to the large body of evidence for these interventions. In fact, intervention programs based on ABA are currently viewed as the first line treatment for children with IDD in early childhood (Vismara & Rogers, 2010) and are the only interventions that have

been shown to produce comprehensive, lasting behavioral change in children with IDD (National Research Council, 2001). Furthermore, research indicates that, in addition to behavioral improvement, treatment based on ABA may facilitate clinically significant gains in the domains of language, intellectual, social, academic, emotional, and adaptive functioning (Anderson, Avery, DiPietro, Edwards, & Christian, 1987; Eikeseth, Smith, Jahr, & Eldevik, 2002; Howard, Sparkman, Cohen, Green, & Stanislaw, 2005; Lovaas, 1987; Smith, Groen, & Wynn, 2000).

ABA is the study of environmental variables that control socially-important behavior (Baer, Wolf, & Risley, 1968), such as challenging behavior. Thus, behavioral researchers and clinicians document the environmental variables that are "responsible for the occurrence or non-occurrence" of behavior and to demonstrate control over the behavior (Baer et al., 1968, p. 94). This focus on the environment supplants the need for attributing behavior to mental concepts, such as intentionality of behavior (Skinner, 1963), which are not amenable to direct measurement. Applied researchers, clinicians, school psychologists, and behaviorally-trained paraprofessionals (i.e., teaching assistants) and special education teachers are among a select few who implement ABA assessment and intervention at an individual level in school settings. As such, the duty of these professionals is to identify and intervene upon environmental contingencies promoting challenging behavior at school—and *not* to attribute causes of challenge to pathology or other factors within the student. That is, ABA places the onus of behavioral adjustment on elements of the classroom's or school's ecology, with a focus on manipulating observable environmental variables that influence the student's behavior (Baer et al., 1968; Skinner, 1963).

Environmental variables, which are the focus of ABA, reside immediately prior to behavior (i.e., antecedents), immediately following behavior (i.e., consequences), and in contexts

temporally independent of the antecedent-behavior-consequence sequence (i.e., three-term contingency) in the form of motivating operations or setting events. Challenging behavior is said to be maintained, or supported by, the consequences that follow it (Iwata, Dorsey, Slifer, Bauman, & Richman, 1982; Iwata, Dorsey, Slifer, Bauman, & Richman, 1994; Lydon, Healy, O'Reilly, & Lang, 2012; Matson et al., 2011; O'Neill et al., 1990). For example, a consequence maintaining challenging behavior (e.g., adult attention) provides very important information about the function (i.e., to obtain adult attention) of the challenging behavior (e.g., physical aggression). That is, by documenting a reliable pattern of consequences that are delivered following challenging behavior, it is possible to develop or infer causal inferences that describe the relation between environmental contingencies and challenging behavior.

Functional behavior assessment. Functional behavior assessment (FBA) of challenging behavior is designed to identify the environmental variables, including antecedents, consequences, and contexts (e.g., motivating operations or setting events) that occasion or maintain the behavior (Chandler & Dahlquist, 2010; Horner & Carr, 1997; Huete, Kurtz, & Boyd, 2012). FBAs are commonly used to assess challenging behavior in individuals with IDD (Beavers, Iwata, & Lerman, 2013; Huete et al., 2012). To provide effect intervention for challenging behavior, the behavior's operant or communicative function must first be identified (e.g., gaining something preferred, escaping an aversive, automatic reinforcement; Frea & Hepburn, 1999).

Both indirect and direct approaches have been developed, including interviews, direct observation, and systematic environmental manipulations (Carr et al., 1999; O'Neill et al., 1990). O'Neill et al. (1990) indicated that functional assessments typically include each of these approaches, in a progression from interviews to observations to systematic manipulations,

although one or two of these strategies may be sufficient to identify the environmental variables that occasion and maintain challenging behavior. Belva et al. (2013) emphasized that the best approach to functional assessment does not rely on any one single approach; rather, treatment decisions should be informed by multiple sources of assessment data. In most general and special education classroom settings, the FBA process usually takes the following form: 1) a behavior specialist conducts at least one interview with a key stakeholder (e.g., teacher or paraprofessional), 2) which is followed by at least one direct observation by a behavior specialist in the setting where the challenging behavior is said to reliably occur to confirm hypotheses developed in the interview(s) (Sugai et al. 2000). Note, there are effective observational (non-experimental) methods for distinguishing a primary function of relatively more complex behavior (e.g., conditional probability), which are also not particularly common in most school settings.

Nonexperimental assessment of challenging behavior. As mentioned previously, FBA includes a range of methods, including interviews, direct observation, and experimental environmental manipulations. Regardless of dimensional qualities of the challenging behavior (e.g., topography, intensity) nonexperimental methods (i.e., indirect assessment in the form of interview and direct assessment the form of direct observation) should be conducted (or data from previously conducted interviews which are still relevant should be utilized) and confirmed with direct observations.

A major advantage with conducting both indirect (e.g., interviews) and direct (e.g., observation) nonexperimental assessments is that it is possible to compare information collected from each source and assess the degree of agreement across various sources of information (Carr et al., 1999). Greater agreement could enhance the confidence in these data, which may inform

treatment strategies. Another major benefit to this type of assessment, especially when compared directly to experimental methods such as functional analysis, is its methodological efficiency and parsimony of methods. A number of structured interviews, including the Functional Assessment Checklist for Teachers and Staff (FACTS) (Adapted by C. Anderson & C. Borgmeier, 2007, from March et al., 1999) and the Functional Assessment Interview Form (FAI) (O'Neill et al., 1997) have been developed to guide interviewers through the process of identifying environmental variables that occasion and maintain challenging behavior, with some in under 60 minutes (Crone, Hawken, & Horner, 2015). In fact, the Questions About Behavioral Function (Matson & Vollmer, 1995) is a well-validated assessment and can be completed in 20 minutes or less. Likewise, many iterations of direct observation data collection procedures have been developed over the years. The most common method is Antecedent-Behavior-Consequence (ABC) recording (Bijou, Peterson, & Ault, 1968). In using this procedure, the child's behavior is observed in the relevant setting and the events occurring immediately prior to and following the behavior are recorded. The A-B-C procedure can lead to a plausible inference of the function of behavior.

A major limitation to non-experimental assessment (i.e., descriptive assessment) is that the information gathered is correlational, and thus, only suggestive of the controlling variables and function of behavior (Belva et al., 2013; Mace, Lalli, & Lalli, 1991). This is due to the fact that the environment is not systematically manipulated to examine the impact on behavior. Another limitation of these methods is that the retrospective format of the interviews and checklists is subject to the interviewer's influence, bias, memory, or other inaccuracies (Boyd & Kennedy, 2014).

Experimental assessment of challenging behavior. The experimental manipulation of

environmental contingencies (e.g., functional analysis) is typically conducted during 5 or 10

minute sessions, where environmental stimuli are strategically manipulated to identify or isolate

the factor(s) controlling the target (challenging) behavior (Herzinger & Campbell, 2006). The

settings necessary for this type of analysis are necessarily highly controlled (e.g., clinic settings).

Functional analysis in school settings is not common or easy to conduct, and usually only

completed (by a behavior specialist) if a clear primary function of behavior is not identified

through indirect assessment and direct observations (Sugai et al. 1999). Functional analysis is

often conducted following many failed attempts to accurately identify a function of behavior

with nonexperimental methods, and is usually reserved for children with the most intense

challenging behavior (Belva et al., 2013).

The greatest advantage of conducting an experimental assessment of challenging

behavior (e.g., functional analysis) is that it is possible to draw the clearest picture of causal

association between environmental contingencies and challenging behavior, with the fewest

inferences (Boyd & Kennedy, 2014). Based on the accuracy of results that are typically obtained

from functional analyses, it has been deemed the "gold standard" for functional assessment

(Belva et al., 2013). Despite the clear benefit of using functional analysis to identify maintaining

variables for challenging behavior, several limitations make functional analysis difficult to

employ in school settings. Functional analyses are lengthy (Carr et al., 1999; Horner & Carr,

1997), labor intensive (Carr et al., 1999; Horner & Carr, 1997), and the procedures involve

systematically and purposefully evoking challenging behavior, which may cause risk to the child

and others and pose undue ethical concerns (Belva et al., 2013). In addition, for young children

in early childhood (i.e., preschool) settings, challenging behavior is usually just beginning to

emerge. Assessment of students with emerging challenging behavior, which is more likely to be minor to moderate in intensity, may not justify the use of elaborate and highly-controlled techniques such as functional analysis. For these reasons, experimental functional analysis is not typically utilized in early childhood settings, and is certainly not typically conducted by school-based providers.

Treatment of Challenging Behavior

Once the purpose of the challenging behavior has been identified through an FBA, a functionally equivalent replacement behavior can be taught (Sugai et al., 1999). By teaching a functionally equivalent alternative response, the problematic behavior can be reduced (Horner & Carr, 1997). The primary purpose of the FBA process, then, is to develop ecologically-valid, contextually fit, and effective behavior support plans (BSPs) that directly address the function of an individual's challenging behavior (Sugai et al., 1999). Intervention strategies that are not derived from FBA findings are less effective at decreasing challenging behavior and may even evoke iatrogenic effects (i.e., to inadvertently reinforce the target behavior), resulting in an increase in challenging behavior (Newcomer & Lewis, 2004). Function-based intervention strategies for challenging behavior are necessarily informed by FBA, where each element of assessment is amenable to intervention. For example, when a reliable and valid relation is drawn, connecting antecedent conditions and challenging behavior, an antecedent intervention can be employed. Likewise, a consequence that is found to reliably occasion challenging behavior can then become a focus of intervention.

Learning Contexts

Early childhood special education settings. Early childhood special education (ECSE) settings are learning environments (e.g., classrooms, one on one supports) designed to provide

early intervention (EI) services, which are federally mandated in the United States for young children suspected or at risk for, or identified with, IDD (IDEA, 2004; Ramey & Ramey, 1998). EI programs and services may occur in a variety of settings, with a heavy emphasis on natural environments. Generally speaking, EI is the process of providing services, education and support to lessen the effects of a child's disability or delay. Services are designed to identify and meet a child's needs in five developmental areas, including: physical development, cognitive development, communication, social or emotional development, and adaptive development (IDEA, 2004). These programs and/or services are proven to be most effective when started as soon as the delay or disability is identified (Ramey & Ramey, 1998; Walker, Ramsey, & Gresham, 2003).

Inclusive classrooms. Inclusive classroom settings are general education classrooms in which students with and without disabilities learn together. In a sense, it is the opposite of a special education classroom, where students with disabilities learn with only other students with disabilities. Note, the proportion of students with disabilities in any particular inclusive classroom could vary significantly, from relatively lower to relatively higher density. Young students who qualify for special education services (i.e., EI), are commonly served in these settings, with a portion of their day also dedicated to "pull out" services where they receive more intensive, targeted, one on one or small group supports for specific skill domains (e.g., social skills, speech services, occupational therapy).

Inclusive ECSE settings provide a unique conglomeration of conditions to consider when designing function-based behavioral intervention supports. First, children are expected to engage in systematic and organized (academic) tasks for probably the first time. Many readiness skills may need to be taught prior to instruction to be effective (Bierman, Domitrovich, Nix, Gest,

Welsh, Greenberg, Blair, Nelson, & Gill, 2008). Second, children are exposed to many other children for probably the first time, with a high probably of contacting other children with IDD, challenging behavior, and other unique needs. Children may learn to imitate peers who engage in challenging behavior or observe peers receiving putative reinforcement contingent on expression of challenging behavior (Bandura & Walters, 1977, Cooper, Heron, & Heward, 2007). Third, children in ECSE or other preschool settings are expected to operate independent of their primary caregivers, for probably the first time. Understandably, this transition can be very challenging for families. Behaviorally, in this scenario, it is understood that children may be in a relative state of deprivation of adult attention, which may serve as a motivating operation; temporarily increasing the value for adult attention and the likelihood for engaging in (challenging) behavioral to obtain it (Keller & Schoenfeld, 1950; Millenson, 1967, Michael, 2000). So in addition to the aforementioned ABA principles to guide assessment and treatment for challenging behavior, behavioral change considerations in ECSE settings should include the novelty, and potentially challenging nature of demands placed on the children, the relatively high density of peer models with disabilities and challenging behavior, and the high likelihood of initial exposure to an increased adult-to-child ratio (i.e., relative deprivation of one-on-one adult attention).

  Least restrictive environment. According to the least restrictive environment mandate as part of IDEA (2004), to the extent possible, students with IDD should spend maximal time in inclusive settings and minimal time in more restrictive settings (e.g., one on one pull out services). Thus, although challenging behavior is difficult to manage in applied settings because of the many competing demands teachers face in the classroom, and a logical ecological intervention is to remove disruptive students from group academic settings, students with

disabilities are required to receive their education in the least restrictive environment possible. This means that children with disabilities should spend as much time as possible with peers who do not receive special education (e.g., EI services). This presents a difficult situation for teachers and staff, where the challenging behavior of some students may be disruptive to classroom functioning and draw on the limited time and resources of classroom staff. Thus, necessarily incorporating students with challenging behavior into regular classroom routines can be quite challenging, which highlights the need for efficient and effective intervention supports. Further, this issue is compounded by the fact that school personnel experience difficulty implementing function-based supports because of a number of issues related to time-constraints, level of expertise required, and lack of administrative and other support (e.g., Hanley, Iwata, & McCord, 2003).

Behavior Support Planning

  Individualized behavioral supports. Although a plethora of evidence-based behavioral supports may exist at a school-wide, classroom-wide, or at the individual level, by the time a referral is made to conduct an FBA, supports are intended to be highly individualized, that is, in the third tier of multilevel system of support (Crone, Hawken, Horner, 2015). Treatment of challenging behavior relies first on accurately identifying the motivational sources and operant functions of challenging behavior (Carr, 1977; Carr et al., 1999; Carr & Durand, 1985), and then implementing an individualized intervention accordingly (Horner & Carr, 1997; Mace et al., 1991). Even though the response class (e.g., various types of aggression) and topography of a behavior (i.e., the specific physical form of the behavior) may be consistent across several children, the function of the behavior may differ; thus, making some interventions appropriate for certain individuals under certain conditions but not for others (Boyd & Kennedy, 2014).

Thus, without conducting a comprehensive FBA for each student, a function-based treatment for challenging behavior used with one student may not be acceptable or appropriate for use with another student with similar challenging behavior in the same setting.

   Multi-component behavior support plans (BSPs). A BSP is developed based on the information gathered from the FBA and is a detailed account of how a student's environment might be redesigned to promote more appropriate behavior (Sugai, Horner, & Gresham, 2002). Best-practice BSP development includes antecedent manipulations, teaching replacement behaviors, and consequence (i.e., reinforcement) strategies (Ferro & Liaupsin, 2007). First, antecedent strategies should manipulate access to environmental events that serve as establishing operations and discriminative stimuli for challenging behavior. Next, interventions to support the development of a repertoire of more appropriate replacement behaviors should identify and teach behaviors that serve the same function as the challenging behavior. Next, consequence strategies should be designed to minimize reinforcement of challenging behavior and to increase reinforcement of long-term, desired behavior or immediately acceptable alternative behaviors (Benazzi, Horner, & Good, 2006). Last, above and beyond the overall aims of reducing challenging behavior and increasing more appropriate behavior, the goal of BSP development is to create a plan that has both 1) sufficient technical adequacy and 2) appropriate contextual fit. Technical adequacy refers to the degree to which empirical or clinical data should support the effectiveness of the procedures used in the plan (Alberto & Troutman, 2012). For a BSP to be sufficiently contextually fit, the plan procedures must be consistent with the values, skills, resources, and support of those who will actually implement the plan (Albin, Lucyshyn, Horner, & Flannery, 1996).

There is general consensus that function-based interventions should be employed to minimize challenging behavior (Sugai, 1999), but there is no single treatment that is most appropriately suited for each function of challenging behavior (Horner & Carr, 1997). Further, challenging behavior may be supported by multiple functions, even though a primary and secondary function are usually distinguishable (Boyd & Kennedy, 2014). But still, best practice BSPs include strategies targeting multiple elements—antecedent conditions and consequences, with additional behavioral teaching of alternative responses where necessary.

Antecedent-based strategies. Antecedent-based strategies are well-supported by the extant literature to prevent and reduce challenging behavior in children with IDD (Conroy & Stichter, 2003). Further, antecedent-based strategies can be adapted to prevent and reduce challenging behavior that is maintained by different functions (e.g., attention, escape, tangible items; Dunlap, Kern-Dunlap, Clarke, & Robbins, 1991; Wallace, Iwata, Hanley, Thompson, & Roscoe, 2012). For example, noncontingent reinforcement (i.e., fixed time schedule of reinforcement; response-independent reinforcement) is a common and well-validated antecedent-based strategy where, independent of challenging behavior, consequences known to maintain challenging behavior (e.g., escape from nonpreferred tasks [i.e., breaks], adult or peer attention, or preferred toys) are delivered on a fixed or variable time schedule. Other common antecedent-based interventions include environmental enrichment (Horner, 1980), choice during instructional activities (Conroy & Stichter, 2003), and curricular revisions (e.g., varying the task type and difficulty; Dunlap et al., 1991). Ideally these interventions would be based on the results of a FBA and be catered specifically to the individual and context where the challenging behavior occurs.

Consequence-based strategies. Differential reinforcement of alternative (DRA) behavior is a common consequence-based treatment for challenging behavior for individuals with IDD (Boyd & Kennedy, 2014; Horner & Carr, 1997). As a consequence manipulation, the response of those within the environment where the challenging behavior occurs is purposeful, planned, and contingent on the (challenging or desired) behavior of the target student. For example, a DRA procedure may be designed such that a student is differentially reinforced for raising her hand to get teacher attention rather than calling out (i.e., an alternative, socially acceptable response). In this example, the teacher would provide reinforcement (e.g., teacher praise, tokens, earned breaks) contingent on the student engaging in the alternative behavior (i.e., hand raising), and *not* for calling out. In addition, extinction can be employed as a standalone intervention (e.g., planned ignoring; Buck, 1992), or in conjunction with other interventions (e.g., DRA). Extinction is the act of removing reinforcement that was once available for a behavior. So, if a child was receiving adult attention for throwing a tantrum, that behavior would be "put on extinction" if individuals in the environment purposefully and successfully removed all adult attention following any tantrum behavior.

These examples of some commonly used antecedent- and consequence-based interventions are not at all comprehensive, by any means. Again, these interventions should be based on the results of a FBA and be catered to the operant function of a specific individual in a particular context. The implications are that BSPs should be composed of strategies to target multiple environmental contingencies (Sugai, 1999) and strategies can be adapted to prevent and reduce challenging behavior that is maintained by different or multiple functions (Dunlap, Kern-Dunlap, Clarke, and Robbins, 1991; Wallace, Iwata, Hanley, Thompson, & Roscoe, 2012).

Examining Treatment Acceptability for Function-Based Behavior Supports

A recent study surveyed a nationally-representative sample of teachers, paraprofessionals, and school psychologists who work with students with challenging behavior (O'Neill et al., 2014). The study assessed participant attitudes about the usefulness and acceptability of FBA procedures (i.e., interviews, rating scales, direct observation, and functional analysis) and whether they had used the procedures, felt comfortable doing so, whether they found it useful, etc. Nearly all respondents found the array of procedures highly acceptable and efficacious, but respondents with more behavioral expertise (e.g., school psychologists) rated FBA procedures to be generally too time intensive. Classroom teachers, however, rated FBA procedures as highly acceptable, efficient, and efficacious. Although school personnel found FBA procedures generally acceptable, these were typically (approximately 70% of the time or more) facilitated by outside research or other personnel (Finn, & Sladeczek, 2001). Thus, even though BSPs based on FBA procedures are highly effective at preventing and reducing challenging behavior in school settings, the FBAs and BSP development is often facilitated by outside professionals. Therefore, the sustainability of FBA procedures is limited by the number of school personnel who are qualified to learn and implement function-based plans (Crone, Hawken, & Horner, 2015). Scott, Anderson, and Spaulding (2008) identified the following challenges for school-based personnel in implementing effective function-based supports: 1) time requirements, 2) the influence of personnel skills and resources on sustainability of implementation, and 3) the fidelity with which plans were delivered.

Training Endogenous Providers to Implement Individualized Behavior Supports

As a result of the empirical support and endorsement by governing bodies for the use of behavioral interventions, teachers and paraprofessionals have an increased familiarity with the

efficacy of ABA practices. However, some teachers and paraprofessionals may lack the technical behavioral expertise to implement behavioral programs with fidelity without considerable support from a person with behavior analytic expertise (Kodak, Cariveau, LeBlanc, & Mahon, 2017). In some settings, paraprofessionals take on a large amount of responsibility in developing educational and behavioral programming, often with limited experience and education. That is, they often have minimal training but are asked to work with the neediest students. So even if evidence-based behavioral strategies are introduced, the likelihood that they will be implemented as intended (with fidelity) is compromised because of a lack of training and experience in creating, implementing, and adapting behavioral interventions, among other issues (Hanley, Iwata, & McCord, 2003; Scott et al., 2008).

There are many models available to inform curricular development and delivery, with some bearing more evidence of effectiveness than others. Some noteworthy models of instruction which are behaviorally-derived (i.e., aligned with the principles of ABA) and supported by a robust evidence base include direct instruction (Engelmann & Carnine, 1982), discrete trial teaching (Lovaas et al., 1981), and behavioral skills teaching (e.g., Sarokoff & Sturmey, 2004). Each of these teaching models emphasizes well-developed and carefully planned lessons which are informed by assessment (MacSuga-Gage, Simonsen, & Briere, 2012) and designed around small learning increments with clearly defined and prescribed teaching tasks (Hempenstall, 2004; Carnine & Fletcher-Janzen, 2013). While direct instruction and discrete trial instruction have primarily emerged as highly efficacious strategies for teaching children with and without disabilities (Green, 1996; Archer & Hughes, 2011), behavioral skills training has the greatest focus on teaching skills to typically-developing adults (Ward-Horner & Strumey, 2012).

It's been long known that teachers can be trained to implement behavioral strategies in the classroom (Koegel, Russo, & Rincover, 1977). Behavioral skills training (BST) is developing a substantial evidence base for teaching various skills, including teaching parents (Lasafakis & Sturmey, 2007) and teachers (Crone, Hawken, & Bergstrom, 2007) how to implement behavioral support strategies. BST typically includes a combination of instructions, modeling, rehearsal, praise, and corrective feedback. BST has been used to teach a variety of skills to children, including abduction-prevention skills (Johnson et al., 2005), gun-play prevention skills (Gross, Miltenberger, Knudson, Bosch, & Breitwieser, 2007; Miltenberger et al., 2004), and sexual abuse prevention skills (Lumley, Miltenberger, Long, Rapp, & Roberts, 1998). In addition, several studies have evaluated BST to teach adults to implement behavior-analytic techniques. For example, Iwata et al. (2000), Moore et al. (2002), and Wallace, Doney, Mintz-Resudek, and Tarbox (2004) used various instructional packages to train a variety of individuals (e.g., undergraduates, teachers) to implement functional analyses. Sarokoff and Sturmey (2004), for example, used a BST package to teach special education teachers with varying levels of education to conduct discrete-trial teaching. Sarokoff and Sturmey monitored adherence to 10 critical components of discrete trial teaching (Green, 1996; McClannahan & Krantz, 1993) and found that teachers could improve from an average of 45% adherence at baseline to an average of 98% following instruction using BST.

Examining Treatment Fidelity for Function-Based Behavior Supports

Treatment fidelity is the delivery of intervention or instruction in the way in which it was designed to be delivered (Gresham, MacMillan, Beebe-Frankenberger, & Bocian, 2000). Other terms which are often used synonymously are fidelity, fidelity of implementation, treatment integrity, and sometimes components of treatment fidelity are wrongly described as an overall

measure of fidelity (e.g., adherence; Century, Rudnick, & Freeman, 2010). Fidelity of implementation refers to processes at an organization-wide level, like with implementation of RTI, as well as fidelity of intervention implementation (i.e., treatment fidelity) at an interventionist level (e.g., teacher, paraprofessional, behavioral consultant, etc.). This study is concerned with the latter, and will primarily use the term "treatment fidelity" from this point forward.

Treatment fidelity is an issue in applied (e.g., school) settings, which is highly problematic because it is well-established that when we improve and sustain fidelity, we experience better outcomes (Dane & Schneider, 1998; Durlak & DuPre, 2008). In fact, in a meta-analysis conducted by Derzon and colleagues (2005), which evaluated the effects of a substance-use prevention program, the authors found that mean effect sizes were up to 12 times higher for programs with higher treatment fidelity. Nevertheless, many teachers and other professionals struggle to achieve and sustain high treatment fidelity in applied settings. This is perhaps an effect of the complicated interplay of factors that influence treatment fidelity in these settings. Durlak and DuPre (2008) reviewed over 500 studies that reported on factors associated with behavioral intervention implementation and composed a list of 23 factors that ostensibly influenced implementation across the studies. Durlak and DuPre separated factors into five distinct categories: 1) Community level factors (e.g., policy), 2) provider characteristics (e.g., self-efficacy), 3) characteristics of the innovation (e.g., contextual fit), 4) factors relevant to the prevention delivery system (e.g., organizational capacity, positive work climate), and 5) factors related to the prevention support system (e.g., training). Not only does this represent an overwhelming list of considerations to incorporate into intervention development and implementation, it does not even account for the possibility for there to be relationships (e.g.,

moderating; interacting) among some pairs or groups of factors or shared variance (i.e., collinearity) in explaining treatment fidelity. This realm is somewhat unexplored, however a handful of authors have attempted to answer research questions pertaining to the shared and interacting effects of variables associated with implementation success. For example, Riley, Taylor, and Elliott (2001) successfully used a path analytic model to predict nearly half the variance in implementation of Canadian health promotion programs. The implications are that one may identify and measure elements of implementation to 1) predict variance in treatment fidelity and 2) assess the degree to which various elements of implementation share explanatory power (i.e., are collinear), but there is still much work to do in this area to more distinctly inform researchers and practitioners of the most salient dimensions of treatment fidelity in various contexts.

Thus, applied researchers and school-based clinicians are presented with a substantial challenge: to maintain treatment fidelity in applied settings, while also accommodating limited time, resources, and behavioral intervention skills of school-based professionals (Crone, Hawken, & Horner, 2015; Harn, Parisi, & Stoolmiller, 2013). While the procedures for conducting FBA and implementing sound BSPs are methodologically demanding, there is also a strong need to make assessment and intervention procedures efficient and accessible to school-based providers (Scott, McIntyre, Liaupsin, Nelson, & Conroy, 2004; Scott, Liaupsin, Nelson & McIntyre, 2005). Further, although we know that teachers and other professionals can be trained by specialists to implement behavioral supports (e.g., Sarokoff & Sturmey, 2004), without ongoing monitoring, feedback, and supervision, skills learned are not likely to maintain and generalize (Lafasakis & Sturmey, 2007). So it seems reasonable to assert that in order for treatment fidelity of behavioral interventions to stand a chance in applied settings, a behavioral

interventionist (i.e., consultant) must accommodate for limited time, resources, and behavioral expertise of involved staff, technical adequacy and contextual fit of the BSP, accessibility of the BSP to providers who are expected to implement it, and the available infrastructure of available support in the form ongoing progress-monitoring and feedback regarding the performance (i.e., treatment fidelity) of involved staff.

Types or dimensions of fidelity. Unmistakably, treatment fidelity can be parsed into a number of different dimensions. There is a growing recognition of the value of measuring treatment fidelity as a necessary part of evaluating behavioral interventions; however, evaluators do not have a shared conceptual understanding of what treatment fidelity is and how to measure it. Although there is neither consensus on how to describe treatment fidelity, nor what exactly should be measured, a number of researchers have attempted to identify salient dimensions (e.g., Dane & Schneider, 1998) and establish shared language (e.g., Century et al., 2010) that applies to the critical analysis of behavioral intervention implementation. For instance, Dane and Schneider (1998) examined the extent to which treatment fidelity was verified and promoted in evaluations of primary and early secondary prevention programs published between 1980 and 1994. In doing so, authors identified key dimensions of treatment fidelity and stated that, "…five aspects of fidelity have been identified in the literature…though the definitions and labels assigned to these aspects vary considerably and are often not consistent with the terms used in the present review" (p. 39). Four dimensions identified by Dane and Schneider (1998) that are relevant to the implementation of behavioral interventions in ECSE settings, which include 1) adherence, 2) exposure/dosage, 3) quality, and 4) participant responsiveness. In addition, authors reported that fewer than 25% of 162 outcome studies reported specific procedures for the documentation of treatment fidelity at all. So, although the field of ABA has prioritized the

measurement of treatment fidelity on a broad scale, it is still somewhat unclear *how* to best

measure it and which terms should be used, and to boot, an inconsequential proportion of studies

to date have provided sufficient information regarding their assessment of treatment fidelity at

all. Nonetheless, Dane and Schneider (1998) offer a good starting place for determining broad,

salient dimensions to consider.

***Adherence*.** Dane and Schneider (1998) define adherence as "the extent to which

specified program components were delivered as prescribed in program manuals" (p. 45). Others

embrace this definition and essentially equated adherence with implementation and sometimes

use the two words—adherence and fidelity—interchangeably (Dusenbury, Brannigan, Falco, &

Hansen, 2003; Hansen, Graham, Wolkenstein, & Rohrbach, 1991; Lynch & O'Donnell, 2005).

Some authors argue that adherence is not a dimension of fidelity because it is essentially

synonymous with the generally accepted broader definition of fidelity (Century et al., 2010).

***Exposure and dosage*.** Dane and Schneider (1998) define exposure as "an index that may

include any of the following: (a) the number of sessions implemented; (b) the length of each

session; or (c) the frequency with which program techniques were implemented" (1998, p. 45).

Dusenbury et al. (2003) refer to dose as "the amount of program content received by

participants" (20p. 241). Exposure and dose reflect a critical dimension of fidelity which reflects

how much intervention was delivered, which allows for comparison between intended and actual

amount of intervention delivered.

***Quality*.** Dane and Schneider (1998) define quality of delivery, as "a measure of

qualitative aspects of program delivery that are not directly related to the implementation of

prescribed content, such as implementer enthusiasm, leader preparedness, global estimates of

session effectiveness, and leader attitudes toward program" (p. 45). Thus, the construct of "quality" truly includes many sub constructs associated with the intervention deliverer.

   Participant responsiveness. Dane and Schneider (1998) describe participant responsiveness as "a measure of participant response to program sessions, which may include indicators such as levels of participation and enthusiasm" (p. 45). Others refer to this as the extent of participant/student participation or engagement (Dusenbury et al., 2003; Lynch & O'Donnell, 2005). This dimension of fidelity recognizes that some critical components essential for implementation reside not with the implementer of the intervention but with the recipients.

Assessing Treatment Fidelity

   The two primary methods of assessing dimensions of treatment fidelity are self-reports and direct observations. Most of the studies which used direct observations have documented the reliability of their observational procedures, but studies relying on self-reports typically have not (Durlak & DuPre, 2008). In addition, there is some indication that observational data are more likely to be linked to outcomes than self-report data (e.g., Hansen et al. 1991; Lillehoj, Griffin, & Spoth, 2004; Resnicow et al. 1998), but few studies have directly compared these two strategies. Because observational data are ultimately more objective, it seems preferable to use such information for analysis of treatment fidelity, despite the possibility of observer or social desirability bias. Irrespective of the methodology, periodic checks of fidelity can help identify providers who might be struggling with executing parts of the intervention. Understandably, several authors have indicated this might occur with the more difficult components of interventions (Botvin, 1990; Hahn, Noland, Rayens, & Christie, 2002; Kallestad & Olweus, 2003).

Treatment fidelity assessment design. The actual measurement of treatment fidelity involves a number of assessment decisions. In addition to determining which dimensions to measure (Dane & Schneider, 1998) and which method to employ (Durlak & DuPre, 2008), decisions also need to be made regarding when to measure treatment fidelity since implementation is not static (e.g., beginning, middle, end, or continuously; Fixsen, et al, 2005; Durlak & DuPre, 2008) and how often to measure (Stoolmiller, Eddy, & Reid, 2000). Further, decisions need to be made regarding what level of fidelity is expected or acceptable. Durlak and DuPre (2008) note that, "Expecting perfect or near-perfect implementation is unrealistic" (p. 331), but clearly, higher fidelity is better. In addition, Durlak and DuPre indicated that positive outcomes have been obtained with 60% implementation, with few studies attaining levels greater than 80%. Nevertheless, an 80% or higher goal seems ideal.

