

EFFECTS OF PEER-DELIVERED FUNCTIONAL COMMUNICATION TRAINING IN AN
INCLUSIVE SCHOOL SETTING FOR A HIGH SCHOOL STUDENT WITH
INTELLECTUAL AND DEVELOPMENTAL DISABILITIES

by

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ABSTRACT

ANDREA BOWEN MASUD. Effects of Peer-Delivered Functional Communication Training in an Inclusive School Setting for a High School Student with Intellectual and Developmental Disabilities. (Under the direction of DR. VIRGINIA WALKER)

Access to inclusive school settings is associated with many benefits for students with intellectual and developmental disabilities in the areas of academics (Agran et al., 2020; Kurth & Mastergeorge, 2010), social skills (Kleinert et al., 2015; Lyons et al., 2011; Schwab et al., 2015), and communication skills (Ballard & Dymond, 2017; Kleinert et al., 2015), among others. Challenging behavior is a major barrier to inclusive school settings for some students with intellectual and developmental disabilities (Agran et al., 2020; Gee et al., 2020; Giangreco, 2020; Kleinert, 2020). Given the benefits of access to inclusive school settings, researchers and other educational team members must address this barrier. One way in which challenging behavior can be addressed in school settings, including inclusive school settings, is through function-based interventions. Function-based interventions are targeted interventions based on functional behavior assessment results and aligned with the function of a student's challenging behavior (Gage et al., 2012; Jeong & Copeland, 2020). It is critical that educators and researchers consider the contextual fit of a function-based intervention, as interventions that incorporate contextual fit are more effective than those that do not (Monzalve & Horner, 2021). Functional communication training (FCT) is an example of a highly effective function-based intervention implemented to teach functionally equivalent, socially appropriate communication skills and address challenging behavior. The literature on the effectiveness of FCT spans age groups, settings, interventionists, and disability categories (Cooper et al., 2020; Hume et al., 2021), including students with intellectual and developmental disabilities (Andzik et al. 2016; Walker, Lyon, et al., 2018). Although emerging evidence demonstrates the effectiveness of FCT implemented with students

with intellectual and developmental disabilities in inclusive school settings (Masud et al., 2022), the research is minimal. Further, no FCT studies focus on a peer as an interventionist. The current study extends the literature on FCT for students with intellectual and developmental disabilities by demonstrating implementation by a peer mentor in an inclusive high school setting.

The purpose of this study was to examine the effects of peer-delivered FCT on the functionally equivalent communication responses and challenging behavior of a high school student with intellectual and developmental disabilities, the collateral effects of the intervention on various student communication behaviors, and the degree to which educator team member participants and student participant found the intervention to be socially valid. Results of this study indicated that the FCT intervention had no effect on student functionally equivalent communication responses or challenging behavior. There is evidence of positive collateral effects as the student participant's rates of various communication behaviors increased after the intervention was implemented. Finally, all participants found the intervention to be socially valid across most measures, though there were concerns about the limited time and potential student discomfort. The dissertation includes a discussion of each research question, study limitations, directions for future research, and implications for practice.

DEDICATION

I dedicate my dissertation to Emily Zells.

To the adorable little girl who loved dogs and to swim, who did not know what to do with her big emotions, whose parents were told all the things she would never do. To the child and then teenager with whom I spent so many summers and after-school evenings, my adventure buddy always, who let me ride shotgun in her golf cart, and who taught me that ‘impossible’ is just a word. To the beautiful, amazing, independent woman who has broken through all of the barriers ever placed on her, who continues to flourish in every way, and for whom I am so grateful that words cannot express. To my heart sister, who started me on this journey, who taught me more than I could ever have learned in a class. To you, Em. I love you.

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CHAPTER 1: INTRODUCTION

Statement of the Problem

Educational placement data from the past several decades show that the percentage of students with disabilities who are educated alongside their peers without disabilities in the regular educational environment (i.e., general education classroom and other school settings that students without disabilities access) has increased (U.S. Department of Education, 2022). As access to the regular educational environment for students with disabilities is considered best practice (Wehmeyer et al., 2020), the overall increasing trend toward more inclusive practices is promising. There are multiple interpretations of inclusion and, therefore, no commonly accepted definition; however, definitions of inclusion often share similar elements such as students with disabilities (a) learning general education academics and other skills in regular educational environments alongside their peers without disabilities, (b) being welcome in regular educational environments, (c) being presumed competent, (d) having access to the general education curriculum and activities, and (e) experiencing meaningful social relationships (Farrell, 2000; Jorgenson et al., 2018; TASH, 2022).

Parts of these definitions align with special education legislation under the Individuals with Disabilities Education Act (IDEA, 2004) that states that all students with disabilities are legally entitled to education in the least restrictive environment (LRE) and should only be removed from the regular educational environment if their individual needs cannot be met in that setting with access to supplementary aids and services (e.g., mobility aids, instructional supports/services to support a student's behavioral needs; Kurth et al., 2019). Therefore, in considering the LRE, educational teams must first consider educational placement in the regular educational environment with appropriate supplementary aids and services. From this point

forward, the term *inclusive school setting* is used to describe the regular educational environment.

Despite the legal requirement for education in the LRE and the increasing overall trend toward access to inclusive school settings, not all students with disabilities are afforded access to these settings. Because students with high incidence disabilities (e.g., specific learning disability, emotional disturbance, speech or language impairment) account for over 50% of the students receiving special education services under IDEA, the trend toward placement in inclusive school settings is positively skewed, falsely indicating that the percentage of all students with disabilities who access these inclusive settings has increased (Williamson et al., 2020). When compared to the overall trend, the data are far less favorable for students with intellectual and developmental disabilities (IDD), a diverse group of students who are medically diagnosed with and/or eligible for special education services under the IDEA eligibility categories of autism spectrum disorder (ASD), intellectual disability (ID), and multiple disabilities (University of Minnesota Institute on Community Integration, 2022).

Students with IDD are much more likely to be placed in restrictive settings, such as self-contained special education classrooms, for a majority of their school day. For example, according to the U.S. Department of Education (2022) statistics examining the 2019–2020 school year, only 17.9% of students with ID, 40.8% of students with ASD, and 15% of students with multiple disabilities were provided access to the inclusive school setting for 80% or more of their school day. This is cause for major concern in the field of education as the research literature spanning the past several decades suggests positive academic, social, and behavioral outcomes for students with IDD when they access inclusive school settings (Agran et al., 2020; Feldman et al., 2016; Kleinert et al., 2015; Kurth & Mastergeorge, 2010), especially when compared to

students with IDD in self-contained settings (Hehir et al., 2016; Mansouri et al., 2022). Further, because there is ample evidence to support access to inclusive school settings for students with IDD, there is a need to make inclusive school settings the default placement for students with IDD in practice to align with the LRE requirements under IDEA (Wehmeyer et al., 2020) and best practices identified by experts in the field (Agran et al., 2020; Kurth et al., 2019; Morningstar et al., 2016).

Among the many benefits of participation in inclusive school settings for students with IDD is higher quality instruction (Agran et al., 2020; Kurth & Mastergeorge, 2010), including more time spent engaged in meaningful academic tasks (Kurth & Mastergeorge, 2010), greater access to the general education curriculum (Soukup et al., 2007), and increased access to content-area experts and age-appropriate materials (Kleinert et al., 2015). Further, research has shown that students with IDD who are educated alongside their peers without disabilities make gains in academic achievement, including positive outcomes in the areas of language and literacy (de Graaf & van Hove, 2015; Hehir et al., 2016). In addition to improved academic outcomes, students with IDD are more likely to achieve positive outcomes related to social skills when educated in inclusive school settings (Agran et al., 2020; e.g., Kleinert et al., 2015). These outcome areas include greater social skill development and social skills acquisition (Kleinert et al., 2015; Lyons et al., 2011; Schwab et al., 2015), increased access to opportunities for practicing social skills, including peer interaction (Feldman et al., 2016), and with effective supports, a decrease in challenging behavior (Masud et al., 2022; Walker, Chung, & Bonnet, 2018). Finally, research has shown that students with IDD who access inclusive school settings have high quality Individualized Education Programs (Kurth & Mastergeorge, 2010) and

experience better post-school outcomes (Hehir et al., 2016), such as higher levels of self-determination (Hughes et al., 2013).

There are a number of comparison studies in the research literature base examining student outcomes in restrictive environments (e.g., self-contained special education classrooms) versus outcomes in inclusive school settings (e.g., Gee et al., 2020; Kurth & Mastegorge, 2010; Soukup et al., 2007), including a recent systematic literature review that examined six studies comparing social and academic outcomes of students with IDD in inclusive school settings to these outcomes in restrictive settings (Mansouri et al., 2022). Unsurprisingly, these studies provide compelling evidence that, when compared to students with IDD in more restrictive school environments, students with IDD who access inclusive environments have more positive outcomes in both academic and social outcome areas. In addition to the noted benefits of inclusive education for students with disabilities, research has shown that restrictive settings (e.g., self-contained special education classroom) where students with IDD are educated most often (U.S. Department of Education, 2022) may not offer high quality instruction and supports for students with IDD. Restrictive special education settings have been shown to provide students with limited opportunities for active student responding and feedback (Kurth, Born, & Love, 2016; Pennington & Courtade, 2015), limited academic and social experiences with high levels of interruptions and distractions (Causton-Theoharis et al., 2011), and limited access to communication supports (Kurth, Born, & Love, 2016).

There is evidence that educational placement decisions for students with IDD are often based on external factors or specific student characteristics, rather than on student support needs. These factors include family socio-economic status and geographic factors (Agran et al., 2020; Brock, 2018; Brock & Schaefer, 2015; Kurth et al., 2018; Wehmeyer et al., 2016); a lack of

educator knowledge, training, or competence; and biases or faulty perceptions about student abilities (Agran et al., 2020; Giangreco, 2020; Wehmeyer et al., 2016). In addition, student characteristics (e.g., race, disability label, ability level, intelligence assessment results, perceptions about student ability) have been shown to contribute to placement decisions (Kozleski et al., 2014; Wehmeyer et al., 2016). For example, students with lower IQs (Lauderdale-Littin et al., 2013) or more pervasive support needs (Avramidis & Norwich, 2002) may be more likely to be excluded from inclusive school settings. Student challenging behavior has been recognized as a barrier to accessing inclusive school settings for students with IDD (Crosland & Dunlap, 2012; Harrower & Dunlap, 2001; McCabe et al., 2020; Walker, Loman, et al., 2018). Challenging behavior is defined as behavior that (a) is significant in frequency, intensity, irregularity, or duration (Stoesz et al., 2016); (b) may negatively interfere with learning or academic success (Doubet & Ostrosky, 2015; Martinez et al., 2016; Smith & Fox, 2003; Stoesz et al., 2016); (c) may negatively interfere with a student's social interactions or other areas of functioning (Doubet & Ostrosky, 2015; Smith & Fox, 2003); (d) may negatively interfere with the student's safety or the safety of those around them (Poppes et al. 2010; Stoesz et al., 2016); (e) may result in property damage (Davidson et al., 1994); and (f) may result in a denial of access to certain settings (Poppes et al., 2010). Challenging behavior can result when student support needs, such as needs in the areas of social and communication skills, are not adequately addressed (Carr & Durand, 1985; Simó-Pinatella et al., 2019; Wood et al., 2018) and school environments inadequately address the needs of students.

Although not all students with IDD engage in challenging behavior, the current research literature base suggests that some students with IDD commonly exhibit challenging behavior (Amstad & Müller, 2020) in school environments. Additionally, they may exhibit challenging

behavior more frequently when compared to their same-age peers without disabilities (Dekker et al., 2002; Emerson et al., 2014). Research literature focused on the prevalence of challenging behavior exhibited among students with disabilities is often categorized by disability category (Newman et al., 2015). For example, in a review conducted by Simó-Pinatella et al. (2019) that examined various dimensions of challenging behavior exhibited by individuals with disabilities, results indicated that, for studies involving individuals with ID, prevalence rates of challenging behavior ranged from 48% to 60%. For individuals with ASD, prevalence rates of challenging behavior were nearly 90% and, for students with co-occurring ID and ASD, prevalence rates were almost 94%.

Challenging behavior exhibited by students with IDD is associated with a range of negative outcomes including a diminished quality of life (Emerson et al., 2014; Gur, 2018), increased risk of physical harm and abuse (Emerson et al., 2014), poor social outcomes (Gur, 2018), and placement in more restrictive environments (Kurth et al., 2014; Lane et al., 2012; Lohrmann & Bambara, 2006) with no evidence to show this reduces challenging behavior (Lloyd et al., 2019). Therefore, it is critical that the behavioral needs of these students are adequately supported through the use of preventative approaches to challenging behavior (e.g., teaching skills that are functionally equivalent to potential challenging behavior [Ala'i-Rosales et al., 2018]) and individualized positive behavior supports tailored to address the individual support needs of the student. Current research suggests that the challenging behavior of students with IDD may be effectively addressed in inclusive school settings through the implementation of evidence-based practices (EBPs), such as function-based intervention (FBI; e.g., Masud et al., 2022; Walker, Chung, & Bonnet, 2018).

An FBI is an EBP that is aligned to the function (i.e., the purpose or maintaining consequence) of the student's challenging behavior, based on results of a functional behavioral assessment (FBA; Dunlap & Fox, 2011). Decades of research have shown that functionally relevant intervention strategies (i.e., strategies aligned to the function of challenging behavior) are highly effective for addressing challenging behavior exhibited by students with IDD across school settings (Lory et al., 2020), including inclusive school environments (Walker, Chung, & Bonnet, 2018), and further, that FBIs are more effective when compared to interventions that are not functionally relevant (Goh & Bambara, 2012; Ingram et al., 2005; Jeong & Copeland, 2020).

One evidence-based FBI that is highly effective for addressing challenging behavior exhibited by students with IDD is FCT (Browder et al., 2014; Gerow et al., 2018; Hume et al., 2021). FCT is implemented to reduce the occurrence of challenging behavior and promote socially appropriate behavior and has been widely researched across a variety of settings, participant age groups, and disability categories. FCT is used to teach a socially appropriate replacement behavior, called a functionally equivalent communication response (FCR), to replace challenging behavior (Carr, 1988; Carr & Durand, 1985; Tiger et al., 2008). FCT incorporates the behavioral concept of differential reinforcement in that it includes reinforcing one behavior (i.e., FCR) and placing the challenging behavior on extinction (i.e., withholding reinforcement). During the first step of FCT, implementers must first determine the function of the individual's challenging behavior through the FBA process. The replacement behavior (i.e., FCR) is then determined based on results of the FBA and taught to the individual. FCT can be implemented as an intervention on its own or as part of a multicomponent intervention package (e.g., FCT + visual supports; Reeves et al., 2013). As the individual acquires and reliably displays the FCR, the implementer can introduce reinforcement schedule thinning procedures

(e.g., delay to reinforcement), where the ratio or duration of the interval between the student's FCR and reinforcement is gradually and systematically increased to make the rate of reinforcement practical for a natural setting (e.g., classroom; Cooper et al., 2020).

The effects of FCT for students with IDD in school settings has been examined in the literature over the past several years with positive outcomes reported. For example, in a review conducted by Andzik et al. (2016) that examined the effects of FCT delivered by natural implementers (e.g., teacher, paraprofessional, speech and language pathologist), results indicated that FCT was highly effective in reducing student challenging behavior across school environments. Similarly, Walker, Lyon, et al. (2018) examined FCT interventions delivered to students with IDD who used augmentative and alternative communication (AAC) in school settings. Their review suggested large and very large improvements across student outcomes (e.g., challenging behavior, positive behavior, FCR) as measured by Tau-U .

Despite the evidence-base supporting the use of FCT in schools, the research is limited on the implementation of FCT for students with IDD in inclusive school environments, and is particularly limited for secondary students. From this point on, the term *secondary students* will be used to refer to students who attend middle school or high school. In a systematic literature review conducted by Masud and colleagues (2022), the authors discovered that FCT had only been implemented in inclusive school settings with 10 students with IDD across the seven included studies. The authors described several important implications for future research that were addressed in the current study. First, of the 10 participants, nine were elementary-aged and one was middle school-aged; there were no high school-aged participants. Next, in only one case, FCT was experimentally evaluated as a standalone intervention; the other six studies evaluated FCT as part of a multicomponent intervention package. Thus, the authors

recommended additional research to evaluate the effects of FCT in isolation on the challenging behavior of middle and high school-aged participants in inclusive school settings. They noted that a majority of the FCT interventions across studies were developed by researchers instead of school staff and that, for studies in which FCT implementer training was reported, a majority of implementers were trained by researchers, with training practices and dosage varying greatly across studies. To ensure that FCT interventions yield positive student outcomes in inclusive school settings, the authors emphasized the critical importance of ensuring a strong contextual fit (i.e., the extent to which the intervention aligns with the values, abilities, resources, and administrative support of the individuals creating and delivering the intervention; Horner et al., 1999–2000). To address the importance of contextual fit and the aforementioned limitations, this study included strategies during the planning, training, and implementation phases that align with contextual fit elements as outlined in the Contextual Fit Enhancement Protocol (Monzalve & Horner, 2016; e.g., alignment with the values of implementers, implementers are knowledgeable of FCT plan elements, implementers perceive there to be adequate administrative support).

Research Purpose

Given the importance of access to inclusive school settings for students with IDD, including secondary students, and challenging behavior serving as a major barrier to access to inclusive settings, it is imperative to research and implement EBPs in inclusive school settings to determine their effectiveness in reducing challenging behavior and increasing desirable behavior (e.g., FCR). Further, previous FCT reviews (e.g., Andzik et al., 2016; Masud et al., 2022; Walker, Loman, et al., 2018) examined studies that were limited in terms of school staff involvement and collaborative teaming; therefore, it is important to ensure the strong contextual fit of the FCT intervention(s). Because of its effectiveness and ease of implementation, FCT,

both alone and as part of a multicomponent intervention package, should be explored as a viable option for implementation in inclusive school settings. Further, it is important to implement all aspects of the intervention in the inclusive school setting with natural implementers and ensure a strong contextual fit so that the FCT intervention is effective for the student.

Research Questions

1. What are the effects of an FCT intervention delivered in an inclusive school setting on the FCRs of a high school student with IDD?
2. What are the effects of an FCT intervention delivered in an inclusive school setting on the challenging behavior of a high school student with IDD?
3. What are the collateral effects of an FCT intervention delivered in an inclusive school setting on the various communication behaviors of a high school student with IDD?
4. To what extent is the intervention socially valid from the perspectives of the student participant, peer mentor participant, and educator team member participants and based on student observations?

Significance of the Study

This study extends the literature on FCT and access to inclusive settings for students with IDD who exhibit challenging behavior in several meaningful ways. First, to date, there have been a limited number of research studies (i.e., Blair et al., 2006, 2007; Reeves et al., 2013, 2017; Walker et al., 2021; Walker & Snell, 2021; Umbreit & Blair, 1996) investigating the effects of FCT in inclusive school settings for students with IDD (Masud et al., 2022). Second, across all of the seven aforementioned studies that included a total of 10 participants, none included student participants who were high school-aged. In fact, only one study included a middle school-aged participant, and this study focused on educator outcomes instead of student outcomes (i.e.,

DeShawn [participant pseudonym from study] from Walker & Snell, 2017). Therefore, to date, there have been no FCT studies implemented in inclusive school settings for secondary-aged students with dependent variables examining student outcomes, and no FCT studies implemented in inclusive school settings for high school students. I implemented the current study with a high school student with IDD. Third, of the limited number of studies in which FCT was implemented in inclusive school settings for students with IDD, FCT was delivered to nine of out the 10 students as part of a multicomponent intervention package versus as the sole intervention. Additionally, for the student in which FCT was implemented as the sole intervention, student outcomes were not measured (i.e., Student 1 from Walker et al., 2021). The current study measured the effects of FCT as a sole intervention. Next, school staff involvement and collaboration in planning FCT interventions was limited in previous FCT studies (Masud et al., 2022). Therefore, this study addressed this limitation through the use of a contextual fit protocol as the framework for planning the FCT intervention. Finally, to date, there is no evidence of peer-delivered FCT in the research literature (Andzik et al., 2016; Gerow et al., 2018; Ghaemmaghami et al., 2021; Masud et al., 2022). This study addressed this gap in the research literature as the intervention implementer was the student participant's peer mentor and fellow classmate.

Delimitations

The following delimitations should be considered when interpreting the results and contributions of the study. First, there was only one participant from one county which limited the external validity and generalizability of results. Second, participant recruitment sample size was small (i.e., one participant) as secondary students with IDD in geographic areas of recruitment were served predominantly in the self-contained setting and had little to no access to

inclusive school settings on a daily basis. Finally, the primary dependent variables in this study were centered around student behavior (i.e., student participant challenging behavior and FCR), so I did not experimentally measure the effects of training on implementation fidelity; however, peer mentor implementation fidelity was collected.

