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Using A Behavioral Skills Training Model for Instructing Educators in Functional Assessment and Intervention Procedures in The Classroom Setting

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Using A Behavioral Skills Training Model for Instructing Educators in Functional Assessment and Intervention Procedures in The Classroom Setting

by
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Statement of Original Work

I declare the following:

I have read the Code of Student Conduct and Academic Responsibility as described in the *Student Handbook* of Nova Southeastern University. This applied dissertation represents my original work, except where I have acknowledged the ideas, words, or material of other authors.

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Abstract

Using a Behavioral Skills Training Model for Instructing Educators in Functional Assessment and Intervention Procedures in the Classroom Setting. Lorne Balmer, 2022. Applied Dissertation, Nova Southeastern University, Abraham S. Fischler College of Education and School of Criminal Justice. Keywords: functional assessment, classroom management, function-based intervention, teacher training, behavioral skills training, applied behavior analysis

Educators often manage behavior through suppression rather than working to address the root cause of problematic behavior in the classroom. The Individuals with Disabilities Education Improvement Act of 2004 mandates the use of functional assessment for students with varying exceptionalities to ensure students are educated in the least restrictive environment. However, functional assessment is an evidence-based strategy that could be employed by all teachers to enhance classroom management practices universally. Behavioral skills training is a research-validated approach that is often used to train professionals on a number of skills. The present study investigated the use of a behavioral skills training model to train teacher participants on the basic principles of functional assessment as well as how to functionally redirect behavior in training and natural environment.

A multiple baseline across participants research design was employed to train four teachers how to use functional assessment procedures to functionally respond to maladaptive student behavior. Participants were tasked with understanding the basic tenants of functional assessment, identifying the function maintaining student behavior, and utilizing functional redirections. All participants demonstrated an increased knowledge as related to functional assessment and generalized trained principles to the classroom setting. Thus, using functional assessment and intervention as a theoretical framework for classroom management systems should be utilized to enhance current classroom management practices.

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Chapter 1: Introduction

The professional educator is responsible for providing high quality learning opportunities for all learners while managing the overall dynamic of the classroom. Application of effective classroom management strategies ensures that students' learning environment is conducive to teaching and learning. However, educators often report limited training in classroom management and express a desire for professional learning opportunities in this domain (Gischlar & Riffel, 2020; Hirsch et al., 2020; Russo-Campisi, 2017; Young & Martinez, 2016). Educators have limited exposure to evidence-based practices for addressing classroom behaviors (Eisenman et al., 2015; Hirsch et al., 2020; Stough, 2015; Young & Martinez, 2016). Functional assessment is an evidenced-based practice that is utilized by practitioners of behavior analysis to determine the root cause of behavior (Cooper et al., 2020; Umbreit et al., 2007). Once the function of any given behavior is identified, appropriate interventions can be put forward with scientific confidence and established procedures (Hill et al., 2020).

The Individual with Disabilities Education Improvement Act (IDEA) of 2004 mandates the use of functional assessment procedures for students who display problematic behaviors in the school setting. However, the utilization of functional assessment and intervention procedures is a practice that should be efficiently and effectively applied across all students and educational settings. Rapid reductions in student behavior paired with an increase in more appropriate, or adaptive behavior, can occur if teachers are able to discern the function of behavior and respond appropriately (Hill et al., 2020). Thus, a targeted educator training relative to application of functional

assessment and intervention to current classroom management practices will ensure meaningful behavior change.

Statement of the Problem

The reauthorization of IDEA 2004 set forth the requirement for educational professionals to utilize the principals of functional behavior assessment (FBA) in response to reducing the occurrence of problem behaviors for all students within any educational agency (Bruhn et al., 2016; Haines et al., 2015; Rispoli et al., 2016). However, educator training on functional assessment and intervention often poses a barrier to effective implementation in the classroom setting (Russo-Campisi, 2017). To reduce targeted problematic behavior within an educational setting, systematic interventions based on the identified function of the problem behavior are needed (Bruhn et al., 2016; Gann et al., 2014; LaBrot et al., 2018; Parks-Ennis et al., 2018; Sanford & Horner, 2013; Trussell et al., 2016). Teacher knowledge of functional assessment procedures and redirection strategies is scarce (Oakes et al., 2018; Rispoli et al., 2016). Educators would benefit from functional assessment and problem behavior redirection skill set in the natural classroom setting to achieve meaningful behavior change (Hill et al., 2020). To date, teacher training models have consisted of content presentation in a lecture form with limited opportunity to practice acquired skills in the natural classroom environment (Loman & Horner, 2014; Sawyer et al., 2017). Thus, the effects of utilizing a training model that can provide repeated opportunities for practice in the natural environment, which are known as generalization opportunities, do not tend to occur (Borgmeier et al., 2015; Oakes et al., 2018). As such, a quantitative study that measures the effects of a training model that allows educators the opportunity to rehearse and

receive feedback on functionally assessing and redirecting behavior in the natural classroom environment is warranted. For school systems to comply with the mandates of IDEA 2004, educators need to be equipped with evidenced-based assessment strategies and up-to-date practical knowledge that influence behavioral change constructively and longitudinally.

The Research Problem

The reduction of problematic behaviors within the classroom setting has been a long-standing concern for both veteran and pre-service teachers (Eisenman et al., 2015; Gischlar & Riffel, 2020; Hirsch et al., 2020; Russo-Campisi, 2017; Young & Martinez, 2016). Classroom management has historically been grounded in the ideology of managing or controlling student behavior rather than working to teach more adaptive behaviors as a means of reducing maladaptive behaviors (Eisenman et al., 2015; Gischlar & Riffel, 2020; Hirsch et al., 2020; Russo-Campisi, 2017; Young & Martinez, 2016). As such, a more thorough understanding of environmental events contributing to target behavior production is needed to address the behavior in a systematic manner (Bloom et al., 2013). This strategy is often referred to as addressing the function of the behavior rather than working to merely reduce the frequency of any given behavior. However, teachers and school support staff do not generally rely on functional assessment procedures (Young & Bauer-Yur, 2013). Kunnavatana and colleagues (2013) noted a lack of utilization of the functional analysis procedures used by educators serving specialized populations of students.

The determination of what is functionally maintaining problematic behavior can allow for rapid and systematic decreases in problematic behavior; however, educators

need a skill set in order to make such determinations (Hill et al., 2020). With increased training on functional assessment procedures, it is hypothesized that educators can decrease disruptions in the classroom and achieve academic engagement. Rispoli and colleagues (2015) found that teacher-implemented trial-based functional analysis were successful at identifying the function of behavior and yielded interventions that rapidly decreased problematic behaviors and increased adaptive communication. Gann et al. (2014) found that with a focus on functional intervention based on assessment, student on-task behavior was increased across classroom settings. Preliminary research has indicated that functional assessment holds merit for use in the educational setting and should be utilized as research-based approach in working to reduce target behaviors. Moreover, enhanced training opportunities following a scripted model are needed to produce systematic changes in the approach to classroom management.

Background and Justification

Overall, teacher knowledge of the principles of functional analysis is limited, at best (Oakes et al., 2018; Rispoli et al., 2016). Furthermore, Oakes et al. and Rispoli et al. indicated that limited training in functional analysis for professional educators prohibits the successful implementation of positive behavioral intervention supports within the educational setting. It is hypothesized that with effective analysis of problematic behavior in the classroom, interventions based on these functional analyses (regardless of type or model) can be developed to curb the frequency of such behaviors while concurrently building more appropriate functional skills (Ennis et al., 2018; Gann et al., 2014; Oakes et al., 2018). The methodologies of training educators on varying functional analysis models as well as the interventions created and implemented across educational settings

stemming from the conducted functional analyses are two areas in which the literature can be divided and reviewed for further analysis and discussion.

Borgmeier and colleagues (2015) found teachers and behavior specialists to have a low pre-assessment score on functional assessment procedures used within the educational setting. Results of these pre-assessments created notable concern as behavior specialists should have a thorough understanding of functional assessment and intervention procedures as their primary role is to assist in reducing problematic behavior within the classroom. More notably, even with additional training, general education teachers still scored relatively low on post-assessment measures (Borgmeier et al., 2015). Thus, on-going training containing content that can be generalized to the natural environment is needed to produce lasting change.

Gann and colleagues (2014) found a comprehensive intervention system grounded in function was successful in reducing off-task behaviors and increasing more pro-social behaviors. Furthermore, the need for collaboration and transfer of trained procedures to the natural environment were demonstrated (Gann et al., 2014). Rispoli and colleagues (2016) expressed that educators could acquire and retain trained principles of functional analysis for both traditional functional assessment and trial-based functional assessment. Exposure to one functional assessment model led to a higher rate of acquisition for subsequent trained functional assessment models. Following training, educator ratings of social validity regarding the importance of utilizing function in addressing target behaviors also increased. Thus, demonstrated effects of functional assessment and functional interventions have been noted; however, further research is needed to perfect educator training models on best practices in functional assessment in the school setting.

Deficiencies in the Evidence

To date, functional assessment training models have mainly consisted of a lecture-based approach to content exposure with contrived vignettes for assessing trained concepts and limited to assessment with no correlation to designing and implementing function-based interventions (Kunnavatana et al., 2013; Loman & Horner, 2014; Sawyer et al., 2017). Kunnavatana and colleagues (2013) trained educators to perform functional assessment procedures and derive interventions in a contrived manner but limited natural environment training occurred. In a study completed by Oakes and colleagues (2018), participants were provided with follow-up activities and assignments that were based on trained tasks; however, these were not mandatory assignments. Therefore, the generalization effects of the training were unknown to the researchers. Similarly, Borgmeier and colleagues (2015) trained principles of functional assessment in a whole group fashion. The authors recommended follow-up assessment in natural environment to occur as a future direction for research.

In general, research conducted to date has consisted of isolated studies looking to produce intervention effects that are not longitudinal in nature. Although Crone and colleagues (2007) did demonstrate success with the utilization of a yearlong training model with in-classroom follow-up and coaching, this training approach has not been the norm. Thus, a major deficiency in current research relates to the lack of natural environment training in implementing the trained principles of functional assessment to devise and enact functional interventions that are longitudinal in nature.

As related to the implementation of functional analysis-based interventions, the reviewed research lacked in the area of addressing all identified functions of behaviors.

Trussell and colleagues (2016) noted that a significant limitation of their study was the lack of inclusion of escaped-based intervention procedures. While Sanford and Horner (2013) reviewed escape-based interventions in relation to academic performance, the authors noted the lack of intensity for escape-based behaviors. The functions of attention and access-based behaviors have been more readily addressed through prior research efforts; therefore, a need to identify systematic interventions for escape emerged as a growing need (LaBrot et al., 2018; Sanford & Horner, 2013; Trussell et al., 2016). In conjunction with the need to readily analyze the escape-based functional interventions and intense target behaviors, researchers noted the need for examining interventions across settings and with diverse population (Bruhn et al., 2016; Gann et al., 2014). As such, future research should focus on providing educators with conceptually systematic training on functional assessment practices to be used in creating function-based interventions for all functions of behavior that can be generalized to the classroom setting.

Audience

The overall purpose of the proposed study is to enhance functional assessment and intervention procedures to improve classroom practices in an effort to increase learning and behavioral outcomes for all learners. Thus, school-based and district leadership would benefit from reviewing the effects of proposed training procedures in an effort to design high-quality and evidence-based professional development for personnel in their local educational agencies. Additionally, educators and relevant support staff may also have interest in the findings of the proposed training procedures and relevant background research to refine their own professional practices relative to classroom

management. Finally, board certified behavior analysts (BCBAs) may also find utility in the findings of the study when designing school-based trainings as part of their everyday role or consultative role within any given district.

Setting of the Study

The study took place at a private school in Central Florida. While the researcher invited several schools throughout Central Florida to participate in the study, only one private school administrator responded to the invitation. The participating school enrolled students from pre-kindergarten through 10th grade. Classrooms were clustered by grade level and housed two grades in each room. In addition, mixed ability students were grouped together in one classroom. Students received pushed-in supports from outside agencies in a variety of domains including occupational therapy, speech therapy, etc. The average classroom size across all classrooms was 11-12 students. Many of the students relied on the McKay Scholarship from the Florida Department of Education.

Researcher's Role

The researcher's primary responsibility was to deliver all preliminary trainings in functional assessment as well as design function-based interventions. The researcher developed standardized job-aides to be used by all study participants in conducting a functional assessment, designing interventions, and intervention implementation. The researcher created both pre and post assessment measures, social validity measures, and checklists to rate performance and provide corrective feedback to participants in a systematic manner. In addition to assessing participant performance, the researcher delivered corrective feedback based on the standardized check lists following a behavioral skills training model as well as performed checks for interobserver agreement.

Finally, the researcher aggregated all participant performance data, analyzed data for trends, determined outcomes, identified limitations, and made recommendations for future research.

The researcher is a BCBA since 2017. Prior to obtaining certification as a BCBA, he served as a public-school educator in the P-12 setting. Currently, he works in the private sector as a behavior analyst and educational consultant. The researcher relied on his background in behavior analysis and knowledge of the dynamics of the overall classroom environment to design technological and ergonomically relevant procedures to assist professional educators in identifying environmental variables maintaining behaviors and altering these variables to produce desirable behavior.

Purpose of the Study

The purpose of this study was to utilize the principles of BST to train professional educators to use functional assessment and intervention procedures to reduce maladaptive behaviors for any given learner. Central to this study were the concepts of increasing an educator's knowledge of the four functions of behavior, how to identify these functions, and how to implement interventions based on functional variables maintaining problematic behavior. Using a behavioral skills training model, participants were systematically guided through both the functional assessment and intervention design process with repeated opportunities to apply skills with feedback in both a training and natural setting. Outcome measures were two-fold as participants' knowledge regarding functional assessment and intervention procedures was measured in conjunction with

their ability to functionally redirect problematic behaviors and increase adaptive behavior in the classroom setting.

Definition of Terms

Adaptive behavior is described as behavior that is considered functional or meaningful relative to one's age as defined by the normative standards of society (Cooper et al., 2020).

Applied behavior analysis is the science that stems from application of behaviorism in which environmental manipulations are utilized to produce meaningful change in human behavior in a systematic fashion (Cooper et al., 2020).

Antecedent is the environmental stimulus that occurs before the behavior of interest and can be referred to as the "quick trigger" for the behavior (Alberto & Troutman, 2006; Cooper et al., 2020; Steege et al., 2019).

Behavior is defined as any action involving muscle movement that can be observed and measured (Alberto & Troutman, 2006; Cooper et al., 2020; Steege et al., 2019).

Behavior chain is the sequential order of events in which any behavior can be observed through an analysis of the antecedent, behavior itself, and maintaining consequence (Cipani & Schock, 2011, Cooper et al., 2020; Umbreit et al., 2007).

Behavior modification is defined as generalized treatment condition used in an effort to increase or decrease a behavior of interest with no consideration to functional attributes (Alberto & Troutman, 2006; Cooper et al., 2020).

Behavioral skills training is a training paradigm that involves the use of instructions, modeling, rehearsal, and feedback to aid in the acquisition and maintenance of new skills (Cooper et al., 2020; Himle & Miltenberger, 2004).

Classroom management is defined as the actions and systems implemented by an educator to maintain overall order in the classroom and keep disruptive behaviors to a minimum (Emmer & Stough, 2001).

Consequence is the environmental stimulus that immediately follows any given behavior, which can strengthen or weaken the behavior of interest. Reinforcement and punishment are both types of consequences (Cipani & Schock, 2011).

Evidence-based practices are strategies implemented by a variety of practitioners across disciplines that have proven to be effective through repeated research ventures (Cooper et al., 2020; Ledford & Gast, 2018).

Functional analysis is defined as the systematic manipulation of alone, escape, access, and attention experimental conditions to determine with high certainty the maintaining function of any given target behavior. Functional analysis often leads to the ability to derive functional relations (Cooper et al., 2020; Steege et al., 2019).

Functional assessment is a comprehensive assessment tool that involves multiple methodologies (i.e., observations, questionnaires, observations, environmental manipulations, record reviews, etc.) to determine the function of any given human behavior (Cipani & Schock, 2001; Cooper et al., 2020; Steege et al., 2019).

Function-based intervention is an alternative strategy or skill to teach a learner that possesses the same function of the behavior targeted for decrease in an effort to ultimately replace targeted behavior. The alternative behavior used for intervention

should be functionally equivalent to the target behavior and be less effortful to complete (Borgmeier et al., 2015; Cooper et al., 2020).

Generalization is defined as the ability to apply behavioral outcomes of any given treatment package from initial training environments to additional or alternative treatment settings (Baer et al., 1968; Cooper et al., 2020).

Indirect assessment measures encompass interview instruments used to gather information from the learner of interest and/or persons who have regular interactions with the learner in order to discern the hypothesized function of the behavior of interest (Cooper et al., 2020).

Maladaptive behavior is defined as behavior displayed by any given learner that is considered disruptive or irregular for one's age group as described by the normative standards of society (Cooper et al., 2020).

Narrative recording is an assessment practice, which can also be referred to as ABC data collection, in which one or multiple observers notate behavior chains by recording the antecedent, behavior, and consequence for any given behavior (Alberto & Troutman, 2006; Cooper et al., 2020).

Natural environment training is a set of instructions that occurs in the learner's day to day environment(s) (Steege et al., 2019).

Trial-based functional analysis is a functional assessment strategy in which the experimental conditions of alone, escape, access, and attention are manipulated for brief trials to determine the overall effect on any given challenging behavior (Rispoli et al., 2015).

Chapter 2: Literature Review

Early Origins of Behavior Analysis

Applied behavior analysis (ABA) is a relatively new field in comparison to other branches of knowledge that are dedicated to the understanding and improvement of human behavior. As indicated by Cooper and colleagues (2020), John Watson is widely known as a pioneer in the field of psychology who recognized the importance of observable behavior. He initiated a thought-provoking approach to psychology that incorporated the environmental stimulus-and-response (S-R) relationship. Watson's S-R paradigm ultimately led to the laboratory experiments that were conducted by B. F. Skinner in the middle of the 20th century. Skinner's experimental work expanded the S-R paradigm to emphasize the importance of the consequences. In due course, it became a foundation that is now known as the operant three-term led (S-R-S) contingency. The debate from viewing human behavior as being inclusive of external and internal events as opposed to solely environmental events occurring outside of the individual also began at that time. As a result of the laboratory experiments conducted by B. F. Skinner, which effectively demonstrated basic principles of behavior such as operant conditioning, respondent conditioning, and the utilization of reinforcement, early applied behavior analysts embarked upon effective replications of these highly controlled experiments in various environments to include residential treatment facilities and educational centers (Cooper et al., 2020). Behavior analysts were then able to begin disseminating their applied work across individuals, behaviors, and settings to further expand upon the professional body of knowledge related to human learning and behavior.

In addition to the monumental contributions of Watson and Skinner, Fuller's as well as Ayllon and Michael's work with psychiatric nurses set the stage for future applied research studies that broadened the growing field (Cooper et al., 2020). Such research led to the statement by Baer and colleagues (1968): "obviously, the study must be applied, behavioral, analytic, in addition, it should be technological, conceptually systematic, and effective, and it should display some generality." (p.92). This statement ignited the seven dimensions of ABA that serve as fundamental components of study for applied researchers. They set the stage of the professional practice of all prior, current, and future behavior analysts. The application of behaviorism comes to fruition in the experimental analysis of behavior as well as ABA as a professional practice. According to Bush (1945), an experimental analysis of behavior leads to a better understanding of processes and procedures on any given topic which can then be applied to a number of practical settings. As such, behavior analysis has begun to be integrated into a variety of disciplines to include classroom management as being a predominant environment for students in the PK-12 education.

The Professional Practice of Behavior Analysis: A Practical Approach

An imminent need for a stronger base of evidenced-based classroom management strategies has emerged in recent years due to an increase in higher levels of problematic behaviors displayed by students across multiple educational settings (Hutchings et al., 2013). However, the application of behavior analytical strategies within the educational setting have not been employed. The concept of management has served as the onus of a variety of techniques employed for educators for the past several decades (Emmer & Stough, 2001). Rather than conducting a thorough analysis of the underlying variables

impacting behavior, the focus is to reduce the occurrence of target behaviors. Although ABA is a relatively new science, the strategies employed by practitioners have strong foundation in the evidence-based research studies and provide strong support for attainment of social significant outcomes for both individual learners and groups of learners (Baer et al., 1968; Cooper et al., 2020). In short, the practice of ABA focuses on analyzing the environment to determine variables that trigger and maintain both adaptive and maladaptive behavior (Alberto & Troutman, 2006; Catania, 2011; Cooper et al., 2020).

Furthermore, ABA is grounded in an exploratory analysis of the sequential environmental events that occur at any given time in a repeated fashion (Cooper et al., 2020). This analysis aims at discerning observable trends about why individuals engage in specific behavior (Cooper et al., 2020; Poling et al., 2020). While John Watson made a provocative S-R paradigm contribution to the ABA science, essential formulation of the S-R-S contingency by B. F. Skinner demonstrated the powerful effect of consequences on behavior and hence made a fundamental contribution to the understanding of behavior (Cooper et al., 2020). The S-R-S contingency is often referred to as the antecedent-behavior-consequence model or the basic three-term contingency (Alberto & Troutman, 2006). In recent years, the concept of motivating operations, or the underlying drive to engage in any given behavior, has been added as an interwoven component to the basic three-term contingency (Poling et al., 2020). In essence, any given human behavior can be visually represented and analyzed in relation to the underlying motivational contingencies in order to glean systematic patterns and identify reasonable hypotheses for recorded behavior chains.

Although initial environmental recording referred to all environmental occurrences as stimuli, more recently, behavior is analyzed through antecedents that evoke behavior and consequences that maintain behavior (Cooper et al., 2020; Umbreit et al., 2007). ABA as a field relies on the utilization of measurable and observable properties of the environment to determine why any given behavior occurs and correlates the said behavior to the maintaining variables (Cooper et al., 2020; Kruger et al., 2015). Ultimately, accurate measurement leads to a systematic representation of behavioral deficits and the acquisition of more adaptive behaviors over time. Holistically, ABA allows anecdotal data to be analyzed in conjunction with numerical representations of behaviors of interest in a streamlined fashion, reduce behavioral excesses, and build more desirable behavior (Baer et al., 1987). As such, the acquisition of both narrative data and numerical data allows practitioners of behavior analysis to devise treatment protocols aimed at producing both meaningful and socially significant outcomes for individuals. This is the core of ABA (Baer et al., 1987; Cooper et al., 2020).

The field of ABA has a strong grounding in evidence-based practices as consistent treatment effects have been noted for many of the theoretical principles of practice (Cooper et al., 2020). One such practice is the utilization of reinforcement, punishment, and overall human motivation to engage in behavior. Oftentimes, the systematic manipulation of reinforcement and punishment strategies have produced measurable effects on human responding (Catania, 2004; Cooper et al., 2020). In the classroom setting, reinforcement and punishment procedures that are embedded into teaching strategies have proven successful in reducing problematic behavior and advancing desirable behavior (Oakes et. al, 2018). Many successful treatment modalities

such as functional communication training, natural environment training, utilization of differential reinforcement, and interventions based on functions have emerged as evidence-based practices (Cooper et al., 2020; Kruger et al., 2016; Trump et al., 2018). Their positive effects have been demonstrated in the growing body of behavioral analytical literature. The evidence base for the practical applications of ABA has been built upon the single-subject research samplings; however, the effects of ABA treatment protocols would prove beneficial for teachers, particularly in responding to student behavior within the classroom setting (Trump et al., 2018).