Limitations of the Extant Literature

Measuring and defining treatment fidelity. Although a strong association has been established between behavioral intervention treatment fidelity and treatment outcomes (Fiske, 2008), the degree to which the field has explored discrete interventions for supporting fidelity is extremely limited (DiGennaro Reed et al., 2010). Durlak and DuPre (2008) argue that far too few researchers (i.e., about one third) focus on fidelity, and the ones that do, only say that implementation was effectively achieved without supplying any data. Further, few journals require authors of intervention studies to provide information documenting (good) implementation of the intervention program(s). These facts showcase a major scientific issue in the field of implementation science. Namely, since treatment fidelity documentation is pervasively limited in detail and complexity across intervention studies, the field is greatly restricted in its ability to develop consensus on terminology and operational definitions of

relevant fidelity constructs. And without this shared calibration, the development of psychometrically sound measurement systems to study implementation is understandably lacking as well. Thus, the limited degree to which scientists can accurately and reliably measure the relevant constructs of treatment fidelity prevents sufficient analysis of strategies to support or intervene on treatment fidelity. Simply, science cannot study what it cannot accurately measure, and it cannot measure what it cannot define. Although several authors have offered guidelines for measuring various components of treatment fidelity (e.g., Granner & Sharpe, 2004; Nastasi & Schensul, 2005), and it is clear *why* it should be monitored, there is not well-developed consensus in the field about *how*, *what*, and *when* it should be monitored.

   Treatment fidelity as a target for intervention. Considering the current limitations in the extant literature to define and measure components of treatment fidelity in a unified manner, it makes logical sense why there are also very few studies that have attempted to intervene on treatment fidelity directly. In order to isolate the link between implementation fidelity and outcomes, a number of studies have assessed treatment fidelity as an independent variable by systematically implementing interventions with predetermined levels (e.g., low versus high) of treatment fidelity (e.g., Vollmer et al., 1999; Wilder et al., 2006). More commonly, studies record treatment fidelity as a dependent variable in order to assess the relation between treatment fidelity and outcomes across intervention trials or sessions (Fiske, 2008). In this case, treatment fidelity serves the role of a subordinate dependent variable (i.e., not the primary target for intervention), for which the level of fidelity is assessed for association with improvement or worsening in outcomes.

   Few studies have been conducted to discretely analyze the effectiveness and efficiency of methods to treat low treatment fidelity or support high treatment fidelity (DiGennaro-Reed,

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Codding, Catania, & Maguire, 2010). Furthermore, no studies to date had analyzed the utility of structured methodology to guide consultants and researchers in monitoring treatment fidelity for the purpose of supporting consultees with implementation contingent on performance (i.e., treatment adherence). In the current educational climate where resources are limited, having a planned way of differentiating levels of support could maximize cost-efficiency and effectiveness. Further, since the needs to support treatment fidelity outweigh the available personnel resources, we must innovate in order to individualize supports in a way that is efficient. One logical option is to provide specialists with decision rules and pre-planned levels of support which differentially appropriates levels of ongoing support contingent on performance (i.e., treatment fidelity). Levels of support may be scaffolded by the amount and type of expert time required. This scaffolding may help consultants effectively manage their time and provide efficient supports to staff.

Current Investigation: Multilevel Consultation Model for Supporting Treatment Fidelity

The researcher designed a multilevel consultation model (MCM) as part of the current investigation. The multilevel model was designed to support consultees in implementing function-based BSPs with fidelity, which was hypothesized to contribute to reductions in challenging behavior. There may be substantial and far-reaching benefits to exploring the use of a model that is designed to support endogenous providers in their delivery of evidence-based interventions, and the current study represents an initial step in that exploration. The researcher proposed that the model design may cogently prevent the development of significant implementation issues through monitoring, formative assessment, individualization of supports, and a focus on building consultee competence.

Prevention. Continuous monitoring was incorporated into the multilevel model to reduce the likelihood that issues with consultee treatment adherence would build to a degree that required significant intervention. Monitoring BSP implementation following appropriate training, was intended to isolate specific missing skills of the implementer and head off issues before they built considerable momentum. In addition, consultees were asked to self-monitor adherence. Self-monitoring itself is likely to affect treatment adherence (e.g., Lillehoj et al., 2004), which means that the process of self-monitoring is also likely to help prevent significant departures from the established BSPs. In addition, the deliberate promotion of treatment adherence was intended to increase the likelihood that the function-based BSP disrupted patterns of student challenging behavior, which in turn, would contribute to prevention of further development of such issues.

Formative assessment. The multilevel consultation model utilized in the current provided a structure to support consultee skill acquisition. The delivery of support was driven by assessment, and thus, was responsive to individual needs. Consultees were offered increasing support contingent on their observed need (i.e., low treatment adherence) or expressed need (i.e., low ratings of challenging behavior acceptability) for support. In order to take into account consultants' time constraints, each level of support was preceded by one that requires less expert time and resources, so if an individual only needed a small amount of support to improve fidelity, she received an amount of support that was appropriate in both scale and content (e.g., rather than no support or too much support in the form of a training that targets many other *potentially* relevant skills).

Skill mastery. Skill mastery is the result of a learning process which happens gradually and in phases. Skill mastery is reflected in one's ability to readily apply skills over time and in

multiple contexts (Archer & Hughes, 2011). Thus, in order to increase the probability that teaching leads to skill mastery, instructional approaches should at least incorporate the general principle that learning is a gradual process which requires exposure to teaching over time. Generally speaking, skill mastery can be separated into three sequential and distinct phases: 1) skill acquisition, 2) skill maintenance, and 3) skill generalization. The current study was designed to support consultee skill acquisition and skill maintenance specifically. Skill generalization was not targeted in intervention.

Promoting Consultee Skill Acquisition

       Explicit teaching. Teaching components embedded in the multilevel consultation model in the current study were based on explicit teaching principles and practices, which are structured, systematic, and effective (e.g., Brophy & Good 1986; Christenson, Ysseldyke, & Thurlow, 1989). The likelihood of skill acquisition is determined by many factors related to both the learner, instructional design, and characteristics of the instructional delivery (e.g., Archer & Hughes, 2011) so individualization of supports is a critical consideration to training. The current study aimed to provide training for consultees which ensured skill acquisition and maintenance by incorporating scaffolds, whereby consultees were guided through the learning process with 1) clear explanations and demonstrations of skills needed to implement a BSP, 2) supported (i.e., guided) and distributed practice opportunities, 3) performance feedback, 4) opportunities to practice independently, and 5) formative assessment of skill acquisition and maintenance.

       Performance feedback. Without a mechanism for feedback on behavior or performance on a task, learning is much less likely to predictably occur (Kluger & DeNisi, 1996; Stronge, 2006). In the context of teaching, learners are known to benefit from two specific types of

performance feedback: 1) behavior-specific praise and 2) error correction (Hattie & Timperley, 2007).

Behavior-specific praise. Behavior-specific praise was utilized by the researcher in all training and feedback opportunities as part of the current study. Specific consultee behaviors targeted for behavior-specific praise were mostly guided by adherence to specific elements of the target student's BSP. For example, when a consultee adequately performed a step of the BSP accurately, the researcher provided praise that specifically described the behavior performed by the consultee that aligned with the BSP implementation checklist. Behavior-specific praise was also utilized to reinforce learning in reflection of errors previously performed by the consultee and to highlight improvement in areas in which the consultee had previously requested feedback.

Shaping. Shaping is a behavioral strategy that involves differential reinforcement of successive approximations of a target behavior (Cooper, Heron, & Heward, 2007). Shaping was used in the current study to deliver behavior-specific praise regarding BSP plan adherence when a consultee was observed to adhere to a specific step in the BSP, but not to an adequate level or degree. Thus, in order to use shaping regarding a specific component of the BSP, the consultee had to have engaged in some approximation of the complete step in the BSP and not have omitted it completely.

Visual performance feedback. In addition to shaping, visual performance feedback was used to provide feedback to teaching assistants (TAs). Specifically, a line graph which displayed adherence and challenging behavior across baseline and intervention phases was used in unison with a "rainbow sheet" which showed an empty number line that spanned from red, to orange, to yellow, to green, with red representing poorer adherence and green representing better adherence. The actual percentages were left off the feedback forms and an "X" was placed by the

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researcher on the number line approximately where the TA's percent adherence would have fell (out of 100%). In other studies, this type of "rainbow sheet" style of visual performance feedback has proven useful as part of relational and motivational considerations while providing assessment feedback to families (i.e., Family Check-Up; Dishion, Nelson, & Kavanagh, 2003) and school professionals (Classroom Check-up; Reinke, Herman, & Sprick, 2011).

Error correction. To address errors committed by learners (e.g., consultees) during the process of skill acquisition, systematic and decisive procedures should be employed (Rosenshine & Stevens, 1986). Procedures should involve feedback that is immediate, corrective, specific, and followed by an opportunity to try the correct response again (Archer & Hughes, 2011). Error correction was utilized in an initial training with consultees by the researcher providing correct responses following errors during mock BSP implementation, followed by a prompt to try the skill again. The researcher provided a model, and asked the consultee to try the step again. During the intervention phase of the study, error correction was offered in the form of least-to-most and most-to-least prompting, depending on the level of support being provided (see "Errorless learning." and "To Assess for Skill Acquisition" sections below).

Prompting. Errorless learning is a principle which promotes the incorporation of prompting during instruction through modeling. Most-to-least prompting (MTL) is a term for this type of prompting, and is used during the process of skill acquisition to ensure that consultees have access to the correct response (i.e., implementing a specific step in a BSP) prior to contacting an opportunity or expectation to respond more independently (without support, prompts, or other help). In this sense, MTL offers the most "intrusive" form of a prompt (e.g., the consultee reaches out and hands the student a break card, which is the correct step in the BSP) out of a prompting hierarchy that includes less intrusive prompting methods (e.g., pointing

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to the break card). MTL also reduces the likelihood that learners (e.g., consultees) will commit

errors, which reduces the likelihood that errors will be committed to memory (Wolery, Ault, &

Doyle, 1992). In the current study, MTL was used in the "Modeling" portion of the initial

training, and was planned for "Level 3" of the multilevel system of supports (described later in

the "Methodology" section), but no consultees reached that level of need for support.

Contrastingly, to probe for skill acquisition or to provide learners brief opportunities to display

skills that have been taught, a series of prompts may be used that slowly increase in

obtrusiveness to independent responding (Yanardag et al., 2011; Wolery, Ault, & Doyle, 1992).

This form of prompting is called Least-to-Most prompting (LTM). Functionally, LTM is the

reverse version of MTL. That is, the least intrusive prompt is no prompt at all (i.e., an

independent opportunity to engage in the desired behavior), and is delivered first. Next, a

predetermined time delay (e.g., 5 seconds) is used to determine when the next most intrusive

prompt will be delivered, and so on, until the desired behavior is evoked (Walker, 2008). In the

current study, the principles underlying LTM were used to when prompting consultees in the

"Guided Practice" portion of the initial training, as well as in "Level 2" of the multilevel system

of supports. LTM was planned for "Level 3" of the multilevel system of supports, but no

consultees reached that level of need for support.

  Distributed versus massed practice. When practice opportunities are decisively

distributed across time (e.g., 10 trials delivered across each of 4 days) rather than delivered in a

single set of massed trials (e.g., 40 trials delivered in a single day), learners consistently master

skills more quickly and display higher levels of correct responding (Haq & Kodak, 2015).

Practice opportunities for consultees who participated in the current study were ostensibly

distributed during the initial training as a direct result of using varying levels guidance during

practice. Further, as participants moved through the levels of BSP implementation support contingent on observed treatment adherence, practice became increasingly distributed. That is, participants who indicated the highest need for support received the most highly guided practice, the highest dosage of practice opportunities, as well as the highest distribution of practice opportunities across time.

Scaffolding Support by Degree of Expert Involvement

The degree of expert involvement (i.e., time and resources) was scaffolded across three levels of support during the intervention phase of the current study. As levels of support increase from one to three, the levels incorporate varying 1) degrees of guidance, 2) timing of prompts, 3) location (i.e., locus) where support is provided, 4) format of the support provided, 5) delivery of materials, and 6) accumulated amount of support (i.e., since levels are sequential, higher levels of support are also associated with having had more opportunities to access supports).

Degree of guidance. Explicit instruction involves breaking down teaching into discrete steps, each of which gradually increases in the degree of independence expected from the learner (Archer & Hughes, 2011). In general, this type of instruction can be thought of in three distinct phases, affectionately known as the "I do," "We do," and "You do" phases of instruction. The "I do" phase involves the teacher modeling the skill for the learner. The "We do" phase involves practice opportunities that are guided by the instructor in a way that minimizes opportunities for the learner to commit errors. The "You do" phase is the opportunity for a learner to practice the skill without support.

Although the phases of modeling (i.e., I do) and independent practice (i.e., You do) are imperative to learning and undoubtedly incorporated into training and support provided in the current study, guided practice (i.e., We do) was the central focus of support provided during

intervention. A hypothesis of the current study is that this focus addresses a typical and substantial issue that often arises in behavioral consultation as a function of extremely limited expert (i.e., consultant) time. That is, consultees are very commonly expected to independently practice newly introduced skills without support, following a mere description of the procedures, or perhaps a small amount of modeling and practice in a mock setting. In other words, consultees are often asked to move swiftly from the "I do" phase of instruction (i.e., a consultant modeling or describing procedures) to the "You do" phase of instruction (i.e., consultee implementing a plan without support or in vivo feedback), with little or no time spent in the "We do" phase of instruction where the most feedback and support is to be provided.

Prompt time delay. Prompts provided as part of the multilevel consultation model varied in their delay from five second time delay (i.e., researcher allow five seconds before prompting) in "Level 2" of the model to zero second time delay "Level 3" (i.e., MTL prompting). Again, no consultees reached a "Level 3" need for support.

Support locus. The range of locations where supports were provided as part of the current study were relatively limited. Locations ranged in their application, from electronic (i.e., email or text message), to a mock setting, to the target classroom setting. During the initial training, supports were offered in a mock setting, which essentially means that it was not in the target academic setting and no students were present. It involved the consultee practicing implementation of the BSP with the researcher in an empty classroom or other private setting at the preschool. The other location where supports were provided was in the actual target preschool setting with the target student, which varied by target student.

Support format. The format of support provided as part of the current study ranged from electronic (i.e., email or text message) to one-on-one support.

Delivery of materials. Intervention materials utilized in the current study varied by student. However, training materials included training handouts, treatment fidelity checklists, and thumb drives containing video models created during training. In the first level of the model, consultees were only oriented to the materials with a reminder email or text message. For all subsequent levels of the model, consultees were offered new printed versions in person.

Accumulative opportunities to contact expert guidance. Since levels of support were introduced sequentially, higher levels of support were also associated with having more opportunities and increased time receiving feedback, praise, and other forms of expert guidance.

Purpose of the Current Investigation

The purpose of the current investigation was to determine the effectiveness of a responsive and structured multilevel methodology for supporting paraprofessional consultees in the implementation of behavioral support plans, using evidence-based teaching practices and principles in inclusive early childhood special education contexts for children with developmental delay and behavior problems (i.e., challenging behavior). Additional purposes of the current investigation were to discretely explore the time and associated costs required to promote sufficient treatment fidelity (i.e., treatment efficiency), and to learn the acceptability of the study's procedures.

Research Questions

Primary research questions. 1) Is there a functional relation between application of a multilevel consultation model and increased adherence to behavioral supports for paraprofessionals in an early childhood special education setting? The relation between the proposed model of support and paraprofessional treatment fidelity would then provide a platform for assessing another empirical question through a cascading logic: 2) Research Question 2: Is

there a functional relation between application of a multilevel consultation model and a decrease in challenging behavior for students in an early childhood special education setting?

Secondary descriptive questions. 1) Acceptability: How acceptable are the supports provided as part of the multilevel consultation model? 2) Efficiency: How much time and what dosage of which levels of support are required for consultees to reach an acceptable level of fidelity? 3) Maintenance: At what level is fidelity maintained by paraprofessionals when the multilevel supports are faded?

CHAPTER II

METHODOLOGY

The purpose of the current chapter is to describe the methodology associated with the

current investigation. This chapter will provide information about the participants, setting,

materials, variables, interobserver agreement, and research design for the present investigation.

Measures including direct and indirect forms of functional assessment, treatment fidelity, and

treatment acceptability will be discussed. A description of the procedures related to behavior

support plan design and implementation will be presented. Finally, data analysis of all measures

will be described.

Participants

Student inclusion criteria. This study involved five preschool students (i.e., 4-5 years

old) who were reported by teachers and parents as having one or more developmental delays and

challenging behavior in the preschool setting. The total number of students included in the study

depended on both the minimum number of paraprofessionals available to serve as

interventionists, and the feasibility of collecting all relevant data in a timely manner. Students

met the following criteria in order to qualify for the study: 1) the student must have an identified

developmental disability or delay and presently be receiving services through an Individualized

Family Service Plan (IFSP). 2) The student must have a teacher who rates their challenging

behavior in a target setting as unacceptable in level, intensity, frequency, or variability (as

indicated by the Acceptability of Current Levels of Challenging Behavior scale). 3) The student

must have a history of challenging behavior in a target educational setting, dating back to at least

30 calendar days prior to the initial teacher functional assessment interview (i.e., FACTS

interview). In other words, the challenging behavior must not have been newly expressed in the

setting where behavioral assessment and treatment would eventually occur. (4) There must not be any specialist-coordinated, individualized behavioral interventions already in place for the target student in the target setting.

Consultee inclusionary criteria. Five teaching assistants (TAs) across three classrooms within an inclusive early childhood special education setting were invited to participate in the study as consultees. TAs met the following criteria in order to qualify for the study: 1) The TA must have less than a bachelor's degree or have a degree in a field unrelated to behavior analysis or teaching. This maximum education criteria was thought to reduce the likelihood that a TA's prior knowledge about a specific behavioral or teaching strategy would affect value for, or implementation of, that strategy. In addition, using TAs with minimal relevant training likely helped strengthen the meaningfulness of the results, given that teacher and student outcomes were influenced in the anticipated direction. 2) TAs must be planning to remain employed and able to participate in the study until the end of the school year (i.e., middle of June 2017). 3) In addition, preference was given to TAs who had relatively fewer years of experience working with students with disabilities and challenging behavior.

Recruitment procedure. The recruitment procedure for the study is outlined in the model below. First, the Springfield School District Autism and Behavior Specialist was contacted to identify local special education preschool classrooms with TAs and students who likely meet the study criteria. Second, the lead teachers of identified classrooms were contacted by phone or email to assess interest in having their students and staff participate in the study. The study aims, proposed procedures, and likely benefits and risks were discussed with the lead teacher. Parents of children who the teacher identifies as likely to benefit from participation in the study were contacted to assess interest in participating. Again, the study aims, proposed

procedures, and likely benefits and risks of participating in the study were discussed with the parent. Third, informed consent was obtained from willing parents at their child's classroom before or after school. Fourth, a Functional Assessment Checklist for Teachers and Staff (FACTS) interview was conducted with the lead teacher or a paraprofessional who works regularly with the student to collaboratively (a) identify a target setting or routine (b) operationally define a target challenging behavior, and (c) develop a hypothesis that outlines relevant environmental contingencies maintaining the target challenging behavior in the target setting. Fifth, at least one independent observer conducted at least two direct behavioral observations in the target setting to confirm the hypothesis. Students with a clear primary function of challenging behavior were retained for the study. If it had been difficult to distinguish a clear primary function of challenging behavior, additional observations would have been conducted and conditional probabilities may have been calculated in an attempt to identify a primary function of challenging behavior. Otherwise, the student would have been referred to the district Autism and Behavior Specialist for additional district support and the student would not have participated in the study. No students required additional observations to identify a clear function of their challenging behavior. Last, for students with a clearly defined primary function of challenging behavior, a behavior support plan was developed and used for the study. See Figure 14 for a visual depiction of the participant recruitment procedures.

Student demographics. Target student demographic data are presented in Table 1. Demographic data were collected from student files and conversations with Early Education Program (EEP) administrators and lead teachers. Target student participants ranged in age from three years, 11 months, to five years, three months (M = four years, five months) at the beginning of the study. All five target students were identified as males. Four target students were

identified as Caucasian, while one target student (i.e., TS5) was identified as Caucasian, Hispanic, and Native American. All five target students were identified as having developmental delay (DD) across at least two of the following domains: expressive communication, receptive communication, adaptive behavior, fine motor, gross motor, socioemotional, and cognitive domains. Target students ranged from two to seven domains of DD endorsed. TS2 also qualified for educational services under an educational eligibility of autism. Age at educational eligibility ranged from two years, 11 months, to four years, three months (M = three years, three months) at the beginning of the study. TS5 was diagnosed with autism at age five and TS4 was diagnosed with articulation disorder, verbal dyspraxia, mixed expressive and receptive language disorder, and developmental coordination disorder at age three years, six months.

Teaching assistant demographics. Teaching assistant (TA) demographic data are presented in Table 2. Demographic data were collected from interviews with TAs. All five TAs identified as Caucasian women. Their ages ranged from 20 to 40 at the beginning of the study (M = 29.2 years) and their experience working with children with disabilities ranged from 0.9 to 12 years (M = 6.3 years). Acquired education ranged from a General Education Degree (GED) to Bachelor's Degree. When asked about what they thought about ABA, the average response was a 1.2 (range = 1-2) on a six-point scale from 0 to 5, indicating minimal knowledge about ABA. See Table 2 for more details on individual responses and responses to additional questions.

Setting

A target setting or routine was identified within the classroom for each student, where all direct assessment and treatment occurred. Exceptions included routines that involved traveling outside the classroom (e.g., bathroom routine—transitioning from classroom to bathroom and back to classroom). Each target setting or routine met the following criteria: 1) duration must be

a minimum of 10 minutes and a maximum of 20 minutes, 2) occur at least twice per day (every school day), 3) occur during a time when challenging behavior is reported by the teacher to occur (a) at relatively higher levels than other settings or routines and (b) at an unacceptable level, intensity, frequency, and/or variability (as indicated by the Acceptability of Current Levels of Challenging Behavior scale), 4) occur at a consistent time of day, 5) and be able to support multiple independent observers and other adults.

Materials

Materials used as part of the current study primarily took the form of printed materials and preferred items to be used as putative reinforcement for desired behavior. Printed copies of the following materials were utilized: 1) administrative materials such as those used for recruitment, informed consent, and consultee participation agreement. 2) All assessment materials, including, but not limited to: (a) FBA checklists and (b) preference assessments. 3) Handouts to be used during the initial BSP training. 4) Treatment fidelity checklists (both consultee and independent observer versions). 5) Intervention materials were in a number of different formats, including, but not limited to, reusable laminated cards such as: (a) five by seven inch laminated picture schedules, (b) "First-Then" picture boards, and (c) token boards for use with a token economy. 6) Preferred items that were used for putative reinforcement varied widely, depending on teacher- and parent-identified preferred items of each child.

Independent Variable

The independent variable (IV) for the current study was a treatment package (i.e., multilevel consultation model) designed to support teaching assistants who were observed to implement a BSP with low treatment fidelity following an initial training with the researcher. The treatment package was comprised of three levels of support, which progressively built from

Level 1 to Level 3 in the degree to which expert time and resources were provided. Specifically, levels incorporated varying 1) degrees of guidance and 2) timing of prompts, which represent the factors most associated with variations in teaching across the levels. In addition, levels also incorporated varying 3) location, 4) format, 5) delivery of materials, and 6) accumulated amount of support. For example, as can be seen in the model below, the support structure of the multilevel consultation model provided an increasing level of guidance, from Level 1 (i.e., minimally-guided or limited prompting) to Level 3 (i.e., highly guided or extensive prompting). In essence, each subsequent level of support involved increasingly detailed prompts with fewer opportunities for consultees to commit errors.

Following individualized training on a target student's BSP, consultees were provided with the opportunity to implement the BSP in the target setting without in person support. Delivery of Level 1 of the treatment package was contingent on treatment adherence that fell below a pre-established advancement criteria (i.e., 70% adherence; see "Advancement criteria" in "BSP implementation" below for more details). After contacting Level 1 supports, a consultee re-entered the target setting and had the opportunity to independently practice implementing the BSP again. If the consultee maintained adherence above the advancement criteria, additional supports were not provided. However, if the consultee met the advancement criteria again, they received the next level of supports, and so on. See Figure 15 for a visual depiction of Level 1-3 supports.

Dependent Variables

The primary dependent variable (DV) was the teaching assistant's treatment adherence to a multicomponent behavioral support plan in a target preschool setting. The secondary DV for this study was the percentage of intervals with challenging behavior in a 10- to 20-minute

session in the target setting. Fifteen-second intervals were used for a total of 40 to 80 intervals per session. Challenging behavior was defined operationally for each participant and potentially included all behaviors in a target response class.

Measurement

Teacher demographics survey. Teaching assistants were assessed in the following areas prior to involvement in the study: 1) level of education, 2) age, 3) duration of plan to be employed in current position, 4) knowledge of behavioral intervention strategies prior to intervening, 5) thoughts and feelings about applied behavior analysis, 6) experience adhering to any behavioral or other interventions, and 7) teacher experience working with children with autism or other developmental disabilities. The survey was delivered in person.

Preference assessment. Teaching assistants were trained during the initial training to conduct a multiple-stimulus without replacement preference assessment (MSWO; DeLeon & Iwata, 1996) procedure to identify items or activities to use as part of the consequence component of the BSP for each student. Picture cards were used to represent activities (e.g., a 'high five'). Teaching assistants were trained to provide an array of approximately three to four items to each participant per session. The target students were instructed to select one item or activity (i.e., "Pick one"), and then they were provided access to the item or activity for 20 seconds. Thereafter, the teaching assistant was instructed to remove the item or stop the activity and rearrange the remaining items in the array. The target student was then instructed to select another item or activity (i.e., "Pick one"). This procedure continued until no items remained in the array (see Form 12). The item or activity selected first during the preference assessment was assumed to be the most highly preferred item that day.

Treatment fidelity. The degree to which a BSP was implemented with fidelity was measured using a behavior support plan checklists, which was developed to assess teaching assistants' adherence to target student BSPs. This form was filled out during direct observations by an independent observer who was individually trained by the researcher using behavioral skills training. In addition, teachers were provided a similar version of the behavior support plan checklist to use to self-monitor BSP adherence. Direct observations and self-monitoring using this form was measured during the treatment and maintenance phases of the study only (see Forms 2, 3, 4, 5, and 6).

Adherence. The Fidelity of Implementation Checklist is a checklist of all intervention steps, where independent observers and teaching assistants place a check mark next to each step completed. Implementation adherence was calculated as a percentage of steps completed for each session by dividing the number of steps completed by the number of steps in the plan. Each step was rated as 0 = not met, 1 = partially met, or 2 = fully met. For example, a plan with five steps would have a total of 10 points possible. A score of 9 out of 10 would indicate 90% adherence to the plan.

Treatment acceptability. In order to assess the acceptability of the multilevel consultation model, the Consultation Model Treatment Acceptability Rating Form (CM-TARF) was administered. The CM-TARF consists of sixteen items, rated by TAs using a six-point Likert-type rating scale. An average score was computed for each respondent. A higher score indicates higher treatment acceptability—with possible averages ranging from zero to five. The CM-TARF was based on the structure and scale of the Abbreviated Acceptability Rating Profile (AARP; Tarnowski & Simonian, 1992). Factor analyses of the AARP conducted by Tarnowski and Simonian revealed a unitary factor which accounted for 84.9% of the variance responding

with item loadings ranging from .89 to .96, indicating strong internal validity. The internal consistency of the AARP is rated at .98, indicating strong reliability. The researcher was responsible for implementing this CM-TARF. See Form 16 for the CM-TARF full form. A slightly altered version of the CM-TARF was also created for Early Education Program administrators (CM-TARF-admin), to assess their levels of acceptability of the support and training provided to lead teachers and teaching assistants (13 items) and their willingness and interest in the future to engage in consultation and research similar to that conducted as part of the current investigation (six items). See Form 17 for the CM-TARF-admin full form.

In order to assess the acceptability of the behavior support plans developed for each target student, the Behavior Support Plan Treatment Acceptability Rating Form (BSP-TARF) was administered. The BSP-TARF consists of sixteen items, rated by lead teachers and TAs using a six-point Likert-type rating scale. An average score was computed for each respondent. A higher score indicates higher treatment acceptability—with possible averages ranging from zero to five. The BSP-TARF was also based on the structure and scale of the AARP form (Tarnowski & Simonian, 1992). Versions of the BSP-TARF were created to assess acceptability at both pre-assessment (see Form 14) and post-assessment (see Form 15).

To assess TAs' perceptions about various dimensions (e.g., frequency, intensity) of target student challenging behavior in the target setting, the Acceptability of Current Levels of Challenging Behavior form was developed for this study. The form documents quantitative teacher ratings of satisfaction with characteristics of target student behavior and perception of the appropriateness of target student behavior. The survey contains nine items on a 1–6 Likert-type scale with individualized response options specified for each item. An average score was computed for each respondent. A higher score indicates higher acceptability—with possible

averages ranging from one to six. No data are available for the reliability or validity of the measure, as it was developed for this study. Separate forms were created to apply to the target setting (for the TA to complete; see Form 8), as well as the whole classroom (for the lead teacher to complete; see Form 9). The researcher was responsible for implementing this measure.

Functional behavior assessment (FBA). The FBA process included both indirect and direct measurement systems. First, the lead teacher of the classroom where each target student attended was interviewed using a semi-structured interview process designed to help identify a target setting, identify and define target challenging behavior(s), and to identify environmental contingencies maintaining challenging behavior(s) in the target setting. Next, direct observations of the target student were conducted by an independent observer to evaluate hypotheses formed in the indirect assessment procedures.

Indirect measurement. The Functional Assessment Checklist for Teachers and Staff (FACTS) (Adapted by C. Anderson & C. Borgmeier, 2007, from March et al., 1999) was completed with each target student's lead teacher by the researcher. Students and parents are sometimes also interviewed as part of the FBA process, however no parents or target students were interviewed for behavior assessment purposes as part of the current study. See Form 1 for the FACTS form and see Form 10 for a FACTS procedural fidelity checklist. During the interview, a single target behavior (e.g., hitting) or a single target response class (e.g., physical aggression) was selected for intervention for each target student, depending on the reported variability in response topography of the challenging behavior in the target setting. The researcher interviewed the lead teacher to identify and hypothesize the antecedent conditions that precede challenging behavior, consequences delivered contingent on challenging behavior, and setting events or motivating operations hypothesized to impact the likelihood of challenging

behavior. The interviews were concluded with the lead teacher and the researcher collectively determining a summary statement hypothesizing specific antecedents, consequences, and setting events or motivating operations that influence the identified challenging behavior (or response class) in the target setting. The cooperating lead teacher rated their level of confidence in the accuracy of the summary statement on a scale of one to six, from one, "Not real sure" to six, "100% sure, no doubt." If the lead teacher agreed that the summary was accurate, the information served as a referent hypothesis to be confirmed with direct observations.

Direct measurement. In evaluate hypotheses developed in the FBA interview and assess the occurrence of student challenging behavior, direct behavioral observations were conducted by independent observers, which included the researcher. Individualized operational definitions were created which were explicit, objective, clear, and complete (Sattler, 2002) and included a single target behavior (e.g., hitting peers) or behaviors in a target response class (e.g., hitting, spitting, and kicking may all be included in the response class "aggressive behaviors"). Operational definitions were written with sufficient detail so independent observers could attain a high level of agreement with minimal training. Observers were graduate students in school psychology and special education and one undergraduate student in psychology. To meet competency, observers were required to attain 90% or higher interobserver agreement with the researcher using 20 minute video examples with example operational definitions of challenging behavior. The data sheet was titled and labeled electronically by the researcher with the operational definition and examples/nonexamples prior to baseline data collection. Challenging behavior was recorded during the identified window of time that encompasses the target setting. A partial interval recording system was used to record target student challenging behavior, which facilitates comparison across target students. The number of intervals where challenging

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behavior was observed was divided by the total number of possible intervals for a percentage of intervals with challenging behavior. Certain dimensions of behavior may more accurately reflect levels of challenging behavior for some students, in which case, frequency, duration, latency, or intensity would have been used instead. Challenging behavior for all target students was recoded using partial interval recording. During data collection, the researcher coordinated with lead teachers to determine observation areas in the classroom least likely to result in distraction. See Form 7 for an example data collection form.