Definition of Terms

The following list of terms are important to understand within the context of this study:

Applied Behavior Analysis: “the science in which tactics derived from the principles of behavior are applied to improve socially significant behavior and experimentation is used to identify the variables responsible for the improvement in behavior” (Cooper et al., 2020, p. 19)

Autism Spectrum Disorder: a developmental disability that often causes deficits in social and communication skills, and often causes individuals to have restricted or repetitive behaviors or interests (Centers for Disease Control and Prevention, 2020)

Challenging Behavior: behavior that (a) is significant in frequency, intensity, irregularity, or duration (Stoesz et al., 2016), (b) negatively interferes with learning or academic success (Doubet & Ostrosky, 2015; Martinez et al., 2016; Smith & Fox, 2003; Stoesz et al., 2016), (c) negatively interferes with a student’s social interactions or other areas of functioning (Doubet & Ostrosky, 2015; Smith & Fox, 2003), (d) may negatively interfere with the student’s safety of the safety of those around them (Poppes et al. 2010; Stoesz et al., 2016), (e) may result in property damage (Davidson et al., 1994), and (f) may result in a denial of access to certain settings (Poppes et al., 2010)

Developmental Disabilities: “a group of conditions due to an impairment in physical, learning, language, or behavior areas. These conditions begin during the developmental period, may

impact day-to-day functioning, and usually last throughout a person's lifetime" (Centers for Disease Control and Prevention, 2020, Facts About Developmental Disabilities section)

Evidence-based Practice: "instructional techniques that meet prescribed criteria related to the research design, quality, quantity, and effect size of supporting research, which have the potential to help bridge the research-to-practice gap and improve student outcomes" (Cook & Cook, 2011, p. 71)

Functional Analysis: "an analysis of the purposes (functions) of problem behavior, wherein antecedents and consequences representing those in the person's natural routines are arranged within an experimental design so that their separate effects on problem behavior can be observed and measured; typically consists of four conditions: three test conditions, contingent attention, contingent escape, and alone. A control condition in which problem behavior is expected to be low because reinforcement is freely available and no demands are placed on the person." (Cooper et al., 2020, p. 792)

Function-based Intervention: an individualized intervention developed based on the function of challenging behavior, as determined by a functional behavior assessment (Gage et al., 2012; Jeong & Copeland, 2020)

Functional Behavior Assessment: "a systematic method of assessment for obtaining information about the purposes (functions) of a problem behavior and increasing appropriate behavior" (Cooper et al., 2020, p. 792)

FCT: "an antecedent intervention in which an appropriate communicative behavior is taught as a replacement behavior for problem behavior usually evoked by an establishing operation (EO); involves differential reinforcement of alternative behavior" (Cooper et al., 2020, p. 792)

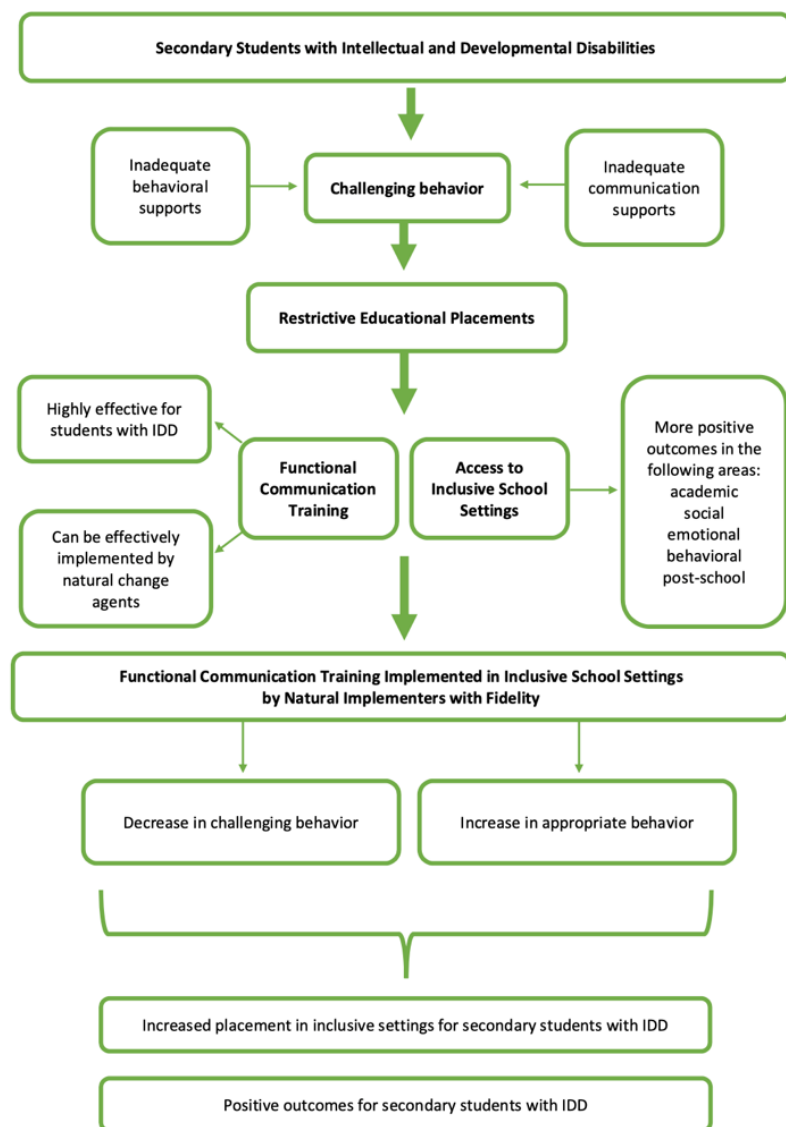
Inclusion: includes school settings where students (a) learn general education academics and other skills in inclusive school settings alongside their peers without disabilities, (b) are welcome in regular educational environments, (c) are presumed competent, (d) have access to the general education curriculum and activities, and (e) experience meaningful social relationships (Farrell, 2000; Jorgenson et al., 2018; TASH, 2022).

Inclusive School Setting: school settings that include general education classrooms and all other settings that students without disabilities access (e.g., lunchroom, playground, gymnasium, hallways; IDEA, 2004)

Intellectual Disability: “a condition characterized by significant limitations in both intellectual functioning and adaptive behavior that originates before the age of 22.” (American Association for Intellectual and Developmental Disabilities, n.d.)

Mand: “An elementary verbal operant involving a response of any form that is evoked by an MO and followed by specific reinforcement. Manding allows a speaker to get what she wants or refuse what she does not want.” (Cooper et al., 2020, p. 794)

Reinforcement: “when a response is followed by a stimulus change that results in similar responses occurring more often” (Cooper et al., 2020, p. 36)

Figure 1*Theory of Change*

CHAPTER 2: REVIEW OF LITERATURE

The purpose of this study was to investigate the effects of peer-delivered functional communication training (FCT) on the functionally equivalent communication responses (FCRs) and challenging behavior of a high school student with intellectual and developmental disabilities (IDD) in inclusive secondary school settings (i.e., educated in general education classrooms and other school settings alongside their peers without disabilities). I used a quantitative AB design to examine the effects of FCT on student FCRs and challenging behavior. I also measured the collateral effects of the intervention on student communication behaviors. Finally, I measured social validity from the perspective of all participants.

The theory of change, depicting the inputs and outputs of this study (Figure 1), shows that secondary students with IDD may exhibit challenging behavior as a result of inadequate environmental supports (e.g., communication supports; Wood et al., 2018), and, as a result, may be placed in restrictive educational settings. Depicted further down are the various benefits of access to inclusive school settings for secondary students with IDD, such as positive outcomes in academic, social, emotional, behavioral, and post-school areas. Next to this, FCT is introduced as a possible solution to address barriers related to challenging behavior that limit access to inclusive school settings for students with IDD. Figure 1 shows that FCT is highly effective when implemented with students with IDD and that it can be effectively implemented by natural implementers. Further down, the theory of change shows that when implemented in inclusive school settings by natural implementers with fidelity, immediate short-term outcomes may include a decrease in challenging behavior and an increase in positive behavior for students with IDD. These short-term outcomes are then shown to lead to positive long-outcomes, such as increased placement in inclusive school settings for students with IDD and, in turn, more positive

outcomes for these students overall (e.g., access to general education curriculum, social relationships, academic success).

Inclusion

Inclusion Defined

Over the past several decades, a number of terms have been used to describe the educational placement of students with disabilities. The term *integration* was first used to describe students with disabilities being removed from specialized separate schools and educated in separate classes in their home neighborhood schools. Then, the term *mainstreaming* was introduced to describe the process of some students with disabilities attending some nonacademic classes or other settings such as lunch, gym, or recess, alongside their peers without disabilities (Brown et al., 2020). Most currently, the term *inclusive education* or *inclusion* is used to describe the inclusion of all students with disabilities in classes and other settings as their educational placement for more than 80% of their school day (U.S. Department of Education, 2022). As previously mentioned, the term *inclusive school setting* will be used in this study to describe the regular educational environment as defined by IDEA (2004).

IDEA

As the legal foundation for the education and acceptance of students with disabilities in the public school system, the Education for All Handicapped Children Act (EHA, 1975), which over time and reauthorizations evolved into the Individuals with Disabilities Education Act (IDEA, 2004), serves as a crucial framework for understanding inclusive education. IDEA (2004) states that all students with disabilities (a) have access to a free appropriate public education (FAPE), (b) are educated in the least restrictive environment (LRE) with peers without

disabilities to the maximum extent appropriate, and (c) have access to and make progress in the general education curriculum.

FAPE. IDEA (2004) defines FAPE as an appropriate education for all students with disabilities that incurs no cost to their parents or guardians. The term *appropriate* is used to describe an education (a) that includes specially designed instruction (i.e., special education services) that meets the individual needs of the student to the same extent as students without disabilities; (b) where the student with a disability is educated alongside their peers without disabilities to the maximum extent appropriate in order to meet the needs of the student with a disability; (c) safeguarded against misclassification or inappropriate placement through the use of evaluation procedures; and (d) that enables parents or guardians to receive notices regarding their child's education plan, to review their child's data, and to challenge decisions made regarding identification, evaluation, and placement.

LRE. What constitutes the LRE for students with disabilities has been a long-contested debate in the field of education. Under the LRE requirements in IDEA (2004), school agencies must ensure that all students with disabilities are educated alongside students without disabilities to the maximum extent appropriate. This includes general education classrooms and other school settings such as the gym, cafeteria, or hallways and all extracurricular activities that students without disabilities may access. The appropriateness of the placement should be determined by the student and members of their educational team (i.e., administrators, related services providers, teachers, parents, caregivers; McCloskey, 2016).

Further, the provision for LRE includes that students with disabilities may only be removed from inclusive school settings to be placed in more restrictive educational settings (e.g., special education self-contained classrooms, separate schools) when their education in inclusive

school settings is proven unsatisfactory, despite the use of supplementary aids and services. Supplementary aids and services are forms of support for students with disabilities that serve as companions to specially designed instruction to facilitate success in all school settings (Wehmeyer et al., 2020). They can include any aid, service, or support, such as the roles of educators, mobility aids, instructional supports, and modifications to instructional content (IDEA, 2004). In considering the LRE, educational team members must first consider educational placement in inclusive school settings with appropriate supplementary aids and services for a student with a disability before considering a more restrictive placement. The removal of students with disabilities from inclusive school settings should be the expectation and not the rule (Quirk et al., 2017); however, this is not always the case in practice.

Access to the General Education Curriculum. All students with disabilities are entitled to learn grade-level content following the general education curriculum (i.e., the same education curriculum as for students without disabilities; IDEA, 2004), to participate in a state assessment of the general education curriculum standards, and have Individualized Education Programs (IEPs) that state how progress in the general education curriculum will be made under IDEA (2004). Further, school systems must ensure all students with disabilities not only access the general education curriculum, but also have equal access to nonacademic and extracurricular activities to the same extent as their peers without disabilities (Quirk et al., 2017). IDEA (2004) does not specify where access to the general education curriculum should occur for students with disabilities. As a result, some students access the general education curriculum in restrictive environments (e.g., self-contained special education classrooms) while others are taught the same curriculum alongside peers in inclusive school settings (Jackson et al., 2008–2009). Inclusion advocates argue that access to the general education curriculum goes beyond physically

including students with disabilities in inclusive school settings, such as classrooms; they contend that it includes high expectations from teachers, accountability, and progress on general curriculum content demonstrated through assessments (Ryndak et al., 2008).

To summarize the legal aspects of inclusion, Wehmeyer and colleagues (2020) described the mandates of IDEA (2004) with two simple expectations. First, all students with disabilities should receive special education services to access and make progress following the general education curriculum alongside their peers without disabilities. Second, all students with disabilities should only be removed from the aforementioned setting if they are not successful in this setting, despite receiving specially designed instruction and supplementary aids and services.

The Ethics of Inclusion

Although there is no commonly accepted definition of what constitutes inclusion for students with disabilities, many researchers, advocates, scholars, and educational professionals argue that the definition of inclusion must incorporate ethical components such as feelings of welcomeness, acceptance of diversity, and that students with disabilities should have access to the same experiences as their peers without disabilities (Brown et al., 2020; Giangreco et al., 2010; Jackson et al., 2008–2009; Taub et al., 2019). TASH (2022), a leading group in disability advocacy, made the following statement regarding inclusive education for students with disabilities:

TASH seeks to transform school communities based on social justice principles in which all students (a) are presumed competent, (b) are welcomed as valued members of all general education classes and extra-curricular activities in their local schools, (c) fully participate and learn alongside their same age peers in inclusive school settings based on

the general education curriculum, and (d) experience reciprocal social relationships (Inclusive Education section).

This vision of inclusive education incorporates the specific social justice concerns of students with disabilities being presumed competent, being welcomed and valued, and experiencing reciprocal social relationships.

Jackson et al. (2008–2009) discussed three overarching concepts related to access to inclusive school settings for students with extensive support needs (i.e., students who require pervasive and ongoing supports, may participate in their state’s alternate assessment, and may have disability labels such as ASD, ID, or multiple disabilities). The first concept is the purpose of school, which they argue is to promote socialization, enhance acculturation, and facilitate learning. The second concept, equity of opportunity in education, they describe as education benefiting all students. The presumption of competence is the final concept, meaning the belief that students with disabilities can meet educational expectations, as their peers do. The least dangerous assumption states if there are not sufficient data to support a decision, the decision made should be one that has the least dangerous effect on a student (Donnellan, 1984). This assumption has been accepted and used as criterion in educational research literature to justify interventions, practices, and inclusion for students with IDD (Taub et al., 2019). When making decisions for students with extensive support needs, this means the presumption of competence, because doing otherwise could be harmful to students (e.g., deny them potential educational opportunities; Jorgenson, 2005).

Brown et al. (2020) stated that the purpose of inclusive education for students with IDD is to facilitate academic and social engagement, ensure students are valued, and optimize both short- and long-term student outcomes that lead to an enviable life. They suggested that this may

be accomplished by addressing student support needs related to the acquisition, maintenance, and generalization of all relevant skills. These ethical considerations often drive perceptions about inclusive education for students with disabilities.

History of Inclusion

In the early 1900s, individuals with cognitive disabilities (e.g., intellectual disability) resided full-time in highly segregated and isolated institutional facilities and did not attend their neighborhood school, despite the establishment of public schools (Osgood, 2009; Wehmeyer et al., 2013). From 1930 through the early 1960s, special education gained momentum beginning with President Herbert Hoover's White House Conference on Child Health and Protection (1930; Osgood, 2009). This conference led to a report titled "The Handicapped Child" that provided educational recommendations regarding students with disabilities (Osgood, 2009; Wehmeyer et al., 2013). During the next few decades, there was a push to educate students with disabilities in public schools. During this time, the common belief was still that students with disabilities were best served in segregated settings away from their peers without disabilities for their own good and for the good of their peers without disabilities and teachers; however, there were dissenting opinions opposed to segregation as a practice (Osgood, 2009). Despite the growing number of special education programs in public schools, a large number of children with disabilities continued to reside and receive education at institutions (Osgood, 2009; Wehmeyer et al., 2013).

The *Brown vs. Board of Education of Topeka* (1954) case, where the Supreme Court ruled that the segregation of students based on race was unconstitutional, was instrumental in shaping the way in which the appropriateness of special education settings was viewed from then on – the rights of students with disabilities were seen as a social justice issue. Disability rights activism of the 1960s and 1970s was largely responsible for the culmination of the landmark

legal action of the EHA in 1975, which after several reauthorizations would become IDEA (2004; Dudley-Marling & Burns, 2014). The EHA was the first legal act to ensure students with disabilities received FAPE and an IEP individualized to meet their specific needs (Dudley-Marling & Burns, 2014). The EHA also mandated that students with disabilities be educated alongside their peers without disabilities (Osgood, 2005; Wehmeyer et al., 2020). This influenced the philosophy of mainstreaming, which allowed for students with mild or high incidence disabilities (e.g., learning disability, emotional disturbance, speech or language impairment) to be educated in inclusive non-academic settings such as lunch, gym, or recess as a guest, rather than a full participant (Brown et al., 2020). Because it did not take into consideration the needs of students with more extensive support needs (Osgood, 2005), students with IDD continued to receive their education in highly segregated settings, such as institutions and separate schools (Brown et al., 2020).

Instructional strategies for students with more extensive support needs were developed and disseminated in research with a focus on developmental skills based on the learner's assumed developmental age, rather than on their chronological age (Brown et al., 2020). This focus on developmental skills was associated with poor long-term educational outcomes for students with IDD, and so research pivoted to incorporate more age-appropriate functional life skills (e.g., daily living, vocational skills; Browder et al., 2003). This approach resulted in better outcomes for students with disabilities across community-based contexts (e.g., home, work; Jackson et al., 2008-2009), but still produced limited long-term outcomes in academic skills (Brown et al., 2020).

In 1990, the EHA was reauthorized and renamed IDEA and guidelines were added that stipulated that students with disabilities must be educated in the LRE at their neighborhood

school (Alquraini & Gut, 2012; Dudley-Marling & Burns, 2014). As a result, the concept of *mainstreaming* was replaced with that of *inclusion*, a concept wherein students with disabilities were not seen as guests in inclusive school settings anymore, but entitled to participation, the same as their peers without disabilities (Alquraini & Gut, 2012). As the inclusion movement gained momentum, researchers began examining the inadequacies of segregated settings along with the associated benefits of inclusion for students with disabilities (Osgood, 2005).

Educational research for students with IDD began to focus on a balance between functional and academic skills, with an emphasis on access to the general education curriculum (Browder et al., 2003).

Current Trends in Inclusion

According to the U.S. Department of Education (2022) educational placement data, the number of students with disabilities who are educated alongside their peers in inclusive school settings has increased over the past several decades. In 2020, 66.1% of students with disabilities were educated in inclusive school settings for 80% or more of their school day (U.S. Department of Education, 2022). This was a 5.6% increase from 2009, when the percentage of students with disabilities who were educated in inclusive school settings was 60.5% (U.S. Department of Education, 2022). Although reporting procedures have changed since 2009, it is still important to note that during the 2000–2001 school year, 46.46% of students with disabilities were educated outside inclusive school settings for less than 21% of the school day (U.S. Department of Education, 2003). Therefore, there has been roughly a 20% increase in rates of inclusion over the past 2 decades.

Although this increasing trend is promising, it does not capture the entire picture. Because students with high incidence disabilities (e.g., learning disability, emotional disturbance,

speech or language impairment) account for over 50% of students with disabilities served in special education, this upward trend is more positively skewed to indicate that all students with disabilities have experienced increased placement in inclusive school settings (Wakeman et al., 2022; Williamson et al., 2020). The inclusive educational placements of students with more extensive support needs have not kept pace with the overall trend (McLeskey et al., 2012; Morningstar & Kurth, 2017; Wakeman et al., 2022).

Students with IDD are a heterogeneous subgroup of students with IDEA disability labels that include ASD, ID, and multiple disabilities (University of Minnesota Institute on Community Integration, 2022). According to the American Association for Intellectual and Developmental Disabilities (2022) and the Centers for Disease Control and Prevention (2020), persons with IDD may have support needs in the areas of intellectual functioning, adaptive behavior, motor and physical movement, or a combination of these. Characteristics of students with IDD are similar to characteristics of students with extensive support needs in that both subgroups include students with low-incidence disabilities (e.g., ASD, ID, multiple disabilities); however, the definition for extensive support needs is more specific in that it includes that students follow their state's alternate assessment (Taub et al., 2017), whereas IDD is a broader subcategory and does not include this characteristic by definition. Students with extensive support needs are students who have IDD; however, students with IDD do not necessarily have extensive support needs.

For the subgroup of students with IDD, educational placement data are far less favorable. The U.S. Department of Education (2022) data indicated that only 40.8% of students with ASD, 17.9% of students with ID, and 15% of students with multiple disabilities were served in inclusive school settings for 80% or more of their school day during the 2019–2020 school year.

This indicates that students with IDD are educated primarily in restrictive educational settings such as self-contained special education classrooms for a majority of their school day. Several researchers over the past decade have examined these trends in various contexts and found that there is little to no evidence that students with IDD are experiencing a positive trend toward greater placements inclusive school settings (Agran et al., 2020; Brock, 2018; Kleinert et al., 2015; Kurth et al., 2014; Morningstar & Kurth, 2017; Morningstar et al., 2017; Polloway et al., 2019; Wakeman et al., 2022; Wehmeyer et al., 2020).

