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A Conceptual and Applied Analysis of Treating Severe Problem Behavior and Reducing The Need for Emergency Interventions

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A CONCEPTUAL AND APPLIED ANALYSIS OF TREATING SEVERE PROBLEM BEHAVIOR AND REDUCING THE NEED FOR EMERGENCY INTERVENTIONS

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ABSTRACT

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Special education teachers are tasked with ensuring the implementation of a free appropriate public education, which might also include supporting students who demonstrate severe problem behavior (SPB). Often, students with emotional and behavioral disorders are likely to engage in SPB in various forms such as physical aggression and property destruction. While definitions surrounding the term SPB vary, there is a general consensus within the field for interventions to address these types of dangerous behaviors. Unfortunately, students who demonstrate similarly concerning behavior are likely to experience some type of emergency intervention such as physical restraint or seclusion. These practices are problematic as they are associated with various physical (e.g., death) and mental health conditions (e.g., trauma). This study included three students with emotional behavior disorders in a public school setting who had a history of SPB and previous experience with restraint and/or seclusion procedures. Through implementation of a multiple baseline across behaviors design, SPB was assessed through a practical functional assessment and subsequent treatment which included skill-based treatment within an enhanced choice model (ECM). Each participant demonstrated a reduction in SPB responses throughout the treatment phases in comparison to elevated SPB in the baseline condition. Further, this study demonstrated an increase in emissions of functional communicative responses that gradually became more complex over time. Results of this study suggest that through the use of the ECM, participants' SPB was decreased by teaching functional

communicative responses. Further, this study demonstrated that through the use of the ECM, physical management and prompting procedures were not necessary. This dissertation presented associated findings in addition to social validity measures from school-based staff who observed each phase of assessment and treatment.

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DEDICATION

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ABA: Applied Behavior Analysis

EBD: Emotional and Behavioral Disorders

ECM: Enhanced Choice Model

ED: Emotional Disturbance

FA: Functional Analysis

FBA: Functional Behavior Assessment

FCR Functional Communicative Responses

IDEA: Individuals with Disabilities Education Act

IISCA: Interview Informed Synthesized Contingency Analysis

OCR: Office for Civil Rights

PFA: Practical Functional Assessment

SBT: Skills-based treatment

SWD: Students with Disabilities

USDOE: United States Department of Education

CHAPTER I

INTRODUCTION

Who Are Students with Disabilities?

Since the inception of special education through the passage of the Education of All Handicapped Children Act of 1975, later renamed and hereafter referred to as the Individuals with Disabilities Education Act (IDEA, 2004), the federal government requires the education of all students with disabilities (SWDs) an opportunity to receive a free and appropriate public education (FAPE). In addition to parent advocacy, IDEA came on the heels of Brown v. Board of Education (as cited in Skiba et al., 2008) and although it is considered an educational law, it was very much a part of the civil rights movement. In particular, the IDEA was developed to provide equal access to education for SWDs and reduce the effects of segregation (Losen & Welner, 2001). In the original authorization of the IDEA (1975), Congress aimed to provide SWDs with specific rights and protections to ensure access to an equitable education. In fact, prior to the passage of the IDEA, SWDs were often denied access to schooling and had limited opportunities to learn new skills. Fortunately, through the initial passage and subsequent authorizations, much progress has been made. According to the National Center for Educational Statistics (NCES, 2022), SWDs are considered a group of individuals who receive special education services under the IDEA. Students with disabilities represented 7.2 million or 15% of students served in public schools as of the 2020-2021 school year. While states were allowed to expand the range of ages served, IDEA requires states to at least provide special education services for eligible individuals ages 3-21 (NCES, 2022). Under the IDEA, 13 areas of eligibility

have been identified and describe eligible students as having disabilities that adversely impact their educational performance and therefore require special education and related services (NCES, 2022).

Requirements of the Individuals with Disabilities Education Act

The intention of the IDEA (2004) was to provide parents with a variety of protections, a guaranteed education for their child with a disability, and funds for states to implement. To deliver on these requirements, districts were required to develop what is called an individualized education program (IEP). Although the "P" in IEP is sometimes referred to as a "plan," this is not the case. Rather, the IEP acts as a vehicle to ensure that students receive an education that is both free and appropriate. Specifically, it is a written document that includes a statement of present levels of achievement and functional performance, how one's disability impacts them in the general education curriculum, a statement of goals, and a statement as to how those goals would be met through either special education and related services or supplemental aids. All of this is provided to students at no expense to the family regardless of the severity of the disability. This particular concept is referred to as the "zero reject" requirement and requires that local schools might not turn away any SWDs regardless of the severity of their disability (IDEA, 2004). Through the development of an IEP, districts are required to focus on the SWD by carefully identifying current strengths, weaknesses, unique disability related needs, and potential for growth (see Endrew F. v. Douglas County School District, 2017). This might include various domains such as academic skills (e.g., reading and arithmetic), communication and socialization skills (e.g., turn taking), and social, emotional, and behavioral skills (e.g., direction following; Harmon et al., 2020).

To develop the specific written statement known as the IEP, IDEA (2004) identified specific team members required to draft such a document including the parents of the child, at least one general education teacher, at least one special education teacher or provider (e.g., Speech-Language Pathologist), a district representative who could allocate resources, and an individual who could interpret instructional implications of evaluations, and, when appropriate, the child with a disability. Based on the unique needs of students with disabilities, IEP teams could also include additional members with knowledge or special expertise regarding the student. In thinking about students with disabilities, needs might present differently and might require additional expertise. For instance, students with physical impairments (e.g., cerebral palsy) might require a physical therapist and occupational therapist on their IEP team. In contrast, students with emotional and behavioral disorders might require the support of school psychologists and behavior analysts. Due to the unique needs of SWDs, the IDEA developed an eligibility system to ensure access to FAPE.

Behavioral Requirements of the Individuals with Disabilities Education Act

Through subsequent reauthorizations of the IDEA (e.g., 1997, 2004), legislators identified that problem behaviors were likely associated with specific disabilities (e.g., emotional disturbance [ED]). Consequently, this resulted in language being added to IDEA in 1997 that requires IEP teams to consider the use of positive behavioral interventions and supports (PBIS; 20 U.S.C. §1414(d)(3)(B)(i), IDEA, 2004). In 2016, the U.S. Office of Special Education and Rehabilitation Services (U.S. Department of Education [USDOE], 2016) issued guidance and described PBIS as evidence-based behavioral interventions and supports that might include "school-wide, small group, and individual behavior supports that use proactive and preventative approaches, address the underlying cause of behavior, and reinforce positive behaviors" (p. 5).

In addition to the need to consider the use of PBIS, the IDEA (2004) also added discipline protections to prevent SWDs from being arbitrarily removed from their educational environments. Of critical importance to SWDs is the district's requirement to conduct a manifestation determination review (MDR) after a change of placement has occurred. This process occurs when a student has been removed for more than 10 school days from their current placement and requires the district and IEP team to consider whether the behavior that led to the removal was a result of the student's disability. Based on the findings of the MDR process, a student might be entitled to return to their placement if the IEP team did indeed conclude the problem behavior was a manifestation of their disability. These types of discipline protections are afforded to all eligible students under the IDEA and it is important to also understand how many students have been granted these procedural safeguards.

Students with Disabilities: The Numbers

During the 2020-2021 school year, approximately 7.2 million students ages 3-21 received special education services under the IDEA (NCES, 2022). This accounted for almost 15% of all public-school students. While most students served under the IDEA (2004) receive services through a specific learning disability (SLD) eligibility, the IDEA also recognized 12 other areas of eligibility. While this area is associated with academic impairments (e.g., inability to read), other areas of eligibility have been associated with impairments in social, emotional, and behavioral functioning as outlined by the IDEA eligibility rules: autism (ASD), developmental delay (DD), intellectual disability (ID), traumatic brain injury, and ED. For instance, ASD eligibility through IDEA requires that students demonstrate a disability that significantly impacts their social interactions in addition to resistance to environmental change or change in daily routines. Emotional disturbance criteria require characteristics such as an inability to build or

maintain satisfactory interpersonal relationships with others or inappropriate types of behavior under typical circumstances (IDEA, 2004).

Rates of problem behavior are well-established across both the general and special education populations. Challenging behaviors such as “inattention, impulsivity, and noncompliance are present in 12% to 20% of students” (Owens et al., 2018, p. 157). Unfortunately, things were only exacerbated by the COVID-19 Pandemic. In July 2022, NCES released a report highlighting the increased rates of problem behavior for all students. During the 2021-2022 school year, 87% of respondents indicated the pandemic had negatively impacted student social-emotional development (NCES, 2022). Additionally, behavioral concerns were also reported as negatively impacted by 84% of schools. This included problem behaviors such as misconduct, disrespect toward staff, rowdiness, and inappropriate use of electronics (NCES, 2022).

Some areas of eligibility experienced much more frequent rates of problem behavior according to a study conducted by the USDOE (Gonzalez, 2006). In the National Longitudinal Transition Study-2, the USDOE found that 61% of students with ED were found to argue in class compared to 42% of their peers with SLD. Additionally, the study found that 40% of students with ED were reported as having difficulty controlling their behavior in class compared to only 20% of their peers with low incidence disabilities such as hearing and visual impairments.

What Is Severe Problem Behavior?

As IEP teams (e.g., guardian, general education teacher, special education teacher/provider, district representative) are required to address all unique disability-related needs, IEPs must also proactively address problem behaviors that could include physical aggression and property destruction (Markelz & Bateman, 2021). Unfortunately, these types of

severe behaviors have increased in specific populations (e.g., autism) and have resulted in the need for medical interventions that fall outside of the scope of special educators (Mandell et al., 2008). Specifically, students with ASD are at greater risk for psychiatric hospitalization in comparison to other disabilities (Mandell et al., 2008). Often, this is due to demonstrating behaviors considered aggressive and self-injurious. Alarmingly, Mandell et al. (2008) found "that the risk of hospitalization increased over time…(and) some groups of children may be increasingly hospitalized" (p. 4). Further, in a recent survey of nearly 1900 teachers, 70% of respondents noted they had seen an increase in disruptive behavior within their classrooms as of late (Board, 2019).

Some of these behaviors have been termed severe problem behaviors (SPB) and include descriptions that range from non-compliance (e.g., refusing to follow a direction) to serious bodily injury (e.g., loss of vision). Due to the variability and vagueness in these descriptions, it is critical to identify what exactly constitutes SPB, particularly from a radical behaviorist perspective, and what types of students might present with such. Further, as SWDs often present with SPB, it is important to understand what laws govern school personnel's interaction with students who present with these behaviors.

How Can We Address Severe Problem Behaviors Through Applied Behavior Analysis?

As the IDEA (2004) mandated the use of practices based in evidence, severe problem behavior has strong empirical support for intervention through the field of applied behavior analysis (ABA). These types of interventions, including PBIS, are derived from the science of ABA, which focuses on the application of scientifically validated procedures (e.g., reinforcement) to make meaningful improvement to an individual's life (Baer et al., 1968). From this field have come numerous behavioral interventions (e.g., functional analysis, token

economies, etc.) that are uniquely suited to address SPB (Cooper et al., 2020) within a classroom setting. In addition to the strong empirical support for use of these interventions on SPB, there has been an increased focus on training educators in approaches based in ABA within teacher preparation programs (Loiacono & Allen, 2008). For instance, New York State required coursework on evidence-based practices (EBP; e.g., ABA) for supporting students with autism (Loiacono & Allen, 2008). By having access to EBP, educators can ensure they are making progress toward the intended outcome. With that being said, the opposite remains true when opting to utilize practices not empirically supported.

What Are Potentially Harmful Responses to Severe Problem Behaviors?

Despite access to evidence-based interventions, SWDs are disproportionately restrained and secluded within their classrooms as evidenced by a recent civil rights data collection from 2017-2018 (USDOE, 2020). These types of responses were defined through a questions and answers document (USDOE, 2022) as practices that "should not be used except in situations where a child's behavior poses imminent danger of serious physical harm to themselves or others" (p. 10). Within this questions and answers document, the office defined physical restraint as "a personal restriction that immobilizes or reduces the ability of a student to move their torso, arms, legs, or head freely" (USDOE, 2022, p. 54) while seclusion was considered "involuntary confinement of a student alone in a room or area from which the student is physically prevented from leaving. (p. 54). Even though SWDs (IDEA eligible) only represented 13% of the student population, they were subject to 80% of physical restraint instances reported to the federal government (USDOE, 2020). These types of interventions could have deadly and harmful outcomes (Kutz, 2009); therefore, educators need access to behavioral interventions that address dangerous behavior in an effective manner. Further, this topic has been the focus of the USDOE

as of late. For instance, in July 2022, the USDOE's Office for Civil Rights (OCR) and Office of Special Education and Rehabilitative Services issued new guidance to support SWDs and inappropriate use of discipline to address SPB (e.g., *Supporting Students with Disabilities and Avoiding the Discriminatory Use of Student Discipline under Section 504 of the Rehabilitation Act of 1973*).

To address and reduce the current rates of restraint and seclusion, it is critical that educators have access to interventions that are effective, safe, and humane. Therefore, the principal investigator utilized a radical behaviorist framework to propose a potential remedy through this study.

What Theoretical Framework Would Guide This Study?

To ensure the principal investigator could encapsulate all forms of behavior (e.g., private events, operant behavior), a radical behaviorism perspective was used to understand SPB and how educators respond to such behavior. Radical behaviorism was developed by B.F. Skinner (1989) and has been described as "the philosophy of a science of behavior treated as subject matter apart from internal explanations, mental or physiological (p. 122). Radical behaviorism is suited to guide our conceptual and applied analysis of behavior as it allows us to consider all forms of behavior, which is important given the vague definition of SPB (Johnston, 2021). For example, later the principal investigator reviewed how various fields defined drastically different behaviors when utilizing the term SPB. Additionally, the principal investigator utilized this lens to analyze the vague legal landscape (e.g., FAPE) impacting students who demonstrate such behaviors. Regarding IDEA (2004), radical behaviorism is important in understanding this type of work because it also supports the notion that some behaviors might not be visible to the naked eye and should be considered private events (Skinner, 1969). Despite radical behaviorism

acknowledging all types of behavior (e.g., both private events and observable behaviors), the principal investigator aimed to identify approaches to SPB based on empirical evidence and consistent with radical behaviorism's requirement to rely on evidence only from "publicly observable events" (Johnston, 2021, p. 184).

Statement of the Problem

In the 2004 reauthorization of the IDEA, Congress included a new provision requiring that interventions being utilized, including behavioral supports, be based on peer-reviewed research to the extent practicable (Pennington, 2022). Interventions derived out of the field of PBIS, and ABA in particular, are well established and have "been used to improve outcomes for individuals with support needs for over 70 years (Pennington, 2022, p. 315). Additionally, ABA has been a hallmark of special education programming (e.g., functional behavior assessment, token economies) and has been demonstrated as effective across various eligible students (e.g., autism, traumatic brain injury; Pennington, 2022). Despite there being well-established means to address SPB through procedures such as functional analysis and function-based interventions, restraints and seclusions continue to be disproportionately utilized against SWDs (USDOE, 2020). Further, students who have been identified as having an emotional or behavioral disorder or on the autism spectrum are most likely to experience these procedures (Van Acker et al., 2021).

This is quite alarming as use of these types of procedures could and have resulted in death or serious injury of students (Kutz, 2009; Van Acker et al., 2021). For example, Holden and Nunno (2019) identified that between 2003 and 2017, at least 28 students died after contact with physical restraint. Despite the obvious concerns, there continues to be no federal mandate regulating use of these practices nor a system to identify deaths or injury related to restraint and

seclusion (Van Acker et al., 2021). Some pieces of legislation have been proposed in Congress but none have been cemented into federal law. Due to limited regulations at the national level, it is imperative that special educators and families of students with SPB have access to interventions that might reduce the need and risk related to use of restraint and seclusion.

Significance of the Study

Due to significant attention and concern being placed on emergency interventions such as restraint and seclusion, there has been extensive discussion on the appropriateness of these practices. Focus should be paid to students with emotional and behavioral disorders and other students who demonstrate dangerous SPB due to an increased likelihood of coming into contact with them. For example, students with EBD are one group of students who are most likely to be restrained or secluded (Van Acker et al., 2021) in comparison to other groups of SWDs (e.g., hearing impaired). Additionally, French and Wojcicki (2018) found that restraint and seclusion were even more likely for younger students with EBD in comparison to their older peers. Therefore, it is critical to identify an intervention that could reduce the need for such. One promising intervention is the enhanced choice model (Hanley et al., 2014). Through such identification, this single subject design study potentially generates multiple points of significance. First, the enhanced choice model is relatively new with a sparse body of literature evaluating it explicitly. While the enhanced choice model is based on a solid body of research due to being considered a procedural deviation from the skills-based treatment model (Hanley, 2012), limited literature examined its impact on students within self-contained classrooms. Secondly, this study assessed whether use of the enhanced choice model could reduce the need for students to engage in SPB. Additionally, it might have impacted the student by allowing them increased access to learning opportunities. Further, through social validity measures, I assessed

the potential for a reduction or elimination of a need to utilize emergency procedures such as restraint and seclusion as a secondary variable. Lastly, this study might provide special education teachers an option to more effectively support students who demonstrate significant and complex behavior, which in turn might result in a decrease in teacher stress and associated health outcomes.

Purpose of the Study

The purpose of the study was to identify the effectiveness of the enhanced choice model in reducing the frequency of severe problem behaviors within school-based settings. While there has been extensive literature regarding the procedure from which it has evolved (skills-based treatment; (Hanley et al., 2014), this study aimed to add to the current limited knowledge base regarding the enhanced choice model. Further, this study aimed to assess social validity of practitioners who witnessed said procedures and its ability to impact rates of restraint and seclusion during treatment. Lastly, this study taught functional replacement skills in lieu of problem behavior, which is considered socially significant.

Research Questions

This research aimed to improve and expand current knowledge related to the enhanced choice model. To address these deficits in the literature, the following questions guided this research study:

Q1 Does the implementation of the enhanced choice model reduce rates or intensity of severe problem behavior?

Q2 Does the implementation of the enhanced choice model increase rates of functional communicative responses and tolerance responses?

Q3 Do practitioners find an enhanced choice model acceptable within the school setting?

Definition of Terms

Applied Behavior Analysis. Study of socially meaningful human behavior and it's change through the application behavioral principles (e.g., positive reinforcement; Pennington, 2022).

Emotional and Behavioral Disorders. A common term used to encompass various behavioral and emotional difficulties that may be associated with various psychiatric or psychological diagnoses. Emotional behavioral disorder is also used synonymously with the special education eligibility under the IDEA (2004) of emotional disturbance (Riden et al., 2022).

Functional Analysis. A derivative of functional behavior assessment that allows an individual to ascertain with the highest level of certainty as to why an individual is engaging in a specific behavior (Cooper et al., 2020).

Functional Behavior Assessment. An umbrella term encompassing a series of procedures that allow for the identification of circumstances leading up and following problem behavior and often the potential purpose (Pennington, 2022)

Physical Restraint. When an individual (e.g., teacher) applies forceful contact such that it restricts or immobilizes another individual (e.g., student) from moving their limbs (e.g., arms, legs, torso; USDOE, 2022).

Positive Behavior Interventions and Supports. Evidence-based strategies and interventions used to support prosocial behavior and subsequently reduce problem behavior (USDOE, 2022).

Practical Functional Assessment. An interview-informed form of functional analysis that allows for a synthesis of multiple reinforcers (Hanley et al., 2014).

Seclusion. When an individual is prevented from leaving a space or are confined to a specific area (e.g., classroom; USDOE, 2022).

Skills-Based Treatment. An intervention based off a practical functional assessment that focuses on teaching functional communication skills, toleration and denial skills, and appropriate replacement behaviors (Hanley et al., 2014).

CHAPTER II

REVIEW OF LITERATURE

Historical Overview of Special Education Law and Key Requirements

The Individuals with Disabilities Education Act (IDEA, 2004) identified six key principles that must be met to be in compliance with the law (Markelz & Bateman, 2021). Arguably the most important and litigated component of IDEA was the requirement to provide eligible students with FAPE (Yell & Bateman, 2019). Because the term "appropriate" is quite ambiguous, its definition and application have been the center of various hearings including the Supreme Court case Endrew F. v. Douglas County School District (2017); appropriate education for a SWD should be individualized through the IEP and allow the student to "make progress appropriate in light of the child's circumstances" (p. 11). Despite the term appropriate being ambiguous, the 'free' component of FAPE required that parents and students receive any necessary special education services designed to meet their unique needs at no cost to them within their public school district. It is important to note that prior to delving into the major requirements of IDEA, some of the components were quite perplexing to those that might identify as a radical behaviorist. Because IDEA was drafted by legislators, radical behaviorists argued that vague terms (e.g., appropriate) were not operational. Further, radical behaviorists argued these terms took meaning only by identifying what evoked the term and what impact it might have had on a verbal community (Johnston, 2021). For example, what might be considered appropriate for one family who comes from a lower socioeconomic status might vary drastically

to another family that comes from a higher socioeconomic status. These differences in income might lead to families placing a different magnitude of reinforcement on ensuring their child receives an appropriate level of services in comparison to another.

To become eligible for special education services, IDEA (2004) requires a non-discriminatory evaluation. Eligible students can qualify for services through 13 different areas of disability—traumatic brain injury, autism spectrum disorder, emotional disturbance, intellectual disability, specific learning disability, other health impairment, speech or language impairment, visual impairment including blindness, deafness, hearing impairment, deaf-blindness, orthopedic impairment, and multiple disabilities—through an evaluation process that is neither biased toward individuals or groups of students (Markelz & Bateman, 2021). Upon review of the federal regulations, there are also specific procedural and substantive requirements when conducting a nondiscriminatory evaluation including but not limited to a comprehensive evaluation of all suspected disability areas and domains, evaluations being conducted by trained staff, assessments conducted in a child's native language, and use of multiple assessment tools or sources (Markelz & Bateman, 2021).

The IDEA (2004) also required that parents be involved throughout this process including the development of the IEP. Parents and their children are afforded a variety of rights and protections throughout this entire process, described as procedural safeguards (commonly referred to as parent rights). In fact, parental participation has been at the forefront of all IDEA reauthorizations (1990, 1997, 2004) and various case law (e.g., Doug C. v. Hawaii, 2013), thereby highlighting that meaningful parent participation was not only mandated but necessary throughout the IEP process (e.g., eligibility, goals, services, placement). In the Ninth Circuit Court, Doug C. v. Hawaii (2013) affirmed parents had a right to attend an IEP meeting including

potentially violating procedural requirements such as timelines, to ensure their meaningful participation and input when addressing substantive issues about their child's academic, behavioral, and social/emotional needs. Further, procedural safeguards sought to bolster parent participation and address any potential concerns that might arise throughout the IEP process. To provide parents with the opportunity to "seek review of any decisions they think inappropriate" (Honig v. Doe, 1988, p. 598), IDEA provided families with four layers of protection including prior written notice and consent (Regulation 34 C.F.R. § 300.503[b]), access to educational records (Regulation 34 C.F.R. § 300.501 [a]), independent educational evaluations (Regulation 34 C.F.R. § 300.502 [a]), and dispute resolution options (Regulation 34 C.F.R. § 303.430; Markelz & Bateman, 2021).

Notably, special education came on the heels of Brown v. Board (as cited in Yell & Christle, 2017), a major court case that addressed segregation by race within public schools. Like Brown v. Board, IDEA (2004) also aimed to ensure segregation based on ability did not occur within schools (Yell & Christle, 2017). Within special education, the IDEA also supported integration of special education students with their general education peers through the least restrictive environment (LRE) requirement. Simply put, this component of the law required that districts educate disabled students, as much as possible, with their nondisabled peers by utilizing various supports outlined within the IEP (IDEA, 2004). To conceptualize this further, LRE is often described as providing students with a continuum of educational placements, including the general education classroom with special education supports, by providing services in this classroom (least restrictive), self-contained classrooms (moderately restrictive), and hospitalized or residential settings (most restrictive). Because of the requirement to provide a continuum of options as to where education might occur, LRE was often subject to parent and district

disagreement (Yell et al., 2020). This might be due to IDEA and Congress having strong deference for SWDs' involvement with their non-disabled peers (Yell et al., 2020). The law made this a 'right' for all children with disabilities. Consequently, placement in one's LRE has been a contested topic and the subject of numerous lawsuits (Kauffman et al., 2022). One example of this type of litigation was demonstrated in Roncker v. Walter (1983), in which the Sixth Circuit Court identified various factors that should be considered when identifying whether a placement was more restrictive than necessary (e.g., Roncker test). These types of tests have been adopted by circuit courts to help determine the appropriateness of a placement (Tzucker, 2022). In Roncker v. Walter, the Supreme Court identified a strong preference to educate SWDs within the general education environment. However, it also noted that some students were unable to benefit from these types of settings. This particular test required one to identify whether or not "the services which make that placement superior could be feasibly provided in a non-segregated setting" (Tzucker, 2022, p. 1278).

As circuit courts are free to develop their own standards, additional legal tests exist regarding the topic of LRE including the Two-Prong Test and the Balancing Test (Tzucker, 2022). The Two Prong Test developed out of the Fifth Circuit in 1989 and focused on a child with Down syndrome who was placed in a self-contained special education classroom (Tzucker, 2022). Parents alleged that placement into such violated IDEA (2004). To determine appropriateness, a two-part test was developed that first asked whether or not the child could be educated 'satisfactorily' without use of supplemental aids or services. If the answer was "no" to the first part, then the second part asked whether the child had been included with non-disabled peers to the maximum extent appropriate (Tzucker, 2022). Some additional factors were considered in this test as well such as identifying whether the child was receiving educational

benefit and what impact the presence of a SWD had on the general education environment and other students. The Balancing Test was part of the Ninth Circuit and included four parts (Tzucker, 2022). To assess placement and LRE, the following factors were considered: "(1) the educational benefits of placement full-time in a regular class; (2) the non-academic benefits of such placement; (3) the effect [the student has] on the teacher and children in the regular class; and (4) the costs of mainstreaming [the student]" (Tzucker, 2022, p. 1278). This test in particular has been considered holistic in comparison to the Two Prong Test and the Roncker test (Tzucker, 2022).