Deficits in Traditional Classroom Management Systems

The creation and on-going management of effective classroom management systems has proven to be a daunting task for many novice and seasoned educators. Teachers are taught how to manage academic deficits in their formal pre-service training; however, training on how to structure classroom management systems does not occur (Young et al., 2018). Oakes et al. (2018) indicated the need for educators to have a strong background in classroom management strategies consistent with functionally reducing target behaviors to increase learning outcomes for all students. Owen and colleagues (2015) found that educators often lack the skill sets necessary to effectively manage classrooms, which often leads to the use of more punitive management practices. Oftentimes, pre-service educators receive no formalized training on how to develop effective classroom management strategies and techniques utilizing a research-based framework (Eisenman et al., 2015). Traditional classroom management systems have historically relied on the principles of behavior modification, which is based on obtaining order and structure over an individual or group of people, rather than principles of

behavior analysis (Emmer & Stough, 2001). General and special educators alike often lack the necessary skills set to determine why a behavior is occurring and often rely on other environmental deterrents such as home life, mental health factors, and the like to rationalize problematic behaviors within the classroom setting (Alberto & Troutman, 2006; Young & Martinez, 2016). The United States Department of Education (2016) found that the utilization of functional behavioral assessment and associated strategies serves as an effective methodology for classroom management in reducing problematic behaviors on the part of students.

As related to the school setting, "effective reinforcement-based interventions for problem behavior require knowledge of the environmental determinants of that problem behavior" (Bloom et al., 2013, p. 208). Environmental determinants can be correlated to the four functions that are obtainable from any number of assessment measures used by the professional educator. If one can determine why challenging behaviors occur, it stands to reason they are in a better position to teach alternative behaviors to the problem behavior. In turn, it will assist the student in achieving the desired social and academic outcomes in an effective manner (Oakes et al., 2018). A basic understanding of behavioral function allows the professional educator to proactively intervene with antecedent tactics such as advanced warning, frequent breaks, behavioral momentum strategies, and the like to reduce occurrences of target behavior. These interventions can then be developed into more cohesive classroom management systems. Barbetta and colleagues (2009) found that a common mistake of most educators is a reliance on sole suppression of a behavior rather than addressing the function or "why" of the behavior. Although a classroom educator may not have an advanced knowledge of functional

assessment procedures, a basic understanding of why humans engage in behavior is fundamental in the creation of grounded management systems.

Young and Martinez (2016) found that the use of functional assessment procedures and interventions in the classroom setting is not a common practice. These researchers provided certified educators with a course in functional assessment practices for continuing education purposes. Over 70% of educators attributed poor behavior to previous trauma, poor parenting, and the like. Moreover, 87% of the same pool of educators agreed that the classroom environment is a major cause of the student problematic behaviors. However, the study's participants demonstrated limited competencies on functional assessment practices. To be specific, 87% of respondents indicated that they did not use such practices in their day-to-day classroom routines. Furthermore, some participants also viewed the use of reinforcement in the classroom as bribery and considered negative reinforcement and punishment to be synonymous. The results of this study indicate a clear need for enhanced educator training on the basic tenants of human behavior that account for positive and negative behavior modifications. While this study relied on the survey approach that has inherent concerns relative to the concept of internal validity, 757 participants who took part in the study demonstrated the emerging trends regarding functional management that hold great implication for the need for additional educator training on enhanced management systems.

Wills and colleagues (2019) examined the use of functional management strategies in assisting in the reduction of problematic behaviors displayed by middle schoolers in three different classrooms across different schools for a total of six participants. Of particular interest to the researchers was the annual loss of academic time

for all learners based on misguided classroom management practices (Muscott et al., 2008). Responding variables included on-task behavior of the classroom as a whole, teacher praise and reprimands, and on-task behavior of targeted students. Through the utilization of an ABAB design whereas A is baseline and B is intervention, the researchers employed scripted interventions in which expectations were reiterated daily, positive praise associated with on-task behavior was delivered, and corrective prompting was utilized for error correction. Teacher reprimand and praise were tallied using a frequency count while on-task behavior was measured through momentary-time sampling procedures. The class wide function-related intervention training (CW-FIT) for teachers served as the independent variable. Implementation of the CW-FIT began after steady state responding was achieved in the first five data collection sessions of baseline. Data analysis including aggregating the rate of teacher praise and reprimands per 10 min observation. Additionally, percent of intervals scored of on-task were visually inspected by researchers. Effects of the intervention were mixed across classrooms. For example, utilization of positive specific praise associated with earned points used by teachers in all classrooms on average increased. For individual students, the trends associated with an increase in on-task behavior were variable at best. These findings are indicative of functional management systems being appropriate for the classroom setting. A major limitation of this study was associated with the lack of assessment of prevailing functions that contributed to the problematic behaviors of individuals and the classroom as a whole. However, management systems grounded in the general principles of ABA demonstrated some promise. Thus, fluid function-based interventions are hypothesized to impact

student behavior with an even greater effect traditional classroom management systems based on behavior modification.

As indicated, research has demonstrated a positive effect in the utilization of enhanced opportunities for teacher professional development in the area of functional analysis within the classroom setting (Bloom et al., 2013; Kummavatana et al., 2013; Oakes et al., 2018; Rispoli et al., 2015; Rispoli et al, 2016). As with academic interventions, the reauthorization of IDEA (2004) calls for an evidenced-based approach to the overall implementation of behavioral interventions for at risk students. An emerging theme in the application of the area of functional analysis is the need for natural environment training embedded into teacher training to occur systemically. Performance-based assessment of teacher implementation of functional analysis procedures as well as the development of functional interventions holds significant implication for future research.

Functional Assessment in Addressing Target Behaviors

When analyzing human behavior, behavior should be viewed as functional, or occurring for a discrete reason to achieve an effect on the environment (Cipani & Schock, 2011). All learners operate under "if, then" contingencies operating under the premise of: if I engage in this behavior, then I will achieve this effect (Cipani & Schock 2011; Cooper et al., 2020). Functional assessment serves as a comprehensive and analytical tool repeatedly used by behavior analysts to discern the underlying root causes for recorded behavior chains (Baer et al., 1987; Steege et al., 2019). This multi-faceted assessment process has been utilized by behavior analysts in order to treat challenging target behaviors since the middle to late 1960s (Hastings & Brown, 2000; Remington, 1998).

Professional behavior analysts employ a multitude of assessment measures to glean function of all recorded behavior chains as a means to best serve the learner. Practitioners must have a keen understanding of the "processes underlying mediator behavior" (Hastings & Brown, 2000, p. 234), which are associated with function. All human behavior can be attributed to four basic functions: attention, automatic reinforcement, access, and escape. These four categories are often referred to as the "why" or the underlying catalysts that drive behavior of all living organisms. Oftentimes, behavior analysts will also refer to function as the purpose that any given behavior serves (Umbreit et al., 2007).

The function of any given target behavior is determined by analyzing the relevant antecedents and consequences triggering and/or maintaining any given behavior (Cooper et al., 2020). Arriving at the function of any given target behavior can occur through any number of procedures including direct and indirect measures. Controlled manipulations or a functional analysis involves an intentional alternation of alone, attention, escape, and control conditions in a systematically arranged manner. It provides the basic experimental model from which all functional assessment procedures are derived. Derivatives of direct functional assessment procedures include but are not limited to: trial-based functional analysis, brief functional analysis, and latency or precursor functional analysis (Iwata, 2010). While indirect measures allow the practitioner to conduct assessments by using interviews, rating scales, and questionnaires, descriptive direct assessments reveal data on the occurrences of behavior in the context of natural environment and direct observations to hypothesize functions of behaviors (Cooper et. al, 2020). Both direct and indirect assessments are designed to identify potential events that correlate with the behavior of

interest and gather information assortation with reasons for behavior occurrence. While direct assessment measures can lead to identification of pure functional relations between the onset of environmental variables and behavior, indirect measures guide the hypothesis development and are often utilized due to their ecological friendliness of implementation (Cooper et al., 2020).

The utilization of functional assessment procedures holds great practicality for utilization within the educational setting. Behavior analysts are commonly known for utilizing a variety of functional assessment procedures in their professional practice; however, the practice of functional assessment continues to be underutilized in educational settings (Young et al., 2018). For the professional educators, a grounded understanding of the reasons for the student's behavior is fundamental in the creation of functional-based intervention systems in the classroom setting (Alberto & Troutman, 2006). Crone and colleagues (2007) reported "at most schools, a small group of students with chronic or severe behavioral; problems will not respond to broad-based interventions" (p. 15). When looking to systematically reduce the occurrences of maladaptive behaviors within the classroom, educators should consider the use of functional assessment procedures as a technique in developing and implementing functional interventions (Oakes et al., 2018). Ultimately, the in-depth understanding of behavioral causes and effects leads to development of systematic approach of reducing maladaptive behavior and increasing adaptive behaviors.

Functional Assessment as Related to the IDEA of 2004

The reauthorization of the IDEA (2004) sets forth the requirement for educational professionals to utilize the principals of functional analysis in response to reducing the

occurrence of problem behaviors for all students who participate in federally funded school districts, which originated in the IDEA of 2004 (Bruhn et al., 2016; Haines et al., 2015; Rispoli et al., 2016). *Mills v. Board of Education of District of Columbia* (1972; hereafter *Mills*) held that all students, regardless of exceptionality, must be educated in an equitable fashion when compared to the same-aged peers. Otherwise, it would be deemed unconstitutional. The results of this landmark case led to a publicly supported education for children with disabilities and established the procedural safeguards. Functional assessment procedures as well as behavioral intervention plans are now required to be included in the individualized education plan (IEP) to ensure that free and appropriate public education is afforded to all students (Bruhn et al., 2016; Haines et al., 2015; Rispoli et al., 2016; Walker & Hott, 2015). It is worth noting that the IDEA (2004) does not provide information relative to the components of an assessment. As such, school districts and the IEP team members are left with designing their own functional behavior assessment measures and educators as well as administrators need to demonstrate minimal competencies in assessment practices. Furthermore, there are no standardized templates detailing the necessary components of functional assessment for school-based practitioners to follow when completing assessment, which makes successful completion of assessment practices challenging (Scott et al., 2010). While positive behavior supports and functional assessment procedures are now mandated for students with exceptionalities, the evidence-based practices in the field of education demonstrated that these supports and measures should be utilized with all learners within the K-12 educational system (Gresham et al., 2004). Students with disabilities are far more likely than their same-aged peers to be victims of disciplinary actions when compared to the

same-aged peers. It often leads to exclusionary practices (Knudsen & Bethune, 2018; Scavongelli & Spanjarrd, 2015).

Students with disabilities are protected under the IDEA (2004) from exclusionary educational practices (Scavongelli & Spanjaard, 2015). An inadequate knowledge of federal and state laws related to implementation of functional assessment procedures has prevailed over the past decade (Gresham et al., 2004). Some states require additional functional assessment components that go beyond the federal requirements. Therefore, a solidified training model in which school-based personnel can receive training on functional assessment procedures as well as functional management practices is needed to avoid due process hearings. Serious reappreciations can occur for failure to implement or revise behavioral intervention plans and/or assessments within the school setting (Drasgow & Yell, 2001). In analysis of due process hearings steaming from inadequate functional assessment procedures from 1997-2000, school districts lost in 94% of cases and, in some instances, faced financial penalties in the form of retribution (Drasgow & Yell, 2001). In *Endrew F. v. Douglas County School District Re-1* (2017), school officials failed to develop an IEP that was appropriated for meeting educational needs of a young learner with autism as well as affording him the opportunity to make reasonable progress, which ultimately led to a ruling that ordered the school district to pay for a private school placement.

It is another indication of the need for a targeted training model for both assessing and treating problem behavior within the educational setting. Mills (1972) laid the framework for ensuring students with disabilities have access to a free and appropriate public education with non-exclusionary practices. Students with varying exceptionalities

may not be suspended for longer than 10 school days in any calendar year for disciplinary infractions related to their disability (Wright & Wright, 2007). Should a student be removed for longer than 10 days or a recommendation for an alternative educational placement be made, a functional assessment and/or revised behavioral intervention plan, which is based on assessments results, is required (Scavongelli & Spanjaard, 2015; Wright & Wright, 2007). As such, the need for an evidenced-based and comprehensive behavioral assessment and intervention package for educational professionals across the nation has emerged.

Educator Training on Functional Assessment

Researchers have begun the process of identifying the most effective and technological methodologies in training teachers to conduct functional analyses in educational setting across the country (Bloom et al., 2013; Kummavatana et al., 2013; Oakes et al., 2018; Rispoli et al., 2015; Rispoli et al, 2016). Rispoli and colleagues (2015) conducted a study in which early childhood educators were trained to implement trial-based function analysis and functional interventions across learners who were identified as behaviorally challenged. Three Head Start teachers participated in the study by selecting one learner from each of their respective classes. Each teacher received training on conducting three trial-based functional analysis conditions which included escape, attention, and sensory conditions. Additionally, all teachers were trained to operationally define target behaviors. Researchers worked with teachers to implement functional communication responses based on the results of the functional analysis. Utilizing a withdrawal reversal design, Rispoli and colleagues (2015) analyzed the rate per minute of functional responding compared to rates of target behavior displayed across intervention

and control conditions. Across all three learners chosen by their teacher, the functional-communication conditions aided in decreasing the rate per minute of target behaviors displayed while increasing the rate per minute of adaptive responding. The ability to demonstrate the ability of function-based interventions as having higher success rates when compared to universal supports traditionally provided by educators across all study participants and intervention conditions served as a major strength of the study. A major limitation of the study was the sole exploration of access as a maintaining function of target behavior across all students in the study.

Grey and colleagues (2005) noted the inadequate use of ABA procedures within the educational setting. Furthermore, Grey and colleagues went on to discuss the importance of a specialized educator training in the field of ABA in an effort to meet the ever-growing diverse population of students. Researchers utilized a single-case design applying an AB model, whereas A served as baseline and B served as intervention. Eleven special educators participated in a training course to develop functional support plans for learners in a variety of educational settings. A total of 45 classroom instruction hours followed by 45 practical application hours were provided to participants in creating the behavioral interventions for their targeted learner. Grey and colleagues found the intervention to be successful in addressing problematic target behaviors and increasing replacement skills across 80% of participants. The Wilcoxon statistical analysis procedure was used in order to determine interventions produced a statistically significant difference from baseline to intervention in reducing target behaviors. Educators reported feeling better equipped to address problematic target behaviors functionally and implement strategies within the classroom to systematically decrease target behaviors in

an evidence-based manner. The inability to rule out contributing extraneous variables and the lack of on-going support after the termination of the study were cited as the study's weaknesses. However, the high prevalence of success paired with the significant ratings of social validity by both parents and educators are major strengths of this study. Clearly, the utilization of the principles of ABA has demonstrated success within the classroom and should be further explored within this context.

Loman and colleagues (2014) also researched teacher training on functional assessment. Twelve participants across 10 elementary schools were recruited to participate. The study design consisted of three phases in which educators were trained on functional assessment procedures through a lecture-based training, afforded the opportunity to complete the functional assessment process for a student, and finally, university researchers checked the educators' assessments for fidelity. Loman and colleagues were also interested in determining whether or not educators saw functional assessment processes as socially valid to their role in the classroom. Educators took a pre and post assessment to determine whether knowledge for functional assessment practices improved as a result of training. Educators also completed a basic functional assessment questionnaire and observation form with summary statement to be checked by the primary researchers. All of the aforementioned were the dependent variables of the study while the training procedures served as the independent variable. Basic descriptive statistics were used as the main data analysis tool for pre and post assessment measure. Participants' summary statements were checked against researcher functional analysis. On all occasions, participant summary statements regarding function matched true functional analysis procedures. The ability for educators to implement functional

assessment procedures served as a major strength of the study. However, no follow-up probes on participant knowledge of assessment procedures were doubted, which is considered a limitation. Additionally, no comprehensive intervention packages to determine if a student behavior could be reduced functionally occurred as a part of the study. Clearly, educators can be trained in functional assessment procedures, but a streamlined process to take assessment to practice in regard to behavior management needs to be analyzed.

Although all educators can benefit from advanced training in ABA, novice educators should be of particular emphasis as their classroom management practices are evolving. Gann and Kunnavatana (2016) demonstrated a clear need for teacher training on functional assessment and functional classroom management practices in their work with a newly certified teacher who was in the process of attaining special education certification. One classroom educator served as the participant of their study lending to a single-case design research methodology with a changing criterion design. Phases of the design included baseline, intervention, and an additional intervention with changing criterion. Researchers found that a classroom teacher was not able to adhere to a scripted management plan or intervention plan despite training. Furthermore, the participant had no knowledge of the four functions of behavior or how they could impact student behavior. This is indicative of a lack of formalized training in university programs or school professional development programs in the areas of functional management strategies and functional behavior assessment in the classroom setting. The reduction of off-task behavior across three students in the participant's classroom served as the dependent variable. Researchers targeted the domains of antecedent techniques and

strategies, use reinforcement, and deliver appropriate paced instruction as the phases of the intervention. Components within each of these domains were introduced as part of the comprehensive classroom management plan followed by the teacher in the changing-criterion design. As a result and based on a visual analysis of the date, on-task behavior for all three targeted students increased. The small sample size of participants is this study's major weakness. Additionally, the lack of involvement on part of the classroom educator in the overall process of assessment and development of the management plan was also a weakness. However, the ability of the researchers to demonstrate improvements in teacher implementation of functional interventions based on assessment is the study's major strength. Ultimately, Gann and Kunnavatana's results established the need for enhanced training in functional assessment and classroom management planning to decrease off-task behavior and produce enhanced learning outcomes.

Functional assessment procedures have proven challenging to implement within the classroom setting. However, trial-based functional analysis offers a less cumbersome strategy for educators to identify perceived functions of student behavior. Rispoli et al. (2016) continued research in the area of functional analysis by comparing the implementation of trial-based functional analysis to the traditional functional analysis model in the public education setting. A lack of competency in assessing and intervening on part of professional educators and support staff as well as educator commentary on a lack of competency in functional assessment served as the driving factors for additional research. In this study, educators were trained using a three-pronged approach involving classroom component, a hands-on component, and a post- observation follow-up. Six different educators, divided into groups of two, participated in the study. Four concurrent

multiple baseline designs were used by researchers in effort to demonstrate effects of their intervention across participants. Participants were exposed to a classroom training, contrived practice with researchers and peers, captured practice in the classroom, and maintenance probes for both trial-based functional analysis procedures and traditional functional analysis procedures. All participants were able to obtain mastery criteria after coaching and feedback for both assessment methodologies; however, less corrective prompting was needed for the trial-based functional analysis procedure as compared to traditional functional analysis procedures. Additionally, trial-based functional analysis procedures were considered to be more socially valid. The limited time spent in the classroom for generalization of training was a major limitation of the study as was the prior knowledge skill set in regard to behavior analysis for all participants. Despite the study's limitation, the ability for educators to be trained in varying methodologies of functional assessment in such a short time span served as a major strength. Furthermore, a distinction between teacher preference towards trial-based functional analysis as opposed to traditional functional analysis also emerged, which provides future research pathways. A summary of noteworthy studies regarding teacher training on functional assessment can be found in the Table 1.

Table 1

Educator Training on Functional Assessment

Reference	Participants	Setting	Independent Variable	Dependent Variable	Outcomes
Rispoli et al., 2015	Three head start teachers and one learner from each teacher's class	Head start classroom	Individualized functional communication strategies for each learner	Rate per minute of functional responding, rate per minute of target behavior displays	Rate per minute of displays of target behavior reduced over time while functional communication increased for each learner
Loman & Horner, 2014	Twelve teachers	Ten different elementary schools	Functional assessment training (classroom based) followed by ability to complete a functional assessment	Pre and post measures on knowledge surround functional assessment and completed functional assessment	Participants were able to accurately identify function on all occasions as a result of training and reported high levels of social validity for functional assessment practices
Oakes et al., 2018	148 educators who attended a professional development event	Professional development opportunity across 22 midwestern school districts	Five-day training on designing function-based interventions through five-step process	Educators' perceive knowledge of assessment, confidence levels in completing assessment, and perceived usefulness of functional assessment	Increase in educator actual knowledge on functional assessment practices; need for natural environment practice notated

Function-Based Classroom Management

The traditional functional analysis and trial-based functional analysis have emerged as two prominent models to draw from when training educational professionals on the basic principles of understanding the root causes of human behavior. While each model assists in identifying the function of the problem behavior, the setting, data collection for said behavior, and reporting methodologies vary between the models (Bloom et al., 2013). In addition to training professional educators to understand the

principles of functional analysis, research has extended into the domain of the creation and implementation of functional-based interventions within the educational setting. In an attempt to reduce targeted problematic behavior within the classroom setting, researchers have begun to explore systematic interventions based on the identified function of problem behavior in a variety of classroom setting across all age ranges (Bruhn et al., 2016; Gann et al., 2014; LaBrot et al., 2018; Parks-Ennis et al., 2018; Sanford & Horner, 2013; Trussell et al., 2016). Results have indicated that the use of functional interventions in reducing student target behaviors can have higher success rates than the use of traditional classroom management systems.

Gann et al. (2014) extended the research on functional assessment in a single environment by looking at the generalizability of functional interventions for a student across multiple settings within the school setting. Gann and colleagues studied one participant in his science, mathematics, reading, and social studies class periods. Researchers examined the participant's off-task behavior in all of the aforementioned classroom environments. On-task behavior became the desired target, which was measured in 15 s intervals of the chunked observation periods of 20 min. Whole interval recording measures the participant's engagement in the desired target behavior for the entire duration of the specified interval (Cooper et al., 2020). Researchers employed a multiple baseline across settings single-subject research design to determine whether intervention effects would be consistent across environments. Through a collaborative model, researchers worked with educators to develop a comprehensive behavior plan to address the identified functions of behaviors across teachers. Outcomes measured were displayed by percent of on-task behavior displayed across all recording periods per

environment. Based on a visual analysis of the data, the functional intervention was successful in increasing on-task behavior for the participant across settings. The research team's lack of establishing steady rate responding in baseline for all settings served as a major limitation of the study. Furthermore, the inclusion of only one participant paired with the possibility of treatment interference could have potentially influenced the identified outcomes. However, the significant upward trend following intervention served as a major strength. Additionally, researchers limited the use of traditional behavior modification strategies such as exclusion and think-sheets with more evidence-based practices.

Bruhn and colleagues (2016) analyzed the effects of functional-management strategies. The authors conducted a study with two high school students in two separate studies. Study 2 was conducted as a means to build upon the limitations and shortcomings of Study 1. Single-subject research designs were chosen for this study; however, Study 1 consisted solely of a baseline and intervention measures while Study 2 included an additional baseline and intervention conditions to bolster control. The authors analyzed the effects of individualized interventions that were developed from the functional analysis results. While each participant underwent a different intervention catered to their specific needs, the basic premise was to demonstrate basic schedules of differential reinforcement. Furthermore, antecedent interventions were utilized. Off-task behavior served as the dependent variable for Participant 1 while inappropriate language use was the dependent variable for Participant 2. Their individual intervention packages were the independent variables. Based on a visual analysis, both intervention packages demonstrated utility in reducing the problem behavior. Although reduction in the desired

target occurred, teacher fidelity of implementation was cited as a concern by researchers. Thus, on-going training for educators could improve the future fidelity data. The small sample size served as a major limitation of the study as well as the lack of teacher involvement in the overall design of the prescribed intervention. Training in intervention development is hypothesized to enhance classroom management practices. The ability to demonstrate positive effects for functional interventions served as a major strength of this study.