Benefits of Access to Inclusive School Settings for Students with IDD

Some educational professionals may believe the support needs of students with IDD cannot be adequately addressed in inclusive school settings, and thus believe restrictive educational settings are more appropriate. Research has shown that student support needs related to academics, behavior, communication, social skills, relationships with peers, and adaptive skills can be successfully addressed in inclusive school settings (Wakeman et al., 2022). For example, in a recent systematic literature review, Saunders and colleagues (2020) examined effective practices for students with significant disabilities in inclusive school settings. Results yielded several effective instructional practices (e.g., embedded trial instruction, constant time delay, system of least prompts, peer supported interventions) for use in the inclusive school setting across academic, social, and functional skills outcomes.

In a literature review specific to secondary students with ID, Kuntz and Carter (2019) examined interventions delivered in inclusive school settings with students with ID. They found a myriad of approaches to support secondary students with ID in inclusive school settings across a wide range of skill domains including academics (e.g., mathematics, science, civics, survival skills), challenging behavior (e.g., elopement), and social skills (e.g., friendship measures, social

initiations). The intervention approaches included systematic instruction, peer mediated supports, self-management, communication interventions, and educational placement changes.

One approach commonly implemented in inclusive school settings to support students with IDD is Peer-based Instruction and Intervention (PBII). In a literature review conducted by Chang and Locke (2016), they examined the literature related to PBII for students with ASD. The authors found that peer-mediated interventions were effective in addressing social skills for students with ASD in natural settings, such as schools. Similarly, Schaefer and colleagues (2016) conducted a literature review focusing on the effectiveness of PBII for students with ID. They found that PBIIs were successful in increasing student interactions with peers. Although most PBIIs are focused on supporting social skills, there is evidence that PBIIs can be implemented to address challenging behavior as well (Travers & Carter, 2022). For example, Brady et al. (2016) examined the effects of a peer-delivered PBS intervention on the socially appropriate behavior of students at-risk for disabilities. The results indicated that the intervention was highly effective and that socially validity results were acceptable across participants.

Academic Outcomes

Research supporting access to inclusive school settings includes evidence that students with IDD who have extensive support needs can meaningfully learn general education academic content in a classroom among their same-age peers without disabilities (Shogren et al., 2015). For example, access to inclusive school settings has shown to increase student access to the general education curriculum (Kurth et al., 2019; Quirk et al., 2017; Soukup et al., 2007). This is critical as appropriate access to the general education curriculum is legally mandated for all students with disabilities under IDEA (2004). Next, inclusive school settings provide students with IDD highly qualified teachers (Kurth et al., 2019; Quirk et al., 2017; Soukup et al., 2007),

and higher quality instruction compared with segregated settings (Agran et al., 2020; Ryndak et al., 2013; Sauer & Jorgenson, 2016). Further, students with IDD may spend more time engaged in academic tasks in inclusive school settings (Kurth & Mastergeorge, 2012) and experience greater academic gains than in more restrictive placements (e.g., Agran et al., 2020), in the areas of language and literacy (e.g., de Graaf & van Hove, 2015). There are several recent experimental studies conducted with students with IDD in inclusive school settings that measured and demonstrated positive academic outcomes such as literacy (e.g., Hunt et al., 2020; Ruppar et al., 2017), mathematics (e.g., Bowman et al., 2020; Spooner et al., 2018), social studies (e.g., Ryan et al., 2019), science (e.g., Hudson et al., 2014), and STEM (e.g., Kuntz et al., 2022).

Kurth and Mastergeorge (2010) examined the academic profiles of 15 junior high school students with ASD. They had all received special education services since kindergarten; however, seven of the participants were served in inclusive school settings for 80% or more of their school day, whereas the other eight were educated in self-contained settings for 50% or more of their school day. Assessments were administered across domains including academic achievement. Results of the multivariate analysis of variance indicated that students in inclusive school programs achieved higher test scores on academic achievement measures as compared to their peer counterparts in restrictive placements.

In a similar study, Gee and colleagues (2020) used student IEP data over the course of their education to compare the progress of fifteen matched pairs of students with extensive support needs across achievement outcomes in literacy and mathematics. Half of the students were included in inclusive school settings for 80% or more of their school day, whereas the other half was educated primarily in self-contained settings. Pairs of students were matched by several

characteristics including age, gender, disability label, primary language, communication level, literacy level, and numeracy level. After analyzing the blinded data using a Wilcoxon signed-rank test to compare the two groups, the research team discovered the group of students in inclusive school settings had greater involvement in activities of typical peers without disabilities as compared to the other group of students in self-contained settings. Further, students in self-contained classes were found to be less engaged when compared to the other group. In general, students included in general education classrooms made more educational progress in both literacy and numeracy compared to those students educated in separate settings.

Behavioral, Social, Communication, and Self-Determination Outcomes

Aside from academic benefits, students with IDD may experience positive behavioral outcomes in inclusive school settings (Ryndak et al., 2013; Sauer & Jorgenson, 2016) and experience improved social skills (Ballard & Dymond, 2017; Chung & Carter, 2013; Gee et al., 2020; Lyons et al., 2011; Schwab et al., 2015), communication skills (Ballard & Dymond, 2017; Kleinert et al., 2015), and self-determination (Agran et al., 2020; Hughes et al., 2013). Further, inclusive school settings have been associated with greater opportunities for interaction with peers and for practicing social skills (Feldman et al., 2016).

In a recent literature review conducted by Mansouri and colleagues (2022), the authors analyzed six studies that compared the academic and social outcomes of students with extensive support needs in inclusive school settings versus segregated settings. Examples of matched variables across studies included age, gender, grade level, disability level, and levels of adaptive behavior. Across various designs, four of the six studies measured social outcomes (i.e., social interaction [Hunt et al., 1994], social relationships [Fryxell & Kennedy, 1997; Kennedy et al., 1997], social competence [Fisher & Meyer, 2002]), one study measured academic achievement

(Kurth & Mastergeorge, 2010) and the final study measured both communication and academic progress (Gee et al., 2020). Of the six included studies, five yielded statistically significant results indicating that inclusive school settings were associated with more positive outcomes for the included students (Fryxell & Kennedy, 1997; Kennedy et al., 1997; Gee et al., 2020; Kurth & Mastergeorge, 2010), while one study yielded positive outcomes in the inclusive school settings that were not statistically significant (Fisher & Meyer, 2002).

Post-School Outcomes

In addition to positive outcomes related to academic, social, communication, and self-determination skills, the inclusive school setting has been associated with improved post-school outcomes for students with IDD (Baer et al., 2011; Hehir et al., 2016; McConnell et al., 2021; Yamamoto & Alverson, 2022), including employment and continuing education opportunities. Yamamoto and Alverson (2022) examined 5 years of special education data to examine statewide post-school outcome data for students with ASD and ID. Their specific research aims were to discover whether various categorical predictors were significant in predicting post-school engagement 1 year after exiting from high school. Post-school engagement included being enrolled in higher education, competitively employed, enrolled in some form of postsecondary education/training, or being otherwise employed. Results from the multilevel logistic regression indicated that one of the strongest significant predictors of post-school engagement was a student's educational placement in school. Specifically, students who spent at least 80% of their instructional day in inclusive school settings experienced significantly greater post-school engagement than students who did not.

In a systematic literature review that produced similar findings, McConnell et al. (2021) analyzed the skills, behaviors, expectations, and experiences of students with significant

cognitive disabilities that were associated with post-school success (i.e., employment, continued education, independent living). After systematically analyzing 53 studies including both quantitative and qualitative data, the researchers found that students who were educated with peers without disabilities and accessed the general education curriculum during high school were more likely to experience post-school success in the areas of employment and continuing education than those who did not.

Research Surrounding Segregated Settings

Although there is compelling evidence in the research literature that inclusive school settings are the most beneficial educational placement for students with IDD (National Council on Disability, 2018; Shogren et al., 2015), there is little to no evidence of the value of segregated settings (National Council on Disability, 2018; Pennington & Courtade, 2015). In fact, there is literature that suggests that more restrictive placements such as self-contained special education settings may be inadequate educational placements for students with IDD (Kurth, Born, & Love, 2016; Pennington & Courtade, 2015).

Pennington and Courtade (2015) conducted observations of instructional activities across 35 self-contained classrooms where students with IDD were served for a majority of their school day. They collected data on teacher delivery of opportunities to respond for a group and individual students, positive and negative feedback, and error correction. They also collected data on the behaviors in which students were engaged (i.e., active engagement, passive engagement, off-task, downtime, questioning). Key findings suggested that a majority of the students' instruction occurred in small group arrangements, with little instruction occurring in full group or independent arrangements, which is concerning as instruction that occurs in inclusive school settings includes large parts of instructional time in full group and individual

arrangements. Further, observed academic content was largely related to reading, with few observations including mathematics or science. The authors suggested that this may be due to a lack of emphasis on content areas other than reading due to teachers' lack of preparedness to teach other content areas or their opinion that other content areas may not be as relevant to students with IDD. Teacher-delivered opportunities to respond varied widely across classrooms, but in general were considered low. Further, students were found to have spent an average of 29% of observed sessions engaged in academic instruction with low rates of questioning.

In a similar study, Kurth, Born, and Love (2016) investigated the ecobehavioral characteristics of high school self-contained classrooms for students with IDD. They observed characteristics related to student behavior (e.g., academic, nonacademic), teacher behavior (e.g., delivering content, providing feedback), and the classroom environment (e.g., instructional grouping, layout, type of curriculum). Their results indicated that teachers spent a large amount of time engaged working at their desks on activities other than instruction (e.g., paperwork, classroom management), there was little meaningful instruction occurring, and, in general, classroom environments were found to be highly distracting with many interruptions. Similar to the findings from Pennington and Courtade (2015), teachers delivered few opportunities to respond and there was a lack of communication supports observed for students with complex communication needs who used AAC.

Barriers to Inclusion for Students with IDD

Despite the research demonstrating positive outcomes of inclusion and the inadequacies of restrictive settings, students with IDD continue to be primarily educated in segregated settings (U.S. Department of Education, 2022). Over the past decade, there has been ample research examining why this might be the case. Results from this body of research indicate a wide range

of barriers associated with access to inclusive school settings for students with IDD, including many that are not based on student support needs but rather on irrelevant student characteristics or external factors. These include (a) perceptions and biases of key educational team members including teachers, administrators, and parents (Agran et al., 2020; Anderson et al., 2022; Ballard & Dymond, 2018; de Boer et al., 2015; Gee et al., 2020; Kozleski et al., 2014; Kurth et al., 2017; Roberts et al., 2018; Ruppert et al., 2017; Wehmeyer et al., 2016; Zagona et al., 2017), including a misinterpretation of LRE (Giangreco, 2020; Ryndak et al., 2014); (b) factors related to student characteristics including student support needs (Segall & Campbell, 2014), disability label (Kurth et al., 2019), IQ (Kurth et al., 2015), social and communication skills (Kleinert et al., 2015; Lyons et al., 2011), and challenging behavior (Lauderdale-Littin et al., 2013); (c) a lack of resources including systemic barriers (Agran et al., 2020; Wehmeyer et al., 2016; White et al., 2020) and time to collaborate (Ruppert et al., 2017); (d) factors associated with student socioeconomic status and geographic location and urbanicity of the school district (Agran et al., 2020; Brock & Schaefer, 2015; Brock, 2018; Cosier et al., 2021; Kurth, Mastergeorge, & Paschall, 2016; Lauderdale-Littin et al., 2013); and student race or ethnicity (Brock & Schaefer, 2015; Cooc, 2022; Cosier et al., 2021; White et al., 2015).

Agran and colleagues (2020) summarized factors related to students with IDD, specifically students with extensive support needs, to explain the lack of inclusive school setting placements associated with this subgroup of students. The authors responded by suggesting six factors they believe to be the reason for more segregated placements: (a) faulty perceptions of student ability and competence, (b) economic and demographic factors, (c) biases, (d) lack of adequate teacher preparation and experience, (e) lack of resources, and (f) the research-to-practice gap. In a response to this article, Kleinert (2020) suggested the addition of

communicative competence to the list of factors that prevent students with IDD from accessing inclusive school settings. They stated that the ability to communicate competently is one of the most fundamental educational outcomes and factors heavily in decisions related to educational placement. They stated also that there is a positive correlation between student communicative competence and access to inclusive classroom settings. Gee (2020) added that a major barrier to systemic change is that some key educational professionals benefit from the exclusion of students with IDD (i.e., no change in the status quo). They stated that, without a change to the way some educational professionals perceive students with IDD, these educators are likely to continue to hold low expectations of students with IDD and justify their placement in restrictive settings.

In a similar article, Giangreco (2020) offered five systemic causes for the exclusion of students with IDD from inclusive school settings. First, they stated that the concept of ableism, or the discrimination of people with disabilities, is deeply ingrained in society and thus school system. This may lead to biases, faulty perceptions, low expectations, and restrictive protectionism. Second, they stated that schools continually misapply the LRE in placement decisions, jumping too soon to assuming a segregated setting is most appropriate. Third, the author referenced curricular inclusion and how some educators have a difficult time conceptualizing this. Fourth, they argued that inclusion is too often seen as an “either/or” decision instead of a continuum. Finally, the author stated that educational systems changes often exclude students with disabilities in general, as the faulty assumption is that the changes may not impact them.

There is a wide array of barriers associated with access to inclusive school settings for students with IDD. These include faulty perceptions and biases, misinterpretation of legal

mandates, specific student characteristics, a lack of resources, geographic location, a lack of educator preparation and training, and systemic barriers. These barriers are relevant to all ages of students with IDD, but some research has been conducted that focuses specifically on barriers related to inclusive school settings for secondary students with IDD.

Secondary Students with IDD

Although the aforementioned barriers associated with access to inclusive school settings for students with IDD apply to all school-aged students, there are barriers that may apply specifically to older students (i.e., middle school, high school). There is evidence that younger students with IDD are more likely to be included in inclusive school settings than are older students (Harris & Handleman, 2000). Kuntz and Carter (2019) suggested that access to inclusive school settings for secondary school students with ID may be particularly challenging for the following reasons: (a) the educational environment may change dramatically, (b) the academic curriculum becomes more difficult, (c) there is an increase in class sizes, (d) academic achievements (e.g., high stakes tests) are given more importance, (e) behavioral expectations are higher and students are expected to function more independently, and (f) peer relationships become more important.

For example, Kroesch and Peebles (2021) examined the perceptions of high school general education teachers on their ability to support students with IDD. Results indicate that general education teachers perceive themselves to be largely incapable of implementing an IEP for a student with IDD, uncomfortable collaborating with related services providers and paraprofessionals, and unable to modify instruction effectively to meet the needs of students with IDD. The authors suggested that these perceptions could be due to a lack of teacher preparation and training at the pre-service and in-service levels.

Ballard and Dymond (2018) found similar results after examining the perceptions and experiences of 11 middle and high school teachers who served students with IDD who had extensive support needs regarding their students' access to inclusive school settings. The teachers identified enablers and barriers for their students accessing inclusive school settings. Perceived enablers included self-efficacy of school staff (e.g., general education teachers taking initiative to support students without being explicitly told how) and (b) a positive school climate (e.g., general education teachers welcoming students, supportive administrators). Reported barriers to student access to inclusive school settings included (a) attitudinal barriers (e.g., general education teachers' apprehension and fear), (b) health care related issues (e.g., absences, medical emergencies), (c) administrative issues such as limited knowledge and/or support, (d) lack of adequate supports (e.g., collaboration between parents, administrators, and teachers), and (e) a lack of time to plan and advocate for access to inclusive school settings for their students.

Challenging Behavior

Challenging behavior, a factor most relevant to this study, serves as a major barrier to inclusive school settings for students with IDD (Anderson et al., 2022; Crosland & Dunlap, 2012; Harrower & Dunlap, 2001; McCabe et al., 2020; Roberts & Simpson, 2016; Walker, Loman, et al., 2018). Challenging behavior may especially serve as a barrier for secondary students, versus younger students, given the longer history of reinforcement of challenging behavior. If a student has displayed challenging behavior for a long period of time (e.g., since elementary school) and has accessed the maintaining consequence of these behaviors as a result, these behaviors may be more resistant to extinction than behaviors with shorter histories of reinforcement (Cooper et al., 2020). Therefore, it is critical to address and replace challenging behavior so they no longer continue to be reinforced. Additionally, is important to address the

challenging behavior of secondary age students with IDD as challenging behavior reaches its peak during adolescence (Billstedt et al., 2007; Shattuck et al., 2007) and is associated with negative post-school outcomes (Wehman et al., 2015) and a poorer quality of life (Biggs & Carter, 2016). In fact, there is evidence that students with IDD who exhibit lower rates of challenging behavior are more likely to be placed in inclusive school settings than students who exhibit challenging behavior with more frequency (Lauderdale-Littin et al., 2013).

In a systematic literature review conducted by Roberts and Simpson (2016), perceptions of key educational team members (e.g., teachers, parents, students) on inclusive practices for students with ASD were examined. They reported the following five factors that impact the access to inclusive school settings for students with ASD: (a) attitudes toward inclusion, (b) knowledge of ASD, (c) students' social communication behaviors, (d) perceived challenging behavior, and (e) student support networks. Under the category of perceived challenging behavior, the authors found that educators cited behaviors such as self-injury, tantrums, and physical aggression toward peers as unacceptable and grounds for restriction from the inclusive school setting. Further, special education teachers as opposed to general education teachers were seen as responsible for managing student challenging behavior.

In an analysis of IEPs for students with IDD, McCabe and colleagues (2020) qualitatively examined the LRE statements across 88 IEPs. They found that many LRE statements included ambiguous justifications for restrictive placements on the grounds of inappropriate or challenging behavior (e.g., student is required to maintain unspecified behavior norms in order to be allowed in the inclusive school setting, behavior needs interfere with learning). Other LRE statements included specific behaviors (e.g., refusal behaviors) that were referenced to provide

justification for the student's inability to follow the general education curriculum in an inclusive school setting.

Summary

The consideration for access to inclusive school settings for all students with disabilities, including students with IDD, is legally mandated under IDEA (2004) and considered best practice by many in the education field (Agran et al., 2020; Carter et al., 2023; Kurth et al., 2019; Morningstar et al., 2016). Although there is a current trend toward more inclusive practices, students with IDD are still primarily served in restrictive settings (U.S. Department of Education, 2022), despite the numerous associated benefits to inclusive school settings (Agran et al., 2020; Gee et al., 2020) and potential inadequacies of restrictive settings (e.g., self-contained special education classroom; Causton-Theoharis et al., 2011; Kurth, Born, & Love, 2016; Pennington & Courtade, 2015). Access to inclusive school settings benefits students with IDD in the areas of academics (Agran et al., 2020; Kurth & Mastergeorge, 2010), social skills (Kleinert et al., 2015; Lyons et al., 2011; Schwab et al., 2015), communication skills (Ballard & Dymond, 2017; Kleinert et al., 2015), self-determination (Agran et al., 2020; Hughes et al., 2013), and post-school outcomes (Baer et al., 2011; Hehir et al., 2016; McConnell et al., 2021; Yamamoto & Alverson, 2022). Barriers to inclusive school settings for students with IDD include faulty perceptions and biases; a misinterpretation of LRE; student characteristics such as disability label, IQ, social skills, and communication skills; a lack of resources; systemic barriers; socioeconomic status; geographic location of the school district; student race and ethnicity; and student challenging behavior (Agran et al., 2020; Gee et al., 2020; Giangreco, 2020; Kleinert, 2020). The benefits to accessing inclusive school settings make eliminating barriers, such as challenging behavior, critical for students with IDD.

Supporting the Behavioral Needs of Students with Disabilities in Schools

Challenging behavior of students with disabilities within the context of school settings has been defined in a number of ways in the educational literature. Most definitions of challenging behavior include that the behavior (a) is significant in frequency, intensity, irregularity, or duration (Stoesz et al., 2016); (b) may negatively interfere with learning or academic success (Doubet & Ostrosky, 2015; Martinez et al., 2016; Smith & Fox, 2003; Stoesz et al., 2016); (c) may negatively interfere with a student's social interactions or other areas of functioning (Doubet & Ostrosky, 2015; Smith & Fox, 2003); (d) may negatively interfere with the student's safety or the safety of those around them (Poppes et al. 2010; Stoesz et al., 2016); (e) may result in property damage (Davidson et al., 1994); and (f) may result in a denial of access to certain settings (Poppes et al., 2010).

Challenging Behavior in Schools

During the 2013–2014 school year, around 2.6 million K–12 students (i.e., 5.3% of the total student population) received out-of-school suspensions at least one time (National Center for Educational Statistics, 2019). The suspension rates for students receiving special education services are disproportionately higher than for students without an IEP (Camacho & Krezmien, 2019). Similarly, students with disabilities are significantly more likely to be subjected to aversive practices, such as restraint and seclusion, than students without disabilities (Gage et al., 2022).