The last requirement of IDEA (2004) is the actual implementation of special education through the IEP. As described by Markelz and Bateman (2021), the IEP is both a process and product within IDEA. Like the other five components, both procedural and substantive requirements surround the IEP. Procedurally, the IEP should be a collaborative process for both the district and parents, and as appropriate the student themselves, to engage in creating an outline of special designed instruction and related services. Substantively, the IEP has various required sections including the student's present levels of performance, annual goals, how said goals would be measured, and a projected date for start and stop of services. Additionally, the IEP required the following be identified: what programs and services to be provided, how much time would be spent outside of general education classrooms, what accommodations are necessary for assessment participation, and identification of postsecondary goals (if applicable). When considering the implementation of the six major pillars of IDEA, unique considerations have often been applied to students who demonstrate SPB within the schoolhouse. The next section focuses on these IDEA tenets as they relate to SWDs who demonstrate SPB within the classroom.

Legal Requirements That Impact Problem Behavior

Because schools are expected to be safe spaces for learning to occur, school staff have been designated to assume some parental functions (e.g., maintaining safety and supervision of child in absence of guardians) that might include addressing student behavior—a concept that has been termed 'loco parentis' (Markelz & Bateman, 2021; Smith & Yell, 2013). Consequently, loco parentis might include application of school discipline (e.g., suspension) to both students with and without disabilities by staff. However, it is important to note that IDEA (2004) did provide students with disabilities with additional protections and remedies to ensure FAPE (e.g., requirement of schools to conduct MDRs upon change of placement when issuing discipline), especially when a behavior was directly related to a student's unique disability needs (Markelz & Bateman, 2021). Due to the mandate of ensuring FAPE, which might include addressing behavioral needs, student behavior and the implementation of behavioral supports have often been the subject of various guidance from the federal government in addition to case law and similar due process claims (e.g., circuit court cases).

In 1997, Congress reauthorized IDEA (Dragoo, 2017) to include the term 'positive behavioral interventions and supports' (PBIS). This term derived out of the work of Carr et al. (2002) and originated out of the field of applied behavior analysis (ABA) and focuses on the use of primarily reinforcement-based interventions (Carr et al., 2002; Carr & Sidener, 2002). Within the act, legislators added language to mandate that an IEP should consider the need for PBIS when a student has behavior needs that impact their learning or the learning of others (20 U.S.C. § 1414(d)(3)(B)(i)). Due to the glaring ambiguity of the term PBIS, the Federal Office of Special Education (USDOE, 2016) also issued guidance in which they clarified that PBIS should also be considered as part of a tiered model of support for students demonstrating challenging behavior.

Within this letter, the department went as far to say that if a student's behavioral needs were not being met without clear consideration of the need of PBIS, this could also constitute a violation of the child's FAPE (see above for definition; Kern & Yell, 2020). While the term PBIS was quite broad, the 1997 reauthorization included specific language requiring IEP teams to conduct functional behavior assessment (FBA) and implementation of behavior intervention plans (BIP; including reviews or modifications to plan, if necessary) when a disciplinary removal resulted in a change of placement greater than 10 days as a direct result of the child's disability. A review conducted by Zirkel (2017) identified 91 rulings in which the implementation of FBA and BIP were the subject of due process.

In addition to case law that reviewed the use of FBA and BIP in schools, legal tests have been established within both the appellate and supreme courts to help determine whether or not students need more restrictive placements including those with SPB. The development of these legal tests might be attributed to students who are identified under the eligibility of emotional disturbance as one of the most involved groups in due process hearings (Schanding et al., 2017) with estimated reports between 13% to 20% (Mueller & Carranza, 2011). Further, one recent study identified placement and LRE as subject to due process hearings in approximately 20% of cases reviewed (Blackwell et al., 2019). One specific legal test that exists and impacts students with SPB includes a three-part test developed in Hartmann v. Loudoun County Board of Education (1997). Specifically, this legal test developed a three-pronged approach that allowed for a more restrictive placement outside of a general education classroom when a "student demonstrates significant disruptive behavior" (Bolourian et al., 2020, p. 165). The first part of the test required a court to consider whether a SWD would not receive educational benefit from being placed in the general education environment. Second, the test required a district to consider

if any benefit from being in a general education environment would be significantly outweighed by any type of benefits that could only be obtained in more restrictive placement. Lastly, the third part of the test allowed for removal from the general education environment if the student was a 'disruptive force' to the classroom (Hartmann v. Loudon County Board of Education, 1997).

In addition to placement and LRE decisions made by IEP teams, students might also be subject to judicial relief through what has been termed a 'Honig Injunction' (Honig v. Doe, 1988). In this case, the Supreme Court noted that students who were significantly dangerous could be removed through "judicial determination of dangerousness" (Zirkel, 1999, p. 113). This was the first suit to address discipline through the U.S. Supreme Court and examined the SPB of two students who presented as 'dangerous.' Since then, the court has not addressed behavior in over 30 years, which has led to many differences and disputes regarding what constitutes SPB (Dalton, 2019). Due to limited litigation at the federal level, it was important to clarify for the purpose of this paper what is and is not considered SPB.

What Constitutes Behavior?

Since this study operated out of a radical behaviorist conceptual framework, it was important to clarify what constitutes behavior as outlined by the pioneering work of B.F. Skinner (1938). In the most technical sense, behavior has been defined as "the movement of an organism or of its parts in a frame of reference provided by the organism or by various external objects or fields" (Skinner, 1938, p. 6). Further, radical behaviorism also recognizes more complex forms of behavior not easily identified through the naked eye (e.g., thoughts and feelings) and terms these specifically as private events; therefore, these types of behaviors are influenced by similar external variables (Skinner, 1974). While there might be consensus within the behavioral

community as to what constitutes the term ‘behavior,’ the same cannot be said for ‘severe problem behavior.’

Defining Problem Behaviors

Horner and Yell (2017) clarified what constituted ‘problem behaviors’ by determining it was “any behavior that impedes the learning of a student or others” (p. 58). Further, they went on to include specific examples (e.g., disruption, noncompliance, and withdrawal) that were functional but yet were also “barriers to educational success” (p. 58). As broad as this term might be, it encompasses a spectrum of behaviors that might include both internalizing (e.g., head down and ignoring directions) and externalizing (e.g., yelling profanities) examples. However, when thinking about the term ‘severe problem behavior,, how do we delineate behaviors that are dangerous versus ones that are merely challenging or annoying to a teacher?

Defining Severe Problem Behaviors

The term ‘severe problem behavior’ (SPB) might rather evoke emotional perceptions and visualizations of behavior considered socially unacceptable. However, when tasked with defining the term, various definitions range from mild to severe behaviors. When thinking about what might or might not constitute SPB, one’s conceptual understanding and background in addressing challenging behavior might lead to definitions that include fewer intensive behaviors. For example, Knight et al. (2019) utilized the term SPB within the title of an article and included example behaviors such as disrobing, “playing dead,” non-compliance, urination outside of the restroom, and absent without permission. While these behaviors might be considered problematic, particularly due to the safety concerns associated with leaving an area without permission, one might expect to see behaviors that often result in physical harm or property destruction when describing SPB (e.g., self-injury, scratching, and leaving marks). In fact, a

recent review of publication trends conducted by Dunlap and Lee (2018) identified a dramatic shift in the *Journal of Positive Behavior Interventions*, which initially largely focused on SPBs defined by acts of physical aggression, severe tantrums (e.g., major property destruction), self-injury, and specifically excluded disruptive behaviors (e.g., noise-making, minor aggressions, out of seat behaviors). In their study, Dunlap and Lee reviewed the first 12 issues of the journal and identified 16 separate articles that met inclusion criteria identified in the definition of SPB. Specifically, the authors defined SPB as physical aggression, self-injury, major property destruction, and severe tantrums (e.g., throwing objects, screaming). The definition explicitly excluded "disruptive behaviors such as noise making, out of seat, inappropriate vocalizations, minor aggressions (e.g., touching), and other nonviolent topographies" (Dunlap & Lee, 2018, p. 27). Despite a high rate of inclusion of SPB-related content toward the journal's inception, the most recent 12 issues only included one article that met the definition of SPB (Dunlap & Lee, 2018). Variation in the term also occurs within the medical field as well. A recent article in the *Journal of the American Academy of Child and Adolescent Psychiatry* defined SPB by including behaviors such as self-injury, aggression, disruption, vocalizations, and property destruction (Strohmeier et al., 2020). Similar to educational journals such as *Journal of Positive Behavior Interventions*, Strohmeier et al. (2020) presented an inclusive definition of behaviors one might not necessarily consider severe (e.g., vocalizations). Because of the inconsistencies across journals, this dissertation adopted the definition of SPB as

> culturally abnormal (behavior(s)) of such intensity, frequency or duration that the physical safety of the person or others is likely to be placed in serious jeopardy, or (behavior) which is likely to seriously limit the use or, or result in the person being denied access to, ordinary community facilities. (Nicholls et al., 2020, p. 4)

With this definition in mind, next I elaborate on the impact SPB has had within the classroom for both students and staff.

Severe Problem Behaviors in Schools

Unfortunately, schools are seeing an increase in disruptive behaviors within the classroom (Tzucker, 2022). In one study by Simó-Pinatella et al. (2019), a systematic review was conducted on school-aged children and identified that challenging behavior might be prevalent from 48% to 94% of children. Specifically, Simó-Pinatella et al. noted that SPB such as physical aggression was found in 11% to 85% across the 20 different studies reviewed and self-injury was noted in 5% to 80%. Additional studies reviewing prevalence were mixed, however. For instance, some studies found younger children were more likely to demonstrate aggression than were older children (Mazurek et al., 2013); while other studies (e.g., Esteves et al., 2021; Nicholls et al., 2020) found no relationship. Nicholls et al. (2020) identified the prevalence within a segregated special education school serving children with severe disabilities (e.g., autism spectrum disorder and intellectual disability) and found that self-injurious behavior (SIB) occurred in 36.4% of children and aggressive, destructive behavior was seen in 30.2% of children. Another study found that children identified with intellectual disabilities were three times more likely to engage in SPB in comparison to those without (Dekker et al., 2002). In addition to obvious impacts SPB might have (e.g., tissue damage), a more thorough description of the impacts related to restraint and seclusion are addressed in the next section of this paper.

Impacts to Students with Severe Problem Behaviors

Severe problem behaviors could have various impacts on the student directly. Multiple studies demonstrated that students with SPB were more likely to receive a restrictive placement in comparison to students who demonstrated academic disabilities (Frey, 2002; McLeskey et al.,

2012). Students with SPB might have a greater need for specialized instruction (Mitchell et al., 2019). An additional study by Courtney et al. (2004) found that students with ED eligibility were more likely to be placed in restrictive settings in comparison to their peers. Due to potentially increased level of needs, there are various implications within the schoolhouse. For example, children with SPB might face limited opportunities to engage with their non-disabled peers due to placement in restrictive settings (e.g., self-contained classrooms and center-based programs), which could limit socialization with other students who might not demonstrate SPB (McLeskey et al., 2012). For example, this reduced access to a classroom community often equates to fewer social interactions and less opportunities to practice important prosocial skills (e.g., greetings).

In addition to impacting one's social and educational environment, SPB might also lead to involvement in the criminal justice system. Tzucker (2022) highlighted that some criminal statutes might be applied within the school setting. For example, Tzucker noted that in New Mexico, a law prohibits individuals from interfering with the educational process and might result in a misdemeanor charge. In Florida, a similar statute is in place for any individual who disrupts or interferes with the educational environment. Through laws such as these, there is a clear emphasis for schools to maintain order in the learning environment. Unfortunately, SPBs might be considered violations of such laws and might result in criminal charges.

Additionally, students who demonstrate SPB are more likely to receive negative feedback from staff, particularly for students who are Black (Scott et al., 2019). Ultimately, students who demonstrate SPB are likely to encounter discipline (suspension or expulsion), less teacher instruction, and less positive feedback (Scott et al., 2019).

Strategies to Address Severe Problem Behaviors in Schools

Severe problem behaviors in the classroom are commonly addressed in schools through aversive procedures such as restraint and seclusion (Matson & LoVullo, 2008). These practices are considered punitive in nature and intended to decrease the likelihood of behavior occurring in the future. Consequently, such default application of aversive interventions lacks the understanding as to the purpose of the behavior, could often exacerbate SPBs, and, in some cases, might be inadvertently reinforcing the behavior (increasing the likelihood of it occurring again). For example, Favell et al. (1981) demonstrated that the application of physical restraint to individuals identified with an intellectual disability resulted in an increase of problem behaviors (e.g., self-injury).

The use of aversive behavioral procedures, such as restraint and seclusion, have consistently been the subject of controversy, often resulting in debates surrounding the ethical, legal, and practical aspects of these practices (e.g., Foxx & Mulick, 2016; National Institutes of Health, 1989). In addition to the major safety concerns regarding these practices (described later in this paper), students who come in frequent contact with these types of practices are categorically denied access to instruction and risk their right to FAPE. For instance, courts are beginning to see suits against school districts from families alleging that restraint and seclusion might result in a denial of FAPE for their SWD (Cho, 2020). Despite myriad concerns associated with utilizing aversive technologies such as restraint and seclusion, they are quite prevalent across the United States.

The Challenges with Restraint and Seclusion

In 2020, the USDOE's Office for Civil Rights (OCR) released its Civil Rights Data Collection (CRDC) for the 2017-2018 school year. The CRDC represents a survey of public-

school systems and requires them to report various metrics associated with federal civil rights laws (e.g., Americans with Disabilities Act). For the 2017-2018 school year, the OCR collected information from over 17,000 districts and 97,000 schools, which encompassed approximately 50.9 million students. At the start of the 2009-2010 school year, the OCR began to require that school districts collect data on the use of both physical and mechanical restraint in addition to seclusion (USDOE, 2020). Per the CRDC, the definition of physical restraint is "a personal restriction that immobilizes or reduces the ability of a student to move his or her torso, arms, legs, or head freely" (USDOE, 2020, p. 4); conversely, mechanical restraint is considered "the use of any device or equipment to restrict a student's freedom of movement" (USDOE, 2020, p. 4). Additionally, the OCR defined seclusion as "the involuntary confinement of a student alone in a room or area from which the student is physically prevented from leaving" (USDOE, 2020, p. 4). While there are stated differences on what might and might not be considered restraint and seclusion, this paper utilized the federal definitions offered by the USDOE OCR.

During the CRDC 2017-2018 year, approximately 101,00 students were subjected to some type of restraint or seclusion as self-reported by public schools and districts (USDOE, 2020). Specifically, approximately 70,000 students experienced some type of physical restraint, 27,000 were secluded, and 3,000 were mechanically restrained. Additionally, it is important to note that the CRDC emphasized that this total number might not accurately represent the number of students who encountered these types of interventions. Also, approximately 13% of students (6.7 million) were eligible for special education and related services (USDOE, 2020). While students who were IDEA eligible only represented 13% of the school population, they were disproportionately represented in the reported instances of seclusion and physical restraint. In fact, students with disabilities were subject to 80% (56,905 students) of instances of physical

restraint, 41% (1,494 students) of mechanical restraints, and 77% (21,277 students) of seclusions (USDOE, 2020).

Due to the grossly disproportionate rates of both restraint and seclusion, there have been multiple instances of written communication from the federal government surrounding these practices, primarily due to associated risks of physical harm. Because the CRDC did not offer suggestions on the actual application of these types of practices, the OCR and similar agencies have issued guidance in the form of various resources (e.g., Dear Colleague Letters). In 2009, the U.S. Government Accountability Office (GAO; Kutz, 2009) issued a report surrounding seclusion and restraint. This report highlighted a variety of issues associated with these practices. The GAO (Kutz, 2009) concluded no federal laws would prevent the use of seclusion and restraints in either public or private schools. To this day, this remains true (USDOE, 2020). Despite the lack of federal protections, laws have been developed at the state level (e.g., Michigan) to reduce the use of restraint and seclusion specific to emergency situations. In addition to citing limited federal legal requirements, the GAO reported also noted multiple themes surrounding these practices such as being utilized almost exclusively on students with disabilities, practices are sometimes used for non-aggressive behaviors (e.g., non-compliance, yelling), implementers have limited training, and families did not provide consent (Kutz, 2009). The most concerning outcomes referenced by the GAO was these types of practices have the possibility of leading to serious injury and death (see Kutz, 2009 for examples of these cases).

Restraint and Seclusion for Non-Aggressive Behavior

Like Kutz (2009) noted in his first theme, the GAO also shared numerous allegations with the majority involving SWDs. Despite this report being nearly 13 years old, this is still consistent with 2017-2018 CRDC, which demonstrated significant disproportionate rates of

restraint and seclusion on SWDs. Some of the disabilities noted within the GAO report included students who were diagnosed with autism (ASD), attention deficit hyperactivity disorder (ADHD), and posttraumatic stress disorder (PTSD). While some states did have restrictions on when restraint and seclusion might be used (e.g., imminent harm to self or others), the GAO found that often restraint and seclusion were utilized as forms of discipline instead of maintaining safety (Kutz, 2009). For example, one case featured a four-year old child with cerebral palsy who was restrained due to being "uncooperative" during times for restroom use. Additionally, another allegation investigated by the GAO noted a nine-year-old child with learning disabilities was secluded approximately 75 times for minor behaviors such as whistling, waving his hand, and slouching (Kutz, 2009). More recently, in Kerri K. and Jacob K. v. State of California (2019), plaintiffs filed suit against their school district alleging that restraint and seclusion was used in non-emergency situations. Despite California law requiring these practices be used as a last resort safety measure, the parents alleged the district was using these practices to "break (the students) into submission" (Kirkman, 2022, p. 156). In a similar case, Q.T. v Fairfax County School Board out of Virginia, a plaintiff alleged that their son was "secluded more than seven hundred times over the course of seven years…" and at another point was "allegedly physically restrained in the classroom and then placed in a six-by-six foot padded room with a magnetically locked door" for reasons "that did not pose an imminent threat to himself or others" (Kirkman, 2022, pp. 156-157). In Illinois, ProPublica, an investigative journalism group, published a piece regarding approximately 20,000 instances of seclusion over a period of two years (Kirkman, 2022). ProPublica found that over one-third of the captured instances did not contain sufficient documentation to justify said seclusion (Kirkman, 2022).

Untrained Staff and Non-Consent

Kutz's (2009) investigation found that in most of the restraint cases, staff were not appropriately trained, particularly in the application of restraint. For example, one principal testified that a substitute teacher who taped a child to a chair most likely did not have awareness of the district's policy regarding restraint. Similarly, another case involving a teacher's aide resulted in children having their mouths sealed shut with tape due to not being provided training on appropriate classroom management (Kutz, 2009). As a result of this, Congress attempted to pass the Keeping All Students Safe Act multiple times (e.g., 112th Congress, 113th Congress, 114th Congress, 115th Congress). One component of this bill proposed trainings and certifications of staff to prevent the aforementioned concerns from occurring (Kirkman, 2022). Since there are no current federal regulations mandating training on restraint in public schools, it is important to clarify that some states do require training before being able to implement these types of emergency procedures. For instance, in 2016, the State of Michigan codified limitations on seclusion and restraint within schools (Lake, 2021). Specifically, this law specified permissible uses of these practices and other requirements such as reporting, documentation, and training requirements. Regarding the latter, this law required all school staff members be provided with awareness training regarding restraint and seclusion (Lake, 2021). A further training requirement was included in the law by requiring key identified personnel to receive comprehensive training that included first aid, cardiopulmonary resuscitation, and strategies to deescalate SPB (Lake, 2021). Often, to meet some of these requirements, districts employed crisis prevention training programs (e.g., Crisis Prevention Institute; Safety-Care) that included instruction on physical holds and de-escalation strategies. In addition to employing untrained staff, the investigation also noted that many times schools who employed those strategies did not obtain consent prior to

‘foreseeable’ implementation. Specifically, at the time of the GAO report (Kutz, 2009), only 13 states required training on utilizing restraint procedures. Further, 19 states required parents to be notified when physical restraints were utilized. As of 2016, 43 states had some level of regulation regarding these practices (Butler, 2016). Despite this, a lack of training of staff is still frequently cited as a concern within litigation. For instance, in Q.T. v. Fairfax County School Board, plaintiffs alleged that school staff lacked both “training and guidance” and were forced to “assume knowledge and responsibilities for responding to children with disabilities that they profoundly lack[ed]” (Kirkman, 2022, p. 157). This case is a perfect example of needed trainings in both safe usage of emergency interventions in addition to alternatives (Kirkman, 2022) to promote the general welfare of SWDs.

Death By Restraint

The most significant theme noted by the GAO’s report (Kutz, 2009) was that out of the hundreds of allegations reviewed, over 20 resulted in a student death. Out of the 10 highlighted in case review, four resulted in death. From these selected cases, Kutz (2009) noted in all these specific cases, school employees utilized restraint positions that restricted breathing in some manner. For example, one case involved a paraprofessional sitting on top of a child, which ultimately smothered him. The remaining cases employed prone restraints that resulted in the student being kept face down on the floor and ultimately their death. One example of a fatal outcome occurred in a Michigan public school in 2003 when a student with autism suffered a seizure. Following the seizure, the student became uncooperative and was placed in a prone restraint for one hour, which resulted in death (Kutz, 2009). Despite the loss of life, no criminal charges were filed against the staff who implemented the prone restraint in this case.

Since the original GAO account (Kutz, 2009), there has been no official count of death as a result of physical restraint. Despite this, a recent study (Van Acker et al., 2021 reviewed media news reports between the years of 2003-2017 and found at least 28 deaths of children and adolescents as a result of being physically restrained. Just between the years of 2013 and 2017, seven deaths had occurred. Often, these deaths were considered a result of multiple factors but frequently, reasons cited included "lack of adequate training, lack of evidence-based prevention interventions, and lack of supervision leading to the increased use of physical restraint in special education programs" (Van Acker et al., 2021, p. 40). In another tragic death, a teenager being educated at a residential treatment center was pronounced dead shortly after being physically restrained with a chokehold (Van Acker et al., 2021). Further, another study was conducted in 2022 in which the authors identified 79 restraint-related deaths across a 26-year span for children and teens (Nunno et al., 2022). Most importantly, this study asserted that "professional consensus has emerged that restraints are safety interventions that do not effectively teach self-control and that have little or no therapeutic benefit" (Nunno et al., 2022, p. 663); therefore, we should rethink the use of emergency interventions.

Rethinking Emergency Interventions

Due to the potential for harm when utilizing restraint and seclusion, as highlighted by Kutz (2009), there has been an increase in state legislation to reduce use of these practices (Marx & Baker, 2017). Consequently, due to increased attention on the topic, there have also been increased calls for advocacy to develop federal regulations and alternatives to these practices (Gage et al., 2020). Despite these calls to action, restraint and seclusion are supported by the field of special education across various disciplines. For example, various professional associations (e.g., Council for Children with Behavioral Disorders, Association for Behavior

Analysis International) spanning across multiple disciplines have developed position statements outlining the permissible use of these types of emergency interventions. For instance, the National Association of School Nurses (NASN, 2021) issued an updated statement in which they conveyed that restraints and seclusion should only be used when there is imminent danger of serious physical harm to others or self. Further, they suggested that positive behavior supports be utilized within the schoolhouse as well (NASN, 2021). Special educators, as represented by the Council for Exceptional Children (CEC), issued a similar position statement in 2020 in which they shared similar sentiment in only utilizing either procedure as a last resort and in extremely rare instances when a particular behavior poses a threat of harm to self or others. They expanded that these types of strategies "should never be included within Behavior Intervention Plans (BIPs) or Individualized Education Programs (IEPs)" (CEC, 2020, p. 1). The CEC position concluded with a variety of recommendations including a focus on utilizing FBAs and BIPs to support students with the most "significant behavioral… challenges" (CEC, 2020, p. 1). As these recommendations, and similar behavioral interventions, remain consistent between publications across professional organizations (e.g., CEC, NASN) and the USDOE, it is apparent there are empirically supported approaches to reduce the need for these types of emergency interventions. Additionally, as restraint and seclusion do not lead to teaching functionally equivalent replacement behaviors, we must seek alternatives that remove the need to engage in SPB.

In a study by Putkonen et al. (2013), authors found six different factors to reduce the potential need for restraint and seclusion. While this particular study was not conducted within a school, various points might be applicable including ensuring staff are environmentally aware (e.g., aware of student behaviors and pre-cursor behaviors), providing staff development (e.g., training on de-escalation tactics) requiring use of data to make decisions (e.g., event recording),

utilizing the student and their preferences in planning (e.g., conducting preference assessments to identify potential reinforcers), planned antecedent and consequent responses (e.g., functional communication training and prompting), and using information to guide discussions regarding these practices or incidents of behavioral concern (e.g., restorative practices; Putkonen et al., 2013).

Models or packages of interventions based in applied behavior analysis are well suited empirically and should be established as a potential alternative within schools (Robinson et al., 2019). While it is unlikely one strategy could be used as an alternative for restraint and seclusion (Trader et al., 2017), special education teams should consider both preventative and reactive strategies.