Sanford and Horner (2013) reviewed the effects of modifying instructional variables when working with students with escape-maintained problem behaviors associated with academic tasks. Participants included four second and third grade students in different classrooms. Researchers used a non-concurrent multiple baseline design in which students were in a frustration level placement followed by an instructional level placement. It was hypothesized that based on a functional assessment all identified participants were engaging in escape-based target behaviors to avoid academic tasks in the classroom setting. A manipulation of student curricular materials served as the independent variable for the study. On-task behavior or academic engagement and percent occurrence of target behaviors served as the dependent variables. Interval recording was the methodology used for data collection. Overall, the intervention was successful in increasing on-task behavior for learners. However, the inability to establish steady state of responding in baseline prior to intervention in relation to target behaviors served as a limitation. Additionally, while functional-intervention strategies were used in the form of antecedent interventions, participants were not taught appropriate replacement behaviors to circumvent maladaptive behaviors. Based on a

visual analysis of the date, major strength of this study was the call to attention of the use of antecedent interventions in a proactive manner when dealing with escape-maintained behaviors as related to academic tasks, which are derived from a grounded understanding of functional contingencies maintaining target behavior.

While many scholars focus on pure function-based interventions, LaBrot and colleagues (2018) analyzed differential reinforcement schedules as related to identified function for three different students in different classrooms in two Head Start centers in the southeastern United States. The effects of non-contingent reinforcement (NCR) and differential reinforcement of other behavior (DRO) with preschoolers were compared. It should be noted that teachers were not involved in the functional intervention planning process used by researchers. An alternating treatment design was utilized to compare the differences in eliminating out-of-area behavior for the participants. Escape appeared to be the prevailing function for all three participants. The importance of reinforcement in building desirable behaviors and placing undesirable behaviors on extinction is often overlooked (Cooper et al., 2020). LaBrot and colleagues trained teachers on implementing NCR and DRO procedures in the classroom. During intervention, teachers were cued with neon cards whether or not to use DRO and NCR in response to student behavior. NCR and DRO both produced effects based on a visual analysis of the data. While NCR produced effects for two students, DRO procedures were hypothesized to be successful in reducing out-of- area behavior for one participant. These results indicate the importance of training practitioners on a variety of functional strategies to employ with learners as all learners are different. Researchers were able to demonstrate a strong effect for the use of functional interventions in increasing academic engagement and reducing

out-of-area behavior through the utilization of ABA principles. The variability in the data pose a limitation to this study as steady state responding in an upward direction was never achieved. LaBrot et al. also indicated the lack of maintenance probes for teachers to be a limitation of this study. The successful demonstration of NCR and DRO strategies in reducing out-of-area behavior served as a major strength of this study. However, replication of this study is advisable in order to ensure generalizability in the results.

While LaBrot and colleagues (2018) focused on exclusive implementation of functional interventions, Hirsch and colleagues (2015) maintained that teachers should be primary participants in developing functional interventions and can be trained using multiple modalities of instruction. The authors conducted a study in which pre-service educators were exposed to functional assessment in two different groups, one digital and one face-to-face. There were 199 pre-service educators across three universities that participated in the study. The primary researchers assigned participants to a digital instruction group or a live lecture group in order to receive instruction of functional behavior assessment (FBA) procedures. Participants were required to self-report on their knowledge on FBA and were randomly assigned to the two intervention groups as well. Both groups of participants received the same information. It should be noted that only functional assessment procedures were trained within this study; furthermore, extension of knowledge of assessment into the creation of interventions did not occur. Generalization of trained principles to natural environments did not occur. Researchers analyzed the pre and post assessment measures. Furthermore, analysis of variance procedures was utilized to determine whether the different training modalities produced statistically significant differences in performance. Overall, training did allow

participants to increase their knowledge centered on FBA practices. It is important to note that participants did not receive the opportunity to apply knowledge in real life classroom situations, which is a major limitation of the study. The active responding component of the digital training, absent of in-person training, proves that there is a need for rehearsal, which is a major component of a behavioral skills training model. Thus, teachers can achieve proficiency when trained via multiple modalities with embedded opportunities for frequent practice. Hirsch and colleagues noted that a future direction for research should include both pre-service and current educators' training in the intricacies of utilizing functional assessment practices in the classroom.

Relying on an A-B-A-B research design whereas A serves as baseline and subsequent return to baseline (no intervention) and B serves as intervention, Hendrix and colleagues (2018) demonstrated educators and paraprofessionals' ability to successfully implement functional interventions to reduce targeted classroom disruption with fidelity. A young student, referred to as Daniel, served as the participant of the study. The classroom teacher worked alongside the paraprofessionals to implement interventions to reduce the target behavior of disruption, which served as the primary dependent variable. Partial interval recording procedures for 15 min durations were used for classroom disruption. Intervals were broken into 15 s increments. Intervention tactics employed during phase B included the antecedent manipulations of self-monitoring and utilization of a concern card and reinforcement for requesting attention in an adaptive manner. Data were analyzed through a visual analysis of classroom disruption across phases and the intervention appeared to be successful. A major limitation of the study was the fact that Hendrix and colleagues did not include teachers or paraprofessionals in the formal

assessment process. Function-based interventions were derived from assessment completed by the interventions, and these interventions ultimately reduced the problematic target behavior. The overall weakness of the study was the researchers' lack of inclusion of primary stakeholders in the assessment process. While the researchers conducted interviews using indirect methods, no formal trainings on the methodologies other than their developed interventions were provided to the educators or paraprofessionals. Ultimately, practitioners who were skilled in the utilization of assessment procedures were able to reduce behaviors through functional methods. This outcome indicates the need for this level of training to occur for educators and paraprofessionals alike to better serve the needs of all learners. Furthermore, Hendrix and colleagues set the framework for enhanced training opportunities for educational support staff rather than just certified instructional staff serving as a major strength of the study. Additionally, the ability for functional interventions to impact behavior change was demonstrated and furthers the argument for more comprehensive intervention practices based on functional assessment.

Oakes and colleagues (2018) continued to analyze the effects of teacher training on functional assessment practices and interventions. However, unlike Hendrix and colleagues (2018), Oakes et al. (2018) worked with teachers from start to finish in an effort to train functional assessment practices ultimately leading to evidence-based interventions. Study participants included 148 educators who attended a professional development workshop conducted in 22 midwestern school districts. All participants attended a five-day training on how to design function-based interventions through a five-step process, which served as the independent variable of the study. Using a pre-created

assessment survey, researchers measured participants' perceived knowledge, confidence, and perceived usefulness for information presented in the training before the onset of training and at the offset of training. Descriptive statistical analysis of data was used to determine whether pre and post measures differed significantly. Inferential statistical analysis of data was also employed, and these measures indicated a statistically significant difference between perceived knowledge and actual knowledge from pre to post measures. Furthermore, the usefulness of content yielded a statistically significant difference from start to finish as well. Oakes and colleagues demonstrated that assessment practices leading to intervention can be conducted, which served as a major strength of the study. While outcomes of the training were positive in providing educators with the necessary tools to design effective interventions, limited training in the natural environment occurred. This served as a major limitation of the study. Educators found functional interventions valid; however, practice in the natural setting rarely occurred. Researchers cited that generalization to the classroom for participants happened at low rates. Although research outcomes indicate functional interventions are viable to classroom settings, a lack of generalization from the research setting to the classroom setting continues to occur at low frequencies.

Newcomer and Lewis (2004) conducted a study in which function-based interventions were compared to non-function-based interventions in the classroom setting. Researchers employed a multiple baseline across participants research for part one of the experiment. A multiple baseline across participants combined with an A-B-C phase design was utilized for part two of the experiment whereas A served as baseline, B served as intervention one, and C served as intervention two. Three students in one

elementary school served as the participants of the study. All students had a history of engaging in problematic target behavior based on a review of the students' record. Newcomer and Lewis employed the help of teachers to complete descriptive assessments to hypothesize functions of the identified targeted behaviors. An experimental analysis was then conducted to verify the functions gleaned from the descriptive assessment process. Once functions were determined, traditional management practices consistent with school-wide positive behavior supports were used as the traditional classroom management procedure. Function-based management systems were developed for each participant based on the identified function of the behavior. The type of intervention served as the independent variable and the percent occurrence of student behavior served as the dependent variable. Interventions were staggered in a systematic fashion; however, there was no reversal completed. Based on a visual analysis of the data, all participants had a drastic reduction in occurrences of problematic behavior during the function-based intervention. However, one participant appeared to have steady rate responding across all conditions. The ability to bolster control for function-based procedures served as a major strength of the study. However, the small sample size and lack of reversal to demonstrate experimental control were weaknesses of this study. Ultimately, Newcomer and Lewis further demonstrated the success that function-based management systems can have when incorporated into classroom management practices.

Behavioral Skills Training

As indicated by the aforementioned studies, performance-based assessment of teacher implementation of functional analysis procedures as well as the development of interventions hold significant implication for professional practice within the field of

education. The implementation and utilization of effective training methodologies continue to be a concept heavily researched across many disciplines including current training paradigms used with professional educators. Behaviorism provides a theoretical framework from which conceptually systematic training modalities can be derived. Rostami and Khadjooi (2010) found that behaviorism can be utilized in assisting adult learners in familiarizing themselves with varying components of a profession. As such, the principles of behaviorism can be applied to training and overall implementation of functional assessment procedures within the classroom setting by education professionals. Behaviorism provides a methodological foundation that allows practitioners to scrutinize measurable outcomes as a result of any objectified intervention, which includes training (Allen, 2007; Ertmer & Newby, 2013). The theoretical framework of behaviorism serves as one of the major learning theories. Thorndike's laws of learning: *the law of readiness, the law of exercise,* and *the law of effect* serve as critical elements of learning experiences for all learners. The preparation of the learning environment and learner motivation can be equated with *the law of readiness* while repeated practice in and out of class can be compared to *the law of exercise* (Allen, 2007; Ni & Lu, 2020). Error correction is best associated with the law of effect (Allen, 2007; Ni & Lu, 2020). The early works of Thorndike appear to be in alignment with more modern training packages and approaches, namely Behavioral Skills Training (BST).

BST has emerged as a highly structured and scripted approach that was initially used to teach personal safety skills to children and vulnerable adults (Hanley & Tiger, 2011; Miller et al., 2014). The basic premise of BST involves using instructions for task completion, modeling of the desired task, repeated practice of the skill, and feedback on

skill performance (Hanley & Tiger, 2011; Hogan et al., 2015; Miller et al., 2014; Sawyer et al., 2017). Trainings are often limited to a lecture approach with no role-play skill practice or in-situ practice (Sawyer et al., 2017). One of the primary roles of the professional behavior analyst involves training others to implement programs; therefore, the utilization of a BST approach to training caregivers, staff, and teachers on the basic principles of ABA in natural environments could be a truly impactful practice for the field. In the past decade, several scholars have begun drawing upon the principles of BST and applying them to the training of educators and caregivers working in a variety of settings where the ABA principles are utilized in some manner. The ultimate goal of any training initiative is to ensure that trainees are placed in a position to demonstrate competency in both a prescribed and naturalistic manner, and BST allows for such learning opportunities to occur in one or multiple settings (Gunn et al., 2017; Hogan et al., 2015; Miller et al., 2014).

Discrete trial training (DTT) is a highly utilized practice within the field of applied behavior analysis. Sarokoff and Sturmey (2008) analyzed the effects of using instructions, modeling, rehearsal, and feedback to promote stimulus generalization of trained concepts through a shortened BST training model. Participants included three staff members and five students who were enrolled in a small school for students diagnosed with autism. In order to enhance experimental control, researchers used a multiple baseline across participants research design. Participants received training on DTT in the area of match to sample. During training, participants were taught through modeling and feedback, and given the opportunity to rehearse based on the researcher's feedback. Once proficiency occurred at 90% or higher, the intervention portion of the

study commenced. The implementation of the trained intervention served as the independent variable of the study whereas the practitioner's ability to maintain accurate DTT utilization and overall student responding served as the dependent variables. The research team used measures of central tendency and visual analysis to evaluate the overall effectiveness of the intervention. Additionally, student performance on trained skills increased overtime in a progressive manner. Overall, the training package appeared to be effective and increased the practitioners' overall ability to implement the intervention even with untrained skills. Thus, a BST training model was effective to apply in training staff to incorporate DTT into instruction with higher levels of accuracy. The lack of performance drift in skill training on the part of the practitioner served as a major strength of the study. However, no component analysis occurred to determine if one element of BST was more effective in increasing performance than another. Furthermore, Sarokff and Sturmey cited that all trained programs were receptive in nature, which could have contributed to the ease of generalization. The effective and efficient training approach provided by a BST framework could be applied to other skill sets across a variety of learners.

A BST paradigm is comprehensive in nature but attainable to the everyday learner. Nabeyama and Sturmey (2010) demonstrated how a robust BST package can be utilized in training non-specialist staff. Participants included three staff members and three students with physical disabilities in special education classrooms. Staff posturing and guarding techniques were predominant areas of concerns as physical injuries are often sustained due to inadequate supervision and positioning. Thus, the researchers taught three staff to position and guard three students using a BST model. Nabayama and

Sturmey used a multiple baseline across participants research design. The ability to implement varying guard positions individually as well as distance ambulated were the independent variables. The intervention approach that consisted of instructions, modeling, rehearsal, and feedback served as the independent variable. Baseline measures were taken with only verbal instructions while intervention measures consisted of scripted techniques, instructions, allocated practice time, and corrective prompting as needed. Based on a visual analysis of data, the training methodology appeared to increase correct guarding as well as distance ambulated. As indicated by the data, performance maintained at high levels during baseline and follow-up. Overall, this study's major strength was the ability to demonstrate the ease of training non-specialist using a BST model. Furthermore, staff measures of social validity increased as a result of training. However, experimental control could have been better demonstrated through the use of a reversal design. However, the ability to train non-specialists bolsters the ease of implementation of BST in almost any setting.

Gunn and colleagues (2017) also demonstrated the ease of a BST training model in training a learner with high functioning autism. Researchers designed an intervention program for a 22 -year-old college student who was referred to in the study as Shelly. Shelly was diagnosed with autism at a young age and was struggling to complete an early childhood education practicum. Single-case research design was employed to determine whether or not Shelly made progress on the goals established by her research team. Gunn and colleagues utilized the instructions, modeling, rehearsal, and feedback components of the traditional BST model. Researchers scripted Shelly's training by conducting pre-coaching observations, planning meetings, coaching sessions with in-vivo role plays, and

post-coaching observations with corrective feedback. Thus, the training methodology served as the independent variable for the study. It should be noted that coaching sessions consisted of a variety of topics but always referred back to the two primary strategies of: rules vs. guidelines and look, evaluate, respond. Dependent variables for the study were grouped into two categories: Shelly's engagement with students at the practicum site and Shelly's ability to scan her environment / classroom setting. Overall, the outcomes of the BST model led to variable results with a multitude of confounding variables. Researchers attributed the mixed results to the intricacies of training required to teach strategies to increase student engagement as well as scanning the environment for safety. While the BST model appeared to be successful, the advanced processing skills to work with children could have impacted her performance. Researchers cited the lack of a formalized observational checklist with set expectations for performance served as a major weakness of the study. Additionally, realistic benchmarks for performance should be established and shared with all members of the team when training any new skill. Despite the weaknesses of the study, the in-vivo training included in the treatment package allowed for practice in a natural setting as well as instantaneous feedback. As such, BST model emerged as major application for current and future studies relative to training of individuals with and without disabilities.

Similar to Gunn and colleagues (2017), Hogan and colleagues (2015) utilized the basic tenants of the BST training model (instructions, modeling, rehearsal, and feedback) to design a training centered around the implementation of key elements of a behavior analysis service plan. Study participants included four female instructional staff working in a non-public school for individuals with varying behavioral challenges. Although it

was not succinctly stated, the study participants appeared to have been selected through convenience sampling. Through the use of a multiple concurrent baseline research design, Hogan et al. staggered interventions across the staff working in the treatment group A and staff working in the treatment group B. Both groups were trained in a one-on-one manner on components of the chosen student behavior intervention plan.

Overall, the use of a BST training package resulted in increased occurrences of successful implementation of the behavior plan (Hogan et al., 2015). The authors neither tracked nor analyzed the reduction of maladaptive student behavior, which is considered a limitation for this study. Furthermore, the researchers did not correct errors during the implementation phase. As such, it is another limitation of this study. A post-training analysis demonstrated that all participants were able to maintain skills acquired through the training with no re-training that could attest to the effectiveness of the BST model. It should be noted that the phases for all participants, in which intervention impacted performance, were the modeling and rehearsal phases. Thus, the need for natural environment practice for acquiring any skill is again demonstrated. Behavior analysts or professionals who are involved in coordinating training can utilize such models in professional practice to enhance overall staff performance, skill acquisition, and target behavior reduction. Behavior analysts dedicate a significant portion of time to training; therefore, the utilization of a BST model not only improves training but also eliminates the need for re-training due to systemic errors that could be made by practitioners.

Hine (2014) conducted a longitudinal study in a childcare center in a rural area of the U.S. The study's participants consisted of 31 childcare workers. The study was designed to train the participants on basic interaction strategies that were commonly

utilized with children in the childcare center. A multiple baseline across behaviors was utilized for the research design of the study. Researchers collected baseline data by observing all of the varying skills required for a job performance. Following acquisition of baseline data, short training sessions on each skill were conducted in which participants were required to record occurrences of targeted behaviors. Staff were required to record the occurrences of the desired target behaviors that were shown in the instructional videos. Once one skill of the hierarchy of skills was mastered, an additional skill for "directed data collection" was added to the data sheet following a tiered model (Hine, 2014, p. 228). Subsequently, researchers conducted follow-up observations to observe whether training generalized to the classroom environment and feedback was given. Peer modeling, providing options with minimum of two items, active participation with child, use of rotating attention, eye-level communication, use of descriptive praise, and physical prompting for compliance were the target skills serving as the dependent variables of the study. The training sequence used to impact performance was the independent variable. An increase in percent of occurrences for each of the aforementioned skills served as the dependent variable. Although variability existed in two out of the seven targets, training appeared to be successful following a BST model. Hine did not directly demonstrate the effectiveness of a BST model, but he was able to study the retention of trained concepts for a period of 100 weeks. Additionally, the researcher established the manner in which a BST model can be adapted to the needs of an organization. No data were taken on reduction of student behavior or acquisition of new skills, which indicates the study's weakness. Thus, additional research on a targeted

training in the prekindergarten-12 education system to impact student performance continues to be an area for further research.

Miller and colleagues (2014) analyzed the effects of a booster training to an original course given to teachers on the basic principles of ABA to enhance classroom management skills. The authors identified the need for a follow-up training that occurs after initial trainings. Performance drift is an expected phenomenon that occurs regularly with all trained methodologies for any given skill; therefore, Miller et al. sought out to determine what elements of BST model could lead to an increase in effective classroom management skills. Three female educators were recruited for this study. Each of the three educators was administered a pre-booster training role-play skill evaluation prior to participating in a booster training in a one-to- one arrangement. After the training, all teachers were administered a post-assessment role-play checklist as well as prompted in-situ probes in their individual classrooms.

A multi-element research design that involved a baseline condition (A), a training condition (B), a 12-month time progression with no training (A), and a booster train condition (B) served as the elements of the design (Miller et al., 2014). Based on a visual analysis of the data, all three participants demonstrated an increased performance in classroom management skills after the booster training and role plays. All participants rated the booster training as a useful tool to improve their classroom management practices from a social validity perspective. A major strength of this training strategy is its ability to promote competence after the initial training through continuous practice and corrective prompting. Furthermore, the utilization of skill-based role play checklists allows for ease of replication for additional training opportunities across varying settings.

The fact that researchers prompted teachers on what strategy from training to use in the classroom in response to behavior rather than allowing for self-selection served as a limitation. Future research should analyze the effects of non-prompted in-situ practice coupled with training retention rates on longitudinal competency-based probes within the classroom setting.

Fetherston and Sturmey (2014) extended upon the work of Miller et al. (2014) by analyzing the effects of a BST model on instructor and learner response sets. Unlike Miller et al. (2014), Fetherston and Sturmey analyzed the effects of a BST model on the utilization of correct instruction on the part of instructors, student response rates, and overall disruptive behavior of the learner. Participants included both adults and students at a private school for learners diagnosed with developmental disabilities. The authors used single-case research design; however, multiple probe data collection across participants served as the data collection technique. Three separate experiments were conducted as a part of the study to include: assessment of instructor ability to conduct discrete trial instruction (DTI), instructor ability to engage in natural environment teaching, and instructor ability to teach activity schedules, or sequenced responses. A BST intervention package served as the independent variable in all studies. The intervention consisted of the primary researcher providing instructions, modeling, rehearsal, and feedback on one response per session. Instructor's ability to implement all steps of a teaching sequence, correct responses by students, and the reduction of student behavior were the dependent variables in the study. All experiments utilized a percentage correct scoring model for learner's responding and instructor's implementation of

teaching procedures. Partial interval recording was used to track occurrences of disruptive behavior that was displayed by students.

As a result of Experiment 1, BST positively impacted the instructor's ability to implement DTI (Fetherston & Sturmey, 2014). All instructors were able to reach criterion within four sessions and maintain criterion in post-assessment probes. Learning responding also increased steadily as a result of the BST training model. However, little impact was found on the ability of the DTT intervention training package to affect overall student disruptive behavior. Experiment 2 aimed at evaluating the ability of a BST training model to impact incidental teaching. Instructors reached criterion early in the intervention and were able to maintain trained instructional sequences as evidenced by post-assessment probes. Student accuracy in responding also increased as a result of the enhanced instruction. Again, overall student disruptive behavior was not impacted. In Experiment 3, BST again proved effective in instructor's ability to enhance student's ability to learn to complete steps in sequential order. As with the prior experiments, BST had little to no impact on reducing student disruptive behavior.

Overall, Fetherston and Sturmey (2014) demonstrated the ability of BST to impact instructional techniques for adult learners in a consistent fashion. Furthermore, the student accuracy in responding was positively impacted as well. However, a major limitation of the study was the multiple probe research design leading to a lack of prolonged baseline measures as well as intervention conditions. Furthermore, another limitation of the study was the BST training procedures were only implemented for a short period of time in each intervention condition prior to moving into post-training probes. Thus, there were limited occasions for practitioners to have opportunities for

repeated practice. Furthermore, measures of social validity were not described in detail at the conclusion of the study. A major strength of the study is the ability to use a BST model to provide scripted teaching approach to educational professionals to enhance student performance. The results of this study indicate that BST can positively impact teaching; however, scripted teaching strategies will not necessarily reduce problematic student behavior. As such, practitioners must be intentional in designing behavior intervention packages independent of general techniques for instruction. Scripted instruction alone may not be enough to reduce problematic behavior; thus, targeted training on behavior reduction following a BST model is needed.

In the study conducted by Sawyer and colleagues (2017), the authors recruited seven female undergraduate students who were enrolled in a special education program at the university. The primary researchers identified the following ABA strategies that are related to the role of special educators: "constant time delay, differential reinforcement for other behavior, discrete trial teaching, functional communication training, naturalistic intervention, least-to-most prompting, response interruption/redirection, multiple stimulus without replacement preference assessments" (Sawyer et al., 2017, p. 297). All of the aforementioned strategies were delineated into a scripted Microsoft PowerPoint® for training by each of the authors of the study. All PowerPoints were created to be consisted with the core components of the BST paradigm. Pre-training and post-training assessments served as the methodology for data collection. The pre-service educators were exposed to training on each of the topics in a small group setting serving as the instruction and modeling portions of the BST model. Performance-based role plays and trials-to-criterion training with corrective feedback through role plays allowed for

rehearsal and feedback to occur. Each participant was able to engage in rehearsal with a lead researcher until the final post-assessment was delivered. Each of the seven participants made noticeable gains on the post-training assessment measures when compared to the pre-training assessment. The BST training paradigm used by researchers allowed pre-service educators the opportunity to practice and master classroom-based ABA practices, which served as a major strength of the study. Furthermore, the need for skill practice in either a captured or contrived manner to promote retention was also demonstrated by this study. Practice of trained concepts in a captured rather than a contrived manner did not occur, which served as a limitation of the study. Additionally, follow-up probes for retention of trained content did not occur. Based on the presented data, BST was proven to be an effective strategy to draw upon and use in conjunction with traditional lecture-oriented training strategies. BST provides trainers with frequent opportunities for practices in both captured and contrived manners, which is often underutilized in traditional professional development opportunities for educators.