Westling (2010) analyzed the results of a questionnaire presented to 70 special and general education teachers in a southeastern state regarding perceptions about their students who exhibited challenging behavior. Teachers reported that students with high incidence disabilities (i.e., emotional disturbance, other behavior disorders, specific learning disability, ADHD) and

IDD were likely to exhibit challenging behavior. The most common topographies of challenging behavior included defiance, noncompliance, disruption, and socially inappropriate behavior. Special education teachers indicated that almost half of their students exhibited some form of challenging behavior, while general education teachers reported that about one fourth of their students engaged in challenging behavior.

Challenging Behavior Among Students with IDD

For the subgroup of students with IDD, rates of challenging behavior may be higher compared to students with other disabilities or without disabilities (Emerson et al., 2014; Esteves et al., 2021; Kurtz et al., 2020; Lloyd & Kennedy, 2014). For example, many individuals with IDD engage in some form of challenging behavior, and over half of these individuals may engage in multiple topographies of challenging behavior (Hutchins & Prelock, 2014) including aggression, stereotypy, self-injury, elopement, and property destruction (Delgado-Casas et al., 2014; Lloyd & Kennedy, 2014).

In a recent literature review, Simó-Pinatella et al. (2019) examined studies reporting the prevalence of challenging behavior exhibited by children with disabilities. They found that the most commonly analyzed topography of challenging behavior was aggression, which varied greatly across studies (i.e., 10–85%). Further, for participants with co-occurring ASD and ID, 56.3% were found to exhibit aggression and 93.7% were found to exhibit aggression, stereotypy, and/or self-injurious behaviors. For self-injurious behaviors, the authors found that rates ranged from 5.3–47.2% for children with ID. When examining destructive behavior, prevalence rates ranged from 7.3–24% for children with ID. Finally, the authors analyzed studies that examined the prevalence rates for overall challenging behavior. They found that rates of challenging behavior ranged from 48–60% for students with ID, 94% for students with ASD, and 93.7% for

students with ID and ASD. In general, students with ASD and ID exhibited consistently higher rates of challenging behavior across studies than did students with high-incidence disabilities (e.g., learning disability, emotional disturbance, speech or language impairment), with students with co-occurring ASD and ID exhibiting the highest rates.

Negative Outcomes of Challenging Behavior

Teachers and other key educational team members agree that student challenging behavior is a high priority area to address (Strickland-Cohen et al., 2019). This is evidenced by the emphasis in educational research on developing and implementing school-wide approaches to universally prevent and address challenging behavior (Noltemeyer et al., 2019). Further, there are several negative consequences associated with challenging behavior that affect students, their peers, and teachers, and which make preventing and addressing challenging behavior critical. Negative outcomes may include hindering academic learning of other students (Martinez et al., 2016; Roberts & Simpson, 2016; Westling, 2010), instructional time used to address challenging behavior (Westling, 2010), difficulty developing and maintaining social relationships (Amstad & Müller, 2020), poor relationships with educators (Amstad & Müller, 2020; Eisenhower et al., 2015), physical injury (Poppes et al. 2016), and a decreased quality of life (Emerson et al. 2014).

Challenging behavior has been associated with aversive practices implemented by school members. In fact, aversive procedures such as restraint and seclusion in response to student challenging behavior is significantly more likely to be used for students with disabilities than students without disabilities (Gage et al., 2022). Restraint is defined as a device or equipment that restricts a student's freedom of movement (i.e., mechanical restraint) or a personal interaction that immobilizes or reduces a student's ability to move parts of their own body (i.e., physical restraint; Council for Exceptional Children [CEC], 2020). Seclusion is defined as the

involuntary confinement of a student by themselves in an area that the student is not able to leave (CEC, 2020). As these aversive procedures are highly reactive in nature, there is little documented evidence supporting their effectiveness in reducing challenging behavior (Simonsen et al., 2014; Trader et al., 2017). Further, they put students at risk for removal from educational opportunities (Scheuermann et al., 2016), injury, and, in extreme cases, death (Gage et al., 2022). In a position statement disseminated by CEC (2020), the largest international professional disability rights organization, the organization called for educators and policy makers to eliminate the use of these harmful practices in favor of positive strategies that respect student dignity and ensure student safety. They further emphasized that these aversive procedures should not be included in IEPs, behavior intervention plans (BIPs), or individualized safety or crisis plans.

Westling and colleagues (2010) surveyed 1,300 parents and guardians of students with a wide range of disabilities to determine whether their child had been subjected to restraints, seclusion, or other aversive practices during their school career. A large percentage of respondents (64.7%) indicated that their child had been subjected to these procedures, and 67.3% reported they had not provided consent. Of these students, almost 50% had ASD. Further, 55.4% indicated that their student had no formal or informal BIP prior to being restrained, secluded, or subjected to other aversive procedures. As Westling and colleagues noted, this is concerning, as BIPs can prevent and address challenging behavior effectively. Parents and guardians indicated that their child had experienced a physical injury (42.2%), obvious signs of physical pain (33.5%), emotional trauma (92.2%), and other adverse reactions (39.2%). These findings indicate a critical need to ensure that educators supporting students with disabilities are using proactive, positive behavior practices to address challenging behavior instead of reactive,

potentially dangerous procedures. Finally, challenging behavior has been associated with poor long-term effects such as more restrictive educational placements, school dropout (Balfanz et al., 2014), reduced odds of high school graduation and post-secondary education (Balfanz et al., 2014), and entry into the criminal justice system (Nicholson-Crotty et al., 2009; Rosenbaum, 2020).

In general, students with disabilities are more likely than students without disabilities to be subjected to aversive practices such as suspension, restraint, and seclusion. The subgroup of students with IDD is more likely to exhibit challenging behavior in schools, which may lead to a variety of negative consequences including inadequate use of instructional time, issues with relationships, physical injury, aversive practices, and an overall decrease in quality of life. These outcomes make addressing challenging behavior a high priority area for educators. Given the negative consequences associated with challenging behavior for students with IDD and other disabilities, it is critical to implement effective frameworks and practices in schools to support the behavioral needs of these students.

Effective Frameworks and Practices

Given the severity of the potential impacts and outcomes of unresolved challenging behavior, it is critical that schools prioritize preventing and addressing the behavioral needs of students in school using effective practices. The most effective way to address student challenging behavior in school is through the use of evidence-based practices (EBPs; e.g., FCT, behavior contracts, behavior-specific praise, self-management, token economy, group contingencies; Cooper et al., 2020) and evidence-based frameworks (e.g., PBIS). EBPs are practices that have accumulated substantial evidence in facilitating positive outcomes for a specific population of students and meet specific criteria in design, quality, quantity, and

effectiveness (Cook & Cook, 2011; Horner et al., 2005; The IRIS Center, 2016). Therefore, educators are encouraged to implement these practices to promote positive student outcomes.

ABA

ABA is the science of using behavioral principles (e.g., reinforcement, stimulus control) to create socially significant behavior change interventions (Cooper et al., 2020). In their seminal article, Baer and colleagues (1986) described seven dimensions of ABA. First, ABA is *applied*, meaning that the behavior change occurring is meaningful to the individual and to those around them. Second, is that ABA is *behavioral* in that behavior change can be systematically observed, measured, and defined. Third, ABA is *analytic*, meaning that adequate data are required to demonstrate causal relationships between interventions and behavior change. Fourth, ABA is *technological* in that the procedures implemented are operationalized and described to a degree so they can be replicated. Fifth, ABA is *conceptually systematic*, meaning that all interventions and strategies implemented are evidence-based and grounded in the scientific principles of behavior. Sixth, ABA should display a degree of *generality*, meaning the learner is able to demonstrate learned behaviors in multiple settings across contexts and time. Finally, ABA is *effective* in that the interventions implemented are monitored and changed as needed so as to produce positive results of a practical value.

Based on these dimensions, the procedures and principles used in ABA have been historically significant in supporting children and adults with IDD across a wide range of skill and outcome areas (Neidert et al., 2010). Since the 1960s, researchers have published hundreds of studies on the development, implementation, and delivery of socially significant behavior change interventions to persons with IDD (Cooper et al., 2020; Whitman et al., 1983). These interventions include a wide range of participants, settings, and interventionists, and include

supports in the areas of adaptive behavior, academic instruction, daily living skills, and challenging behavior support (Neidert et al., 2010).

PBIS. Historically in schools, punishment-based (e.g., loss of privileges) and exclusion-based interventions (e.g., suspension, detention) were commonly used for addressing challenging behavior. These largely reactive approaches to challenging behavior were not effective in reducing student challenging behavior and, as a result, the focus began to shift toward more proactive approaches (Sprague & Horner, 2006). PBIS is an applied scientific framework based on the principles of ABA that is focused specifically on promoting positive behavior, reducing challenging behavior, and improving student and educator quality of life in educational systems (Carr et al., 2002). It is a continuum of supports centered on students' academic and social outcomes in a schoolwide, small group, and individual capacity (Sprague & Horner, 2006).

Schoolwide PBIS. EBPs in schools can be implemented across the whole school or classroom, or on an individual basis. Schoolwide Positive Behavior Interventions and Supports (SWPBIS) is a multitiered, inclusive model of support designed to extend to all students within a school, with the purpose of promoting positive behavior (Horner et al., 2009; Kurth & Enyart, 2016; Kurth & Zagona, 2018; Loman et al., 2018). Supported by a range of EBPs and grounded in the ideals of person-centered planning and ABA, SWPBIS can decrease occurrences of challenging behavior and increase prosocial, appropriate, and positive behaviors across all populations of students with and without disabilities (Horner et al., 2009; Kurth & Enyart, 2016; Kurth & Zagona, 2018; Loman et al., 2018). At the first tier of support, students are taught school-wide behavioral expectations and are rewarded for following them. If students do not respond to Tier 1 supports, they are introduced to Tier 2 interventions and supports, such as self-monitoring, social skills training and instruction, Check and Connect, and Check-In Check-Out,

which are more intensive than Tier 1 supports. Students who receive Tier 2 interventions and supports are considered to have at-risk behavior and, thus, are introduced to these more comprehensive behavioral interventions (Brown et al., 2020; Walker, Loman, et al., 2018). A small percentage of students, however, will require more intensive, individualized behavior supports (i.e., Tier 3). These Tier 3 interventions and supports are typically function-based.

Benefits of Using EBPs vs. Other Interventions

Given the rich evidence-base supporting EBPs, it is critical that educators and other school professionals implement EBPs over non-evidence-based interventions for a variety of reasons. EBPs offer a greater degree of accountability, afford educators and students an increased likelihood of success, and are more likely to promote more positive outcomes for all involved including a greater degree of responsiveness to individual student needs (The IRIS Center, 2014). These benefits translate to less time wasted (e.g., trial and error interventions); fewer wasted resources (e.g., pricy interventions from popular websites); and more buy-in from educators, administrators, and other educational team members, and from students, parents, and caregivers (The IRIS Center, 2014). It also is critical that educational team members implement EBPs over other interventions without supporting evidence because there may be legal implications. Under the 1994 reauthorization of IDEA, PBIS became a required evidence-based framework under which EBPs may be implemented for addressing student challenging behavior in schools (Sugai et al., 2000).

Function-based Interventions

The most effective way to address challenging behavior that requires intensive support is through function-based interventions (FBI). FBIs are individualized interventions that are developed based on the function or purpose of a student's challenging behavior (Gage et al.,

2012; Jeong & Copeland, 2020). Specifically, the student's behavioral function must be hypothesized following assessment results from an FBA, which is an EBP and systematic continuum of assessments for determining behavioral function (Cooper et al., 2020; Jeong & Copeland, 2020). Functions of challenging behavior are attributed to either positive or negative reinforcement. Specifically positive reinforcement includes social positive reinforcement or attention (e.g., a teacher delivering verbal praise), tangible positive reinforcement (e.g., 15m of iPad time), or automatic positive reinforcement, meaning that the behavior is reinforced without the intervention of another person (e.g., yawning). Negative reinforcement includes social negative reinforcement or escape (e.g., a no homework pass) or automatic negative reinforcement (e.g., a student cracking their knuckles to relieve pressure is automatically reinforcing; Cooper et al., 2020).

FBA

Because interventions and supports aligned with the function of challenging behavior are more effective than those which are not aligned to function (Goh & Bambara, 2012; Ingram et al., 2005; Jeong & Copeland, 2020), it is critical to determine the student's behavioral function using an FBA. An FBA is an EBP that includes a continuum of methods for assessing and determining the function of a behavior through direct and indirect assessments, and an experimental functional analysis (FA; Cooper et al., 2020). With the goal of determining a student's behavioral function, the assessments are intended to identify contingencies or events that reliably produce or reliably do not produce challenging behavior (Martella et al., 2012). It is important to note that both indirect and direct assessments can only be used to form hypotheses about the maintaining function of challenging behavior. An experimental FA is the only FBA

method that can be used to determine a functional relation between the student's behavior and consequence maintaining the behavior.

Indirect Assessment. Indirect assessments are subjective written or verbal reports of student behavior under natural conditions; the reports may include interviews, checklists, and rating scales (Martella et al., 2012). Although the reports can provide important information regarding behavioral function and are the easiest method to use, indirect assessments are associated with the lowest level of precision in effectively determining behavioral function (Cooper et al., 2020). They may be used as a starting point for the FBA process because they are efficient and easy to use, but it is highly recommended that other FBA methods also be used, as indirect assessments may produce unreliable or invalid results (Martella et al., 2012), especially in school settings where educators may have limited training in FBA methods (Dufrene et al., 2017). Although indirect assessments have value (e.g., they can inform planning of direct assessment methods), they should never be used as the sole source of assessment information (Miltenberger et al., 2019).

Some common measures of indirect assessment include the Functional Assessment Interview (FAI; O'Neill et al., 2015), the Open-ended Functional Assessment Interview (Hanley, 2009), the Motivation Assessment Scale (MAS; Durand & Crimmins, 1988), and the Questions About Behavioral Function (QABF; Matson & Vollmer, 1995). The FAI is an interview form that prompts respondents to describe the topography, setting events, predictors, consequences, and efficiency of challenging behavior, and alternative behaviors, the individual's communication mode, their triggers, their preferred items and reinforcers, and history of methods or procedures used to decrease challenging behavior in the past. Similarly, the Open-ended FAI is an interview form that prompts respondents to provide the following regarding the individual

exhibiting challenging behavior: background information (e.g., age, preferred activities) and questions regarding the challenging behavior to inform the development of more precise FBA methods (e.g., topography, effects on others, antecedent events that evoke behavior, consequences, perceived function). The MAS is a 16-question questionnaire conditioning questions about observed behaviors in four categories of potential behavioral functions (i.e., escape, sensory, attention, tangible) that respondents answer using a 7-point Likert-type scale (0 = *Never* to 6 = *Always*). The function category with the highest score can be viewed as the hypothesized behavioral function. The QABF is formatted and scored in the same manner as the MAS. It contains 25 questions across five subgroups of behavioral function (i.e., attention, escape, nonsocial, physical, tangible) and uses a 4-point Likert-type scale (0 = *never* to 6 = *often*) to measure occurrences of behavior.

Direct Assessment. Direct or descriptive assessments are quantitative direct observations of student behavior under normally occurring conditions (Martella et al., 2012). They include Antecedent-Behavior-Consequence (A-B-C) analyses and other observation forms (Cooper et al., 2020). An A-B-C analysis of behavior is a direct observation conducted by an observer (e.g., teacher, behavior support person) of a student during normally occurring activities (e.g., math class) when challenging behavior is most likely to occur. Each time a challenging behavior occurs, the observer makes note of the specific potential contingencies occurring prior to (i.e., antecedent), during (i.e., behavior), and after (i.e., consequence) the behavior. A-B-C analysis forms can be open-ended in nature, where the observer writes out each occurrence in narrative form, or be checklists, where the observer checks boxes. Direct or descriptive FBA assessments are moderately easy to implement, but they require more effort and time than indirect assessments. Disadvantages of direct assessments include that they may not produce reliable

patterns, can be time consuming, and are potentially unreliable (e.g., overestimate attention as the function for challenging behavior; Cooper et al., 2020; Martella et al., 2012). They are associated with a moderate degree of precision in determining behavioral function (Cooper et al., 2020).

Examples of tools for direct assessment include the Functional Assessment Observation Form (FAOF; O'Neill et al., 2015). The FAOF is used to collect direct observation data across as many settings and times per day as possible until regular patterns of behavior are observed. It prompts the observer to record information related to an individuals' challenging behavior, such as number of occurrences of the behavior, the topography of behaviors that occur simultaneously, times or routines when it is most likely to occur, predictor events, perceptions about the function, and consequent events. The form includes columns for time intervals, various topographies of challenging behavior, predictors, and functions, consequences, and comments. The *time intervals*, *behaviors*, *actual consequence*, and *comments* sections are open-ended, whereas there are open column and suggestions listed in the sections for *predictors* (e.g., demand/request, difficult task, transition) and *perceived functions* (e.g., get/obtain attention, get/obtain self-stimulation, escape/avoid demand/request). Results of the FAOF and other direct assessment forms can be used to confirm hypotheses resulting from indirect measures. Following indirect and direct assessments, a matrix such as the Functional Assessment-Based Interventions (FABI; Umbreit et al., 2007), can be used to organize information regarding behavioral function from multiple assessments.

Experimental FA. A traditional experimental FA requires the most time and effort and specialized training and expertise; however, it allows for the highest degree of control and confidence in identifying behavioral function (Cooper et al., 2020). FAs are used to test the

hypotheses developed following indirect and direct assessment; they are the only FBA method that can provide causation instead of correlation results. An FA is an experimental FBA wherein a participant's environment is arranged so that the effects of antecedents and consequences on challenging behavior are systematically observed (Cooper et al., 2020; Iwata, 1994; Iwata et al., 1982). Traditional FAs are experiments used to test hypotheses (i.e., resulting from indirect and direct FBAs) about behavioral function under test and control conditions. The test condition involves the presentation of antecedent and consequence events that bring about or reinforce challenging behavior. The control condition presents a condition where these events are intentionally absent.

Although the exact procedures and conditions for FAs vary, they are commonly conducted using an alternating treatments design where a student's behavior is observed under the following conditions: (a) *alone* where no peers or adults engage with the student, (b) *attention* where adult attention occurs immediately if the student starts to exhibit challenging behavior, (c) *demand* where a demand (e.g., begin mathematics worksheet) is placed on the student and immediately removed if challenging behavior occurs, (d) *access to tangibles* where a student is given access to preferred tangible reinforcers upon the occurrence of a challenging behavior, (e) *control* (i.e., baseline) where the student is given free access to all known reinforcers. The implementer contrives these specific conditions in which relevant antecedent and/or consequent events occur or do not occur to observe their effect on the student's challenging behavior (O'Neill et al., 2015). The student is exposed to each condition for 5 min each with a 5 min break in between. Across the entire experiment, students are typically exposed to each condition 3–5 times (Desrochers & Fallon, 2014). The behavioral function can then be determined by the results of the FA in that the condition in which the student exhibits the highest

rates of challenging behavior is presumed to be the maintaining function of their challenging behavior.

There are several limitations that may negatively impact the feasibility of implementing a traditional FA including time, the topography and/or intensity of target challenging behavior, and control over environmental conditions (Bloom et al., 2011; Iwata & Dozier, 2008). For example, in a school setting, educators or other implementers may not have adequate time to dedicate to conduct an FA or, if a student's challenging behavior could cause harm to themselves or others around them, the implementer may not feel comfortable conducting an FA. Further, because traditional FAs are highly controlled and require that each condition is contrived, if a teacher or other implementer cannot leave their classroom due to staffing, or if there is not an empty classroom or other area available, they may not physically be able to conduct a traditional FA. Therefore, multiple variations have been made to traditional FA procedures to control for these potential limitations. These variations include Brief FA, Precursor FA, Interview-informed Synthesized Contingency Analysis, and Trial-based FA (Coffey et al., 2019; Nesselrode et al., 2022).

Brief FA. A brief FA is a condensed version of a traditional FA where the participant is exposed to each FA condition a limited number of times (e.g., once or twice) for a short amount of time (e.g., 5 min; Cooper et al., 2020; Iwata & Dozier, 2008) versus in a traditional FA where students are exposed to each FA condition once per session across 3–5 sessions. They are implemented when time constraints are a concern and still require contrived conditions (Iwata & Dozier, 2008).

Precursor FA. When assessing individuals who exhibit dangerous (e.g., self-injurious, aggressive) behaviors, it can be dangerous and unethical to manipulate conditions to evoke

challenging behavior through the various conditions in a traditional FA. Instead, precursor FAs assess behaviors that consistently occur prior to more severe challenging behavior (e.g., rocking in chair prior to throwing body to floor) instead of waiting to reinforce the potentially dangerous behavior (Iwata & Dozier, 2008). The same conditions as a traditional FA are presented but reinforcement is delivered upon the occurrence of the precursor behavior to challenging behavior instead of waiting for the challenging behavior to occur.