Applied Behavior Analysis

The terms functional behavior assessment (FBA) and behavior intervention plan (BIP) were described primarily throughout the literature within the field of applied behavior analysis (ABA), referenced earlier in this paper when describing PBIS. The science of ABA, which has accumulated an expansive base of literature over the past 50 years (Baer et al., 1968), has been used to create socially significant change in behaviors in need of improvement primarily through reinforcement-based procedures and identification of behavioral functions (Baer et al., 1968). While Baer et al. (1968) wrote the seminal article for the origination of ABA as a field, it was heavily influenced on the work of B.F. Skinner and his concept of radical behaviorism. For instance, Morris et al. (2005) posited that Skinner and radical behaviorists' focus was on operant behavioral processes. Operant behavior has been defined as any behavior that is free to be emitted and is impacted by the consequences it encounters. Within school settings, however, ABA might look different based on the unique, individualized needs of students. In fact, an

entire special issue on behavior analysis in the schools was published within *Teaching Exceptional Children* to "demonstrate the flexibility and wide-ranging utility of ABA" (Pennington, 2018, p. 319). Unfortunately, views held by special education professionals consider ABA as "contrived, complex, and controversial" and it is important to clarify what constitutes behaviorally based instructional practices (Pennington, 2018, p. 319). One type of common misconception regarding the use of ABA in schools is its application only to students with ASD (Trump et al., 2018). While there is a strong association between ABA and ASD, most likely due to a combination of factors such as insurance-mandated coverage of ABA services for individuals with this diagnosis and strong parent advocacy groups, it is not only limited to students with this particular diagnosis or eligibility (Trump et al., 2018). For instance, practices such as behavioral skills training are based out of ABA and have been effective at teaching new skills to special education teachers. Another common misconception about ABA is it is a specific set of strategies or interventions (e.g., discrete trial teaching; Trump et al., 2018). Applied behavior analysis is in fact a science and also employs other practices such as data collection procedures that could inform instruction. Through objective observation of behavior, data collection procedures derived out of ABA such as frequency and duration recording could allow special educators to make instructional decisions. Lastly, another common misconception regarding ABA in the schools is confusion between the use of positive reinforcement (described below) and bribery. Reinforcement is a powerful behavioral principle that focuses on teaching new skills through the application of either negative or positive reinforcement. In classrooms, this might be seen as following a prosocial behavior (e.g., sitting in one's assigned seat) with behavior descriptive praise and seeing an eventual increase in the target behavior. On the other hand, bribery is defined as "the promise of a reward before target behavior occurs in an attempt

to influence the individual's behavior" (Trump et al., 2018, p. 385). Unfortunately, students with SPB (e.g., self-injury) have frequently been subject to procedures such as restraint and similar restrictive strategies that do not end up teaching students any new skills or behaviors as they lack reinforcement components (Luiselli, 2004). The following section details basic behavioral principles from the field of ABA and radical behaviorism in addition to how it might appear with school settings.

Reinforcement

The field of ABA describes an event that follows a particular behavior and in turn increases the future likelihood of said, or similar, behaviors as the phenomena of reinforcement (Cooper et al., 2020). This was argued quite extensively as the most important and critical element in changing behavior (Flora, 2004). When a specific stimulus has been added to the environment following a specific behavior and in turn results in an increase, this is considered positive reinforcement (Skinner, 1953). Additionally, when a specific stimulus, typically something aversive or uncomfortable, is removed following a specific behavior and results in a future increase of similar behaviors, this is termed negative reinforcement (Skinner, 1953). While both types of reinforcement are important, it is important to focus on applications of positive reinforcement, specifically in the teaching of new skills (Humenik et al., 2008).

Within school settings, reinforcement is used extensively to teach new behaviors. In 1968, a seminal article by Hall et al. was published in the *Journal of Applied Behavior Analysis* in which the power of reinforcement was demonstrated. In this study, the researchers identified six elementary students who were considered 'disruptive' and identified the need to increase their ability to sit and orient toward the appropriate instructor and engage with activities. Through positive reinforcement in the method of specific praise, a teacher would give specific

feedback and occasionally a physical gesture (e.g., pat on the back) when noticing appropriate displays of the target behavior. Ultimately, the study found that positive reinforcement was effective in teaching and increasing the important study skills (Hall et al., 1968).

Further, by using the principle of reinforcement effectively, educators could also identify sources of reinforcement for problem behavior (Sugai & Simonsen, 2020). Through understanding both positive and negative reinforcement, we can explain why behaviors continue to occur across time and space. For instance, if we can identify that a student is receiving attention from a peer following a crude remark, we can effectively plan interventions to attempt to eliminate or lessen the likelihood that said peer would provide similar attention in the future.

Punishment

Conversely, there are specific methods to decrease the future likelihood of behaviors by following it with a particular stimulus, termed *punishment* (Cooper et al., 2020). While the word punishment might conjure negative connotations associated with chastising or similar vocabulary, the science of ABA utilizes the term to simply describe a way to decrease any behavior. Like reinforcement, the addition of positive and negative simply means the addition of a stimulus (positive punishment) or removal of a stimulus (negative punishment; Cooper et al., 2020). Within schools, punishment practices continue to persist (Katsiyannis et al., 2017). This might include lesser restrictive interventions such as reprimands to more restrictive approaches such as time out. In one such study, Vascelli et al. (2022) examined the effects of a punishment procedure on self-injury within a school setting. Specifically, the 12-year-old student was biting his own hand (e.g., hand mouthing), which resulted in tissue damage. To try and reduce this behavior, the authors engaged in blocking the student from mouthing their hand, provided a reprimand, and then wiped his hand with a handkerchief (Vascelli et al., 2022). Following

repeated exposure to this punishment procedure, the student began to engage less in the SIB of biting his hand.

Three-Term Contingency

To better understand the effects of punishment and reinforcement, ABA utilizes a three-term contingency to describe what occurs prior to and following a specific behavior (Cooper et al., 2020). This contingency diagram demonstrates the critical effects timing has in its effect on future likelihood of behavior (Cooper et al., 2020). When thinking about what occurs immediately prior to a behavior, we describe this as the antecedent (Cooper et al., 2020). Antecedents are important to understand as they allow individuals to identify potential events that might signal a SPB occurring (e.g., presentation of worksheet). On the opposite end of the contingency, we describe the event that follows a particular behavior as the consequence. What determines the term we attribute to this (e.g., reinforcer or punisher) is based on the rates of future behavior after meeting said consequence (Cooper et al., 2020). Through a comprehensive understanding of these terms, particularly consequences, we can identify potential purposes of behaviors.

Functions of Behavior

To better understand why SPB might occur, it is important to clarify the specific purpose or function. Prior to exploring functions of behavior, we briefly review how radical behaviorists understand them. Specifically, radical behaviorism suggests that behavior analysts and educators have an interest in the specific causes of behavior (Skinner, 1953). Further, radical behaviorists are interested in the "analysis if the variables of which behavior may be observed to be a function" (Leigland, 2010, p. 213). As described by radical behaviorism, this analysis leads us to understanding the specific purposes also known as functions of behavior. These functions have

been recognized and described as: “(a) accessing tangibles, including preferred items or activities; (b) accessing attention, such as from peers or educators; (c) escaping or avoiding aversive tasks or activities; and (d) accessing sensory reinforcement (also called automatic reinforcement)” (Robinson et al., 2019, p. 155). Through an understanding of the purpose of SPB, educators are more likely to plan effective and appropriate interventions (Ervin et al., 2001; Iwata et al., 1994). To complete this process however, practitioners should conduct an FBA. Examples and descriptions of each function are listed in Table 1. Through a review of one’s antecedent, behavior, and consequence (ABC) data, educators can begin to identify the function of the behavior (Pence & Peter, 2018).

Table 1

Overview of Common Purposes or Functions of Behavior

Function	Description	Example
Escape/Avoid	Engaging in SPB which results in avoiding or escaping from a particular circumstance, stimulus, or direction.	When given work, Tina engages in self-injury which leads to no longer having to do work
Tangible	Engaging in a SPB which results in obtaining a preferred item or activity.	When Tina pulls her hair, the aide will bring her iPad to calm her down.
Attention	Engaging in SPB which results in high quality interaction with other students or adults in the classroom.	When Tina engages in self-injury, her teacher runs to comfort her
Sensory	Engaging in SPB as it results in obtaining or reducing some type of sensory input (e.g., visually stimulating, pain reduction)	When Tina engages in self-injury, there is a forceful impact that occurs on her skin, and it often leaves a mark.

Functional Behavior Assessment of Severe Problem Behavior

As special educators and school-based professionals are tasked with addressing the needs of the whole child, which might include the need for PBIS, they are often charged with conducting the FBA process. It is important to understand that FBA has been described and developed primarily through the literature within the field of ABA. Functional behavior assessment should be considered the umbrella term under which a variety of procedures and practices fall; all could be used to help hypothesize the circumstances that might reliably precede and follow problem behavior, ultimately resulting in teachers having the ability to identify the potential purpose of a problem behavior. Further, radical behaviorism also describes functional assessment as a primary method outlined by key characteristics (Leigland, 2010).

When considering the training of school-based personnel in FBA, various studies have been conducted across preservice teachers and professional staff. One common vehicle to gain knowledge surrounding FBAs is through institutes of higher education (e.g., universities). Hirsch et al. (2015) conducted a study on 199 teacher candidates enrolled in either undergraduate or graduate special education courses and attempted to gauge methods as to how to increase knowledge about FBA. The researchers compared two methods to identify which would be more effective: traditional lecture and PowerPoint versus multimedia vignettes (e.g., podcasts). As a result of this, Hirsch et al. found statistically significant results in utilizing a multimedia approach to increase skills related to FBA.

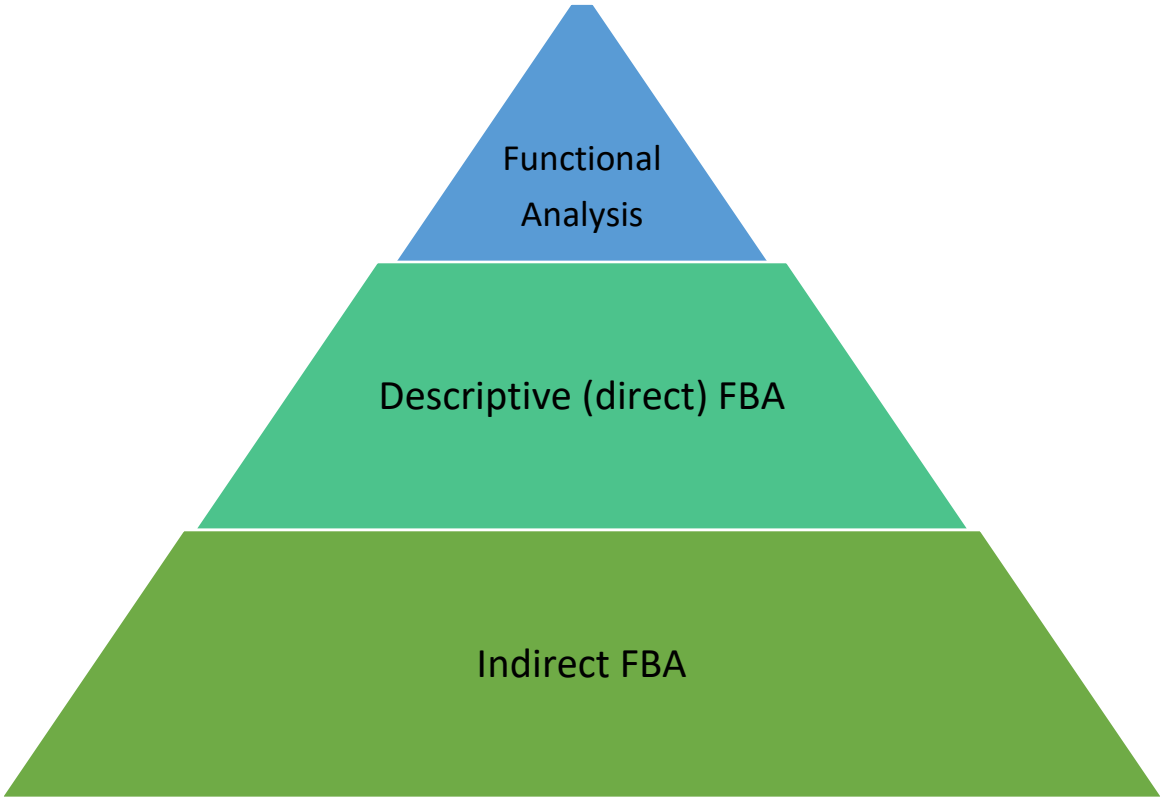
Through the FBA process, educators focus on the behavior of the individual rather than the group. Additionally, repeated direct observation is the main source of documentation over a period, which could also include experimental manipulations of various antecedent and consequence events (see Functional Analysis described below; Leigland, 2010). Lastly, radical

behaviorists describe the reasons for changes in behavior as primarily due to “changes in contingencies” (Leigland, 2010, p. 213). In addition to radical behaviorism supporting the use of FBA, repeated research has demonstrated the efficacy and applicability of FBA within the school setting (Anderson et al., 2015).

To develop appropriate responses and interventions to support SPB, it is critical that educators consider the environmental context while conducting a FBA in schools. Sugai and Simonsen (2020) asserted that educators begin by developing a testable hypothesis. To do this, an initial comprehensive review of all data (e.g., records, interviews, and direct observations) should be conducted. Following completion of data collection, Sugai and Simonsen suggested that teams compare the testable hypothesis to confirm if the reinforcement contingency was accurately identified. Other studies reviewed the impact of FBAs in school settings as well. For instance, a meta-analysis by Bruni et al. (2017) identified 30 single-case studies that incorporated an FBA in treatment versus others that did not. Their findings concluded that FBAs were effective in reducing inappropriate (e.g., SPB) behavior in both general and special education classrooms (Bruni et al., 2017). The meta-analysis noted that interventions based on a functional analysis (described below) performed no better compared to a descriptive assessment. To understand the results and differences of varying FBA methods, it is important to clarify the distinctions between the three main types: indirect, descriptive assessment, and functional analysis (see Figure 1).

Figure 1

The Different Types of Behavior Assessment and the Level of Intensity and Rigor Associated With Each Method



Indirect Functional Behavior Assessment

Methods considered indirect are often used by school-based practitioners due to ease of implementation (Anderson et al., 2015). Often, indirect methods include a variety of questionnaires, surveys, and rating scales that inquire about the circumstances surrounding the behavior of concern through individuals familiar with the student. Some examples of the types of indirect FBA tools that could be used by special education teachers include Functional Assessment Checklist: Teachers and Staff (March et al., 2000) and the Functional Analysis Screening Tool (Iwata et al., 2013). While indirect assessment tools could be quick to complete

without necessitating extensive training in behavior analysis, they should not be the sole source of data as educators develop BIPs (Iwata et al., 2013).

Within schools, indirect assessments are often preferred due to the ability to complete quickly (Anderson et al., 2015). Unfortunately, indirect assessments do not involve direct view of the behavior in question and have been shown to have poor reliability and validity metrics (Roscoe et al., 2015). Despite this, practitioners within the field of ABA often preferred to continue to utilize indirect tools in conjunction with descriptive methodologies (described below). Roscoe et al. (2015) found only 4.9% of respondents felt an indirect assessment was sufficient alone to determine the suspected function; this was consistent in a review of the literature that identified just 3.4% of publications included indirect data as the source for the FBA (Anderson et al., 2015).

Descriptive Functional Behavior Assessment

Although indirect tools are a great place to start when completing an FBA, it is critical that teachers complete some type of mid-level, descriptive assessment at a minimum. Radical behaviorists support the use of descriptive approaches to identify a specific correlation between events (Leigland, 2010). Specifically, through a descriptive approach, educators could identify if SPB was likely to occur in the presence of a particular antecedent and consequence stimuli. Further, Skinner (as cited in Leigland, 2010) supported descriptive approaches and compared them to an individual interpreting, which was prominent throughout his work in verbal behavior. This component of the FBA provided a higher level of assurance to the potential function of behavior in comparison to indirect methods such as the Functional Analysis Screening Tool (Lewis et al., 2015). Often, special educators utilized an antecedent-behavior-consequence observation approach to ascertain the purpose of problem behaviors (Eckert et al., 2005). This

approach required direct observation of the problem behavior(s) in relevant contexts where the behavior was likely to occur. To best understand the triggers (antecedents) that would occasion the problem behavior and reactions (consequences) that followed, it is important to have a clear idea as to what the behavior looks like. Through the development of an explicit definition of the problem behavior(s), observers would have a clear idea as to when and when not the behavior is occurring (Borgmeier et al., 2017

Once a clear definition has been established for observational purposes, practitioners should pay special attention to what is occurring prior to the behavior of concern (antecedent). Through repeated observation of the problem behavior, teachers should be able to reliably identify instances where the problem behavior is likely to occur if they are presented beforehand. On the consequence side of things, direct observation of the behavior should include notating what occurs after the problem behavior takes place. While not always obvious, especially in terms of behaviors maintained by sensory conditions (e.g., stereotypy), there is often some type of visible outcome or response that follows the problem behavior (Borgmeier et al., 2017). The final step to descriptive assessment is a review of the data to identify potential patterns on both the antecedent and consequence side of things. In summary, a descriptive approach utilizes a direct observation of the SPB. Typically, through use of some type of ABC observational form, an individual would record the ABCs that occur repeatedly across multiple settings and over several days. Upon completion of the data collection, a radical behaviorist interprets the data and attempts to correlate what specific events might evoke and maintain said behavior. A thorough analysis of these conditions might allow individuals to identify the purpose of the child's SPB.

Within the classroom, descriptive approaches to FBA are the clear preference for educators due to a variety of factors (e.g., time, training). In one survey study, Roscoe et al.

(2015) noted that 62% of responses indicated a descriptive assessment alone or in conjunction with a survey or similar indirect measure was used to develop a BIP. Additionally, this particular study was representative of school-based professionals as the authors indicated a large number of respondents indicated they worked in a public school setting. Additional studies regarding descriptive assessment also confirmed what types of procedures are commonly used in school settings as well. For instance, Anderson et al. (2015) identified that descriptive procedures (e.g., ABC recording, scatter plot) were more likely to be conducted in schools in comparison to experimental methods such as functional analysis (described below).

Functional Analysis

Through inclusive efforts and the requirements of IDEIA (2006; e.g., Zero Reject principle), special education and general education teachers must serve learners with complex needs including significant challenging behaviors. Due to this, special education teachers might need to utilize a higher level of functional assessment through a procedure called functional analysis (Iwata et al., 1994). This process purposefully arranges the environment systematically to test whether certain antecedents and consequences evoke and reinforce a problem behavior. Functional analysis has been considered the ‘gold standard’ for identifying a suspected function and in turn develop a function-based behavior plan (e.g., McCahill et al., 2014). While this might vary across universities and preparation program coursework, special education teachers often have classes that focus on behavioral assessment and intervention. As a result, they are uniquely suited to have an additional tool under their belt to assist in their identification of problem behaviors (Young & Martinez, 2016).

Historically though, functional analyses are used infrequently within schools (Anderson et al., 2015). Roscoe et al. (2015) identified a variety of perceived constraints regarding the use

of functional analysis: “A functional analysis will take too long, will be too difficult or complex, will cause harm, will not be accepted by constituents, or will not be amenable to certain types of behavior” (e.g., SIB; p. 841). Additional constraints noted in the survey included lack of space and lack of training in staff. Regarding knowledge and skill to implement functional analyses by teachers, this concern was also noted in additional studies (e.g., McCahill et al., 2014). Despite this, evidence to the contrary would in fact support training otherwise unfamiliar individuals in functional analysis procedures (e.g., McCahill et al., 2014). Specifically, educators should begin to explore the use of functional analysis methodologies in the classroom to support students who present with SPB.

Functional Analysis in Schools

Functional analysis is a well-established procedure that results in a reduced need to utilize aversive procedures (Brosnan & Healy, 2011). Within the schools, functional analysis has the power to improve outcomes for students as it provides the highest level of certainty as to why a student might be engaging in a particular behavior. While the procedure might not be necessary for all students, it could prove valuable for teachers who serve students with complex behavioral needs (e.g., students with SPB). As the procedure has developed since its inception, there have been many variations and adjustments on how one could conduct a functional analysis. Unfortunately, with these variations came multiple issues surrounding the acquisition of how to implement them. In some studies, researchers have shown that a traditional functional analysis model was unable to be conducted adequately or teachers lacked necessary skills in general (Couvillon et al., 2009). Further, even credentialed behavior analysts (e.g., board certified behavior analysts) reported “never” or “almost never” utilizing traditional methods as due to various factors such as being too time consuming and unsafe (Coffey et al., 2020). Therefore,

practitioners, including educators, need a more efficient approach. Further, within the schools, it is important that the procedures we conduct are safe, practical, and timely. To maintain these three criteria, educators should consider implementing the practical functional assessment (PFA) interview informed synthesized contingency analysis (IISCA; Hanley et al., 2014). The following section briefly reviews an alternative method of functional analysis that might be suitable for school-based individuals in addition to potential treatment options.

Practical Functional Assessment

To support the effective, safe, and practical assessment process, teachers might consider conducting an IISCA, now referred to as PFA (Coffey et al., 2021; Hanley et al., 2014). This process includes nine simple steps to complete an efficient, effective, and, most importantly safe, functional analysis within the schools. To briefly outline the process, it begins with an open-ended interview (Hanley, 2012; Hanley et al., 2001) completed by a school employee. The interview requires educators to ask somewhat open-ended questions to relevant individuals who are familiar with the student and their SPB (e.g., parent, teacher, paraprofessional). Initially, educators are tasked with completing background information. During this section, the educator should describe the communication skills of their students and some of their interests. This allows them to identify potential items/activities/resources that could be used as reinforcers. Next, a series of questions guide educators to think critically about the problem behavior. Initially, educators would describe multiple behavior(s) of concern, avoiding vague or ambiguous terminology. After addressing all the behaviors of concern, the interview should guide educators to target the SPB. This behavior would be assessed in the functional analysis through the IISCA.

Once completed with the interview, the PFA process requires educators to design the IISCA. This is an important step in the process to identify logistical considerations such as who would be conducting the process, where, and with what materials. As the IISCA could be conducted within the classroom and as part of the natural routine, as demonstrated by Santiago et al. (2016), one should select relevant contexts to complete this process. Next, educators identify the materials that would be used and needed to maintain the safety of the student and their peers if being conducted in the classroom. The selected materials should be used to ensure that the student will remain happy, relaxed, and engaged. For example, this might include selecting items the child enjoys during free time or recess (e.g., iPad, books, coloring). Additionally, it is important to gather the materials likely to evoke or cause the problem behavior to occur. These materials should be placed in a separate space that might be considered the 'table of high expectations.' These items are considered ones that often cause the problem behavior to occur (e.g., worksheets, manipulatives for math lessons, etc.).

Once ready, educators might begin to conduct the actual PFA. During the first phase of the FA, educators need to establish control, described as an absence of problem behaviors (Coffey et al., 2021). During this time, students should have access to reinforcers that would suggest they would not need to engage in problem behavior as they are freely available. This condition might include physical items, engaging in a favorite activity, and/or high-quality attention from others. As the IISCA differs from other approaches to functional analysis, all reinforcers are synthesized together to test for potential reinforcers through a simplified test-control analysis (Hanley et al., 2014). The control condition should be implemented first and all reinforcers should be made freely available. After this condition is completed and no problem behaviors are noted, it is then time to move into the test condition to evoke SPB. To test whether

an educator has identified what is maintaining the current behaviors of concern, it is critical to safely remove the items or present a similar condition in which reinforcement (e.g., items, activities) are not available. For approximately five minutes, you will be testing to see if problem behavior will occur when the reinforcers are not made available. To do this, at the start of the five minutes, safely remove the available reinforcers. For instance, if you are providing high-quality attention while playing a game, you should remove the game and divert your attention to something else (e.g., grading work). If the teacher has successfully identified the reinforcers of value, the child should engage in the problem behavior at that point in time. If the child engages in either the precursor or SPB, immediately return access to the reinforcers for 30 seconds (e.g., bring the game back out and provide high quality attention). At the conclusion of the 30 seconds, staff should once again remove the reinforcers and repeat this process until the five minute session is completed.

To demonstrate a high level of assurance, it is critical that we return once again to the control condition in which the preferred items/activities are readily available (see above for description of this stage). Once done, educators should once again return to the test condition where reinforcers are removed and only provided for 30 second time frames if problem behavior occurs. Approximately three to five sessions should be run alternatively between test and control. Upon conclusion of the FA, educators should graph the results to identify if there are differentiated results between their control (student is happy, relaxed, and engaged) and test condition (reinforcement is only provided contingent on problem behavior). A differentiated result is critical to align with the radical behaviorism, specifically because “in behavior-analytic research the theoretical work is very closely tied to the technical aspects of the experimental analysis” (Leigland, 2010, p. 218). Through a high level of experimental control, which could be

demonstrated through the IISCA, we are able to evaluate said data rigorously, which ultimately might be used to test the theory of radical behaviorism (Leigland, 2010). Once confirmation is made of the suspected function through visual analysis of the data, educators can begin to intervene with the SPB through a skill-based treatment.

Skill-Based Treatment

As a thorough FBA is only the first step to addressing SPB, it is critical to identify potential interventions that might effectively and safely address them. Historically, SPB, including self-injury, is often addressed with "restrictive interventions such as restraint and punishment" (Robinson et al., 2019, p. 155). Despite a reliance on these practices, skill-based treatment (SBT) has demonstrated promising results to reduce the reliance on restraint and seclusion practices (Hanley et al., 2014). Additionally, SBT aligns with radical behaviorists in the sense the community values interventions that are not considered aversive (Johnston, 2021). Further, SBT utilizes Skinner's analysis of verbal behavior, which is highly based in radical behaviorism to ensure that function language skills are taught primarily through functional communication training (Hanley et al., 2014). To conduct this process, students are presented with all the synthesized reinforcers, which are identified through the PFA/IISCA, contingently on emittance of various functional communicative responses (Hanley et al., 2014). Over time, this treatment increases the complexity of the functional communication in addition to the introduction of delayed access to said reinforcers (Coffey et al., 2020). Ultimately, this often leads to a significant reduction in SPB (Coffey et al., 2020).