Interobserver Agreement

Interobserver agreement (IOA) was collected for the following variables: 1) TA adherence to the BSP and 2) target student challenging behavior. Interobserver agreement was computed on a step by step (i.e., ratings of 0, 1, or 2, for each step of the BSP) basis for adherence and on an interval by interval (i.e., using 15-second partial interval recording) basis for challenging behavior across both baseline and intervention phases. Occurrence of agreement was scored only when the two observers indicate identical ratings for a step or interval. Percentage agreement was calculated by dividing the number of trials with an agreement by the total number of trials (complete steps or total intervals), and multiplying by 100.

Fewer baseline observations were collected for BSP adherence than challenging behavior during baseline because BSP adherence was probed rather than continuously monitored. An equal number of observations were conducted in the intervention phase for BSP adherence and challenging behavior for TS2-TA2, TS4-TA4, and TA5, TS5. Two fewer observations of BSP adherence were collected for TA1 in the intervention phase compared to observations of challenging behavior, and one fewer observations of BSP adherence were collected for TA3. Discrepancies in the number of observations resulted from the order of training topics delivered

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to research assistants. During the three observations where challenging behavior data were collected and BSP adherence data were not, the assigned independent observers were not yet trained to criterion for collecting data on BSP adherence at that time, but they were trained to criterion to collect data on challenging behavior.

IOA: Teaching assistant adherence. BSP adherence for each TA was monitored by two independent observers to assess interobserver agreement for 24% of sessions (4/17 sessions) for TA1, for 25% of sessions (4/16 sessions) for TA2, for 25% of sessions (4/17 sessions) for TA3, for 20% of sessions (2/10 sessions) for TA4, and for 25% of sessions (4/16 sessions) for TA5.

Interobserver agreement for TA1's BSP adherence across baseline and intervention phases was 96% (range, 92% to 100%). Interobserver agreement for TA2's BSP adherence across baseline and intervention phases was 92% (range, 88% to 100%). Interobserver agreement for TA3's BSP adherence across baseline and intervention phases was 94% (range, 92% to 100%). Interobserver agreement for TA4's BSP adherence across baseline and intervention phases was 98% (range, 95% to 100%). Interobserver agreement for TA5's BSP adherence across baseline and intervention phases was 90% (range, 84% to 98%).

IOA: Target student challenging behavior. Challenging behavior by each target student was monitored by two independent observers to assess interobserver agreement for 25% of sessions (6/24 sessions) for TS1, for 23% of sessions (6/26 sessions) for TS2, for 21% of sessions (7/33 sessions) for TS3, for 26% of sessions (8/30 sessions) for TS4, and for 27% of sessions (10/37 sessions) for TS5.

Interobserver agreement for TS1's challenging behavior across baseline and intervention phases was 98% (range, 95% to 100%) Interobserver agreement for TS2's challenging behavior across baseline and intervention phases was 98% (range, 96% to 100%). Interobserver agreement

for TS3's challenging behavior across baseline and intervention phases was 93% (range, 89% to 100%). Interobserver agreement for TS4's challenging behavior across baseline and intervention phases was 97% (range, 90% to 100%). Interobserver agreement for TS5's challenging behavior across baseline and intervention phases was 91% (range, 84% to 98%).

Research design

A single subject research design was used to assess the utility of the multilevel consultation model 1) to promote treatment adherence of a function-based BSP and 2) to reduce challenging behavior in a target setting. Specifically, a concurrent multiple baseline design across consultee-student dyads was used. Key advantages of using a multiple baseline design (MBD) across participants are 1) multiple subjects may contact intervention in one or more settings, 2) there is no need for a reversal of behavior, and 3) staggered implementation of the independent variable and the multi-phase structure of the design allows for clear opportunities to demonstrate basic effects and a functional relation (Kratochwill et al., 2013). The concurrent multiple baseline design across dyads for this study included three phases: Baseline, intervention (i.e., BSP implementation and multilevel consultation model support contingent on treatment adherence), and maintenance.

To reduce the amount of time each TA and target student (TS) remained in baseline, particularly those in the fourth and fifth tiers of the design, a dual regulation randomization procedure (Koehler & Levin, 1998) was utilized prior to collecting baseline data. In a multiple baseline design, it is standard practice to establish a problematic pattern of responding in baseline (for each tier) prior to initiating intervention at the next tier (i.e., with the next TS-TA dyad; Gast & Ledford, 2014). However, in certain cases, intervention initiation at any particular tier may be postponed if baseline data in the previous tier are not stable or indicative of a

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problem. In addition to randomization, the researcher decided to initiate intervention simultaneously for dyads in the fourth and fifth tiers as an additional measure to aid in reducing the time participating dyads remained in baseline. This decision was justified by considering there were already sufficient opportunities in previous tiers to display a basic effect across three points in time (Kratochwill et al., 2010).

First, TS-TA dyads were randomly assigned a position (tiers 1-5) within the multiple baseline design. Then, TS-TA dyads were randomly assigned a start point for the intervention phase (i.e., number of sessions required in baseline before initiating intervention). The lengths of the baselines were randomly assigned within a researcher-selected range of possible intervention start dates, using a randomized start point design procedure (Kratochwill & Levin, 2010). Ranges of potential start dates were chosen to ensure that the study could be completed before the school year came to an end, and so that baselines were appropriately staggered according to single-case research design logic (Kratochwill & Levin, 2010). A random number generator was used through Microsoft Excel to randomize 1) each TS-TA dyad's position within the multiple baseline design and 2) intervention start points for each TS-TA dyad. The same procedure was used with potential start points for each TS-TA dyad. The range of possible intervention start points for the first TS-TA dyad, TS1-TA1, was between seven to eight days. The randomly selected start point for TS1-TA1 was day eight. For each subsequent TS-TA dyad, two possible initial days were selected with no overlapping potential days (except for the planned overlap on tiers four and five), in an effort to stagger the initiation of intervention for each dyad, which is inherent in multiple baseline design structure (Gast & Ledford, 2014; Kratochwill et al., 2013). For the second TS-TA dyad, TS2-TA2, the first possible intervention start point was day 10. The randomly selected start point for TS2-TA2 was day 11. For the third TS-TA dyad, TS3-TA3, the

first possible intervention start point was day 14. The randomly selected start point for TS3-TA3 was day 14. For the fourth TS-TA dyad, TS4-TA4, and the fifth TS-TA dyad, TS5-TA5, the first possible intervention start point was day 17. The randomly selected start point for TS4-TA4 and TS5-TA5 was day 17. See figure 16 for a description of the predetermined timeline for the randomized multiple baseline design.

Baseline. The baseline phase involved baseline data collection for challenging behavior following the identification of a target challenging behavior in a target preschool setting. Following baseline data collection for each target student, each TA was trained on the BSP specific to their associated target student.

Intervention. During the intervention phase, BSP implementation was initiated with each TA and supports associated with the multilevel consultation model were delivered contingent on BSP adherence. TAs were asked to implement the strategies in the target setting. Data were collected on BSP adherence and challenging behavior throughout intervention. During BSP implementation, if consultees implemented below the pre-established BSP adherence advancement criteria (see ''Advancement criteria'' below), they received the next level of support associated with the multilevel consultation model. If TAs did not meet the criteria, they moved directly to the maintenance phase of the study.

Advancement criteria. TAs received increasing amounts of training and support when BSP adherence fell below a specified criteria for more than one observation, combined with no observable improvements. Specifically, if adherence to the BSP dropped below 70% for two consecutive observations *and* there is not more than 10% improvement in adherence across the two observations, the advancement criteria was met, and the next level of support was provided. If TAs successfully implemented a BSP with levels of adherence that did not meet the

advancement criteria to initiate further support, performance feedback was provided in brief, weekly check-ins, which lasted less than 10 minutes.

Multilevel consultation model. The multilevel consultation model involved implementation of the primary independent variable of the study, where TAs received increasing levels of support and guidance contingent on meeting the advancement criteria. Each time the advancement criteria was met for each TA, the next level of support was offered.

Maintenance. During the maintenance phase of the study each TS-TA dyad was monitored for challenging behavior and treatment fidelity on a reduced schedule in the target setting (e.g., 1-2 times per week) and no intervention support were provided.

Procedures

Overview. Following successful recruitment of the minimum number of participants, informed consent was obtained from interested and willing families. Next, FBAs were conducted to inform development of a function-based BSP. Next, TAs participated in an initial training on the BSP, followed by implementation of the BSP while the researcher and/or research assistants monitored BSP adherence. Next, TAs were offered varying levels of support contingent on levels of treatment fidelity. Finally, TAs moved into the maintenance phase of the study, contingent on a number of consecutive sessions with reported acceptable levels of challenging behavior and BSP adherence.

Business as usual. The initial steps of the current investigation represented a replication of common behavioral consultation practices, where consultees are offered quality training and evidence-based intervention strategies, but little-to-no in person support.

Functional behavior assessment. An FBA interview was conducted with the lead teacher of each target student to identify a target setting for intervention and environmental

contingencies that were associated with challenging behavior in that setting. Direct behavior observations were then conducted to evaluate the hypotheses developed in the FBA interview. These data served as baseline data for the research study.

Behavior support plan development. A multicomponent behavior support plan was developed for each target student which outlines discrete antecedent, teaching, and consequence strategies. The framework used to conceptualize antecedent and consequent events as they pertain to challenging behavior is commonly referred to as the competing behavior pathway (Sugai et al., 2000). See Figure 1 for an example competing behavior pathway. This framework guides practitioners to not only consider antecedent and consequent conditions occasioning challenging behavior, but it suggests influence of broader contextual influences (i.e., setting events) on challenging behavior. In addition, a competing behavior pathway entices practitioners to develop goals for desired behavior, as well as determine immediately acceptable alternate behaviors, which helps to create a focus on the teaching of new patterns of behavior. See Figure 2 for a behavior support plan development template, Form 11 for a procedural fidelity checklist for BSP development, and Forms 2, 3, 4, 5, and 6 for BSP checklists developed for each target student's BSP. In addition, each BSP had a built-in fading protocol for slowly thinning the reinforcement schedule used in the consequence portion of the BSP, thus programming for skill maintenance. The fading protocol was designed to support maintenance of improvements in behavior with naturally-occurring contingencies in the target student's classroom environment (e.g., praise) rather than less natural ones (e.g., candy or special activities) used in some consequence portions of target student BSPs. Also, the model-lead-test (MLT) steps of behavioral skills training with feedback were taught to TAs to use with each target student for teaching and rehearsing appropriate replacement behavior with examples and nonexamples. TAs

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were trained to reduce MLT to only "test" once the target student is 100% accurate in the "test phase" two sessions in a row. This training procedure also programmed for maintenance by planning for future contingencies to include naturally-occurring classroom contingencies.

Initial training. An initial training was conducted with the researcher and TA in a one-on-one format. The training was broken up into two parts. Form 13 provides the procedural fidelity checklist of items for the initial training. Part I of the initial training lasted approximately 30 minutes, and sometimes occurred on the same day as Part II, depending on TA time and availability. Part I provided TAs with an overview of the behavioral consultation approach and addressed administrative requirements of the study. Part II of the initial training provided TAs with one-on-one coaching (using behavioral skills training) on the implementation of the BSP that was specific to their associated target student. TAs were guided through practice opportunities until they could implement the BSP to 100% fidelity in the mock setting, then they were videotaped independently implementing the BSP in the mock setting. Independent implementation included no feedback *during* implementation, only after. Part II took approximately 90 minutes for each TA.

BSP implementation. Following the initial BSP training, the TA was instructed to deliver the BSP in the target setting with the resources and training provided while adherence to the BSP was monitored by one or more independent observers. In addition, the consultee was asked to rate their level of acceptability of the target student's challenging behavior on an ongoing basis.

Fidelity support and maintenance. Next, BSP implementation support was offered to TAs, contingent on BSP adherence. TAs with higher adherence to the BSP received less or no support in addition to the initial training, and TAs who were observed to implement the BSPs

with lower adherence (i.e., below 70%) received more support. Eventually, all TAs moved to the maintenance phase of the study where all supports were withdrawn.

Multilevel supports. BSP adherence continued to be monitored until (a) the advancement criteria were met (see "Advancement criteria"), at which time the multilevel consultation model went into action, *or* (b) adherence remained above 70% and TAs and lead teachers reported satisfaction with current levels of challenging behavior, at which time no further intervention was provided and the dyad moved to the maintenance phase. However, if adherence was observed to be above 70% and TAs reported dissatisfaction with current levels of challenging behavior, consultees were allowed to move to the next level of support if desired. Not TAs met this criteria or made this request. When advancement criteria were met for the first time, Level 1 of the multilevel consultation model was delivered. BSP adherence continued to be monitored and progression to Level 2 was delivered contingent on the same criteria, and so on, until level 3 supports were implemented. Level 3 supports would have been implemented for a maximum of four total sessions. No TAs met the criteria to receive Level 3 supports.

When Level 2 prompts were delivered after TAs met the advancement criteria for the second time, a brief meeting was arranged between the researcher and TA for the researcher to provide verbal and visual performance feedback on recent overall adherence. Overall adherence was broken into adherence to 1) antecedent strategies, 2) behavior teaching or rehearsal, and 3) consequence strategies to provide behavior-specific praise to TAs for current levels of multiple strategy sets, and to differentially reinforce for relatively higher levels of adherence to certain sets of BSP steps. Visual performance feedback was provided using graphical displays of TA adherence and target student challenging behavior data and a "rainbow sheet" depicting their approximate rating of adherence in each strategy set on a colored number line.

Advancement criteria. Consultees received increasing amounts of training and support when BSP adherence fell below specified criteria for more than one observation and significant improvements were observed. Specifically, if adherence to the BSP dropped below 70% for two consecutive observations *and* there was not more than 10% improvement in adherence across the two observations, the advancement criteria was met.

Maintenance. During maintenance, each TS-TA dyad was monitored for challenging behavior and BSP adherence on a reduced schedule (e.g., 1-2 times per week) and no intervention support was provided. Also, in order to enter the maintenance phase, TA ratings of acceptability of the target student's challenging behavior were required to be elevated to the level of at least "acceptable" as rated by the TA on the ACLCB form. Maintenance data were collected until the study ended for all TS-TA dyads.

Adapting supports mid-study. A TA's and lead teacher's satisfaction with current levels of challenging behavior was assessed following each observation of the target student in the target setting. See Form 8 for the Acceptability of Current Levels of Challenging Behavior form for the target setting. It was anticipated that one of two situations could have arisen during the current study. 1) A consultee may be implementing the BSP with less than perfect adherence, while challenging behavior subsides to a degree that is acceptable to the lead teacher and consultee. In which case, the Acceptability of Current Levels of Challenging Behavior form would inform the researcher of the degree to which the TA and lead teacher felt the need to continue to access support with the target student in the target setting. Following any ACLCB ratings that averaged between 5 ("satisfied") and 6 ("very satisfied") over more than one session, TAs and lead teachers were asked if they were interested in continuing in the study. If there was interest in ending participation, the consultee was asked whether maintenance probes may be

conducted weekly. 2) Contrastingly, it was hypothesized that a TA may potentially be implementing a BSP with perfect adherence, while challenging behavior did not subside to a degree that was acceptable to the lead teacher and TA. In which case, the Acceptability of Current Levels of Challenging Behavior form would inform the researcher of the need to reassess the function of the challenging behavior of the target student in the target setting. At that time, supports could have been removed, added, or modified, and an initial training session would be conducted again, followed by Level 1 supports contingent on the advancement criteria, and so on. No TAs required adapting supports mid-study.

Data Analysis

Visual analysis. Analyzing the results of this study involved visual analysis of the data within each phase, as well as across each phase of the study for the two dependent variables in the study (i.e., BSP adherence by the TA and target student challenging behavior). Within each phase of the study, analysis involved visual inspection of 1) level—the mean of a set of data within a phase, 2) trend—the slope of the best-fit line describing data within a phase, and 3) variability—the level deviation of data around the slope of the best fit line (i.e., range and standard deviation of a data path). Analysis of data across study phases involved visual inspection of 1) overlapping data—the percentage of data from the intervention phase (i.e., BSP implementation) that overlaps with the range of data from the previous phase (i.e., baseline phase), and 2) immediacy of effect—the magnitude of change (i.e., in level, trend and/or variability) between the last set of at least 3 data points in one phase and the first set of at least 3 data points in the next phase.

Effect size. Non-overlap indices (Tau-U) were calculated to provide a summary representation of study results and to determine the effectiveness of the initial training and

multilevel consultation model on target student challenging behavior. Unlike other non-overlap methods, Tau-U is not affected by a ceiling effect and performs well in the presence of trend in baseline (Tarlow, 2016). Tau-U was calculated using the Tau-U calculator for single-case research (http://www.singlecaseresearch.org/calculators/tau-u). The obtained effect sizes were compared to Cohen's d guidelines (1988) to determine the magnitude of the effect. According to Cohen's d guidelines, d = 0.20 indicates a small effect, g = 0.50 indicates a medium effect, and g = .80 indicates a large effect. The researcher controlled for trend in baseline. A Tau-U of 1 or -1 indicates there were no overlapping data between phases.

CHAPTER III

RESULTS

This section describes the results of the study, including assessment (i.e., lead teacher FBA interviews), teaching assistant treatment fidelity (i.e., direct measurement of adherence to BSPs), and target student challenging behavior data (i.e., teacher ratings and direct observation). The results are presented in terms of effectiveness (establishing functional relations between intervention and outcomes), efficiency (providing dosage information), and acceptability (i.e., behavior support plan and consultation model acceptability).

Assessment

Indirect assessment: Lead teacher (LT) FBA interviews. Results from indirect assessment (i.e., lead teacher FBA interviews) for each target student are presented in Table 3. Target settings were determined for each target student based on lead teacher report of the setting with the highest frequency and severity of challenging behavior. Identified target settings for target students varied, including free play and clean up after free play, circle time, afternoon groups, and arrival and departure routines. Transitions to nonpreferred activities were included as part of target settings in some cases as well. Target challenging behaviors varied as well, including, aggression to peers, elopement, nonengagement, off-task behavior, and refusal. Hypothesized functions of challenging behavior for each participant varied as well, with hypotheses ranging from functions of peer attention, escape, and adult attention. Establishing operations were identified for two target students, including illness or fever and changing primary caregivers. Abolishing operations were identified for three target students, including illness or fever, constipation, sugary breakfast, allergy or sleep medications, low variability in

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available lunch items, and arriving late to school. A list of TAs who met the study criteria were also collected from lead teachers during these FBA interviews.

Direct assessment: Direct behavior observations. Results from baseline direct behavior observations for each target student are presented in Table 3. Target challenging behaviors for each target student, as well as their respective target settings, were confirmed in baseline observations. The average percent of intervals in baseline with challenging behavior for target students ranged from 33.5% to 84.8%.

Research Question 1: Is there a functional relation between application of a multilevel consultation model and increased adherence to behavioral supports for paraprofessionals in an early childhood special education setting?

Through direct observations, data were gathered of TA's adherence to their respective target student's behavior support plans, serving as the primary indication of TA treatment fidelity. During baseline data collection, direct observation probes of TA behavior plan adherence were recorded by video for retroactive comparison to post-intervention performance.

TA1. Results from direct observations of TA1's behavior support plan implementation adherence (for target student 1; i.e., TS1) are presented in Figure 3. Based on direct observations, TA1 implemented elements of the later-developed behavior plan at consistently low levels of adherence ($M = 2.1\%$), with very low variability ($SD = 2.9\%$) across three probes during baseline. Following behavioral skills training, a drastic immediacy of effect was observed (i.e., increase of 80.8% in adherence from last baseline data point), to a high and stable level of 94.9% adherence, with low variability ($SD = 7.5$) across 14 intervention sessions. TA1 did not reach the advancement criteria to receive further support during intervention, and thus no further intervention was provided following behavior skills training. Following the withdrawal of

supports after intervention, TA1 maintained improvements in adherence to the behavior plan, evidenced by a continuation of a high and stable level of responding ($M = 95.2\%$), with low variability ($SD = 4.7\%$) across 4 maintenance probes which spanned 35 school days and over 80 calendar days. Therefore, TA1 required behavioral skills training only to reach and maintain adequate (70% or higher) levels of adherence to TS1's behavior plan.

TA2. Results from direct observations of TA2's behavior plan implementation adherence (for TS2) are presented in Figure 4. Based on direct observations, TA2 implemented elements of the later-developed behavior plan at consistently low levels of adherence ($M = 0.0\%$), with minimal variability ($SD = 0.0\%$) across three probes during baseline. Following behavioral skills training, a slight immediacy of effect was observed (i.e., increase of 11.1% in adherence from the last baseline data point), to a low and stable level of 11.8% adherence across 2 intervention sessions. Two data points at this level of adherence met the advancement criteria. Thus, TA2 received level 1 supports. Following level 1 supports, a slight immediacy of effect was observed (i.e., increase of 14.2% in adherence from the last intervention data point), to a moderately low and stable level of 23.4% adherence across 2 intervention sessions. Two data points at this level of adherence met the advancement criteria again. Thus, TA2 received level 2 supports. Following level 2 supports, a large immediacy of effect was observed (i.e., increase of 64.8% in adherence from the last intervention data point), to a moderately high and stable level of adherence ($M = 76.5\%$) with low variability ($SD = 9.5\%$) across the 9 remaining intervention sessions. Following the withdrawal of supports after intervention, TA2 maintained improvements in adherence to the behavior plan, evidenced by a continuation of a moderately high and stable level of adherence ($M = 84.5\%$), with low variability ($SD = 1.7\%$) across 2 maintenance probes which spanned 31 school days and over 65 calendar days. Therefore, TA2 required level 2

supports to reach and maintain adequate (70% or higher) levels of adherence to TS2's behavior plan.

TA3. Results from direct observations of TA3's behavior plan implementation adherence (for TS3) are presented in Figure 5. Based on direct observations, TA3 implemented elements of the later-developed behavior plan at consistently low levels of adherence ($M = 1.4\%$), with low variability ($SD = 3.1\%$) across three probes during baseline. Following behavioral skills training, a large immediacy of effect was observed (i.e., increase of 96.3% in adherence from last baseline data point), to a moderately high level of adherence ($M = 75.9\%$) with decreasing trend and moderate variability ($SD = 13.2\%$) across 5 intervention sessions. The fourth and fifth intervention data points met the advancement criteria. Thus, TA3 received level 1 supports. Following level 1 supports, a moderate immediacy of effect was observed (i.e., increase of 22.7% in adherence from the third intervention data point), to a moderately high and moderately stable level of 85.2% adherence across the remaining 9 intervention sessions. Following the withdrawal of supports after intervention, TA3 maintained improvements in adherence to the behavior plan, evidenced by a continuation of a moderately high and stable level of adherence ($M = 91.2\%$), with low variability ($SD = 6.1\%$) across 3 maintenance probes which spanned 29 school days and over 65 calendar days. Therefore, TA3 required level 1 supports to reach and maintain adequate (70% or higher) levels of adherence to TS3's behavior plan.

TA4. Results from direct observations of TA4's behavior plan implementation adherence (for TS4) are presented in Figure 6. Based on direct observations, TA4 implemented elements of the later-developed behavior plan at consistently low levels of adherence ($M = 3.0\%$), with low variability ($SD = 2.9\%$) across three probes during baseline. Following behavioral skills training, a moderate immediacy of effect was observed (i.e., increase of 20.7% in adherence from the last

baseline data point), to a low and stable level of 24.2% adherence across 2 intervention sessions. Two data points at this level of adherence met the advancement criteria. Thus, TA4 received level 1 supports. Following level 1 supports, a large immediacy of effect was observed (i.e., increase of 66.3% in adherence from the last intervention data point), to a high and stable level of 85.2% adherence across the remaining 5 intervention sessions. Following the withdrawal of supports after intervention, TA4 maintained improvements in adherence to the behavior plan, evidenced by a continuation of a high and stable level of adherence ($M = 100\%$), with minimal variability ($SD = 0.0\%$) across 1 maintenance probe which spanned 30 school days and over 65 calendar days. Therefore, TA4 required level 1 supports to reach and maintain adequate (70% or higher) levels of adherence to TS4's behavior plan.

TA5. Results from direct observations of TA5's behavior plan implementation adherence (for TS5) are presented in Figure 7. Based on direct observations, TA5 implemented elements of the later-developed behavior plan at consistently low levels of adherence ($M = 0.0\%$), with minimal variability ($SD = 0.0\%$) across three probes during baseline. Following behavioral skills training, a moderate immediacy of effect was observed (i.e., increase of 37.5% in adherence from the last baseline data point), to a low level of adherence ($M = 25.9\%$) with decreasing trend across 2 intervention sessions. Two data points at this level of adherence met the advancement criteria. Thus, TA5 received level 1 supports. Following level 1 supports, a large immediacy of effect was observed (i.e., increase of 52.4% in adherence from the last intervention data point), to a high and stable level of 82.2% adherence across the remaining 11 intervention sessions. Following the first intervention session after initiating level 1 supports (66.7% adherence), prior to an opportunity to meet the advancement criteria, TA5 reached out to the researcher and requested that level 2 supports be provided. Thus, TA5 received level 2 supports. Following

level 2 supports, a moderate immediacy of effect was observed (i.e., increase of 22.2% in adherence from the last intervention data point), to a high and moderately stable level of adherence ($M = 83.7\%$) with low variability ($SD = 9.4\%$) across the 9 remaining intervention sessions. Following the withdrawal of supports after intervention, TA5 maintained improvements in adherence to the behavior plan, evidenced by a continuation of a high and stable level of adherence ($M = 88.3\%$), with minimal variability ($SD = 2.8\%$) across 4 maintenance probes which spanned 24 school days and over 60 calendar days. Therefore, TA5 required level 2 supports to reach and maintain adequate (70% or higher) levels of adherence to TS5's behavior plan.

Summary of results for Research Question 1. See Figure 13 for a graphical depiction of the concurrent multiple baseline design across participants (i.e., TS-TA dyads) depicting all five target students' challenging behavior data, along with all five teaching assistants' BSP adherence data. Five out of five possible basic effects were observed in the form of changes in treatment adherence in the predicted direction from baseline phase to intervention phase for the TAs who participated in the study, across at least three different points in time. However, the extent of the implications of these findings is somewhat weakened due to the fact that baseline data were not collected continuously for BSP adherence. These data provide sufficient evidence to suggest a functional relation between provided intervention supports and adherence to target student behavior support plans. That is, these results confirm the hypothesis that TAs will engage in significantly higher levels of BSP adherence following application of the multilevel consultation model. The relation between the proposed model of support and TA treatment fidelity then provides a platform for assessing another empirical question through a cascading logic (see Research Question 2 below).

Research Question 2: Is there a functional relation between application of a multilevel consultation model and a decrease in challenging behavior for students in an early childhood special education setting?

   TS1. Results from direct observations of TS1's challenging behavior (i.e., aggression toward peers) in his teacher-identified target setting (i.e., free play) are presented in Figure 8. Based on direct observations, TS1 engaged in a high and stable level of challenging behavior (M = 35.7% of intervals), with moderate variability (SD = 10.0% of intervals) during baseline. Following initiation of intervention, a drastic immediacy of effect was observed (i.e., decrease of 39.3% in challenging behavior from the last baseline data point), to a low and stable level of 2.2% of intervals with challenging behavior, with very low variability (SD = 1.8%) across 14 intervention sessions, suggesting a strong effect of the intervention. Further, Tau-U non-overlap index value of -1 suggested no overlapping data and thus, a high practical significance. Following the withdrawal of supports after intervention, TS1 maintained improvements in challenging behavior, evidenced by a continuation of a low and stable level of challenging behavior (M = 0.0%), with minimal variability (SD = 0.0%) across 4 maintenance probes which spanned 35 school days and over 80 calendar days.

   TS2. Results from direct observations of TS2's challenging behavior (i.e., elopement) in his teacher-identified target setting (i.e., circle) are presented in Figure 9. Based on direct observations, TS2 engaged in a high level of challenging behavior (M = 84.8% of intervals), with increasing trend and relatively moderate variability (SD = 16.4% of intervals) during baseline. Following initiation of intervention, a relatively large immediacy of effect was observed (i.e., decrease of 38.4% in challenging behavior from the last baseline data point), to a low and decreasing level of 19.0% of intervals with challenging behavior, with moderate variability (SD

= 15.9%) across 13 intervention sessions, suggesting a strong effect of the intervention. Further, Tau-U non-overlap index value of -.98 suggested very minimal overlapping data and thus, a high practical significance. Following the withdrawal of supports after intervention, TS2 maintained improvements in challenging behavior, evidenced by a continuation of a low and stable level of challenging behavior ($M = 7.8\%$), with minimal variability ($SD = 1.6\%$) across 2 maintenance probes which spanned 31 school days and over 65 calendar days.

TS3. Results from direct observations of TS3's challenging behavior (i.e., off-task, refusal) in his teacher-identified target setting (i.e., circle) are presented in Figure 10. Based on direct observations, TS3 engaged in a moderately high level of challenging behavior ($M = 41.2\%$ of intervals), with a slightly increasing trend and low variability ($SD = 10.0\%$ of intervals) during baseline. Following initiation of intervention, a relatively large immediacy of effect was observed (i.e., decrease of 39.4% in challenging behavior from the last baseline data point), to a low and stable level of 13.4% of intervals with challenging behavior, with low variability ($SD = 5.6\%$) across 15 intervention sessions, suggesting a strong effect of the intervention. Further, Tau-U non-overlap index value of -1 suggested no overlapping data and thus, a high practical significance. Following the withdrawal of supports after intervention, TS3 maintained improvements in challenging behavior, evidenced by a continuation of a low and stable level of challenging behavior ($M = 5.7\%$), with minimal variability ($SD = 3.8\%$) across 3 maintenance probes which spanned 29 school days and over 65 calendar days.

TS4. Results from direct observations of TS4's challenging behavior (i.e., off-task, nonengagement) in his teacher-identified target setting (i.e., afternoon gross motor and snack routines) are presented in Figure 11. Based on direct observations, TS4 engaged in a moderately high level of challenging behavior ($M = 33.5\%$ of intervals), with a slightly decreasing trend and

relatively high variability (SD = 19.1% of intervals) during baseline. Following initiation of

intervention, a relatively small immediacy of effect was observed (i.e., decrease of 14.2% in

challenging behavior from the last baseline data point), to a low and decreasing level of 4.5% of

intervals with challenging behavior, with low variability (SD = 4.8%) across 7 intervention

sessions, suggesting a strong effect of the intervention. Further, Tau-U non-overlap index value

of -.97 suggested very minimal overlapping data and thus, a high practical significance.

Following the withdrawal of supports after intervention, TS4 maintained improvements in

challenging behavior, evidenced by a continuation of a low and stable level of challenging

behavior (M = 0.0%), with minimal variability (SD = 0.0%) across 1 maintenance probe which

spanned 30 school days and over 65 calendar days.

TS5. Results from direct observations of TS5's challenging behavior (i.e.,

nonengagement) in his teacher-identified target setting (i.e., arrival and departure routines) are

presented in Figure 12. Based on direct observations, TS5 engaged in a high and stable level of

challenging behavior (M = 79.2% of intervals) with moderate variability (SD = 12.8% of

intervals) during baseline. Following initiation of intervention, a large immediacy of effect was

observed (i.e., decrease of 63.6% in challenging behavior from the last baseline data point), to a

low and decreasing level of 14.1% of intervals with challenging behavior, with relatively low

variability (SD = 12.79%) across 13 intervention sessions, suggesting a strong effect of the

intervention. Further, Tau-U non-overlap index value of -1 suggested no overlapping data and

thus, a high practical significance. Following the withdrawal of supports after intervention, TS5

maintained improvements in challenging behavior, evidenced by a continuation of a low and

stable level of challenging behavior (M = 1.3%), with minimal variability (SD = 2.5%) across 4

maintenance probes which spanned 24 school days and over 60 calendar days.

Summary of results for Research Question 2. See Figure 13 for a graphical depiction

of the concurrent multiple baseline design across participants (i.e., TS-TA dyads) depicting all

five target students' challenging behavior data, along with all five teaching assistants' BSP

adherence data. Five out of five possible basic effects were observed in the form of changes in

challenging behavior in the predicted direction from baseline phase to intervention phase for the

target students who participated in the study, across at least three different points in time. These

data provide sufficient evidence to suggest a functional relation between provided intervention

supports and reductions in challenging behavior. That is, these results confirm the hypothesis

that target student's will engage in significantly lower rates of challenging behavior following

application of the multilevel consultation model. In addition, calculated Tau-U effect sizes

ranged from -.97 to -1, indicating a high practical significance of results for all five target

students.