More recently, Chazin and colleagues (2018) analyzed the use of BST to train educators on the use of augmentative and alternative communication devices (AAC). One child, referred to as Elliot, and four adult teachers served as the participants of the study. The study took place in Elliot's classroom, which was part of a university-based early learning program. The primary researchers hypothesized that the effective use of AAC would lead to better implementation of the participant's behavior intervention plan and reduce overall occurrences of target behaviors (Chazin et al., 2018). A multiple probe across participants research design was chosen to demonstrate the effects of the intervention. As part of the intervention, all four educators received a 1-hr training on

implementing a behavior intervention plan including but not limited to: antecedent interventions, functions of behavior, differential reinforcement, extinction, and the overall utilization of acquisition and reduction procedures in a behavior intervention plan. The behavior plan training was given in relation to Elliot's behavior plan and served as part of the instructions/rationale pieces of the overall BST model. All components of the training were delivered using a BST training framework. A particular emphasis was placed on skill training in the area of communication with the use of AAC. Following training, participants received coaching on implementation of the behavior plan and use of AAC. Researchers provided no more than six assistive prompts and provided between three to nine corrective and positive feedback statements. The next phase of intervention consisted of corrective statements, but no verbal or modeling prompts were provided. The intervention package and BST training framework were the independent variable while correct implementation of the behavior intervention plan and overall reduction in self-injurious behavior were the dependent variables. Overall, the BST training model did improve educator's ability to implement the behavior intervention plan. Data analysis occurred through a visual analysis of the data. The delineated phases of the BST model served as a major strength of the study. The phases demonstrated that instructions and rationale alone are not sufficient to impact performance. However, a practice component in which feedback is provided enhances overall ability to perform any skill and maintain skills over time. Although some reduction in performance did occur, trained implementation procedures did maintain over time. The overall ecological validity of the intervention design posed a major weakness due to the time requirements needed to complete the research. A low child-to-adult classroom ratio was also cited as a weakness

in terms of replication because low student-to-teacher ratios are generally not the norm in most classroom settings. However, Chazin et al.'s study demonstrated the ability of a BST model to lead to effective implementation of a behavior plan. An extension of this research could include an educator's ability to create and implement functional behavior intervention plans. Research in this area could yield applied techniques to the design of more socially valid classroom management approaches nationally or even globally.

Ryan and colleagues (2019) continued the utilization of a BST model in their recent study on social skills training. Ryan et al. analyzed the effects of increasing conversational skills of adults diagnosed with autism through the use of a BST training model. Six adults, who attended a day training center, were participants in the study. A multiple probe design across participants was utilized to determine if a BST model for teaching appropriate conversational skills could impact performance. Participants received conversational skills training in a private observation room. Participants were provided with corrective prompts for failed steps as well as verbal praise for correctly completed steps. Positive feedback was provided after the conversation chain was completed and corrective feedback was provided immediately when a step was performed incorrectly. Corrective feedback was coupled with the opportunity for rehearsal. The conversational skills intervention package served as the independent variable while the learner's average proficiency in conversations served as the dependent variable. All participants demonstrated improvements from baseline to intervention. It should be noted that higher levels of proficiency were observed in the private room during the training than when transferred to the general population housing area. However, follow-up probes indicated that performance did maintain relatively stable after

instruction. Thus, BST produced desirable results in all learners. Additionally, based on the parent social validity report, 80% of parents reported a significant increase in conversational skills while one parent indicated a relative increase. The overall ability to enhance student performance in conversing with one another was a major strength of the study. Furthermore, the simplicity of the training task analysis for replication purposes served as another major strength. However, the lack of observational learning during training was cited as a major limitation of the study. As indicated by the results of this study, BST can be adapted to almost any form of a training and yield socially significant results.

BST provides a useful training structure to draw upon when designing professional learning opportunities. BST is a model that can be individually tailored to the needs of organizations, employers, and the like to promote individualized training (Hine, 2014). Through a systematic and sequential approach to training that involves instructions, modeling, rehearsal, and feedback, a variety of skills can be taught to adult learners, learners with disabilities, and students alike (Gunn et al., 2017; Miller et al., 2014). Furthermore, behavioral skills training can be applied across a multitude of settings such as a preschool or a university classroom (Hine, 2014; Sawyer et al., 2017). Regardless of the applied setting in which this strategy is utilized, increases in demonstrated competencies associated with following a scripted training model across multiple skills have occurred with the demonstration of positive outcomes for participants (Chazin et al., 2018; Hogan et al., 2015; Miller et al., 2014; Ryan et al., 2019; Sawyer et al., 2017). Although the BST model does not always produce rapid effects (Gunn et al., 2017; Hine, 2014), a meta-analysis of the data indicates that the use of a

BST model does bolster treatment effects. Regardless of the rate of acquisition of desired targets in any given training, the evidence-based research has advocated for the use of a BST model when training a wide array of such skills. The use of such a model in the professional arena of behavior analysis is imperative as training staff to competency is a major task of the professional behavior analysts. Therefore, based on initial findings, the overall goal of the professional behavior analyst should be to embed the BST elements of instructions, modeling, rehearsal, and feedback into created trainings designed to promote retention of trained concepts. A summary of noteworthy BST studies can be found in Table 2.

Table 2

Behavioral Skills Training as an Intervention Strategy

Reference	Participants	Setting	Independent Variable	Dependent Variable	Outcomes
Fetherston & Sturmey, 2014	Adults and students (number not specified)	Specialized school for learners diagnosed with developmental disabilities	BST intervention packages	Instructor proficiency in DTI, NET, teaching sequences task, and overall reduction in disruptive student behavior	Positive effects for instruction on DTI, NET and sequentially ordered tasks. Results indicated scripted teaching strategies should be used for behavior reduction as high-quality instruction does not generalize to behavior reduction
Sawyer et al., 2017	Seven undergraduate special education students	University; non-specified	BST intervention to teach varying ABA strategies to pre-service educators	Ability to implement trained strategies through role-plays and assessment measures	Student demonstrated increased competency in ABA strategies as a result of training; however, natural training did not occur
Chazin et al., 2018	Four educators; one student learner	University-based early. Learning center	BST intervention consisting of a workshop and corrective prompting and modeling throughout intervention	Overall implementation of learner's behavior plan and reduction of target behavior	Overall correct implementation of behavior plan increased. Furthermore, repeated practice with corrective prompting detailed as necessary component of BST.

BST Procedural Fidelity

Regardless of research design or methodology, the overall implementation of specified procedures is an area of concern for all researchers. In short, procedural fidelity involves consistent implementation of research procedures across all researchers (Ledford & Gast, 2018). Thus, interventions must be written in a manner that can easily be replicated in a technological and streamline manner, which is the onus of research in the area of applied behavior analysis (Baer et al., 1968). The BST training paradigm consists of four simple steps including: instructions, modeling, rehearsal, and feedback (Hanley &Tiger, 2011; Hogan et al., 2015; Miller et al., 2014; Sawyer et al., 2017). Thus, a framework in which to devise interventions is provided in a consistent fashion for researchers to follow. In the area of applied behavior analysis, interobserver agreement (IOA) is often used as a data-driven strategy to increase believability and measure procedural fidelity. IOA is most typically calculated via percentage of agreement between the total number of responses recorded by two observers (Cooper et al., 2020). The literature on BST has consistently yielded high rates of IOA as a measure of procedural fidelity thus indicating that BST models can be easily implemented with fidelity (Chazin et al., 2018; Fetherston & Sturmey, 2014; Miller et al., 2014; Sarokoff & Sturmey, 2008).

Chazin et al. (2018) studied the effects of a BST model on implementation of behavior plans for individuals with complex communication issues. All data collectors for interobserver agreement were trained on definitions and how to report IOA data. Researchers collected IOA data for procedural fidelity for 100% of the sessions conducted for the proposed intervention package across all the intervention phases. IOA data was taken using yes/no statements for the components of the intervention package to

derive a total score across observers. For this particular study, one individual was used to assess procedural fidelity. The average procedural fidelity for the observations was 93%. Procedural fidelity indicated that the intervention was implemented consistently across implementers. Furthermore, the overall design of BST allowed procedural fidelity checks to occur in a relatively noncumbersome manner through the use of yes/no statements.

Fetherston and Sturmey (2014) conducted procedural fidelity data in a similar fashion to the techniques employed by Chazin and colleagues (2018). The overall purpose of the study was to look at the effects of BST across different instructional techniques that are commonly used in ABA. Fetherston & Sturmey used pre-created checklist to assess the BST intervention components. Undergraduate students viewed 20% of the videotaped sessions to assess for procedural fidelity through IOA measures. Discrete trial training, incidental teaching, and multi-step directions were all trained using a BST lens. Overall, participants respectively achieved 99%, 100%, and 100% procedural fidelity on each of the aforementioned interventions. As was the case with Chazin et al. (2018), Fetherston and Sturmey (2014) were able to take procedural fidelity data with ease, which is hypothesized to be correlated to the ease of implementation of a BST model.

Miller and colleagues (2014) analyzed the effects of a BST booster course in reducing problematic behavior in the classroom and assisting with the acquisition of new skills. Teachers had been previously trained; however, researchers wanted to assess if additional booster training could aide in increasing performance on trained skills. Again, researchers used IOA data to measure procedural fidelity in the form of yes/no checklists. The lead researcher and research assistants calculated the data of implementation that was

based on observations. IOA data were taken during 55.6% of trained sessions. Fidelity data were taken for contrived practice sessions as well as in-situ or captured practice sessions. Overall, the respective scores for IOA were 81% and 86%. Again, the BST training model allowed for IOA to be taken in an ecologically friendly manner. Although reported IOA means were low in this particular study, the overall scores still fell in the range of acceptable procedural fidelity measures (Ledford & Gast, 2018).

Sarokoff and Sturmey (2008) analyzed the effects of using the components of BST to assess for generalization of trained skills to implementing novel instructional techniques. Procedural fidelity was assessed through the use of IOA recording procedures. IOA data were taken on 35% of trials across all phases of baseline and intervention. A non-partisan trained observer viewed video tapes to measure procedural integrity of the scripted steps of the intervention. Using a scripted checklist, the observer was trained to determine whether or not the participant implemented the steps correctly as trained. All IOA measures across all three participating staff were well above 90% average proficiency. Thus, BST proved once again to be relatively strong in regard procedural fidelity.

Training models used within the classroom setting should be non-cumbersome and easy to implement. Furthermore, training models allowing for consistent implementation across participants are more ideal than training models that cannot be consistently implemented. When measures of procedural fidelity are higher, the overall results of any given research study are accepted as credible and believable (Gay et al., 2012; Ledford & Gast, 2018). As demonstrated above, a BST model can be implemented with high measures of procedural fidelity. Furthermore, IOA data can be taken in a

relatively streamlined manner through yes/no checklists (Chazin et al., 2018; Fetherston & Sturmey, 2014; Miller et al., 2014; Sarokoff & Sturmey, 2008). Simple IOA recording measures allow for less labor-intensive measures to be utilized by researchers when assessing the overall implementation of any given training. Educational agencies as a whole are already known to operate with limited resources. Therefore, a BST model should be considered as a viable means for both university-based researchers and practitioners to utilize when conducting research in educational settings.

Social Validity of Functional Assessment Training

Although teachers are often professionally prepared to address various academic deficits when presented with them in their day-to-day interactions with students, the same statement cannot be made when teachers encounter problematic student behaviors within the classroom setting (Young et al., 2018). In a survey conducted by Young and Martinez in 2016, only 20% of educators were familiar with the term functional assessment or functional behavior assessment (Young & Martinez, 2016; Young et al., 2018). Despite the lack of familiarity with functional assessment procedures, evidence does exist to support the fact that teachers can be effectively trained to apply these practices to their professional skill set. O'Neill et al. (2015) found little research regarding social validity of teacher's ability to implement functional assessment. However, researchers hypothesized that educators would find training on functional assessment procedures to be useful. Educators need enhanced training opportunities in order to feel confident and competent in the area of functional assessment. The need to increase the social validity surrounding functional assessment practices for educators has become apparent. Social validity has grown out of the applied behavior analysis discipline and constitutes one's ability to impact meaningful change in the life of themselves or others (Cooper et al.,

2020; Young et al., 2018). Therefore, pairing high quality and evidence-based training models with needed skill sets such as functional assessments holds great implication for educators.

McCahill and colleagues (2014) analyzed 25 different studies around the concept of teacher training on functional assessment practices. Although the initial goal of the study was to determine the general consensus of type of functional assessment procedure to use, data regarding social validity emerged. Most generally, educators reported high rates of social validity in regard to functional assessment after undergoing training on functional assessment practices. While there was a limited consensus of what types of functional assessment practices to implement in the classroom setting, educators did find the utilization of functional assessment practices useful. Therefore, the case is further supported to provide educators with formalized training on functional assessment to improve professional practice.

In another study, Rispoli and colleagues (2016) examined the effects of a BST model on educators' ability to implement functional assessment within the classroom. Through scripted modeling, rehearsal, and feedback, educators were taught traditional functional assessment procedures as well as trial-based functional assessment procedures. Educators were asked to complete a 15-point Likert scale assessment, and the average validity measure across participants was 73%. Therefore, educators did find training on functional assessment practices useful within their professional practice. However, educators did report that assessment practices created additional burden and disruption to the classroom setting. Therefore, future research on teacher training on functional

assessment should address the overall ecological friendliness of assessment and intervention practices.

Loman and colleagues (2014) addressed the area of social validity of functional assessment procedures. Twelve participants were trained in functional assessment procedures as well as structured interview tools and narrative recording forms. Participants made gains in the practice of functional assessment procedures; furthermore, they rated functional assessment procedures as "…beneficial, practical, and efficient for school use within schools…" (Loman & Horner, 2014, p. 26). Again, educators have expressed the utility in functional assessment procedures. However, in the work completed by Loman and colleagues, no comprehensive treatment models were developed and implemented. The social validity of functional assessment procedures and function-based management procedures could further be enhanced if they were included in comprehensive research projects moving from assessment to practice. It is hypothesized that educators would find even greater social validity in reducing the rate of problematic behaviors in their classrooms through functional assessment procedures and management strategies.

Young et al. (2018) indicated that educators truly have a vested interest in obtaining knowledge on the best practices to develop and maintain effective classroom management systems. As such, in the authors' study, three educators provided their perspective on the utility of receiving training in functional assessment procedures. All teachers stated that the assessment process yielded better outcomes than prior management procedures that were utilized with the teachers. Thus, it is imperative for teachers to receive training in functional assessment procedures to improve not only

professional practices but increase the amount of active academic engagement time for learners across the globe.

Clearly, functional assessment procedures are considered valid by educators as indicated by the aforementioned self-reported measures (Loman & Horner, 2014; McCahill et al., 2014; Rispoli et al., 2016; Young et al., 2018; Young et al., 2016). However, the manner in which training occurs must also be considered relevant by educators as well. BST offers a significant platform to draw upon when designing and implementing both assessment and management practices. The notion of repeated practice and corrective feedback embedded into the BST training model allows for more refined skill acquisition to occur when compared to traditional training models as scripted procedures tend to be used (Cooper et al., 2020). In regard to functional assessment modalities, Miller and colleagues (2014) conducted a study in which BST was used as the training strategy to provide a booster training to educators on previously trained concepts surrounding tools for positive behavior change. Three female teachers in a charter school were the participants. All teachers reported that the booster training assisted with their competency on trained skills. The educators also noted the perceived usefulness of practicing trained skills in the classroom with corrective feedback, which is at the core of the BST training model.

BST training models have been used to train a variety of concepts including fire safety skills and reading intervention programs (Davenport et al., 2019; Houvouras & Harvey, 2014). In both cases, meaningful outcomes for all participants were achieved as a result of the training. The core components of BST instructions, modeling, rehearsal, and feedback provide a scripted structure for researchers to build upon when designing

trainings for staff. Traditional training methods tend to consist of lecture-based content; however, more meaningful practice opportunities are needed to ensure maximum retention rates (Kirkpatrick et al., 2019). While BST has been explored as a methodology in training a variety of skills, the application of BST in training functional assessment procedures and intervention protocols is scarce. Although teachers indicate a high desire to learn more optimal classroom management techniques from assessment to practice, to date, the work completed by Oakes and colleagues in 2018 seems to be the only attempt to establish an intervention plan from start to finish. Thus, additional research is needed in this area that is socially significant to teachers. Furthermore, the BST training model provides an evidenced-based and ecologically friendly framework on which to guide educator training opportunities. Overall, providing meaningful training to educators through systematic training on assessment and intervention from start to finish holds great promise for improving educator practice and modifying student behavior in productive and meaningful ways.

Research Questions

1. How does training in functional assessment procedures increase educator knowledge of basic principles of functional assessment as indicated by pre and post assessment measures?

2. How does the use of a behavioral skills training model for training functional assessment practices and procedures aid professional educators in assessing student target

behaviors correctly (80% accuracy minimum) for hypothesized function using descriptive recording procedures?

3. What effect does training on functional assessment and intervention practices have on professional educators' ability to select functional interventions (80% accuracy minimum) for students with accuracy based on descriptive recording?

4. How does classroom training on identifying the hypothesized function of student behavior and recommending a function-based intervention generalize to the natural classroom environment in professional practice?

Chapter 3: Methodology

Participants

Professional educators serve as the primary facilitators of classroom management practices. As such, an enhanced understanding of how to better respond to maladaptive behavior within the classroom is hypothesized to be beneficial for educators and could be taught directly and systematically as presented in this research study. The researcher recruited four teachers who a) possessed a valid Florida temporary or professional teaching certificate; b) had less than 5 years of experience teaching in a general education classroom; c) had no advanced training in ABA as part of any post-baccalaureate studies; and e) were not enrolled in a master's or certification program in ABA. The participants of the study included elementary and secondary school teachers working at a private school in Central Florida. Each participant was assigned a pseudonym. The researcher utilized a demographic qualitative questionnaire to obtain information relative to the potential participants' gender, certification, educational background, and teaching experience prior to the onset of the study (Appendix E). Each participant also completed a social validity questionnaire (Appendix F).

Each teacher participant identified two problematic behaviors displayed by the majority of the students in their classroom, analyzed each student response for function, and redirected each occurrence of the target behavior to a functionally equivalent response. All students in each teacher participant's classroom were observed by the primary researcher. The overall purpose of the study was to improve teacher responding to problematic behaviors displayed by all students in their respective classrooms. Thus, the intervention package served as a viable methodology to improve the behavior of all

students in the classroom, which is a key job responsibility of the professional educator. A key purpose of the study was to analyze how educators can generalize trained functional assessment principles and procedures to the natural environment; thus, an interaction with students in the classroom setting was needed to determine effects on behavior. The utilization of functional management strategies as opposed to traditional classroom management necessitated an observation of teacher interaction with all students in their respective classrooms.

Purposeful sampling was used as the primary sampling technique to obtain teacher participants. It can be described as a researcher's deliberate approach to participants' selection due to their ability to provide information on a specific subject (Creswell & Guetterman, 2018). Snowball sampling was also employed as the researcher asked interested participants to recommend other participants who could benefit from the study (Gay et al., 2012). There were no individual students isolated for participation in the study. All students in each participant's classroom were observed to determine whether they engaged in the maladaptive behaviors identified by the teacher participant at the onset of the study. Classroom management is an essential role of the professional educator; thus, the pre-created teacher classrooms served as a population for teachers to generalize their trained skills. Ultimately, convenience sampling was the methodology implemented in choosing student populations for participants to generalize trained skills. Convenience sampling involves using participants who happen to be available at the time of the study and possess a unique set of characteristics that are of interest to a specific study (Gay et al., 2012). No one student from any classroom was isolated for individual observation as a part of this study.

Instruments

Instrumentation used within the field of applied behavior analysis is often unique to the overall research venture (Cooper et al., 2020). The far-reaching goal of behavior analysis is to produce meaningful outcomes in the lives of individuals with the hopes of demonstrating effects that can be generalized across behaviors, participants, and settings (Baer et al., 1968; Cooper et al., 2020). As such, the researcher drew from a multitude of resources to self-create instrumentation for this research study. Instrumentation for this study included pre and post assessment measures regarding educator knowledge on functional assessment practices and function-based interventions (See Appendix A). Participants were then exposed to a functional assessment and intervention training course. As a result of this course, participants were asked to dissect behavioral vignettes for antecedent, behavior, and maintaining consequence and recommend an intervention to replace maladaptive behavior. Therefore, the second instrument used within this study was a modified version of the Competing Behavior Pathway introduced by O'Neill and colleagues in 2004 (See Appendix B). After competency criteria were achieved, participants were asked to generalize their knowledge of functional assessment practices and interventions to the classroom setting. A pre-created classroom observation form was utilized by the primary researcher during the generalization phase of the study to determine whether functional assessment practices and related interventions have generalized to the classroom setting with fidelity (See Appendix C). A detailed description of each instrument to be used can be found in the text below.

Pre and Post Assessment Measures

Prior to the onset of the study, participants were asked to complete a pre

assessment measure as a means of gauging their knowledge of functional assessment practices and interventions prior to intervention. The researcher utilized a modified Ability in Behavior Assessment and Interventions for Teachers Scale (ABAIT-R) to collect and evaluate the pre and post assessment data, (See Appendix A). For the purpose of this study, this instrument was renamed to the Educator Functional Assessment Knowledge Evaluation (EFAKE). All participants completed the EFAKE at the onset of the intervention and during the last phase of the intervention. Descriptive statistics were utilized to determine if an overall change in percent correct on the assessment occurred when comparing educator scores at the beginning of the intervention and post intervention. A paired t test was also performed to determine if a statistically significant difference between pre and post assessment measures exists.

Normalized data collection instruments are not the norm in behavior analytical research (Cooper et al., 2020; Ledford & Gast, 2018). Thus, a thorough analysis of the literature yielded limited research validated knowledge assessments to use a means of assessing educator knowledge on functional assessment practices (Borgmeier et al., 2015; Crone et al., 2007). However, Nair and colleagues (2019) developed a knowledge measure known as the ABAIT. This measure was later revised and renamed to ABAIT-R. Nair and colleagues piloted the use of this measure with 102 special educators using Rasch models for the overall assessment evaluation. Ultimately, the researchers discovered the ABAIT-R had targeting over 85% and a high reliability measure at 79% (Nair et al., 2019). The tool was cited as viable for practitioners who possess limited knowledge of assessment or intervention processes (Nair et al., 2019).

The EFAKE utilized for this study draws upon some of the content of the ABAIT-

R. Some of the items contained within the assessment were taken directly from the ABAIT-R with permission from the primary authors, who also provided scoring keys and directions for administration to ensure that no prior learning history effects emerged from the administration of multiple assessment administrations. Some of the items on the ABAIT-R were revised minimally to align with the overall purpose of this research study. Additionally, new items were added. The assessment was evaluated for face and content validity (Creswell & Guetterman, 2018). Both methods were based on the feedback from experts in the field of educational research. A panel of faculty members, who are experts in the field, reviewed the assessment and ensured its accuracy. Based on the feedback of the faculty members, items that were unclear or unnecessary were removed or modified. Following the iterative process of reviewing and modifying the assessment, the summative committee of two faculty members reviewed the assessment for a final endorsement and approved it.