Implementation of SBT following a PFA/ISSCA was well supported in the literature. Santiago et al. (2016) conducted a study with two participants—one who received treatment in their classroom and the other who received it in their home. Both participants demonstrated what

might be considered SPB. For instance, the first participant engaged in physical aggression and self-injury “that often resulted in tissue damage” (Santiago et al., 2016, p. 799) and the second participant similarly engaged in physical aggression and property destruction. Through the application of SBT, participants moved through treatment that included teaching both simple and complex functional communicative responses (FCRs) and eventual delay and denial tolerance responses (e.g., “Okay”). Ultimately, the treatment resulted in socially significant reductions in SPB within both the school and home settings for each participant, respectively. All of this was conducted across a range of 23 to 30 hours of total treatment. A recent meta-analysis was conducted by Slaton and Hanley (2018) in which they reviewed how prominent synthesized functional analyses and resulting treatments were within the literature. The authors found these types of FBAs and treatments occurred in a variety of settings from natural environments to specialized settings (e.g., university clinics). In fact, “over one third (35.9%) of all applications (reviewed) were conducted in natural environments where the individual typically spends his or her time; these included at home, at school, or at adult day placements” (Slaton & Hanley, 2018, p. 955). Further, the review noted that various forms or topographies of behavior were included in the synthesized FBAs such as aggression, self-injury, elopement, etc. A similar review was conducted in 2020 in which Coffey et al. reviewed 14 studies that included a SBT component following a PFA. This study found SBT was demonstrated primarily within controlled environments (e.g., university clinics) and with individuals with autism (Coffey et al., 2020). Additionally, Coffey et al. found a range of participants from 1 to 30 years of age with a median age of six. Additionally, a variety of diagnoses were represented in the included studies such as ASD, ADHD, oppositional defiant disorder, mood disorder, and individuals with no reported diagnoses. Despite the range of diagnoses, very limited information within the review (one

study) included measures of cognitive functioning or adaptive behaviors (e.g., Vineland Adaptive Behavior Scales). Outcomes were also evaluated across the various studies and concluded that treatment resulted in a 100% reduction in SPB for half of the included studies (Coffey et al., 2020). To accomplish this task, functional communication training (FCT) was used in all but one study. Lastly, the review also assessed social validity through use of rating scales across 40% of studies. This included asking "parents at the end of each study to rate the effectiveness…of treatments, as well as their overall experience (Coffey et al., 2020, p. 221). The review found a 76% reduction in number of concerns after implementation of the SBT/PFA process. Additionally, all but two individuals who participated in social validity measures rated the SBT process with the highest level of acceptability (Coffey et al., 2020). One noted gap included in various reviews of the literature, however, was an in-depth analysis of SBT on individuals with dual diagnoses (e.g., autism and ADHD) and outside of controlled clinical settings.

Skill-based treatment procedures for this study aligned with what was described in Hanley et al. (2014) including teaching functional communicative responses (FCR) that function as a replacement behavior, introducing delays and denial, and extending treatment into relevant contexts. Following baseline condition, the first behavior to be taught is considered a simple FCR. This behavior is taught through functional communication training (FCT), which includes a variety of functional communicative responses being taught and shaped across various phases of treatment (Hanley et al., 2014). The FCR taught is individualized based on the needs of the child but might include phrases such as "My way." This phrase would result in reinforcement identified in the PFA process. If the FCR is not evoked within five seconds, a prompt is provided verbally by telling the student to "say --_." The context of this teaching occurs in the identified

setting for treatment (e.g., classroom, office, etc.). Various FCR phrases are expected to be emitted during treatment conditions only. Following teaching a simple FCR and an intermediate FCR, a complex FCR is taught once the student has demonstrated independent simple FCRs for at least two sessions (Hanley et al., 2014). Specifically, advancing to the next stage of FCT requires that the student demonstrate "across two consecutive sessions with zero problem behavior during EO intervals and consistent, independent emission of the skill(s) targeted" (Rajaraman et al., 2022, p. 10). Upon mastery of the simple FCR, an intermediate FCR is taught. The intermediate FCR requires teaching the child that in order to access reinforcement, they must add a pleasantry phrase prior to asking for "my way." This might include phrases such as "May I please have." The complex FCR includes increasing the FCR by including a phrase such as "Excuse me," making eye contact with an adult, and allowing for wait time from the adult prior to engaging in the FCR phrase. This phrase might appear: "Excuse me…. May I have _____, please?" (Hanley et al., 2014). In the event the student does not engage in each of these steps, a prompt is provided. Following teaching of a complex FCR, delay and denial are taught to the child. This includes the adult occasionally saying "no" to a request when presented with the FCR during the treatment conditions. This phase also includes teaching the child to respond to denial by engaging in a phrase such as "Okay." Future studies might extend this work by evaluating the generalization of tolerance responses across settings and time.

This study focused on prompting and differentially reinforcing three different types of behaviors that ultimately could be described as functional communicative responses (FCR; Rajaraman et al., 2022). Initially, the participant was taught a FCR that would evoke the suspected reinforcer identified in the PFA. To teach this response, the learner was prompted through a verbal prompting method (e.g., say "My way"). If the participant identified did not

engage in vocal behavior, an alternative FCR was identified that could be prompted through a most-to-least hierarchy system (Seaver & Bourret, 2014). The FCR taught to the learner would be considered a neutral phrase that was suspected to have no prior learning history associated with obtaining said reinforcers. This phrase was called “My way” (Hanley et al., 2014). Prior to the start, it was critical that the primary investigator had access to all suspected reinforcers of the problem behavior. This would be specific to the unique needs of the participant (e.g., goldfish crackers, iPad, etc.). Upon the occurrence of any pre-cursor behavior as outlined in the FBA as occurring prior to the severe problem behavior, reinforcement should be blocked and should not lead to access to the identified reinforcers. Instead, the primary investigator would use a system of most-to-least prompts to evoke the phrase “My way” from the participant. Additionally, a blank card with the phrase “My way” was raised in the air at the same time as the phrase “My way” was stated should the participant not engage in vocal speech. Upon stating the phrase “My way” or the raising of the card, the student immediately received access to the suspected reinforcers. Upon access to the preferred items, a timer was set for three minutes. Once the timer went off, access to the items was terminated until the learner engaged in the appropriate FCR (“My way”). However, in this specific study and due to the nature of students with SPB, a procedural variation of the SBT process was made by Rajaraman et al. (2022) and an enhanced choice model (ECM) was utilized.

The Enhanced Choice Model and Supporting Studies

In addition to SBT, a procedural variation has evolved from this work called an ECM (Hanley et al., 2014). This specific model is unique because it does not involve any components that might escalate behaviors such as escape extinction (Rajaraman et al., 2022). Specifically, this process follows the steps of SBT (described above); however, no escape extinction

procedures are utilized (e.g., application of progressively more intrusive prompts until task is completed)**.** This is particularly beneficial as it could limit the escalation of students who resist physical assistance. Additionally, the model provides a variety of choices some of the time throughout the last stage of the SBT process that requires the child to engage in specific circumstances historically likely to evoke SPB. Some of the options might include choice on what to work on (e.g., art or reading), how to complete it (e.g., worksheet or laptop), and where (e.g., in the hallway or in the classroom). Lastly, students involved in this process have the option to leave the SBT process, engage freely with reinforcers, or not participate whatsoever (Rajaraman et al., 2022).

The ECM is an emerging practice with growing evidence to support use with students with SPB (Rajaraman et al., 2022). As ECM is derived from SBT, we can infer many similarities regarding how it aligns with radical behaviorism (see above). Despite this, it would benefit future research studies to demonstrate direct correlations to this conceptual model. It might seem counterintuitive to allow a student to not participate in a treatment activity that is likely to evoke SPB; however, one study demonstrated that all three participants chose to participate in almost 90% of the potential sessions presented (Rajaraman et al., 2022). Similarly, educators might expect students to avoid engaging in SBT as reinforcers were freely available without having to engage in any "work" or to leave completely when offered the option. However, this same study noted that all participants chose to engage in the SBT process for most sessions presented (Rajaraman et al., 2022). Most importantly, all three participants engaged in near-zero levels of SPB upon conclusion of the study after experiencing SBT in the ECM (Rajaraman et al., 2022). Future research was discussed and the authors noted that additional research is necessary to explore this model as a whole to develop its literature base (Rajaraman et al., 2022).

Despite the need for additional research and replication on the ECM procedures outlined by Rajaraman et al. (2022), there was supporting literature surrounding various premises on which the ECM was based. As the ECM has been a suggested model for students with EBD, previous studies also utilized SBT, on which ECM was derived, to support individuals who had diagnoses that might fall under the educational umbrella of ED. For instance, Coffey et al. (2020) conducted a study implementing PFA and SBT on two participants with co-existing mental health diagnoses and autism. The first participant included a 10-year-old boy who communicated with full sentences and had diagnoses such as ASD, ADHD, depression, and fetal alcohol syndrome. The second participant was a nine-year-old boy who also spoke in full sentences and was diagnosed with ASD and generalized anxiety disorder. Through PFA and SBT, both participants were able to return to their school environments due to a reduction in SPB to low rates. Another aspect of ECM is providing individuals with choice. This is considered a well-established practice that might reduce any risk of re-traumatization, particularly because it lessens the likelihood for the individual to feel powerless (Rajaraman et al., 2022). By incorporating choice into treatment procedures such as ECM, we can help our students gain a sense of control over their school day. Further, choice-making has been well researched as a treatment component within behavioral analytic research (Fisher et al., 1992, 1997). For example, providing choice in one's ability to select their own potential reinforcers is a hallmark of one type of preference assessment procedure termed forced-choice stimulus preference assessment (Fisher et al., 1992). In addition to empirical evidence supporting choice, professionals who treat under certifications affiliated with the Behavior Analysis Certification Board (2020) are also ethically bound by practice guidelines to incorporate choice in treatment. The intervention for this study was relatively limited regarding its current research base (Crowell

et al., 2021). However, this study aimed to expand its understanding particularly in the use of non-contingent access to breaks. As of 2022, only two studies examined the enhanced choice model specifically (e.g., Rajaraman et al., 2022). The ECM is based off the work of Hanley et al. in which they examined a "distinct set of assessment and treatment procedures for addressing and improving severe problem behavior exhibited by children" (Rajaraman et al., 2022, p. 219). These procedures included both a "a practical functional assessment process, which included an open-ended interview and an interview informed synthesized contingency analysis (IISCA); (and) a skill-based treatment developed from the findings of the practical functional assessment process" (Rajaraman et al., 2022, pp. 219-220). As this procedure has been developed as a procedural variation of the process, this study sought to evaluate the promise ECM holds. The ECM model of SBT includes various components that might reduce the risks associated with physical prompting and escape extinction (Staubitz et al., 2022). It does not utilize physical guidance and provides "two concurrently available alternative to participating in treatment: (e.g., SBT) (a) escaping instructions while accessing preferred items and activities (b) returning to regularly scheduled activities" (Staubitz et al., 2022, p. 3). Further, the ECM allows students at any point in time to decide to "either practice (i.e., participate in treatment sessions), enter hangout (i.e., a designated area in the room in which instructions ceased and highly preferred toys and low-quality attention were available), or leave (i.e., return to class and regularly scheduled activities)" (Staubitz et al., 2022, p. 12). In the hangout area, one should not provide any type of directions or demands and the student would have access to all tangible items identified in the PFA process as potentially reinforcing. When a student enters the practice area, SBT conditions (outlined below) are presented and the student should work on developing FCRs. Lastly, when a student decides to leave, the principal investigator should walk the student back

to their class and set a timer for five minutes. The principal investigator would then return every five minutes to offer a choice to return until the one hour session time had elapsed. These choices would be reviewed prior to the start of every ECM session.

As the traditional SBT process employs escape extinction and often physical prompting, the ECM does not (Rajaraman et al., 2022). During the ECM, no physical guidance is used as part of escape extinction. While positive reinforcers might be withheld, no physical prompting (e.g., hand over hand) is utilized. In lieu of this, Rajaraman et al. (2022) stated that a combination of both gestural and vocal prompts to engage in the FCR would be provided every 5 to 10 seconds while a student is engaging in problem behavior. An additional change from the standard SBT process includes providing students with additional information as to what would be occurring in each session. Further, in some later sessions of the ECM, students might also be provided some level of choice occasionally. Lastly, students could always leave the 'practice' setting and enter areas of non-contingent reinforcement ("hang out") or leave the area altogether and return to their regularly scheduled activity.

Conclusion

As SIB might occur in 36.4% of children and aggressive, destructive behaviors have been reported in approximately 30.2% of children in segregated special needs settings (Nicholls et al., 2020), it is imperative that educators seek ways to address these unique needs. Unfortunately, these types of behaviors are often addressed with restrictive interventions such as restraint and seclusion (Robinson et al., 2019). In addition to student level impacts, educators and related service providers who support students with SPB also face various consequences including both health and workplace related issues such as increased rates of absenteeism, attrition, and stress.

Although students with disabilities might engage more frequently in SPB (e.g., students with ID are three times more likely to engage in SPB; Dekker et al., 2002), there has been a clear overuse of restraint and seclusion for SWDs. As evidenced by the OCR, multiple years of CRDC (USDOE, 2020) continued to show increased rates where SWDs were disproportionately restrained and secluded. Therefore, it is imperative that the field identifies additional methodologies to reduce the need for these types of emergency interventions. Fortunately, the field of ABA is uniquely suited to address these types of behaviors. Specifically, through a radical behaviorist lens, educators could utilize empirically supported practices such as FBA (Iwata et al., 1994) and through an understanding of functions of behaviors, educators could identify specific purposes SPB might serve. Educators have a variety of options available regarding FBA such as indirect, descriptive, and experimental methods, all of which have their own pros and cons. However, when dealing with SPB, it is important to utilize procedures with the highest level of scientific rigor and, therefore, the need for experimental methodologies such as functional analysis should be considered. This is of particular importance to radical behaviorists as a strong experimental foundation allows for continued development and testing of our radical behaviorism as a theoretical framework (Leigland, 2010). One specific method of functional analysis to consider has been described within the IISCA/PFA process (Hanley et al., 2014). This process has demonstrated an effective way to identify the function of SPBs across various contexts such as schools (Coffey et al., 2020). Further, the IISCA/PFA process allows for teams to identify all relevant contextual variables to ascertain what within the environment was allowing the behavior to continue. As identifying the function is just the first step in addressing SPB, educators might then identify the best approach to safely treat and address SPB. As evidenced by Hanley et al. (2014), an SBT approach would support the development of

necessary functional communication skills to be used in lieu of SPB. Specifically, the ECM presents as a promising practice that might safely reduce SPB and ultimately reduce the need for intrusive and dangerous procedures such as restraint and seclusion. Further, evaluation of this intervention would also add to the current limited research base. Therefore, it was this principal investigator's intention to replicate and extend the work by Rajaraman et al. (2022).

CHAPTER III

METHODOLOGY

The purpose of the study was to identify the effectiveness of the enhanced choice model in reducing the frequency of severe problem behaviors within school-based settings. A primary goal was to increase and expand the current base of research surrounding the enhanced choice model (ECM) as an extension of the skills-based treatment (Hanley et al., 2014). Due to the recent nature of this research, it was critical that various studies critically analyze the intervention to refute or support it as a potential evidence-based practice. Second, the study aimed to identify the overall effectiveness of the ECM in reducing the frequency and intensity of severe problem behaviors within school-based settings. An additional goal of this study was to analyze the perceived social validity of the procedures. Most importantly, this study aimed to teach necessary functional replacement skills in lieu of problem behavior in the selected participants who exhibited SPB and were at risk for restraint or seclusion.

A single-subject, multiple-baseline, across behaviors design was used to accomplish these goals. This chapter outlines the following aspects of this study: recruitment and eligibility requirements for inclusion in this study, participants, settings, materials, the experimental design, dependent and independent measures, data collection and recording procedures, inter-observer agreement, social validity, and generalization.

The following research questions guided this study:

Q1 Does the implementation of the enhanced choice model reduce rates or intensity of severe problem behavior?

Q2 Does the implementation of the enhanced choice model increase rates of functional communicative responses and tolerance responses?

Q3 Do practitioners find an enhanced choice model acceptable within the schoolhouse?

Participant Recruitment and Eligibility Requirements

Three participants were recruited (Kazdin, 2020) within the principal investigator's school district of employment to support the plausibility of the study,. Specifically, a flyer was shared (see Appendix A) to disseminate information to prospective participants' legal guardians. This flyer was mailed home to students on each teacher's caseload within each elementary and middle school. The flyer highlighted what type of students were eligible (e.g., students who engaged in SPB) and explained that this was a research project exploring a new intervention that might reduce SPB. Additionally, the flyer explained that the intervention would take place in the school of the student and last approximately four to eight weeks. Lastly, the flyer contained the Institutional Review Board approval number. Once the flyer was disseminated, the principal investigator (PI) contacted each classroom teacher to see if there were any students who might benefit from the study and placed a follow up call to the family to inquire approximately three to five days later after the initial mailing. This allowed the PI to answer any questions about the study. After making a follow up contact, the PI screened candidates who expressed interest and reviewed the following inclusion criteria for eligibility: (a) age at time of study between 5 and 15 years, (b) eligible for special education programs and services through any IDEA (2004) eligibility category (e.g., intellectual disability, emotional disturbance, autism spectrum disorder), (c) engaged in a history (minimum of six months) of SPB including either physical aggression that resulted in physical injury to self or others (e.g., broken skin, bruising, broken bones) or significant potential for such or property destruction that resulted in a loss of value

greater than an estimate amount of $100, (d) educated in a public school setting, and (e) student was observed by the PI prior to admission to study to ensure rates of SPB were evident and necessary for treatment based off clinical judgement of the PI and research advisor. At a minimum, frequency or duration data were collected based off the target behavior. If frequency was used, at least three instances of severe problem behavior should be observed in an observation period. Should duration be utilized, at least three minutes or more of the target behavior should be observed in an observation period.

Participants

Three participants were included in the study based on the selection criteria. Ralph was a White six-year-old boy who was eligible for special education services under the IDEA (2004) category of emotional disturbance. Ralph communicated vocally and fluently and did not have any current medical diagnoses reported by the parents but an evaluation was pending with their community mental health agency. Ralph engaged in full-sentences, although they were not always grammatically correct (e.g., use of future verb tense for past events). Ralph's communication was not a concern during his initial special education evaluation so no formal standardized assessments were conducted. Ralph presented with severe problem behaviors: elopement from the classroom/school building and physical aggression in the form of punching with a closed fist and shoving others with two hands forcefully. Additionally, Ralph engaged in property destruction including flipping tables and destruction of classroom furniture (e.g., chairs) and instructional items. Ralph's parents reported he demonstrated similar problem behaviors within the home and community. Ralph was educated in a rural elementary school located in the Midwest of the United States. Ralph's elementary school educated pre-school through fifth grade students and had at least two sections of each grade level. Additionally, Ralph's school also

educated students were moderate intellectual disabilities. While Ralph was educated in an elementary school that served primarily general education students, he received most of his instruction in a separate classroom with a one-to-one paraprofessional under the direction of special education and classroom teachers. Ralph had fairly limited interaction with his general education peers with the exception of participating with them during recess and elective courses (e.g., art, music, physical education). Ralph struggled with academic tasks (e.g., phonics-based worksheets, basic math calculation worksheets) when presented in their general education classroom and would often engage in physical aggression or property destruction to escape from tasks and demands. This would include tasks designed for the whole classroom such as moving to a central part of the classroom and being asked to respond individually to prompts from the teacher (e.g., "What is today's date?") and chorally ("Say after me class," "today's weather is Sunny"). In addition to whole group tasks, individual tasks were difficult for Ralph including being provided one page reading worksheets that could also include multiple-step directions (e.g., cut the pictures out, color the pictures, place them next to the letter their begin with). Further, Ralph had experiences with restraint and seclusion at least six different times during the 2022-2023 school year. Physical restraint included at least two adults restricting movement through use of physical force; the adult staff members who utilized the physical restraint were trained in physical management procedures through a crisis management program. Additionally, Ralph was subjected to at least five instances of seclusion during the 2022-2023 school year in which he was confined to the room and unable to leave until safety was demonstrated. These types of experiences often led to removals from the school for the following day. By the end of the 2022-2023 school year, Ralph's IEP team had to conduct at least three manifestation

determination reviews that typically resulted in it being determined the conduct in question was in fact a manifestation of his disability.

Homer was a White seven-year-old boy who was eligible for special education under the IDEA (2004) category of emotional disturbance. Homer was educated in a self-contained classroom for students with emotional disturbance; however, it was located within a rural public elementary school. Homer's school was a general education school that served students in grades kindergarten through fifth. The school had at least one section of each grade level with an average of 22 students. Homer's classroom served up to 10 students who had disability-related needs primarily in the behavioral domain and included a special education teacher and two paraprofessional staff members. To attend this self-contained classroom, which was open to the entire county's school districts, an IEP team determined this would be the student's LRE. Homer demonstrated severe problem behaviors that often resulted in seclusion. Main problem behaviors included property destruction in the form of physically throwing objects, which often resulted in the destruction or inability of further use. Physical aggression included use of objects being thrown toward others (e.g., chairs). Additionally, Homer had a history of engaging in verbal threats toward others (e.g., threatening to harm or kill others). Homer had recently experienced a transition from living with his paternal grandparents to living back with his father. Prior to moving into his current school district, Homer attended another school district out of the county and was initially placed in their self-contained classroom for students with intensive behavioral needs. Homer communicated vocally and fluently and typically would engage in full-sentences with age-appropriate grammatical structures. Homer could use his communication skills for various purposes (e.g., requesting preferred items and displaying displeasure with a task [e.g., "No"]). Homer would often engage in severe problem behavior during the presentation of

academic demands (e.g., being asked to read narrative and informational texts) from adults, which impacted his ability to complete tasks.

Tyson was a 10-year-old White male who was eligible for special education under other health impairment. Additionally, Tyson had a medical diagnosis of disruptive mood dysregulation disorder, which was the reason why he was found eligible under this specific disability category. Tyson had an extensive history of restraint prior to placement in his current classroom. Before being placed into the self-contained classroom for students with emotional disturbance, Tyson came in contact with physical restraint on average at least one time per day. Seclusion was rarely used due to the concerns associated with seclusion and self-injurious behaviors. A specific concern was that if seclusion was used, he would harm himself and need medical care. Regarding his severe problem behavior, he engaged in physical aggression toward adults and self-injury. Self-injury included attempts to punch self in the face, which would often result in bruising or contact with physical restraint to prevent reoccurrence. Tyson communicated fluently and vocally. Tyson was able to utilize full-sentences with frequent age- inappropriate grammar structures (e.g., incorrect use of pronouns). Tyson was able to communicate to request preferred activities or items (e.g., access to his laptop computer). Tyson engaged in severe problem behavior during most academic demands when presented, which prevented him from completing any type of classwork (e.g., completing reading passages and associated comprehension questions). Tyson was educated in the same school as Homer (see above for description). However, prior to being placed through the IEP process in a self-contained classroom, he attended his resident public elementary school. This school building was considered to be a rural area and educated students in grades kindergarten through sixth. The average number of students per classroom was 15.

Setting

This study was conducted within a public-school district located in a rural area within the Mid-west region of the United States. The district had approximately 3,000 students and a total of eight schools. The district's student body was predominantly White. Additionally, it served a large number (greater than 40%) of students who were eligible for free and reduced meals.

This study took place within two of its elementary school buildings. Both elementary school buildings included general education peers. Tyson and Homer were educated at elementary school one; whereas Ralph was educated at elementary school two.

Elementary school one educated students in kindergarten through fifth grade. This school had at least one section of each grade level in addition to a self-contained classroom for students with emotional and behavioral disorders. Further, this school was situated off a busy road in a rural area (e.g., surrounded by cornfields and no businesses for several miles). The building itself included multi-purpose spaces such as a gymnasium and library. Treatment procedures occurred at elementary school one in two settings: a library (25 m x 30 m) and an office (4 m x 3 m). The library included various spaces to engage in reading in addition to spaces for academic tasks (e.g., tables in center of the room). The library was located in the back of the school and was located near two smaller offices and no classrooms. The office was located next to the principal's office and had windows that looked to the road on which the school was located. This space also included two tables that were used for the purpose of treatment. Another desk was located there and was utilized by the PI at times when no attention was provided. These tables were separated from each other to support discrimination between each area during the study.

Elementary school two was a rural school building located within a neighborhood off a main street within the community. It included students in pre-school through fifth grade with two

sections of each grade. Classrooms were spread out through the main level and a second story level. Lower elementary grades were typically educated on the first floor, whereas upper elementary students were educated on the second floor. In addition to the general education classrooms, there was a multi-categorical special education classroom in addition to a self-contained classroom for students with moderate intellectual disabilities. The school included a library in the center of the building in addition to a multi-purpose space (e.g., gymnasium classes, lunch room). Treatment was conducted in a small office (3 m x 2 m) and a small classroom (6M X 6M). The office contained two small desks to support discrimination of what types of activities would take place during the treatment process and a bookshelf with various learning manipulatives and resources (e.g., academic games, books, etc.). The classroom included two larger tables that could seat multiple students; it also served as a storage area for various school-related materials (e.g., extra clothes for students, extra textbooks, etc.).

Materials

As SBT within an ECT is individualized and performance-based, a wide variety of materials was necessary as determined by each participant's interview and were often changed between sessions. The PI utilized video recording equipment (e.g., computer with recording software), paper data sheets for IISCA data collection (see Appendix B), paper data sheets for SBT data collection (see Appendix C) and writing utensils. Further, a device to capture time was used to record start/end times of sessions. Regarding individual student materials, as the PFA identified synthesized reinforcement contingencies, a variety of reinforcing items were utilized.

Ralph's preferred items during reinforcement time included items and activities such as edible snacks, cause and effect toys, and board games (e.g., Connect Four), laptop (e.g., watching shows, playing online games). Homer's preferred activities included playing

competitive board games (e.g., Battleship), racing/rolling cars, watching videos online (e.g., YouTube), and playing with small figurines (e.g., Action Figures). Tyson's preferred items during reinforcement varied and included online games on his school-issued laptop, creating sculptures and objects out of clay, playing card games (e.g., Uno), and playing board games (e.g., Gooey Louis).