Teaching Assistant Ratings of Target Student Challenging Behavior in the Target Setting

TA1's ratings of TS1's challenging behavior in target setting. Results from TA1's

ratings of TS1's challenging behavior in his teacher-identified target setting are presented in

Table 4. Based on scores obtained from TA1 prior to intervention (i.e., pre assessment) on the

Acceptability of Current Levels of Challenging Behavior (ACLCB; *target setting*) form, TA1

reported overall dissatisfaction ($M = 3.0$, range = 2-5) with TS1's challenging behavior in the

target setting. TS1's ratings improved on eight out of nine items on the rating scale and none of

her ratings worsened during the post assessment ($M = 5.1$, range = 5-6). Following intervention

(i.e., post assessment) in the target setting, TA1 rated satisfaction with the overall level of TS1's

challenging behavior a 5 (*satisfied*), the intensity of TS1's challenging behavior a 5 (*satisfied*),

the dangerousness of the challenging behavior as a 5 (*satisfied*), and the degree to which peers

are impacted as a result of TS1's challenging behavior as a 6 (*very satisfied*); all of these items

showed improved ratings by three points compared to pre-assessment. Post assessment, TA1

rated the appropriateness of TS1's behavior in the target setting overall as a 5 (*appropriate*), the

frequency of TS1's challenging behavior as a 5 (*satisfied*), and the consistency of TS1's

challenging behavior as a 5 (*satisfied*); all of these items showed improved ratings by two points

compared to pre-assessment. Post assessment, TA1 rated how much adults enjoy interacting with

TS1 as a 5 (*satisfied*), which is an improved rating by one point compared to pre-assessment. In

all, TA1 assigned near-perfect scores to eight out of nine items on the post assessment, and a

perfect score on one item, which suggests a high degree of satisfaction regarding multiple

dimensions of TS1's challenging behavior following the study.

TA2's ratings of TS2's challenging behavior in target setting. Results from TA2's

ratings of TS2's challenging behavior in his teacher-identified target setting are presented in

Table 5. Based on scores obtained from TA2 during pre-assessment on the ACLCB (target

setting) form, TA2 reported overall being somewhat dissatisfied (M = 3.4, range = 1-4) with

TS2's challenging behavior in the target setting. TS2's ratings improved on nine out of nine

items on the rating scale from pre- to post-assessment (*M* = 5.8, range = 5-6). During post-

assessment in the target setting, TA2 rated satisfaction with the overall level of TS2's

challenging behavior a 6 (*very satisfied*), a rating improved by four points compared to pre-

assessment. During post-assessment in the target setting, TA2 rated the appropriateness of TS2's

behavior in the target setting overall as a 6 (*very appropriate*), the intensity of TS2's challenging

behavior a 5 (*satisfied*), the frequency of TS2's challenging behavior as a 6 (*very satisfied*), and

how long the challenging behavior lasts when it occurs as a 6 (*very satisfied*); all of these items

showed improved ratings by three points compared to pre-assessment. During post-assessment in

the target setting, TA2 rated the degree to which peers are impacted as a result of TS2's

challenging behavior as a 6 (*very satisfied*), a rating improved by two points compared to pre-

assessment. During post-assessment, in the target setting, TA2 rated the dangerousness of the

challenging behavior as a 6 (*very satisfied*), the consistency of TS2's challenging behavior as a 5

(*satisfied*), and how much adults enjoy interacting with TS2 as a 6 (*very satisfied*); all of these

items showed improved ratings by one point compared to pre-assessment. In all, TA2 assigned

near-perfect scores to two out of nine items on the post assessment, and a perfect score to seven

out of nine items, which suggests a high degree of satisfaction regarding multiple dimensions of

TS2's challenging behavior following the study.

TA3's ratings of TS3's challenging behavior in target setting. Results from TA3's

ratings of TS3's challenging behavior in his teacher-identified target setting are presented in

Table 6. Based on scores obtained from TA3 during pre-assessment on the ACLCB (target

setting) form, TA3 reported overall dissatisfaction (M = 2.6, range = 1-4) with TS3's challenging

behavior in the target setting. TS3's ratings improved on nine out of nine items on the rating

scale from pre- to post-assessment ($M = 4.9$, range = 4-6). During post-assessment in the target

setting, TA3 rated the intensity of TS3's challenging behavior a 5 (*satisfied*), the frequency of

TS3's challenging behavior as a 5 (*satisfied*), the consistency of TS3's challenging behavior as a

5 (*satisfied*), how long the challenging behavior lasts when it occurs as a 6 (*very satisfied*), and

the degree to which peers are impacted as a result of TS3's challenging behavior as a 4

(*somewhat satisfied*); all of these items showed improved ratings by 3 points compared to pre-

assessment. During post-assessment in the target setting, TA3 rated satisfaction with the overall

level of TS3's challenging behavior a 5 (*satisfied*) and the dangerousness of the challenging

behavior as a 4 (*somewhat satisfied*); both items showed improved ratings by 2 points compared

to pre-assessment. During post-assessment in the target setting, TA3 rated the appropriateness of TS3's behavior in the target setting overall as a 5 (*appropriate*) and how much adults enjoy interacting with TS3 as a 5 (*satisfied*); both of these items showed improved ratings by 1 point compared to pre-assessment. In all, TA3 assigned scores of 4 out of 6 on two out of nine items on the post assessment, near-perfect scores to six out of nine items, and a perfect score on one item, which suggests a moderate to high degree of satisfaction regarding multiple dimensions of TS3's challenging behavior following the study.

TA4's ratings of TS4's challenging behavior in target setting. Results from TA4's ratings of TS4's challenging behavior in his teacher-identified target setting are presented in Table 7. Based on scores obtained from TA4 during pre-assessment on the ACLCB (target setting) form, TA4 reported overall dissatisfaction (M = 3.0, range = 2-4) with TS4's challenging behavior in the target setting. TS4's ratings improved on nine out of nine items on the rating scale from pre- to post-assessment (*M* = 6, range = 6-6). During post-assessment in the target setting, TA4 rated the intensity of TS4's challenging behavior a 6 (*very satisfied*), the degree to which peers are impacted as a result of TS4's challenging behavior as a 6 (*very satisfied*), and the frequency of TS4's challenging behavior as a 6 (*very satisfied*); all of these items showed improved ratings by four points compared to pre-assessment. During post-assessment in the target setting, TA4 rated satisfaction with the overall level of TS4's challenging behavior a 6 (*very satisfied*), the appropriateness of TS4's behavior in the target setting overall as a 6 (*very appropriate*), and the consistency of TS4's challenging behavior as a 6 (*very satisfied*); all of these items showed improved ratings by three points compared to pre-assessment. During post-assessment in the target setting, TA4 rated the dangerousness of the challenging behavior as a 6 (*very satisfied*), how much adults enjoy interacting with TS4 as a 6 (*very satisfied*), and how long

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the challenging behavior lasts when it occurs as a 6 (*very satisfied*); all of these items showed improved ratings by two points compared to pre-assessment. In all, TA4 assigned perfect scores to nine out of nine items on the post assessment, which suggests a high degree of satisfaction regarding multiple dimensions of TS4's challenging behavior following the study.

TA5's ratings of TS5's challenging behavior in target setting. Results from TA5's ratings of TS5's challenging behavior in his teacher-identified target setting are presented in Table 8. Based on scores obtained from TA5 during pre-assessment on the ACLCB (target setting) form, TA5 reported overall dissatisfaction (M = 2.6, range = 1-5) with TS5's challenging behavior in the target setting. TS5's ratings improved on six out of nine items on the rating scale and none of her ratings worsened during the post assessment (*M* = 4.3, range = 4-5). During post-assessment in the target setting, TA5 rated satisfaction with the overall level of TS5's challenging behavior a 4 (*somewhat satisfied*), the frequency of TS5's challenging behavior as a 4 (*somewhat satisfied*), the consistency of TS5's challenging behavior as a 4 (*somewhat satisfied*), and how long the challenging behavior lasts when it occurs as a 5 (*satisfied*); all of these items showed improved ratings by three points compared to pre-assessment. During post-assessment in the target setting, TA5 rated the intensity of TS5's challenging behavior a 4 (*somewhat satisfied*) and the appropriateness of TS5's behavior in the target setting overall as a 4 (*somewhat appropriate*); both of these items showed improved ratings by two points compared to pre-assessment. During post-assessment in the target setting, TA5 rated the dangerousness of the challenging behavior as a 5 (*satisfied*), the degree to which peers are impacted as a result of TS5's challenging behavior as a 5 (*satisfied*), and how much adults enjoy interacting with TS5 as a 4 (*somewhat satisfied*); all of these items showed zero improvement compared to pre-assessment, with little room to improve from pre-assessment. In all, TA5 assigned scores of 4 out

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of 6 to six out of nine items on the post-assessment, and near-perfect scores to three out of nine

items, which suggests a moderate to high degree of satisfaction regarding multiple dimensions of

TS5's challenging behavior following the study.

These results provide additional evidence for the hypothesis that target students will

engage in lower rates of challenging behavior following application of the multilevel

consultation model.

Lead Teacher Global Ratings of Target Student Challenging Behavior

LT1's global ratings of TS1's challenging behavior. Results from LT1's global ratings

of TS1's challenging behavior across the whole school day are presented in Table 4. Based on

scores obtained from LT1 during pre-assessment on the ACLCB form (whole school day), LT1

reported overall dissatisfaction ($M = 2.3$, range $= 2$-3) with TS1's challenging behavior across

the whole school day. TS1's ratings improved on eight out of nine items on the rating scale and

none of her ratings worsened during the post assessment ($M = 4.0$, range $= 3$-5). In all, LT1

assigned scores of 3 (*somewhat dissatisfied*) to three out of nine items on the post-assessment, 4

(*somewhat satisfied*) to three out of nine items, and 5 (*satisfied*) to three out of nine items, which

suggests a moderate to high degree of overall satisfaction regarding multiple dimensions of

TS1's challenging behavior following the study.

LT3's global ratings of TS2's challenging behavior. Results from LT3's global ratings

of TS2's challenging behavior across the whole school day are presented in Table 5. Based on

scores obtained from LT3 during pre-assessment on the ACLCB form (whole school day), LT3

reported overall dissatisfaction ($M = 3.0$, range $= 2$-5) with TS2's challenging behavior across

the whole school day. TS2's ratings improved on seven out of nine items on the rating scale and

none of her ratings worsened during the post assessment ($M = 4.7$, range $= 4$-6). In all, LT3

assigned scores 4 (*somewhat satisfied*) to four out of nine items, 5 (*satisfied*) to four out of nine items, and 6 (*very satisfied*) to one item, which suggests high degree of overall satisfaction regarding multiple dimensions of TS2's challenging behavior following the study.

LT1's global ratings of TS3's challenging behavior. Results from LT1's global ratings of TS3's challenging behavior across the whole school day are presented in Table 6. Based on scores obtained from LT1 during pre-assessment on the ACLCB form (whole school day), LT1 reported overall dissatisfaction ($M = 1.9$, range = 1-3) with TS3's challenging behavior across the whole school day. TS1's ratings improved on eight out of nine items on the rating scale and none of her ratings worsened during the post assessment ($M = 3.3$, range = 3-4). In all, LT1 assigned scores of 3 (*somewhat dissatisfied*) to six out of nine items on the post-assessment, and scores of 4 (*somewhat satisfied*) to three out of nine items, which suggests a moderate degree of overall satisfaction regarding multiple dimensions of TS3's challenging behavior following the study.

LT3's global ratings of TS4's challenging behavior. Results from LT3's global ratings of TS4's challenging behavior across the whole school day are presented in Table 7. Based on scores obtained from LT3 during pre-assessment on the ACLCB form (whole school day), LT3 reported overall dissatisfaction ($M = 2.9$, range = 2-4) with TS4's challenging behavior across the whole school day. TS1's ratings improved on nine out of nine items on the rating scale from pre- to post assessment ($M = 4.9$, range = 4-6). In all, LT3 assigned scores of 4 (*somewhat satisfied*) to two out of nine items, 5 (*satisfied*) to six out of nine items, and a score of 6 (*very satisfied*) to one item, which suggests a high degree of overall satisfaction regarding multiple dimensions of TS4's challenging behavior following the study.

LT2's global ratings of TS5's challenging behavior. Results from LT2's global ratings of TS5's challenging behavior across the whole school day are presented in Table 8. Based on scores obtained from LT2 during pre-assessment on the ACLCB form (whole school day), LT2 reported overall dissatisfaction ($M = 3.0$, range = 1-6) with TS5's challenging behavior across the whole school day. TS1's ratings improved on six out of nine items on the rating scale and none of her ratings worsened during the post assessment ($M = 5.2$, range = 4-6). In all, LT2 assigned scores 4 (*somewhat satisfied*) to two out of nine items, 5 (*satisfied*) to three out of nine items, and scores of 6 (*very satisfied*) to four out of nine items, which suggests a high degree of overall satisfaction regarding multiple dimensions of TS5's challenging behavior following the study.

These results not only provide additional evidence to support the hypothesis that target students will engage in lower rates of challenging behavior following application of the multilevel consultation model, but lead teacher satisfaction ratings suggest some positive effects of the model in non-target settings.

Efficiency of the Model: Consultation Dosage

Table 9 depicts the type and number of minutes of support provided to TAs throughout the study. Level 1 supports involved sending an email or text message reminder to utilize the treatment fidelity checklist used during training and took approximately 1 minute of researcher time. Four out of five TAs required Level 1 supports, totaling 4 minutes of researcher time across the study. Level 2 supports involved in-person prompting (3-second prompt delay) to use the checklist in the target setting. Two out of three TAs required Level 2 supports, totaling 48 minutes of researcher time across the study. Level 3 supports involved in-person prompting (0-second delay) to use the checklist in the target setting. None of the TAs required Level 3

supports, thus no minutes of researcher time were devoted to Level 3 supports across the study. Positive feedback only was delivered when five or more consecutive sessions occurred without meeting the advancement criteria (i.e., above 70% adherence), which served as a check-in with TAs and an opportunity to deliver behavior-specific praise to TAs for adherence to the BSP. Three out of five TAs had five or more consecutive sessions without meeting the BSP adherence advancement criteria, meriting positive feedback only, on five occasions, totaling 17 minutes (M = 3.4 minutes per feedback session, range = 3-4) of researcher time across the study. At the beginning of the study, TAs were informed that they could reach out to the researcher for additional support at any point throughout the study. Four out of five TAs took advantage of this offer, on eight occasions (M = 8.3 minutes per check in, range = 3-15), totaling 66 minutes of researcher time across the study. During the initial training, the researcher videoed TAs implementing their respective target student's BSP with 100% adherence. The TAs were provided a copy of the video on a thumb drive as a resource. One out of five TAs reported reviewing the video prior to a session with their target student, which required no additional researcher time. On average, each TA received a total of 151.2 minutes (range = 125-203 minutes), or 2.5 hours (range = 2.1-3.4 hours) of researcher time across the study. Overall, the researcher spent 756 minutes (approximately 12.6 hours) working directly with TAs as part of the study.

Cost analysis. *CostOut* - the CBCSE Cost Tool Kit © 2015 is designed to facilitate the estimation of costs and cost-effectiveness of educational or other social programs. It is primarily designed for researchers, analysts, educational administrators, and policymakers, but it is free for anyone to use provided individuals sign a license agreement. *CostOut* is set up with U.S. prices and considers inflation and geographical indices. The current study was evaluated using *CostOut*

to determine the cost of implementing the multilevel consultation model. Prices were scaled for pre-kindergarten settings, across both rural and urban areas of Oregon. The three primary costs associated with the model were consultant (i.e., researcher) time, paraprofessional time, and the cost of printing. The cost of consultant time was calculated at a rate of $75 per hour, paraprofessional time was calculated at a cost of $15 per hour, and total printing costs were calculated at about $30. All hours on site were calculated for the consultant (i.e., 56 hours), and only hours performed outside of the regular scheduled work hours were calculated for paraprofessionals (i.e., 11 hours total across all five paraprofessionals). After all costs were computed, the total cost to the Early Education Program (EEP), assuming they would be funding all FTE and materials, would be $4,395. Although five TAs, five target students, and three lead teachers were directly involved and directly impacted by the implementation of the multilevel consultation model, the average cost per participant was calculated based on the number of target students (i.e., across 5 participants). The total cost per target student boiled down to $879 across the entire duration of the study.

Acceptability: Behavior Support Plans

TA1 and LT1's ratings of TS1's behavior support plan. Ratings for LT1's and TA1's acceptability are depicted in Table 10. Based on scores obtained from LT1 on a representative item on the Behavior Support Plan Treatment Acceptability Rating Form (BSP-TARF), "*How acceptable do you find the behavior support plan (BSP) overall?,*" LT1 rated TS1's behavior support plan a 5 (*very acceptable*) at pre-assessment and 5 (*very acceptable*) at post-assessment. Based on scores obtained from TA1 on a representative item on the BSP-TARF, "*How acceptable do you find the behavior support plan (BSP) overall?,*" TA1 rated TS1's behavior support plan a 5 (*very acceptable*) at pre-assessment and 5 (*very acceptable*) at post-assessment.

These results indicate that TS1's BSP was deemed highly acceptable by both his TA and lead teacher when initially introduced (pre-assessment), as well as after the study was completed (post-assessment). See Table 10 for LT1's and TA1's pre- and post-assessment responses to 15 other, more specific items regarding acceptability of TS1's behavior support plan.

TA2 and LT3's ratings of TS2's behavior support plan. Ratings for LT3's and TA2's acceptability are depicted in Table 11. Based on scores obtained from LT3 on a representative item on the Behavior Support Plan Treatment Acceptability Rating Form (BSP-TARF), "*How acceptable do you find the behavior support plan (BSP) overall?*," LT3 rated TS2's behavior support plan a 5 (*very acceptable*) at pre-assessment and 5 (*very acceptable*) at post-assessment. Based on scores obtained from TA2 on a representative item on the BSP-TARF, "*How acceptable do you find the behavior support plan (BSP) overall?*," TA2 rated TS2's behavior support plan a 5 (*very acceptable*) at pre-assessment and 5 (*very acceptable*) at post-assessment. These results indicate that TS2's BSP was deemed highly acceptable by both his TA and lead teacher when initially introduced (pre-assessment), as well as after the study was completed (post-assessment). See Table 11 for LT3's and TA2's pre- and post-assessment responses to 15 other, more specific items regarding acceptability of TS2's behavior support plan.

TA3 and LT1's ratings of TS3's behavior support plan. Ratings for LT1's and TA3's acceptability are depicted in Table 12. Based on scores obtained from LT1 on a representative item on the Behavior Support Plan Treatment Acceptability Rating Form (BSP-TARF), "*How acceptable do you find the behavior support plan (BSP) overall?*," LT1 rated TS3's behavior support plan a 5 (*very acceptable*) at pre-assessment and 5 (*very acceptable*) at post-assessment. Based on scores obtained from TA3 on a representative item on the BSP-TARF, "*How acceptable do you find the behavior support plan (BSP) overall?*," TA3 rated TS3's behavior

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support plan a 5 (*very acceptable*) at pre-assessment and 5 (*very acceptable*) at post-assessment. These results indicate that TS3's BSP was deemed highly acceptable by both his TA and lead teacher when initially introduced (pre-assessment), as well as after the study was completed (post-assessment). See Table 12 for LT1's and TA3's pre- and post-assessment responses to 15 other, more specific items regarding acceptability of TS3's behavior support plan.

TA4 and LT3's ratings of TS4's behavior support plan. Ratings for LT3's and TA4's acceptability are depicted in Table 13. Based on scores obtained from LT3 on a representative item on the Behavior Support Plan Treatment Acceptability Rating Form (BSP-TARF), "*How acceptable do you find the behavior support plan (BSP) overall?*," LT3 rated TS4's behavior support plan a 5 (*very acceptable*) at pre-assessment and 5 (*very acceptable*) at post-assessment. Based on scores obtained from TA4 on a representative item on the BSP-TARF, "*How acceptable do you find the behavior support plan (BSP) overall?*," TA4 rated TS4's behavior support plan a 5 (*very acceptable*) at pre-assessment and 5 (*very acceptable*) at post-assessment. These results indicate that TS4's BSP was deemed highly acceptable by both his TA and lead teacher when initially introduced (pre-assessment), as well as after the study was completed (post-assessment). See Table 13 for LT3's and TA4's pre- and post-assessment responses to 15 other, more specific items regarding acceptability of TS4's behavior support plan.

TA5 and LT2's ratings of TS5's behavior support plan. Ratings for LT2's and TA5's acceptability are depicted in Table 14. Based on scores obtained from LT2 on a representative item on the Behavior Support Plan Treatment Acceptability Rating Form (BSP-TARF), "*How acceptable do you find the behavior support plan (BSP) overall?*," LT2 rated TS5's behavior support plan a 5 (*very acceptable*) at pre-assessment and 5 (*very acceptable*) at post-assessment. Based on scores obtained from TA1 on a representative item on the BSP-TARF, "*How*

acceptable do you find the behavior support plan (BSP) overall?," TA5 rated TS5's behavior

support plan a 4 out of 5 on a scale from 0 (*not at all acceptable*) to 5 (*very acceptable*) at pre-

assessment and 4 out of 5 at post-assessment. These results indicate that TS5's BSP was deemed

highly acceptable by both his TA and lead teacher when initially introduced (pre-assessment), as

well as after the study was completed (post-assessment). See Table 14 for LT2's and TA5's pre-

and post-assessment responses to 15 other, more specific items regarding acceptability of TS5's

behavior support plan.

BSP acceptability summary. These results indicate that BSPs were found to be highly

acceptable by TAs and lead teachers when the plan was initially described (pre-assessment), as

well as during post-assessment by those implementing the plans (i.e., TAs) and those regularly

observing implementation (i.e., lead teachers).

Acceptability: Multilevel Consultation Model

TA1. Ratings for TA1's acceptability (i.e., perceived helpfulness and utility) of the

multilevel consultation model are depicted in Table 15. Based on scores obtained from TA1 on

the Consultation Model Treatment Acceptability Rating Form (CM-TARF), TA1 rated the

consultation model as highly acceptable overall ($M = 4.3$, range = 3-5). See Table 15 for TA1's

responses to 16 specific items regarding the helpfulness and utility of specific components of the

multilevel consultation model.

TA2. Ratings for TA2's acceptability (i.e., perceived helpfulness and utility) of the

multilevel consultation model are depicted in Table 15. Based on scores obtained from TA2 on

the Consultation Model Treatment Acceptability Rating Form (CM-TARF), TA1 rated the

consultation model as highly acceptable overall ($M = 4.4$, range = 3-5). See Table 15 for TA2's

responses to 16 specific items regarding the helpfulness and utility of specific components of the multilevel consultation model.

TA3. Ratings for TA3's acceptability (i.e., perceived helpfulness and utility) of the multilevel consultation model are depicted in Table 15. Based on scores obtained from TA3 on the Consultation Model Treatment Acceptability Rating Form (CM-TARF), TA1 rated the consultation model as highly acceptable overall ($M = 4.6$, range = 3-5). See Table 15 for TA3's responses to 16 specific items regarding the helpfulness and utility of specific components of the multilevel consultation model.

TA4. Ratings for TA4's acceptability (i.e., perceived helpfulness and utility) of the multilevel consultation model are depicted in Table 15. Based on scores obtained from TA4 on the Consultation Model Treatment Acceptability Rating Form (CM-TARF), TA4 rated the consultation model as highly acceptable overall ($M = 4.8$, range = 4-5). See Table 15 for TA4's responses to 16 specific items regarding the helpfulness and utility of specific components of the multilevel consultation model.

TA5. Ratings for TA5's acceptability (i.e., perceived helpfulness and utility) of the multilevel consultation model are depicted in Table 15. Based on scores obtained from TA5 on the Consultation Model Treatment Acceptability Rating Form (CM-TARF), TA1 rated the consultation model as highly acceptable overall ($M = 4.3$, range = 3-5). See Table 15 for TA5's responses to 16 specific items regarding the helpfulness and utility of specific components of the multilevel consultation model.

Administrator 1. Administrator 1 is the direct supervisor of lead teachers and assistant teachers. Ratings for Administrator 1's acceptability of the training and support provided to staff as part of the multilevel consultation model are depicted in Table 16. Based on scores obtained

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from Administrator 1 on the Consultation Model Treatment Acceptability Rating Form (CM-TARF-admin), Administrator 1 rated the consultation model as highly acceptable overall ($M = 4.3$, range = 3-5). See Table 16 for Administrator 1's responses to 13 specific items (items 1-13) regarding her acceptability of the training and support provided to staff as part of the multilevel consultation model. In addition, Administrator 1 was assessed for her willingness and interest in the future to engage in consultation and research similar to that conducted as part of the current investigation. Across six items on the CM-TARF-admin, Administrator 1 rated her level of willingness and interest to engage in research and consultation in the future as very high ($M = 4.9$, range = 4.5-5). See Table 16 for Administrator 1's responses to the six specific items (items 14-19) regarding future engagement in consultation and research.

Administrator 2. Administrator 2 is the District Behavior and Autism Specialist. Ratings for Administrator 2's acceptability of the training and support provided to staff as part of the multilevel consultation model are depicted in Table 16. Based on scores obtained from Administrator 2 on the Consultation Model Treatment Acceptability Rating Form (CM-TARF-admin), Administrator 2 rated the consultation model as highly acceptable overall ($M = 4.9$, range = 4.5-5). See Table 16 for Administrator 2's responses to 13 specific items (items 1-13) regarding her acceptability of the training and support provided to staff as part of the multilevel consultation model. In addition, Administrator 2 was assessed for her willingness and interest in the future to engage in consultation and research similar to that conducted as part of the current investigation. Across six items on the CM-TARF-admin, Administrator 2 rated her level of willingness and interest to engage in research and consultation in the future as very high ($M = 5.0$, range = 5-5). See Table 16 for Administrator 2's responses to the six specific items (items 14-19) regarding future engagement in consultation and research.

Administrator 3. Administrator 3 is the Early Education Program (EEP) Director and direct supervisor of Administrator 1 and Administrator 2. Ratings for Administrator 3's acceptability of the training and support provided to staff as part of the multilevel consultation model are depicted in Table 16. Based on scores obtained from Administrator 3 on the Consultation Model Treatment Acceptability Rating Form (CM-TARF-admin), Administrator 3 rated the consultation model as highly acceptable overall ($M = 4.8$, range = 4-5). See Table 16 for Administrator 3's responses to 13 specific items (items 1-13) regarding her acceptability of the training and support provided to staff as part of the multilevel consultation model. In addition, Administrator 3 was assessed for her willingness and interest in the future to engage in consultation and research similar to that conducted as part of the current investigation. Across six items on the CM-TARF-admin, Administrator 3 rated her level of willingness and interest to engage in research and consultation in the future as very high ($M = 5.0$, range = 5-5). See Table 16 for Administrator 3's responses to the six specific items (items 14-19) regarding future engagement in consultation and research.

Acceptability results summary. These results indicate that the multilevel consultation model is highly acceptable to those implementing each target student's BSP, as indicated by high ratings of helpfulness and utility of all consultation model components. In addition, those who recruit funding and supervise teaching/support staff in the EEP (i.e., administrators) found the training and support provided to staff as part of the multilevel consultation model to be highly acceptable. Administrators also indicated a high level of willingness and interest to engage in similar research and consultation in the future as a result of participating in the study.

Summary of Results

The assessment results informed development of the operant hypotheses that challenging behavior was maintained by peer attention in free play for TS1, escape from cleanup and circle for TS2, adult attention in cleanup and circle for TS3, adult attention in afternoon groups and transitions for TS4, and adult attention during arrival and departure for TS5. These assessment data informed development of function-based BSPs for each target student. Application of the multilevel consultation model was associated with immediate and substantive increases in adherence to BSP components for all TAs, which maintained over time. Moreover, immediate and substantive decreases in challenging behavior for all target students was observed, which resulted in very large effect sizes and maintained for approximately two months' time. In addition to observational data collected on target student challenging behavior, participant ratings of challenging behavior at pre- and post-assessment were collected, which strengthened the validity of observed patterns of behavior change across target students in target settings (i.e., ratings by TAs), as well as globally, across settings (by lead teachers). Observed effects resulted from a small number of total minutes dedicated to working directly with TAs, indicating an overall efficient consultation model.

Acceptability results demonstrated that each BSP, as well as the consultation model as a whole, was highly acceptable to participants. TA and lead teacher ratings of BSPs were found to be highly acceptable at both pre-assessment and post-assessment, indicating feasibility of plan implementation and contextual fit of each plan. The helpfulness and utility of the multilevel consultation model was rated as highly acceptable by those implementing BSPs (i.e., TAs). Administrators found the training and support provided to staff as highly acceptable, and they

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indicated a high level of willingness and interest to engage in similar research and consultation in the future as a result of participating in the study.

CHAPTER IV

DISCUSSION

Individuals with intellectual and developmental disabilities (IDD) may be impacted by impairments in behavior, language, learning and physical domains (Centers for Disease Control and Prevention, 2013), leading to a number of unfavorable outcomes which are deteriorated further when individuals with IDD exhibit challenging behavior (e.g., Leinhardt & Pallay, 1982; Sigafoos, et al., 2003). As many as 80% of individuals with IDD also engage in challenging behavior (Emerson et al., 2001). Challenging behavior can arise as early as 6 months of age, but typically arises around age two (Feldman et al., 2000) and generally persists over time and across contexts, suggesting early childhood to be an optimal time for prevention and early intervention of challenging behavior. Function-based behavioral interventions, which are informed by functional assessments, help (a) identify the operant function of targeted behavior, such as those that are maladaptive, and (b) increase the likelihood of successful treatment (Carr et al., 1999; Sugai et al., 2000). Although specialists are able to assess and treat challenging behavior effectively, specialist-level implementation is not a sustainable practice, given the high need for these types of supports (O'Neill et al. 2014). Providers with limited behavioral expertise (e.g., teaching assistants) are typically those who spend the most time with students with disabilities, but they are often unable to implement function-based supports with fidelity without considerable support (Hanley, Iwata, & McCord, 2003; Scott et al., 2008). It is well-established that teachers and other professionals can be trained by specialists to implement behavioral supports in the classroom, and there is a strong evidence-base supporting the use of behavioral teaching strategies with parents and teachers (Koegel, Russo, & Rincover, 1977; Sarokoff & Sturmey, 2004; Lasafakis & Sturmey, 2007; Crone, Hawken, & Bergstrom, 2007). Not

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surprisingly, a lack of attention to treatment fidelity is a pervasive issue in applied settings (e.g., school; Durlak & DuPre, 2008). When treatment fidelity is improved and sustained, there are better treatment outcomes (Derzon et al., 2005). Thus, applied researchers and school-based clinicians are presented with a substantial challenge: to maintain treatment fidelity in applied settings, while also accommodating limited time, limited resources, and limited behavioral intervention skills of school-based providers (Crone, Hawken, Horner, 2015; Harn, Parisi, & Stoolmiller, 2013). Few studies have analyzed the effectiveness, efficiency, and acceptability of methods to treat low treatment fidelity or support high treatment fidelity, and no studies to date have analyzed the utility of structured methodology to guide consultants and researchers in monitoring treatment fidelity for the purpose of supporting consultees with implementation contingent on performance (i.e., treatment adherence).

Thus, this study contributed to the literature by evaluating the effectiveness, efficiency, and acceptability of a structured, multi-level consultation model designed to increase teaching assistant adherence to BSPs to reduce challenging behavior in preschool students with IDD. This study comprised a multimethod FBA to identify the operant function of each target student's challenging behavior, behavioral skills training delivered to TAs to teach them how to implement each target student's function-based BSP, and additional, increasingly supportive and intensive (i.e., increased involvement of researcher) levels of support contingent on TA's levels of BSP implementation adherence. This study sought to address the following: the operant function of each participant's challenging behavior, whether behavior skills training alone was sufficient for TAs to implement BSPs to acceptable levels (and, if not, how much additional support would be required to reach the criteria), whether target student's would engage in reduced levels of challenging behavior following increased BSP adherence, and what dosage would be required to

achieve acceptable levels of challenging behavior. This study also sought to address issues of social validity, such as acceptability of challenging behavior based on TA and lead teacher report, BSP acceptability based on TA and lead teacher report, and multilevel consultation model acceptability based on TA and administrator report.

Summary of Key Findings

What is the operant function of each participant's challenging behavior? The results of the FBA (i.e., FACTS interview and baseline direct behavior observations) provided information that was necessary to hypothesize an operant function of each target student's challenging behavior. For TS1, results of the FBA strongly suggested peer attention as a primary function and adult attention as a possible second function. For TS2, results of the FBA strongly suggested an escape function as a primary function and access to tangibles as a possible second function. For TS3, results of the FBA strongly suggested adult attention as a primary function and peer attention as a possible second function. For TS4, results of the FBA strongly suggested Adult attention as a primary function and escape as a possible second function. For TS5, results of the FBA strongly suggested adult attention as a primary function and escape as a possible second function. In all, three target student's challenging behavior was hypothesized to be primarily maintained by adult attention, one was hypothesized to be primarily maintained by escape, and one was hypothesized to be primarily maintained by peer attention. These functions guided development of each target student's function-based supports.