Relying on the Huck's (2012) recommendations, an alternate-forms reliability approach was used to determine reliability of the EFAKE. Two forms of the same assessment were created. These two forms of the assessment were similar in that they focused on measuring knowledge of functional assessment practices and interventions, but they differed relative to the questions' mode of expression included within each assessment. To quantify the degree of alternate-forms reliability, two similar forms of the same survey were administered to two teachers who met the inclusion criteria of the study. Two assessments were administered one week in between the administrations. After the assessment results became available for both forms, two sets of data were compared to determine their reliability. The Cronbach's alpha (α=.89) indicated that the

EFAKE was a reliable measure. Generally, an instrument is considered to be reliable when the Cronbach's index of internal consistency is .70 or higher (Huck, 2012).

The EFAKE consists of 20-multiple choice questions. The administration time of this assessment was around 35 min for each participant. Each item within the assessment contained five choices. One choice was correct while the remaining four were distractor choices. The majority of test items had a "Don't know" option, which was a recommendation of the original authors of the ABAIT-R. Due to the fact that the ABAIT-R was modified for the purposes of this study, the standard scoring measures that are outlined by the original authors were not employed. Therefore, the measure was scored by taking the number of correct items divided by the total number of correct items added to incorrect items multiplied by 100 to render an overall percent of correct score.

Modified Competing Behavioral Pathway Organizer

The Competing Behavior Pathway model was originally released by O'Neill and colleagues in 1997 as a graphic organizer to assist educators and practitioners in identifying the relevant components of a behavior chain as well as recommending functional interventions based on derived function. For the purposes of this study, the same organizer was used as a means of assisting participants in dissecting behavioral vignettes in a visual manner. Furthermore, the four functions of behavior were pre-filled for participants to circle. A copy of this form can be found in Appendix B. Historically, this form has been used as an organizational tool to assist practitioners in recommending function-based treatment. Therefore, no normalization has occurred to date with this organizer. For the purposes of this study, participant ability to identify key components of behavioral vignettes were scored through utilization of this organizer. Each element of

the vignette, which is depicted in the graphic organizer, was scored as either 1 or 0. The total sum of correct responses was divided by the total number of correct plus incorrect responses and multiplied by 100 to yield a percent correct. The overall purpose of using this tool was to systematically quantify participant ability to dissect behavioral vignettes in a streamlined manner during structured training. Participants completed a separate graphic organizer for each presented behavioral vignette.

Classroom Observation Form

To assess generalization effects of classroom training, a self-created classroom observation form was used (See Appendix C). This observation form was utilized to determine whether trained skills were generalized to the natural environment as well as guided corrective prompting of classroom teachers. The primary researcher observed the teacher during 15-min observation periods working in their individual classrooms. Each time any student in the classroom engaged in the problematic behaviors, as identified by the participants, the researcher recorded the events of the behavior chain and the hypothesized function. Additionally, the researcher recorded whether or not the participant redirected the student who engaged in the behavior to a functionally equivalent replacement behavior through a redirection strategy or implemented a functional intervention strategy (i.e., planned ignoring). The classroom observation form contained the following components: observed antecedent, observed behavior, observed consequence, hypothesized function, and replacement skill or redirection strategy utilized in response to the behavior. Additionally, a section was included next to the response to behavior section to determine whether or not the response to the displayed target behavior was correct in function. Each element of the classroom observation form was

scored as correct or incorrect. The total sum of correct responses (correct functional redirections) was divided by the total number of correct plus incorrect responses and multiplied by 100 to yield a percent correct for each observation period.

Educator Social Validity Assessment

The Skills and Needs Inventory-Functional Behavior Assessment and Intervention (SN-FBAI) is a measure that was created by Dutt and colleagues in 2016 (Appendix F). Dr. Dutt, the primary author, provided the researcher with a copy of this assessment. This tool captures the current skill level and current need for training in the areas of functional assessment and functional intervention. Historically, this tool has been used in aiding leadership teams in creating professional development opportunities for teachers related to classroom management procedures (Dutt et al., 2015). A modified version of this tool was used to acquire social validity data for the purpose of this study. This instrument was given to participants to complete at the beginning of the study as well as at the end of the study. The modified SN-FBAI contained six original questions measuring participant perceptions regarding their ability to use functional assessment and intervention strategies. The six statements were answered using a 0-3 Likert scale recording system. The participants were provided with a description for each numerical rating. The modified SN-FBAI took no more than 10 min per participant to complete. The assessment consisted of the SN-FBAI has been validated through administration to 338 special educators and 28 teaching support staff in seven schools in Singapore (Dutt et al., 2015). Results of this study indicated that the SN-FBAI is psychometrically sound instrument as determined by Cronbach's alpha.

The modified version of the SN-FBAI was evaluated for face and content validity

(Creswell & Guetterman, 2018). Both methods are based on the feedback from experts in the field of educational research and ABA. A panel of faculty members, who are experts in the field, reviewed the instrument and ensured its accuracy. Based on the feedback of the faculty members, some items were modified. Following the iterative process of reviewing and modifying the assessment, the summative committee of two faculty members reviewed the assessment for a final approval.

Relying on the Huck's (2012) recommendations, an alternate-forms reliability approach was used to determine reliability of the modified SN-FBAI. Two forms of the same assessment were created. These two forms of the assessment were similar in that they focused on measuring social validity, but they differed relative to the questions' mode of expression included within each instrument. To quantify the degree of alternate-forms reliability, two similar forms of the same instrument were administered to two teachers who met the inclusion criteria of the study. Two assessments were administered one week in between each administration. After the assessment results were available for both forms, two sets of data were compared to determine their reliability. The Cronbach's Alpha (α=.96) indicated that the modified SN-FBAI had high internal consistency. Higher alpha levels, with 1 being the maximum, are correlated with high coefficient of reliability (Huck, 2012).

Materials

During the training phase of this study, each participant received a copy of handout slides with lines for note taking. Each page contained three slides on the left side of the page and five lines next to each slide on the right side of the page. Participants were provided with highlighters as well as pencils to take notes during the training.

During the modeling and rehearsal phase of the study, participants were provided with five blank copies of the Modified Behavior Pathway Visual Organizer (see Appendix B). This tool was used for participants to accurately identify the key behavioral components detailed in each presented behavioral vignette. Participants were provided with pencils to complete these organizers.

In order to conduct data analysis, the researcher used a computer, Excel graphing software, a calculator, and SPSS® statistical analysis software. Additionally, a colored marking tool was needed to grade participant performance on the pre assessment measure, completed modified behavior pathway sheets, and post assessment measure. The researcher utilized multiple copies of the classroom observation form and a recording utensil to mark observations during the classroom observations.

Measures

The primary dependent variables of this study were teacher knowledge regarding functional assessment practices and intervention procedures, teacher ability to correctly identify antecedents, behaviors, consequences, and discern function within any given behavior chain, and teacher ability to select function-based interventions to utilize within their individual classrooms (i.e., generalization). The primary purpose of the study was to increase educator knowledge surrounding functional assessment and function-based intervention. The independent variable for the study consisted of the behavioral skills intervention package used for initial teacher training and classroom follow-up observations. The intervention package consisted of the primary elements of a BST training model: instructions, modeling, rehearsal, and feedback (Cooper et al., 2020). Teacher knowledge regarding both functional assessment and intervention practices was

scored using the EFAKE. Each question of the EFAKE consisted of one correct answer and four distractor choices. The collected data were scored using a correct percent model. The number of correct answers was divided by the total number of incorrect and correct answers and multiplied by 100 to yield a percent correct score.

The ability of each participant to dissect discrete behavior chains, discern function, and recommend functional interventions served as the second dependent variable for this study. The modified version of Competing Behavior Pathways diagramming tool was used as the primary measure to assess this variable. Each participant was presented with five behavioral vignettes post training to dissect for the following components: antecedent, behavior, maintaining consequence, and primary function. Participants were also asked to identify the most appropriate intervention from a pre-created checklist. Each vignette had total of available 5 points. The total number of correct responses was divided by the total number of incorrect and correct responses and multiplied by 100 to yield a percent correct. Educator ability to complete each vignette was graphed as a separate data point. Participant scores were generated prior to corrective coaching or feedback consistent with a cold probe data collection approach.

Participant ability to discern function as well as recommend a functional intervention served as the third dependent variable of the study. The third dependent variable was designed to test participant ability to generalize trained skills to the classroom setting rather than in a contrived training environment. The researcher recorded the antecedent, behavior, maintaining consequence, and hypothesized function for each behavior displayed by any student in the classroom. The researcher also recorded the intervention chosen by the teacher to redirect any given behavior in the classroom on

the recording sheet. If the redirection was functional in nature, the behavior chain was scored as a correct redirection. If the redirection was not functional in nature, the behavior chain was scored as incorrect. Observations occurred for a total of 15 min. The average percent correct for each observation was calculated by dividing the number of correct observed behavior chains by the total number of incorrect and correct behavior chains and multiplying by 100. Each observation was graphed as a separate session. The same recording procedures were used for the follow-up observations that were designed for maintenance data collection purposes.

Design

This study was based on the single-subject research design methodology. As is the case with all single-subject research designs, each participant served as their own control (Ledford & Gast, 2018). A multiple probe (MP) design across participants was used as the general design for the study. The MP design allowed the researcher to take non-continuous data during baseline and intervention phases as a method for acquiring and reporting data (Ledford & Gast, 2018). A key feature of the MP design lies in the fact that experimental control can be bolstered to some degree as demonstration of effect can systematically be observed during intervention (Cooper et al., 2020; Ledford & Gast, 2018). Multiple phases were embedded into the MP design. Phases of the MP design included participant knowledge of related topics prior to training, knowledge as a result of training following a BST model, generalization probes, and follow-up assessment and probes. The MP design suited this type of study as the researcher's ability to conduct simultaneous data collection across participants was not possible. The MP design allowed the researcher to take data in a non-consecutive manner (Ledford & Gast, 2018). The MP

design was advantageous for this type of study because the intervention effects were demonstrated within and across participants (Cooper et al., 2020; Ledford & Gast, 2018). The MP design was more appropriate than a reversal design because trained knowledge cannot be reversed; therefore, a withdrawal or reversal design could not be used. Additionally, the researcher looked at effects across participants and took data in a concurrent fashion across phases, which aligned nicely to the MP design across participants (Ledford & Gast, 2018). A major limitation of the MP design is often associated with behavioral covariation among participants (Ledford & Gast, 2018). In order to control for behavioral covariation, training and observations occurred in four separate classrooms within the research site. Additionally, the researcher controlled for extraneous variables by using scripted measures for training, data collection, and classroom observations.

Procedures

Data Collection Procedures

1. The researcher sought approval from the university's Institutional Review Board (IRB).
2. After the IRB approval was obtained, the researcher began the participant recruitment process for the pilot study.
3. The researcher piloted the EFAKE and SN-FBAI instruments.
4. Participants for the pilot study were recruited by word-of-mouth.
5. The researcher determined acceptable content validity and high reliability of the EFAKE and SN-FBAI instruments upon completion of the pilot study.
6. Relying on the purposeful sampling technique, the research worked with the

school administrator and followed their recommendations regarding the potential participant selection and recruitment.

7. With help of a school administrator, the researcher identified four teachers who met the inclusion criteria.
8. Each potential teacher participant received an email invitation to participate in this study.
9. Once the teacher chose to participate in the study, the appropriate consent was obtained.
10. Prior to the onset of the study, the researcher created a fidelity of data collection system. For this study, the researcher set the fidelity of data collection at a minimum of 25% for all sessions. The researcher was the primary agent responsible for data collection throughout the study.
11. Prior to the onset of the study, the researcher asked each teacher participant to identify two maladaptive behaviors displayed by the majority of students in their respective classrooms.
12. The researcher looked to see whether the teacher participant could functionally redirect the previously identified two maladaptive behaviors pre-training in the classroom with fidelity. Maladaptive behaviors varied across each participant.
13. At the onset of the study, the researcher entered the participant's individual classrooms and collected baseline data relative to the participants' ability to use functional redirection strategies in response to their identified maladaptive behaviors. The classroom observation recording sheet was utilized for baseline data collection.

14. After collecting the baseline probe data (Phase A), which consisted of 3-4 observations, the EFAKE was administered.
15. In addition, each participant completed the SN-FBAI as a pre-intervention measure of social validity prior to the onset of the study.
16. After the researcher collected the EFAKE data, participants began their functional assessment and intervention training (Phase B).
17. During Phase B of the study, participants were exposed to content knowledge regarding assessment and intervention, modeling for prescribed assessment and intervention recommended practices, rehearsal opportunities to dissect behavioral vignettes, and received corrective feedback.
18. The researcher began the training with Participant 1. When participant 1 had finished the training, Participant 2 entered the training.
19. Step 18 was followed until all participants had progressed through all phases of the intervention. In other words, intervention start times were staggered based on stability of baseline data and the prior participants completion of the training phase (Phase B). There were four participants in this study.
20. An independent observer, who was trained by the researcher, took treatment fidelity data during all individual training sessions.
21. After all participants received the training on functional assessment and intervention procedures, the researcher continued to conduct classroom observations and collected probe level data using the classroom observation form. Each participant had 4 to 6 classroom observations in total.
22. A student RBT was assigned to the researcher by the research site to take IOA

observation data. The student RBT took IOA data for a minimum of 25% of observations across all phases of the intervention.

23. During the training phase (Phase B), participants responded to contrived behavioral vignettes and recommended the appropriate treatment options. However, when classroom observations began, participants responded to in-vivo student behaviors within their individual classrooms.
24. Classroom observations occurred for 2 weeks after the offset of functional assessment and intervention training using the classroom observation form (Phase C).
25. Participants received corrective prompting at the end of each classroom session for a duration of no longer than 5 min.
26. After the 2-week recording period, the researcher terminated classroom observations and administered the post-assessment measure.
27. After the post assessment measure had been administered, the researcher aggregated all collected data into varying graphs and tables for inspection.
28. After 2 weeks elapsed, the researcher returned to the participants' classrooms to conduct follow-up observations to determine maintenance effects over time (Phase D). Each participant had three follow-up observations.
29. Upon completion of Phase D, all participants completed the SN-FBAI.

Internal Validity

Internal validity aims at ensuring that the studied intervention produces the desired outcome without the influence of extraneous variables (Creswell & Guetterman, 2018; Ledford & Gast, 2018). Multiple probe designs across participants have acceptable

reports of internal validity when a systematic change in the dependent variables occurs in conjunction with the introduction of the independent variable for each participant (Ledford & Gast, 2018). One area of concern for internal validity within any prolonged baseline design for participants is maturation. Maturation can be referred to as the overall change in participant knowledge, ability, and the like that could contribute to performance across time (Creswell & Guetterman, 2018; Ledford & Gast, 2018). In order to control for this threat to internal validity, the researcher kept all phases of the intervention to a three-week reporting period as a means to reduce the overall time spent in in any given intervention phase short for any given participant.

Testing effects is also another threat to internal validity within the MP design. Participant ability to respond correctly to intervention measures as a result of repeated exposure often poses a threat to the overall outcome of the study (Ledford & Gast, 2018). To control for this effect, the researcher conducted all recordings within the classroom and delivered corrective prompting at the end of each observation. Testing effects, which were mitigated by anecdotal reporting, reflected the environment that was naturally created by the day-to-day interactions in the classrooms as opposed to being scripted in nature.

Attrition, or the overall departure of a participant from the study, is a major concern within any single-subject research studies as the number of participants is already limited (Ledford & Gast, 2018). Thus, the researcher included four participants to measure the overall effects of the intervention, which is one above the minimum number of participants to demonstrate effect in a single-subject design. Inconsistent effects across participants also poses a major threat to internal validity within the MP single-case design

(Ledford & Gast, 2018). Due to the lack of reversal, the experimental control bolstered with MP design is less than that of the withdrawal or reversal designs (Ledford & Gast, 2018). However, the overall choice to vary baseline by participant mitigates the inconsistent effects as does the careful selection of participants based on their prior learning histories (Ledford & Gast, 2018). The overall knowledge of these threats to single-subject research design methodologies allowed the researcher to implement the aforementioned techniques and mitigate threats to internal validity.

Social Validity

In the field of ABA, social validity or the overall acceptance of treatment procedures by participants is crucial to producing meaningful change (Cooper et al., 2020). Social validity involves measuring thoughts and/or perceptions of the participants and/or key stakeholders regarding the intervention procedures (Ledford & Gast, 2018). As ABA is grounded in single-subject research design to produce significant change in the lives of individuals, social validity is a construct that should always be measured for all research studies (Cooper et al., 2020; Ledford & Gast, 2018). While not measured directly as a dependent variable related to intervention, a pre and post measure of social validity was completed. The overall purpose of conducting the pre and post measure of social validity was to determine whether the participants' thoughts regarding the utility functional assessment and intervention changed as a result of increased exposure. It determined whether or not the intervention package was deemed to be a socially acceptable training strategy for educators.

Reliability of Measurement

Interobserver agreement (IOA) data were taken throughout the baseline,

intervention, and generalization phases of the intervention. Reliability data were also taken on the professional educators' overall use of functional redirection strategies in the classroom. The researcher as well as a trained observer recorded the overall use of functional redirections during set intervals throughout baseline, intervention, and post assessment measures. The primary researcher as well as a trained observer viewed a minimum of 25% of the sessions across each phase of the study simultaneously. The trained observers' ratings were compared to the primary researchers rating on the IOA recording sheet (See Appendix G). Total count IOA method was utilized for collecting interobserver agreement. Total count IOA was calculated by taking the smaller of the two recorded counts of each observer and dividing it by the larger of the two recorded counts and multiplying by 100 (Cooper et al., 2020). The IOA data were collected and represented visually. Furthermore, the IOA data were reported as an average for each phase of the study. Finally, the researcher summarized and presented the total count IOA across all phases of the study.

Treatment Fidelity

Treatment fidelity is critical to ensure that all researchers adhere to the scripted research procedures to produce accurate results (Vollmer et al., 2008). Treatment fidelity involves the use of pre-created checklists to ensure adherence to treatment protocols that are outlined in the study (Cooper et al., 2020). The researcher created a fidelity rating checklist for each individual phase of the study. Two separate checklists were created: one for classroom observations and one for training protocols and procedures. The researcher utilized these checklists during the actual implementation of the study. Additionally, a trained observer took procedural fidelity data on a minimum of 25% of

the sessions within each phase of the study. During the training phase, the procedural fidelity checklist addressed components such as: the trainer introducing themselves, the trainer providing all relevant materials to the participants, and the trainer's use of corrective feedback. During classroom observations, the procedural fidelity checklist encompassed whether or not the observer greeted the teacher, determined an agreed time to deliver feedback, found a neutral and non-distracting spot in the classroom, recorded a start and end time on the session sheet, and provided corrective prompting to the classroom teacher. Copies of the procedural fidelity checklists can be found in Appendix H.

Data Analysis Procedures

Visual analysis was used as the primary data analysis method to determine whether or not the independent variable produced reasonable effects on the dependent variable. As is typical with behavioral-analytical research, trend, variability, and level were reviewed for each participant across intervention conditions (Cooper et al., 2020). Each graph was created with the progression of time on the x-axis and the dependent variable - teacher ability to use appropriate functional redirections - on the y-axis. The level for each phase across participants was calculated for each participant. A paired t-test was conducted to determine whether statistically significant differences between baseline and average intervention exist. Additionally, a repeated measures analysis of variance (ANOVA) was performed to determine statistically significant differences between each phase of the study. An additional paired t-test was used to determine whether or not statistically significant differences exist between pre and post administrations of the EFAKE assessment as well as the social validity assessment.

As is traditional with MP designs, the researcher looked for immediacy of change in the data resulting from the applied intervention. Immediacy of change refers to the overall time needed for effects of intervention to be realized (Ledford & Gast, 2018). Generally, the quicker demonstrated effect emerges, the greater degree of believability that the intervention produced the change in performance. The researcher also conducted percentage of non-overlapping data (PND) to determine the degree to which data is similar across conditions. A higher PND indicates a better demonstration of effect in either a positive or negative direction as there are limited similar data points (Ledford & Gast, 2018). Microsoft® Excel was used as the primary software platform for the creation of all graphs. Statistical analysis was performed utilizing SPSS

Chapter 4: Results

Introduction

This study evaluated the effects of applying a BST training model to functional assessment procedures in the classroom. Furthermore, the ability of participants to redirect student behavior in a functional manner in both a contrived and natural setting was analyzed. Participants were exposed to a brief training presentation centered around the four basic functions of human behavior - the three-term behavioral contingency. As a part of this training, the BST training model was utilized to model the process of identifying the function of target behaviors within the classroom setting and redirecting students to appropriate behavior. Instructions, modeling, rehearsal, and feedback were all provided within the context of this training. Participants were then observed generalizing the trained skills to the natural classroom environment with the support of the researcher and relying on the BST components of modeling, rehearsal, and feedback. The researcher also conducted follow-up probes with no BST components to determine how the effects of training maintained over time. This research study aimed at answering the following research questions:

1. How does the on-going training in functional assessment procedures increase educator knowledge of basic principles of functional assessment as indicated by pre and post assessment measures?

2. How does the use of a behavioral skills training model for training functional assessment practices and procedures aid professional educators in assessing student target behaviors correctly (80% accuracy minimum) for hypothesized function using descriptive recording procedures?

3. What effect does the training on functional assessment and intervention practices have on professional educators' ability to select functional interventions (80% accuracy minimum) for students with accuracy based on descriptive recording?

4. How does the classroom training on identifying the hypothesized function of student behavior and recommending a function-based intervention generalize to the natural classroom environment in professional practice?

Demographic Characteristics

Two female teachers and two male teachers participated in this study. All four participants were in the age range of 31 to 40 years old. No participants fell outside of this age range. Furthermore, the researcher did not solicit the exact age information. All participants held a Florida Professional Certificate, except for one participant, Rachal, who held a Florida Temporary Certificate. One participant, Victor, held a teacher certificate in elementary education with a reading endorsement. One participant, Mathew, held a teacher certificate in English of Speakers of Other Languages. One participant, Lacy, was certified in Social Sciences subject area (Grades 6-12). The range in years of teaching was 17 years. However, it should be noted that the participant, Victor, who reported 17 years of teaching experience had worked in a multitude of capacities as an English as a second language instructor. All participants were in their first 2 years of teaching in the general education setting in either the elementary or secondary school. Three participants held a bachelor's degree while one held a master's degree. No participants reported having advanced training in applied behavior analysis. One participant reported starting the Registered Behavior Technician (RBT) Training course; however, the course was not completed nor was certification obtained. Two participants

taught in the elementary school classroom setting while the other two participants taught in the middle and high school classroom setting. The study took placed in a charter school in central Florida.

Data Analysis

The primary researcher used a combination of visual analysis as well as statistical analysis to analyze this research study data. To determine if a significant difference in knowledge acquisition existed before and after training on functional assessment practices, the paired-samples t test was utilized. The paired-samples t test allows for calculation and comparison of the means of two different but related data sets (Grabowski, 2016; Suter, 2012). The same statistical analysis was performed to determine if significant differences existed between social validity perceptions in both pre and post study. The larger the significance of t, the larger the evidence that advocates for the proposed explanation in gains in knowledge (Grabowski, 2016; Suter, 2012). The p value is the probability of achieving results potentially as extensive as the actual results. Researchers normally reject a proposed explanation of any kind if a p value is equal to 0.05 or less and accept a proposed explanation when p value is greater than 0.05 (Grabowski, 2016). Finally, when the mean, t, and p values are accounted for, the value of the p level decreases, and the t level increases (Suter, 2012).