Interview-informed Synthesized Contingency Analysis. The interview-informed synthesized contingency analysis (IISCA) is a variation of FA design to improve feasibility and functionality of implementation (Hanley et al., 2010, 2011, 2012). The IISCA operates under the assumption that multiple events happen simultaneously to evoke (i.e., antecedent events that bring about behavior) and reinforce (i.e., consequent events that make behavior more likely to occur in the future) challenging behavior. The IISCA involves an open-ended interview regarding the antecedents and consequences of challenging behavior and a synthesized contingency analysis. Results of the interview and other behavioral data are used to determine the synthesized contingencies in which the individual's behavior is most likely to occur (e.g., when presented with a difficult mathematics task while peers are present) and the synthesized reinforcement contingency (e.g., free time with a teacher). These two conditions are then introduced to the individual using an alternating treatments design. In theory, the IISCA can be conducted in classrooms, but as this method is relatively new, limited research exists on the effects of implementing it in natural settings such as classroom environments.

Trial-based FA. When environmental control is a concern for implementing a traditional FA (e.g., in a classroom setting), trial-based FAs can be embedded within naturally occurring routines (Bloom et al., 2011; Cooper et al., 2020; Iwata & Dozier, 2008; Sigafoos & Sagers,

1995). Therefore, instead of removing the student from the classroom and placing them in a contrived and heavily controlled environment for observation (e.g., empty classroom), trial-based FAs allow for more discrete observation in that behavioral antecedents and consequences are presented naturally (e.g., teacher presenting a mathematics task demand within the context of mathematics instruction; Rispoli et al., 2014). Trial-based FAs include two 1-min alternating conditions that include the contingency in which challenging behavior is likely to occur (i.e., test condition) and unrestricted access to reinforcement (i.e., control condition; Cooper et al., 2020).

Rispoli and colleagues (2014) conducted a literature review of experimental studies where trial-based FAs were conducted across various settings, including school settings, and reported outcomes of the assessment. They reviewed characteristics of the trial-based FA (e.g., implementer, setting, conditions), outcomes of the assessment, and descriptions of the FBI that was created from the results of the trial-based FA. A majority of the participants' disability labels included ASD, ID, and DD. Further, in eight of the 13 studies, natural interventionists delivered the trial-based FA (i.e., special education teacher, paraprofessionals). Positive results were reported for 35 of the 36 participants, indicating that the function of challenging behavior was effectively identified. Further, four of the 13 studies assessed the validity of trial-based FA outcomes by developing FBIs based on the results; this included 12 participants. FCT was implemented for 11 of the 12 participants with the remaining participant receiving a noncontingent reinforcement intervention. The FBIs were successful in reducing challenging behavior for all 12 participants, indicating that the trial-based FA was effective in assessing behavioral function.

The Importance of Aligning Interventions to Behavioral Function

Following the FBA process, assessment data can be used to make decisions about appropriate and effective behavioral interventions that align with behavioral function (e.g., using a competing pathways diagram; O'Neill et al., 2015 or FABI; Umbreit et al., 2007). Although the FBA process does not provide recommendations for specific interventions, it facilitates in identifying potential *preventative strategies* or strategies that target the antecedent events that trigger challenging behavior, *teaching strategies* or the specific behavioral supports that may be needed, and *response strategies* that target the maintaining consequences for challenging behavior that may be altered (Cooper et al., 2020).

Preventative or antecedent strategies target events, settings, or situations that occur prior to changing behavior. They vary greatly by the maintaining function of challenging behavior, but may include providing fidget items for sensory maintained behavior, providing scheduled breaks for escape-maintained behavior, or providing noncontingent attention or access to a preferred item for 5 min on a regular (e.g., daily) basis for behavior that is maintained by attention or access to tangibles. Teaching strategies involve teaching new behaviors to students to replace challenging behavior (e.g., FCT). It is critical that the replacement behavior is functionally equivalent to the student's challenging behavior so that the student continues to receive the same consequence for their appropriate or replacement behavior than they did for their challenging behavior (Cooper et al., 2020). That way, the student is still receiving the desired outcome of their behavior (e.g., escape difficult tasks), but now it is their replacement behavior being reinforced (e.g., asking for a break) instead of their previously reinforced challenging behavior. Reinforcement or response strategies address the consequence of challenging behavior by reinforcing alternative behaviors to the challenging behavior (e.g., reinforcing student behavior

of chewing gum instead of their hair) and/or placing the challenging behavior on extinction (e.g., ignoring a student's previously reinforced whining behavior to access an iPad).

FBIIs can address all three strategies (antecedent, teaching, response); for example, if FBA results indicated that a student's challenging behavior of hitting peers was triggered by the presentation of difficult reading tasks and maintained by escape from these difficult math tasks, implementers may determine to address the antecedent, behavior, and consequences of challenging behavior. They may decide that appropriate FBIIs include enriching the student's learning environment by making the math tasks more relevant to the student's interests, to teach the student a functionally equivalent (i.e., the student's behavior is still reinforced by escape from difficult reading tasks) replacement behavior to hitting (e.g., asking for a break), and providing the student a break contingent on the request.

Although they can be time consuming to plan and implement, FBIIs are more effective than interventions not aligned with behavioral function (Dufrene et al., 2014; Gage et al., 2012; Goh & Bambara, 2012; Ingram et al., 2005; Jeong & Copeland, 2020). Other positive features of FBIIs include that they may diminish the need for reactive procedures as they are proactive in nature and diminish behavior before it occurs (Wood et al., 2018), they are comprehensive and address the function of challenging behavior instead of just the topography, they promote more maintainable and generalizable results, and they have strong evidence of being socially valid (Gage et al., 2012; Goh & Bambara, 2012; Jeong & Copeland, 2020; Kern et al., 2006).

In a review of the literature comparing functional behavior assessment-based interventions (i.e., FBIIs) to non-functional behavioral assessment-based interventions, Jeong and Copeland (2020) examined single-case design studies that specifically compared these two types of interventions for their relative effectiveness in reducing challenging behavior. The results

indicated that FBIs were more successful than non-FBIs in reducing challenging behavior. This review further supports the critical nature of implementing evidence-based interventions, guided by assessment results from an FBA.

Proactively Addressing Challenging Behavior

By nature, FBAs are conducted in response to observed challenging behavior. In a recent conceptual article, Ala'i-Rosales et al. (2018) emphasized the importance of additional research directed toward the prevention of challenging behavior. They stated that this could include antecedent strategies, such as arranging the environment in a manner where challenging behavior would not be likely to occur, or teaching skills (e.g., mand skills) associated with common behavioral functions to prevent challenging behavior from occurring. The four major areas the authors deemed necessary to teach children proactively to prevent the occurrence of challenging behavior are communication, gaining attention, engaging in play and leisure activities, and coping skills.

FBIs in the Literature

FBIs have been effective in reducing challenging behavior in schools for students with disabilities, including students with IDD across settings, including inclusive school settings (e.g., Casey & Merical, 2006; Filter & Horner, 2009; Rispoli et al., 2015); across student disability labels such as EBD (e.g., Ingram et al., 2005; Liaupsin et al., 2006; Smith & Sugai, 2000), ASD (e.g., Buckley & Newchock, 2005; Devlin et al., 2011; Pane et al., 2015), specific learning disabilities (e.g., Filter & Horner, 2009; Lane et al., 2007; Sanford & Horner, 2013), and ID (e.g., Logan et al., 1998); across various age groups including elementary (e.g., Christensen et al., 2007; Sanford & Horner, 2013), middle (e.g., Casey & Merical, 2006; Lane et al., 2007; March & Horner, 2002; Smith & Sugai, 2000) and high school (e.g., Losinski et al., 2015); and

across natural implementers such as school staff (e.g., Kern et al., 2006), general education teachers (e.g., Banda et al., 2012; Ellingson et al., 2000; Lane et al., 2007), and paraprofessionals (Walker & Snell, 2017).

Goh and Bambara (2012) conducted a meta-analysis of individualized positive behavior support practices, which they defined as individualized, FBA-based, comprehensive behavioral supports that address challenging behavior and are delivered in school settings. Effect size measures across studies that reported maintenance data resulted in a large effect, indicating potential positive long-term effects of FBIs. A large effect was reported for studies that employed both descriptive and experimental FBA procedures; this may indicate the importance of either training educators in both descriptive and experimental FBA, or in ensuring there is a trained staff member (e.g., behavioral support specialist, behavior analyst) available to collaborate with educators in conducting the FBA. Further, large effect sizes were reported for studies that included team decision making during the intervention planning phase, whereas a moderate effect was reported for those studies that did not. This could suggest the importance of collaboration when planning FBIs. Finally, a large effect size was reported for interventions delivered in the inclusive school setting indicating that the inclusive school setting is an effective setting in which to deliver FBIs.

In a meta-analysis of FBIs delivered to students with disabilities in inclusive school settings, Walker, Chung, and Bonnet (2018) examined single-case design articles and analyzed characteristics related study participants, study settings, the FBI implemented, and study quality to determine the overall effect of intervention. Similar to results of the previous study (i.e., Goh & Bambara, 2012), results of this study indicated that FBIs can be effectively delivered to students with disabilities in inclusive school settings. On one of their reported effect size

measures, scores were interpreted as a large to very large improvement across challenging behavior and appropriate behavior. Other key findings included that effect size measures were significantly higher for studies in which classroom teachers were involved in the FBA process, versus an experimenter. This suggests that it is critical for educators to be involved in the FBA and intervention planning process. Further, only two of the reviewed studies included high school-aged students. This could indicate that high school-aged students with disabilities are less likely to access inclusive school settings than younger students with disabilities, especially when they exhibit challenging behavior. Finally, for a majority of the students, FBIs were delivered by natural implementers (i.e., classroom teacher, paraprofessional), indicating that with appropriate training and ongoing support, educators can successfully implement FBIs in inclusive school settings for students with disabilities.

Individualized Behavior Supports for Students with Disabilities in Schools

For all students with disabilities, IDEA (1997), and its subsequent amendments, mandated that if a student's challenging behavior negatively impacts their learning or that of others, their IEP must address the challenging behavior (IDEA, 2004). The appropriate procedures should include (a) conducting an FBA, (b) developing or amending the IEP to include realistic, measurable behavioral goals and objectives based on results of the FBA, and (c) developing a BIP (Trader et al., 2017). Further, developing and implementing BIPs for students who may benefit from this individualized support is recommended best practice (Collins & Zirkel, 2017).

BIP

A BIP, or behavior support plan, is a school-based team-developed set of procedures, including FBIs, for reducing an individual student's challenging behavior and increasing their

appropriate behavior (Goh & Bambara, 2012; O'Neill et al., 2015; Strickland-Cohen et al., 2019). Under IDEA (2004), when a student with an IEP is suspended for more than 10 school days for behavior that interferes with the learning environment, schools are required to conduct an FBA. Schools are highly recommended to use FBAs proactively so that challenging behavior does not escalate, resulting in suspension or other disciplinary measures. The mandate recommends that if a student's behavior negatively impacts their own learning or that of other students, a BIP based on FBA outcomes should be considered. BIPs are required to be reviewed at least once per year and should be updated and revised as frequently as is required based on the student's behavioral progress.

BIPs are proactive and focused on prevention of challenging behavior (Goh & Bambara, 2012). According to Trader et al. (2017), BIPs should be (a) *technically adequate*, meaning that they incorporate EBPs (e.g., positive reinforcement such as teacher praise, token system, self-management strategies, antecedent interventions) that are based on individual student assessment data from an FBA (i.e., FBIs); (b) *contextually appropriate* meaning that the BIP should be consistent with the abilities, values, and support of the BIP team and those expected to implement the BIP (i.e., contextual fit); and (c) *focused on valued outcomes*, meaning that the BIP has a broader focus than just eliminating challenging behavior in one setting or classroom and improving positive behaviors by teaching a replacement behavior and focuses broadly on an improved quality of life for the student. Another critical component of the BIP process is that student progress is addressed in the plan, and should be monitored frequently to determine whether the BIP needs to be modified to fit the student's needs (Anderson et al., 2022). Likewise, it is critical to monitor BIP implementation fidelity frequently to ensure that educators or others responsible for implementing the BIP are doing so with fidelity (Anderson et al., 2022).

Barriers to Implementation. Several barriers to effective implementation of BIPs, including FBIs that comprise BIPs, in schools exist. These include issues related to school climate, culture, and staff beliefs (e.g., resistance to change, the belief that students who exhibit challenging behavior are better served in segregated settings, the belief that challenging behavior should be punished, a lack of staff understanding of PBIS, lack of administrative support; Bambara et al., 2009, 2012; Killu, 2008; Strickland-Cohen et al., 2019). Another set of issue relates to a lack of school resources (Kern et al., 2006; Killu, 2008; Oram et al., 2016; Robertson et al., 2020), including materials for programming (Killu, 2008), opportunities for training (Bambara et al., 2012; Oram et al., 2016), and availability and accessibility of ongoing coaching and consultation (Strickland-Cohen et al., 2019). Another reported resource barrier to the effective implementation of BIPs in schools is a lack of time (e.g., fitting intervention into set schedules and routines, lack of time for implementation; Bambara et al., 2012; Killu, 2008; Strickland-Cohen et al., 2019). Finally, there are issues related to implementation fidelity; for example, the BIP not being implemented consistently across staff members and changes in staff members (Kern et al., 2006; Robertson et al., 2020).

Bambara and colleagues (2012) surveyed 293 school-based professionals (i.e., teachers, behavior support personnel, school administrators) who were responsible for implementing BIPs in schools about perceived barriers to BIP implementation. Of the top 10 commonly identified barriers, five were related to school culture, practices, and beliefs. For example, school-based professionals reported that staff beliefs were not in alignment with tiered positive behavioral frameworks, such as PBIS (e.g., that challenging behavior should be punished), that there was overall staff resistance to change the status quo (i.e., punishment-based practices) with regard to practices for addressing challenging behavior, and that staff held the belief that students who

exhibited challenging behavior would be better served in restrictive settings versus inclusive school settings. Other barriers reported were under the domain of professional development and practice; specifically, respondents reported a lack of time to implement BIPs and a lack of training in effective implementation.

In a similar study, Robertson et al. (2020) surveyed over 600 teachers regarding their perceptions and experiences surrounding the implementation of BIPs. The most commonly reported barrier to effective implementation of BIPs was perceptions that BIPs were not adequate to address challenging behavior. This perception is both concerning as there exists ample evidence that BIPs based on behavioral function are indeed highly effective in reducing challenging behavior. The second and third highest ranked barriers included inconsistent implementation across staff and inadequate resources. It is possible that the effectiveness of BIPs have more to do with inconsistent implementation, lack of resources, and other barriers such as poor contextual fit than the plan's inability to adequately address challenging behavior.

Contextual Fit

One way in which barriers to the effective implementation of BIPs can be addressed is by ensuring a strong contextual fit of the FBIs included in the plan. It is a critical component of effective behavioral supports planning and implementation. Contextual fit refers to the extent to which a BIP reflects the values, skills, resources, and administrative support of the team developing and implementing the BIP (Horner, 2000). Albin and colleagues (1996) introduced contextual factors related to effective, technically sound BIPs that are more likely to be implemented with fidelity, including that the BIP is in the best interest of the student and aligns with the values, knowledge, skillset, resources, and administrative support of the plan implementers. Using this information, Monzalve and Horner (2016) designed and developed the

Contextual Fit Enhancement Protocol (CFEP). The CFEP was created to be used within a BIP team meeting while interpreting the results of FBA data to determine how best to design or modify the BIP. The team is encouraged to use the protocol as a meeting framework and follow steps that include ensuring the six components of contextual fit are met, including that (a) BIP implementers understand the BIP interventions and procedures, (b) the BIP is consistent with the implementers' values and morals, (c) the BIP implementers have the skills required to effectively implement the BIP, (d) the BIP implementers believe the BIP will be effective for the student and efficient to implement, (e) the BIP implementers have the resources available to implement the BIP, and (f) there is adequate administrative support for effective implementation. The following step includes making changes to the BIP and action plan based on results of the protocol (Monzalve & Horner, 2021). Because BIPs that have strong contextual fit have a better chance of being implemented with fidelity and promoting positive student outcomes, it is critical to ensure strong contextual fit when developing and implementing a BIP.

Monzalve and Horner (2021) conducted an experimental study to examine the effects of the CFEP on the implementation fidelity of BIPs and challenging behavior. Participants included four student-teacher dyads in which student participants had a BIP not being implemented with fidelity. Following baseline data collection, a researcher met with the BIP team (e.g., classroom teachers, behavioral specialists) to lead the CFEP process. This included a review of the BIP goals and procedures, assessment of the contextual fit of the current BIP, adaptations to the BIP to improve contextual fit, and development of a plan for implementing the new BIP. Results indicated that following training, implementation fidelity of the BIP increased and student challenging behavior decreased. These findings provide evidence that BIPs with strong

contextual fit can be implemented with high fidelity by teachers in classrooms through the framework of the CFEP and, consequently, can lead to improved student behavior.

Social Validity

An important component to the goals, method, and outcomes of an FBI is measuring its social validity. Social validity was initially defined as the degree to which an intervention produces meaningful and practical changes in a participant's behavior (Kazdin, 1977). Wolf (1978) expanded this definition to encompass the socially validity of (a) the goals the intervention (e.g., did the intervention successfully change decrease the rate of the student's challenging behavior?), (b) the intervention's procedures (e.g., do the teachers and paraprofessionals who implemented the intervention find it effective and feasible to implement?), and (c) the outcomes of the intervention, including those which may have not been anticipated. Social validity is a critical component in addressing the research-to-practice gap in determining whether interventions that have been implemented successfully in contrived (e.g., clinical setting) or highly controlled settings (e.g., self-contained classrooms) also are effective when replicated in more natural settings such as inclusive school settings. In an article outlining single-case design guidelines, Ledford and colleagues (2022) described the importance of ensuring that a research study has an acceptable degree of social validity for all participants. This includes examining and measuring behaviors that are representative and meaningful so that studies can be generalized. They state that social validity data should be taken throughout the course of the study for all participants. They provide examples of initial interviews, intervention check-ins, and post study questionnaires.

One potential indicator of student social validity is the degree to which the student appears happy, relaxed, and engaged (HRE; Hanley, 2021). HRE was a concept developed to

ensure that behavior analysts develop meaningful reinforcement contexts for their clients to learn and develop new skills (Hanley, 2021). Translating this to a research study, by measuring the degree to which a student participant is HRE, researchers can measure the degree to which the student's environment is socially acceptable to them. In measuring HRE for a student participant, it is important to operationally define HRE for the learner, as these behaviors vary greatly by person (Gover et al., 2022). If levels of HRE are observed to be high, it can be determined that the reinforcement context likely was acceptable to the student at the time of the observation. Likewise, if the student is observed to have low levels of HRE, it can be determined the environment likely needs to be changed for the student in order to make it more socially valid.

Individualized Behavior Supports for Students with IDD in Schools

The research literature base contains many experimental studies focused on interventions for addressing challenging behavior for students with IDD conducted in schools. Examples of these interventions include antecedent-based interventions (e.g., Banda et al., 2012; Rispoli et al., 2011) such as FCT (e.g., Davis et al., 2012; Flynn & Lo, 2016; Gibson et al., 2010). EBPs, including those implemented to reduce challenging behavior, for individuals with IDD have been examined in systematic literature reviews and research summaries, for example ASD (e.g., Hume et al., 2021; de Bruin et al., 2013) and extensive support needs (e.g., Browder et al., 2014; Courtade et al., 2014; Westling et al., 2015). These reviews overwhelmingly indicate that there are a wide range of EBPs that address challenging behavior for students with IDD that can be implemented by natural implementers (e.g., teachers, paraprofessionals), in various school settings (e.g., self-contained classroom, inclusive school settings), and across a range of student ages and support needs.

Hume et al. (2021) reviewed a wide range of interventions for individuals with ASD, including challenging behavior interventions. To be classified as an EBP, intervention studies had to meet rigorous criteria (e.g., at least two high quality group design studies conducted by at least two different researcher groups). Results indicated that there were 28 interventions that met the EBP criteria, several of which may be implemented for the purpose of addressing challenging behavior (e.g., antecedent-based interventions, differential reinforcement, extinction, FCT, prompting, reinforcement, self-management, social narratives, visual supports). Challenging behavior interventions were one of the most common outcome areas reviewed, indicating the great importance placed on addressing challenging behavior for individuals with ASD in settings including school settings.

In a related review, Browder et al. (2014) conducted a review of EBPs for students with extensive support needs grouped around the areas of (a) how to teach, (b) what to teach, and (c) how to support. The review explicitly addressed two areas related to challenging behavior EBPs; in the group of *how to support*, under the subgroup of *positive behavior support*, identified EBPs included non-aversive techniques based on FBA including differential reinforcement of alternative behavior; FCT; and antecedent strategies such as choice making, noncontingent reinforcement, visual cues, and noncontingent escape. Under the category of *effective collaboration*, individualized BIPs were identified as an EBP for students with extensive support needs. Further, there were several other EBPs that were not explicitly described as challenging behavior interventions, but could be implemented as such (e.g., prompting hierarchies, video-modeling, AAC, reinforcement, self-management). The results indicated that there are a wide range of EBPs to support the behavioral needs of students with extensive support needs.