Research Question 1: Is there a functional relation between application of a multilevel consultation model and increased adherence to behavioral supports for paraprofessionals in an early childhood special education setting? Although results of the study confirm the hypothesis that TAs will engage in significantly higher levels of BSP

adherence following application of the multilevel consultation model, TAs did not have access to the target student's BSP during baseline because it had not been created yet, making it essentially impossible to obtain a high level of adherence in baseline. Through direct observations, TAs were recorded by video to allow for retroactive comparison to post-intervention performance. Since development of the BSP was, in part, contingent on results of the baseline observations (i.e., FBA direct assessment), the BSP was not available for direct observers to use when conducting observations to determine the level of adherence TAs were engaging in when working with target students. For this reason, researchers were required to video record baseline sessions for later playback and coding after development of the BSP. In addition, although differences observed when comparing BSP adherence across baseline and intervention were unnaturally inflated, this method afforded an opportunity to, in a sense, give "credit" to TA strategy use in baseline. That is, if TA's had already been implementing an intervention component prior to development of the BSP, and that component coincidentally ended up being part of the BSP, TA's were able to get "credit" for that in baseline. For instance, TA3 provided TS3 with behavior-specific praise on multiple occasions during observation 10 in baseline, which was part of TS3's ultimately developed BSP. Thus, during baseline, TA3 adhered to 7% of the BSP, or, received "credit" for adhering to part of the BSP, even though the video-recorded observation occurred prior to the development of the BSP. Although this retroactive comparison is not a typical procedure used to demonstrate a functional relation between implementation of an intervention strategy and a desired outcome, the researcher's thought is that this comparison has strengthened the case that each individually-developed BSP was causally linked to decreases in challenging behavior following implementation of each target student's BSP. Thus, an advantage of providing a retrospective comparator for TA adherence to each students' behavior

plan is that any baseline levels of adherence can be attributed to pre-existing TA knowledge and skills, rather than attributed to the study procedures.

Durlak and Dupre (2008) reviewed over 500 studies that reported on factors associated with behavioral intervention implementation and found that positive outcomes have been obtained with 60% adherence to protocol, with few studies attaining levels greater than 80% adherence. The level of adherence in the intervention phase for all TAs (i.e., TA1 $M = 94.8\%$; TA2 $M = 61.8\%$; TA3 $M = 82.7\%$; TA4 $M = 78.2\%$; TA5 $M = 73.5\%$; overall $M = 78.2\%$) was somewhat elevated in comparison to levels observed in other studies (Durlake & DuPre, 2008). Further, the high end of the observed range of adherence for all TAs (i.e., TA1 high adherence = 100%; TA2 high adherence = 85.7%; TA3 high adherence = 100%; TA4 high adherence = 100%; TA5 high adherence = 93.3%; overall high adherence = 95.8%) was especially elevated.

Although overall adherence and the high end of the range of adherence for all TAs was relatively high, initial levels of adherence were not high for all TAs. Anecdotally, TAs 2, 4, and 5 reported (to the researcher) feeling somewhat unready to implement on the first intervention session because they hadn't prepared the environment for implementation (e.g., created necessary intervention materials such as a choice wheel). In other words, initial lower levels reflect the difficulty in generalizing skills from contrived practice opportunities with the researcher to the actual setting where the each target student engages in challenging behavior. The researcher believes a Level 1 prompt (a single, brief text message or email reminding TAs to refer to the checklist) may have been effective in bringing adherence from below 70% to above 70% for two out of three TAs who met the advancement criteria because the prompt re-oriented TAs to the BSP checklist which listed environmental considerations for each target student. TA2 was the only participant who required Level 2 prompts (in-person prompting in the target setting)

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to reach an initial acceptable level of adherence. TA1 was able to implement TS1's BSP with

over 70% adherence by accessing the initial training only (behavior skills training on the BSP),

while TAs 3, 4, and 5 required Level 1 prompts following behavior skills training. Thus, the

multilevel consultation model appears to be highly effective for remediating initial low levels of

adherence (i.e., TA2, TA4, and TA5) and levels that drop after initial implementation has

reached acceptable levels (i.e., TA3). Further, this model has shown to be adaptable to

individuals with differing levels of need for implementation support, maximizing researcher (i.e.,

consultant) time and resources.

Behavioral consultation is widely-accepted as an effective practice for helping teach

educational providers how to promote outcomes for students, including reducing challenging

behavior (Erchul & Sheridan, 2008). It is also well-known that treatment adherence is strongly

predictive of intervention effectiveness (Derzon et al., 2005). Thus, in an indirect service

delivery model such as behavioral consultation, it becomes an absolute critical consideration to

promote accurate implementation of BSPs in order to have the greatest potential impact on

reducing target student challenging behavior. In the current study TAs implemented BSPs with

an unusually high level of adherence, despite relatively limited experience and training. This

may be the result of a number of explicit foci inherent in the current study, all designed to

promote TA adherence, including: a discrete focus on treatment fidelity, utilization of best-

practice teaching methods, programming for generalization, using formative assessment of

treatment adherence, and using self-monitoring of treatment adherence.

First, far too few behavioral researchers (i.e., about one third) focus on treatment fidelity,

and the ones that do, often only report that implementation was effectively achieved without

supplying any data (Durlak & DuPre (2008). The current study made promoting adherence an explicit focus of the study, which may be one reason for elevated levels of adherence.

Second, the current study made an explicit focus to train TAs using best-practice teaching methods and to program for generalization of skills learned in practice settings. It's well-understood that learners of new skills need to receive access to accurate models and feedback during guided-practice opportunities, as well as feedback following opportunities to practice new skills independently (Archer & Hughes, 2011). Learning outcomes are further improved when feedback is provided across time and multiple learning trials (Haq & Kodak, 2015). Thus, in the context of training TAs to implement multicomponent BSPs, it is imperative that TAs not only receive modeling, guided-practice, and independent practice opportunities in training settings, but feedback must also be available in targeted intervention settings in order to ensure the likelihood of accurate generalization of skills learned in practice settings (Lafasakis & Sturmey, 2007). In addition, individualized target student BSP checklists were used as the primary referent when training TAs in a practice setting, as well as in the intervention setting. Further, Level 1, Level 2, and Level 3 prompts were designed to also use the BSPs as the primary referent. That is, the researcher effectively programmed for generalization of skills learned in the practice setting by using the same BSP checklist during initial behavior skills training, during independent practice opportunities in the target setting, and by referring to the same checklist during all prompting thereafter. Adherence to the checklist became the focus of all levels of training and feedback, thus making adherence a clear and consistent priority throughout the entire duration of the study.

Third, the current study made an explicit focus to track BSP adherence during each intervention session in order to determine whether further support was necessary (i.e., formative

assessment) for each TA to reach an acceptable level of adherence. By tracking adherence in real time, the researcher could intervene (i.e., apply the appropriate Level of the multilevel consultation model) when necessary, based on up-to-date information (i.e., engage in formative assessment; Sadler, 1989). This helped to prevent TAs from lapsing in adherence across more than two sessions without further support, leading to all TAs reaching acceptable levels of adherence throughout the study, to levels which maintained following the withdrawal of intervention supports. In fact, across all five TAs, throughout the entire duration of the study, only five total sessions were observed where any TA implemented a BSP below 70% adherence after initially reaching 70% adherence. Thus, the multilevel consultation model was effective at supporting TAs with varying levels of skills and experience to reach acceptable levels of adherence, and when levels dropped below acceptable levels, they were quickly remediated.

Fourth, in order to track, and ultimately intervene on adherence, it was necessary for independent observers to conduct direct observations of TA's implementation of each target student's BSP in the target setting. In order to intervene on low adherence, it was required to provide feedback to TAs, which is likely to evoke a feeling of defensiveness, which is critical to avoid, if at all possible, as it is a considerable barrier to engagement in consultees (Noell & Gansle, 2014; Erchul & Martens, 2010). Thus, it is likely very important that the current study promoted a training context where monitoring adherence by independent observers and self-monitoring adherence was normalized. This was achieved by discussing adherence from the onset of training (i.e., at initial training, describing what study involvement will look like) and describing that initially low, and later variable, adherence is very common and expected when learning and implementing a new strategy.

Then, when it came time to actually provide additional prompts (i.e., Levels 1-3, contingent on meeting the 70% advancement criteria) to two TAs following the initial behavioral skills training, it is additionally likely that the use of shaping and visual performance feedback promoted acceptability of receiving this feedback. When Level 2 prompts were delivered (after TAs met the advancement criteria for the second time), a brief meeting was arranged between the researcher and TA in order for the researcher to provide verbal and visual performance feedback on recent overall adherence. Overall adherence was broken into adherence to 1) antecedent strategies, 2) behavior teaching or rehearsal, and 3) consequence strategies in order to provide behavior-specific praise to TAs for current levels of multiple strategy sets (i.e., shaping), and to differentially reinforce for relatively higher levels of adherence to certain sets of BSP steps. For example, if consequence strategies were implemented with 100% adherence, behavior teaching or rehearsal steps were implemented with 55% adherence, and antecedent strategies were implemented with 78% adherence, adherence to BSP steps that include consequence strategies would be differentially reinforced with behavior-specific praise regarding the specific steps, and other words reflecting approval by the researcher for following the checklist more generally. Then, other sets of BSP steps that were implemented with relatively lower adherence would be addressed by the researcher inviting the TA to look over the rest of the steps of the BSP together to see if the TA had any questions. This approach allowed TAs to receive lots of positive feedback on areas of relative strength and to join the researcher in analyzing relative deficits rather than being told what to remediate, which can be punishing and evoke feelings of defensiveness (Noell & Gansle, 2014). Further, TAs reported very high levels of perceived helpfulness of the feedback received from the researcher throughout the study, which includes feedback in the form of shaping (provided to 2 TAs who ultimately received Level 2 supports)

and visual performance feedback (provided to all five TAs who received visual performance feedback (i.e., during any check-in, regardless of whether the advancement criteria were met).

Fifth, TAs self-monitored adherence throughout the intervention phase of the study, which may partially explain elevated levels of adherence since tracking one's own behavior influences behavior (Kanfer, 1970). However, TAs were not observed to self-monitor their behavior in the maintenance phase of the study, and all TAs maintained high levels of fidelity during the maintenance phase. Thus, self-monitoring adherence throughout the initial stages of implementation appears to be useful in promoting adherence, but it is unclear if self-monitoring was useful after completion of intervention sessions, since self-monitoring did not occur. Maintenance of high BSP adherence after intervention may be a testament to the level of fluency developed during the intervention phase that made self-monitoring less pertinent in maintenance. However, based on TAs elevated ratings of acceptability of the BSP procedures, it is likely that they acquired understanding and value for the procedures, thus influencing their continued use of the procedures.

Research Question 2: Is there a functional relation between application of a multilevel consultation model and a decrease in challenging behavior for students in an early childhood special education setting? It is clear that higher treatment fidelity is associated with better outcomes when behavioral interventions are implemented to reduce challenging behavior (DiGennaro, Martens, & Kleinmann 2007; Derzon et al., 2005). The current study made a decided effort to increase TA treatment fidelity (i.e., adherence to target student BSP's), which, through a cascading logic, is thought to have led to such a substantial reduction in challenging behavior for each target student across time. Data showed that paraprofessionals engaged in immediately and significantly higher levels of BSP adherence following application of the

multilevel consultation model, and as a result, students engaged in immediately and significantly lower rates of challenging behavior, which maintained over time. Observed effect sizes ranged from a Tau-U non-overlap index of -.97 to -1, indicating a high practical significance for interventions delivered to each target student. As such, the multilevel consultation model was found to be highly effective in reducing challenging behavior for preschool students with disabilities. Thus, the multilevel consultation model used in the current study appeared to be causally related to an *observed* decrease in challenging behavior for all target students in their respective early childhood special education target settings.

Such large reductions in challenging behavior could be related to the age of participating target students. As students grow older, early-established patterns of challenging behavior have increasing opportunities to be reinforced and, thus, strengthened (Feldman, Hancock, Rielly, Minnes, & Cairnes, 2000). By intervening in early childhood (i.e., prior to kindergarten), it is possible that challenging behavior exhibited by target students was initially lower, and had a weaker reinforcement history, compared what one would expect from older children, and thus potentially easier to intervene upon (Emerson et al., 2001).

Teaching assistant ratings of target student challenging behavior in the target setting. In addition to observational data of target student challenging behavior, data were collected of TA pre- and post-intervention ratings of TA ratings of the acceptability of multiple dimensions (i.e., overall level, variability, frequency, duration, and intensity) of target student challenging behavior. Not only did independent observers report substantive and immediate reductions in challenging behavior for all target students, each TA reported substantive increases in the acceptability of each target student's challenging behavior, indicating socially valid reductions in challenging behavior for all participating students. These data also strengthened the

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validity of observed patterns of behavior change across target students in their respective target settings. Thus, the multilevel consultation model used in the current study appeared to also be causally related to *reported* increases in acceptability of challenging behavior for all target students in their respective early childhood special education target setting.

Data were also collected by lead teachers on their pre- and post-intervention ratings of the acceptability of multiple dimensions (e.g., overall level, variability, frequency, duration, and intensity) of target student challenging behavior. However, lead teachers were instructed to report on target student challenging behavior across the whole school day, including, but not limited to, the target setting. Like TAs, lead teachers reported substantive improvements in each target student's challenging behavior, strengthening the validity of the observed patterns of behavior change across target students in their respective target settings following intervention. So these results not only confirm the hypothesis that target students will engage in lower rates of challenging behavior following application of the multilevel consultation model in the target setting, but they suggest some positive effect of the model in non-target settings. Thus, the multilevel consultation model used in the current study appeared to also be causally related to *reported* increases in acceptability of challenging behavior for target students, across multiple settings.

Consultation dosage. Teaching assistants participated in a standard initial training with the researcher to learn how to implement their respective target student's BSP, which totaled about two hours for each TA. Then, varying amounts of support were provided, contingent on each TA's level of observed adherence to the BSP for their respective target student. In some cases, TA's recruited support in addition to that scheduled. On average, each TA received a total of about 2.5 hours of researcher time across the study, meaning that, on average, TAs only

required about 30 minutes of direct one-on-one support following the initial training throughout the entire duration of the study (i.e., approximately 15 weeks). These results indicate strong evidence that behavioral skills training is a very effective, but insufficient, means of teaching TAs how to implement a multicomponent BSP and maintain adherence over time. The multilevel supports were delivered contingent on observed levels of treatment adherence, meaning this model is adaptable to individuals with differing levels of need for implementation support. Therefore, this model promotes the idea that we should provide increasing supports to those who need it, and only periodically checking in with those who don't appear to need support with implementation; in essence, a response-to-intervention framework (Sugai & Horner, 2009). In sum, after receiving an initial 2 hour training using BST, relatively minor amounts of support were required to reach fidelity thereafter for each TA. One TA required no further prompting to maintain adequate levels of adherence across the study, two only required a brief text message reminder, and two required in-person prompting using a 5-second time delay. Thus, the multilevel consultation model used in the current study proved to be a responsive, and highly efficient, means for teaching TAs to implement multicomponent BSPs to fidelity (i.e., above 70% adherence).

Behavior support plan acceptability. Professionals have mixed thoughts, experience, and motivation concerning the use of behavioral interventions, which is why it is important to assess the acceptability of behavioral intervention supports provided to consultees. All five BSPs were found to be highly acceptable by TAs when the plan was initially described (pre-assessment) as well as during post-assessment. That is, after practicing implementing the BSP in a practice setting, prior to the intervention phase, all TAs rated the BSPs as highly acceptable. Additionally, after implementing the BSPs in the target setting for numerous sessions, all TAs

rated similarly, indicating a strong contextual fit of each BSP for those implementing the plans. In addition, all TAs were observed in the maintenance phase of the study

Likewise, all five BSPs were found to be highly acceptable by lead teachers when the plan was initially described (pre-assessment) as well as during post-assessment. That is, after briefly walking through the BSP outside of the target setting, prior to the intervention phase, all lead teachers rated the BSPs as highly acceptable. Additionally, after implementing the BSPs in the target setting for numerous sessions, all lead teachers still rated similarly, indicating a strong contextual fit of each BSP from the perspective of an outside observer. Thus, the BSPs were not only technically adequate, but they were contextually fit as evidenced by the continued acceptability rated by both implementers and onlookers in the target setting.

Multilevel consultation model acceptability. Results indicate that the multilevel consultation model is highly acceptable to those implementing each target student's BSP, as indicated by high ratings of helpfulness and utility of all consultation model components. Thus, the initial training received, and any prompting provided thereafter, was considered by TAs to be highly acceptable. In addition, those who recruit funding and supervise teaching/support staff in the EEP (i.e., administrators) found the training and support provided to staff as part of the multilevel consultation model to be highly acceptable. Thus, administrators found the overall consultation process to be highly acceptable in their setting. Further, administrators also indicated a high level of willingness and interest to engage in similar research and consultation in the future as a result of participating in the study. Thus, using the current study as a referent, administrators reported that they would be more willing to agree to participate in similar studies in the future, an indication of systematic acceptability of the multilevel consultation model across administrative levels. In national sample, teachers, TAs, and school psychologists were surveyed,

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and those with low behavioral expertise rated function-based supports as acceptable, effective, and efficient, but over 70% of respondents were reporting on behavior plans that were primarily delivered by outside personnel. Thus, those with limited expertise rated strategies positively because they were minimally involved in implementation. In the current study, TAs were directly responsible for implementing BSP, but still rated BSPs as highly effective, efficient, and acceptable. Thus, the current study contributes to a limited body of literature that suggests some professionals with limited behavioral expertise favor behavioral interventions, even when they are responsible for implementing them.

Limitations and Future Research Directions

Findings from the present study must be considered within a set of important limitations. These limitations inform future research directions. First, training each individual TA on each target student's BSP was somewhat difficult for the researcher under the time constraints of a concurrent multiple baseline design. This constraint required a somewhat rapid turnaround on accumulating and organizing evidence-based procedures for each BSP, as well as developing each associated fidelity checklist. Future research should investigate the utility of alternative research designs; perhaps designs which allow for time- and session- independent intervention implementation. One example would be a nonconcurrent multiple baseline design, where researchers could potentially conduct trainings in small groups and initiate implementation of BSPs near the same starting point, or have more flexibility in accumulating and developing BSP materials across more time. A nonconcurrent design is less methodologically rigorous, but may be easier to conduct in applied settings.

Although a clear benefit of training and employing multiple independent observers is the ability to observe interobserver agreement, scheduling observations with multiple independent

observers was somewhat difficult to coordinate, as most independent observers were doctoral students with many other responsibilities. Future research in this area should consider relying on consultee self-report or video-recordings of BSP implementation to inform whether additional implementation supports would be provided to consultees. First, though, reliability would need to be evaluated for consultee self-report and independent observers ratings of adherence.

Intervening with TAs contingent on BSP adherence was likely a key variable in promoting and maintaining high adherence across the study. One limitation to this procedure was that the researcher had to be available, ready to intervene, with only a day's notice. Minimal materials were required so not much preparation occurred within a day's notice, again, scheduling was sometimes difficult. On the other hand, although scheduling was difficult, it wasn't prohibitive. One factor that made intervening on short notice (within a day's notice) difficult is that there was no designated space available for the researcher, so storage of materials, printing forms, etc., was relatively cumbersome to deal with prior to meeting with TAs. Future research should consider alternative approaches to tracking and intervening on BSP adherence. For example, researchers may try gathering weekly probes of adherence on one or two set days of the week, and intervene contingent on those results. Alternatively, it may be worthwhile to prioritize having a designated research assistant (or more) who is/are trained and regularly onsite to collect observational data. This/these research assistant(s) could report assessment probes to an online database that the researcher can check when necessary. Alternatively, future research may explore the benefits and costs of having consultees video record their own BSP implementation in the target setting, and uploading themselves to an online database.

There were clear benefits of having one person trained to criterion, and monitored for BSP adherence for each target student's BSP (i.e., each TA), including insurance that BSP procedures were implemented as intended, which is usually a major barrier in applied research (Durlak & DuPre, 2008). However, a limitation to this design is that having only one person trained on each target student's BSP caused issues when a TA was absent, as others did not necessarily know how to implement the BSP procedures. Although BSP procedures were described in detail to all lead teachers to check for contextual fit before training each TA, lead teachers reported wishing they had been involved more in the intervention procedures. This was not necessarily directly reflected in acceptability ratings, but noted in multiple teachers' subjective remarks on the CM-TARF form and discussed with the researcher anecdotally. Incorporating lead teachers into the intervention procedures could be greatly beneficial to target students by having multiple providers on hand who are familiar with their individualize BSP procedures. However, incorporating lead teachers into the intervention procedures could have a number of drawbacks as well, including: 1) scheduling trainings, meetings, and check-ins across multiple providers would be potentially more difficult, especially considering the varied demands and schedules of TAs and lead teachers, 2) potential differences in initial understanding and interpretation of BSP procedures may influence the involvement and motivation of some providers, 3) the task of collaborating who would be responsible for implementing the BSP on which days may complicate implementation and compromise adherence, and 4) the additional time and resources required to train, progress-monitor, and otherwise support an additional provider would reduce the efficiency of the multilevel consultation model, which compromises one of the primary aims of the study (i.e., promoting consultation efficiency).

Although it was the desire of the researcher to recruit target students with the highest level of challenging behavior and TAs with the least amount of training and experience possible, not all participants at the study location were ideal participants. Some TAs were educated higher than expected and desired, with two TAs holding bachelor's degrees. Also, although it was agreed by administration and lead teachers that selected target students had the highest level of challenging behavior in each of the selected classrooms, if students could have been selected across sites, perhaps students with more extreme challenging behavior could have been selected, providing an opportunity to strengthen the validity of the procedures used in the study. If the researcher were able to recruit from multiple sites, it may have been possible to find students with more significant challenging behavior and paraprofessionals with less experience. Further, one target student who participated in the study was not a particularly good fit for the study, but was selected because he was the highest priority concern of one of the lead teachers involved in the study. In essence, TS5 exhibited challenging behavior across all settings, which made intervention in a target setting less effective. Future research should consider exploring the costs and benefits of employing stricter criteria for participation in study. For example, researchers may choose to require that challenging behavior must exist in only *some* settings. Hypothetically, if students were to engage in challenging behavior across many settings, interventions supports would need to be constructed with each setting in mind, requiring potentially multiple BSPs that would need to be sensitive to the antecedents, consequences, and putative function of the behavior in each setting. Recruiting participants from multiple sites should be considered as well.

The current study began at the end of April, 2017, nearing the end of the school year. One limitation to this start time, is that teacher energy and motivation was hypothesized as being somewhat lower relative to earlier in the school year, as teachers had been exposed to

challenging behavior for several months without successful intervention. Likewise, by starting the study that late in the school year, target student challenging behavior had most of a school year to develop and strengthen, which potentially may have reduced intervention effects compared to a possible earlier start date. On the other hand, the context of a school climate where teachers are worn out and students have established strong patterns of challenging behavior may also provide additional rationale that the study procedures were valid and especially effective considering the context. Future research should consider the costs and benefits of initiating the study in the first couple weeks of school in the fall (e.g., October) or in the middle of the school year (e.g., January or February) to maximize teacher motivation and prevent unnecessary strengthening of untreated challenging behavior over time. One potential drawback of starting relatively earlier may be that challenging behavior may not occur as reliably in a target settings as would be appropriate for one-on-one (i.e., tier 3) intervention. Further, teachers may not be sufficiently familiar with students early in the school year as well to provide accurate indirect behavior assessment results.

By intervening in early childhood, it is possible that challenging behavior exhibited by target students is initially lower than one would expect when compared to older children, and thus potentially easier to intervene upon (Emerson et al., 2001). This multi-level consultation model may be suitable for use with older children, but this should be tested experimentally with new consultees and older target students. The principles of ABA drove the design and development of assessment and intervention procedures used in the current study, and thus, the same principles should be applicable to students of all ages (and adults). Thus, it highly likely that the procedures used in the current study would work well in elementary and other settings, given other study components are not compromised.

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Additionally, future research should consider evaluating the pros and cons of altering the advancement criteria (i.e., support provided contingent on TAs implementing a BSP below 70% percent adherence), to see if a lower criteria (e.g., 60%) or a higher criteria (e.g., 80%) would be equally effective and efficient in identifying and remediating less than acceptable levels of treatment adherence. It's possible that setting higher adherence criteria could produce higher observed adherence, while such an increase may also substantially increase researcher involvement, and thus decrease the efficiency of an already effective model. Last, in looking forward to scaling up the multilevel consultation model, additional measures which have been used in preschool settings, such as the Teaching Pyramid Observation Tool (TPOT; Hemmeter, Fox, & Snyder, 2008), should be considered for use in pre-post assessment of fidelity of implementation for school-wide multilevel supports.

Conclusion

Limitations notwithstanding, the multilevel consultation model utilized in the current study accomplished four major feats in the field of behavioral consultation: 1) consultees were trained to over 90% fidelity how to effectively implement a multicomponent BSP, 2) target student challenging behavior was reduced to near-zero levels for all participating students, 3) all directly and indirectly involved participants rated the model as highly acceptable, and 4) observed effects resulted from a minimal amount of training and support to consultees, indicating a highly efficient model. Thus, a highly structured (i.e., replicable), multilevel consultation model has proven effective, efficient, and has been rated as highly acceptable by those involved. This is a substantial accomplishment in the context of an educational system where 1) professionals have mixed thoughts, experience, and motivation concerning the use of behavioral interventions, 2) children with the highest needs are primarily served by those with the least

training and experience, and 3) specialists are burdened with large caseloads and limited system-wide structure for treating challenging behavior.

The biggest contribution of the current study to the literature more broadly, however, is the provision of an initial, discrete documentation of the time and procedures required within a structured consultation model to reach desired outcomes for both students and staff. Paraprofessionals with minimal-to-moderate levels of experience and training reached desirable levels of skill acquisition, and preschool students with disabilities and challenging behavior achieved desirable reductions in challenging behavior through behavioral consultation with a single consultant across approximately 2.5 hours of intervention per consultee, on average. Thus, when presented with students with the highest needs, and providers with the least amount of experience and training, the multilevel consultation model was an acceptable mechanism to increase consultee competence and decrease target student challenging behavior across settings, over time, with minimal time and resources.

FUNCTIONAL ASSESSMENT CHECKLIST FOR TEACHERS AND STAFF FORM

For _Early Childhood_ (pre-k) Teachers/Staff:
Functional Assessment Checklist for Teachers and Staff (FACTS-Part A)

Student: _____ Age: _____ Date: _____
Staff Interviewed: _____ Interviewer: _____

Student Strengths: Identify at least three strengths or contributions the student brings to school.
Learning-related strengths- _____
Social/Emotional strengths- _____
Other strengths - _____

ROUTINES ANALYSIS: Where, When and With Whom Problem Behaviors are Most Likely.

	Time	Routine (_and who is around?_)	Likelihood of Problem Behavior		Specific Problem Behavior	Current Intervention for the Problem Behavior (_and who intervenes?_)
Example	9:30-9:35	Lining up for bathroom. (Liz, a paraprofessional, stands at the door)	Low 1 2 3 4 ⑤ 6	High	Hitting peers	Make him say sorry (usually Liz asks him to apologize, sometimes the lead teacher, Bailey)
			1 2 3 4 5 6			
			1 2 3 4 5 6			
			1 2 3 4 5 6			
			1 2 3 4 5 6			
			1 2 3 4 5 6			

List the Routines in order of Priority for Behavior Support: Select routines with ratings of 5 or 6. Only combine routines when there is significant (a) similarity of activities (conditions) and (b) similarity of problem behavior(s). Complete the FACTS-Part B for each of the prioritized routine(s) identified.

	Routines/Activities/Context	Problem Behavior(s)
Routine # 1		
Routine # 2		
If problem behaviors occur in more than 2 routines, refer case to behavior specialist		

BEHAVIOR(s): Rank order the top priority problem behaviors occurring in the targeted routine above:

___ Running away   ___ Physical Aggression   ___ Noncompliance   ___ Other _____
___ Unresponsive   ___ Yelling/Screaming, etc.   ___ Work refusal   _____
___ Self-injury   ___ Take things w/out asking   ___ Work not done   _____

Describe prioritized problem behavior(s) in observable terms (**EXAMPLE**: Physical Aggression- "Timmy hits nearby children on the face and chest with an open hand") _____
_____

What is the frequency of the Problem Behavior in the targeted routine (# times/day or hour)?	
What is the duration of the Problem Behavior in the targeted routine (in seconds or min)?	
Is Behavior Immediate Danger to self/others?	Y N **If Yes, refer case to behavior specialist**

Adapted by J. Mahon (2017) from .Loman (2009); Borgmeier (2005); March, Horner, Lewis-Palmer, Brown, Crone & Todd (1999)

Functional Assessment Checklist for Teachers & Staff (FACTS-Part B)

Identify the Target Routine: Select _ONE_ of the prioritized routines from FACTS-Part A for assessment.

ROUTINE # 1	Problem Behavior(s) – make description observable
(gather from "Routines Analysis" above)	(gather from "Behavior(s)" box above)

ANTECEDENT(s): _Rank Order_ the strongest triggers/predictors of problem behavior in the routine above. Then ask corresponding follow-up question(s) to get a _detailed_ understanding of triggers ranked #1 & 2.

Environmental Features (_Rank order strongest 3_)		Follow Up Questions – _Get as Specific as possible_
___ a. uninterested in activity	___ h. small groups	If a, b, c, d, or e – describe task/demand in detail:
___ b. activity is aversive	___ i. unstructured time, e.g., free play	_____
___ c. bored w/ activity	___ j. transitions, e.g., line up	If f – describe purpose of correction, voice tone, volume etc.
___ d. cleaning up	___ k. with peers	_____
___ e. physical prompt, e.g., touch arm	___ l. isolated/ no attn	If g, h, or i – describe setting/activity/content in detail
___ f. verbal correction, e.g., "stop it"	___ m. involves food	_____
___ g. circle time	___ n. certain teachers present	If j – transitioning _from_ _____ _to_ _____
___ Other (what triggers this behavior?) Describe: _____		If k – which peers? _____
		If l, m, or n – describe:

CONSEQUENCE(s): _Rank Order_ the strongest pay-off for student that appears most likely to maintain the problem behavior in the routine above. Then ask follow-up questions to detail consequences ranked #1 & 2.

Consequences/Function	As applicable -- Follow Up Questions – _Get as Specific as possible_
___ a. get adult attention	**If a or b** -- Whose attention is obtained?
___ b. get peer attention	
___ c. get preferred activity	How is the (positive or negative) attention provided?
___ d. get object/things	
___ e. get sensation	
___ f. get other, describe _____	**If c,d, e, or f** -- What specific items, activities, or sensations are obtained?
___ g. avoid adult attention	
___ h. avoid peer attention	**If g or h** – Who is avoided? _____
___ i. avoid undesired activity/task	Why avoiding this person?
___ j. avoid sensation	**If i, j, or k**- Describe specific task/activity/sensation avoided? **Long tasks**
___ k. avoid/escape other, describe	Be specific, DO NOT simply list subject area, but specifically describe type of work within the subject area? Tasks with multiple steps, application questions that requires problem solving
_____	Can the student perform the task independently? Y N
	Is academic assessment maybe needed to ID specific skill deficits? Y N

SETTING EVENT(s): _Rank_ Order any events that **happen outside of the immediate routine** (at home or earlier in day) that commonly make problem behavior more likely or worse in the routine above.

__ hunger __ conflict at home __ conflict at school __ missed medication __ illness __recent disappointment (e.g., lost privilege)

__ lack of sleep __change in routine __ not sure __ Other_____

SUMMARY OF BEHAVIOR

Fill in boxes below using top ranked responses and follow-up responses from corresponding categories above.

ANTECEDENT(s) / Triggers	Problem Behavior(s)	CONSEQUENCE(s)/ Function(s)
SETTING EVENT(s)		

How likely is it that this Summary of Behavior accurately explains the identified behavior occurring?					
Not real sure					100% Sure/No Doubt
1	2	3	4	5	6

BEHAVIOR SUPPORT PLAN CHECKLIST FOR TARGET STUDENT 1 (TS1),

TO BE USED BY TEACHING ASSISTANT 1 (TA1)

Behavior Support Plan Checklist for TS1

Target student initials: _____ TS1 _____ Date:_____
Target setting: _____ Free play _____ Target time: _____ 9:25 – 9:40 _____ **OBSERVATION** (1) / 2
Instructions:
1. Mark an "X" in the column for whether a step was completed: **no**, **some**, **most**, or **yes**.