Materials used during the establishing operation (EO) period were always provided by each participant's classroom teacher. Materials varied by day but generally included workbook activities, worksheets, reading passages in books, and online assignments.

Experimental Design and Procedures

This study operated within a radical behaviorism framework; therefore, a single case design was implemented to answer the research questions. Further, ABA relies on single-subject methodology to answer questions and evaluate various interventions such as the ECM (Kazdin, 2011). Further, because IDEA (2004) required the use of evidence-based practices, this study aimed to contribute to the identification of the ECM, to increase the knowledge base surrounding the ECM, and subsequently contribute to the potential establishment of it as an EBP through this single case experiment (Horner et al., 2005).

Well-constructed single-subject studies can be used to identify causal links between strategies and behavior(s) of interest (Cooper et al., 2020). Single-case research (SCR) designs include many similarities such as repeated measurement of behavior(s) over time, observation of behavior(s) prior to the introduction of an intervention (baseline), introduction of a specific independent variable (e.g., ECM), and a visual review of data.

The variation of this study employed a multiple baseline across behaviors. The multiple baseline design is a well-accepted subset of SCR and might be utilized across settings,

participants, and behaviors (Cooper et al., 2020). In this study, the principal investigator utilized multiple baselines across behaviors to demonstrate a functional relationship between SPB and the introduction of the ECM. To demonstrate such, the selected participants entered the experiment subsequently and a baseline of data was collected simultaneously on various dependent variables such as SPB, simple FCR, intermediate FCR, complex FCR, and tolerance responses. Upon visual inspection of baseline data, stability of the data was identified prior to the introduction of the intervention for each target behavior to be taught. To do so, the PI inspected the data points to ensure there were potential upward or downward trends. By ensuring there was stability by collecting multiple data points during the baseline phase, the PI was able to help identify if a functional relationship existed when comparing between each phase (e.g., baseline versus treatment; What Works Clearing House, 2020). As the intervention was implemented, data were collected and a similar visual inspection was conducted to establish stability in responding. This was recorded by observing multiple data points in this phase to determine if a trend was present in either an upward or downward direction. Once identified, the intervention was then introduced to the subsequent behavior. This process was repeated after stable responding was identified in the intervention condition with the third behavior.

Use of the multiple baseline, across behaviors design included some threats to internal validity. To limit the effects of maturation, which are inherently addressed in multiple baseline designs, this study was restricted to a short period of time (approximately four to eight weeks) pending the student's response to intervention and individual performance. Further, if a school break occurred, a history threat might have occurred (e.g., school break results in no school in session for an extended period of time); therefore, this was noted in the data collection and indicated in the visual data with a // symbol to account for a break in continuous time. Additional

history threats might present as coincidental events, which are considered another potential threat to internal validity. This type of concern might be addressed by requesting that any unique events occurring (e.g., reported divorce of participant's parents) be reported to the PI to note the specific day of occurrence and any potential changes to responding.

While some researchers might consider alternative single case designs such as a changing criterion design, this was not appropriate for this study. Changing criterion designs are intended to change incrementally some dimension of a specific behavior (e.g., duration, intensity; Kazdin, 2020). This specific study aimed to teach a variety of topographically dissimilar FCRs by increasing the complexity of each phrase. While a changing criterion might appeal to researchers as it allows for gradual shifts toward a terminal goal, this study aimed to use a multiple baseline across behaviors. To determine a functional relationship like Coffey et al. (2020), control was established when FCRs "increased during the stepwise and staggered introduction of reinforcement for the respective complexity" (p. 6). Additionally, the multiple baseline design was selected as the FCRs being taught were considered free operants and could be emitted at any time regardless of phase in treatment (Coffey et al., 2020). Lastly, this type of design was well-established in the literature (e.g., Ferguson et al., 2020; Ghaemmaghami et al., 2018; Jessel et al., 2018; Rose & Beaulieu, 2019) and respected to teach "progressively more complex topographies of communication to evaluate control without a reversal" (Coffey et al., 2020, p. 6).

Dependent Measures

Severe Problem Behavior

This study intended to identify and clarify what constituted SPB. Because the term *severe problem behavior* was broad in nature, the PI utilized the definition proposed by Nicholls et al. (2020). Specifically, SPB was operationally defined in this study as

> culturally abnormal (behavior(s)) of such intensity, frequency or duration that the physical safety of the person or others is likely to be placed in serious jeopardy, or (behavior) which is likely to seriously limit the use or, or result in the person being denied access to, ordinary community facilities. (Nicholls et al., 2020, p. 40)

Further, SPB was described in three sub-behaviors to operationalize and support accurate data collection by observers. Physical aggression, purposeful property destruction, and self-injurious behavior were selected and further defined as they are socially significant and put individuals at risk for harm. For instance, each of the identified behaviors posed a risk of harm for either the student themselves or others in the immediate area (e.g., peers, staff). Additionally, engaging in any of the target behaviors might result in social consequences such as reduced interactions with peers and changes in educational placement.

Physical Aggression

Physical aggression was defined by the result of the forceful contact with another individual that might include broken skin, bleeding, red marks, bruises, removal of hair, bite marks, and broken bones. An example of this target behavior might include forceful contact between the participant's nails on another subject's skin, resulting in loss of blood and breaking of the skin. Additional examples included punching someone and leaving a mark (e.g., bruise or red mark) and pulling of hair that resulted in hair being left in the student's hand. A non-example of this target behavior would be the participant pulling another individual's hair that resulted in no hair loss from the participant engaging in this behavior. Self-injurious behavior as defined was not considered for the purpose of this study as physical aggression.

Purposeful Property Destruction

Purposeful property destruction was defined as engaging in either purposefully destroying, breaking, altering beyond intended use, or disfiguring beyond intended use of physical items that would require a cost to repair or replace within the participant's immediate environment. An example of this behavior would be if a participant engaged in throwing a laptop computer of at least $500 value across the room that resulted in the computer no longer being able to be used for typical functions and required the district to purchase a new one. A non-example of this behavior would be a participant ripping up a worksheet into 15 pieces with a projected value less than $1. While property destruction might not necessarily cause injury to anyone unless directed toward an individual, it could result in monetary recoupment from a family and potential financial strain (Jessel et al., 2022).

Self-Injurious Behavior

Within this definition, behaviors inflicted by the individual and resulted in physical harm were counted for the purpose of this study including biting, pulling out one's hair, and scratching self.

Rationale for Inclusion

Each of the target SPBs (e.g., physical aggression, property destruction, self-injury) was included for their potential for physical harm to self or others. These behaviors were also considered "significant public health concerns" (McMahon et al., 2020, p. 116) as they could each result in bodily injury (e.g., bruises, broken bones, lacerations). In addition to potential physical concerns, engaging in each of these types of behavior might result in a variety of societal and educational consequences. Hukkelberg et al. (2019) found that children with SPB experienced a higher risk of academic failure and impaired social functioning. These might

present as poor interactions with peers and overall rejection from teachers due to constant conflict (Hukkelberg et al., 2019; Kremer et al., 2016). Further, these types of externalizing behaviors (e.g., physical aggression) have also been linked to deficits in academic areas such as reading, math, and writing (Kremer et al., 2017).

Functional Communicative Responses

In addition to collecting data on SPB, functional communicative responses (FCRs) were included in data collection during various phases of the study as outlined by the multiple baseline across behaviors design.

Simple Functional Communicative Responses

To recruit necessary and identified synthesized reinforcers, an omnibus mand that results in immediate reinforcement was measured at multiple points (e.g., baseline, treatment). This included a short phrase that likely had not resulted in reinforcement previously such as “My way.” As this phrase should be selected and individualized based on the performance and needs of the student, this could have been altered to include other ways to elicit reinforcement such as raising a card that says, “My way” or pressing a button that speaks “My way.”

Intermediate Functional Communicative Responses

,An intermediate FCR was also measured throughout the study. An intermediate FCR typically includes a pleasantry or carrier phrase such as introducing “May I please have” prior to the child saying “my way” or similar omnibus mand. A non-example of an intermediate FCR would include just saying “My way” in isolation without a social pleasantry such as “May I please have?”

Complex Functional Communicative Responses

The last type of FCR measured was complex FCRs. These types of FCRs included a recruitment behavior (e.g., tapping shoulder) to gain the attention of the adult in the area who might assist in providing reinforcement. This might include phrases such as “Excuse me” and waiting at least three seconds without problem behavior prior to engaging in the identified intermediate FCR phrase. A non-example of such was a student stating just “My way” during this phase without any type of pause of at least three seconds. As each FCR was individualized, additional gestures or attempts to seek attention might be honored and counted as part of the target behavior (e.g., tapping the shoulder, waiting three seconds, and engaging in FCR).

Tolerance Response

Students were measured on their ability to engage in tolerance responses when denied access to reinforcement. A tolerance response was defined as an individualized response that typically indicated being comfortable with not gaining access to a preferred activity, person, or item. This included phrases such as “that’s okay” or looking at the adult and nodding their head “yes.” Tolerance responses were determined individually based on performance of student (e.g., “no biggie”).

Independent Measures and Procedures

Pre-Baseline

Initially, a practical functional assessment was conducted for each of the identified students. The purpose of this phase was to identify and develop both the control and test conditions of the PFA that were to occur during baseline This began by utilizing an open-ended functional assessment interview with relevant providers such as a classroom teacher or similar staff member who was familiar with the SPB (Hanley, 2012). This interview took approximately

30 to 45 minutes and included a variety of questions about the student's abilities, the contexts where problem behavior was likely to occur, and how staff members would respond to such behaviors. Some of the questions included identifying language abilities, play skills, what the SPB looked like, where it was likely to occur, and what was done when the student engaged in SPB. Following the interview, a PFA was designed based on the information attained in the open-ended interview (Hanley et al., 2014). This included identifying the appropriate conditions to test for the potential reinforcement contingencies impacting SPB. Specifically, it included control and test conditions that were repeated multiple times throughout the process. Interviews were conducted with identified teachers and staff members who were familiar with the student and asked that they meet in a space without interruptions. The specific questions asked are listed in Appendix D and said responses were documented.

Each participant was interviewed by the PI in order to conduct the PFA (Hanley et al., 2014). The PFA began with an open-ended interview (Hanley, 2012; see Appendix D) with a caregiver who was aware of the student—it included the participant's teacher or similar staff member who was aware of their behavioral needs (e.g., principal). Based on the answers of the interview, this allowed the PI to identify what specifically was occurring in the environment at the same time and potentially reinforcing the SPB. This information was then used to help develop the test and control conditions for the purpose of the functional analysis. Additionally, this study implemented procedures described in Hanley et al. (2014) in addition to the procedural variations described in Rajaraman et al. (2022). Specifically, students were offered during this functional analysis to enter one of three options:

> (a) enter the "practice" context in which the skill-based treatment procedures were implemented, (b) enter a "hangout" context in a different room in which the evocative

> conditions of the treatment context were never present, or (c) leave the clinic altogether with their parents. (Rajaraman et al., 2022, p. 226)

As this study was conducted within a school setting, option (c) involved allowing the student to leave the classroom/office where treatment was occurring. These options were available in both the PFA and skills-based treatment (SBT) throughout the study.

Baseline

A PFA was conducted to gather a baseline level of responding to gather information regarding rates of severe problem behavior in addition to the occurrence of FCRs. To begin the baseline, the PFA required the PI to ensure the student was happy, relaxed, and engaged (HRE). This would be considered the control condition. The goal was to ensure the student did not demonstrate any SPB in addition to the FCRs being targeted in treatment. This control condition, which was presented first, was when all identified reinforcers were made available to the student. For example, each interview conducted aimed to identify when the child did not engage in SPB (e.g., when demands were absent and rich interaction between an adult was present). Additionally, if specific items or interest or activities resulted in the child remaining safe (e.g., zero SPB), these would also be included in the control condition. This condition would be implemented for approximately five minutes and would note the presence or absence of SPB. The test condition was then implemented for five minutes (Hanley et al., 2014). During this condition, the identified reinforcers from the control condition were removed and specific evocative circumstances were added (e.g., directives to complete work). The goal was to reliably evoke (turn on) problem behavior and be able to turn it off safely. The reinforcers were returned immediately upon demonstration of SPB or a precursor behavior (e.g., behavior that reliably preceded SPB). This process was typically repeated every 30 seconds, although this did

occasionally require longer periods of time to allow the student to return back to HRE; data were collected to identify rates of SPB during both conditions. During the baseline period, which included conducting the PFA, rates of SPB were collected in addition to the emission of the various FCRs (to be identified individually). Rates of SPB and a total count of the emissions of FCRs were then compared to treatment phases to evaluate the effects of introducing SBT within an ECM.

Treatment

Treatment for all students included teaching a variety of FCRs, primarily through functional communication training (FCT), and subsequently the introduction of delays and denial and the development of tolerance responses based on the individualized needs identified in the PFA process. Future studies might extend this initial work by extending treatment into relevant contextual variables (e.g., during reading groups). These procedures were outlined above in the skills-based treatment (Hanley et al., 2014) section and are detailed below.

Simple Functional Communication Training

Functional communication training was utilized by initially teaching a simple FCR. The PI began each session identifying appropriate reinforcers to be utilized during the training session; this might have included providing access to tangibles, high quality attention, and compliances with demands from the student (Rajaraman et al., 2022). Following this, the PI interrupted reinforcement by introducing appropriate variables that evoked SPB in the PFA and would prompt the simple FCR from the student and reinforce appropriately based on the behavior demonstrated. Initially, response prompts were given immediately to the student (e.g., “say -----_”) following introduction of the evocative conditions and subsequent prompts were faded in a least-to-most method (Rajaraman et al., 2022). If the student engaged in SPB, the PI

then re-presented prompts every 5-10 seconds. Once the student engaged in the correct FCR, reinforcement was provided. This process was repeated for a period of approximately five minutes.

Intermediate and Complex Functional Communication Training

Following independent, unprompted demonstrations of the simple FCR across two treatment sessions and demonstration of zero problem behavior, an intermediate and complex FCR was taught. The intermediate and complex FCR teaching sessions followed the same process outlined in the simple FCR sessions but expanded student responses for social appropriateness and complexity. For instance, in the intermediate FCR, a phrase such as "May I please ----" was added and in complex FCRs, "Excuse Me" and waiting for adult attention following with "May I please ----" were added. Prior to moving from an intermediate FCR to a complex FCR, two sessions of unprompted emittance of the FCR and zero SPB were noted. Upon conclusion of the complex FCR teaching sessions, delay and denial of reinforcement were introduced.

Tolerance Response Training

In these specific sessions, FCRs began to be reinforced on an intermittent, unpredictable schedule (Rajaraman et al., 2022). Approximately 40% of FCRs were immediately reinforced, whereas the remaining number of trials required the emission of a tolerance response (e.g., "okay," "that's cool with me") prior to reinforcement. In these specific trials testing toleration, the PI presented evocative variables that should evoke SPB. Immediately, the PI would verbally prompt the student to engage in a tolerance response such as "okay" (or similar) and then they would request reinforcement through the complex FCR.

Additionally, during each of these conditions if escape extinction was required (based on the individual needs of participants), physical guidance would not be utilized to minimize escalation of problem behavior (Rajaraman et al., 2022). Instead, vocal and gestural prompts were provided in these circumstances and re-presented every 5-10 seconds if a student engaged in SPB. Additionally, prior to the start of a treatment session, the PI would

> (a) discuss progress made during the prior visit and (b) describe the current training step, including the most challenging EO that would be programmed, and the specific responses required of the child to produce reinforcement (and) the analyst, child, and (teacher) would review participant performance at the culmination of the day's visit. (Rajaraman et al., 2021, p. 7)

Lastly, since this treatment was provided in an ECM, students always had an option of "exit(ing) the practice context and either "hang out" or leave the (practice area) for the day (Rajaraman et al., 2022, p. 8).

All the aforementioned procedures were included in an ECM. This allowed the student a variety of options regarding treatment. The first included entering the practice context, which included engaging in various SBT processes. Additionally, the student also had the option of "hangout" in which evocative variables that reliably evoked SPB never occurred. Lastly, the student had the opportunity to leave the practice area (e.g., classroom) all together. When choosing to leave, the student would then return to their programmed educational activities with their teacher. To conduct the other two options, two separate spaces were identified and shown to the student so they understood what would occur in each physical space (e.g., practice SBT skills or hangout). If the student chose to leave, the PI would remain in the school for 60 minutes and re-present the opportunities every 10 minutes. If students elected to hangout, during this

condition they would have access to preferred tangible items and adult attention with no demand conditions present. Additionally, while in this context, the PI continued to re-present the availability to practice every five minutes.

Table 2

Outline of Practical Functional Assessment and Skills-Based Treatment Procedures

Step	Brief Description of Step
1	Conduct interview (see Appendix D)
2	Design control and test (EO) conditions
3	Implement PFA by alternating between control and EO conditions
4	Obtain zero problem behavior during PFA control conditions
5	Obtain controlled SPB during EO conditions
6	Complete simple FCT training for simple FCR
7	Complete intermediate FCT training for intermediate FCR
8	Complete tolerance training for tolerance response

Data Collection and Recording Procedures

A variety of data points were collected in this study. In all portions of the study, time stamps were collected to measure when sessions began and ended. Additionally, a systematic direct observation procedure was used to measure participant responses (Staubitz et al., 2022). In the PFA portion, the occurrence of SPB and precursor behaviors as identified within the IISCA was scored as present or not present in a 30 second period. To score the presence of precursor behaviors, a combined rate was calculated for both precursor behaviors and SPB by recording the total number of independent SPB and precursor behaviors and dividing the number of

minutes elapsed per session. A sample data sheet is provided in Appendix C for the PFA process. Additionally, time stamps were collected to identify what portions of the session were spent in the ECM areas (e.g., practice, hangout). These data were calculated by identifying the start and end times of a session and calculating total number of minutes spent in each condition. Generally, total sessions were no longer than 60 minutes (Rajaraman et al., 2022). A paper data sheet was used in conjunction with a digital clock to note the start and end times. This allowed the total duration of time to be calculated regarding how much time was spent in each area. This form noted the date, name of the student, and included start and end times for each of the sessions.

Sessions were generally 60 minutes long (Rajaraman et al., 2022). Video recording was utilized to capture the content of each session, to serve as a permanent product, and to support accurate data collection proceeding each session prior to deletion to protect student confidentiality as outlined by consent and assent forms. Rates of SPB were collected specific to each student in each session as measured by problem behaviors per minute across sessions. This data collection form included the name of the student, the date, and start and end times of the session, and a spot to mark the occurrence of SPB. This allowed for a calculation of the rate of problem behavior to be made (e.g., number of SPB per minute). Similarly, in the treatment conditions, the use of appropriate behaviors (e.g., simple FCRs) was also measured as each child progressed through the development of FCRs and reported the total number per session. To score the occurrence of independent engagement in these FCRs, correct phrasing, which was identified individually, and appropriate tone and volume were required. If an FCR was prompted, this datum was not included in data for independent engagement and was noted if the PI had to

provide a vocal or gestural prompt before the student emitted it independently (Hanley et al., 2014). A sample data sheet is provided in Appendix C.

Additionally, a records review was conducted regarding participants' prior experience with both restraint and seclusion, and the history of contact with these types of interventions. This information was important to report accurately whether each participant had had a history of contact with either restraint or seclusion procedures.

Treatment Fidelity and Procedural Fidelity

In the initial stages of the PFA phase, all results were reviewed by the PI who is also a licensed and board-certified behavior analyst (BCBA) enrolled in a doctoral program in special education in conjunction with the participants' teachers for confirmation of the synthesized reinforcement contingency.

Inter-Observer Agreement

Methodology

Inter-observer agreement (IOA) was collected during 31% of the sessions with the goal of at least 80% agreement between observers. As the sessions were recorded, the PI and independent observer independently reviewed the sessions and compared through a total count IOA. The specific formulas utilized were:

Total Count IOA= (Smaller of the Observer's Count/Larger of the Observer's Count) x 100

The independent observer was an external BCBA with no current employment relationship to the PI. This independent observer had graduate (e.g., master's degree) level training in applied behavior analysis and special education. Further, the independent observer had completed a 10-hour training on the PFA and SBT process. Training was provided by the PI to the independent observer to ensure there were clear expectations as to what constituted the dependent variables of interest. A written copy of each participant's dependent variables was

presented to the independent observer for review. The written description of the dependent variables also included non-examples. Additionally, the independent observer and PI both completed a 10-hour course on the basic procedures related to the SBT and PFA process.

Inter-Observer Agreement

Results

Inter-observer agreement is considered a necessary component of behavior analytic research (Essig et al., 2023). Inter-observer agreement was collected on participants' behavior throughout the baseline and intervention phases across behaviors during this study. Approximately 30% of sessions were reviewed by the PI and independent observer. This was in alignment with professional standards for single case research. For instance, the National Autism Center (2015), which disseminates information surrounding evidence-based practices, required that at least 25% of sessions be measured. The independent observer was also a BCBA with training in SBT. A total count formula was utilized to identify agreement between PI and the independent observer. The formula used to determine IOA was:

Total Count IOA= (Smaller of the Observer's Count/Larger of the Observer's Count) x 100

Seventeen sessions (approximately 31%) were reviewed for IOA within the baseline and treatment phases. Select video recorded sessions were shared with the independent observer to complete the total count IOA. Based on the formula utilized, IOA was approximately 81% agreement across sessions. This level of IOA was considered acceptable and did not indicate a concern with the reliability of data collected (Cooper et al., 2020).

Social Validity

A similar social validity evaluation was completed to extend the results from Rajaraman et al. (2022). Per the work of Baer et al. (1968), it was critical that this study be considered applied, which translates to being socially important.

Social Validity of Outcomes

Social validity was assessed at the conclusion of treatment to assess perceived social value of the effects of treatment. Staff members were asked a series of questions as outlined in Table 3. They were sent both electronic and paper copies of the measures and asked to return them upon completion. They were asked to rate all the included items on a 7-point Likert-type scale with the following descriptions: not acceptable/satisfied/helpful to highly acceptable/satisfied/helpful. A section for open comments was also provided for some measures. These results were used to identify how satisfied and acceptable staff found the procedures. The questions were modified from Jessel et al. (2018) to be utilized with staff members in comparison to parents as in the original study.

Table 3

Questions Regarding the Outcomes of Treatment

Rate the extent to which you are satisfied with the amount of improvement seen in your child's problem behavior in our clinic. 1 2 3 4 5 6 7 Not Satisfied Highly Satisfied Please comment:
Rate the extent to which you are satisfied with the amount of improvement seen in your child's communication skills in our clinic. 1 2 3 4 5 6 7 Not Satisfied Highly Satisfied Please comment:
Rate the extent to which you have found the assessment and treatment provided by our team helpful to your home situation up to this point. 1 2 3 4 5 6 7 Not helpful Very Helpful Please comment:
Rate the extent to which you found the recommended treatment acceptable. 1 2 3 4 5 6 7 Not Acceptable Highly Acceptable Please comment:
Please provide any additional comments for the researcher.

Social Validity of Procedures Implemented

To identify the social importance of this work, the PI posed to the staff involved a questionnaire at three different stages: (a) after the PFA process, (b) following the ECM in treatment, and (c) approximately two-months following the conclusion of this study. Staff were asked to rate all the included items on a 7-point Likert-type scale with the following descriptions: not acceptable/satisfied/helpful to highly acceptable/satisfied/helpful. The questions were posed to identify relevant opinions of classroom staff regarding their perceptions of both the PFA and

ECM process (see Table 4). Further, videos of both PFA and SBT sessions were reviewed with classroom staff prior to asking questions regarding the actual procedures. Lastly, the PI sought to understand staff perception as to the impact this procedure had on the rates of restraint and seclusion of students by inquiring into whether or not they had seen a reduction in problem behavior. The information gathered in both social validity measures was reviewed by the PI and is reported in the results and discussion. Further, any themes identified across participants were also reported.

Table 4

Questions Regarding the Practical Functional Assessment and Enhanced Choice Model Processes

Number	Question
	Practical Functional Assessment Process
1	Did you find the interview process acceptable?
2	Were you comfortable during the interview process?
3	Did you find the functional analysis of your student's problem behavior to be acceptable?
4	After watching the PFA, did you consider the functional analysis to be safe for your student and the analyst?
5	Were you comfortable watching the functional analysis of your student's problem behavior?
	Enhanced Choice Model Process
1	Rate the extent to which you are satisfied with the amount of improvement seen in your student's problem behavior
2	Rate the extent to which you are concerned about your student's ongoing problem behavior in the classroom.
3	Rate the extent to which you have found the assessment and treatment provided by your analyst helpful to your classroom situation
4	Rate the extent to which you feel confident applying the same strategies you have seen in the practice sessions when addressing your student's problem behavior in the classroom
5	How comfortable are you taking away your student's preferred activities and asking them to do something else?
6	Rate the extent to which you found the treatment to be feasible for use within your classroom during regular activities.
7	Rate the extent to which you found the training process helpful.
8	Rate the likelihood that you would agree to participate in this process again with another student with similar needs

Generalization

Generalization was assessed through multiple probes. At three points in the study, the PI conducted a baseline observation, a mid-treatment observation (after a student entered intermediate FCR phase), and at the conclusion of treatment to measure SPB for each participant. Specifically, the PI measured the rates of SPB for approximately one hour during a reported period a SPB was likely to occur historically as outlined by the IISCA. These observations occurred at the start of the study after consent had been received, after the intermediate FCR phase, and one week following conclusion of treatment. Information gathered was reported as rates of behavior. This information was reported in the results and was utilized to help identify if there was any type of interaction between treatment and rates of SPB in different settings.