In a final example of behavioral support for students with IDD in school settings, de Bruin and colleagues (2013) reviewed practices that were implemented in school settings, including inclusive school settings, for secondary students with ASD. Results indicated that 23 experiments focused on antecedent-interventions (e.g., high-probability request sequence to reduce latency to transitioning), 15 on consequence-based interventions (e.g., FCT plus extinction to reduce disruptive behaviors), and 14 on video-based interventions (e.g., video social stories to increase task engagement) with sufficient evidence to qualify these types of interventions as EBPs. Other findings included that just over half of the interventions were delivered by school staff (e.g., teacher) or other students. Further, about one-third of the interventions were conducted in inclusive school settings. These results suggest that natural implementers can deliver effective challenging behavior interventions in school settings, including the inclusive school setting. This is critical, as the inclusive school setting provides students with IDD various positive outcomes across many areas.

Behavioral Supports for Students with IDD in Inclusive School Settings

There are many benefits of inclusive education for students with IDD, such as positive academic outcomes (e.g., increased access to the general education curriculum, higher quality instruction, greater academic achievement); positive social, communication, and behavioral outcomes (e.g., greater self-determination, increased communication skills and opportunities, positive behavior); and increased post school outcomes (e.g., more positive employment and postsecondary education opportunities). Further, challenging behavior is cited as a barrier to inclusive school settings for students with IDD (Anderson et al., 2022; Crosland & Dunlap, 2012; Harrower & Dunlap, 2001; McCabe et al., 2020; Roberts & Simpson, 2016; Walker,

Loman, et al., 2018). Therefore, it is critical to eliminate challenging behavior as a barrier by implementing behavior interventions that support students with IDD in inclusive school settings.

Lory et al. (2020) reviewed the magnitude of effect of challenging behavior interventions conducted with students with IDD in inclusive school settings. Results indicated these interventions had positive effects on student outcomes, suggesting that EBPs can be successfully implemented in inclusive school settings for students with IDD. There was a strong overall effect associated with interventions in which the participant was taught a replacement behavior, indicating that behavioral strategies such as FCT can be successful in reducing mild and severe challenging behavior for students with IDD when implemented in inclusive school settings. Other key findings included strong effects for studies in which natural implementers (e.g., teachers) delivered interventions, implying that with sufficient training and support, teachers and other educators can adequately support the behavioral needs of students with IDD in inclusive school settings.

In another meta-analysis, Walker, Chung, and Bonnet (2018) summarized 27 single-case research studies that included FBIs delivered to students with disabilities in inclusive school settings. Unsurprisingly, their findings indicated that FBIs delivered in inclusive school settings for students with disabilities were found to have positive effects on both challenging behavior and positive behavior, indicating that FBIs are both feasible and effective in inclusive school settings, regardless of disability status or topography of behavior. Another interesting finding included that there was a significant effect on reduction in student challenging behavior when a natural implementer, such as the classroom teacher, conducted the FBA versus a researcher or therapist. This could indicate that educator-delivered FBA methods lead to more effective,

contextually fit FBIs. Overall, their findings suggest that the behavioral needs of students with IDD can be effectively planned for and supported in the inclusive school setting.

Summary

Challenging behavior in schools is associated with many negative outcomes (Amstad & Müller, 2020; Eisenhower et al., 2015; Emerson et al. 2014; Martinez et al., 2016; Poppes et al. 2016; Roberts & Simpson, 2016; Westling, 2010). Students with disabilities are more likely to display challenging behavior than students without disabilities (Allman & Slate, 2013), including the subgroup of students with IDD (Emerson et al., 2014; Esteves et al. 2021; Kurtz et al. 2020; Lloyd & Kennedy 2014). There is a range of EBPs that can be effectively implemented schoolwide, classwide, and on an individual basis across all school settings under a PBIS framework to prevent and address challenging behavior exhibited by students in schools, including for students with disabilities (Horner et al., 2009; Kurth & Enyart, 2016; Kurth & Zagona, 2018; Loman et al., 2018). FBIs are individualized interventions, aligned with the function of student behavior based on FBA results, and are highly effective in reducing student challenging behavior (Gage et al., 2012; Jeong & Copeland, 2020). FBAs include direct, indirect, and experimental assessment of challenging behavior and can be conducted effectively in school settings (Cooper et al., 2020; Rispoli et al., 2014). Effective BIPs include FBIs, take contextual fit into consideration, and can be implemented effectively in school settings for students with IDD, including in the inclusive school setting (Monzalve & Horner, 2021). Given the importance of access to inclusive school settings for students with IDD, it is important that students with IDD who display challenging behavior are provided access to effective evidence-based behavioral supports that are planned collaboratively and implemented with fidelity in the inclusive school setting. There are a number of practices that target challenging behavior for

students with IDD. One such challenging behavior intervention that involves teaching a replacement behavior to individuals with IDD is functional communication training (FCT).

Functional Communication Training

Theory and Practice

As an FBI, FCT involves (a) conducting an FBA to determine the function of an individual's challenging behavior and (b) using the results of the FBA to identify and teach a functionally equivalent replacement behavior (FCR; Carr & Durand, 1985). FCT is a differential reinforcement of alternative behaviors (DRA) procedure, which involves (a) delivering reinforcement upon the occurrence of a specific, socially acceptable alternative to a challenging behavior and (b) placing the previously reinforced challenging behavior on extinction (Cooper et al., 2020; Hume et al., 2021). Extinction procedures include discontinuing reinforcement of a previously reinforced behavior with the purpose of making the occurrence of the behavior less likely in the future (Cooper et al., 2020). FCT also is often implemented as part of an intervention package with other behavioral interventions.

Carr and Durand (1985)

In the seminal study for FCT, Carr and Durand (1985) introduced the intervention in two consecutive experiments implemented in a day school setting with four children with disabilities aged 7–14 who displayed a variety of frequent self-injurious, aggressive, and/or disruptive challenging behavior. The first study consisted of an experimental FA to determine the function of the participants' challenging behavior. The FA consisted of three conditions involving easy (i.e., baseline condition and one experimental condition) and difficult tasks (i.e., one experimental condition), during which the experimenters presented students with intermittent reinforcement on two schedules. Results indicated that the function of the children's behaviors

were escape from difficult tasks (i.e., two children), adult attention (i.e., one child), and both escape from difficult tasks and adult attention (i.e., one child). Based on these functions, experimenters implemented FCT with the four children in the second study. This involved teaching the three children whose challenging behavior was maintained totally or partially by escape to request help by saying “I don’t understand.” Likewise, the experimenters taught the children whose challenging behavior was maintained either partially or totally by adult attention to request adult attention by saying, “Am I doing good work?” The experimental conditions were similar to those of the FA, except that a condition was added to teach students to use their replacement responses (e.g., “Say, I don’t understand.”). Verbal praise and other forms of reinforcement were delivered to the children when they used their replacement behaviors and were then gradually faded. Results indicated that FCT procedures served to effectively add the communicative phrase(s) to the children’s verbal repertoire and to decrease challenging behavior to low rates for all four children. This study first introduced the concept of teaching a replacement behavior to challenging behavior using positive (i.e., not punishment-based) behavioral procedures. Since its publication in 1985, this article has been cited over 1,500 times and replicated hundreds of times; through this article, Carr and Durand introduced one of the most effective FBIs (Durand & Moskowitz, 2015).

Behavioral Function

Determining an individual’s behavioral function is the first step and a key component of FCT (Cooper et al., 2020; Steinbrenner et al., 2020). Interventions that have been aligned to the function of a student’s challenging behavior are more effective than non-FBIs (Goh & Bambara, 2012; Jeong & Copeland, 2020). Therefore, systematic methods, such as a functional behavioral assessment (FBA), to determine behavioral function must be used. FBAs include a continuum of

methods for determining the function of a behavior through direct (e.g., A-B-C data) and indirect assessments (e.g., rating scales, interviews), and experimental FA; Cooper et al., 2020).

FCR

After determining the function of an individual's challenging behavior through the use of FA and/or other FBA methods, interventionists must use data from these assessments to guide their selection of an appropriate FCR for the individual. A key component of FCT is that the differentially reinforced alternative replacement behavior (i.e., or FCR) serves the same function as the challenging behavior. In addition to this most important aspect, there are several other factors about the FCR that must be considered. First, the FCR must be in a mode that is appropriate for the student based on their specific behavioral repertoire (i.e., what behaviors they exhibit) and communication needs (Steinbrenner et al., 2020; Tiger et al., 2008). It also is important to consider the amount of time that may be required for the student to acquire the FCR, especially in cases where a rapid decrease in challenging behavior may be critical (e.g., self-injurious or aggressive behaviors; Tiger et al., 2008).

Several response modes have been used successfully across various FCT studies, including vocal speech, picture exchanges, sign language, and speech generating devices (Tiger et al., 2008; Walker, Lyon, et al., 2018). Second, an appropriate FCR must be in a functional and recognizable mode of communication for the student's verbal community and allow for others to respond (Steinbrenner et al., 2020; Tiger et al., 2008). Durand and Carr (1992) recommend selecting a response mode that is easily understood by a new communication partner. Finally, it is important that an FCR requires equal or less effort than the challenging behavior (Horner & Day, 1991; Tiger et al., 2008). If an FCR requires more effort than a challenging behavior, the response is likely to fail (Horner & Day, 1991). After determining the most effective and

appropriate FCR for the individual, the interventionist teaches the replacement behavior to the individual using errorless evidence-based teaching methods such as time delay (e.g., Day et al., 1988; Kelley et al., 2002), least-to-most prompting (e.g., Flynn & Lo, 2016; Hetzroni & Roth, 2003; Walker et al., 2021), most-to-least prompting (Blair et al., 2007), and graduated guidance (Durand, 1999).

Thinning the Schedule of Reinforcement Following FCT for Maintenance

Following the FCT intervention, potential issues with resurgence of challenging behavior, generalization, and maintenance exist due to the immediacy and frequent rate of reinforcement required (Hagopian et al., 2011; Muharib et al., 2019). For example, in a natural setting such as a school, a dense reinforcement schedule is not always feasible or practical, and as a result, a learned FCR could inadvertently be placed on extinction, leading to possible resurgence of the challenging behavior (Hagopian et al., 2011; Muharib et al., 2019). Because of these factors, thinning the schedule of reinforcement following successful acquisition of the FCR is considered a key component to an effective FCT intervention (Cooper et al., 2020).

Schedule thinning procedures such as delay schedules, multiple schedules, and chained schedules can be used to facilitate generalization and maintenance of the FCR, and thus prevent the recurrence of challenging behavior by gradually decreasing the frequency or strength of reinforcement to an acceptable level for sustained maintenance and generalization to a natural setting (Hagopian et al., 2011; Muharib et al., 2019). Delay schedules of reinforcement teach tolerance to postponed reinforcement by introducing a delay interval between the occurrence of the FCR and reinforcement (Austin & Tiger, 2015; Hagopian et al., 2011). The schedule of reinforcement is gradually thinned so the participant can tolerate increasing delays to reinforcement while the challenging behavior remains on extinction (Austin & Tiger, 2015;

Hagopian et al., 2011; Muharib et al., 2019). Multiple schedules of reinforcement involve at least two distinct components that correlate with two separate items (Campos et al., 2020; Hagopian et al., 2011). Discriminative stimuli, such as a teacher placing either a green or red card on the bulletin board signals (a) when reinforcement will be given (e.g., the green card on the board means the student will receive a break if they ask for one) and (b) when the FCR will be placed on extinction and thus no reinforcement will be delivered (e.g., the red card on the bulletin board means that the student will not receive a break if they ask). Typically, the duration of each distinct component is gradually altered, so access to the reinforcement condition is shortened, while the extinction of the FCR condition is lengthened allowing for increased tolerance (Hagopian et al., 2011).

For example, Blair and colleagues (2007) collected data on educator-implemented delay to reinforcement schedule thinning procedures following a multicomponent FCT intervention for a young child with ASD in a kindergarten classroom. As the student's challenging behavior was found to be maintained by attention, his FCR was a communication card for requesting a break to engage in a preferred activity with a staff member. After systematic instruction of his FCR, the student's challenging behavior was placed on extinction. In order to reinforce the student's use of his break card, he was prompted to use his card each time he exhibited a precursor behavior to his challenging behavior, which was then reinforced with staff attention. Additionally, he was initially allowed to access a break with staff members for 3 min for every 10 min in which he refrained from exhibiting challenging behavior. Following mastery of the FCR, the time between his use of the picture card to request a break with a staff member and access to this activity was gradually increased to teach him to tolerate increasingly greater delays in reinforcement. Maintenance data indicated that the both the student's decreased level of challenging behavior

and increased level of appropriate behavior were stable following the conclusion of the intervention, indicating that the delay to reinforcement schedule thinning procedures implemented effectively thinned the schedule of reinforcement to an appropriate level and that these levels were able to be effectively maintained by the student's educators.

Effects of FCT

FCT is the most published and most commonly recommended FBI for challenging behavior (Greer et al., 2016; Tiger et al., 2008). There exists ample empirical support in the research literature base to qualify FCT as an EBP for individuals with IDD (Hume et al., 2021; Gerow et al., 2018). In 2021, Ghaemmaghami et al. conducted a systematic literature review of FCT literature to determine the efficacy and effectiveness of the intervention when controlling for various factors such as setting and intervention for a broad range of participants. Based on a review of 208 empirical studies involving 744 participants, their findings supported FCT as a highly efficacious intervention in reducing challenging behavior; 90% of the articles' results showed a strong reduction in challenging behavior as a result of FCT. Additionally, nearly 60% of the FCT interventions were delivered by experts in highly controlled settings.

The positive effects of FCT on the reduction of challenging behavior also have been supported across specific disabilities categories. For example, Gerow and colleagues (2018) evaluated the research literature base to determine the strength of evidence in favor of FCT across disability categories. Their inclusion criteria included that the FCT studies were published in a peer-reviewed journal, were implemented to reduce challenging behavior, included at least one participant with a disability, and were using a single-case research design. The results of their review included 215 studies across 482 experiments, and indicated that FCT is an EBP for children with IDD according to the What Works Clearinghouse Standards (2020). There are

many FCT studies implemented in various settings with students with IDD that showed positive results in reducing challenging behavior such as school settings (Buckley & Newchok, 2005; Hetzroni & Roth, 2003; O'Neill & Sweetland-Baker, 2001), clinical settings (Fisher et al. 2019; Gratz et al., 2018; Hoffman & Falcomata, 2014; Lambert et al., 2017; Ringdahl et al., 2018), and home or community-based settings (Berg et al., 2007; Fisher et al., 2013; Hanley et al., 2014; Lucyshyn et al., 2007; Rispoli et al., 2014; Wacker et al., 2013).

Effects of FCT for Students with IDD in School Settings

Although the aforementioned reviews and studies examining the effects of FCT are important parts of the evidence-base surrounding FCT, it is critical to examine FCT studies that were conducted in school settings. There are several barriers to implementation of effective interventions that are relevant to school settings (e.g., school climate, staff perceptions, lack of administrative support, lack of resources and materials, issues with implementation fidelity). With these barriers in mind, it is important to examine FCT studies that were conducted in various school settings, across implementers, student characteristics, and other relevant factors.

A review of the literature shows that FCT has been effective for students with IDD across PreK, kindergarten, elementary, and secondary levels in traditional school settings, including public schools, federally funded separate schools for students with disabilities, neighborhood home schools, and private schools (e.g., Boesch et al., 2015; Flynn & Lo, 2016; Reeves et al., 2017). There also are FCT studies that were conducted with students with IDD in school settings at day treatment or residential facilities (Durand, 1993; Hetzroni & Roth, 2003; Santiago et al., 2016; Schmidt et al., 2014; Slaton & Hanley, 2016; Slaton et al., 2017; Weyman, 2019). Further, in several studies, authors demonstrated the effects of FCT with middle and high school students with IDD in nontraditional or public-school settings, but they were not explicit about the type of

school setting (Day et al., 1988; Davis et al., 2012; Dolezal & Kurtz, 2010; Lalli et al., 1993; Sprague & Horner, 1992).

A majority of FCT studies in school settings involving students with IDD have been in traditional school settings. Andzik et al. (2016) reviewed the literature for single-case, experimental intervention studies in which a member of the participants' educational team (e.g., teacher, paraprofessional, related service personnel) delivered FCT to school-aged students with a disability (i.e., multiple disabilities, ASD, IDD, DD) in classroom settings. Their results yielded 12 studies that included 31 student recipients whose disability categories included ASD, ID, multiple disabilities, and developmental delay. There were positive results for 30 of the 31 recipients, with mixed results for one. Overall, this review supports the implementation of FCT to reduce challenging behavior and increase appropriate behavior for students with IDD in school settings. In a similar review, Walker, Lyon, et al. (2018) searched the research literature base for studies involving FCT interventions delivered in a school setting, including early childhood through high school, with student participants who used AAC, most of whom had IDD. Across the 17 included studies, *Tau-U* effect size measures were large to very large across the effect of FCT on the decrease of challenging behavior and on the increased FCRs.

Although the effects of FCT implemented with students with IDD in school settings provide strong evidence, a majority of FCT interventions have been conducted with younger-aged participants (e.g., average age 11.8 years [Andzik et al., 2016], younger than 10 years [Gerow et al., 2020], early childhood or elementary aged [Walker, Lyon, et al., 2018]). Despite this, there exist experimental studies in which FCT was conducted in traditional secondary school settings with students with IDD with positive results (i.e., decrease in challenging behavior, increase in socially appropriate behavior, increase in FCR behavior; Boesch et al.,

2015; Durand, 1999; Flynn & Lo, 2016; Frea & Hughes, 1997; Horner et al., 1990; Kennedy et al., 2000; O'Neill & Sweetland-Baker, 2001; Reeves et al., 2017; Walker & Snell, 2017). For example, Davis et al. (2012) conducted FCT interventions without extinction with four students who were eligible for special education services under ID and/or ASD and were diagnosed with severe emotional behavioral disorders. The students were 8, 12, 17, and 18 years old, and were served in self-contained settings. Results from the FA determined that the function of all four students' challenging behavior was escape. The intervention packages were delivered by the students' classroom teachers and included a dense, concurrent schedule of reinforcement for challenging behavior and replacement behaviors, and prompting procedures. The mode of FCR for each of the student's was a picture card indicating a mand for a break. Results indicated a decrease in challenging behavior and an increase in appropriate, alternative behaviors during FCT conditions, implying that FCT can be successfully implemented with a wide age range of students with IDD. Although this study was conducted in a restrictive educational setting, it is critical to examine the effects of FCT in inclusive school settings, given the various benefits associated with this setting for students with IDD.

Effects of FCT in Inclusive School Settings for Students with IDD

The research literature base surrounding the effects of FCT on students with IDD in inclusive school settings is relatively limited; however, some articles do exist (see Table 1). For example, Umbreit and Blair (1996) studied the effects of an FCT intervention in an inclusive school setting with an 11-year-old child with ID. The participant's challenging behavior included physical aggression, property damage, elopement, and disruptive verbal and physical behaviors and were attention-maintained. The FBA process included both formal (i.e., FA) and descriptive assessments (e.g., interview, observations). His classroom teacher implemented FCT as part of a

multicomponent intervention package, which included choice-making, attention, social and communication skills instruction, and a picture communication book to teach the student an FCR (e.g., sign “help”). Results showed both an increase in appropriate behavior and a decrease in challenging behavior during the intervention conditions.

In a related study, Blair and colleagues (2006) trained special and general education teachers to implement an intervention package, embedded into the natural routine, that included FCT and antecedent strategies, such as environmental arrangements (e.g., incorporating student preferences and interests into activities), reinforcement, and extinction with three kindergarteners with ID in an inclusive kindergarten classroom during free choice play time. The children’s challenging behavior was all maintained by access to tangibles, and they were taught to mand for toys using picture symbols. For all three participants, results indicated that the intervention package was effective in reducing challenging behavior. In the following year, Blair et al. (2007) trained a special education teacher, general education teacher, and paraprofessional to implement FCT as part of a multicomponent intervention package, which included embedding preferences, choice making, and response strategies (e.g., reinforcing positive or prosocial behavior, extinguishing challenging behavior), with a young child with ASD in a kindergarten classroom. The purpose of the intervention was to promote inclusive practices for this student. The student was taught to display a picture card showing a child and adult playing together in lieu of his attention-maintained challenging behavior. Results showed a decrease in the student’s levels of challenging behavior and an increase in appropriate behavior during intervention conditions. Additionally, the student displayed appropriate levels and maintained use of the FCR during intervention conditions.

Further, Reeves et al. (2013) trained a general education teacher and a paraprofessional to implement an FCT intervention with 7-year-old triplets with ASD who exhibited challenging behavior in an inclusive first-grade classroom during their morning routine. The intervention also included antecedent strategies (e.g., visual schedule, reminder of expected behaviors prior to starting). Two children's challenging behavior was maintained by attention, whereas the other child's challenging behavior was maintained by both attention and escape. Results indicated that the FCT intervention was effective in increasing challenging behavior, increasing time on task, and maintaining appropriate use of their FCR behaviors for all participants. Later, Reeves et al. (2017) implemented an FBI involving FCT with two elementary school students with ASD in an inclusive school setting (i.e., mathematics classroom, language arts classroom). The interventions included antecedent adjustments (i.e., being reminded of behavioral expectations), reinforcement, and extinction. One student exhibited disruptive and distracting behaviors maintained by attention, and the other exhibited disruptive, distracting, and destructive behaviors maintained by escape. The effects of the interventions were large in decreasing challenging behavior for all three participants and in maintaining functional use of their replacement behaviors.