Step in the BSP for TS1	No	some	most	Yes
BEFORE free play (9:15-9:20)				
Step 1: Collect the following: (1) Behavior Support Plan Checklist (this form!) (2) Rewards to be earned by TS1 (3) TS1's tokens and token strip				
AT VERY BEGINNING of free play (at 9:20)				
Step 2: Lead TS1 outside of play area. Offer praise and a token for "*helping*"				
Step 3: Conduct pref. assess. (4-5 choices) to learn what he wants to earn				
Step 4: Remind TS1 of what he can earn for engaging in **sharing**, **nice touches**, and **making a different choice**				
Step 5: Model – Lead – Test Nice touch • **Model** using examples and nonexamples. **Lead** through practice by asking "*If _____ happens, what should you do?*" **Test** his knowledge: "*Show me how you touch nicely*"	Note: if she only "Tests" still count as "yes"			
Step 6: Model – Lead – Test Sharing • **Model** using examples and nonexamples. **Lead** through practice by asking "*If _____ happens, what should you do?*" **Test** his knowledge: "*Show me how you share*"	Note: if she only "Tests" still count as "yes"			
Step 7: Model – Lead – Test Make a different choice • **Model** using examples and nonexamples. **Lead** through practice by asking "*If _____ happens, what should you do?*" **Test** his knowledge: "*Show me how you make a different choice*"	Note: if she only "Tests" still count as "yes"			
Step 8: Test TS1 about **(1)** how he earns tokens, and **(2)** how many he needs.				
DURING (9:15-10:10)				
If TS1... Shares, touches nice, or makes a different choice (when peer says no)				
Step 9: Use specific praise (**very enthusiastically**) and deliver points on **appropriate schedule**. Randomly include other rewards like candy.	*Tally praise/tokens:*			
Appropriate PRAISE schedule? (Jake will calculate this)				
Step 10: Every 5 points or so, deliver a piece to the new toy -- **OR** – whatever he chose during the preference assessment.	*Tally Reinforcement:*			
Appropriate REINFORCEMENT schedule? (Jake will check this)				
If TS1... Challenging Behavior				
(1) At first, **DO NOT** provide any attention to TS1.				na
(2) Provide specific praise and reward to nearby peer				na
(3) Remind what he earns if he, **shares**, **touches nice**, or **accepts "no"**				na

BEHAVIOR SUPPORT PLAN CHECKLIST FOR TARGET STUDENT 2 (TS2),

TO BE USED BY TEACHING ASSISTANT 2 (TA2)

Behavior Support Plan Checklist for TS2

Target student initials: _____ TS2 _____   Date:_____   Observer: _____
Target setting: _____ Circle _____   Target time: _ 10:10-10:25 & 12:00-12:15 (choose 1) _

Instructions: Mark an "X" in the column for whether a step was completed: **no**, **some**, **most**, or **yes**.

Step in the BSP for TS2	No	some	most	Yes
3-5 min BEFORE OTHERS ARRIVE AT CIRCLE (9:55ish *and* 11:55ish)				
Step 1: Collect the following: (1) This BSP Checklist (2) Rewards (3) tokens				
Step 2: Bring TS2 to circle area -- *PRACTICE DESIRED BEHAVIOR* *"Show me sitting"* **provide candy** and **specific praise** *"Show me looking at teacher"* **provide candy** and **specific praise**				
Step 3: Allow TS2 to return to freeplay				
AS CIRCLE TIME STARTS (at 10:10 *and* about 12:00)				
Step 4: Guide TS2 toward circle **Say** *"Remember, you get prizes when you sit and look at teacher."* ***When he walks toward circle - Provide 1 token**				
Step 5: ** When he sits at circle - Provide 1 token				
DURING CIRCLE (10:10-10:25 & 12:00-12:15)				
If TS2... -- **sits at circle** -- **looks at teacher** -- **plays along** --				
***About every 1.5 minutes - Provide token to TS2** [Will probably need signaling from other Teacher] *APPOXIMATE* *When walking *When sits *1½ minutes *3 minutes *4½ minutes *6 minutes *7½ minutes *9 minutes *12 minutes				
***After 4-5 tokens, provide group with candy**				
If TS2... Leaves the circle without permission				
(1) Verbally prompt him to ask for a break (2) Gesture for him to ask for a break (3) physically prompt him to ask for a break During break (1) don't look at him (2) no touching (3) no talking (4) no laying down for **TS2,** (5) no books during circle time, **unless it's at circle,** (6) Remind what he earns if he, sits or looks at teacher.	na			
If TS2... Asks for a break (with hand-raise or other break signal)				
(1) **Praise** for using hand-raise or break signal				
(2) **Be sure he stays** in pre-determined break area. At break be boring and neutral in tone. MINIMAL adult attention. No books or toys.	na			
(3) **After 1 minute...** insert **TS2** into the activity or story Other teachers might remind what he earns if he, sits, looks at teacher, or plays along [Optional]				

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BEHAVIOR SUPPORT PLAN CHECKLIST FOR TARGET STUDENT 3 (TS3),

TO BE USED BY TEACHING ASSISTANT 3 (TA3)

Behavior Support Plan Checklist for TS3

Target student initials: _____ TS3 _____   Date:_____

Target setting: _____ Circle _____   Target time: _____ 10:20 – 10:35 _____ / _____ 12:00 – 12:15 _____

1. Mark an "X" in the column for whether a step was completed: **no**, **some**, **most**, or **yes**.

Step in the BSP for TS3	No	some	most	Yes
BEFORE circles (10:15-10:20 and 11:55-12:00)				
Step 1: Collect the following: (1) BSP Checklist (**this form!**), (2) Rewards for **TS3**, (3) **TS3** tokens/coupons				
Step 2: Pull TS3 aside from free play before the transition to circle 1 or circle 2				
Step 3: Conduct pref. assess. (3-4 choices) to learn what he wants to earn. Provide 15-20 seconds of access to each item/activity after he picks it. *"I want to tell you what prizes you can earn today… Pick one…"* [Exact verbiage not required]				
Step 4: Remind TS3 of what he can earn for engaging in listening the first time, play along at circle and how many tokens he needs. *"If you listen the first time and play along at circle, you get a token. If you get 4 tokens, you get to have one of the prizes!"* [Exact verbiage not required]				
Step 5: Model – Lead – Test Listening the first time (cleaning or lining up) • Model examples of cleaning up or lining up • Model nonexamples of cleaning up or lining up • Lead *"If a teacher says _____, what do you do?"* • Test *"Show me listening the first time"* Ask him to do something silly [Note: if she only "Tests" still count as "yes" if he gets it right] [Exact verbiage not required]				
Step 6: Model – Lead – Test Playing along at circle (sit, look, play along) • Model examples of sitting, looking at teacher, playing along at circle • Model nonexamples of sitting, looking at teacher, playing along • Lead *"If a teacher says _____, what do you do?"* Test *"Show me sitting…good!...show me looking at teacher…good!"* [Note: if she only "Tests" still count as "yes" if he gets it right] [Exact verbiage not required]				
AT VERY BEGINNING of circle (at about 10:20 and about 12:00)				
Step 7: Test TS3 about **(1)** how he earns tokens, and **(2)** how many he needs.				
DURING circle (10:20-10:35 and 12:00-12:15)				
Step 8: If TS3… Listens the first time or plays along at circle				
(1) Use specific praise (**very enthusiastically**) and deliver tokens about once per minute. Randomly include other rewards like candy. ****Have another adult signal you at 1 minute intervals**				
(2) Every 4 points or so, deliver sticker to be delivered to a peer – **OR** – whatever he chose during the preference assessment.				
Step 9: If TS3… Challenging Behavior				
(1) At first, *NOBODY!!!* provide any attention to TS3				na
…if noncomply (2) Provide specific praise and reward to nearby peer				na
…if noncomply (3) Remind him what he earns if, Listen first time or play along				na
Step 10: If TS3… Leaves area, REMIND STAFF…				
(1) don't look at him (2) no touch (3) no talking **unless at circle**. …if it persists…(4) Remind what he earns if he, listens the first time, cleans up lines up, sits, looks at teacher or plays along				na

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BEHAVIOR SUPPORT PLAN CHECKLIST FOR TARGET STUDENT 4 (TS4),

TO BE USED BY TEACHING ASSISTANT 4 (TA4)

Behavior Support Plan Checklist for TS4

Target student initials: _____TS4_____   Date:_____   Observer:_____
Target setting: ___gross motor / snack_____   Target time: _approx 3:10 – 3:25 / approx 3:30 – 3:45

Step in the BSP for TS4	No	some	most	Yes
BEFORE gross motor (before 3:10) *and* snack (before 3:30)				
Step 0.1: Administer questionnaire to TS4 as soon as he arrives to school.				
Step 0.2: Deliver neutralizing routine if any of questions = "YES"				
Step 1: Collect: (1) **this form!** (2) Rewards for **TS4**, (3) **TS4** tokens/coupons				
Step 2: Pull TS4 aside (away from peers) before routine (gross motor **and** snack)				
Step 3: Conduct pref. assess. (3-4 choices) to learn what he wants to earn. Provide 15-20 seconds of access to each item/activity after he picks it. *"I want to tell you what prizes you can earn today... Pick one..."*	Exact verbiage not required			
Step 4: Remind TS4 of what he can earn for engaging in listening the first time or playing along and how many tokens he needs. *"If you listen the first time and play along at group and snack, you get a token. If you get 4 tokens, you get to have one of the prizes!"*	Exact verbiage not required			
Step 5: Model – Lead – Test Listening the first time (transition/group/snack) • Model examples of listening first time in **transition**, **group**, or **snack** • Model nonexamples listening first time **transition**, **group**, or **snack** • Lead *"If a teacher says _____, what do you do?"* • Test *"Show me listening the first time"* Ask him to do something silly	It's okay to only do the "Test" part if he gets it right / Exact verbiage not required			
Step 6: Model – Lead – Test Playing along (following expectations of routine) • Model examples of playing along in **transition**, **group**, or **snack** • Model nonexamples listening in **transition**, **group**, or **snack** • Lead *"If the group is doing _____, what should you do?"* Test *"Show me playing along when we _____... Good!"*	It's okay to only do the "Test" part if he gets it right / Exact verbiage not required			
AT VERY BEGINNING of gross motor (at 3:10) *or* snack (at 3:30)				
Step 7: Test TS4 about **(1)** how he earns tokens, and **(2)** how many he needs.				
DURING gross motor (3:10-3:25) *or* snack (3:30-3:45)				
Step 8: <mark>If TS4... **Listens the first time** or **plays along** in</mark> **transition/group/snack**				
(1) Use specific praise (**very enthusiastically**) and deliver tokens about once per minute. Randomly include other rewards like candy. **Feel free to use an interval timer to signal yourself				
(2) Every 4 points or so, deliver group reward – **OR** – whatever he chose during the preference assessment.				
Step 9: <mark>If TS4... **Has challenging behavior**</mark> in **transition/group/snack**				
(1) At first, *NOBODY!!!* provide any attention to TS4				na
...if noncomply (2) Provide specific praise and reward to nearby peer				na
...if noncomply (3) Remind him what he earns if **Listen first time** or **play along**				na
Step 10: <mark>If TS4... **Leaves area**</mark>				

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BEHAVIOR SUPPORT PLAN CHECKLIST FOR TARGET STUDENT 5 (TS5),

TO BE USED BY TEACHING ASSISTANT 5 (TA5)

Behavior Support Plan Checklist for TS5

Target student initials: _____TS5_____   Date:_____   Observer: _____

Target setting: __Arrival / Departure__   Target time: __1:15 – 1:30__ *and* __4:00 – 4:15__   *(circle one)*

Step in the BSP for TS5	No	some	most	Yes	
Collect and prepare the following: (1) BSP Checklist (**this form!**), (2), Icons and icon board (3) Rewards for **TS5**					
Upon arrival: 1:15pm—1:25pm: Provide 10 min preferred activity with mom and Jaime (10 min).					
>> While walking >> Be sure your hands appear "unavailable" • TS5oose one of TS5's preferred activities, **hand over hand** *how to ask for it* >> verbalize the name of the activity and **have him** touch icon. • Provide the fun/preferred activity *for free*...					NA for 4:00 Depar ture
• Once he is engaged, pause for 5 seconds and wait for him to **request the item or activity** >>> (using **sign, words,** or **touching** the icon) • If he doesn't do one of those 3 within 5 seconds, **hand over hand** >> verbalize the name of the item/activity and **have him** touch the icon. • Let him continue the activity *for free*... Repeat about 5-10x, if possible					NA for 4:00 Depar ture
1:25pm – 4:15pm					
As any demand or transition or routine happens, or a class-wide instruction: • **(1)** Wait **5 s** for TS5 to (1) engage independently. **If he doesn't in 5 s** • **(2)** Verbalize the instruction to TS5. **If not in 5 s** • **(3)** Touch the icon and repeat the instruction. **If he doesn't in 5 s** • **(4)** Lightly guide his hand & repeat the instruction. **If he doesn't in 5 s** • **(5)** Hand over hand to touch icon and repeat the instruction. • **(6)** If you get this far, you should be neutral / minimally reinforcing!!!					NA
If TS5... **responds to a demand independently AT ALL...** • Deliver subtle **praise** and **physical touch**, and **M&M** (candy optional)					NA
If TS5... **Tries to grab something such as a toy, Jaime's hand/body/clothes:** • **(1)** Withhold object/hand/body/clothes for 5 seconds. • **(2)** Wait **5 s** for him to (1) say **name of item** or (2) **touch** the icon for it. • **(3)** Verbalize the instruction: *"Say ___ "* / *"Touch ___[icon]"* **If not in 5 s** • **(4)** Touch the icon and repeat the instruction. **If he doesn't in 5 s** • **(5)** Lightly guide his hand & repeat the instruction. **If he doesn't in 5 s** • **(6)** Hand over hand by verbalizing the name of the item/activity (**e.g.,** "hand") and *having him* touch the icon. Then, give it to him. • **(7)** If you get this far, you should be neutral / minimally reinforcing!!!					NA
If TS5... **touches an icon or verbalizes without help...** • Deliver subtle **praise** and **physical touch**, and **M&M** (candy optional)					
If TS5... **vocalizes anything:** • Deliver subtle **praise** (e.g., "Nice talking") and **touch**					NA
If TS5... **vocalizes a request:** • Fulfill request quickly! Subtle **praise** ("e.g., nice asking")/ **touch**					NA
If TS5... **walks in the HALLWAY on his own**: Jaime Provide **subtle praise** ("e.g., nice asking")/ **touch** every 10-20 seconds					NA
If TS5... **requires physical guidance to go to the activity or to comply with routine:** Provide minimal or **NO ATTENTION** while guiding him.					NA

EXAMPLE DATA SHEET FOR TARGET STUDENT CHALLENGING BEHAVIOR

Classroom Observation Form

Student initials: _____

Date of observation: _____

Target setting: _____ (*note*- observe for 20 min)

TIME: → Entered Classroom: _____ Start Observation: _____ End Observation: _____ Leave Classroom: _____

OPERATIONAL DEFINITION OF PROBLEM BEHAVIOR

Target problem behavior: _____
may include an entire class of behaviors)

(*Note:* Be sure to carefully record the operational definition from the behavior support plan. It

Examples:

Nonexamples:

Instructions: Start stopwatch. If the target problem behavior occurs during the 15 second interval, mark an "X" in the white box to right of the indicated interval.

Interval	PB	Interval	PB	Interval	PB	Interval	PB
0 -.15		5:00-		10:00-		15:00-	
2		22		42		62	
3		23		43		63	
4		24		44		64	
1:00-		6:00-		11:00-		16:00-	
6		26		46		66	
7		27		47		67	
8		28		48		68	
2:00-		7:00-		12:00-		17:00-	
10		30		50		70	
11		31		51		71	
12		32		52		72	
3:00-		8:00-		13:00-		18:00-	
14		34		54		74	
15		35		55		75	
16		36		56		76	
4:00-		9:00-		14:00-		19:00-	
18		38		58		78	
19		39		59		79	
20		40		60		80	

Observation Summary

_____ Total # of intervals with the target problem behavior

_____ Total # of observation intervals

_____ % intervals with the target problem behavior

Notes:

THE ACCEPTABILITY OF CURRENT LEVELS OF CHALLENGING BEHAVIOR FORM

USED TO ASSESS RATERS' ACCEPTABILITY OF TARGET STUDENT CHALLENGING

BEHAVIOR IN THE TARGET SETTING

Acceptability of Current Levels of Challenging Behavior – *target setting*

Intended to measure acceptability of the current levels of challenging behavior

----

Please score the following items by circling the number that best indicates how you feel about the target student?

Target setting: _____

Compared to his or her peers…

1. …**how appropriate** is this student's behavior in the target setting overall?

1	2	3	4	5	6
Very Inappropriate	Inappropriate	Somewhat Inappropriate	Somewhat Appropriate	Appropriate	Very Appropriate

How satisfied are you with…

2… the student's overall **current level of challenging behavior** in the target setting?

1	2	3	4	5	6
Very Dissatisfied	Dissatisfied	Somewhat Dissatisfied	Somewhat Satisfied	Satisfied	Very Satisfied

3. …**the intensity** of the student's challenging behavior in the target setting?

1	2	3	4	5	6
Very Dissatisfied	Dissatisfied	Somewhat Dissatisfied	Somewhat Satisfied	Satisfied	Very Satisfied

4. …**how often** the student's challenging behavior occurs in the target setting?

1	2	3	4	5	6
Very Dissatisfied	Dissatisfied	Somewhat Dissatisfied	Somewhat Satisfied	Satisfied	Very Satisfied

5. …**how consistently** the student's challenging behavior occurs in the target setting?

1	2	3	4	5	6
Very Dissatisfied	Dissatisfied	Somewhat Dissatisfied	Somewhat Satisfied	Satisfied	Very Satisfied

6. …**how long** the student's challenging behavior lasts when it happens in the target setting?

1	2	3	4	5	6
Very Dissatisfied	Dissatisfied	Somewhat Dissatisfied	Somewhat Satisfied	Satisfied	Very Satisfied

7. …**how dangerous** the student's challenging behavior is in the target setting?

1	2	3	4	5	6
Very Dissatisfied	Dissatisfied	Somewhat Dissatisfied	Somewhat Satisfied	Satisfied	Very Satisfied

How satisfied are you with…

8. …**how peers are impacted** by the student's challenging behavior in the target setting?

1	2	3	4	5	6
Very Dissatisfied	Dissatisfied	Somewhat Dissatisfied	Somewhat Satisfied	Satisfied	Very Satisfied

9. …**how much adults enjoy interacting with** the student in the target setting?

1	2	3	4	5	6
Very Dissatisfied	Dissatisfied	Somewhat Dissatisfied	Somewhat Satisfied	Satisfied	Very Satisfied

THE ACCEPTABILITY OF CURRENT LEVELS OF CHALLENGING BEHAVIOR FORM

USED TO ASSESS RATERS' ACCEPTABILITY OF TARGET STUDENT CHALLENGING

BEHAVIOR ACROSS THE WHOLE SCHOOL DAY

Acceptability of Current Levels of Challenging Behavior – *whole school day*

Intended to measure acceptability of the current levels of challenging behavior

----

Please score the following items by circling the number that best indicates how you feel about the target student?

Compared to his or her peers…

1. …**how appropriate** is this student's behavior in your classroom overall?

1	2	3	4	5	6
Very Inappropriate	Inappropriate	Somewhat Inappropriate	Somewhat Appropriate	Appropriate	Very Appropriate

How satisfied are you with…

2… the student's overall **current level of challenging behavior** in your classroom?

1	2	3	4	5	6
Very Dissatisfied	Dissatisfied	Somewhat Dissatisfied	Somewhat Satisfied	Satisfied	Very Satisfied

3. …**the intensity** of the student's challenging behavior in your classroom?

1	2	3	4	5	6
Very Dissatisfied	Dissatisfied	Somewhat Dissatisfied	Somewhat Satisfied	Satisfied	Very Satisfied

4. …**how often** the student's challenging behavior occurs in your classroom?

1	2	3	4	5	6
Very Dissatisfied	Dissatisfied	Somewhat Dissatisfied	Somewhat Satisfied	Satisfied	Very Satisfied

5. …**how consistently** the student's challenging behavior occurs in your classroom?

1	2	3	4	5	6
Very Dissatisfied	Dissatisfied	Somewhat Dissatisfied	Somewhat Satisfied	Satisfied	Very Satisfied

6. …**how long** the student's challenging behavior lasts when it happens in your classroom?

1	2	3	4	5	6
Very Dissatisfied	Dissatisfied	Somewhat Dissatisfied	Somewhat Satisfied	Satisfied	Very Satisfied

7. …**how dangerous** the student's challenging behavior is in your classroom?

1	2	3	4	5	6
Very Dissatisfied	Dissatisfied	Somewhat Dissatisfied	Somewhat Satisfied	Satisfied	Very Satisfied

How satisfied are you with…

8. …**how peers are impacted** by the student's challenging behavior in your classroom?

1	2	3	4	5	6
Very Dissatisfied	Dissatisfied	Somewhat Dissatisfied	Somewhat Satisfied	Satisfied	Very Satisfied

9. …**how much adults enjoy interacting with** the student in your classroom?

1	2	3	4	5	6
Very Dissatisfied	Dissatisfied	Somewhat Dissatisfied	Somewhat Satisfied	Satisfied	Very Satisfied

PROCEDURAL FIDELITY CHECKLIST FOR CONDUCTING FBA INTERVIEWS

Procedural fidelity checklist for FBA interview

Name:_____   Date:_____

1=Unmet   2=Partially Met   3=Met

Setting the Stage Tasks

1.   Social opening. Discuss something irrelevant to behavioral consultation   1 _2_ 3
            (e.g., "How's the weather been treating you?")
2.   Introduce self and role.   1 2 _3_
3.   State the purpose of the interview and amount of time expected.   1 2 _3_

Core Objectives

1.   Assess the scope of the teacher's concerns. Cover multiple routines   1 _2_ 3
            if necessary.
2.   Identify a target problem area and/or prioritize problems.   1 2 _3_
3.   Define the target problem in overt, behavioral terms.   1 2 _3_
4.   Estimate problem frequency, intensity, or duration.   1 2 _3_
5.   Identify problem antecedents, consequences, and motivating operations.   1 2 _3_
6.   Establish data collection schedule and next steps.   1 2 _3_

Process Objectives

1.   Ask follow-up questions when necessary.   1 2 _3_
2.   Ask about satisfaction or sufficiency of content covered in each routine. 1 2 _3_
3.   Provide multiple, brief summaries throughout the interview, and/or   1 _2_ 3
            an overall summary statement at the end of the interview.

Relationship-building and Rapport

1.   Provide eye contact and non-verbal cues of support.   1 2 _3_
2.   Maintain focus and on-task behavior in professional manner.   1 2 _3_
3.   Avoid redundancy in question-asking. Be efficient, but also thorough.   1 2 _3_
4.   Thank teacher for participating/conclude interview with next steps.   1 2 _3_

Total Score   ___ /48   =   ___%

PROCEDURAL FIDELITY CHECKLIST FOR DEVELOPING

FUNCTION-BASED BEHAVIOR SUPPORT PLANS

Procedural fidelity checklist for BSP development

Competing Behavior Pathway	Yes	part	No	__/4
Replacement Behavior – Identified Replacement Behavior(s) that provides same outcome/function as the challenging behavior, are easy for the student to do, and are socially acceptable.	2	1	0	
Desired Behavior – Identified a Desired Behavior that is reasonable and as similar as possible to the expectations and norms of mainstream peers	2	1	0	
Components of Function-Based Interventions	Yes	part	No	_/16
Documented two or more options for **Antecedent** interventions to prevent challenging behavior that are *consistent with the student's identified trigger(s) and the function of challenging behavior*	2	1	0	
Documented two or more **Antecedent** interventions to Prompt appropriate behavior including a prompt to (a) use the Replacement Behavior & (b) support or encourage use of the Desired Behavior (or an approximation of)	2	1	0	
Documented explicit **Teaching** of suggested Replacement Behaviors	2	1	0	
Document strategies for teaching skills to support the student to engage (now or eventually) in the "Desired" behavior (or approximations of)	2	1	0	
Documented intervention to **Reinforce** student use of the Replacement Behavior	2	1	0	
Documented two or more interventions to **Reinforce/Motivate** student use of identified Desired Behavior or approximations thereof that are with incentives that are meaningful, regularly available & achievable for the student.	2	1	0	
Documented strategies to **Redirect** the student to use the Replacement Behavior at the earliest signs of challenging behavior	2	1	0	
Documented strategies that **Minimize Reinforcement of challenging behavior**	2	1	0	
Basic BSP Competing Behavior Pathway Technical Adequacy Score				___/20

APPENDIX L

PROCEDURAL FIDELITY CHECKLIST FOR CONDUCTING A MULTIPLE STIMULUS

WITHOUT REPLACEMENT (MSWO) PREFERENCE ASSESSMENT

Procedural fidelity checklist for preference assessment (MSWO)

1. The teaching assistant will label and present an array of 3-4 stimuli in front of the participant.
2. The teaching assistant will tell the participant to select one item.
3. The participant will have 20 s of access to the selected item.
4. Following the reinforcement interval, the teaching assistant will remove the item, and rearrange the array of stimuli by moving the right-most item to the extreme left of the array.
5. The teaching assistant will tell the participant to select one item.
6. The same procedures will be followed until no items remain in the array.

APPENDIX M

PROCEDURAL FIDELITY CHECKLIST FOR THE INITIAL TRAINING DELIVERED

TO EACH TEACHING ASSISTANT REGARDING EACH TARGET

STUDENT'S BEHAVIOR SUPPORT PLAN

Procedural fidelity checklist for initial BSP training

Procedural Fidelity Checklist - Initial Training Part I

Part I of the initial training include the following agenda items:

1. Administrative processes such as:
   - Acquiring and discussing informed consent
   - Confidentiality
   - Mandatory reporting
   - Contact information
   - Preferred time and method of contact

2. Behavioral theory—a focus on changing the environment, not the student
   - Gradual change over time. Thinking about big picture
   - Tiny successes are still successes!
   - Two steps forward, one step back. Not a linear path to our goals…
   - Nail down one small setting, achieve success, then start generalizing to other settings

3. Characteristics of successful interventions—i.e., function-based and implemented with high fidelity;
   - High fidelity of implementation, but *honest* about fidelity in the process
   - It's okay to have low fidelity to start! "Everyone does."
   - Working together collaboratively makes best outcomes

4. Discuss process of having independent observers taking data on their BSP implementation

5. Discuss incentives and sign agreement to participate

6. During Part I of the initial training, data will also be gathered regarding which levels of support consultees think they will likely need

7. Deliver $25 check and inform that remaining $75 will be delivered following completion of the study in mid-June, during the final meeting when the final surveys are completed (i.e., social validity data).

Procedural Fidelity Checklist - Initial Training Part II

Behavior skills training will be used to teach each consultee how to implement the target student's multicomponent behavior support plan. The following will be addressed in the training:

1. Instructions
   - Explain the "I do" "We do" "You do" (explicit teaching) style of the training
   - Explain what performance feedback (i.e., behavior specific praise and error correction) will look like from the consultant while the consultee is implementing the BSP in the target setting.
   - The meeting will not be time-restrained, but the duration of the training will be recorded. The meeting will end once the consultee is able to display 100% fidelity in a mock arrangement.

2. Modeling (I do)
   - The consultant will model implementation of the entire BSP with the consultee in a mock arrangement where the consultee pretends to be the target child, and the consultant pretends to be the consultee. This is performed 1-2 times while orienting to the treatment fidelity checklist.

3. Rehearsal (We do) with performance feedback
   - The consultee will practice implementing the entire BSP with the consultant in a mock arrangement where the consultee acts as themselves and the consultant pretends to be the target child in the target setting, while also providing prompts during the guided practice.
   - Guidance will be implemented in three distinct levels: (1) Highly-guided practice with feedback; (2) Moderately-guided practice with feedback; and (3) Minimally-guided practice with feedback (near independent).

4. You do (with feedback)
   - Following successful practice at the minimally-guided practice (with feedback) level of support, the consultee will have the opportunity to practice the BSP independently, with feedback only occurring at the end of the practice trial. The consultee will continue trials until implemented with 100% fidelity.
   - The consultant will take a video of the consultee implementing with 100% fidelity for future training purposes with the consultee.

5. Discuss the study process and schedule
   - Direct classroom observation protocol and schedule
   - Discuss how multi-level supports will be provided (contingent on fidelity)
   - Reiterate that progress is not linear and to try their best. Improvement will be made over time.

6. Total number of minutes included in the training will be recorded

BEHAVIOR SUPPORT PLAN TREATMENT ACCEPTABILITY RATING FORM

ADMINISTERED AT PRE-ASSESSMENT (BSP-TARF-PRE)

Behavior Support Plan Treatment Acceptability Rating Form (BSP-TARF) - pre

Intended to measure the acceptability of the BSP developed for each target student

Teacher Name: _____   Student initials: _____   Date: _____

Please score the following items by circling the number that best indicates how you feel about the behavior support plan (BSP)?

----

1. How acceptable did you find the amount of training offered to deliver this intervention?

0	1	2	3	4	5
Not at all acceptable		Neutral		Very acceptable	

2.   How acceptable did you find the *behavior support plan (BSP) overall*?

0	1	2	3	4	5
Not at all		Neutral		Very acceptable	

3. How willing are you to carry out the *behavior support plan (BSP)*?

0	1	2	3	4	5
Not at all willing		Neutral		Very willing	

4. How much time will be needed each day to carry out the *behavior support plan (BSP)*?

0	1	2	3	4	5
Little time is needed		Neutral		Much time is needed	

5. How confident are you that the *behavior support plan (BSP)* will be effective for this child?

0	1	2	3	4	5
Not at all		Neutral		Very confident	

6. How likely is it that using the *behavior support plan (BSP)* will make permanent improvements in the behavior of this child?

0	1	2	3	4	5
Unlikely		Neutral		Very likely	

7. How disruptive do you think it will be to carry out the *behavior support plan (BSP)* in the classroom?

0	1	2	3	4	5
Not at all		Neutral		Very disruptive	

8. How much do you like the procedures used in the *behavior support plan (BSP)*?

```
0_____1_____2_____3_____4_____5
Do not like                        Neutral                          Like them very much
them at all
```

9. To what extent did you expect undesirable side-effects from the *behavior support plan (BSP)*?

```
0_____1_____2_____3_____4_____5
No side-effects                    Neutral                          Many side effects
```

10. How much discomfort did children in your classroom experience ***prior to*** implementing this student's *behavior support plan (BSP)*?

```
0_____1_____2_____3_____4_____5
No discomfort                      Neutral                          Very much
at all                                                                        discomfort
```

11. How much discomfort do you think children in your classroom will experience ***during*** implementation of the *behavior support plan (BSP)*?

```
0_____1_____2_____3_____4_____5
No discomfort                      Neutral                          Very much
at all
```

12. How much discomfort do you think children in your classroom will experience ***as a result*** of the *behavior support plan (BSP)*?

```
0_____1_____2_____3_____4_____5
No discomfort                      Neutral                          Very much
at all
```

13. How willing are you to change your routines to continue to carry out the *behavior support plan (BSP)* in the classroom?

```
0_____1_____2_____3_____4_____5
Not at all                   Neutral                               Very willing
```

14. How well do you think the *behavior support plan (BSP)* fits into your existing classroom routine?

```
0_____1_____2_____3_____4_____5
Not at all                   Neutral                               Very well
well
```

15. How well did the goals of the *behavior support plan (BSP)* fit with your personal/professional goals?

```
0_____1_____2_____3_____4_____5
Not at all                   Neutral                               Very much
```

16. How well did the goals of the *behavior support plan (BSP)* fit with your goals for the student?

```
0_____1_____2_____3_____4_____5
Not at all                   Neutral                               Very much
```

17. Did you learn valuable strategies from this student's *behavior support plan (BSP)* that you were not already using?

```
0_____1_____2_____3_____4_____5
Not at all valuable                Neutral                         Very valuable
```

BEHAVIOR SUPPORT PLAN TREATMENT ACCEPTABILITY RATING FORM

ADMINISTERED AT POST-ASSESSMENT (BSP-TARF-POST)

Behavior Support Plan Treatment Acceptability Rating Form (BSP-TARF) - post

Intended to measure the acceptability of the BSP developed for each target student

Teacher Name: _____   Student initials: _____   Date: _____

Please score the following items by circling the number that best indicates how you feel about the behavior support plan (BSP)?