Visual and statistical analyses assisted with understanding of participants' performance to integrate trained concepts in both a captured and contrived manner. The repeated measures of analysis of variance (ANOVA) were utilized to determine if significant differences existed between each phase of the study. They aided in determining the participants' ability to enact functional redirections across phases.

Participants' performance was also evaluated through visual analysis of data. The mean score for each participant was calculated and analyzed. Furthermore, to compare baseline performance data to that of intervention performance data, the researcher applied the percentage of nonoverlapping data (PND) analysis. PND was determined by calculating the range of the data points in the baseline condition, counting the number of data points in the experimental condition exceeding this range in the intended direction, dividing by the total number of data points in the experimental condition, and multiplying by 100 (Ledford & Gast, 2018).

Research Question 1

The first research question of the study asked: How does training in functional assessment procedures increase educator knowledge of basic principles of functional assessment as indicated by pre and post assessment measures? The mean score for participants on the EFAKE pre-assessment was 52.5% ($N = 4$, $SD = 23.2$). The mean score for participants on the EFAKE post-assessment was 73.8% ($N = 4$, $SD = 10.3$). As such, the overall participant average score increased by 21.3%. A statistically significant difference between pre and post assessment scores existed: $t\ (3) = -3.23$, $p = 0.024$, whereas participants' scores increased as a result of the training seminar. The findings are considered significant as the p value is $p < 0.05$ (Suter, 2012). As such, the analysis of data revealed that the training did produce learning gains for all participants.

Participants also reported their perceptions and attitudes regarding functional assessment at the onset and offset of the study. At the beginning of the study, the average score for participants regarding their overall knowledge of functional assessment as well perceived utility in the classroom was 69% ($N = 4$, $SD = 12.9$). At the offset of the study,

the average score for the participants regarding their overall knowledge of functional assessment as well perceived utility in the classroom was 79% ($N = 4$, $SD = 8.5$). Thus, there was an increase in overall participant knowledge and perception of functional assessment practices in the classroom setting. However, there were no statistically significant differences found between pre and post measure of social validity, $t\ (3) = -.988$, $p = 0.198$. While no statistically significant differences existed regarding educator knowledge and perceptions of functional assessment, an increase in overall performance on the measure was achieved. In the future, narrative data collection is recommended to further understand the perceptions and attitudes of study participants.

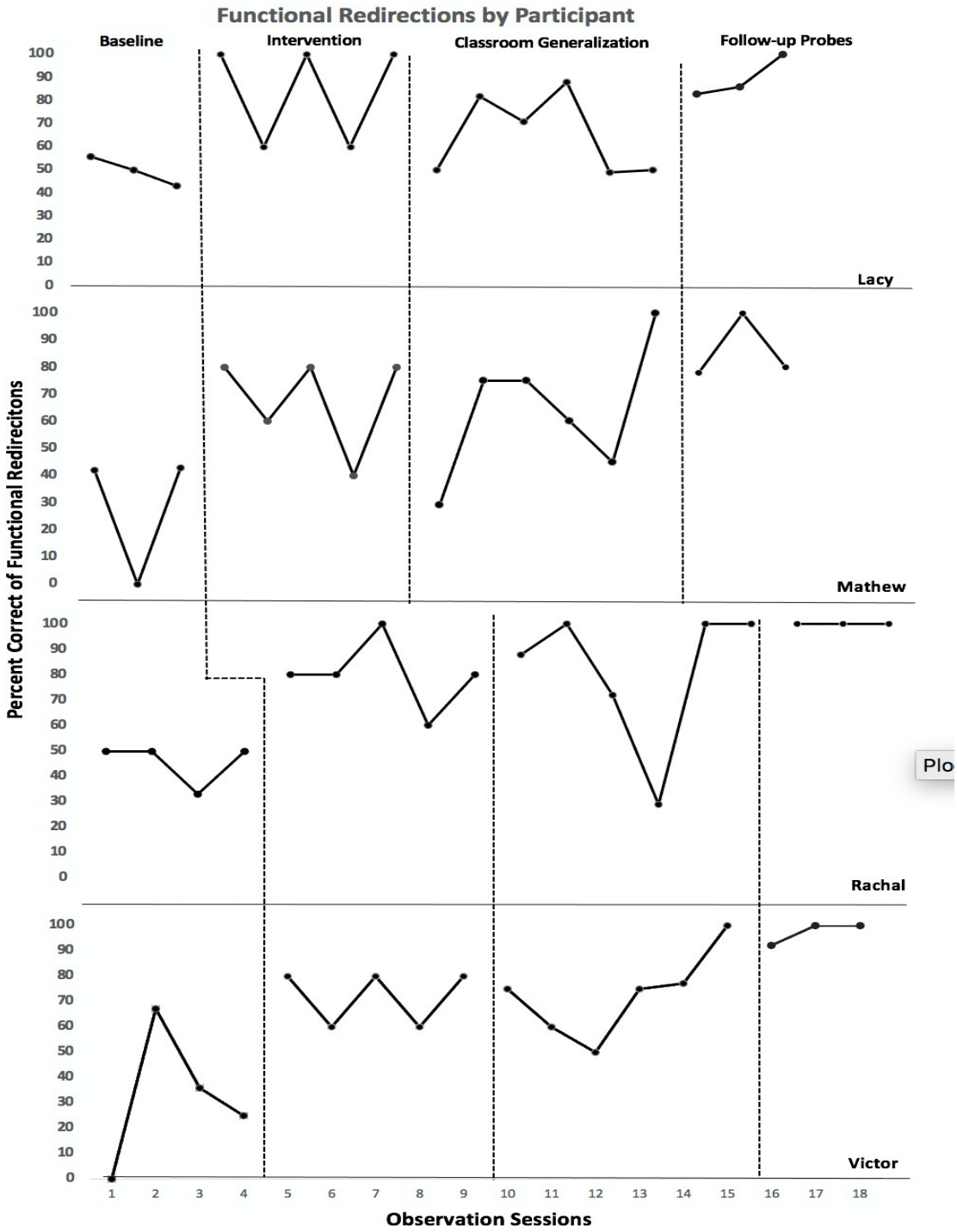
Research Question 2

The second research question of the study addressed the use of a BST for training functional assessment practices and procedures to aid professional educators in assessing student target behaviors correctly (80% accuracy minimum) for hypothesized function using descriptive recording procedures. All participants were asked to diagram behavioral vignettes as a part of the intervention training. They were required to identify the antecedent, behavior, consequence, function of the presented vignette as well as recommend a functional replacement behavior. Modeling and rehearsal components of BST were completed with each participant prior to the assessment portion of the training. Prior to the training, the researcher analyzed each participant's ability to informally address behaviors functionally within the classroom setting. Participants were able to correctly identify the function of a student behavior as well as recommended a functionally equivalent replacement behavior with 39% accuracy ($N = 4$, $SD = 10.7$) across all participants prior to the onset of training. The training produced a significant

effect on the participant's ability to identify the function of the behavior and recommend a replacement skill, Willk's Lambda = 0.005, F (2, 2) = 191.94, p = 0.005. From the visual analysis perspective, an immediate change occurred when participants were exposed to training (see Figure).

Figure

Participant Ability to Identify Function and Redirect Behavior Based on Function Across Phases



A clear increase in participant ability to identify the function of each target behavior and redirect to a functionally equivalent replacement behavior was evident. A PND of 78% ($p = 0.022$) across all participants from baseline to all intervention phases, including both the intervention points as well as generalization data points were calculated (see Table 3).

According to Ledford and Gast (2018), the higher the PND value is the greater confidence the researcher can have when determining if the intervention was solely responsible for producing the intended effect. The ultimate goal of utilizing PND is to ensure there is a lack of overlap in data points from the baseline phase to the experimental phase in the intended direction (Ledford & Gast, 2018). The fewer the data points that overlap, the higher probability the intervention produced the intended effect (Ledford & Gast, 2018). Rachal had the highest PND across all participants followed by Mathew . However, all participants had PND values well above the 50% threshold with a significant value; thus, it is indicative of the intervention's positive effect for each participant.

It should be noted that only two out of the four participants achieved the goal set by the researcher to identify the function of a behavior and redirect the behavior with 80% accuracy. In future research studies, participants should be required to identify function and functionally redirect behavior with 80% accuracy for three consecutive sessions prior to entering the generalization phase. IOA data was also collected during all phases of the study. The average IOA for the baseline phase across all participants was 81% (see table 4), which is within acceptable range (Ledford & Gast, 2018).

Furthermore, the training was determined to be implemented with fidelity as the procedural fidelity was 100% across all participants (see Table 5).

Table 3

Percentage of Non-Overlapping Data Points With Level of Significance

Category	P1	P2	P3	P4	Average
PND	82	91	73	64	78
P-Value	0.002	0.003	0.043	0.04	0.022

The overall trend of intervention for each participant within the intervention phase was variable. There were no criteria established for progression to the generalization phase from the intervention phase at the onset of the study. Thus, although a variable data trend existed, all participants progressed to the subsequent phase regardless of performance. Recommendations for remediation of the variability in the data path will be made in Chapter 5. There were no ascending or descending trends to describe. Each intervention point was obtained by scoring the participants' ability to identify the antecedent, describe the behavior, identify the consequence, identify the function, and recommend a functionally equivalent behavior. Each component yielded a score of 1 and the total score was divided by 5 and multiple by 100 to yield a percentage. Each data point represents a different behavioral vignette presented by the primary researcher during the training. The percentage yielded was graphed for visual analysis.

Table 4

Interobserver Agreement Data Across Participants and Phases

Phase	P1	P2	P3	P4	Average
Baseline	67	100	78	100	87
Generalization	67	75	68	70	70
Follow-up Probes	75	100	100	71	87

Research Question 3

The third research question addressed the magnitude of the training effect on functional assessment and intervention practices for professional educators and their ability to select functional interventions for students with accuracy (80% minimum) based on descriptive recording. Prior to the onset of training, participants could identify the function of target behaviors and functionally redirect with 39% accuracy ($N = 4$, $SD = 10.64$). In the intervention phase of the study, which encompassed contrived classroom with scripted practice, participants were able to identify the function of a given behavior and functionally redirect the behavior with 76% accuracy ($N = 4$, $SD = 7.3$). Participants also correctly identified the function of a target behavior as well as functionally redirected the behavior during the generalization phases, which occurred in their individual classrooms, with 71% accuracy ($N = 4$, $SD = 8.36$). Based on an initial descriptive analysis using measures of central tendency, the intervention appears to have been successful for all participants. Furthermore, the standard deviation decreased from baseline measures to intervention measures, which is a strong indicator of data reliability (Edmonds & Kennedy, 2017; Ledford & Gast, 2018).

A repeated measures ANOVA was also utilized to compare baseline averages to intervention averages. The repeated-measures ANOVA was used to analyze the participants' performance across time as they received additional training. Sphericity of data was verified and was not violated as indicated by Mauchly's W, x^2 (2) = .194, $p = 0.05$; therefore Willk's Lambda was utilized for reporting purposes. Overall, the training produced a significant effect, Willk's Lambda = 0.005, F (2, 2) = 191.94, $p = 0.005$,

across all phases. As the effect was significant, Post-Hoc comparisons were completed. A pairwise comparison of baseline to experimental conditions, which included both the intervention phase and generalization phase, indicated a statistically significant difference, Willk's Lambda=0.005, F (2, 2) = 191.94, $p < 0.001$, with a mean difference of 37% across participants. Thus, the intervention produced the intended effect across all four participants within the study.

Based on a visual analysis of the data, some variability in the data exist from baseline to intervention and from intervention to generalization (see Figure). Steady state responding was not achieved in baseline prior to progression into subsequent phases. Furthermore, criteria for progression from the intervention phase to the generalization phase was not established at the onset of the study. Future recommendations for this limitation will be discussed in Chapter 5. Although there was data variability, the overall ascending trend emerged across all phases ending with the follow-up probes. In an analysis of progress from baseline to intervention, all participants demonstrated noticeable changes in performance at the onset of intervention using a BST model. Treatment fidelity checks were performed throughout all phases of the study (see Table 5). Treatment fidelity was scored at 100% (N = 4) across all participants; therefore, implementation of the intervention and training model is not considered a factor that might have influenced the participants' performance or contributed to the data variability. Additional recommendations for future research will be made in the subsequent chapter.

Table 5

Average Treatment Fidelity Score for Participants Across Phases

Phase	P 1	P 2	P 3	P 4	Average
Intervention	100	100	100	100	100
Generalization	100	100	100	100	100

Research Question 4

The fourth research question of the study aimed at assessing the effect of classroom training on identifying the hypothesized function of student behavior and recommending a function-based intervention. Based on a visual analysis of the data, all participants maintained performance from the intervention and generalization phases through the follow-up phase. Based on measures of central tendency, the mean performance during intervention was 76% ($N = 4$, $SD = 7.3$) whereas participant performance during the follow-up phase was 71% ($N = 4$, $SD = 8.36$). A difference of 5% separated the two conditions of the experiment. All means were above the 80% threshold set forth by the researcher, thus retention of trained concepts can be inferred.

An ANOVA results across all intervention conditions indicated a statistically significant difference, Willk's Lambda = 0.005, $F(2, 2) = 191.94$, $p < 0.001$. However, when pairwise comparisons were completed as a part of the post hoc analysis, the difference between the intervention condition, which included both intervention and generalization, was not found to be significant, $p = 0.378$. This analysis indicates that training did generalize well to the natural classroom and maintained over time as there were no significant differences in the means. Participants demonstrated the ability to enact intervention within the training and classroom environments. Furthermore, the effects generalized over time as evidenced by follow-up probes conducted 2 weeks after feedback sessions were terminated (see Figure). Despite the data variability within the

data sets for each participant, the ability of the participants to utilize trained principles in the natural classroom environment was demonstrated. Maintenance of training was also established. Prolonged data collection in each of the four phases of the study are recommended to further bolster experimental control.

Chapter 5: Discussion

Introduction

To date, functional assessment procedures have been significantly underutilized within the classroom setting (Gischlar & Riffel, 2020; Oakes et al., 2018; Scott et al., 2010; Young & Martinez, 2016). An overreliance on punitive measures rather than function-based interventions to manage student behaviors is a predominant practice, which inhibits the development of adaptive behaviors in the classroom setting (Ennis et al., 2018; Gann et al., 2014; Oakes et al., 2018). Reducing the overall occurrence of problem behaviors and maintaining the reduction of behavior over time have been a long-standing issue for educators working in all classroom types (Eisenman et al., 2015; Hirsch et al., 2020; Stough, 2015; Young & Martinez, 2016). Determining the maintaining functions of problematic behavior can allow for significant reductions in maladaptive behavior and a foundation from which to teach more adaptive responding within the classroom setting (Hill et al., 2020). The utilization of functional assessment practices in the classroom to reduce maladaptive behaviors is mandated by federal law (IDEA, 2004). Thus, providing teachers with this form of training is appropriate because teachers are key stakeholders in the overall learning experience of students. However, traditional lecture-based models relying on exposure to content with limited follow-up tend to be the norm for training educators on a variety of topics (Kunnavatana et al., 2013; Loman & Horner, 2014; Sawyer et al., 2017). The current study relied on using BST framework to develop a training on functional assessment practices that could be generalized to the classroom setting.

Four research questions were developed based on the gaps identified in the existing literature related to teacher training on functional assessment procedures, mainly

descriptive recording procedures. The primary impetus was to determine whether teachers could generalize the trained principles of functional assessment to the classroom and improve their performance over time. To evaluate teacher ability to functionally redirect student target behavior with accuracy in the classroom environment, the researcher collected and analyzed the baseline data followed by providing a training on the principles of functional assessment and the application of assessment practices to redirecting student target behavior. Relying on the BST model, teachers' training included instructions, modeling, opportunities for rehearsal, and corrective feedback. Educators were evaluated on their ability to dissect both scripted and natural behavioral scenarios and recommend the appropriate functional redirection.

Summary of Findings

Teacher participants increased both their overall knowledge of functional assessment procedures as well ability to utilize functional redirections in their professional practice. Initial baseline data indicated that all teacher participants did not have competency in identifying the function of student behavior. Participants were only able to functionally redirect behavior with 42% proficiency ($N = 4$) during baseline. Rachal was able to redirect student behavior with 50% accuracy, which served as the highest participant score during baseline. Mathew only utilized functional redirections correctly 28% of observed sessions, which served as the lowest score during baseline observations. Teacher ability to utilize functional redirections was not deemed proficient by the researcher during baseline recording. The low performance of all teacher participants during this phase of the study was not alarming. Based on observation, all participants initially were delivering too much attention to students as well as responding

to student behavior in a manner that reinforced the overall purpose of the behavior. The primary researcher observed participants delivering attention to students for calling out rather than redirecting students to use a functional replacement skill. The primary researcher also observed all participants allowing task refusal to occur without prompting to a related replacement skill during instruction. Participant ability to redirect behavior was more in alignment with traditional classroom management practices of behavior modification rather than addressing the functional etiology of student behavior.

As evidenced by the data path, participant ability to identify the overall function of student behavior and recommend a functional replacement skill increased after the training. An ascending trend across all participants was noted. An initial increase in proficiency based on observations occurring directly after training on functional assessment procedures occurred. Figure indicates a clear increase in proficiency from baseline to intervention when comparing the last data point in baseline to the first data point of the intervention phase. Immediacy of change from baseline to intervention was observed, which indicates an intervention to be effective (Cooper et al., 2020). Furthermore, the PND value across all participants (M = 77.5) indicated a lack of overlapping data points. Participants' mean score (N = 4, M = 52.5, SD = 23.27) during baseline also increased substantially (N = 4, M = 73.75, SD = 10.30) because of training and intervention practices. A statistically significant difference between pre and post assessment scores existed: t (3) = -3.23, p = 0.024 indicating both training and intervention practices increased participant knowledge.

The intervention phase of the study consisted of the analysis of both captured and contrived behavioral scenarios. A statistically significant difference, t (3) = -5.2045, p =

0.07 , between baseline data points and data points within the intervention phase was found. Thus, the provided training was attributed to the overall skill acquisition of the teacher participants. Performance fluctuated when participants were asked to generalize skills to the natural classroom environment. This is indicated by the overall bounce, or variability, in the data in Figure from one data point to the next in both the intervention phase and generalization phase of the study. Generally, higher levels of variability indicate a weakened experimental control as a predictable pattern of behavior has not been achieved (Cooper et al., 2020). However, 3-6 data points were taken throughout each phase of the study due to time constraints; therefore, additional data points across all phases should have been taken during the course of the study to determine if a true ascending trend was occurring. Furthermore, variability could have been attributed to the overall research design regarding each classroom observation, which is correlated to the individual data points on the graph. A detailed discussion of this phenomenon can be found in the limitations section of this chapter.

Nonetheless, a statistically significant difference between the baseline phase and the intervention phase was found indicating that training impacted teacher ability to identify the function of the student behavior as well as redirect the behavior. A repeated measures ANOVA was used to examine differences between each phase of the study. Willk's Lambda equaling 0.005, F (2, 2) = 191.94, $p < 0.001$ indicated a statistically significant difference between baseline and all intervention conditions. A pairwise comparison as part of the post hoc analysis indicated that differences between the intervention and generalization phases were not significant ($p = 0.378$). This indicates that training did generalize with limited fluctuation or variability as no major changes in

participant performance were observed. Furthermore, based on a visual analysis of all four participants' performance in Figure, participants' scores during the generalization phase were consistent with those observed during intervention. Based on the aforementioned data, learners can generalize trained concepts to the natural environment when provided with appropriate tools and strategies.

Despite prior studies indicating training did not maintain over time or generalize at all (Borgmeier, 2015; Hirsch et al., 2015; Oakes et al., 2018), a clear contrast between the baseline and intervention phases was apparent. Participants functionally redirected behavior with 42% accuracy on average ($N = 4$) during the baseline phase. The average intervention score for classroom training was 73% ($N = 4$) while the average score for the generalization phase was 70%. Thus, participants were able to replicate their performance in the classroom training to their individual classrooms with little fluctuation. Based on visual analysis, participants' performance maintained during follow-up probes as the overall level of the data did not change significantly. In all cases except one, there was an ascending trend or no change in trend apparent in the data paths present in Figure. Participants averaged 94% ($N = 4$) in redirecting behaviors functionally during follow-up probes. Participants demonstrated an increase in performance from generalization to follow-up probes. A summative analysis indicated that teachers' knowledge increased an average of 21% from pre assessment to post assessment.

Prior to the onset of the study, educators completed a social validity questionnaire regarding their overall opinions on functional assessment and functional classroom management. The average validity rating for functional assessment practices and management was 69% ($N = 4$). Post-intervention, the average validity rating was 79%

indicating a general increase in perceived utility of functional assessment and intervention practices. Lacy did decrease their overall score regarding social validity by one point on the post-assessment. However, the researcher debriefed all participants during which they indicated they would embed the trained principles into professional practice as valuable. Ultimately, teacher participants demonstrated that training on functional assessment practices leading to the utilization of function-based interventions can generalize to the natural classroom environment.

Interpretation of Findings

Overall, the utilization of a BST model for training functional assessment practices in the classroom was validated through this study as participants increased their knowledge on functional assessment principles as well as their overall ability to utilize functional redirections in professional practice as evidenced by the data trend preset in Figure. Although there was variability in the data during the intervention and generalization phases of the study, performance increased over time. A clear ascension in trend can be seen in Figure from baseline to intervention phases. However, the variability in the data is indicative of an experimental control issue or research design issue (Ledford & Gast, 2018). It is hypothesized that the variability in all four of the participant data paths is contributed to a flaw in the research design, which will be discussed in the limitations section. More specifically, some participants displayed higher levels of stimulus control in their classroom setting of target behaviors than others, which necessitated a change in research design for future renditions of this study.

Prior to the onset of the study, all participants ($N = 4$) were given a demographic

questionnaire to gauge years of teaching experience, educational backgrounds, and advanced training in ABA. Novice teachers have been documented to have less perfected classroom management skills when compared to veteran classroom teachers (Hirsch et al., 2019). All teachers participating in this study had less than 5 years of experience managing a general education classroom. Furthermore, the sample was heterogenous as related to gender as the sample consisted of two males and two females. Based on the initial demographic questionnaire, teacher participants had no prior training in ABA or knowledge in the basic principles of functional assessment. The mean pre-assessment EFAKE score was 52.5% ($N = 4$, $SD = 23.27$). Oakes and colleagues (2018) had similar results as participants averaged a 24.01 ($SD = 14.28$) prior to training and an average score of 38 ($SD = 8.91$) post-training. Crone and colleagues (2007) also demonstrated similar findings as participant median score on the FBA pre-knowledge assessment was 38.7% with a range of scores from 0% to 82% ($N = 42$). The post-assessment median score was 78.7% with a range of scores from 25% to 97%. and 78.7% ($N = 42$) on the FBA post assessment. A statistically significant difference $t\ (39) = 3.59$, $p < .05$ was found from pre-test to post-test. Therefore, the low initial knowledge assessment scores as well as baseline observations were not surprising to the researcher. Similar to the present study, participant knowledge increased while the standard deviation decreased. Historically, training in ABA, or general classroom management practices for educators is scarce at best (Grey et al., 2005; Hirsch et al., 2019). Borgmeier and colleagues (2015) found behavior specialist and teachers alike have limited knowledge on functional assessment procedures even with additional training, which further justifies the need for enhanced training opportunities. Teachers only tend to receive training on how to

remediate academic deficits and no impetus is placed on effective classroom management practices during formal educator preparation training (Eisenman et al., 2015; Hirsch et al., 2019; Young et al., 2018).