Finally, Walker and Snell (2017) coached three classroom paraprofessionals in the implementation of an FCT intervention package across three students with ASD who exhibited challenging behavior. For two of the three participants, FCT was implemented in an inclusive school setting (i.e., middle school mathematics class, elementary school art class). The intervention package for one student included an FCT and a dense schedule of reinforcement, embedding student preferences, choice making opportunities, self-monitoring instruction, and extinction. This student's challenging behavior included physical aggression, self-injurious

behaviors, and distracting behaviors that were maintained by escape. The FCT intervention package for the second student included minimally intrusive prompting procedures, incorporating preferred and easier task demands, teaching the student to use a visual schedule, reinforcement, and extinction. His disruptive and distracting behaviors were maintained by both attention and escape. Results indicated that during the FCT intervention, both students engaged in lower rates of challenging behavior and higher rates of appropriate behavior, supporting the effectiveness of the FCT intervention package.

Although there is emerging evidence that FCT is effective for students with IDD when implemented in inclusive school settings, effectiveness of FCT in inclusive school settings with secondary students with IDD remains unknown due to lack of research. Further, the effects of a peer-delivered FCT intervention are unknown as well. In a systematic literature review conducted by Masud and colleagues (2022), the authors searched the literature for intervention studies in which FCT was implemented with K–12 students with IDD in inclusive school settings. The review resulted in ten participants across seven studies. Nine of the ten student participants were elementary-age or younger, and the remaining participant was a middle school student (Walker & Snell, 2017). There were no studies found at the high school level. In addition, adult educators (i.e., general education teachers, special education teachers, paraprofessionals, teachers not otherwise specified) served as the interventionists for the FCT interventions. None of the studies had a peer serve as an interventionist. Given the specific challenges of students with IDD at the middle and high school level (e.g., dramatic changes in the educational environment, greater challenges with regard to the academic curriculum, increase in class sizes, greater import placed on academic achievements, and higher adaptive and behavioral expectations, peer relationships), it is critical to examine this gap in the research.

Further, as peers are important to a student's experience in an inclusive school setting, the effects of a peer-delivered FCT intervention should also be explored. As the authors noted, these are limitations as FCT has not been demonstrated to be effective when delivered by a peer in the inclusive school setting for high school students with IDD. There is a need to expand the research literature base surrounding the implementation of FCT in inclusive secondary school settings with middle and high school students with IDD who exhibit challenging behavior. It is imperative to examine the effectiveness of peer-delivered FCT in inclusive school settings for secondary-aged students with IDD because of the many benefits associated with inclusive education and the associated barriers of challenging behavior and factors related to age (e.g., younger students are more likely to access inclusive school settings).

Summary

FCT is an effective FBT implemented to address challenging behavior. It is a systematic process that involves DR procedures to teach an individual an FCR. It can be effectively implemented alone or as part of an intervention package (e.g., noncontingent reinforcement, schedule thinning procedures, extinction). There is ample literature over the past three decades to support FCT as an EBP for challenging behavior for many populations of individuals and in various settings (Cooper et al., 2020; Hume et al., 2021), including students with IDD in secondary school settings (Andzik et al. 2016; Walker, Lyon, et al., 2018). Further, there is emerging evidence of the positive effects of FCT for young students (i.e., elementary and middle schools) with IDD in inclusive school environments (Masud et al., 2022). The current research literature base is limited in literature surrounding the effects of FCT implemented in inclusive middle and high school settings for secondary-aged students with IDD. There is a need for

additional research to examine the effects of FCT on the challenging behavior of secondary-aged students with IDD in inclusive school settings.

Table 1*FCT Intervention Studies Implemented in Inclusive School Settings*

Study	<i>n</i>	Grade level	Disability category	Inclusive setting/ Routine	Intervention	FCT implementer	Schedule thinning procedures
Blair et al. (2006)	3	K-5	ID	Kindergarten classroom during play time	Multi-component	Special education teacher; general education teacher	No
Blair et al. (2007)	1	K-5	ASD; ID	Kindergarten classroom	Multi-component	Special education teacher; general education teacher; paraprofessional	Yes; delay to reinforcement
Reeves et al. (2013)	3	K-5	ASD	Grade 1 classroom during morning routine	Multi-component	General education teacher; paraprofessional	No
Reeves et al. (2017)	2	K-5	ASD	Mathematics class; Language arts class	Multi-component	CD	No
Umbreit & Blair (1996)	1	K-5	ID	CD	Multi-component	Teacher not otherwise specified; CD	No
Walker et al. (2021)	1	K-5	ASD; ID	Playground during recess	FCT only	Paraprofessional	No
Walker & Snell (2017)	2	K-5; 6-8	ASD; S/L impairment	Mathematics class; Art class	Multi-component	Paraprofessional	No

Note. *N* = number of participants given FCT in an inclusive setting; K = kindergarten; ID = intellectual disability; ASD = autism spectrum disorder; S/L = speech language; CD = cannot determine; CB = challenging behavior; FCT = functional communication training.

CHAPTER 3: METHOD

Explanation of Changes to the Originally Proposed Study

This chapter reflects revisions to the proposed study that were made due to challenges with recruitment and absence of student challenging behavior at the time of the study. All revisions were approved by the dissertation committee and the governing university's Institutional Review Board (IRB). See Appendix A for the originally proposed methods. Major changes include a shift from three participants to one participant and, as a result, a change from an experimental single-case design (i.e., multiple baseline across student participants) to a pre-experimental AB design (Birnbrauer et al., 1974). As the sole student participant did not exhibit the degree of challenging behavior during the study that was previously indicated, I shifted the focus of the study from traditional FCT where the FCR is taught in response to precursors to challenging behavior to FCT involving proactively teaching the FCR in the absence of challenging behavior to prevent future occurrences of challenging behavior. Relatedly, there was a change in intervention implementer from an educator participant to a peer mentor participant. This change occurred because the student participant attended the target general education class with a peer mentor, who provided him with noncontingent attention. As results of the FBA indicated that the student participant's challenging behavior was likely maintained by access to attention, the peer mentor, rather than an adult, was in a unique position to deliver mand opportunities for the student to exhibit the FCR.

Method Section for the Current Study

I used a pre- or non-experimental AB design, also referred to as a simple time series design (Birnbrauer et al., 1974; Ledford & Gast, 2018) to examine the effects of FCT on student challenging behavior and FCRs in inclusive school settings. I also evaluated the peer mentor participant's, educator team member participants', and student participant's perceived social validity of the FCT intervention via an adapted version of the School Intervention Rating Form (SIRF) social validity survey (Kern & Gresham, 2002–2007) and open-ended interviews. Further, I evaluated the student participant's social validity by measuring the degree to which he appeared HRE during each session.

Specifically, the research questions were:

1. What are the effects of an FCT intervention delivered in an inclusive school setting on the FCRs of a high school student with IDD?
2. What are the effects of an FCT intervention delivered in an inclusive school setting on the challenging behavior of a high school student with IDD?
3. What are the collateral effects of an FCT intervention delivered in an inclusive school setting on the various communication behaviors of a high school student with IDD?
4. To what extent is the intervention socially valid from the perspectives of the student participant, peer mentor participant, and educator team member participants and based on student observations?

Participants and Setting

One team, comprising one student participant, one peer mentor participant, and four educator team member participants, participated in the study. The student participant was eligible for inclusion in the study because he met the following criteria at the time of screening: (a)

exhibited challenging behavior in an inclusive school setting that interfered with their own academic or social progress or that of peers, that was harmful to the student or others around them, or was harmful to the student's environment, (b) accessed an inclusive secondary school setting (i.e., general education classroom and other school settings that students without disabilities accessed; IDEA, 2004) for at least 15m on a regular basis, (c) received special education services under an IDEA eligibility category was is consistent with IDD (e.g., autism, intellectual disability, multiple disabilities) or was medically diagnosed with IDD, (d) attended a public middle or high school in the United States, and (e) had guardian consent to participate in the study. Educator team member participants were eligible if they were an adult employee of the school district who accompanied the student participant to the inclusive school setting where the FCT intervention implementation occurred or supported the student in this setting in some way (e.g., paraprofessional, art teacher). The peer mentor participant was eligible because of her role at the time of recruitment in serving as the student participant's individual peer mentor and supporting the student participant during the target general education class period.

I conducted this study at a high school located in the township area of a metropolitan city in the Midwestern United States. The school district was classified as a mid-size, suburban school district. For the 2021–2022 school year, 46.1% of the school's student population qualified for free/reduced lunch (National Center for Educational Statistics, 2022). According to the National Center for Educational Statistics (2022), the high school was the largest in its district and comprised around 1,400 students. The student-to-teacher ratio was 20.22 to 1. The racial and ethnic makeup of the school included students who were White (57.6%), Black or African American (19.2%), Hispanic (13.9%), two or more races (4.5%), Asian (4.2%), American Indian/Alaska Native (0.3%), and Native Hawaiian/Pacific Islander (0.1%).

Recruitment

My initial attempt to recruit participants for this study included reaching out to several district-level support personnel in several large school districts located outside of a large city located geographically close to the university. I sent a recruitment email to district-level support personnel and asked them to share the information with the Special Education or Exceptional Children's (EC) director for the district. In my email, I requested permission to work with teachers and other team members who accompany and/or support students with IDD in inclusive secondary settings in the district and have at least one student with IDD who accesses an inclusive school setting regularly and exhibits persistent challenging behavior (see Appendix B). This email also included a thorough description of my research study.

As these initial efforts resulted in no potential participants, I continued to recruit educators from school districts not geographically nearby using multiple methods. First, I used similar email language to email over 500 district-level special education personnel, including special education directors, across various states in the United States. These included a comprehensive list of all special education directors in the state of North Carolina and Washington State, and district-level special education personnel whose schools were listed as community partners on the Schoolwide Integrated Framework for Transformation (SWIFT) Center's website. Additionally, I created and disseminated an informational flyer about my study to fellow doctoral students in my program and professors in my department and asked them to share with those who might be interested. Finally, I posted the flyer and other information about my study on various social media platforms targeting special education teachers, disability advocacy groups, professional organizations for special education or disability, applied behavior analysis practitioners, and fellow doctoral students. My recruitment process lasted 6 months and,

as a result, I was successful in recruiting only one student participant. Therefore, along with the support of my dissertation committee, I decided to move forward with the study with one participant.

For recruitment of the student participant, I was given the name of a school district by a professor in special education who stated that she knew this district had a need. I emailed the district special education representative the district recruitment letter and the flyer I had created. After he expressed interest in the study, I obtained district level consent (see Appendix C). After receiving formal permission from the special education department representative to conduct my research with educators and students in the school district, I began recruitment procedures for educators. The district representative contacted a group of teachers he believed would benefit from this study. The teachers who expressed interest were then sent my contact information via email (see Appendix D) to formally indicate their interest and provide their contact information. Because the FCT intervention was initially designed to be delivered by an educator (e.g., paraprofessional) and other educational team members would likely have been involved (e.g., general education teacher in inclusive classroom setting), I asked the district representative to disseminate the same form to those relevant team members.

As a result, I group emailed two special education teachers from the same high school who expressed interest in the study. After I asked and answered a few initial questions, we then set up a time to meet. The two special education teachers, a classroom paraprofessional who attended art with the target student and the art teacher who instructed the target student, met with me via Zoom so I could give them a more detailed overview of my study, including the rationale, a description of FCT, inclusion criteria for participants, an estimation of the time commitment for participants, requirements for participants, a thorough description of the procedures, and an

opportunity for the teachers to ask questions of me. All team members agreed that the student would benefit from my study. The peer mentor participant was recruited due to her role as the student participant's peer mentor during the target class.

Consent. Subsequently, I obtained consent forms (see Appendix E) and video consent forms (see Appendix F) from all educator team member participants via DocuSign. After this process was complete, I asked them to contact the student participants' legal guardians via email to determine whether they would agree to their child participating in the study (see Appendix G). This email included a link to a Google Form so that guardians could express their interest in having their child participate in the study and share their contact information; however, per the guardian's preference, I had the student participant's teacher send home printed copies of the guardian consent (see Appendix H) and guardian video consent form (see Appendix I). Consent for the peer mentor participant was obtained in the same way. The student participant's teacher printed the guardian consent form (Appendix J) and video consent form (Appendix K) for the peer mentor participant. Additionally, the peer mentor provided assent on behalf of herself (see Appendix L). Because the nature of the intervention changed from an educator participant implementer to a peer mentor implementer, a reconsent form was sent home to the student participant's guardian outlining the changes made to the study (see Appendix M). All digital materials were downloaded and stored in a secure, password protected Dropbox account. Materials were only shared with research team members approved by the university's institutional review board.

Additionally, at the request of the special education district representative, I asked the art teacher to send home an informational letter (see Appendix N) to the guardians of all students in the art class in which the peer mentor participant delivered the intervention to the student

participant. This letter included a summary of the study, validation of the approval of the Institutional Review Board of the university, and the research team's contact information should the guardians have questions or concerns.

Participant Demographic Information

Following recruitment and consent procedures, I obtained demographic information from all team members. To collect relevant information about student, peer mentor, and educator participants, I provided digital forms to educator team member participants and the peer mentor participant. For the educator team member participants (see Appendix O), I requested information about their age, race/ethnicity, job title and description of role, years of experience in special education, years of experience in their current role, other work experience, prior training in challenging behavior in general and in FCT specifically, specific role with regard to the student participant, current strategies implemented for student participant's challenging behavior, and experience with supporting students in inclusive school settings. On the student participant demographic information form (see Appendix P), I requested that the educator team member participants provide information about the student participant's age, disability diagnosis, IEP eligibility category, race, and ethnicity; their special education services and service delivery times, communication level and mode, relevant standardized assessment results (e.g., IQ, adaptive behavior); information related to formal or informal behavioral intervention plans and behavioral goals; and anecdotal reports from their classroom teacher and other classroom team members about the student participant's challenging behavior, including current supports. Finally, for the peer mentor participant's form (Appendix Q), I requested that she provide information about her age, grade level, gender identity, race, ethnicity, and relationship with the student participant, including the length of time she had known him, the length of time

she had served as his peer mentor, how long she served as his peer mentor during the school day, and a description of her roles and responsibilities as a peer mentor. After receiving responses for all participants, I downloaded them and stored them in the password protected Dropbox account.

Team Members

Team members included two high school students (i.e., one student participant, one peer mentor participant), and four educational team member participants (i.e., two special education teachers, one general education art teacher, one paraprofessional).

Student Participant. Jude was a 15-year-old White male in tenth grade who had a dual eligibility of ID and ASD. He communicated using vocal speech at the multiword level and received speech/language services on a consultative basis to decrease stuttering, increase speech fluency and intelligibility, and decrease frustration with communication. He also received direct occupational therapy services for fine and visual motor skills. Jude's medical concerns included that he was visually impaired and wore glasses for this and he wore ankle-foot orthoses daily to support his gait. During the time of the study, the medications he took included Zoloft and Abilify. Results of Jude's most recent Wechsler Intelligence Scale for Children Fifth Edition (WISC-V) showed that his full-scale IQ score was 48, which fell in the extremely low range (i.e., range from extremely high to extremely low). His sub scores included a 70 (i.e., very low range) in verbal comprehension (i.e., knowledge of words and ability to apply them), 55 (i.e., extremely low range) in fluid reasoning (i.e., ability to develop relationships between visual objects and applying this conceptually), 53 (i.e., extremely low range) in perceptual reasoning (i.e., ability to understand, organize, and think about visually delivered information), 62 (i.e., extremely low range) in working memory (i.e., ability to understand, remember, and manipulate auditory information) and 50 (i.e., extremely low range) in processing speed (i.e., ability to visually

identify information, and to make and implement decisions). Composite scores of the Vineland Adaptive Behavior Scales, Second Edition (Vineland-II; Sparrow et al., 2005) across the areas of communication (i.e., receptive, expressive, written), daily living (i.e., personal domestic, community), socialization (i.e., interpersonal, play and leisure time, coping skills), and motor skills (i.e., fine, gross) indicated that Jude's parents and teachers both scored him within the 'low' range (i.e., range from high to low).

Jude was educated primarily in a self-contained program for students with ID who were working toward achieving a career pathway certificate (i.e., an alternative high school diploma). The program comprised 30 students who were identified as having ASD, ID, other health impairment, and speech/language disability and two special education teachers (i.e., Ms. Lennon, Mr. McCartney). For two days per week, Ms. Lennon and Mr. McCartney cotaught students together in the same classroom; for the other three days per week, they taught students separately in their individual classrooms based on students' cognitive ability. Their program included a heavy emphasis on academic and functional life skills and time for social skills and adapted PE. All 30 students from the self-contained classroom attended general education classes as a part of their daily schedule. Of the seven daily class periods, students from Jude's classroom attended between two and five classes in the general education setting per day. Jude's class schedule included two general education classes (i.e., outdoor pursuits physical education, art); however, due to challenging behaviors, he often did not attend the former.

Jude was a participant in the school's peer mentor program. The peer mentor program was designed so that students from Jude's classroom would attend each general education class with a peer mentor who followed the regular high school curriculum. To be eligible to serve as a peer mentor, students had to undergo an interview process with Ms. Lennon and Mr. McCartney

and have availability in their class schedule to attend class with their peer mentee and attend a separate peer mentoring class. The goal of the peer mentor program was for peer mentors to work with their peer mentees to support them in achieving goals, while gaining an understanding and appreciation of individual differences. The role of a peer mentor included to support their peer mentee in their mutual class to the extent needed and act as a role model by encouraging responsibility, independence, and appropriate behavior in their peer mentee. The educator team member participants reported that the program promoted learning and application of life skills, responsibility, collaboration, leadership, and empathy. Ms. Lennon noted that the program had facilitated many meaningful and lasting friendships that continued after graduation.

Jude did not have a formal BIP included in his IEP, but teachers reported that he had many behavioral concerns. These included putting items in his mouth or nose, spitting on the floor, laying on the floor, making inappropriate noises, work refusal, refusal to transition to the next activity or class, hugging or kissing peers or staff, and verbal aggression. To address these concerns, the teachers had implemented various behavioral supports, including modifying non-preferred assignments (e.g., shortening assignments, connecting assignments to high-preference areas such as super-heroes), first-then statements including with visual supports, social narratives and video-models of appropriate behavior, one-on-one pre-session instruction, frequent positive affirmations and behavior specific praise, peer supports, being offered breaks, being offered snacks, daily visual schedule, redirection, providing choices, providing him extended processing time, allowing him to take a walk with staff or with peers to calm down, being allowed to call home to his parents after completing a task, free time activities (e.g., listening to music, taking a walk with staff or peers), and being placed in in-school suspension.

Peer Mentor Participant. Lucy was a 17-year-old White eleventh grader who identified as female. She had known Jude since the beginning of the school year and served as his peer mentor the same amount of time. During the time of the study, she attended art class with Jude as his peer mentor and was responsible for checking in with him during the class, guiding him as needed through social interactions, and assisting him in experiencing a typical classroom experience.

Educator Team Member Participants. Educator team member participants included two special education teachers who both taught the student participant on a daily basis, one paraprofessional assigned to the student participant's special education classroom who attended the general education classroom setting (i.e., art class) with the student participant, and the art teacher who taught the student participant's art class. Please refer to Table 2 for demographic information of educator team member participants.

Ms. Lennon was a 34-year-old White female who served as one of Jude's self-contained special education teachers. She had been in this role for 10 years. She held a master's degree and was certified in general education K–5 and special education K–12, with an endorsement in Intellectual Disability. Throughout her teaching career, she had taught at the elementary, middle, and high school level and at a special education school that served multiple age groups. She had previously taught students with ID, ASD, hearing impairment, speech or language impairment, emotional disturbance, specific learning disability, multiple disabilities, developmental delay, traumatic brain injury, and other health impairment.

Mr. McCartney was a 37-year-old White male who also served as one of Jude's self-contained special education teachers. He had taught in this role for 11 years. He was certified in physical education K–12 and adapted physical education K–12 and held a master's degree in

special education K–12 with an endorsement in Intellectual Disability. He had previously taught at the elementary and high school level and at a special education school that served multiple age groups. The disability categories of students with whom he had experience teaching included ID, ASD, visual impairment, hearing impairment, speech or language impairment, emotional disturbance, specific learning disability, multiple disabilities, developmental delay, traumatic brain injury, and other health impairment.

Ms. Starkey was a 58-year-old White female who served as a paraprofessional in the student participant's self-contained special education classroom. She attended some college, but did not hold a degree. She had 29 years of experience as a paraprofessional and had worked with students with ID, ASD, emotional disturbance, and other health impairment at the elementary, middle, and high school levels. In addition to serving as a classroom paraprofessional, part of her responsibilities included attending Jude's general education classes with him.

Ms. Harrison was a 46-year-old White female general education teacher who had served in her role for 19 years. She was Jude and Lucy's art teacher, but she also taught high school psychology. She held a master's degree and was certified in art education K–12 and high school psychology. During her years teaching, she taught only at the high school level and had previously served students with ID, ASD, speech or language impairment, emotional disturbance, orthopedic impairment, specific learning disability, and developmental delay.