----

1. How acceptable did you find the amount of training provided to deliver this intervention?

0	1	2	3	4	5
Not at all acceptable		Neutral		Very acceptable	

2. How acceptable did you find the *behavior support plan (BSP)*?

0	1	2	3	4	5
Not at all		Neutral		Very acceptable	

3. How willing are you to *continue* to carry out the *behavior support plan (BSP)* after the study?

0	1	2	3	4	5
Not at all willing		Neutral			Very willing

4. How much time was needed each day for you to carry out the *behavior support plan (BSP)*?

0	1	2	3	4	5
Little time was	needed		Neutral		Much time was needed

5. How confident are you that the *behavior support plan (BSP)* is effective for this child?

0	1	2	3	4	5
Not at all		Neutral		Very confident	

6. How likely is it that using the *behavior support plan (BSP)* will make permanent improvements in the behavior of this child?

0	1	2	3	4	5
Unlikely		Neutral			Very likely

7. How disruptive was it to carry out the *behavior support plan (BSP)* in the classroom?

0	1	2	3	4	5
Not at all		Neutral		Very disruptive	

8. How much do you like the procedures used in the *behavior support plan (BSP)*?

0	1	2	3	4	5
Do not like them at all		Neutral		Like them very much	

9. To what extent did you notice undesirable side-effects from the *behavior support plan (BSP)*?

0	1	2	3	4	5
No side-effects		Neutral		Many side effects	

10. How much discomfort did children in your classroom experience ***prior to*** implementing this student's *behavior support plan (BSP)*?

0	1	2	3	4	5
No discomfort at all		Neutral		Very much	discomfort

11. How much discomfort did children in your classroom experience ***during*** the *behavior support plan (BSP)*?

0	1	2	3	4	5
No discomfort at all		Neutral			Very much

12. How much discomfort did children in your classroom experience ***as a result*** of the *behavior support plan (BSP)*?

0	1	2	3	4	5
No discomfort at all		Neutral			Very much

13. How willing are you to change your routines to continue to carry out the *behavior support plan (BSP)* in the classroom?

0	1	2	3	4	5
Not at all		Neutral		Very willing	

14. How well did the *behavior support plan (BSP)* fit into your existing classroom routine?

0	1	2	3	4	5
Not at all well		Neutral		Very well	

15. How well did the goals of the *behavior support plan (BSP)* fit with your personal/professional goals?

0	1	2	3	4	5
Not at all		Neutral		Very much	

16. How well did the goals of the *behavior support plan (BSP)* fit with your goals for the student?

0	1	2	3	4	5
Not at all		Neutral		Very much	

17. Did you learn valuable strategies from this student's *behavior support plan (BSP)* that you were not already using?

0	1	2	3	4	5
Not at all valuable		Neutral		Very valuable	

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CONSULTATION MODEL TREATMENT ACCEPTABILITY RATING FORM

FOR TEACHING ASSISTANTS (CM-TARF)

Consultation Model Treatment Acceptability Rating Form (CM-TARF)
Intended to measure the acceptability of the BST and other supports

Teacher Name: _____ Student initials: _____ Date: _____

Please score the following items by circling the number that best indicates how you feel
----

1. "How helpful was the initial training you completed with the consultant in understanding the underlying theory of **WHY** specific components of the behavior plan were selected?"

0	1	2	3	4	5
Not at all helpful		Neutral			Very helpful

2. "Understanding **WHY** certain components were added to the plan, helped my motivation to stick to the plan"

0	1	2	3	4	5
Not at all true		Neutral			Very true

----

3. "How helpful was the initial training you completed with the consultant in understanding what types of teacher behaviors and attitudes make the plans "work"?"

0	1	2	3	4	5
Not at all helpful		Neutral			Very helpful

4. "Understanding what types of teacher behaviors and attitudes make the plans "work", helped my motivation to stick to the plan"

0	1	2	3	4	5
Not at all true		Neutral			Very true

----

5. "How helpful was the initial training you completed with the consultant in understanding *HOW* to implement each component of the behavior plan?"

0	1	2	3	4	5

Not at all helpful   Neutral   Very helpful

6. "How helpful was it to practice each component of the behavior plan with the consultant during the initial training?"

0	1	2	3	4	5

Not at all helpful   Neutral   Very helpful

7. "How helpful was the initial training in making it feel okay to get feedback about your performance implementing the behavior support plan?

0	1	2	3	4	5

Not at all helpful   Neutral   Very helpful

8. "How helpful was it to have access to the video recording of you implementing the plan 100% correct?

0	1	2	3	4	5

Not at all helpful   Neutral   Very helpful

9. "Without the initial training with the consultant, I probably would have implemented the plan less accurately"

0	1	2	3	4	5

Not at all true   Neutral   Very true

----

10. "How easy was it to use the checklist you were provided with?"

0	1	2	3	4	5

Extremely difficult   Neutral   Extremely easy

11. "How helpful was it for sticking to the plan to self-monitor your own use of the behavior plan with a checklist?"

0	1	2	3	4	5

Not at all helpful   Neutral   Very helpful

12. "Without the self-monitoring checklist, I probably would have implemented the plan less accurately"

0	1	2	3	4	5
Not at all true			Neutral		Very true

----

13. Some teachers got in-person feedback (praise and constructive criticism) while they were implementing the behavior plan. Did you get any in-person feedback from the consultant *while* you were implementing the plan?

    Yes   (if "Yes" answer questions 14-16 below)   No

If "Yes"…

14. How helpful were the consultant's directions of what to do?   (skip if you answered "No" above)

0	1	2	3	4	5
Not at all helpful			Neutral		Very helpful

15. How helpful was the consultant's praise?   (skip if you answered "No" above)

0	1	2	3	4	5
Not at all helpful			Neutral		Very helpful

16. How helpful was the consultant's constructive criticism? (skip if you answered "No" above)

0	1	2	3	4	5
Not at all helpful			Neutral		Very helpful

----

17. "The consultant customized the behavior plan to meet the context of the classroom"

0	1	2	3	4	5
Not at all true			Neutral		Very true

18. "The consultant customized the strategies to work well for me and my learning style"

0	1	2	3	4	5
Not at all true			Neutral		Very true

19. "I felt the consultant was available if I had any questions about what to do

0	1	2	3	4	5

Not at all true   Neutral   Very true

----

20. "Thinking of all the times in the past when a specialist has asked you to implement a specific intervention with a specific kid, how well does this one compare?

0	1	2	3	4	5

The worst   Similar to others   The best

21. How well did this intervention work for your student? With 0 being nothing changed, everything was the same after the intervention, nothing improved. And 5 meaning the child made a complete 180 for the better, it made a big, noticeable difference.

0	1	2	3	4	5

Nothing changed   Neutral   Extremely well

Thank you for answering these questions!

APPENDIX Q

CONSULTATION MODEL TREATMENT ACCEPTABILITY RATING FORM

FOR ADMINISTRATORS (CM-TARF-ADMIN)

Consultation Model Treatment Acceptability Rating Form for admin (CM-TARF-admin)

Name of person filling out this survey: _____ Date: _____

Please score the following items by circling the number that best indicates how you feel
----

1. **How acceptable did you find the amount of training provided to staff?**

   0   1   2   3   4   5   (not sure)
   Not at all acceptable   Neutral   Very acceptable

2. **How acceptable did you find the supports provided to staff during intervention?**

   0   1   2   3   4   5   (not sure)
   Not at all acceptable   Neutral   Very acceptable

3. **How acceptable did you find the amount of support and resources provided to staff regarding skill maintenance and generalization (sustaining and expanding TA and student progress), following intervention?**

   0   1   2   3   4   5   (not sure)
   Not at all acceptable   Neutral   Very acceptable

4. **To your knowledge, how well did the consultation model work to improve Teaching Assistant (TA) <u>use</u> of behavioral interventions?**

   0   1   2   3   4   5   (not sure)
   TAs didn't learn   Neutral   TAs learned a lot

5. **To your knowledge, how well did the consultation model work to promote Teaching Assistant (TA) <u>general knowledge and understanding</u> of behavioral interventions?**

   0   1   2   3   4   5   (not sure)
   TAs didn't learn   Neutral   TAs learned a lot

6. **To your knowledge, how well did the consultation model work to improve the behavior of each Target Student (i.e., Ja, Cj, Ha, Si, and Ch) in their respective classroom routines?**

   0   1   2   3   4   5   (not sure)
   Nothing changed   Neutral   Extremely well

7. **In your perception, how likely is it that the behavior support plans (BSPs) designed for each Target Student will make permanent improvements in the behavior of each child?**

0	1	2	3	4	5	(not sure)
Unlikely			Neutral		Very likely	

8. **In your perception, how disruptive was it to the classroom for each Teaching Assistant (TA) to carry out the behavior support plans (BSPs) designed for each Target Student?**

0	1	2	3	4	5	(not sure)
Not at all			Neutral		Very disruptive	

9. **To your knowledge, how well did the consultation model work to help *other*, <u>non-Target Students</u> at the EEP?**

0	1	2	3	4	5	(not sure)
Didn't help other students			Neutral		Helped lots of other students	

10. **The <u>goals</u> of the Applied Behavior Analytic (ABA) consultation model used in this research study were to (1) improve Teaching Assistant (TA) knowledge and use of behavioral interventions and to (2) reduce challenging behavior for identified Target Students. How well did the <u>goals</u> of this research study fit with your <u>personal/professional goals</u>?**

0	1	2	3	4	5	(not sure)
Not at all			Neutral		Very much	

11. **I believe it's imperative to incorporate Applied Behavior Analysis (ABA) teaching and intervention strategies to support young students with intellectual and developmental disabilities (IDD).**

0	1	2	3	4	5	(not sure)
Very untrue			Neutral		Very true	

12. **How <u>efficient</u> did you find this consultation model in promoting Target Student behavior change?**

0	1	2	3	4	5	(not sure)
Not at all efficient			Neutral		Very efficient	

13. **How <u>efficient</u> did you find this consultation model in promoting Teaching Assistant knowledge and use of behavioral interventions?**

0	1	2	3	4	5	(not sure)
Not at all efficient			Neutral		Very efficient	

14. **How willing would you be in the future to make changes to EEP practices to incorporate the consultation model used in this study?**

0	1	2	3	4	5	(not sure)
Not at all			Neutral		Very willing	

15. **In the future I would like to collaborate with Behavior Specialists/Doctoral Students with behavioral expertise from the UO to help to continue to implement strategies used in this research study.**

0	1	2	3	4	5	(not sure)
Not at all			Neutral		Very much	

16. **With support from at least one Behavior Specialist/Doctoral Student with behavioral expertise from the UO (i.e., like in this study), how sustainable do you think this consultation model is for future use?**

0	1	2	3	4	5	(not sure)

Not at all sustainable   Neutral   Very sustainable

17. **I would be interested in seeing this consultation model used more widely at the EEP.**

0	1	2	3	4	5	(not sure)

Not at all true   Neutral   Very true

18. **I believe the consultation model used in this research study had a major positive impact at the EEP.**

0	1	2	3	4	5	(not sure)

Not at all true   Neutral   Very true

19. **As a result of my involvement in this research study, I am <u>more willing</u> to be involved in research of this nature in the future.**

0	1	2	3	4	5	(not sure)

Not at all true   Neutral   Very true

Thank you for answering these questions!

During _____[target setting]_____

Desired Behavior

Current Consequence

Setting Event

Trigger/Antecedent

Challenging Behavior(s)

Maintaining Consequence

Alternative Behavior

Hypothesized
function:
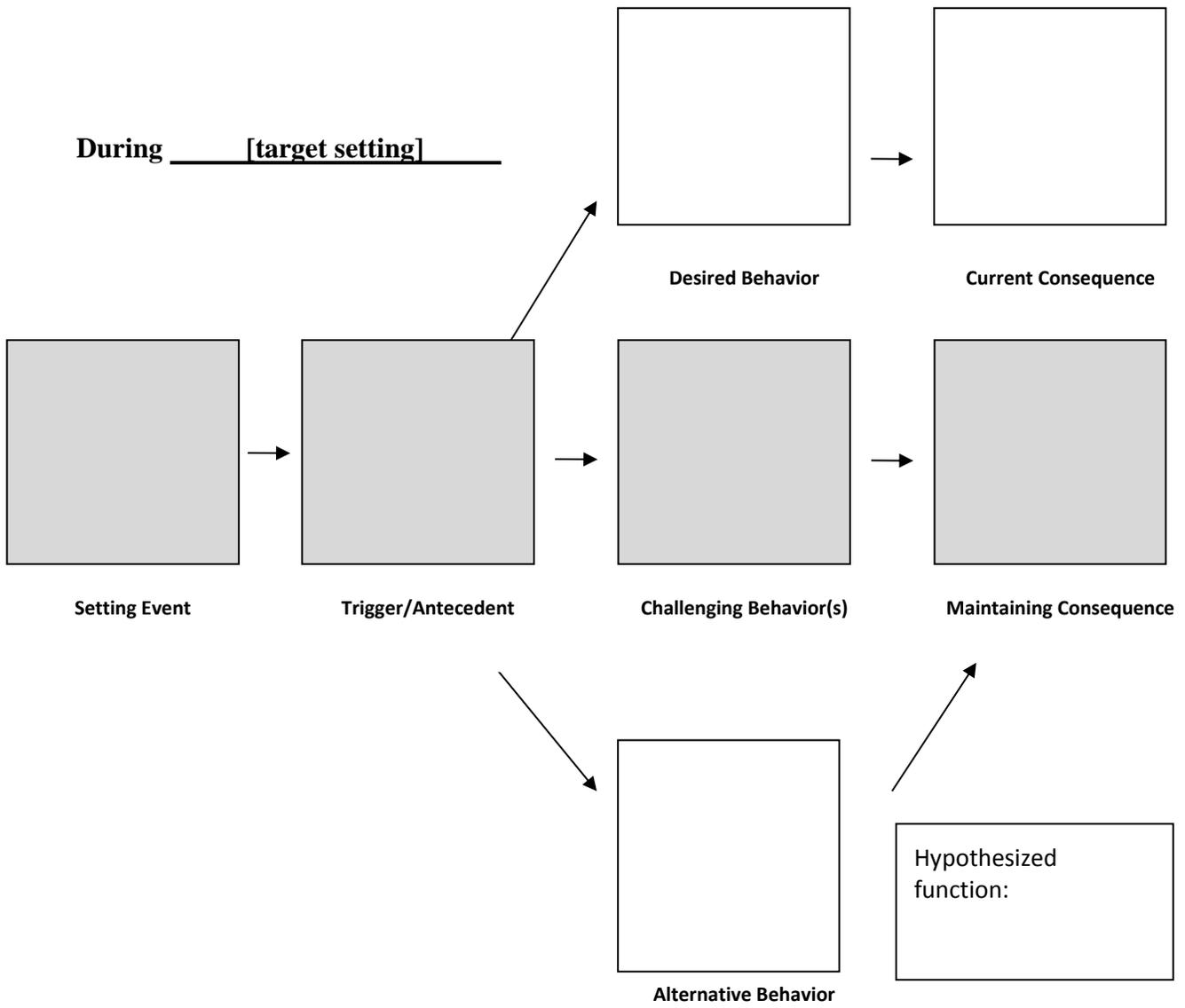
Figure 1. Competing behavior pathway template.

Setting Event Strategies (if relevant)	Antecedent Strategies Behavior	Teaching Strategies	Consequence Strategies
Neutralize/Eliminate	Prevent	Teaching strategies replacement behavior	Strategies to reinforce appropriate behavior
	Prompt		
		Teaching strategies for long term desired behavior	Strategy to redirect
			Strategies to minimize reinforcement for challenging behavior

Figure 2. Behavior support plan template.

Figure 3. Results from direct observations of TA1's implementation of TS1's behavior support plan.
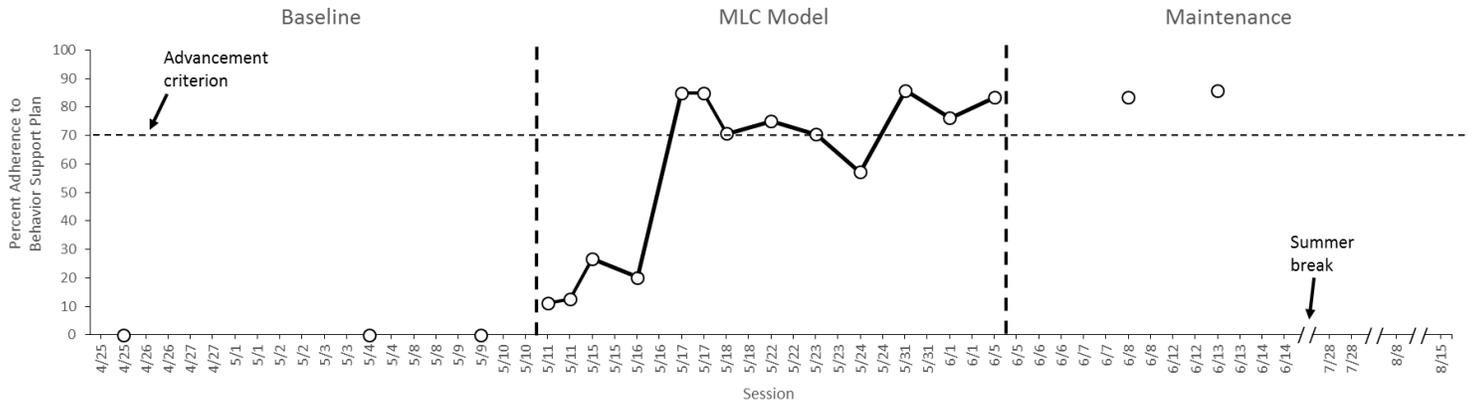
Figure 4. Results from direct observations of TA2's implementation of TS2's behavior support plan.
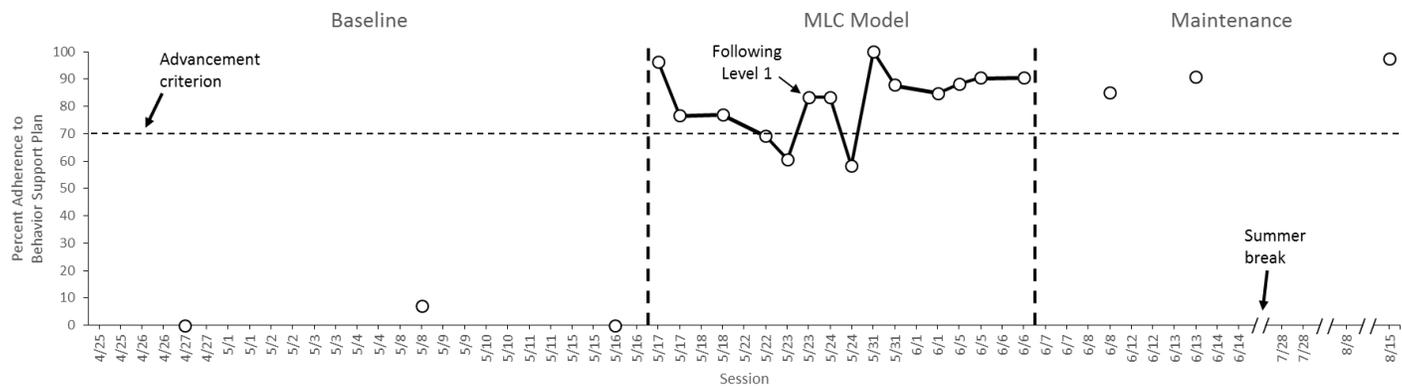
Figure 5. Results from direct observations of TA3's implementation of TS3's behavior support plan.
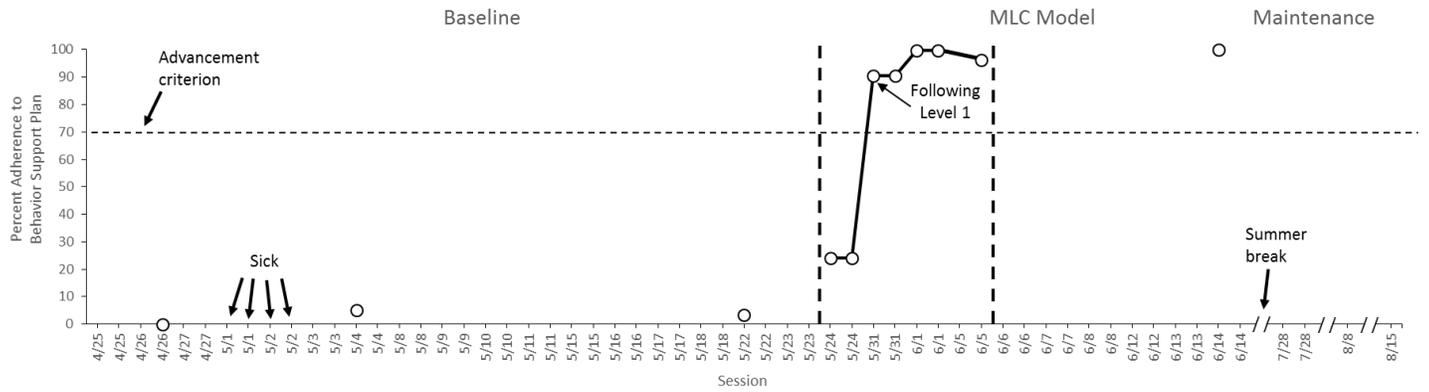
Figure 6. Results from direct observations of TA4's implementation of TS4's behavior support plan.
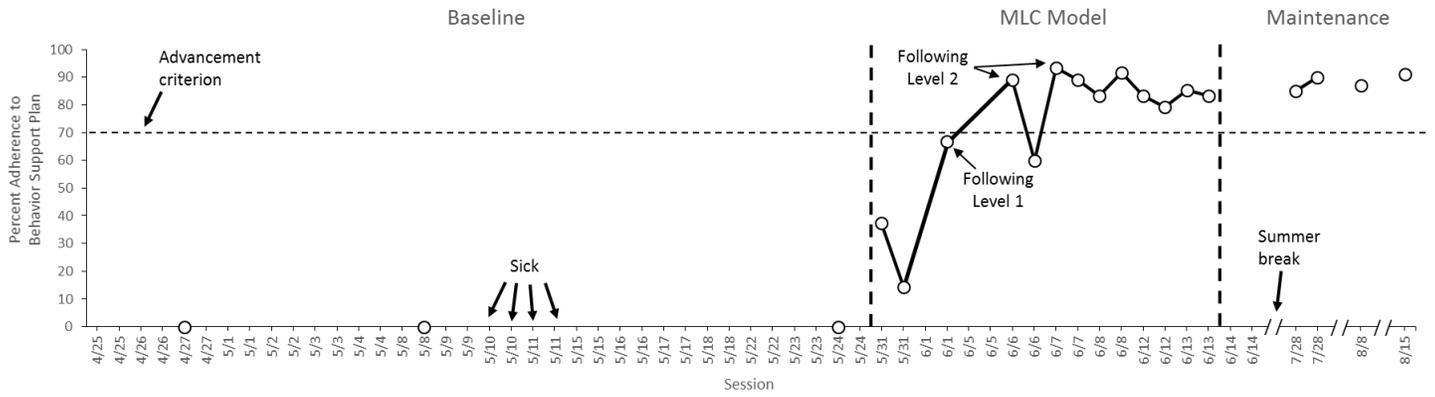
Figure 7. Results from direct observations of TA5's implementation of TS5's behavior support plan.
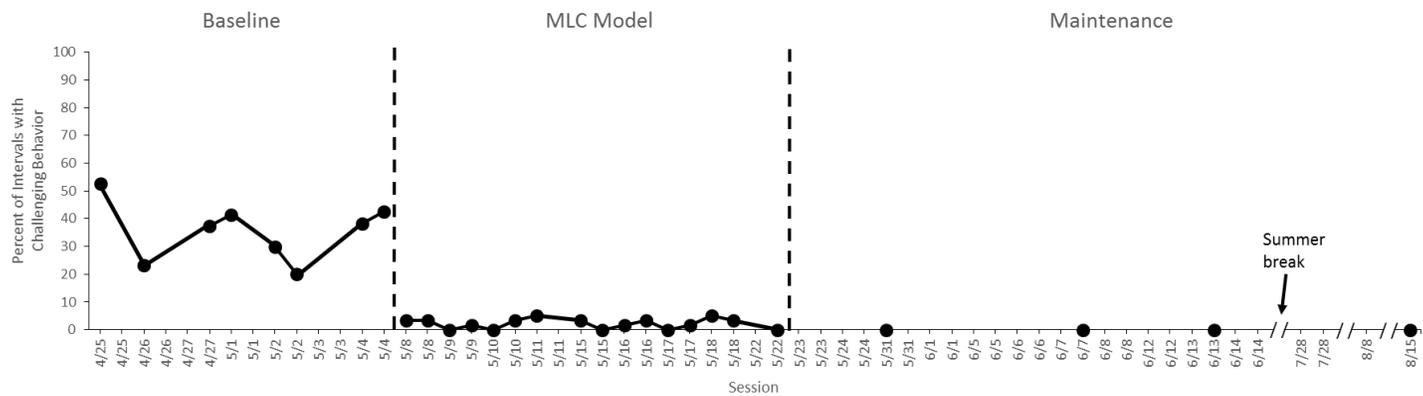
Figure 8. Results from direct observations of TS1's challenging behavior.
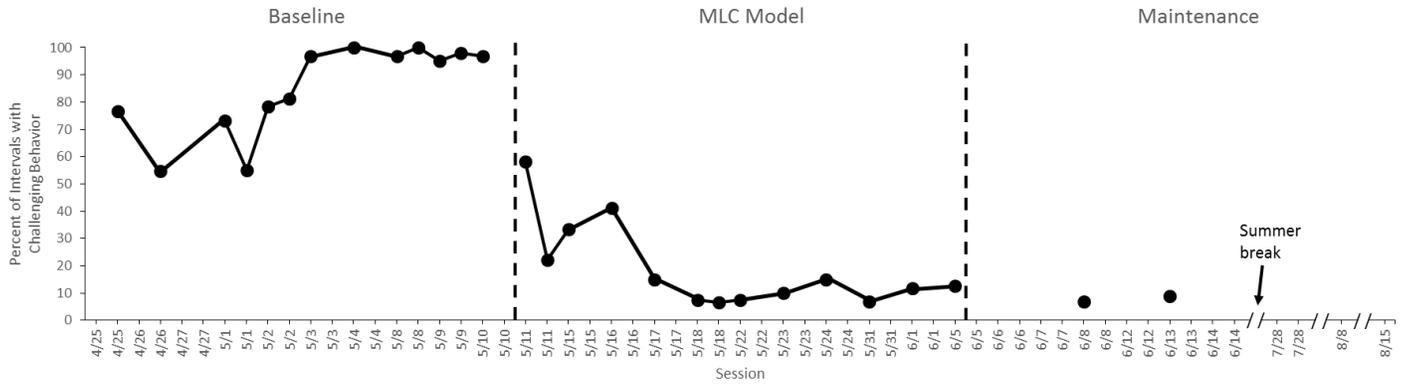
Figure 9. Results from direct observations of TS2's challenging behavior.
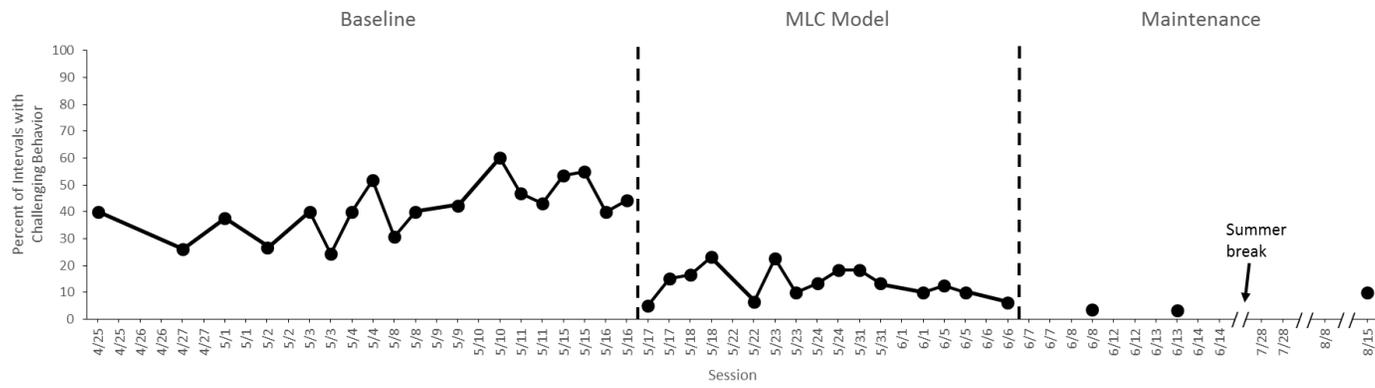
Figure 10. Results from direct observations of TS3's challenging behavior.
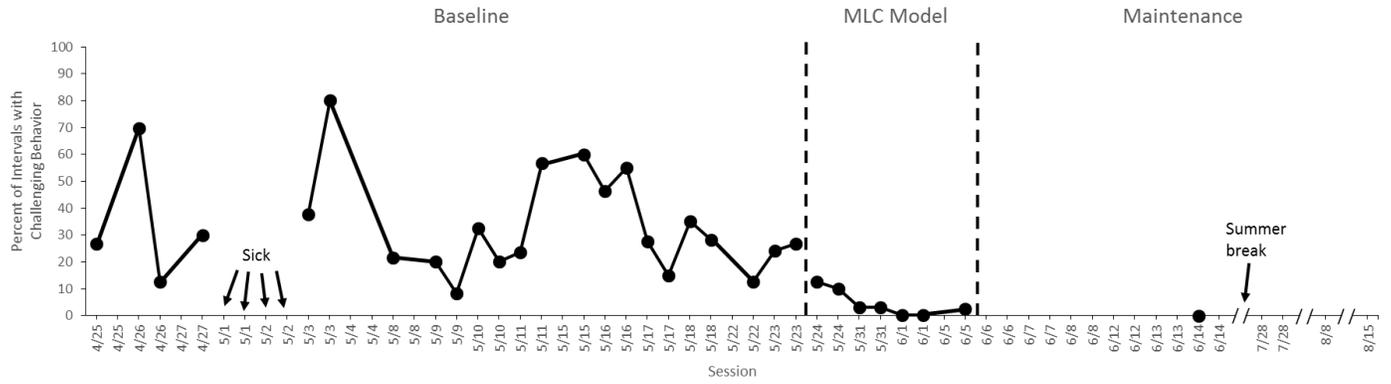
Figure 11. Results from direct observations of TS4's challenging behavior.
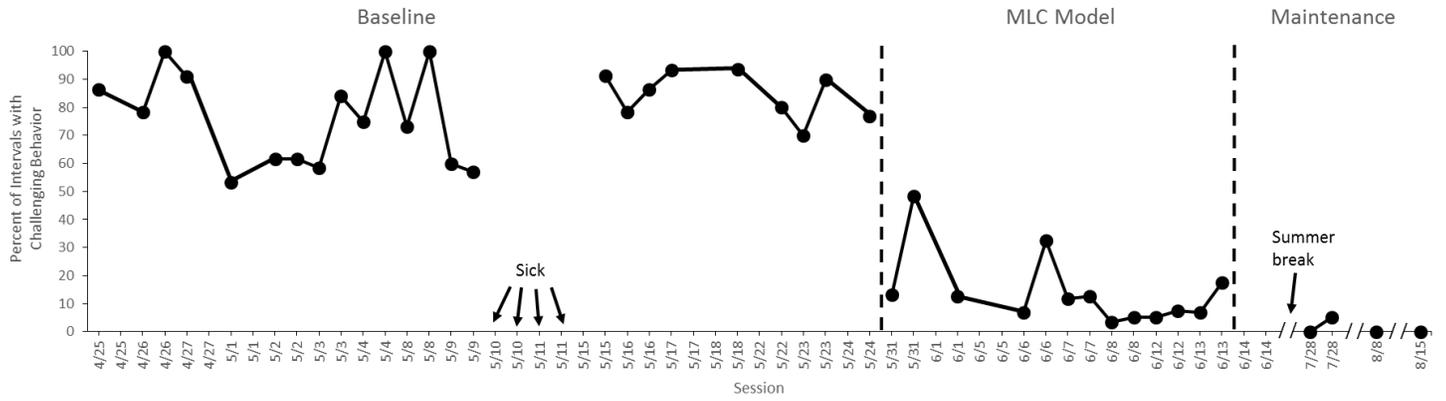
Figure 12. Results from direct observations of TS5's challenging behavior.
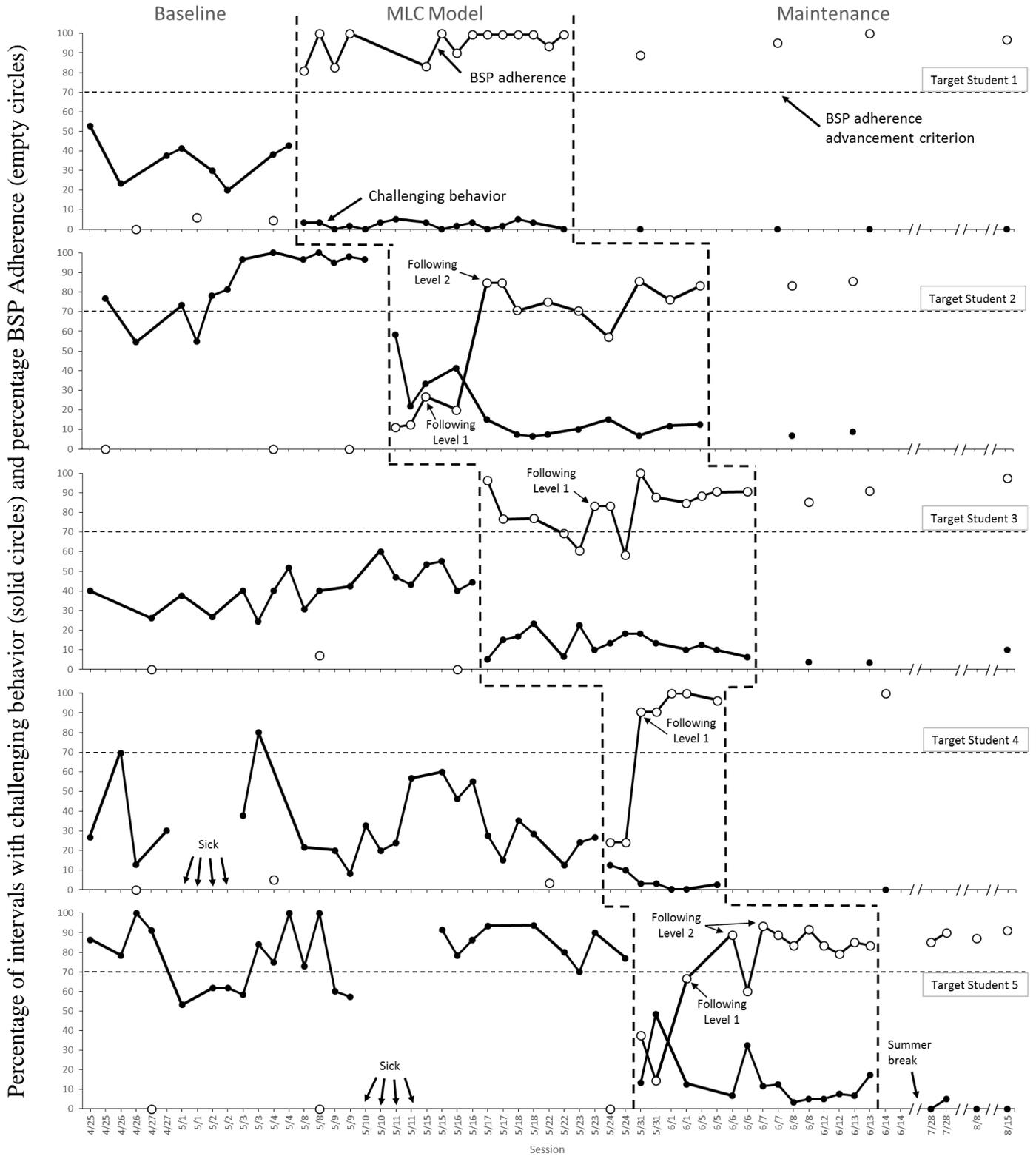
Figure 13. Concurrent multiple baseline across participants of target student challenging