Functional assessment has been found to be effective in yielding interventions to reduce problematic behaviors in the classroom (Gann et al., 2014; Rispoli et al., 2015), An increase in knowledge can occur if the proper training is developed and delivered in a concise and structured manner (Rispoli et al., 2015; Rispoli et al., 2016). Once the proper knowledge regarding functional assessment in the classroom is obtained, educators will apply this to their professional practice for the greater good of their students. Gann and Kunnavatana (2016) demonstrated that a well-trained teacher can decrease off-task behavior by 80%. Furthermore, LaBrot and colleagues (2018) showed that teachers can decrease out-of-area behavior of students with non-contingent reinforcement procedures on average by 42% ($N = 3$) and on average by 46% ($N = 3$) with differential reinforcement of other behavior procedures. Carr (1977) noted that all behaviors serve a purpose. As such, identification of the maintaining variables is at the core of treating the maladaptive behavior. Umbreit and colleagues (207) noted that behaviors can be significantly reduced by defining the target behavior, identifying triggers to that behavior (antecedents) as well as maintaining consequences, and recommending/teaching an alternative replacement behavior. Through an analysis of the maintaining antecedents and consequences, the function of any behavior can be derived and used to program a more adaptive response (Cooper et al., 2020). Blended together, educators can use the basic three-term behavioral contingency to identify the function of any given behavior and reduce its occurrence over time (Cooper et al., 2020). Training in functional assessment

and intervention would allow for traditional punishment-based strategies to be reduced while simultaneously increasing proactive responding (Cooper et al., 2020).

Although teacher participants demonstrated a notable increase in the practice of using functional redirections from baseline to both the intervention and generalization phases, variability in performance has been observed. As evidenced by Figure, an ascending trend was present; however, there was significant bounce, or variability in the data points (Cooper et al., 2020). In other words, the data path was not a clear ascending trend with a typical line of best fit. Fluctuations in performance were apparent, which will be addressed in the limitations section of this chapter. Although the general trend from intervention, to generalization, to follow-up probes was upward as indicated by an average increase of level from phase to phase in a step-wise fashion, a significant amount of bounce from data point to data point emerged. This is indicative of either research design flaws of threats to both external and internal validity (Ledford & Gast, 2018). The researcher hypothesizes the research design could be improved to reduce the overall variability. While some of the variability can be attributed to the parameters set forth by the researcher for each observation, high levels of variability within any given data set indicate the need for additional training and/or re-training (Cooper et al., 2020). However, instability of the data could have occurred as the same group of students per teacher participant was regularly observed (Ledford & Gast, 2018). To prevent instability in the future, a progression criterion from phase to phase similar to that of baseline logic should be created in order to ensure that progression through phases does not occur to rapidly or slowly (Ledford & Gast, 2018). It should be noted that COVID-19 considerations impacted the time spent in each phase of the current study to mitigate

exposure. Therefore, while the study did produce effect as related to their individual percent correct for utilization of functional redirection, extended phases with additional coaching opportunities are needed to enhance participant performance. Participants demonstrated the ability to grasp behavioral-analytical content through their coaching sessions with the researcher as evidenced by the overall increase in level as shown by Figure. However, as it is the case with acquiring any skill, repeated opportunities for practice are needed for mastery of the said skill to occur (Cooper et al., 2020).

Overall, the BST training model was an effective training methodology to draw upon to train the principles of functional assessment with teachers regarding knowledge acquisition. Teachers increased their overall knowledge regarding functional assessment procedures as demonstrated through the EFAKE. Furthermore, Figure shows a clear ascension in trend regarding participant ability to functionally redirect behavior from baseline to subsequent phases of the study. Although there was a change in participant knowledge acquisition from pre to post intervention, there was no significant change in participant social validity ratings (t = -.988, p = .198) from pre- to post-measures. Subsequent studies should include some form of narrative data collection as a part of the social validity measures. The training offered a quick and seamless way to provide each participant with one-on-one instruction in completing functional assessments in the classroom setting, mainly descriptive recording procedures. Furthermore, repeated opportunities for practice were afforded to each teacher participant. The training was delivered in a staggered fashion as is the case with all multiple baseline across participant designs; therefore, it is reasonable to assume that the training was solely responsible for the produced positive effects. Single-subject research designs are often criticized for lack

of large sample sizes to demonstrate effect and generalization (Ledford & Gast, 2018). However, the present data indicated a clear change in participant ability at the onset of the intervention. In other words, direct replication, or repeating a study in its entirety, was possible three times within this study yielding similar effects and, hence, demonstrating experimental control (Ledford & Gast, 2018). Furthermore, all teacher participants had limited interactions with each other and knowledge of one another relative to participation in the research study. Thus, treatment fidelity remained at 100% because there were no confounding variables affecting the implementation of the intervention mitigated by other participants. Furthermore, the average reliability for the study was 81%, which indicates the research design would more than likely produce similar findings if replicated (Edmonds & Kennedy, 2017). Threats to both internal and external validity were controlled for as part of the overall research design as participants did not interact with one another regarding any elements of the study. Overall, the researcher is confident the BST training model was solely responsible for the produced effects on the dependent variable.

Context of Findings

Loman and colleagues (2014) analyzed the effects of training on teacher ability to engage in functional assessment practices. Similar to the current study, educators completed a pre- and post- knowledge assessment to determine whether the delivered training impacted overall knowledge. However, educators only completed functional assessments in a contrived manner and no observations regarding teacher ability to use functional redirections was performed as a part of the study. The present study not only

provided functional assessment training, but also afforded the participant opportunity to practice trained skills in the natural environment with feedback. Furthermore, follow-up knowledge probes were completed. The present study demonstrated the need to provide teachers with repeated opportunities for practice as well as feedback consistent with a BST training model. A general upward trend in data (see Figure) with appropriate feedback indicated that educators can learn to functionally redirect behaviors in the classroom with repeated practice and feedback.

Similar to the work of Gann and Kunnavatana (2016), baseline data from the present study as well as the average educator pre-assessment score of 52.5 ($N = 4$) indicated a need for teacher training on functional assessment practices. Teachers were trained in three strategies to use as a means of reducing one undesirable behaviors within the classroom. In contrast to the work of Gann and Kunnavatana (2016), the present study provided teachers with strategies to use with any given target behavior based on function. Participants were trained on the four functions of behavior as well as how to functionally respond to student maladaptive behavior. While Gann and Kunnavatana (2016) demonstrated teacher ability to use functional redirection in response to one behavior using three strategies, the present study provided teachers with a repertoire of responses to use across all functions of student behavior. Findings indicated that educators increased on task behavior of students by over 80% across participants as well as improved their own implementation of functional intervention procedures by approximately 62%. Therefore, training teachers on the functional redirection strategies could improve professional practice and student learning outcomes as less time could be spent on classroom management, which would correlate to increased levels of academic

engagement. The latter is hypothesized to correlate to increase in overall student performance in core subject areas. Ultimately, the present study coincided with the work of both Loman and colleagues (2014) and Gann and Kunnavatana (2016), which indicated that teachers could indeed be trained to effectively use functional assessment practices and respond functionally to student behaviors.

LaBrot and colleagues (2018) worked with teachers on using NCR as well as DRO in the classroom setting in response to student target behaviors. In contrast to the present study, the effects of these strategies were analyzed through rates of maladaptive student behavior. Furthermore, an alternating treatment design was utilized in this study. While LaBrot and colleagues (2018) analyzed reduction in maladaptive behavior, the current study analyzed teacher ability to functionally redirect behavior based on impromptu descriptive analysis. LaBrot and colleagues (2018) provided cuing to teachers on which strategy to utilize. In contrast, the present study findings demonstrate that teachers can be trained to respond to student behaviors correctly in the natural environment with opportunities for repeated practice and feedback. Thus, the case can be made that with a basic understanding of descriptive functional assessment, educators can respond functionally based on a pre-developed repertoire of functional responses.

The present study most aligned with the works of Oakes and colleagues (2018) in which teachers were trained in functional assessment practices from the start of assessment to the implementation of the intervention. Oakes and colleagues (2018) found that educators perceived knowledge and actual knowledge regarding functional assessment were significantly different. During post assessment measures, educators ranked themselves at an average of 24.01 (SD = 14.28) when actual knowledge was 10.60

(*SD* = 8.75). Thus, additional training in functional assessment was needed as educators perceived their actual abilities as being higher than what they actually were in reality. Educators spent 5 days in training and learning best practices for assessment and writing intervention protocols. However, enactment and generalization skills were limited at best. The present study reversed the onus regarding time spent in training versus time spent rehearsing acquired skills in the natural environment. The ultimate goal of teacher training is to be able to use trained principles with fidelity in the natural environment. The present study extended the work of Oakes and colleagues (2018) by demonstrating that educators can implement trained functional assessment practices as well as engage in functional responding in the classroom setting.

BST has been cited as an appropriate training model to use across multiple disciplines (Hanley & Tiger, 2011; Hogan et al., 2015; Lloveras et al., 2021; Miller et al., 2014; Sawyer et al., 2017). BST involves the trainer delivering an initial training and allowing for repeated opportunities for practice with corrective feedback (Cooper et al., 2020). Recently, Lloveras et al. (2021) utilized a digital modality for training participants in functional assessment practices using a BST model. Participants were presented with a training in a group fashion and asked to role play with the primary researchers to derive the function of behavior in the presented behavioral vignette with corrective feedback. Participant ability to correctly identify the function of behavior was variable across both training groups. The present study required participants to not only determine function of behavior but also functionally respond to the observed behavior. Results of both research studies indicate that training on functional assessment practices and intervention implementation using a BST model may need to be longitudinal in nature with increased

opportunities for practice and feedback. Progression to subsequent phases of the study should not occur until steady state responding is achieved (Cooper et al., 2020). Future studies should take participant responding into account when making determinations of when to progress to subsequent phases to avoid unstable data (Ledford & Gast, 2018). While no concrete formula exists on when to progress from phase to phase in a study, the researcher should take into account participant performance, participant exposure to treatment, and maturation when attempting to obtain valid and robust data (Cooper et al., 2020; Edmonds & Kennedy, 2017; Ledford & Gast, 2018).

Implications of Findings

Initial findings indicate that educators can be trained in functional assessment procedures, mainly descriptive assessment procedures, as well as transfer this knowledge to the classroom setting. Young et al. (2018) found that while teachers are taught how to remediate academic deficits in the classroom, training on how to remediate behavioral deficits is lacking. To ensure optimal student outcomes, educators would benefit from classroom management practices which are inclusive of functional redirections rather than punitive measures (Oakes et al., 2018; Owen et al., 2015). The present study revealed that the targeted teacher training through the use of BST model can improve acquisition of knowledge regarding functional behavior assessment procedures as well as applications of skills. Furthermore, prior to the study, all educators reported perceived functional assessment as relevant to classroom practices and continued to perceive functional assessment as relevant as indicated by post-study social validity data. While not statistically significant, participants overall rating of functional assessment procedures in the classroom setting increased by a total of 11%. Educators demonstrated

trained principles and skills in the classroom environment as evidenced by the ascending trend in Figure. As such, an initial implication of this study is that continuing professional education in the area of classroom management, mainly training in functional assessment and intervention, can impact professional practice.

Educators do not generally receive training on how to implement evidence-based classroom management practices (Eisenman et al., 2015; Hirsch et al., 2019; Oakes et al., 2018; Wills et al., 2019; Young & Martinez, 2016). Traditionally, educators are trained in principles of behavior modification, which has been proven to be ineffective (Emmer & Stough, 2001). To date, educators do not deviate from practices of behavior modification in their approach to classroom management (Gischlar & Riffel, 2020; Owen et al., 2015). The present study indicated that educators can benefit from learning functional management strategies and apply them to professional practice. Using a functional-based intervention approach, students are taught replacement skills to employ rather than having their behaviors suppressed. Ultimately, function-based management affords educators the opportunity to reduce maladaptive behaviors in the classroom semi-permanently rather than merely redirecting behavior in the moment just for the behavior to repeat at a later point in time (Umbreit et al., 2007).

Finally, the present study also boasted the importance of utilizing a scripted training model for educators with opportunities for practice (Hogan et al., 2015; Kirkpatrick et al., 2019; Sawyer et al., 2017; Yates et al., 2020). Often, educators trained in a contrived setting with no opportunities for repeated practice in the natural environment (Kirkpatrick et al., 2019). BST provides an ultimate training framework for any discipline because it offers instructions (generally training), modeling, rehearsal, and

feedback as integral elements of the training Chazin et al., 2018; Cooper et al., 2020; Miller et al., 2014; Ryan et al., 2019). Furthermore, BST has demonstrated practicality in enhancing training concepts in a repeated fashion (Gunn et al., 2010; Hogan et al., 2015; Sarokoff & Sturmey, 2008). The use of scripted feedback can produce better participant outcomes in a multitude of areas including but not limited to interviewing, discrete trial instruction, fire safety skills, teacher performance, etc. (Houvouras & Harvey, 2014; Sarokoff & Sturmey, 2008; Sawyer et al., 2017; Stocco et al., 2017). Therefore, professional development opportunities for teachers and all professionals should be arranged in a fashion allowing for repeated practice and feedback to ensure optimal retention.

Limitations of The Study

The present study employed a multiple baseline across participants research design. Each participant had 3 or 4 recorded baseline points. Baseline logic was not applied to the present study. Baseline logic indicates steady state responding that should be achieved prior to progression to the next phase of the study (Cooper et al., 2020). Furthermore, participants should not have been afforded the opportunity to progress to the subsequent phase of the study if performance was trending in the intended direction as this violates baseline logic (Cooper et al., 2020). However, due to COVID-19 considerations regarding exposure, the researcher had limited time to spend at the research site; therefore, time was a factor in collecting the needed data points for the study.

Additionally, the present study utilized 15-min intervals to record each participant's ability to functionally redirect target behaviors. The researcher recorded all

functional redirections that were completed during the 15-min observation period. However, there was not a minimum of data points threshold established prior to the onset of the study. Thus, one 15-min observation yielded 1 data point while another rendered 8 data points. Percent correct calculations can inflate or deflate participant performance; thus, the researcher should have required each observation to have a minimum of 5 data points (Cooper et al., 2020). Future studies should set an observation termination criterion of 15 min or 5 data points, whichever comes first.

Finally, the researcher noted the differences in classroom culture across the research site. All participants cited task refusal as well as talking-out behaviors as the prevalent behaviors affecting the overall dynamic of their classrooms. However, talking-out or calling-out behavior was often reinforced during some types of instructions, which could have potentially skewed the collected data. While the researcher and IOA data collectors were able to infer conditional differences for calling-out (allowed vs. not allowed), this produced some professional discretion to occur on the part of the observers. In future studies, the research team should have teachers using cuing or some other agreed upon method to signal to researchers when calling-out is adaptive versus maladaptive as it relates to the overall flow of instruction. As the utilization of choral responding or non-signaled student responding is often used as part of instruction, cuing would allow researchers to know the exact conditions in which talking-out or calling-out is not permitted (Alberto & Troutman, 2006; Cooper et al., 2020). This would allow for threats to internal validity to be further mitigated as threats to instrumentation caused by human measurement error could be avoided (Ledford & Gast, 2018).

Future Research Directions

Teachers can benefit from training in functional assessment and functional intervention (Bruhn et al., 2016; Gann et al., 2014; Gann & Kunnavatana, 2016; LaBrot et al., 2018; Oakes et al., 2018; Rispoli et al., 2015; Rispoli et al., 2016). The present study analyzed the effects of a brief training with opportunities for generalization to the natural setting over a shortened time frame. Future research studies should analyze the implications of longitudinal training over the course of a quarter reporting period or even academic semester. Initial data indicated that participants were progressively improving in practice as performance was trending upward (see Figure). However, the time constraints placed on the research team by the research site due to COVID-19 implications limited the timeframe of the study, which decreased the overall amount of time that could be spent in each phase of the study.

Based on the present study data, teacher participants were exposed to the elements of the standard three-term contingency (antecedent, behavior, consequence). Participants were able to connect how antecedents are related to the overall function of behavior and can contribute to the overall reduction of maladaptive behaviors in a proactive manner. Brief observations conducted by the researcher of the present study indicated that teachers often use antecedent interventions without understanding their true purpose. These observations were noted during the data collection phases of this study. Thus, educator training in future studies should encompass the utilization of antecedent interventions within the classroom environment (Kruger et al., 2015; LaBrot et al., 2018; Wood et al., 2018). However, the present study only focused on consequence-based functional interventions. Because antecedent interventions can impact behavior as much as consequence-based interventions (Cooper et al., 2020), future research should consider

their use in reducing frequency of maladaptive problem behaviors.

Finally, the researcher recommends a procedural change if replication of this study is considered in the future. To streamline data collection procedures, the researcher proposes tracking the fluctuation in frequency of teacher identified target behaviors rather than teacher ability to engage in functional redirections. Tracking of specific target behaviors further aligns with the purpose of training educators to use functional assessment procedures, which is to reduce maladaptive behaviors in the classroom setting. Conversely, future studies could track student use of functional replacement skills that are programmed by their classroom teacher. The onus of training in functional assessment is to impact student behavior; however, the present study only analyzed teacher behavior. Tracking of student behavior would allow for a better representation of the effects of function-based classroom management procedures to not only reduce maladaptive student behavior but to maintain the effects of reduction over time.

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Appendix A

Educator Functional Assessment Knowledge Evaluation

Educator Functional Knowledge Assessment

Each participant will be assigned a letter. The test administrator will tell you your participant letter or pre-circle the letter for you.

A B C D E

Instructions: The following items will assess your knowledge in the areas of functional assessment and functional intervention. Please choose only ONE answer for each item.

1. The primary purpose of conducting an FBA is
    a) To understand the form of challenging behavior for the purpose of intervention planning.
    b) To understand why a challenging behavior is occurring and what strategies to include within the behavior plan for the purpose of intervention planning.
    c) To understand how often challenging behavior occurs in a set period of time for the purpose of intervention planning.
    d) To understand how long it takes for challenging behavior to occur following an environmental trigger for the purpose of intervention planning.
    e) Don't Know
2. Functional assessments can be completed by using which of the following measures
    a) Anecdotal recording
    b) Caregiver interview tools
    c) Rating scales and questionnaires
    d) Experimental manipulation of environmental conditions
    e) All of the above
3. When conducting an environmental observation, the observer should look for what three crucial components that comprise a behavior chain
    a) Consequences, setting events, reinforcement
    b) Antecedents, behavior, consequences
    c) Function, operational definition, behavior chain
    d) Antecedent, function, setting event
    e) Don't know
4. The overall _____ of each displayed behavior can determined by analyzing the narrative ABC data
    a) Function
    b) Frequency
    c) Motivating Operation
    d) Duration

e) Don't Know

5. Teachers will often miss the function of a challenging behavior because they are often preoccupied with a behavior's _____.

   a) Frequency
   b) Rate
   c) Latency
   d) Topography
   e) Don't Know

6. When a student engages in problem behavior in an attempt to gain a preferred item or activity, that behavior is said to have a/an:

   a) Access to Tangible Function
   b) Attention Function
   c) Automatic/Nonsocial Function
   d) Escape Function
   e) Don't Know

7. When an individual engages in problem behavior when the teacher is attending to another student or is not attending to them, this problem behavior is said to have:
   a) Sensory Function
   b) Escape Function
   c) Attention Function
   d) Access to Tangible Function
   e) Don't Know

8. A student engaging in a target behavior directly after a demand is placed by a peer or teacher or engaging in a problematic behavior in response to being asked to complete work is said to be:
   a) Escape Function
   b) Access to Tangible Function
   c) Attention Function
   d) Sensory Function
   e) Don't Know

9. Teachers who react to inappropriate behavior by providing the student with one-to-one attention run into the risk of maintaining the inappropriate behavior as it can result in an increase in the inappropriate behavior. This is an example of: _____.

   a) Positive reinforcement of attention
   b) Negative reinforcement
   c) Extinction
   d) Punishment
   e) Don't Know

10. When selecting components of a Behavior Intervention Plan (BIP), which one of the following aspects should be considered the most important for consideration?

    a) The diagnosis of the child
    b) The topography of challenging behaviors
    c) The function of challenging behaviors
    d) Commonly used behavioral intervention practices
    e) Don't Know

11. In order to reduce the overall occurrences of behavior and build more adaptive behaviors in the classroom setting, the professional educator can
    a) Teach functional replacement skills
    b) Punish problematic behavior to suppress them
    c) Ignore the behavior as it will eventually go away
    d) Refer the individual to the school behavior specialist
    e) Don't Know

12. Gregory raises his hand in class for the first time. His teacher subsequently provides descriptive praise for Gregory's hand-raising behavior. If Gregory never raises his hand again in class, the teacher's praise may have functioned as:

    a) Positive reinforcement
    b) Negative reinforcement
    c) Extinction
    d) Punishment
    e) Don't Know

13. A student with limited verbal skills (e.g.,1-2 words) engages in aggression to escape work demands. Which of the following strategies would be the best option for intervention?

    a) Teaching appropriate communication to request break from work
    b) An Exclusionary Time Out from work demands
    c) Reprimanding the child to stop the challenging behavior
    d) Taking away privileges earned
    e) Don't Know

14. A student in your classroom presents with skin picking behavior when completing independent work that is causing visible damage to the fingernails, as an educator you could:
    a) Send the student to the nurse for first aide
    b) Deliver a reprimand to ensure the student no longer engages in that behavior
    c) Give the student an incompatible task to complete skin picking from occurring
    d) Send the student to the school counselor
    e) Don't Know

15. When a student gets out of completing a task by engaging in an inappropriate behavior, that behavior is said to be maintained by:

a) Positive reinforcement
b) Extinction
c) Negative reinforcement or Escape
d) Punishment
e) Don't Know

16. To facilitate compliance with students who engage in escape-maintained challenging behavior, which one of the following antecedent strategies could be used to prevent the occurrence of challenging behavior?

a) Time Out
b) "First and then" Visual Cards
c) Contingent Praise
d) Taking away privileges earned
e) Don't Know

17. For challenging behavior maintained by sensory/automatic reinforcement, which intervention strategy would be <u>most</u> effective?

a) Non-Contingent Reinforcement
b) Reprimands
c) Non-Exclusionary Time Out
d) Response Cost
e) Don't Know

18. When developing a behavioral intervention plan for a student who engages in aggression maintained by access to tangibles or preferred items, which one of the following strategies would you employ first?

a) Response Cost
b) Differential Reinforcement of Appropriate Requesting
c) Exclusionary Time Out
d) Overcorrection
e) Don't Know

19. When a student engages in behavior that is not harmful to themselves, others, or property, the professional educator can:
    a) Use planned ignoring as a primary intervention if other students are not affected
    b) Punish the disruptive behavior through their classroom management system
    c) Send the student out of the classroom
    d) Send the student to the principal's office
    e) Don't Know
20. When a student is engaging in a problematic behavior that is disruptive to the class as a whole, one strategy to employ is
    a) Publicly chastise the student's behavior

b) Deliver a consequence consistent with the classroom management system
c) Send the student to the neighboring teacher's classroom for a reset period
d) Redirect the student to functionally equivalent appropriate behavior
e) Don't know

Appendix B

Modified Competing Behavior Pathways Organizer

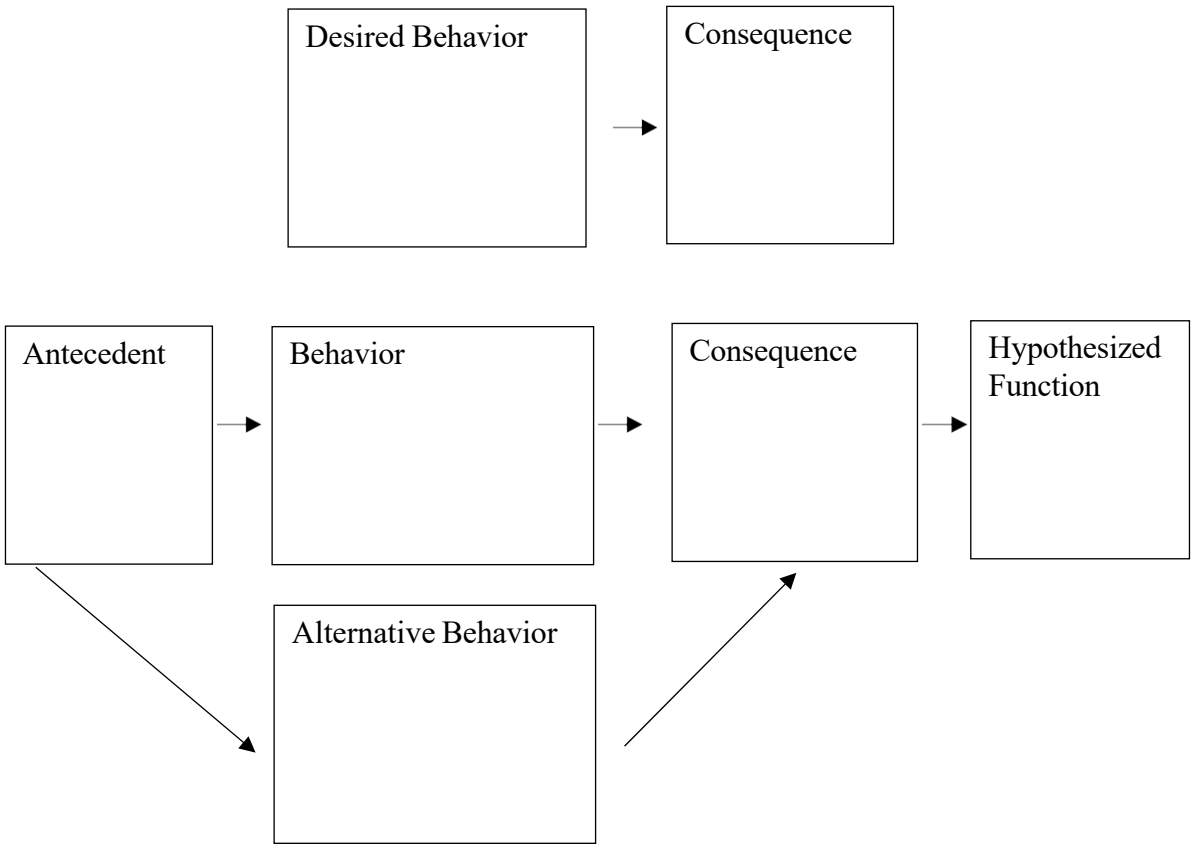
Modified Competing Behavior Pathways Organizer

Instructions: Using the provided visual organizer, dissect the presented behavioral vignette into the components listed in the above boxes.