Ethical Considerations

This study featured several components to ensure it met the ethical requirements set forth by the PI university's Institutional Review Board. First, this study received exempt IRB approval prior to conducting any portion of this research (see Appendix E). Additionally, informed consent was received for all participants from their legal guardian (see Appendix F). Informed consent was also obtained by any staff members who participated in this study (e.g., viewed session video; see Appendix G). Assent was also obtained and video recorded (with consent) in an age-appropriate fashion as this study involved minor children with disabilities (see Appendix H). Each participant was provided with a general overview of what would be done throughout this process and sought their approval to do so. Pseudonyms were assigned to each participant in order to maintain confidentiality. All video recordings of sessions were destroyed upon completion of the data analysis component of this study and any paper copies of data sheets were

shredded. Lastly, written consent was obtained by a school official as this study was conducted in the PI's school district in which he was employed (see Appendix I).

Conclusion

This study was unique in that it aimed to contribute to the drastically limited depth of knowledge surrounding the ECM. While considered a procedural variation to the SBT as based on the PFA process, the ECM requires further study to establish its role in potential EBP. This study identified eligible participants who engaged in SPB and needed treatment. Through use of a single-subject, multiple baseline, across behaviors design, this study not only identified a potential means to reduce SPB, it also aimed to teach socially significant replacement behaviors. By successfully identifying the reinforcing conditions for each student's SPB, this study also taught necessary prosocial skills through development of various FCRs. Further, this study could subsequently impact rates of restraint and seclusion, which have been associated with various harmful outcomes such as adverse academic performance, bodily injury, and even death (Kutz, 2009). Through diligent data collection and data analysis, the results of this study aimed to support students who historically were subjected to restrictive intervention and limited access to non-disabled peers. Further, through implementation within a school setting, this study might also provide school-based practitioners with additional options of assessing and treating SPB. The results and discussion for this study are presented in the next two chapters.

CHAPTER IV

RESULTS

In Chapter III, the methods section outlined the procedures utilized to expand our current understanding of SBT within an ECM. Additionally, those procedures also helped to identify whether an ECM within the school setting could reduce the frequency and intensity of SPB. The purpose of the study was to identify the effectiveness of the enhanced choice model in reducing the frequency of severe problem behaviors within school-based settings. A goal of this study was to demonstrate the ability to teach FCRs to be emitted in lieu of SPB. To answer the following research questions, a multiple baseline, across behaviors design was used:

Q1 Does the implementation of the enhanced choice model reduce rates or intensity of severe problem behavior?

Q2 Does the implementation of the enhanced choice model increase rates of functional communicative responses and tolerance responses?

Q3 Do practitioners find an enhanced choice model acceptable within the school setting?

This chapter presents data congruent with a single-case research design, specifically, rates of SPB across the baseline and intervention phases for each student, inter-observer agreement results, results from social validity measures, and the count of engaging in deliberately taught FCRs (e.g., simple, intermediate, complex, tolerance responses). Discussion related to these results are discussed in Chapter V.

Results

Using a multiple baseline, across behaviors design, data for each participant identified in this study were reviewed and analyzed upon completion of treatment. Over the course of approximately 12 weeks, three participants were able to enter and complete the initial stages of treatment as part of SBT within an ECM. The following sections outline the individual results gathered at each phase of treatment. This includes a pre-baseline that describes the narrative of the interview portion of the PFA. Additionally, it includes the baseline and intervention rates of problem behavior. Lastly, it includes the emission of FCRS in addition to the level of independence (e.g., responding without prompts). A summary of the various results can be found in the figures for each participant. It is important to note that at no point during the course of this study did the participants have to engage in severe problem behaviors. Rather, I was able to address precursor behaviors through sensitive observation of each client through each stage of this study.

Ralph

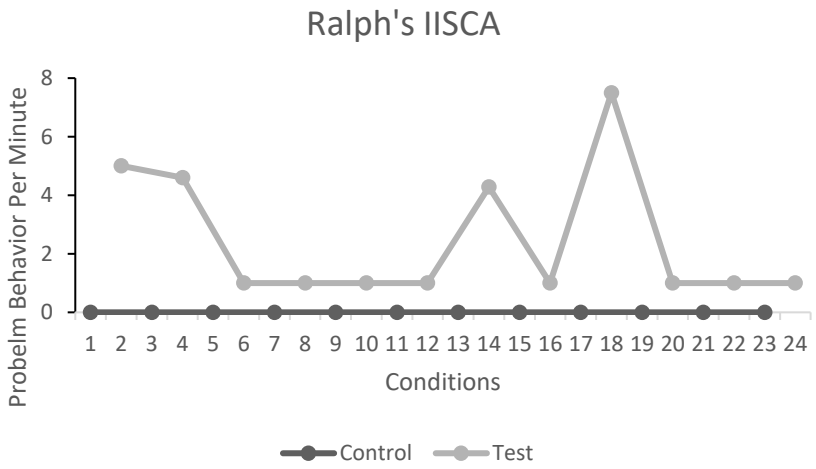
Pre-Baseline Phase

To conduct Ralph's IISCA, a PFA was conducted with his building principal. The interview portion of this process lasted approximately 19 minutes and was conducted with the principal as they had a familiar understanding of the student and reported they spent quite a bit of time during any moments of crisis (e.g., situations that required emergency interventions) with the student. The interview identified both pre-cursor and SPB that would be targeted during treatment and the assessment portions. Severe problem behavior was identified primarily in physical aggression, elopement, and property destruction. Additionally, pre-cursor behaviors were clarified as well through the interview process and included verbal statements, grunting,

and pushing away of work-related materials. Based on the interview, the test conditions and control conditions were able to be identified and materials gathered. This included work-related materials (e.g., short leveled reading passages which relied on ability to decode and read high frequency words, worksheets that required manipulation of the paper to include cutting, sorting, and gluing) provided from his classroom teacher for the test conditions and various reinforcing items and activities (e.g., preferred snacks, games, watching videos online about cooking) for the control condition. The IISCA demonstrated consistent problem behavior at varying rates throughout the test condition and zero problem behavior in the control condition. The average rate of problem behavior per minute within the test conditions was 2.27. This included 12 control conditions and 12 test conditions. An elongated period of testing occurred as during initial test periods a downward trend was initially indicated. To control for this and ensure stability amongst the data, additional data points were captured (see Figure 2 for full results). The implications and perceptions surrounding are addressed in the discussion chapter of this study.

Figure 2

Ralph's Informed Synthesized Contingency Analysis



Baseline Phase

Ralphs's baseline data were collected throughout the IISCA period. During this period, Ralph engaged in pre-cursor behaviors and did not engage in SPB. Pre-cursor behaviors included verbal statements such as "this is stupid," making grunt noises, and pushing/tossing away of presented worksheets. To evoke pre-cursor behaviors, classroom materials were gathered from Ralph's teacher prior to starting the IISCA. This included activities and materials to be used throughout the day to address academic needs. Ralph demonstrated delays (e.g., 1.5 grade levels behind) in various achievement areas such as basic reading skills and basic math as evidenced by his recent special education evaluation. Some of the materials to address these needs, as provided by the classroom teacher, included paper and pencil activities (e.g., sorting written words by initial consonants), worksheets (e.g., drawing lines to connect two images that rhymed together), and a reading passage (e.g., a passage that only contained short-a words). The length of time for the IISCA for Ralph was approximately one hour. This allowed for a total of 12 data points to be captured for the purpose of baseline data collection. The average for the baseline conditions demonstrated problem behavior at a rate of 2.27 times per minute.

In addition to collecting data on problem behavior, FCRs (e.g., simple, intermediate, complex, tolerance) were also measured during the baseline condition. Throughout the baseline condition zero FCRs were emitted for the following free operants: simple FCR, intermediate FCR, complex FCR, and tolerance response.

Intervention Phase

Problem Behavior. Twelve data points were collected throughout the intervention phase. This included three data points within each free operant behaviors addressed during treatment (e.g., teaching of FCRs). Problem behavior was also tracked throughout the intervention portion

of each FCR taught. Problem behavior was considered elevated during the baseline condition (e.g., average of 2.27 problem behavior per minute across conditions) and demonstrated a downward trend throughout all components of treatment. When a simple FCR was taught, problem behavior remained elevated initially (e.g., one problem behavior per minute); however, an immediate decline was noticed in subsequent teaching sessions. Throughout the remainder of the simple FCR sessions, problem behavior remained at zero. During the training of the intermediate FCR, problem behavior did not occur throughout any sessions. During the complex FCR training period, problem behavior elevated to one time per minute but followed a trend back to zero for subsequent sessions. Similarly, during the TR period, problem behavior occurred one time per minute in the initial session but it dropped to zero for the remaining sessions.

Functional Communicative Responses. During each session, the number of FCRs emitted was recorded. Simple FCRs were taught initially and three data points were captured during this period. An average of 13 simple FCRs was emitted during this phase of treatment. Following teaching simple FCRs, intermediate FCRs were taught. During the sessions for intermediate FCRs, an average of 14 intermediate FCRs were emitted. Upon completion of the intermediate FCRs phase, complex FCRs were introduced. Complex FCRs were emitted at a higher rate compared to previous conditions at 15 times per session. Once all FCRs were taught, a TR was introduced. Thirteen TRs were emitted during this period on average. Upon completion of the TR sessions, which included two separate sessions with no prompted responses and zero problem behaviors, treatment was terminated. Similar to Homer, Ralph required prompts only during the initial start of a FCR phase. For instance, during the simple FCR phase, Ralph demonstrated responses independently 87% of the time. During intermediate FCR phase, Ralph required zero prompts and was 100% independent. During the complex FCR phase, Ralph did

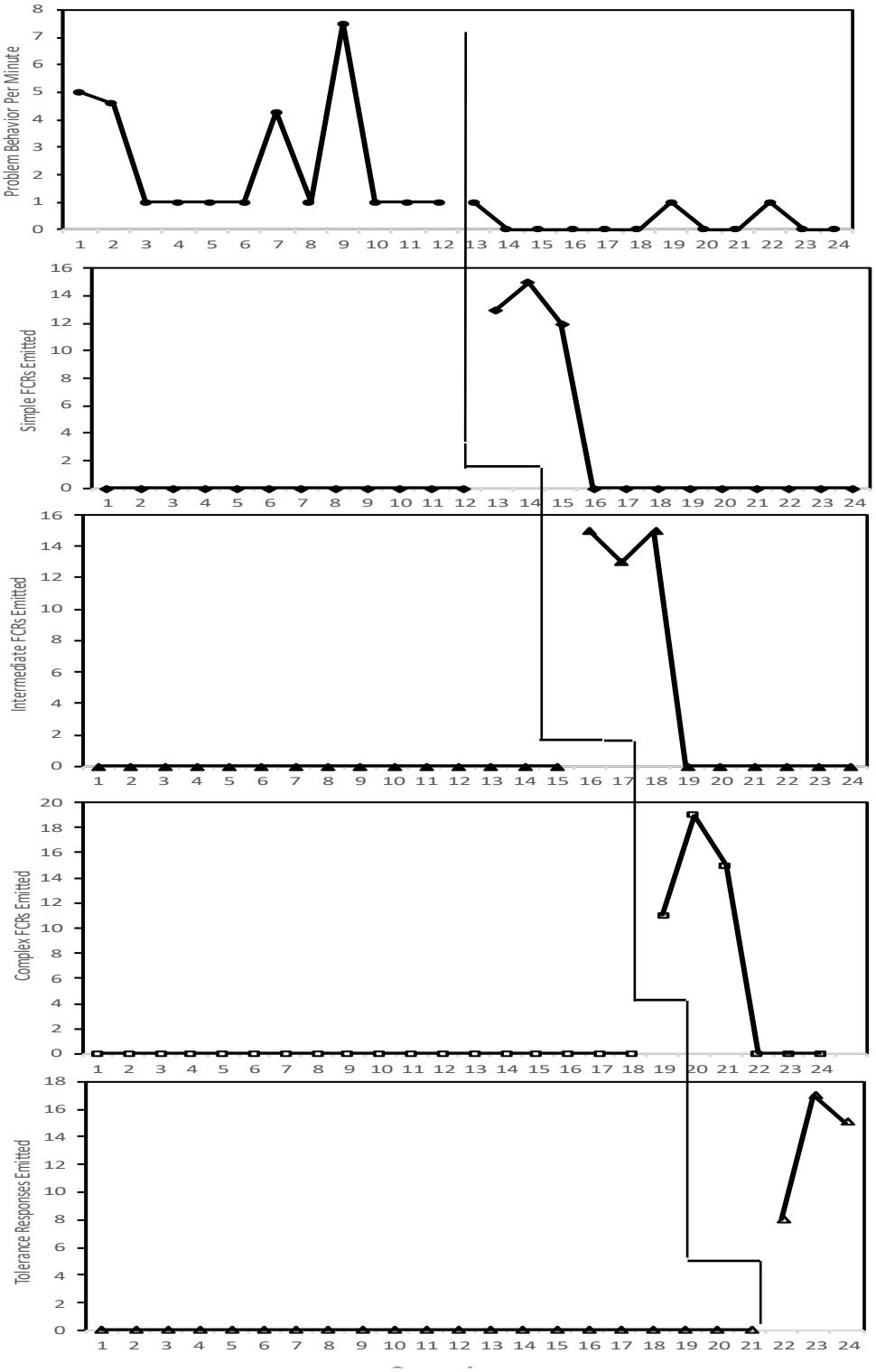
require prompts initially and was independent 91% of the time. Lastly, during Ralph's final phase of treatment, he required prompts and was independent 80% of the time

Summary of Ralph's Results

Ralph's IISCA differed from the two other participants as it required multiple alterations between the test and control conditions. Specifically, it required 12 demonstrations of escalated behavior. The reason for the additional demonstrations was based on the initial visual analysis in which a potential downward trend was noted (see Figure 3). To ascertain this, additional opportunities were presented to evoke and turn off the problem behavior. Upon conclusion of the IISCA, a clear pattern of elevated problem behavior was noted and zero problem behaviors occurred during the control sessions. This demonstrated a strong level of functional control. Further, the IISCA required no physical prompting and safety of both the implementer and student. Like Homer, Ralph demonstrated problem behavior at the initial onset of each new communicative behavior taught with the exception of the intermediate FCR. This led the PI to think about whether or not an intermediate FCR was necessary throughout the SBT process. Rajaraman et al.'s (2022), study only required an intermediate FCR to be taught to one participant per experiment but this study taught intermediate FCRs to each participant. This is further discussed in common findings.

Figure 3

Results for Ralph



A clear elevated rate of responding occurred following the FCT for each communicative behavior taught across multiple baselines. Ralph generally performed the FCRs similarly as each new behavior was taught. For instance, the average count across behaviors was approximately 14 times per session. Tolerance responding was initially dramatically low in comparison to other behaviors taught. It is important to note that during the initial tolerance phase, independent responding only occurred 80% of the time and a problem behavior occurred as well; therefore, this could account for the limited number of independent responses recorded. Thankfully, in subsequent sessions, Ralph did not engage in problem behavior when tolerating being told "no" and he was able to independently acknowledge it by saying "no biggie." Throughout tolerance training, Ralph engaged in commenting and self-awareness and exclaimed, "Wow, look at how much work I'm doing" with a smile on his face. At no point did Ralph elect to not engage in the SBT process.

Homer

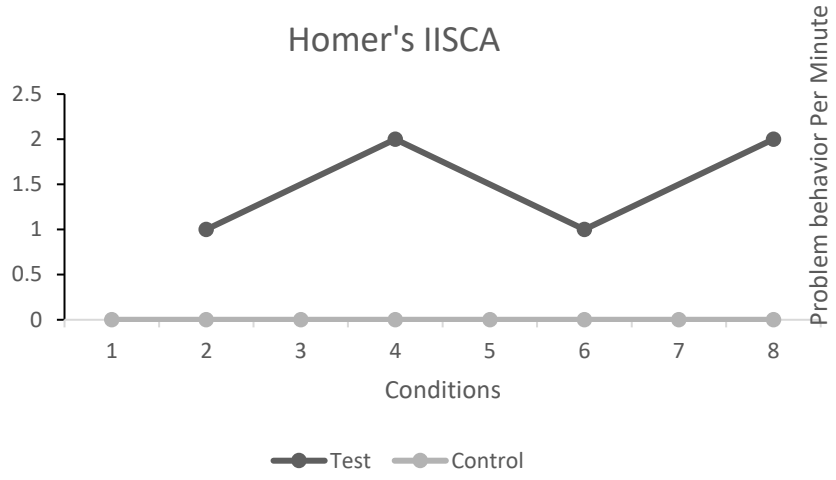
Pre-Baseline Phase

Homer's PFA was completed with his self-contained classroom teacher. The process began by interviewing the teacher to identify various pre-cursor behaviors and SPB that occurred frequently in the classroom. The interview took 28 minutes and was completed virtually through an online video platform. The interview indicated that Homer had vocal behavior and was able to effectively get his needs met through this method of communication. For instance, Homer's teacher indicated he communicated orally in full sentences and rarely struggled with his grammar (e.g., appropriate verb tense). While Homer did rely on problem behavior at times to communicate (e.g., SPB to escape demands), he was able to request through spoken words to get other needs met (e.g., "I need to go to the bathroom," "When is lunch?"). Homer's teacher also

reported he had strong play skills and enjoyed activities with others at times. The PI also witnessed this during the control conditions of the IISCA that included reciprocal (e.g., turn taking games) and independent (e.g., computer games) play skills. Further, the teacher also reported that Homer enjoyed playing gross motor activities outside at recess. She noted he enjoyed competitive games, although these games often led to problem behavior when Homer perceived he "lost the game." Target behaviors were identified that included pre-cursor behaviors (e.g., stating "he can't," "this is hard," etc., pushing away work) in addition to SPB (e.g., physical aggression, property destruction). To evoke these problem behaviors, the interview alluded to the presentation of work demands in addition to limited attention from adults. Demands included being directed to move to a different academic area in the classroom, directives to complete reading tasks (e.g., vocabulary games, comprehension questions based on a passage), and being denied access to preferred items (e.g., end of recess). Limited attention was described as periods of time when an adult was either working with another student or conversing with another staff member in the classroom. Based on this information, the IISCA was designed to evoke problem behaviors during EO periods. When not in EO, reinforcement was defined as "Happy, Relaxed, and Engaged" (HRE) and often included access to technology games (e.g., laptop with game websites), cars, and board games. To demonstrate strong experimental control, the IISCA attempted to demonstrate problem behavior during test conditions only and zero problem behavior during the control conditions. Eight data points were captured including transitioning from control (e. g., reinforcement period) and test (e.g., EO period). This included four test conditions and four control conditions. Results demonstrated zero problem behavior during all control conditions and an average rate of 1.5 problem behaviors during test conditions. Results are demonstrated in Figures 4-7.

Figure 4

Homer's Informed Synthesized Contingency Analysis



Baseline Phase

Homer's baseline data were collected throughout the IISCA period. During this period, Homer engaged in pre-cursor behaviors and did not engage in SPB. Pre-cursor behaviors included non-compliance statements (e.g., "I'm not doing that"), pushing away work, and putting his head down. To evoke pre-cursor behaviors, classroom materials were gathered from Homer's teacher prior to starting the IISCA. This included activities and materials used throughout the day to address academic IEP goals. Some of the materials included his laptop computer to complete academic tasks online (e.g., websites that addressed spelling and writing skills, websites that addressed both reading and mathematics), reading passages and associated workbooks with various worksheets (e.g., a narrative passage at his instructional level which included multiple comprehension classes which were mainly written responses), and math worksheets (e.g., basic calculation tasks such as addition or subtraction). The length of time for the IISCA for Homer was approximately one hour. This allowed for four data points to be

captured for the purpose of baseline data collection. The average for the baseline conditions demonstrated problem behavior at a rate of 1.5 times per minute.

In addition to collecting data on problem behavior, FCRs (e.g., simple, intermediate, complex, tolerance) were also measured during the baseline condition. Throughout the baseline condition zero FCRs were emitted for the following free operants: simple FCR, intermediate FCR, complex FCR, and tolerance response (TR).

Intervention Phase

Problem Behavior. Twelve data points were collected throughout the intervention phase. This included three data points within each free operant behavior addressed during treatment (e.g., teaching of FCRs). Problem behavior was also tracked throughout the intervention portion of each FCR taught. Problem behavior was considered elevated during the baseline condition (e.g., average of one problem behavior per minute across conditions) and demonstrated a downward trend throughout all components of treatment. When a simple FCR was taught, problem behavior remained elevated initially (e.g., two problem behaviors per minute); however, an immediate decline was noticed in subsequent teaching sessions. Throughout the remainder of the simple FCR sessions, problem behavior remained at zero. During the initial training of the intermediate FCR, problem behavior occurred one time per minute; however, a drastic decline to zero for remaining sessions occurred like for the simple FCR phase. During the complex FCR training period, problem behavior elevated to two times per minute but followed a similar trend back to zero for subsequent sessions. When the tolerance response was taught, problem behavior occurred at zero times throughout the sessions.

Functional Communicative Responses. A count was captured for the number of FCRs emitted during each session. Simple FCRs were taught initially and three data points were

captured during this period. An average of 13 simple FCRs were emitted during this phase of treatment. Following teaching simple FCRs, intermediate FCRs were taught. During the initial session for intermediate FCRs, simple FCRs were emitted two times and an average of 17 intermediate FCRs were emitted. Upon completion of the intermediate FCRs phase, complex FCRs were introduced. Complex FCRs were emitted at a lower rate compared to previous conditions at 13 times per session. Once all FCRs were taught, a TR was introduced. Twelve TRs were emitted during this period on average. Upon completion of the TR sessions, treatment was terminated. Regarding prompted responses, prompts were only required during the initial teaching and first session where an FCR was expected. For instance, during Homer's initial simple FCR phase, he demonstrated 80% of FCRs independently. Similarly, during the intermediate FCR training, Homer demonstrated 80% of responses without the need of prompts. Prompts were not needed during the TR phase but were required in the initial complex FCR phase in which he demonstrated 89% of FCRs without the need for prompting.

Summary of Homer's Results

Homer's initial assessment as part of the IISCA demonstrated a reliable pattern of responding during the control conditions in comparison to the test conditions. His results were consistent and did not demonstrate a large rate of variability during the test sessions (e.g., range of 1). Further, based on the zero rate of problem behavior in the control condition, this allowed the PI to confirm the ability to turn on and turn off the problem behavior. Like other participants within this study, Homer's IISCA process was able to reinforce only pre-cursor behaviors, which aligned with similar studies that focused on an ECM (Staubitz et al., 2022). This was important and helpful to note as a functional relationship was able to be established without evoking severe problem behavior and, therefore, did not require the presence of emergency interventions such as

restraint and seclusion. The premise of ECM was based on allowing choice throughout the process (e.g., exit) and at no point did Homer elect to leave the treatment or assessment sessions.

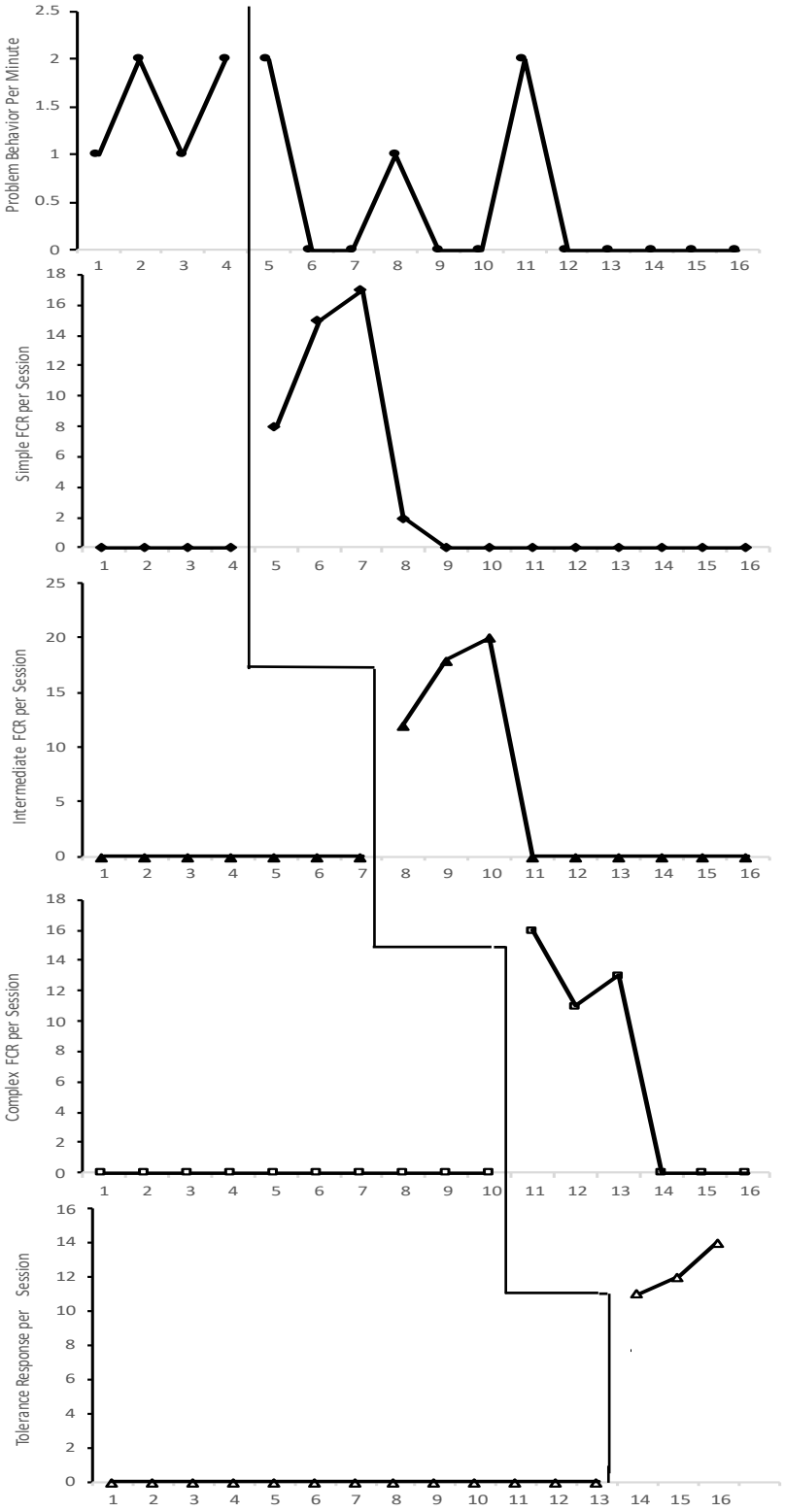
Additionally, Homer's IISCA was based on an interview that was relatively quick to conduct and reliable in its ability to evoke problem behavior. The IISCA was used to establish a baseline rate of problem behavior. This was consistent with Rajaraman et al. (2022). Upon review of the initial data, there was a clear downward trend of the rate of problem behavior upon introduction of the intervention. There were initial spikes in three of the four treatment conditions. For instance, during simple FCR training, Homer demonstrated problem behavior at a rate of one time per minute and during complex FCR, he demonstrated problem behavior at a rate of two times per minute. Fortunately, subsequent sessions for each FCR evoked zero problem behavior. This might be explained through an increased response effort that occurred between behaviors being taught. As Homer advanced between each phase, generally the complexity of the communication increased. For instance, during the simple FCR phase, Homer only had to vocalize two words compared to complex FCR where Homer had to garner attention (e.g., "excuse me"), wait for attention from PI (e.g., "yes, Homer"), and then engage in the full phrase (e.g., "Can I please have my way?").