behavior and teaching assistant behavior support plan adherence.

```
┌─────────────────────────────────────────┐
│ Meet with district Behavior Specialist to│
│ identify children and paraprofessionals  │
│ who likely meet the study criteria       │
└─────────────────────────────────────────┘
                    │
                    ▼
┌─────────────────────────────────────────┐
│ Meet with lead teachers to assess        │
│ interest in having their staff           │
│ participate in the study                 │
└─────────────────────────────────────────┘
                    │
                    ▼
┌─────────────────────────────────────────┐
│ Obtain informed consent from families    │
│ that are interested and willing to       │
│ participate                              │
└─────────────────────────────────────────┘
                    │
                    ▼
┌─────────────────────────────────────────┐
│ Administer FACTS interview with teacher  │
│ to collaboratively develop hypothesis of │
│ environmental contingencies maintaining  │
│ challenging behavior in a target setting │
└─────────────────────────────────────────┘
                    │
                    ▼
┌─────────────────────────────────────────┐
│ Conduct at least two direct observations │
│ in the target setting to confirm the     │
│ hypothesis and retain participants with a│
│ clear primary function of challenging    │
│ behavior                                 │
└─────────────────────────────────────────┘
                    │
                    ▼
┌─────────────────────────────────────────┐
│ Develop a behavior support plan          │
└─────────────────────────────────────────┘
```

Figure 14. Participant recruitment procedures.

	Consultee attends initial 1-on-1 behavioral skills training with researcher				
	Independent practice opportunities implementing BSP. Monitor adherence. If adherence meets the advancement criteria, implement the next level of supports				
	----------Multilevel consultation model starts here----------				
Level	**Materials Provided**	**Degree of Guidance**	**Prompt time delay**	**Support Locus**	**Support Format**
1	Orient consultee to previously-provided training handouts, fidelity sheet, and videos made in the initial training **by email or text**	Minimally-guided No feedback	None	Email/ text	None
	Independent practice opportunities implementing BSP. Monitor adherence.				
2	Hard copies or prompt use of the training handouts, fidelity sheet, and links to the videos made in the initial training **in person**	Moderately-guided	5 s delay	Target setting	1-on-1
	Independent practice opportunities implementing BSP. Monitor adherence.				
3	Hard copies or prompt use of the training handouts, fidelity sheet, and links to the videos made in the initial training **in person**	Highly-guided	MTL (0 s)	Target setting	1-on-1

Figure 15. Level 1-3 supports.

Participant dyads	Baseline	Intervention / Maintenance
TS1 - TA1	7 days	41 days
TS2 - TA2	10 days	38 days
TS3 - TA3	13 days	35 days
TS4 - TA4	17 days	31 days
TS5 - TA5	17 days	30 days

Figure 16. Predetermined timeline for the randomized multiple baseline design.

Table 1

Demographic data for Early Education Program target students

Variable	Target student 1	Target student 2	Target student 3	Target student 4	Target student 5	*M* (*SD*)
Age (years:months)	4:4	4:1	3:11	5:3	4:10	4:5 (0:7)
Sex at birth	Male	Male	Male	Male	Male	
Ethnicity						
Caucasian	X	X	X	X	X	
Hispanic					X	
Native American					X	
Developmental delay						
Expressive comm.	X	X		X	X	
Receptive comm.	X	X			X	
Adaptive behavior	X	X		X	X	
Fine motor				X	X	
Gross motor				X	X	
Socioemotional	X	X	X	X	X	
Cognitive		X	X	X	X	
Other educ. eligibility						
Autism		X			X	
Age at educ. eligibility	2:11	3:2	3:6	2:2	4:3	3:3 (0:9)
Medical diagnosis						
Autism	DNQ				X	
Articulation disorder				X		
Verbal dyspraxia				X		
Mix exp/rec lang dis				X		
Devel coord disorder				X		

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| Age at med diagnosis | 2:7 | NA | NA | 3:6 | 5:0 | 3:8 (1:4) |

Note. "*M*" refers to the mean, or average value of a distribution of scores. "*SD*" refers to the standard deviation associated with a mean of a distribution of scores. "DNQ" means Did Not Qualify. "NA" means Not Applicable.

Table 2

Demographic data for Early Education Program teaching assistants (TAs)

Variable	TA1	TA2	TA3	TA4	TA5	*M (SD)*
Classroom number	1	3	1	3	2	
Age (years)	23	40	30	20	33	29.2 (8.0)
Sex at birth	Female	Female	Female	Female	Female	
Gender	Woman	Woman	Woman	Woman	Woman	
Ethnicity						
Caucasian	X	X	X	X	X	
English fluency	X	X	X	X	X	
Other language fluency						
Plan to remain employed at EEP	1-2 years	permanent	permanent	permanent	permanent	
Number of years working with children with DD	4	12	12	2.5	0.9	6.3 (5.3)
Number of years working with children with autism	1.5	8	12	2.5	0.9	5.0 (4.8)
Highest grade attained	16	12.5	14	12	16	14.3 (1.9)
Highest degree earned						
General education degree				X		
High school diploma		X				
Associate's degree			X			
Major			Early Childhood Dev.			
Bachelor's degree	X				X	
Major(s)	Anthrop., Comp. Lit.				Psychology	
"What do you know about ABA?" (0-5) pre-study	2	1	1	1	1	1.2 (0.4)

"How much do you like ABA?" (0-5) pre-study	3	4	1	4	1	2.6 (1.5)
Number of times working with a specialist	2	8	8	4	1	4.6 (3.3)
Best behavioral consultation experience (0-5) pre-study	4	5	4	3	2	3.6 (1.1)

Note. Age is expressed as [year]:[month]. "*M*" refers to the mean, or average value of a distribution of scores. "*SD*" refers to the standard deviation associated with a mean of a distribution of scores. "DD" means Developmental Delay.

Table 3

Functional behavior assessment data for Early Education Program target students

Variable	Target student 1	Target student 2	Target student 3	Target student 4	Target student 5	*M* (*SD*)
Target setting(s)						
Free play	X					
Cleanup		X	X			
Transition				X		
Circle		X	X			
Afternoon groups				X		
Arrival/departure					X	
Target Behavior(s)						
Aggression to peers	X					
Elopement		X	X			
Nonengagement		X	X		X	
Off-task				X		
Refusal				X		
Mean % intervals CB at BL	35.7%	84.8%	41.2%	33.5%	79.2%	55% (25%)
Putative function of CB						
Adult attention	Secondary		Primary	Primary	Primary	
Peer attention	Primary		Secondary			
Escape		Primary		Secondary	Secondary	
Access to items/activities		Secondary				
MOs (for prim. putative func.)						
Establishing operations						
Illness or fever		X				
Change from PC1 to PC2				X		
Abolishing operations						
Illness or fever	X			X		
Constipation				X		
Sugary breakfast				X		
Allergy and sleep meds				X		

Low variab. lunch items	X	
Arriving late		X

Note. "*M*" refers to the mean, or average value of a distribution of scores. "*SD*" refers to the

standard deviation associated with a mean of a distribution of scores. "CB" means Challenging

Behavior. "BL" means Baseline. "MO" means Motivating Operation. "PC" means Primary

Caregiver.

Table 4

Results of TA1's (target setting) and LT1's (global ratings, across routines) acceptability of

TS1's challenging behavior based on the Acceptability of Current levels of Challenging Behavior

(ACLCB) forms

	Target setting		Global ratings (across settings)	
Item	TA1's pre-treatment rating	TA1's post-treatment rating	LT1's pre-treatment rating	LT1's post-treatment rating
Compared to his or her peers, how appropriate is this student's behavior in the target setting/your classroom overall?	3	5	2	3
How satisfied are you with the student's overall current level of challenging behavior in the target setting/your classroom?	2	5	2	4
How satisfied are you with the intensity of the student's challenging behavior in the target setting/your classroom?	2	5	2	3
How satisfied are you with how often the student's challenging behavior occurs in the target setting/your classroom?	3	5	2	4
How satisfied are you with how consistently the student's challenging behavior occurs in the target setting/your classroom?	3	5	3	4
How satisfied are you with how long the student's challenging behavior lasts when it happens in the target setting/your classroom?	5	5	2	5

How satisfied are you with how dangerous the student's challenging behavior is in the target setting/your classroom?	2	5	3	3
How satisfied are you with how peers are impacted by the student's challenging behavior in the target setting/your classroom?	3	6	3	5
How satisfied are you with how much adults enjoy interacting with the student in the target setting/your classroom?	4	5	2	5
	Pre	Post	Pre	Post
Mean	3.0	5.1	2.3	4.0

Table 5

Results of TA2's (target setting) and LT3's (global ratings, across routines) acceptability of

TS2's challenging behavior based on the Acceptability of Current levels of Challenging Behavior

(ACLCB) forms

Item	Target setting		Global ratings (across settings)	
	TA2's pre-treatment rating	TA2's post-treatment rating	LT3's pre-treatment rating	LT3's post-treatment rating
Compared to his or her peers, how appropriate is this student's behavior in the target setting/your classroom overall?	3	6	3	4
How satisfied are you with the student's overall current level of challenging behavior in the target setting/your classroom?	2	6	2	5
How satisfied are you with the intensity of the student's challenging behavior in the target setting/your classroom?	2	5	2	5
How satisfied are you with how often the student's challenging behavior occurs in the target setting/your classroom?	3	6	3	5
How satisfied are you with how consistently the student's challenging behavior occurs in the target setting/your classroom?	4	5	2	5
How satisfied are you with how long the student's challenging behavior lasts when it happens in the target setting/your classroom?	3	6	2	4
How satisfied are you with how dangerous the student's	5	6	5	6

challenging behavior is in the target setting/your classroom?

How satisfied are you with how peers are impacted by the student's challenging behavior in the target setting/your classroom?

4	6	4	4

How satisfied are you with how much adults enjoy interacting with the student in the target setting/your classroom?

5	6	4	4

	Pre	Post	Pre	Post
Mean	3.4	5.8	3.0	4.7

Table 6

Results of TA3's (target setting) and LT1's (global ratings, across routines) acceptability of

TS3's challenging behavior based on the Acceptability of Current levels of Challenging Behavior

(ACLCB) forms

Item	Target setting		Global ratings (across settings)	
	TA3's pre-treatment rating	TA3's post-treatment rating	LT1's pre-treatment rating	LT1's post-treatment rating
Compared to his or her peers, how appropriate is this student's behavior in the target setting/your classroom overall?	4	5	3	4
How satisfied are you with the student's overall current level of challenging behavior in the target setting/your classroom?	3	5	1	3
How satisfied are you with the intensity of the student's challenging behavior in the target setting/your classroom?	2	5	1	3
How satisfied are you with how often the student's challenging behavior occurs in the target setting/your classroom?	2	5	2	3
How satisfied are you with how consistently the student's challenging behavior occurs in the target setting/your classroom?	2	5	2	3
How satisfied are you with how long the student's challenging behavior lasts when it happens in the target setting/your classroom?	3	6	3	3
How satisfied are you with how dangerous the student's	2	4	2	4

challenging behavior is in the
target setting/your classroom?

How satisfied are you with how peers are impacted by the student's challenging behavior in the target setting/your classroom?	1	4	1	3
How satisfied are you with how much adults enjoy interacting with the student in the target setting/your classroom?	4	5	2	4
	Pre	Post	Pre	Post
Mean	2.6	4.9	1.9	3.3

Table 7

Results of TA4's (target setting) and LT3's (global ratings, across routines) acceptability of

TS4's challenging behavior based on the Acceptability of Current levels of Challenging Behavior

(ACLCB) forms

Item	Target setting		Global ratings (across settings)	
	TA4's pre-treatment rating	TA4's post-treatment rating	LT3's pre-treatment rating	LT3's post-treatment rating
Compared to his or her peers, how appropriate is this student's behavior in the target setting/your classroom overall?	3	6	3	5
How satisfied are you with the student's overall current level of challenging behavior in the target setting/your classroom?	3	6	4	5
How satisfied are you with the intensity of the student's challenging behavior in the target setting/your classroom?	2	6	2	5
How satisfied are you with how often the student's challenging behavior occurs in the target setting/your classroom?	2	6	2	5
How satisfied are you with how consistently the student's challenging behavior occurs in the target setting/your classroom?	3	6	2	5
How satisfied are you with how long the student's challenging behavior lasts when it happens in the target setting/your classroom?	4	6	4	6
How satisfied are you with how dangerous the student's	4	6	4	5

challenging behavior is in the target setting/your classroom?				
How satisfied are you with how peers are impacted by the student's challenging behavior in the target setting/your classroom?	2	6	2	4
How satisfied are you with how much adults enjoy interacting with the student in the target setting/your classroom?	4	6	3	4
	Pre	Post	Pre	Post
Mean	3.0	6.0	2.9	4.9

Table 8

Results of TA5's (target setting) and LT2's (global ratings, across routines) acceptability of

TS5's challenging behavior based on the Acceptability of Current levels of Challenging Behavior

(ACLCB) forms

	Target setting		Global ratings (across settings)	
Item	TA5's pre-treatment rating	TA5's post-treatment rating	LT2's pre-treatment rating	LT2's post-treatment rating
Compared to his or her peers, how appropriate is this student's behavior in the target setting/your classroom overall?	2	4	1	4
How satisfied are you with the student's overall current level of challenging behavior in the target setting/your classroom?	1	4	1	4
How satisfied are you with the intensity of the student's challenging behavior in the target setting/your classroom?	2	4	6	6
How satisfied are you with how often the student's challenging behavior occurs in the target setting/your classroom?	1	4	1	5
How satisfied are you with how consistently the student's challenging behavior occurs in the target setting/your classroom?	1	4	1	5
How satisfied are you with how long the student's challenging behavior lasts when it happens in the target setting/your classroom?	2	5	1	6
How satisfied are you with how dangerous the student's	5	5	6	6

challenging behavior is in the
target setting/your classroom?

How satisfied are you with how peers are impacted by the student's challenging behavior in the target setting/your classroom?	5	5	5	6
How satisfied are you with how much adults enjoy interacting with the student in the target setting/your classroom?	4	4	5	5
	Pre	Post	Pre	Post
Mean	2.6	4.3	3.0	5.2

Table 9

Summary of all teaching assistant's number of minutes of support received (i.e., direct support dosage) from the researcher throughout the study, by support type

Teaching assistant	Type of support							
	Initial training	Level 1	Level 2	Level 3	Positive feedback only	TA-initiated check in	Watched training video	Total min. of support
TA1	126	0	0	0	7	3	No	136
TA2	120	1	18	0	6	3	No	148
TA3	120	1	0	0	0	23	No	144
TA4	120	1	0	0	4	0	Yes	125
TA5	135	1	30	0	0	37	No	203

Table 10

Results of LT1's and TA1's acceptability of TS1's behavior support plan based on the Behavior Support Plan Treatment Acceptability Rating Form (BSP-TARF)

Item	LT1's pre-treatment rating	LT1's post-treatment rating	TA1's pre-treatment rating	TA1's post-treatment rating
How acceptable do you find the amount of training provided to deliver this intervention?	5	4	5	5
How acceptable did you find the *behavior support plan (BSP)* overall?	5	5	5	5
How willing are you to *continue* to carry out the *behavior support plan (BSP)* after the study?	5	5	4	4
How much time will be/was needed each day for you to carry out the *behavior support plan (BSP)*?	2	2	3	2
How confident are you that the *behavior support plan (BSP)* is effective for this child?	4	5	4	4
How likely is it that using the *behavior support plan (BSP)* will make permanent improvements in the behavior of this child?	5	5	3	4
How disruptive will it be/was it to carry out the *behavior support plan (BSP)* in the classroom?	1	0	3	3
How much do you like the procedures used in the *behavior support plan (BSP)*?	5	5	4	4
To what extent do you anticipate/did you notice	1	0	3	3

undesirable side-effects from the *behavior support plan (BSP)*?				
How much discomfort do/did children in your classroom experience *prior to* implementing this student's *behavior support plan (BSP)*?	3	3	4	4
How much discomfort will/did children in your classroom experience *as a result* of the *behavior support plan (BSP)*?	1	1	2	2
How willing are you to change your routines to continue to carry out the *behavior support plan (BSP)* in the classroom?	5	5	3	4
How well does the *behavior support plan (BSP)* fit into your existing classroom routine?	5	4	5	5
How well do the goals of the *behavior support plan (BSP)* fit with your personal/professional goals	5	5	4	4
How well do the goals of the *behavior support plan (BSP)* fit with your goals for the student?	5	5	5	5
Did you learn valuable strategies from this student's *behavior support plan (BSP)* that you were not already using?	4	4	4	5

Table 11

Results of LT3's and TA2's acceptability of TS2's behavior support plan based on the Behavior

Support Plan Treatment Acceptability Rating Form (BSP-TARF)

Item	LT3's pre-treatment rating	LT3's post-treatment rating	TA2's pre-treatment rating	TA2's post-treatment rating
How acceptable do you find the amount of training provided to deliver this intervention?	5	5	5	5
How acceptable did you find the *behavior support plan (BSP)* overall?	5	5	5	5
How willing are you to *continue* to carry out the *behavior support plan (BSP)* after the study?	5	5	5	5
How much time will be/was needed each day for you to carry out the *behavior support plan (BSP)*?	4	2	3	4
How confident are you that the *behavior support plan (BSP)* is effective for this child?	5	5	4	4
How likely is it that using the *behavior support plan (BSP)* will make permanent improvements in the behavior of this child?	5	5	5	5
How disruptive will it be/was it to carry out the *behavior support plan (BSP)* in the classroom?	1	0	2	2
How much do you like the procedures used in the *behavior support plan (BSP)*?	4	5	5	5
To what extent do you anticipate/did you notice	3	1	2	2

undesirable side-effects from the *behavior support plan (BSP)*?				
How much discomfort do/did children in your classroom experience *prior to* implementing this student's *behavior support plan (BSP)*?	4	4	3	3
How much discomfort will/did children in your classroom experience *as a result* of the *behavior support plan (BSP)*?	2	0	0	0
How willing are you to change your routines to continue to carry out the *behavior support plan (BSP)* in the classroom?	5	5	3	4
How well does the *behavior support plan (BSP)* fit into your existing classroom routine?	5	5	5	5
How well do the goals of the *behavior support plan (BSP)* fit with your personal/professional goals	5	5	5	5
How well do the goals of the *behavior support plan (BSP)* fit with your goals for the student?	5	5	5	5
Did you learn valuable strategies from this student's *behavior support plan (BSP)* that you were not already using?	5	5	5	5

Table 12

Results of LT1's and TA3's acceptability of TS3's behavior support plan based on the Behavior Support Plan Treatment Acceptability Rating Form (BSP-TARF)

Item	LT1's pre-treatment rating	LT1's post-treatment rating	TA3's pre-treatment rating	TA3's post-treatment rating
How acceptable do you find the amount of training provided to deliver this intervention?	5	4	4	5
How acceptable did you find the *behavior support plan (BSP)* overall?	5	5	4	5
How willing are you to *continue* to carry out the *behavior support plan (BSP)* after the study?	5	5	4	5
How much time will be/was needed each day for you to carry out the *behavior support plan (BSP)*?	2	2	3	2
How confident are you that the *behavior support plan (BSP)* is effective for this child?	5	3	5	5
How likely is it that using the *behavior support plan (BSP)* will make permanent improvements in the behavior of this child?	5	3	5	5
How disruptive will it be/was it to carry out the *behavior support plan (BSP)* in the classroom?	2	3	2	3
How much do you like the procedures used in the *behavior support plan (BSP)*?	5	4	5	5
To what extent do you anticipate/did you notice	0	2	2	2

undesirable side-effects from the *behavior support plan (BSP)*?				
How much discomfort do/did children in your classroom experience ***prior to*** implementing this student's *behavior support plan (BSP)*?	3	3	3	3
How much discomfort will/did children in your classroom experience ***as a result*** of the *behavior support plan (BSP)*?	1	1	0	0
How willing are you to change your routines to continue to carry out the *behavior support plan (BSP)* in the classroom?	5	4	5	5
How well does the *behavior support plan (BSP)* fit into your existing classroom routine?	5	4	5	4
How well do the goals of the *behavior support plan (BSP)* fit with your personal/professional goals	5	5	5	5
How well do the goals of the *behavior support plan (BSP)* fit with your goals for the student?	5	5	5	5
Did you learn valuable strategies from this student's *behavior support plan (BSP)* that you were not already using?	5	4	5	5

Table 13

Results of LT3's and TA4's acceptability of TS4's behavior support plan based on the Behavior

Support Plan Treatment Acceptability Rating Form (BSP-TARF)

Item	LT3's pre-treatment rating	LT3's post-treatment rating	TA4's pre-treatment rating	TA4's post-treatment rating
How acceptable do you find the amount of training provided to deliver this intervention?	5	5	5	5
How acceptable did you find the *behavior support plan (BSP)* overall?	5	5	5	5
How willing are you to *continue* to carry out the *behavior support plan (BSP)* after the study?	5	5	5	5
How much time will be/was needed each day for you to carry out the *behavior support plan (BSP)*?	4	2	2	2
How confident are you that the *behavior support plan (BSP)* is effective for this child?	5	5	5	5
How likely is it that using the *behavior support plan (BSP)* will make permanent improvements in the behavior of this child?	5	5	5	5
How disruptive will it be/was it to carry out the *behavior support plan (BSP)* in the classroom?	3	0	1	2
How much do you like the procedures used in the *behavior support plan (BSP)*?	5	5	5	5
To what extent do you anticipate/did you notice	3	1	2	1

undesirable side-effects from the *behavior support plan (BSP)*?				
How much discomfort do/did children in your classroom experience ***prior to*** implementing this student's *behavior support plan (BSP)*?	3	4	3	3
How much discomfort will/did children in your classroom experience ***as a result*** of the *behavior support plan (BSP)*?	3	0	0	1
How willing are you to change your routines to continue to carry out the *behavior support plan (BSP)* in the classroom?	4	5	3	5
How well does the *behavior support plan (BSP)* fit into your existing classroom routine?	5	5	5	5
How well do the goals of the *behavior support plan (BSP)* fit with your personal/professional goals	5	5	5	5
How well do the goals of the *behavior support plan (BSP)* fit with your goals for the student?	5	5	5	5
Did you learn valuable strategies from this student's *behavior support plan (BSP)* that you were not already using?	4	5	4	5

Table 14

Results of LT2's and TA5's acceptability of TS5's behavior support plan based on the Behavior

Support Plan Treatment Acceptability Rating Form (BSP-TARF)

Item	LT2's pre-treatment rating	LT2's post-treatment rating	TA5's pre-treatment rating	TA5's post-treatment rating
How acceptable do you find the amount of training provided to deliver this intervention?	5	4	4	4
How acceptable did you find the *behavior support plan (BSP)* overall?	5	5	4	4
How willing are you to *continue* to carry out the *behavior support plan (BSP)* after the study?	5	5	5	5
How much time will be/was needed each day for you to carry out the *behavior support plan (BSP)*?	4	1	4	1
How confident are you that the *behavior support plan (BSP)* is effective for this child?	3	5	5	5
How likely is it that using the *behavior support plan (BSP)* will make permanent improvements in the behavior of this child?	3	5	4	5
How disruptive will it be/was it to carry out the *behavior support plan (BSP)* in the classroom?	1	2	3	2
How much do you like the procedures used in the *behavior support plan (BSP)*?	4	4	4	3
To what extent do you anticipate/did you notice	1	1	2	2

undesirable side-effects from the *behavior support plan (BSP)*?				
How much discomfort do/did children in your classroom experience ***prior to*** implementing this student's *behavior support plan (BSP)*?	1	0	1	2
How much discomfort will/did children in your classroom experience ***as a result*** of the *behavior support plan (BSP)*?	1	0	0	1
How willing are you to change your routines to continue to carry out the *behavior support plan (BSP)* in the classroom?	4	5	4	4
How well does the *behavior support plan (BSP)* fit into your existing classroom routine?	4	4	4	4
How well do the goals of the *behavior support plan (BSP)* fit with your personal/professional goals	4	4	4	4
How well do the goals of the *behavior support plan (BSP)* fit with your goals for the student?	5	5	4	5
Did you learn valuable strategies from this student's *behavior support plan (BSP)* that you were not already using?	4	5	5	5

Table 15

Results of teaching assistants' ratings of the acceptability of the multilevel consultation model as reported on the Consultation Model Treatment Acceptability Rating Form (CM-TARF)

Item	TA1	TA2	TA3	TA4	TA5
How helpful was the initial training you completed with the consultant in understanding the underlying theory of WHY specific components of the behavior plan were selected?	4	5	5	5	4
Understanding WHY certain components were added to the plan, helped my motivation to stick to the plan.	5	5	5	5	4
How helpful was the initial training you completed with the consultant in understanding what types of teacher behaviors and attitudes make the plans "work"?	5	4	5	5	4
Understanding what types of teacher behaviors and attitudes make the plans "work", helped my motivation to stick to the plan.	4	4	5	5	5
How helpful was the initial training you completed with the consultant in understanding HOW to implement each component of the behavior plan?	4	4	5	4	4
How helpful was it to practice each component of the behavior plan with the consultant during the initial training?	5	3	5	5	4
How helpful was the initial training in making it feel okay to get feedback about your performance implementing the behavior support plan?	4	5	5	5	4
How helpful was it to have access to the video recording of you implementing the plan 100% correct?	3	-	3	4	3
Without the initial training with the consultant, I probably would have implemented the plan less accurately.	4	5	4	5	5
How easy was it to use the checklist you were provided with?	5	4	5	5	4

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How helpful was it for sticking to the plan to self-monitor your own use of the behavior plan with a checklist?	4	4	4	5	5
Without the self-monitoring checklist, I probably would have implemented the plan less accurately.	5	4	4	5	4
Some teachers got in-person feedback (praise and constructive criticism) while they were implementing the behavior plan. Did you get any in-person feedback from the consultant while you were implementing the plan?	No	Yes	Yes	No	Yes
If yes… How helpful were the consultant's directions of what to do?	NA	5	5	NA	5
If yes… How helpful was the consultant's praise?	NA	5	4	NA	5
If yes… How helpful was the consultant's constructive criticism?	NA	5	5	NA	5

Note. "-" means missing data. "NA" means not applicable

Table 16

Results of administrators' ratings of the acceptability of the training and support provided to staff as part of the multilevel consultation model as reported on the administrator version of the Consultation Model Treatment Acceptability Rating Form (CM-TARF-admin)

Item	Administrator 1	Administrator 2	Administrator 3
1. How acceptable did you find the amount of training provided to staff?	5	5	5
2. How acceptable did you find the supports provided to staff during intervention?	5	5	5
3. How acceptable did you find the amount of support and resources provided to staff regarding skill maintenance and generalization (sustaining and expanding TA and student progress), following intervention?	5	4.5	5
4. To your knowledge, how well did the consultation model work to improve Teaching Assistant (TA) use of behavioral interventions?	5	5	5
5. To your knowledge, how well did the consultation model work to promote Teaching Assistant (TA) general knowledge and understanding of behavioral interventions?	5	4.5	5
6. To your knowledge, how well did the consultation model work to improve the behavior of each Target Student in their respective classroom routines?	4.5	5	5
7. In your perception, how likely is it that the behavior support plans (BSPs) designed for each Target Student will make permanent improvements in the behavior of each child?	5	5	5

8. In your perception, how disruptive was it to the classroom for each Teaching Assistant (TA) to carry out the behavior support plans (BSPs) designed for each Target Student?	0	NS	1
9. To your knowledge, how well did the consultation model work to help other, non-Target Students at the EEP?	NS	NS	5
10. The goals of the Applied Behavior Analytic (ABA) consultation model used in this research study were to (1) improve Teaching Assistant (TA) knowledge and use of behavioral interventions and to (2) reduce challenging behavior for identified Target Students. How well did the goals of this research study fit with your personal/professional goals?	4.5	5	5
11. I believe it's imperative to incorporate Applied Behavior Analysis (ABA) teaching and intervention strategies to support young students with intellectual and developmental disabilities (IDD).	5	5	5
12. How efficient did you find this consultation model in promoting Target Student behavior change?	4.5	5	5
13. How efficient did you find this consultation model in promoting Teaching Assistant knowledge and use of behavioral interventions?	5	5	5
14. How willing would you be in the future to make changes to EEP practices to incorporate the consultation model used in this study?	4.5	5	5
15. In the future I would like to collaborate with Behavior Specialists/Doctoral Students with behavioral expertise from the UO to help to continue to implement strategies used in this research study.	5	5	5

16. With support from at least one Behavior Specialist/Doctoral Student with behavioral expertise from the UO (i.e., like in this study), how sustainable do you think this consultation model is for future use?	5	NS	5
17. I would be interested in seeing this consultation model used more widely at the EEP.	5	5	5
18. I believe the consultation model used in this research study had a major positive impact at the EEP.	5	5	5
19. As a result of my involvement in this research study, I am more willing to be involved in research of this nature in the future.	5	5	5

Note. "NS" means not sure

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