Vignette Number:_____

Each participant will be assigned a letter. The test administrator will tell you your participant letter or Pre-circle the letter for you.

A **B** **C** **D** **E**



Appendix C

Classroom Observation Form

.Classroom Observation Form

Name:	
Date:	
Observation Period:	
Participant:	

Instructions:

The primary researcher should record all observed behavior chains for the specified target behavior. All of the below components should be recorded. Coaching steps should also be recorded and conducted at the end of the observation without students present. Coaching should occur as close to the end of the observation period as possible, teacher schedule permitting.

Antecedent:	**Behavior:**	**Consequence:**	**Function:**	**Intervention Procedure:**
___Paucity of attention from teacher ___Teacher attention on other student ___Sees preferred peer/person ___Task demand placed ___Denied access to preferred item ___Preferred item in sight ___Told to wait ___Told to transition ___Other:_____	___Task Refusal ___ Calling out	___Teacher redirect ___Planned ignoring ___Teacher delivers attention ___Teacher delivers reprimand ___Teacher sends child out of room ___Teacher prompts student to functional replacement program ___Other_____	___Attention ___Access ___Escape ___Sensory	Was intervention a functional replacement for target? ___Yes ___No **Recommended Procedure:** _____ **Recommended Coaching?**
Antecedent:	**Behavior:**	**Consequence:**	**Function:**	**Intervention Procedure:**
___Paucity of attention from teacher ___Teacher attention on other student ___Sees preferred peer/person ___Task demand placed ___Denied access to preferred item ___Preferred item in sight ___Told to wait ___Told to transition ___Other:_____	___Task Refusal ___ Calling out	___Teacher redirect ___Planned ignoring ___Teacher delivers attention ___Teacher delivers reprimand ___Teacher sends child out of room ___Teacher prompts student to functional replacement program ___Other_____	___Attention ___Access ___Escape ___Sensory	Was intervention a functional replacement for target? ___Yes ___No **Recommended Procedure:** _____ **Recommended Coaching?**

Appendix D

Educator Training Presentation

Educator Training Presentation

Functional Assessment: An Educator Training

Presenter: Lorne Balmer, MA, BCBA
Content Contributors: Dr. Khrystyna Bednarchyk, Ed.D, BCBA
Dr. Emmy Maurilus, Ph.D, BCBA-D

By the end of this training, you will be able to:

- 1. Restate the purpose of functional behavior assessment
- 2. Utilize the three-term behavioral contingency
- 3. Restate the overall functions of behavior
- 4. Identify reinforcers and punishers
- 5. Learn basic behavior redirection strategies
- 6. Recommend and implement functional interventions

FBA: What is it?

- Functional Behavioral Assessment (FBA) answers two questions:
  - 1. Why does behavior occur?
  - 2. How do we respond to behavior?

- Basic Ideas (Steege et al., 2019)
  - Behavior is learned
  - No student behaves for the same reason
  - The same behavior can occur for different reasons
  - Intervention is most effective when based on the "why" of behavior

Rationale for Learning about FBA's

- The reauthorization of the Individuals with Disabilities Education Act (IDEA, 2004) set forth the requirement for educational professionals to utilize the principals of functional behavior assessment (FBA) in response to reducing the occurrence of problem behaviors for all students within any educational agency (Bruhn et al., 2016; Haines etal., 2015; Rispoli et al., 2016).

(Bruhn et al.,2016, Haines et al., 2015; IDEA, 2004; Rispoli et al.,

Each Behavior has a PURPOSE!

- We all behavior for a REASON (Steege et al., 2019)!
- Every behavior has a pay-off!
- Why we behave (Cooper et al., 2020):
  - Access to items / activities
  - Access to attention
  - Escape from tasks / demands
  - Access to sensory feedback

(Cooper et al., 2020; Steege et al., 2019)

Descriptive Assessment in the Classroom

- I already am overwhelmed, how do I assess each child?
- The answer: Descriptive Assessment for Hypothesized Function
  - Descriptive assessment allows for quick observation to occur in the naturalenvironment (Cooper et al., 2020).
  - Basic tenants of descriptive assessment:
    - Identify Antecedent-what happens before behavior?
    - Identify Behavior-what is the student doing?
    - Identify Consequence-how are you responding?
  - These are referred to as the ABC's of behavior

(Cooper et al., 2020)

Descriptive Assessment in the Classroom:A Strategic Process

- FIRST:
  - What happens before the behavior?--ANTECEDENT
  - What is the behavior?—BEHAVIOR?
  - What happens after the behavior?– CONSEQUENCE?
- Second:
  - Determine the function of behavior or PURPOSE

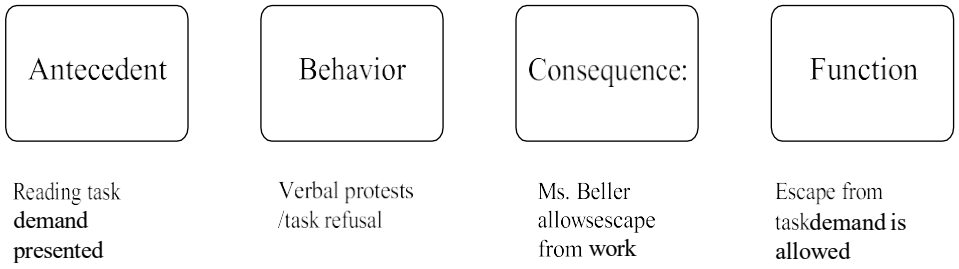
Let's Practice: WE DO, YOUDO!

WE DO: Scenario 1

- Scenario: Minnie is a third grade student who engages in task refusal during reading class. When ever Ms. Beller presents a reading assignment, Minnie verbally refuses to complete the assignment. Thispattern is repeated multiple times throughout each daily reading class. Ms. Beller eventually ignores Minnie allowing her to escape her work and obtain poor grades.

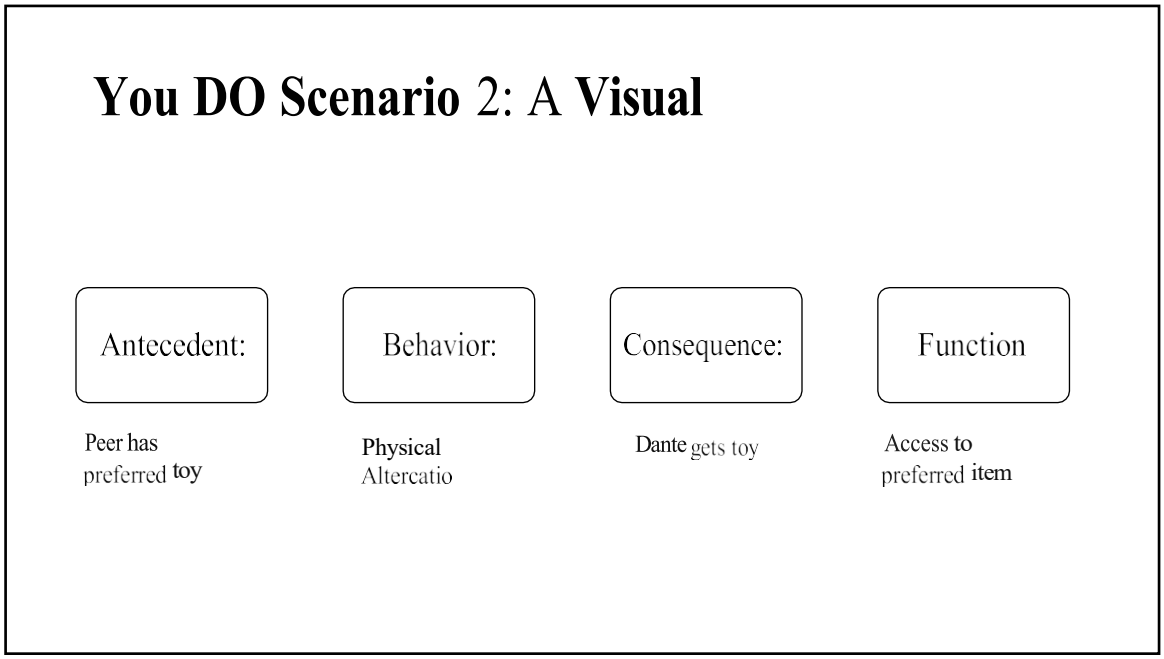
- FIRST: Identify the ABC's
- SECOND: Identify the function

WE DO Scenario 1: A Visual



YOU DO: Scenario 2

- Dante often has physical altercations with his peers while in the playground. When Mr. Baker observes him on the playground, he discovers Dante often hits his peers when they remove a preferred toy from him or when he would like a toy they are playing with. Overtime, Dante continues to hit his peers in order to get his desired play items.


You DO Scenario 2: A Visual
Antecedent:
Behavior:
Consequence:
Function
Peer has preferred toy
Physical Altercatio
Dante gets toy
Access to preferred item

The Response is Everything!

- Our responses MAINTAIN the behavior.
- Classroom management is often grounded in reducing behavior andNOT teaching more adaptive behavior (Eisenman et al., 2015).
- Over reliance on punishment instead of reinforcement (Eisenman etal., 2015)
- Responding by function allows for the following (Hill et al., 2020) :
  - Teaching to occur
  - Quicker reduction in behavior
  - Use of more reinforcement rather than punishment

(Eisenman et al., 2015; Hill et al., 2020)

Some General Reminders

- Reinforcement increases behavior over time (Latham, 1994)
- Punishment decrease behavior over time (Latham, 1994)
- Effects of reinforcers and punishers can only be measured over TIME (Latham, 1994)
  - Sometimes stimulus used as punishers can be reinforcers (i.e. yelling atstudent, sending student out of room)
  - Conversely, some reinforcement can also be punishing (i.e. public praise of ashy child)

(Latham, 1994)

We've Got The Function, Now What?

- Teach an alternate skill
- Every "bad" behavior has a "better" replacement
- The replacement should produce better reinforcement and be easierto do (Cooper et al., 2020)
- Once an appropriate behavior is identified, TEACH IT!

Putting it All Together: The CompetingBehavioral Pathway

- First:
  - What happens before the behavior?--ANTECEDENT
  - What is the behavior?—BEHAVIOR?
  - What happens after the behavior?– CONSEQUENCE?
- Second:
  - Determine the function of behavior or PURPOSE
- Third:
  - Determine an appropriate replacement skill
- Fourth:
  - Redirect the behavior
  - Teach the new skill
  - Reinforce successes, ignore failures

Choosing a Replacement Behavior

- The replacement behavior chosen should serve the same function
- The replacement behavior should be easier
- Modeling:
  - Mia engages in verbal disruption when the teacher is working with other students. If the teacher is sitting at her desk working, Mia will also begin toengage in verbal disruption.
    - What is the hypothesized function?
    - What intervention would you recommend?

Common Interventions

Intervention Strategies by Function

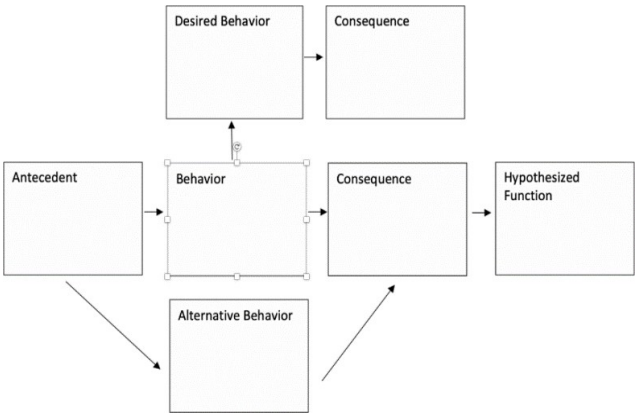
Escape	Access to Item / Activity	Access to Attention	Sensory
Request a delay in task	Appropriate waiting, thenaccess	Hand Raising	Redirecting to incompatible activity(deliver fidget)
Request a break (may include conference withcaregiver)	Appropriate requesting	Tapping hand or shoulder	Redirect to movement task
Asking for help	Accepting an alternative	Saying excuse me	Use other object to apply intense pressure
Accepting transitions	Delivering access to preferred items when behavior is not occurring(non-contingent access)	Delivering attention whenbehavior is not occurring (non-contingent attention)	*Educators should always consult with BCBA's whendealing with sensory related behaviors

General Teaching Tips

- When responding to a problematic behavior, use differentialreinforcement.
  - Ignore the bad behavior
  - Reinforce the good behavior
- Response Strategies:
  - Use planned ignoring (Latham, 1994)
    - Do not respond to behavior that is not dangerous to student, others, or property (i.e. JunkBehavior)
  - Follow the Stop-Redirect-Reinforce sequence (Latham, 1994)
    - Stop what you are doing GIVING no attention to JUNK BEHAVIOR
    - Redirect to the replacement skill
    - Reinforce when the replacement skill is performed
    - Prompt as necessary

(L

A Visual Process Model: Explained

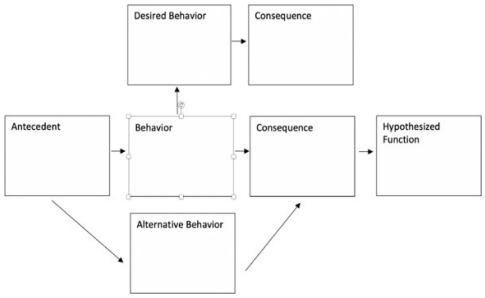


Modeling: Putting It All together

- Scenario:
- You are in lunch duty in the cafeteria and observing your student Ryan. Ryan was given a turkey sandwich for lunch. When presented with the sandwich, Ryan throws his body to the floor and screams that he wants pop tarts. The cafeteria staff immediately remove the turkey sandwich and deliver warmed up pop tarts (Bearrs et al., 2015)
- Let's complete the Behavioral Pathway

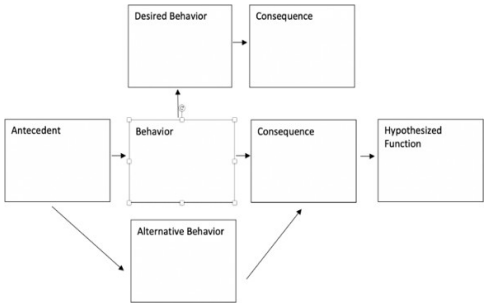
(Bearrs et al., 2015)

A Visual for Modeling



- What are the ABC's?
- What is the hypothesized function?
- What is the student doingcurrently?
- What can we teach them to doinstead (alternative behavior)?
- What would we like them to doinstead of the current behavior?
- Both consequences should MATCH!

Independent Practice



- Using the provided visual organizer, diagraph each of thefollowing scenarios to the bestof your ability.
- A copy of the organizer is provided in your participantworkbook.
- After you have completed each scenario, we will review for accuracy and correct as needed!
- Good Luck!

Independent Scenario 1

- Shaun is in your first-grade classroom. You observe Shaun playing with blocks and the dump truck toys in the play section of your classroom. When another child reaches for the toy he is playing with, Shaun become aggressive and hits them repeatedly with an open- hand. When this occurs, the children consistently give him his desiredtoy and move away from him (Schachner et al., 2016).
  - Diagram this scenario, hypothesize about function, and recommend anintervention
  - When complete, please notify instructor for feedback
  - You may refer back to the intervention recommendation chart

(Schachner et al., 2016)

Independent Scenario 2

- Sophie is in your second-grade classroom. Every time you request Sophie to transition from task to to task or from activity to activity, Sophie drops to the ground screaming and yelling. This behavior occurs regularly in all subjects throughout the day. Today during mathclass, you tell Sophia to transition to the front of the room. She drops to the ground and begins yelling and screaming. You allow her to lay on the floor screaming (Schachner et al., 2016).
  - Diagram this scenario, hypothesize about function, and recommend anintervention
  - When complete, please notify instructor for feedback
  - You may refer back to the intervention recommendation chart

(Schachner et al., 2016)

Independent Scenario 3

- Susie is playing a computer game in the classroom when you announce that it is time to finish up and get ready for reading class.Susie immediately falls to the ground and begins screaming and yelling. In order to terminate her crying, you tell Susie she can have more time on the computer. Susie immediately quits crying and resumes playing the computer (Bearrs et al., 2015).
  - Diagram this scenario, hypothesize about function, and recommend anintervention
  - When complete, please notify instructor for feedback
  - You may refer back to the intervention recommendation chart

(Bearrs et al., 2015)

Independent Scenario 4

- Andy is a student in your fifth-grade classroom. During math class today, Andy is making fart noises during your classroom lesson. When you prompt the class to reduce the fraction 2/3 Andy makes afart noise. The entire class repeatedly laughs at Andy for making these noises.
  - Diagram this scenario, hypothesize about function, and recommend anintervention
  - When complete, please notify instructor for feedback
  - You may refer back to the intervention recommendation chart

Independent Scenario 5

- Shari is in your third-grade math classroom. Historically, Shari has struggled with math, mainly multiplication. Today, you tell Shari to complete problems 1 -5 independently before you deliver help to her.At this point in time, Shari begins cursing at you using derogatory remarks. You immediately send her out of the classroom. This has become a repeated pattern and her cursing is increasing.
  - Diagram this scenario, hypothesize about function, and recommend anintervention
  - When complete, please notify instructor for feedback
  - You may refer back to the intervention recommendation chart

Next Steps…

- Thank you for your active participation
- Please remember to identify a student in your classroom who could benefit from behavioral support
- Follow-up observations will occur in your classroom
- Please contact, Lorne Balmer, should you have any quesitons
  - Phone: 765-776-6668
  - Email: lb2197@mynsu.nova.edu

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Appendix E

Participant Demographic Questionnaire

Participant Demographic Questionnaire

Demographic Information: Please check relevant boxes

- Age (in years): □ 21 – 30 □ 31 – 40 □ 41 – 50 □ 51 – 60 □ Above 60
- Gender: □ Male □ Female
- Primary Role: □Special Educator □Teaching Associate □Educational Psychologist
  □Other (Specify)_____
- Highest Educational Degree Attained:
  _____
- Number of Years of Teaching:
  _____
- Teacher Certification Subject Areas:_____

Appendix F

Functional Assessment Social Validity Assessment

Functional Assessment Social Validity Assessment

Your Current Skill Level: Please indicate your **current skill level** based on formal instruction, in each of the following items by circling the options between 0 and 3 as indicated below. Please use the following descriptors while rating your skill level.

3 – Able to apply and perform this skill in all situations without assistance and are capable of coaching others in the application of this skill

2 – Able to apply this skill to situations occasionally while needing minimum guidance to perform it successfully

1 – Able to understand and discuss the terminology, concepts, principles and issues related to the skill but cannot apply it to situations

0 – Not sure what this statement means

No.	Skills	Current skill level
1)	Observe behavior chains in the natural environment using the ABC (Antecedent – Behavior- Consequence) Model	0 1 2 3
2)	Identify potential reinforcers (such as toys, leisure activities) that can be used in behavioral intervention programs	0 1 2 3
3)	Develop behavioral intervention strategies based on information collected from direct observation	0 1 2 3
4)	Use positive/negative reinforcement based behavioral intervention strategies to *increase* the occurrence of appropriate behaviors	0 1 2 3
5)	Use other reinforcement based behavioral intervention strategies to *decrease* the occurrence of inappropriate behaviors	0 1 2 3
6)	Use behavioral intervention strategies to shape or teach specific functional skills such as daily life skills, academic strategies, communication etc.	0 1 2 3

Appendix G

Interobserver Agreement Data Collection Sheet

Interobserver Agreement Data Collection Sheet

Instructions: For each session, divide the smaller number of functionally appropriate redirections by the larger number of functionally appropriate redirections. The quotient should be multiplied by 100 to render a percent agreement. The total number of percent agreements should be added together and divided by the total number of addends to render an overall Total IOA.

Date of Session	Observer 1: Total Number of Functionally Appropriate Redirections	Observer 2: Total Number of Functionally Appropriate Redirections	Percent Agreement between Sessions

Appendix H

Classroom Training Treatment Fidelity Checklist

Classroom Training Treatment Fidelity Checklist

Target	Training Date:	Training Date:	Training Date:	Training Date:	Training Date:	Initials
Provided participants will all materials	Y N	Y N	Y N	Y N	Y N	
Reviewed training objectives	Y N	Y N	Y N	Y N	Y N	
Used an audible tone throughout training	Y N	Y N	Y N	Y N	Y N	
Checked for participant understanding an average of every five minutes	Y N	Y N	Y N	Y N	Y N	
Provided a minimum of three verbal praises during observation	Y N	Y N	Y N	Y N	Y N	
Reviewed each vignette verbally with participants (when relevant)	Y N	Y N	Y N	Y N	Y N	
Allowed for corrective prompting and discussion after each vignette	Y N	Y N	Y N	Y N	Y N	
Average Fidelity (divide total number of "y's"/ 7 and multiply by 100 for percentage)						