Homer also demonstrated an ability to learn the FCRs, which were described as free operants, across each phase. For instance, Homer initially emitted the FCR at a low rate and required prompting; however, in subsequent sessions, he emitted them at an increased rate. Upon meeting mastery criteria for the simple FCR, the new FCR was taught and modeled. This allowed Homer to advance to demonstrating the intermediate FCR. Initially, Homer did engage in the previous FCR; however, this did not lead to reinforcement and instead allowed him to receive a prompt on the correct FCR. Similar responding occurred for subsequent FCRs in which

he demonstrated a rapid and high level of responding until coming in contact with a period of extinction when moving on to the following FCR phase. A visual display of Homer's results for treatment is included in Figure 5.

Figure 5

Results for Homer



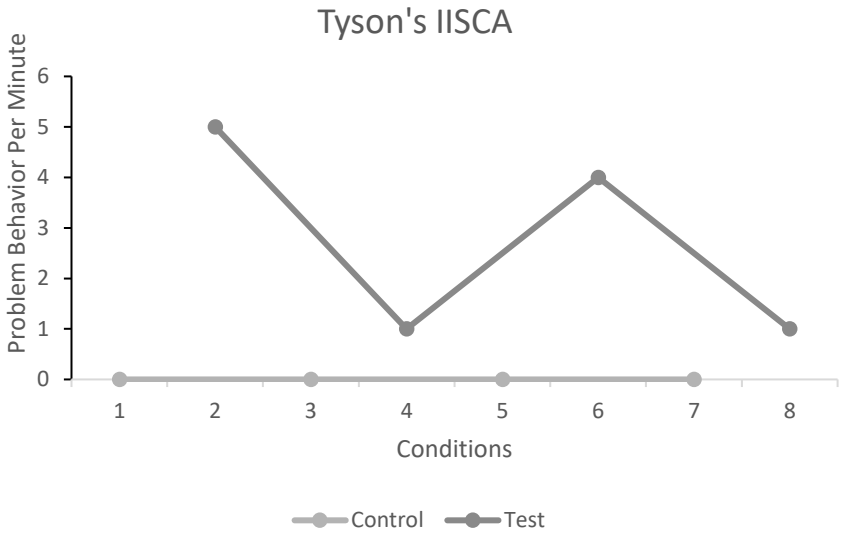
Tyson

Pre-Baseline Phase

A PFA was performed with Tyson that included an interview component that was conducted with his self-contained classroom teacher. The total length for the interview was approximately18 minutes. Tyson's teacher was very familiar with him and had him as a student for the past six months. Based on the responses gathered, test and control conditions were able to be developed. Additionally, target behaviors were identified that included pre-cursor and SPB. The interview discussed self-injury and physical aggression as major behaviors of concern, which would historically result in physical restraint to maintain safety. Four conditions were gathered for the test condition and demonstrated an average of 2.75 problem behaviors per minute. Similarly, four control conditions occurred in which problem behavior occurred zero instances. Figure 6 provides a visual representation of Tyson's IISCA data points.

Figure 6

Tyson's Informed Synthesized Contingency Analysis



Baseline Phase

Similar to the other two participants, Tyson's baseline data were collected throughout the IISCA period. Throughout this component of the study, Tyson did not engage in SPB and only engaged in pre-cursor behaviors: statements indicating wanting to go home (e.g., "When are we going home?"), statements to escape the assessment context (e.g., "Can I get a drink of water?"), and attempting to engage in off-topic conversations. To evoke pre-cursor behaviors, classroom materials were gathered from Tyson's self-contained teacher prior to the start of the IISCA process. The materials utilized were the same ones used for Homer since they were part of the same classroom but adjusted for his differing instructional level: his laptop computer to complete academic tasks online, reading passages and associated workbooks with various tasks (e.g., a narrative, fictional passage in which he may have been directed to underline, circle, and highlight various text elements), and math worksheets (e.g., addressing fluency in multiplication and division). The length of time for the IISCA for Tyson was approximately 50 minutes. This allowed for four data points to be captured for the purpose of baseline data collection. The average for the baseline conditions demonstrated problem behavior at an average rate of 2.75 times per minute.

In addition to collecting data on problem behavior, FCRs (e.g., Simple, Intermediate, Complex, Tolerance) were also measured during the baseline condition. Throughout the baseline condition a total of 0 FCRs were emitted for the following free operants: simple FCR, intermediate FCR, complex FCR, tolerance response (TR).

Intervention Phase

Problem Behavior. Throughout the intervention conditions, 12 data points were collected across the various behaviors taught including three data points within each free operant behavior that was addressed during treatment (e.g., teaching of FCRs). Problem behavior was also tracked throughout the intervention portion of each FCR taught. Problem behavior was considered elevated during the baseline condition (e.g., average of 2.75 problem behaviors per minute across conditions) and demonstrated a downward trend throughout all components of treatment. When a simple FCR was taught, problem behavior remained at zero throughout all sessions. During the training of the intermediate FCR, problem behavior did not occur throughout any sessions. During the complex FCR training period, problem behavior elevated to one time per minute but followed a trend back to zero for subsequent sessions. During the TR period, problem behavior remained at zero all sessions.

Functional Communicative Responses. Simple FCRs were initially taught and three data points were captured during this period. An average of 12 simple FCRs were emitted during this phase of treatment. Following teaching simple FCRs, intermediate FCRs were taught. During the sessions for intermediate FCRs, an average of 16 intermediate FCRs were emitted. Upon completion of the intermediate FCRs phase, complex FCRs were introduced. Complex FCRs were emitted at an average of 14 times per session. Once all FCRs were taught, a TR was introduced. Seventeen TRs were emitted each session on average. Upon completion of the TR sessions, which included two separate sessions with no prompted responses and zero problem behavior, treatment was terminated.

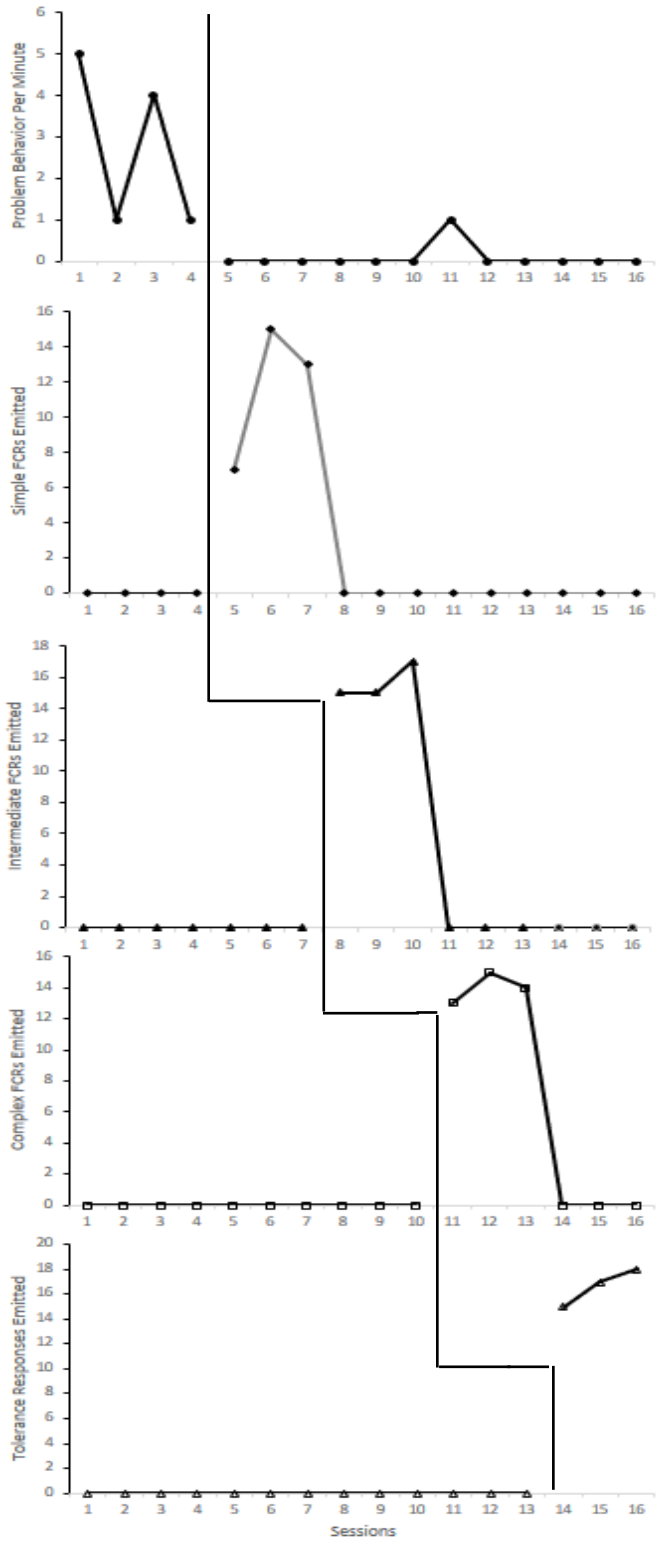
Summary of Tyson's Results

Tyson demonstrated similar results in his IISCA to Homer. There was a clear pattern of behavior that occurred in the test period when EO materials were presented. Notably, less problem behavior occurred in the test conditions when the work presented was to be completed on a computer (e.g., online academic activities) in comparison to when paper and pencil tasks were utilized. Overall, a clear functional relationship was established as no problem behavior occurred during the control condition. When thinking about designing a control condition, it was important to ensure that varied but reliable items were selected especially when progressing through treatment.

Tyson was the only participant who elected to leave early on two occasions (e.g., initial phase of simple FCR). For instance, during the initial phase of simple FCR, Tyson only emitted six responses and due to leaving resulted in a lower number compared to future sessions. This decision to exit was not necessarily surprising to the PI as Tyson often engaged in responses to attempt to leave school early (e.g., "I don't feel good and want to go home"). Fortunately, upon the final phases of treatment, Tyson did not elect to leave the treatment process. Being able to exit at will is another hallmark of the ECM process (Rajaraman et al., 2022). This ability to come and go prevented the need for the PI to engage in escape extinction procedures and limited the likelihood for physical prompts that might lead to escalated behaviors (e.g., SPB). Figure 7 provides a visual representation of Tyson's baseline and treatment data points.

Figure 7

Results for Tyson



Generalization Probes

While the goal of this study was not to assess generalization of treatment effects, to align with the seven dimensions of ABA, generalization data were collected. Throughout the study at three separate periods, problem behavior was observed and recorded for each participant. The initial probe was conducted during the baseline period, the second prove was gathered upon conclusion of the intermediate FCR phase, and the final probe was captured approximately one week following conclusion of treatment. Each observation occurred for approximately 60 minutes.

Ralph initially demonstrated problem behavior at a rate of seven times throughout the hour that included both problem behaviors of physical aggression and elopement. At the mid-way point, Ralph demonstrated problem behavior approximately three times throughout the hour when observing the same behaviors. Upon conclusion of treatment, Ralph had engaged in problem behaviors approximately four times; however, these were considered “disrespectful behavior” and “refusal to follow directions” as described by the teacher. No target problem behaviors were observed throughout the conclusion generalization probe.

Homer’s initial generalization probe was taken in his self-contained classroom. During this period, problem behaviors (e.g., property destruction) were observed at a rate of three problem behaviors throughout the hour. During the mid-point probe, Homer was observed when a substitute teacher was present and demonstrated five problem behaviors. Upon the final observation, the PI confirmed the presence of the classroom teacher and a rate of three behaviors were observed primarily in the form of ignoring directions from staff members.

Tyson was observed on the same day as Homer since they were part of the same self-contained classroom. The observation period occurred at the same time as Homer’s. The initial

baseline probe indicated a rate of problem behavior at nine per hour (e.g., self-injury). During the mid-point probe, problem behavior occurred at a rate of 11 times per hour. At the final probe, problem behavior was observed at a rate of seven per hour.

Social Validity Responses

Social validity measures were applied to two staff members: one special education teacher and one administrator. These staff members participated in all components of the experiment including participation in the interview, observation of the IISCA, and observation of treatment sessions. Social validity measures were gathered and analyzed by the PI. Descriptive statistics for each measure are reported below.

Regarding classroom staff's perception about the outcomes from treatment, a range of one to seven was offered. A score of 1 indicated *not satisfied* and a score of 7 indicated *highly satisfied*. Upon averaging the responses for this section, an average of 7 was reported regarding the extent that staff found treatment acceptable. This would be considered "highly satisfied." Regarding helpfulness, an average score of 4.5 was gathered. This was considered a median score and fell slightly toward *very helpful*. Regarding satisfaction surrounding the amount of improvement, average scores fell at 5.

Staff were also presented questions surrounding the PFA process, which included a range from 1—*not at all* to 7—*very much so*). Averages were computed from both respondents. Overwhelmingly, results indicated a strong level of acceptableness throughout this process. An average of 7 was achieved for four of five items.

Lastly, social validity measures were captured about the ECM components (e.g., ability to leave at any point, no physical prompts). Eight items were presented with a similar scale being provided as identified above (e.g., 1 being *not at all* and 7 being *very much so*). Regarding the

extent that classroom staff were satisfied with improvement in problem behavior, an average of 5.5 was warranted. This would indicate above *not sure* but below *very much so*. Regarding the extent of continued concern regarding student behavior, an average of 4 was computed, which indicated *not sure* regarding this item. Similarly, lower averages (e.g., 4.5) were found for items that assessed whether classroom staff felt comfortable applying the same strategies used during treatment in addition to feasibility to implement during regular class activities. The implications of these results are reviewed within the discussion section of this study.

Summary of Results

Each participant demonstrated responses that were indicative of a functional relationship through use of a multiple baseline, across behaviors design (Rajaraman et al., 2022). Upon visual inspection of each participants' graphs, there were clear differences in responding when comparing rates of problem behavior across both the baseline and treatment phases of this study. Additionally, a functional relationship was established for each behavior taught during the FCR phases (e.g., simple, intermediate, complex, and TR). Rates of problem behavior declined from an average high during baseline of 2.17 problem behaviors to rates of zero by the final session of tolerance training. Additionally, FCRs selected as behaviors as part of this design demonstrated elevated rates of responding for each participant in each FCR condition. A drastic and sudden decrease in responding for each FCR occurred once extinction took place and criteria to move on to the next phase of treatment occurred. Relatively favorable results were also gathered through the social validity measures and specific implications of this are reviewed in Chapter V. Lastly, generalization probes were conducted at three separate points throughout the study and demonstrated an overall decline for two of three participants. These results were congruent with similar results received by Rajaraman et al. (2022).

CHAPTER V

DISCUSSION

Students identified under the special education eligibility of emotional disturbance are at risk for various negative outcomes such as an increased rate of dropping out, incarceration, and poor academic skills (Staubitz et al., 2022). Often, these students present with "severe and persistent patterns of problem behavior that impede learning but cannot be attributed to…other factors" (Staubitz et al., 2022, p. 1), which could present challenges for staff who are tasked with addressing and assessing said behaviors. Due to the potential for risk when addressing SPB, these types of students are often met with emergency interventions that might lead to further escalation (Rajaraman et al., 2022) and are associated with various risks (e.g., death; Kutz, 2009). Consequently, the purpose of the study was to identify the effectiveness of the enhanced choice model in reducing the frequency of severe problem behaviors within school-based settings. Additionally, this study aimed to add to the current limited knowledge base regarding the ECM within a school context. Lastly, this study assessed social validity of practitioners who witnessed said procedures. The goal of this study was to demonstrate how efficiently FCRs could be taught in the school context while reducing rates of problem behavior during treatment and avoiding the need for physical prompts or emergency procedures such as restraint and seclusion. This study utilized a multiple baseline, across behaviors design to answer the research questions that guided this work in alignment with the original Rajaraman et al. (2022) study.

This chapter discusses and presents an interpretation of the results. First, themes across participants are be explored and analyzed. Following this, this study answers whether the

research questions were addressed. Lastly, limitations are addressed that lead to suggestions for future research and applications for practitioners prior to concluding this study.

Across all participants, problem behavior declined from the baseline condition when presented with academic demands in comparison to treatment in which problem behavior occurred relatively little or zero when similar demands were presented. Additionally, all participants were able to acquire new FCRs successfully and quickly following instruction, which corresponded with a decrease using problem behaviors. One could surmise that through the introduction of functional communication skills, each participant was able to utilize appropriate vocal responses in lieu of severe problem or precursor behavior. These results were congruent with results obtained by Rajaraman et al. (2022) and supported the implementation of SBT within an ECM in the school setting. Further, 66% of participants demonstrated no aversion to treatment and elected to participate each time they were offered to do so. While one participant did leave at different points of treatment, it was important that he was able to complete the treatment. In thinking about the hallmarks of ECM (Rajaraman et al., 2022), this study demonstrated that using an ‘open-door’ model also avoided the use of physical prompts and escape extinction. Further, during no period of treatment or assessment did an emergency intervention have to be used. Additionally, the PFA, which included an interview component, was relatively efficient (e.g., less than 30-minutes) and allowed for clear control during test conditions.

Findings Related to the Research Questions

The intent of this study was to identify the effectiveness of the ECM in reducing the frequency of severe problem behaviors within school-based settings. While there was extensive literature regarding the procedure it evolved from (skills-based treatment; Hanley et al., 2014),

this study also aimed to add to the current limited knowledge base regarding the ECM. To do so, three research questions were developed and a multiple baseline, across behaviors experiment was implemented. This section addresses each of the research questions briefly regarding how the results answered them.

The SBT model has been well established in addressing and reducing rates of SPB (Hanley et al., 2014). However, many studies focusing on these practices have catered to students typically identified as developmentally delayed or autistic. Further, SBT often included a component of extinction that might escalate problem behavior because of what was described as an extinction burst (Crockett & Hagopian, 2006). Because of this, other research groups saw a need to develop procedures based on SBT but without the need for escae extinction and a risk for escalation. This was an abbreviated development of the ECM of SBT (Rajaraman et al., 2022; Staubitz et al., 2022).

Through implementation of this model, this study clearly demonstrated that teaching simple, yet efficient FCRs resulted in a reduction SPB across time. Additionally, through a gradual teaching procedure that included graduating the complexity of the FCR, escalated behavior was minimized and did not result in the need for emergency restraints or seclusions. These results were similar to recent studies evaluating the ECM (e.g., Staubitz et al., 2022) in that through a teaching of FCRs in an ECM, rates of problem behavior decreased. Conversely, the ECM led to increased engagement in utilizing FCRs across all phases of the study (e.g., simple FCR, TR).

Lastly, this study aimed to answer whether the treatment procedures and assessment procedures were acceptable within the school setting. Results gathered through administration of social validity questionnaires were overwhelming positive in nature. For instance, when asked

about the acceptability of the IISCA process, respondents indicated on average that they were *very much so* comfortable during the interview process and safe. Additionally, respondents on average felt the actual functional analysis was *very much so* acceptable and safe. These results were also similar when reviewing responses related to the ECM portion and treatment in general. For instance, respondents were generally pleased with the amount of improvement seen in their student's problem behaviors (e.g., average score of 5.5 out of 7). Regarding actual implementation of these strategies, however, respondents often indicated they were *not sure* about their confidence in applying the same strategies in addition to the feasibility of use during classroom lessons.

Upon review of the initially developed research questions, it appeared that this study was able to answer each one by providing additional evidence to support the continued exploration of the ECM within SBT. The following section addresses why these findings are important to current and future practitioners.

Findings and Related Implications for Practice

The findings discussed above might be meaningful to a variety of professionals who support students with SPB. While this study assessed the impact of a particular behavior analytic intervention for individuals who were characterized as EBD, there might be application to other populations of disability as well (e.g., Autism). This section addresses the various implications regarding the use of ECM within SBT for current and future practitioners.

As evidenced by the results, this study demonstrated that the PFA process within an ECM was able to confirm a functional relationship for SPB for all participants. In particular, it is important to note that the PFA process was relatively efficient with regard to the time it took to complete in comparison to other models of functional analysis. For instance, the average PFA

generally takes 36 minutes to complete (Jessel et al., 2018) in comparison to the standard functional analysis model (Iwata et al., 1994) that took an average of 450 minutes to complete. Another major benefit of the PFA process, specifically within an ECM, was only pre-cursor behaviors were emitted during this process, which led to safety for both the participant and PI. Conversely, during the standard functional analysis model (Iwata et al., 1994), implementers had to evoke SPB to ascertain the specific function, which might have resulted in physical harm to the participants or staff. The PFA within an ECM was a departure from the standard model in that it might allow the use of reliable pre-cursor behaviors to evoke reinforcement rather than having to engage in dangerous forms of behavior (e.g., self-injury, physical aggression, etc.). Lastly, during the PFA process, there was never a need to engage in physical management or physical prompting procedures despite each participant having a history of such.

Regarding the efficiency and safety of a PFA within an ECM, practitioners were afforded another option to safely analyze the function or purpose of SPB with a greater level of certainty than standard functional behavior assessment methods (e.g., descriptive assessments). This was important and meaningful as educators and behavior analysts often report they do not implement functional analyses due to a lack of time. For instance, Oliver et al. (2015) found in a survey to practitioners that 57.4% of respondents indicated they did not have enough time to conduct a functional analysis. Through use of the PFA, not only could educators complete a functional analysis quickly, they could do so safely. For instance, Oliver et al. also determined that for 21.1% of responses, there was a "lack of approval from administration or families" (p. 823).

Regarding the actual implementation of ECM within a SBT, this study was meaningful to the field of special education because it provided another methodology to support students with SPB. While ECM within SBT might be considered resource intensive (Staubitz et al., 2022),

students who presented with SPB and were eligible under IDEA would continue to receive their right to FAPE. To provide FAPE and avoid costly due process litigation, which nationally costs more than $90 million per year (Mueller, 2009), an intervention of this type should be considered. While the costs associated with this particular intervention might vary, Staubitz et al. (2022) cited a figure of $5,000 for professional development at a school district in order to support continued implementation of ECM within a SBT.

Further, an ECM within a SBT also demonstrated the ability to quickly and efficiently develop meaningful FCRs that were able to be shaped into more contextually appropriate responses. For instance, through use of this intervention, special education teachers might be able to quickly teach more appropriate phrases or FCRs (e.g., “my way”) in lieu of SPB. Often, as evidenced by the results in Chapter IV, these FCRs could be taught in a matter of hours over one to three days. Additionally, to address staff concerns regarding overuse of FCRs, this study also demonstrated the ability to teach EBD students how to tolerate being denied access to reinforcement (e.g., “no biggie”). While not explicitly studied within the participants’ educational environment (e.g., self-contained classroom), other studies evaluating this model demonstrated the generalization and maintenance of skills in these settings (e.g., Staubitz et al., 2022) and should be considered when thinking about implementing in natural environments.

It should be noted, however, that despite the positive results of being able to teach FCRs and reduce SPB in addition to preventing the need for the use of emergency procedures (e.g., restraint and seclusion), there were still some concerns regarding the practice and implementation of these types of procedures, specifically by those with limited knowledge in behavior analysis. When considering the results presented by the social validity measures, respondents indicated they were *not sure* if they could implement these procedures. Prior to

considering implementing ECM within a SBT model, special education staff should seek out professional development (e.g., online training modules on the PFA and SBT process) and consultation from a BCBA. However, receiving consultation from a BCBA in the school settings continues to be a practical issue due to limited access to individuals with training and education in ABA. That being said, there is hope regarding access to BCBAs within the school setting. Layden (2023) reported that individuals with varying backgrounds (e.g., special education teacher, related service providers, administrators) continue to receive their board certification at increasing rates. Ultimately, the ECM within a SBT model could be done by school providers. With appropriate training (e.g., professional development) and support (e.g., access to BCBAs for technical assistance), special education teachers could implement these practices.

Limitations

Due to the limited time remaining in the school year upon the start of this study, a major limitation was the limited amount of time to work through the entire SBT treatment process, which eventually involved teaching contextually appropriate behavior (CAB) including the demonstration of FCRs in the natural context (e.g., general education classroom). This study did not evaluate the effects of an ECM on CAB, which is typically the next phase of treatment once an individual has learned the appropriate communicative responses. While this limitation might not have impacted the results gathered in the treatment phases of the study, it very well could have impacted the results gathered in the generalization probes (e.g., two of three participants demonstrated some form of problem behavior after treatment concluded). Further, this study did not complete the entire treatment process, which was dissimilar to previous studies in which ECM was analyzed. For instance, Rajaraman et al. (2022) was able to work participants through the CAB process; however, their study took 10 weeks and five days. When translated to school

weeks (e.g., five day week), this would be approximately 15 school weeks, which might approach a total experiment duration of approximately four-and-a-half months of school. By teaching CAB, previous studies were able to impact their participants' ability to engage in educational opportunities within their classrooms (Staubitz et al., 2022). Unfortunately, this study was unable to address CAB so no assumptions might be made experimentally regarding its ability to impact behavior outside of the experimental context.

Another limitation should be addressed regarding the IOA. When conferring with the independent observer upon conclusion of IOA scoring, they indicated that at times, there was difficulty hearing specific vocalizations or the camera did not capture the student when they stepped out of range. Future studies might improve upon this limitation by utilizing a more robust camera recording system. This type of limitation might have impacted the overall IOA score calculated for this study. While this score was considered above the minimally accepted rate (Cooper et al., 2020), it was lower than previous studies that measured an ECM. For instance, Staubitz et al. (2022) reported multiple IOA figures in their study that were above 95%. Nonetheless, IOA was an important metric to assess and report. Cooper et al. (2020) suggested that while "IOA is not a direct indicator of the validity, accuracy, or reliability of measurement, it has proven to be a valuable and useful research tool in applied behavior analysis" (p. 119). Even more extreme stances regarding IOA have been purported. For instance, Kratochwill et al. (2013) suggested that any single case studies without IOA could not be used to establish an evidence base (Essig et al., 2023). While this particular study did report IOA and should be used to support an evidence base for ECM, the minimal IOA should be considered when interpreting findings. Additionally, this study utilized a small number of total participants (e.g., three) and this might be improved upon and expanded in future research to address limitations associated

with smaller participant sample sizes. For instance, findings in this specific study supported the application of SBT within an ECM for a very small population of students (e.g., elementary age students with EBD) and generalizations should be limited to individuals with similar characteristics.

This study also did not measure procedural fidelity due to time limitations (Essig et al., 2023; Gresham, 1989). This process involves the measurement of the intervention procedures as they are intended (Essig et al., 2023). Measurement of this particular type is important as it could support the findings by increasing the likelihood there was in fact a functional relationship due to proper implementation of the independent variable (Peterson et al., 1982). Unfortunately, despite the known importance of this type of measurement, this study did not incorporate a measure of this type of fidelity. This was a common occurrence in the behavioral literature, however. For instance, Falakfarsa et al. (2022) conducted a review of this topic within the journal *Behavior Analysis in Practice* and found that between the years 2008-2019, only 46.8% of published articles included procedural fidelity data (Essig et al., 2023). Through future research and by incorporating procedural fidelity, we can increase "a degree of confidence that responses desired of interventionists are being performed correctly… Moreover, reporting high IOA for procedural fidelity increases confidence in the measure of procedural fidelity" (Essig et al., 2023, p. 83). If procedural fidelity was reported in this study in particular, the findings would have even greater evidence to support the establishment of an ECM as part of the evidence base for treatment of SPB.

Additional limitations of this study included the research design. While multiple baseline designs are considered acceptable by flagship ABA journals (e.g., *Journal of Applied Behavior Analysis* [ABA]), a more stringent design (e.g., reversal) might improve the credibility of future

findings. For instance, Staubitz et al. (2022) conducted a study that incorporated multiple single-case designs. Initially, an A-B-A-B reversal design was used initially and then a changing criterion design was incorporated. In thinking about the results of this study, a stronger design might have alluded to more causal relations being surmised. Lastly, a period for maintenance assessment did not occur during this study due to limited time between the start of this study and the end of the students' school year. Maintenance could be described as the continued emittance of skills taught upon concluding treatment across relevant contexts and settings (Cooper et al., 2020). Without this specific type of measure in place, it is impossible to know whether or not over time if participants would continue to emit the FCRs in addition to maintaining relatively low rates of problem behavior. However, when reviewing recent studies addressing ECM, both Staubitz et al. (2022) and Rajaraman et al. (2022) included components of this and might be looked to to address this in future research.

Implications for Future Research

Based on the results of this study, further research is needed to establish the credibility of ECM as an intervention. While numerous studies have been published supporting SBT, upon which ECM was based, future research should assess its utility and applicability within the classroom setting. Based upon review of the limitations addressed, future research might seek to remedy these concerns through the development of additional studies.

For instance, future studies might look to understand the impact the ECM has on reduction of SPB and a student's ability to be included more often with their non-disabled peers. This might include utilizing a single case methodology such as a multiple baseline across participants to examine how teaching CAB could reduce the rates of SPB and increase the use of appropriate FCRs. A secondary variable of interest that should be measured would include the

percentage of time a student spent throughout their day with their non-disabled peers. This might include utilizing a duration tool to capture periods of time throughout the study by recording how long they were around their general education peers.

Additionally, a future study might seek to address concerns regarding both IOA and procedural fidelity. Specifically, a study utilizing a single case design might utilize better quality video recording equipment that allowed for a panoramic view of the environment. Through this, procedural fidelity might be recorded and analyzed to determine how often critical components of the procedure were implemented as intended; it might lead to a stronger functional relationship and further increase the evidence base of ECM. Additionally, there is a push for behavior analytic research to go from good to great (Essig et al., 2023). For instance, Essig et al. (2023) made recommendations through their paper to encourage the *Journal of Applied Behavior Analysis* to amend their author guidelines to incorporate IOA for both independent and dependent variables.

Future studies should also explore a comparison between the effects of a SBT standalone model compared to SBT within an ECM in addition to a wait-list control group. This is considered a randomized controlled trial (Peterson et al., 2019). While randomized controlled trial experiments are rarely conducted within behavior analytic research, they are often considered a gold standard for experimentation (Peterson et al., 2019). A future study could randomly assign participants to a treatment condition (e.g., SBT, SBT within an ECM, and wait-list control). Participants would then enter the study and experience either intervention or would eventually experience an intervention. Through repeated measurement of various dependent variables within a single case design, a functional relationship could be established and

compared across treatment groups to ascertain whether or not one treatment model demonstrated stronger effects.

Lastly, a final research study might seek to expand implementation of ECM across special educators in addition to continuing to assess the social validity of procedures and results. This type of study might seek to understand how special education teachers can readily implement similar procedures outlined in this study and others (e.g., Rajaraman et al., 2022; Staubitz et al., 2022). To do so, the study could utilize a behavioral skills training methodology to impart the necessary and skills to implement SBT within an ECM. A similar study was conducted through a seminar-based training that taught participants how to conduct a PFA and might be used to guide a similar study on teaching the ECM and SBT process (Whelan et al., 2021). In addition to assessing whether or not special education staff could implement said procedures, a study might also gather input regarding the social validity of ECM procedures in addition to their perception regarding its ability to reduce SPB. Several social validity measures have been established regarding ECM and might be considered by reviewing Rajaraman et al. (2022).

Ultimately, any future research surrounding ECM, regardless if addressing any of the aforementioned suggestions, would continue to expand our current understanding of this intervention. At the time of this study, four studies addressing ECM were located upon a review of Google Scholar and ERIC research database. Further, this study is promising and could lead to additional experimental studies that might lead to a reduction in the need for restraint and seclusion.

Conclusion

This study served multiple purposes that aimed to increase the current knowledge base surrounding SBT within an ECM. Through visual inspection of the results, several findings were identified through this experiment that utilized a multiple baseline, across behaviors design. First, by implementing the ECM, all three participants demonstrated a reduction in their rates of problem behavior throughout the treatment portions of this study in comparison to elevated rates of problem behavior during the baseline condition. Additionally, this study demonstrated the ability to teach increasingly complex, yet topographically dissimilar, FCRs across each phase of the study for each participant. Lastly, this study demonstrated high levels of acceptability regarding the PFA process and the SBT within an ECM. However, it should be noted there still continued to be some hesitancy regarding the actual implementation of similar procedures by school staff.

By addressing SPB through the ECM, this study lent the field of special education another tool to be able to safely and efficiently assess and treat dangerous behaviors within the school setting. This study was able to quickly assess the purpose of problem behaviors in addition to being able to teach new FCRs within a period of approximately 12 weeks. While ECM should not be considered a default intervention for all students with problem behaviors, it should be considered in particular for students who have a history or pattern of previous restraint and seclusion. Through the ECM, this study was able to avoid the need for physical restraint and physical prompting during both the assessment and treatment processes.

Continued research on this topic is needed, however. At the time of this study, only four articles addressed this intervention based upon a review of Google Scholar and ERIC. This study will contribute to the topic but in order to establish ECM as an evidence-based procedure, future

research should address the limitations and topics posed in this chapter. This included but was not limited to assessing the impact ECM had on SPB in generalized settings, measuring and reporting procedural fidelity, and developing a randomized control trial to evaluate other interventions compared to ECM.

Despite the need for continued research, the ECM is a promising practice that might reduce the rates of restraint and seclusion and ultimately mitigate those associated risks (e.g., physical injury, death, etc.). As outlined by various studies and reviews (Kutz, 2009) of the types of practices (e.g., physical restraint), there can be serious consequences when emergency interventions are considered default practices. Additionally, the use of restraint and seclusion could also result in a denial of FAPE and lead to various legal concerns for schools. Because of this, we are not only obligated to consider EBPs but also should be compelled to identify practices that might address SPB. Through the development of prosocial behavior through the teaching of FCRs, we can help students identified with EBD to continue to access educations in the LRE.

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APPENDIX A

RECRUITMENT FLYER

Faculty Advisor: Tracy Gershwin, tracy.gershwin@unco.edu

A Conceptual and Applied Analysis of Treating Severe Problem Behavior and Reducing the Need for Emergency Interventions

Calling all special education teachers and families of students with IEPs.

Who: Do you have a student who engages in severe problem behavior (aggression, self-injury, or property destruction)?
What: Explore a new intervention aimed reducing severe behaviors by participating in a multi-week study.

Where: In-Person in your schools

When: Approximately 4-8 weeks of time

Why: To help improve our understanding of current practices related to supporting students with severe problem behaviors.

APPENDIX B

SAMPLE DATA SHEET FOR INFORMED SYNTHESIZED CONTINGENCY ANALYSIS DATA COLLECTION

IISCA Data Sheet-*Performance-Based Criteria* (March 3, 2019) Child/Client Name: _____ Analyst: _____ Implementor:_____ Consultant:_____

R1s:

R2s:

% engagement: _____

% of PBs in EO:

Minute	**0**		**1**		**2**		**3**		**4**		**5**		**6**		**7**		**8**		**9**		**10**		**11**		**12**		**13**		**14**		**15**		**16**		**17**	
Second	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*
If in EO R1																																				
If in EO R2																																				
EO Line																																				
SR Line																																				
If in SR R2																																				
If in SR R1																																				
Engaged																																				

Minute	**18**		**19**		**20**		**21**		**22**		**23**		**24**		**25**		**26**		**27**		**28**		**29**		**30**		**31**		**32**		**33**		**34**		**35**	
Second	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*
If in EO R1																																				
If in EO R2																																				
EO Line																																				
SR Line																																				
If in SR R2																																				
If in SR R1																																				
Engaged																																				

Minute	**36**		**37**		**38**		**39**		**40**		**41**		**42**		**43**		**44**		**45**		**46**		**47**		**48**		**49**		**50**		**51**		**52**		**53**	
Second	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*	0-30	*31-59*
If in EO R1																																				
If in EO R2																																				
EO Line																																				
SR Line																																				
If in SR R2																																				
If in SR R1																																				
Engaged																																				

Instructions: **1**. Draw one a horizontal line when in SR, stop line and start new one above when EO is cued and progressively implemented, start line again when SR is cued. **2.** Draw a vertical line for each problem behavior, with R1 lines being extended and R2 lines being relatively short. **3.** If child/client is happy, relaxed, and engaged for the majority of the SR interval, place a check in the 30-s interval. **4.** Impose the initial EO, only after at least 3 min of continuous, happy, and relaxed engagement; impose subsequent Eos after 30 s of continuous, happy, and relaxed engagement. **5.** End the analysis after only one or a couple R2s occur within 5s of the EO cue/progression, one or less R2s and zero R1s occur in the subsequent SR period, and the child re-engages within about 10 s after SR is delivered for three consecutive EO presentations (modify the analysis if these conditions are not met within 35 min).

APPENDIX C

DATA SHEET FOR SKILLS-BASED TREATMENT SESSIONS

Data Sheet and Guide for the Skill-Based Treatment of Problem Behavior (Revised: May 2019; FTF Behavioral Consulting, Inc.)
Organization:________________________ Client Name:________________________ Skills Teacher:______________________________ Supervisor:____________________________ Consultant:__________________________

Functional Communication Training

Step	Date	**Responses Reinforced** *Write in specific form; note if form changes within step*	**Progressively Changing Response Requirements** *Trial 1* *EO*	*SR*	*Trial 2* *EO*	*SR*	*Trial 3* *EO*	*SR*	*Trial 4* *EO*	*SR*	*Trial 5* *EO*	*SR*
5		**PB:**	PB	Eng	PB	Eng	PB	Eng	PB	Eng	PB	Eng
8		**sFCR:**	sFCR	Eng	sFCR	Eng	sFCR	Eng	sFCR	Eng	sFCR	Eng
8		*Replace PB with simple communication*	sFCR	Eng	sFCR	Eng	sFCR	Eng	sFCR	Eng	sFCR	Eng
8			sFCR	Eng	sFCR	Eng	sFCR	Eng	sFCR	Eng	sFCR	Eng
8			sFCR	Eng	sFCR	Eng	sFCR	Eng	sFCR	Eng	sFCR	Eng
8			sFCR	Eng	sFCR	Eng	sFCR	Eng	sFCR	Eng	sFCR	Eng
8			sFCR	Eng	sFCR	Eng	sFCR	Eng	sFCR	Eng	sFCR	Eng
8			sFCR	Eng	sFCR	Eng	sFCR	Eng	sFCR	Eng	sFCR	Eng
8			sFCR	Eng	sFCR	Eng	sFCR	Eng	sFCR	Eng	sFCR	Eng
8			sFCR	Eng	sFCR	Eng	sFCR	Eng	sFCR	Eng	sFCR	Eng
8			sFCR	Eng	sFCR	Eng	sFCR	Eng	sFCR	Eng	sFCR	Eng
8			sFCR	Eng	sFCR	Eng	sFCR	Eng	sFCR	Eng	sFCR	Eng
9		**cFCR:**	cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng
9		*Improve form of communication*	cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng
9			cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng
9			cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng
9			cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng
9			cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng
9			cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng
9			cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng
9			cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng
9			cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng
9			cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng
9			cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng
9			cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng
9			cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng
9			cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng
9			cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng
9			cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng
9			cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng
9			cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng	cFCR	Eng

Instructions

This sheet is to be used to guide the shaping of the skills as well as to record trial-by-trial data during the EO and SR periods.

DATA COLLECTION

In EO, circle the response to EO if independent; slash the response if prompted.

In SR, circle Eng if it occurred throughout majority of the SR period.

If one or more severe problem behaviors occurred in either EO or SR, write R1 or R1s, respectively, next to the expected behavior.

If one or more mild problem behaviors occurred, write R2 or R2s, respectively, next to the expected behavior.

There are more rows included for each step than will likely be required (i.e., about 20 trials should be required before advancing).

SHAPING CRITERIA

Remain at each teaching step until 3 to 5 consecutive trials with zero PB, all expected skills are occurring independently, and engagement is consistent during SR.

PROMPTING & REINFORCEMENT

The behaviors noted are those expected and thus reinforced on the specified trial.

The skills are to be prompted just prior to being expected initially and then once independent, still prompted if PB or noncompliance occurs unexpectedly.

EO = establishing operation; SR = synthesized reinforcement; PB = problem behavior; Eng = Engagement; sFCR = simple functional communication response; cFCR = complex FCR

Data Sheet and Guide for the Skill-Based Treatment of Problem Behavior (Revised: May 2019; FTF Behavioral Consulting, Inc.)

APPENDIX D

OPEN-ENDED FUNCTIONAL ASSESSMENT INTERVIEW

Open-Ended Functional Assessment Interview

Developed by Gregory P. Hanley, Ph.D., BCBA-D (Developed August, 2002; Revised: August, 2009)

Date of Interview: Child/Client: Interviewer:

Respondent: Respondent's relation to child/client:

RELEVANT BACKGROUND INFORMATION

1. His/her date of birth: Age: yrs mo Check one: Male ☐ Female ☐
2. Describe his/her language abilities:
3. Describe his/her play skills and preferred toys or leisure activities:
4. What else does he/she prefer?

QUESTIONS TO INFORM THE DESIGN OF A FUNCTIONAL ANALYSIS

⇨*To develop objective definitions of observable problem behaviors:*

5. What are the problem behaviors? What do they look like?

⇨*To determine which problem behavior(s) will be targeted in the functional analysis:*

6. What is the single-most concerning problem behavior?
7. What are the top 3 most concerning problem behaviors? Are there other behaviors of concern?

⇨*To determine the precautions required when conducting the functional analysis:*

8. Describe the range of intensities of the problem behaviors and the extent to which he/she or others may be hurt or injured from the problem behavior.

⇨*To assist in identifying precursors to dangerous problem behaviors that may be targeted in the functional analysis instead of more dangerous problem behaviors:*

9. Do the different types of problem behavior tend to occur in bursts or clusters and/or does any type of problem behavior typically precede another type of problem behavior (e.g., yells preceding hits)?

⇨*To determine the antecedent conditions that may be incorporated into the functional analysis test conditions:*

10. Under what conditions or situations are the problem behaviors most likely to occur?
11. Do the problem behaviors reliably occur during any particular activities?
12. What seems to trigger the problem behavior?
13. Does problem behavior occur when you break routines or interrupt activities? If so, describe.

14. Does the problem behavior occur when it appears that he/she won't get his/her way? If so, describe the

⇨*To determine the test condition(s) that should be conducted and the specific type(s) of consequences that may be incorporated into the test condition(s):*

15. How do you and others react or respond to the problem behavior?

16. What do you and others do to calm him/her down once he/she engaged in the problem behavior?

17. What do you and others do to distract him/her from engaging in the problem behavior?

⇨*In addition to the above information, to assist in developing a hunch as to why problem behavior is occurring and to assist in determining the test condition(s) to be conducted:*

18. What do you think he/she is trying to communicate with his/her problem behavior, if anything?

19. Do you think this problem behavior is a form of self stimulation? If so, what gives you that impression?

20. Why do you think he/she is engaging in the problem behavior?

APPENDIX E

INSTITUTIONAL REVIEW BOARD APPROVAL

UNIVERSITY OF
NORTHERN COLORADO

Institutional Review Board

Date:	12/02/2022
Principal Investigator:	James Nuse
Committee Action:	**IRB EXEMPT DETERMINATION – New Protocol**
Action Date:	12/02/2022
Protocol Number:	2210045136
Protocol Title:	A Conceptual and Applied Analysis of Treating Severe Problem Behavior and Reducing the Need for Emergency Interventions
Expiration Date:	

The University of Northern Colorado Institutional Review Board has reviewed your protocol and determined your project to be exempt under 45 CFR 46.104(d)(701) (702) for research involving

Category 1 (2018): RESEARCH CONDUCTED IN EDUCATIONAL SETTINGS. Research, conducted in established or commonly accepted educational settings, that specifically involves normal educational practices that are not likely to adversely impact students' opportunity to learn required educational content or the assessment of educators who provide instruction. This includes most research on regular and special education instructional strategies, and research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.

Category 2 (2018): EDUCATIONAL TESTS, SURVEYS, INTERVIEWS, OR OBSERVATIONS OF PUBLIC BEHAVIOR. Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is met: (i) The information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects; (ii) Any disclosure of the human subjects' responses outside the research would not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, educational advancement, or reputation; or (iii) The information obtained is recorded by the investigator in such a manner that the identity of the human subjects can readily be ascertained, directly or through identifiers linked to the subjects, and an IRB conducts a limited IRB review to make the determination required by 45 CFR 46.111(a)(7).

APPENDIX F

PARENT/GUARDIAN INFORMED CONSENT LETTER

UNIVERSITY OF
NORTHERN COLORADO

CONSENT FORM FOR HUMAN PARTICIPANTS IN RESEARCH
UNIVERSITY OF NORTHERN COLORADO

Project Title: A Conceptual and Applied Analysis of Treating Severe Problem Behavior and Reducing the Need for Emergency Interventions
Researcher: James Nuse, Ed.S., Doctoral Student, Tracy Gershwin, Ph.D., Faculty Advisor
E-mail: nuse0076@bears.unco.edu

Advisor: (if student researcher, Advisor name and contact information is required.)

Hello! We have identified that your child may benefit from participating in this proposed research study in order to address challenging behavior in the classroom. If you grant permission and if your child indicates to us a willingness to participate we will meet for approximately 2-3 times per week for the next 8-12 weeks. Each session will last no longer than one hour.

This study will be comprised of an assessment process which is called a functional behavior assessment. Specifically, a functional analysis will be conducted by interviewing either you or your child's teacher and then setting up conditions to test whether or not we have identified the suspected purpose of your child's problem behavior in the classroom. Following this, an intervention will be provided in order to develop replacement communication skills. This will include teaching three different types of phrases to gather appropriate attention or access to preferred items or activities or the termination of demands. Following this, we will then work on activities to be able to accept and tolerate being denied access or told "no". During each of these phases, students will be provided the choice to either "Hangout" (e.g., playing with preferred items), "Practice" (e.g., practice the skills addressed above), or "Stay" (e.g., remain in current classroom activity).

I foresee no risks to subjects beyond those that are normally encountered playing games in the classroom. Your child's participation will not be solicited during unpreferred times as identified by their teacher.

We may videotape the activities to back up the notes taken by the researchers. Be assured that we intend to keep the contents of these tapes private, unless you give permission below for their use as an instructional aid in the primary researcher's child development courses at UNC. To further help maintain confidentiality, computer files of children's performance will be created and children's names will be replaced by numerical identifiers. The names of subjects will not appear in any professional report of this research.

Please feel free to phone me if you have any questions or concerns about this research and please retain one copy of this letter for your records.

Thank you for assisting me with my research.

Sincerely,

_____

Participation is voluntary. You may decide not to allow your child to participate in this study and if (s)he begins participation you may still decide to stop and withdraw at any time. Your decision will be respected and will not result in loss of benefits to which you are otherwise entitled. Having read the above and having had an opportunity to ask any questions, please sign below if you would like to allow your child to participate in this research. A copy of this form will be given to you to retain for future reference. If you have any concerns about your selection or treatment as a research participant, please contact the Office of Research & Sponsored Programs, University of Northern Colorado at 970-351-1910 or irb@unco.edu.

_____
Child's Full Name (please print)

_____ _____
Parent/Guardian's Signature Date

_____ _____
Researcher's Signature Date

If you give permission for James Nuse to use the videotape of your child's treatment and assessment sessions for purpose of data collection.

_____
Initials

APPENDIX G

CONSENT FORMS FOR STAFF MEMBERS INVOLVED

STAFF CONSENT FORM FOR HUMAN PARTICIPANTS IN RESEARCH
UNIVERSITY OF NORTHERN COLORADO

Project Title: A Conceptual and Applied Analysis of Treating Severe Problem Behavior and Reducing the Need for Emergency Interventions

Researchers: James Nuse, Primary Investigator, School of Special Education
E-mail: nuse0076@bears.unco.edu

Purpose and Description:

Purpose of the Study

This proposed study aims to identify the effectiveness of the enhanced choice model in reducing the frequency of severe problem behaviors within school-based settings. While there has been extensive literature regarding the procedure it has evolved from, Skills-based Treatment (Hanley et al., 2014), this study also aims to add to the current limited knowledge base regarding the enhanced choice model. Further, this study aims to assess social validity of practitioners who witness said procedures and its ability to impact rates of restraint and seclusion. Lastly, this study aims to teach functional replacement skills in lieu of problem behavior which is considered socially significant.

Research Questions

This research aims to improve and expand the current knowledge related to the enhanced choice model. To address these deficits in the literature, the following questions will guide this research study:

1. Does an enhanced choice model reduce rates or intensity of severe problem behavior?
2. Does the implementation of the enhanced choice model increase rates of functional communicative responses and tolerance responses?
3. Do practitioners find an enhanced choice model acceptable within the schoolhouse?

Sincerely,
James Nuse

Participation is voluntary. You may decide not to participate in this study and if you begin participation, you may still decide to stop and withdraw at any time. Your decision will be respected and will not result in loss of benefits to which you are otherwise entitled. Having read the above and having had an opportunity to ask any questions, please type your name below if you would like to participate in this research. If you have any concerns about your selection or treatment as a research participant, please contact Nicole Morse, Office of Research &

Sponsored Programs, University of Northern Colorado, Greeley, CO; 970-351-1910 or nicole.morse@unco.edu.

I consent to participate in this study.

Yes
NO

Signature: _____
Date

APPENDIX H

ASSENT FORM FOR HUMAN PARTICIPANTS IN RESEARCH

ASSENT FORM FOR HUMAN PARTICIPANTS IN RESEARCH
UNIVERSITY OF NORTHERN COLORADO (to be read with student)

Hi!

My name is James Nuse and I'm a student at the university of Northern Colorado. I also work for our school district, _____. I do research on helping students like you! That means I study how to help students be safe in their classrooms and how to learn best for them!

If you want to participate with me, we will play a variety of activities in order to learn new ways to get our needs met. We will first start by seeing what types of things make you mad or angry and we will follow that with finding the things that make you happy! After this, we will play some games to learn how to get our needs met by learning some new words or phrases. Following this, I might ask you to wait before we play some games or activities.

Playing these activities with me probably won't help you or hurt you. Your parents and teacher have said it's okay for you to talk with me, but you don't have to. It's up to you. Also, if you say "yes" but then change your mind, you can stop any time you want to. Do you have any questions for me about my research?

If you want to be in my research and play some fun activities, sign your name below and write today's date next to it. If you need any help, let me know. Thanks!

_____ _____
Student Date

_____ _____
Researcher Date

APPENDIX I

WRITTEN CONSENT FROM SCHOOL OFFICIAL

To Whom it may concern:

James Nuse is our director of special education for . He has received consent from to conduct his dissertation study in our district.

Associate Superintendent