Setting. I conducted this study in a public high school located within the township of a metropolitan city in a Mid-Western state. The school's student population was about 1,400 and included Grades 9–12. The FCT intervention was conducted in a general education art classroom during an art class that was titled Art 2. Data collection began when Jude entered the art classroom and concluded when he was notified by the peer mentor or paraprofessional that it was

time to leave art class to go home. The art classroom included two large adjoining rooms. The first room included four rows of three or four two-person tables placed in the center of the room. There were also two-person tables bordering three walls of the classroom. One wall contained three large windows to the outside. There were no specific seats assigned to students and, while working independently, students were allowed to move around the room as they pleased. The teacher's desk was located at the front of the room alongside a large storage cabinet and cubbies for student artwork. The second room included filing cabinets, storage cabinets, and flexible seating (i.e., desks, bean bag chairs, cushions). At the time of the study, the second room was used for a visual art demonstration, where a vignette was placed in the center of the room on the table for students to paint or draw. Including Jude and Lucy, there were 21 students in the class in Grades 10–12. Four of these students were classmates of Jude's in the self-contained classroom for students with ID and three students served as peer mentors in the peer mentor program at the school. Adults in the classroom included Ms. Harrison, the art teacher, and Ms. Starkey, Jude's classroom paraprofessional.

The primary investigator conducted the peer mentor implementer training and follow-up coaching sessions for Lucy via Zoom. For these sessions, Lucy took her school computer into the sensory/occupational therapy room, as it was not used during the time the meetings occurred, and received training sessions via Zoom from there. Importantly, Lucy received her training and follow-up coaching sessions during her peer mentor class period and, therefore, did not miss any instructional time while participating in this study. She completed social validity survey with the secondary data collector the afternoon following the last day of school.

Materials

Materials required throughout the entirety of the study included an iPad in a protective case with a blackout screen protector (so Jude could not see that he was being recorded) and a Bluetooth microphone located next to the iPad to isolate Jude and Lucy's voices for video recording purposes. Other materials included Jude and Lucy's art materials (e.g., colored pencils, paper, computer). The researcher used a MacBook Pro with installed Zoom software to video record data collection sessions and planning, training, and follow-up coaching sessions. Other materials included researcher-developed PowerPoint presentations for the purposes of training and coaching the peer mentor participant and planning with the educator team member participants, a digital copy of the FCT plan (Appendix R) and safety plan (Appendix S) for the student participant, and data collection forms. Additional materials included baseline and intervention scripts for Lucy to facilitate effective implementation of the intervention.

Dependent Measures

There were multiple dependent variables in this study. The primary dependent variable was the student participant's FCRs. I also measured student challenging behavior and various communication behaviors for the student participant (i.e., unprompted initiations, unprompted responses, use of complete sentences, mands). I also measured the peer mentor participant's implementation fidelity of the FCT intervention. Lastly, I measured the social validity of the FCT intervention according to educator, peer mentor, and student participants using surveys, interviews, and observations.

Student Participant FCRs

Due to the absence of Jude's challenging behavior during the FBA observation sessions, I measured student FCRs as the primary dependent variable. Specific FCRs for Jude were determined by the educator team member participants during the planning meeting. During the

indirect FBA process, all educator team member participants reported the presence of challenging behavior throughout Jude's daily routine, including occurrences during art class (i.e., his target routine). Therefore, proactively teaching the FCR to the student in the absence of challenging behavior was important to the educator team member participants, as they were concerned that future occurrences of challenging behavior would hinder Jude's participation in the art class. By determining the hypothesized function of Jude's challenging behavior, the team planned to proactively teach Jude replacement behaviors that would likely prevent the future occurrence of challenging behavior (Ala'i-Rosales et al., 2018). As the team determined that challenging behavior was most likely maintained by access to attention (i.e., specifically peer mentor), I met with the educator team members to develop a list of appropriate FCRs (i.e., replacement behaviors aligned with hypothesized function of challenging behavior) for the student participant (see Appendix FF).

Measures coded during the pre-baseline condition included Jude's challenging behavior, social validity, and various communication measures. It was not possible to code the pre-baseline sessions for Jude's FCRs, or likewise Lucy's implementation fidelity, as Lucy had not been instructed to start delivering mand opportunities at this time, and thus an appropriate comparison between pre-baseline to intervention was not possible. I measured the student participant's independent and prompted FCRs using an event recording count measure across the entirety of the student's art class session (see Appendix T). An independent FCR was defined as Jude vocally using an appropriate FCR (e.g., "Will you sit by me?") without prompting, or a close approximation of an appropriate FCR (e.g., "Sit next to me, please?"), within 5 s of the delivery of a mand opportunity by Lucy (e.g., "Let me know what you want."). A prompted FCR was defined as Jude using an appropriate FCR, or close approximation of such, following an indirect

(e.g., “How could you ask me to sit by you?”) or direct prompt from Lucy (e.g., say, “Sit by me.”). For a list of FCRs, see Appendix FF. I calculated independent student FCRs and prompted student FCRs separately by dividing the total number of independent or total number of prompted FCRs by the total number of peer mentor-delivered mand opportunities. This permitted graphing FCRs as a percentage. Occurrences of each FCR (i.e., both prompted and independent) were calculated for each baseline and intervention session. During each session, the total number of FCRs was summed to determine the total occurrences of FCRs per each routine. Prompted and independent FCRs were counted separately.

Student Participant Challenging Behavior

I measured the student participant’s challenging behavior using 10 s partial interval recording across the entire time Jude and Lucy were in their art class (see Appendix U). Partial interval recording was advantageous for following reasons: (a) it accounts for behaviors that occur quickly (e.g., Jude leaning over to attempt to kiss Lucy), (b) it often overestimates the total duration of behavior (since the goal is to reduce challenging behavior), and (c) it allows for the measurement of multiple behaviors simultaneously (e.g., Jude’s three forms challenging behavior; Cooper et al., 2020). The number of 10s intervals in which challenging behavior occurred at any point during the observation session was divided by the total number of intervals in the session. This number was then converted into a percentage by multiplying it by 100. It was graphed as a percentage of intervals in which challenging behavior occurred.

Student Participant Communication Measures

In order to capture supplemental communication data for Jude, I measured the number of unprompted initiations and unprompted responses, and subcategories of whether or not the initiation or response was a mand, and/or a complete sentence. An unprompted initiation was

defined as Jude vocally starting a conversation with another person, including Lucy, other peers, or adults in the classroom (e.g., “Tada! Look at this!”), with no prompting. Therefore, I did not count Jude’s FCRs that were prompted by Lucy, as these were already captured in the FCR data measurement. An unprompted response was defined as an unprompted vocal verbal response to an interaction from another person. A mand was defined as initiating or responding vocally to an interaction with another person for the purpose of requesting something wanted or needed, or requesting to end something aversive (e.g., “Will you help me color?”). Finally, a complete sentence was defined as a word phrase that contained a subject and a finite verb (e.g., “I’m OK”, “You are funny”, “Let’s talk about Super Mario”). I used event recording calculated as rate per minute (see Appendix V) given that each of these measures was discrete and relatively easy to observe and the art class sessions varied in length (Cooper et al., 2020). To calculate the rate per minute of each of the communication behaviors, I divided the total occurrences of each behavior by the number of minutes in the session.

Peer Mentor Implementation Fidelity

I calculated Lucy’s implementation fidelity using a count measure that was then converted into a percentage. Prior to baseline, Lucy was trained to deliver at least five mand opportunities to Jude. She was provided an example list of mand opportunities and, as long as she delivered five opportunities, her fidelity was 100%. If fewer than five opportunities had been delivered, her fidelity would have dropped by 20% per missed opportunity (see Appendix W). For intervention, Lucy was trained to deliver mand opportunities and prompting using the system of least prompts. The first prompt was an indirect prompt and the second prompt (i.e., controlling prompt) was a direct model prompt. I used an implementation fidelity checklist during each session to track Lucy’s fidelity (see Appendix X). For baseline, Lucy achieved 20% fidelity for

each mand opportunity she delivered (i.e., five or more opportunities = 100% fidelity). For intervention, the total number of correct steps implemented by Lucy was then divided by the total number of possible steps.

Social Validity

I measured the social validity of the FCT intervention at the conclusion of the study using various methods. First, I used a subjective evaluation method, meaning that I collected information regarding perceptions related to the goals, procedures, and outcomes of the intervention (Kazdin, 1977, 2011; Wolf, 1978) via a survey for Lucy and the educator team member participants. Second, a research team member conducted video recorded interviews with all participants, including the educators, Lucy, and Jude. All interviews, with the exception of Jude's, were conducted by a secondary data collector. I did not conduct the final social validity interviews in case my presence would potentially alter the participants' answers to questions. For the educator team member participants and the peer mentor participant, interviews were conducted with a PowerPoint serving as the visual prompt for questions. Prior to asking the first interview question, the secondary data collector asked that team members answer questions honestly. Finally, I measured Jude's behaviors (i.e., HRE) as another measure of social validity (see Appendix Y).

Student Participant. Jude's social validity measures included an interview that was formatted with three yes/no questions and follow-up interview questions (see Appendix Z) and observational data on the degree to which Jude appeared HRE. Because of Jude's familiarity with his teachers and concern that he would not answer questions accurately if video recorded, Ms. Lennon and Mr. McCartney conducted the social validity interview. I video recorded this session in the same way data collection sessions were recorded. There were three questions to

which Ms. Lennon and Mr. McCartney prompted Jude to answer ‘yes’ or ‘no.’ Following each question, they asked him follow-up questions to gather more detailed information about his experience (e.g., “Tell me more about that” or “Why did you like that?”). The questions included whether: (a) Jude liked the intervention, (b) he felt that it helped him communicate his wants and needs, and (c) he thought the intervention helped his behavior in art class.

The extent to which Jude appeared HRE was measured as an additional source of social validity data. First, the educator team member participants and I operationally defined behaviors Jude did and did not exhibit when he was HRE. Then, two research team members who had not previously viewed any data collection videos independently coded a randomly selected 3-min clip from each pre-baseline, baseline, and intervention condition using the list of operationally defined behaviors. Video clips were assigned in random order so coders were unaware whether the clip came from pre-baseline, baseline, or intervention to ensure a higher degree of external validity (Ledford et al., 2022). Next, they were asked to complete a Google Form survey to rate the degree to which they believed Jude appeared HRE (see Appendix Y). The rating scale for each measure was a 4-point Likert-type scale (e.g., 1 = *unhappy*, 2 = *moderately unhappy*, 3 = *moderately happy*, 4 = *happy*).

Peer Mentor Participant. To measure the social validity of the intervention and process according to Lucy, I used a survey (see Appendix AA) adapted from the SIRC (Kern & Gresham, 2002–2007). The SIRC is a self-reported survey used to measure educator perceptions of the social validity of school-based interventions. This survey was adapted to include child-friendly language, versus language for a teacher. Lucy completed the 15-question survey via Google Forms using a 5-point Likert-type scale (e.g., 1 = *not at all* to 5 = *many*) with an option to include any further comments at the conclusion of the survey. Survey questions addressed

Lucy's perceptions of her understanding, the acceptability, the ease of implementation, the effectiveness, the disadvantages, and the degree of disruption on her daily routine of the intervention; her willingness to implement and attend training/coaching sessions; and her perceptions regarding Jude's participation, such as improvements to his ability to communicate effectively and the degree of discomfort he experienced from participating.

Following completion of the survey, Lucy met with another research team member and was asked nine interview questions (see Appendix AA) about the process that included her perceptions on the parts of the intervention and training/coaching sessions that were effective and non-effective, what she thought was most challenging, her confidence in implementing, or training someone else to implement, the intervention in the future, whether she would consider implementing the intervention again with Jude or another peer mentee, and whether or not the intervention promoted inclusion in their art classroom for Jude. Her interview lasted about 10 min.

Educator Team Member Participants. There were two separate surveys and interview questions for the educator team member participants. Ms. Starkey and Ms. Harrison were present during the data collection sessions in the art classroom, whereas Ms. Lennon and Mr. McCartney were not. Therefore, Ms. Starkey and Ms. Harrison were able to answer questions about the delivery of the intervention, whereas Ms. Lennon and Mr. McCartney were only able to answer questions about the planning process and their perceptions of the outcomes of the intervention.

Art Teacher and Classroom Paraprofessional. To measure Ms. Harrison and Ms. Starkey's perceived social validity of the intervention and planning process, I used a survey (see Appendix BB) adapted from the SIRF (Kern & Gresham, 2002–2007). This survey was adapted for educators who observed the intervention but did not implement the intervention. In the same

way as previously described, the measure was disseminated via Google Forms. The survey contained 15 questions and used a 5-point Likert-type scale (e.g., 1 = *not at all* to 5 = *many*) for responses. There also was an option to include any further comments at the end of the survey. The specific survey questions addressed Ms. Starkey and Ms. Harrison's perceptions regarding their understanding of the intervention after attending planning sessions and observing Lucy implement it with Jude; the degree to which they deemed the intervention effective, reasonable, acceptable, costly, or and time consuming; their willingness to collaborate and plan for the intervention; the degree to which they liked the procedures used; the degree to which this process was time-consuming; and whether they perceived disadvantages, undesirable side effects, improvements in student behavior, and discomfort to the student.

Ms. Starkey and Ms. Harrison completed the social validity interviews separately in the same manner as described above. Both Ms. Starkey and Ms. Harrison's interviews lasted about 10 min. The 12 questions (see Appendix BB) addressed their perceptions of the parts of the intervention and planning process they perceived to be effective and ineffective; barriers related to their planning, Lucy's implementation, and Jude receiving the intervention; whether they would continue to support the implementation of this intervention in the future, consider implementing it in the future themselves, or consider training another peer mentor to implement in the future; and, finally, whether they believed the intervention promoted inclusion in the art classroom for Jude.

Special Education Teachers. Similarly, in order to measure Ms. Lennon and Ms. McCartney's perceived social validity of the intervention and planning process, I used a survey (see Appendix CC) adapted from the SIRF (Kern & Gresham, 2002–2007). This survey was adapted for educators who were involved only in the planning process of the intervention but

were not able to consistently observe or deliver the intervention. The survey was disseminated via Google Forms. The special educators' survey contained 11 questions and used a 5-point Likert-type scale (e.g., 1 = *not at all* to 5 = *many*) for responses. There also was an option to include any further comments at the end of the survey. Mr. McCartney and Ms. Lennon answered questions about supporting and contributing to the intervention planning process. Specifically, they were asked how willing they were to plan and collaborate, how much time was needed daily, and how disruptive the process was. Further, they were asked how clear their understanding of the intervention was, how acceptable and reasonable they found the intervention to be for Jude, to what extent they perceived there to be disadvantages and undesirable side effects, and the degree to which they liked the procedures used.

For the sake of time and scheduling conflicts, Ms. Lennon and Mr. McCartney's social validity interview was conducted jointly. Their interview comprised eight questions (see Appendix CC) that addressed components of the planning process that were effective or could be improved, other factors that made the planning process possible, barriers to the planning process, whether they had noticed changes in Jude's behavior, whether they would consider implementing or training a peer mentor to implement the intervention in the future, and whether they believed the intervention had any impact on the student's inclusion in the classroom. Their interview lasted about 17 min.

Data Collection

Each session during pre-baseline/FBA, baseline, and intervention conditions were video recorded so that all behaviors can be coded separately, as they required separate measurement procedures (i.e., rate, count, 10s partial-interval recording). To record sessions, I used a MacBook computer with downloaded Zoom software. I chose to use Zoom for its accessibility,

ease of use, common familiarity among educators, ability to record sessions automatically, and cloud storage system for large videos. Additionally, Zoom was free to download and use and therefore, placed no additional financial burden on either the research team or educator team member participants or their school district. The participants used an iPad in a protective case with a blackout screen protector and a Bluetooth microphone to isolate Jude and Lucy's voices for video recording purposes. During each session, Ms. Lennon opened the recurring Zoom room on their classroom iPad, which automatically began recording. Then, when Lucy came to get Jude for their art class, either Lucy or Ms. Starkey would carry the iPad to the art classroom. They then set the iPad up on a whiteboard ledge in front of the Jude and Lucy.

Data Analysis

I used visual analysis to determine whether there was a demonstration of effect between the FCT intervention and the study's primary dependent measures (i.e., student FCRs, student challenging behavior). As the most commonly used form of data analysis in single-case design research, visual analysis is a formative systematic method that involves analyzing data shortly after each data collection session (Cooper et al., 2020; Ledford & Gast, 2018). In the case of this study, I recorded each instructional session in which the peer mentor participant delivered FCT to the student participant, coded the recorded video to measure each dependent variable, graphed the data following each data collection session, and then visually analyzed the graphical data. Specifically, I analyzed the level (e.g., high rate), trend (i.e., increasing, decreasing, stable), and variability (i.e., how far apart the data points are from one another) of the data; the immediacy of effect from one condition to another; and the amount of data-point overlap that occurs per dependent variable (Ledford & Gast, 2018).

For Jude's communications measures (i.e., unprompted responses, unprompted initiations, mands, complete sentences), I used descriptive statistics to analyze these data. I added the totals of each communication category (e.g., complete sentences as initiations + complete sentences as responses) across each session and then divided this number by the total number of minutes in that particular session which converted the number into rate per minute. I did this for each session across each condition. Then, for each condition (i.e., pre-baseline, baseline, intervention), I added the total numbers of rate per minute and divided them by the number of sessions in that condition to calculate the average rate per minute of each measure across each condition.

Finally, for the social validity measures, I used descriptive statistics to analyze the results of the social validity surveys and student HRE measures. In the same way as mentioned in the previous paragraph, I calculated average scores for educator team member participants across questions for the social validity survey, and across HRE outcomes based on coders' scores for the HRE measures. For the interviews, I took notes on each participant's responses and developed themes based on these by grouping similar responses and analyzing them together.

Experimenter

I served as the primary experimenter for this study. Lucy, the peer mentor participant, served as the primary interventionist in delivering the FCT intervention. My responsibilities included: (a) conducting the FBA; (b) working with team members to develop the FCT intervention; (c) training the peer mentor participant to deliver the FCT intervention; (d) providing follow-up coaching sessions to the peer mentor participant as needed; (e) collecting student data during pre-baseline, baseline, and intervention sessions; and (f) monitoring peer mentor participant implementation fidelity of the FCT intervention during baseline and

intervention conditions. At the time of the study, I had a master's degree in Teaching Special Education (Adapted Curriculum K–12) from UNC Charlotte and was a doctoral candidate in special education at UNC Charlotte. My special education background is in teaching high school-aged students with IDD in a self-contained classroom at a rural, Title I school district for 5 years. While teaching, I included my students in social and educational opportunities with peers without disabilities, regardless of whether they exhibited challenging behavior. At the time of the study, my research interests included ABA, PBIS, and evidence-based challenging behavior interventions, and access to communication access to inclusive school settings for high school and transition-aged students with IDD.

Research Team

The research team comprised myself, the principal investigator and experimenter, and three secondary data collectors, two of whom were also responsible for collecting interobserver agreement (IOA) data. The team also included three faculty members from the governing university who served as consulting experts in content areas (e.g., inclusive practices, FBIs, FCT) and in single-case design. Two of the secondary data collectors were first-year doctoral students in special education and one was a first-year assistant professor in special education. All secondary data collectors had expertise in ABA and FCT and served as special education teachers for 5 or more years. The first secondary data collector's (i.e., first year doctoral student) role was to conduct social validity interviews and complete IOA data collection for student FCRs and challenging behavior and peer mentor implementation. She was also responsible for collecting IOA data on procedural fidelity measures for the planning, training, and follow-up coaching sessions. The second secondary data collector's (i.e., first year doctoral student) role included collecting primary data on Jude's HRE behaviors and collecting IOA data on Jude's

communication measures. The third secondary data collector's (i.e., first year assistant professor) role was to collect primary data on Jude's HRE behaviors.

The first faculty member from the governing university was an associate professor of special education who had content area expertise in inclusive practices, challenging behavior interventions, and communication access for students with IDD. The second and third faculty members from the governing university were both professors in special education who had expertise in challenging behavior interventions and access to communication for students with IDD. All three had expertise in single-case research design and were Board Certified Behavior Analysts and had content area expertise in ABA, including FCT. The first faculty member's role was to monitor the intervention and advise the principal investigator. The role of the second and third faculty members was to serve as consultants to the principal investigator.

Research Design

To study the effects of an FCT intervention on the FCRs and challenging behavior of a high school student with IDD in inclusive school settings, I used a pre-experimental or non-experimental AB design, also referred to as a simple time series design (Birnbauer et al., 1974; Ledford & Gast, 2018). I chose this design as a more experimentally rigorous design was not feasible due to the number of participants I was able to recruit (i.e., one). The AB design is a single-case design used to measure behavior change between two conditions (A) baseline and (B) intervention (Ledford & Gast, 2018). AB designs have weak internal validity and, by nature, can only produce correlational conclusions as there is no verification or replication. Therefore, no causal conclusions (i.e., functional relations) can be made based on this design. There are advantages to this type of design that were beneficial and particularly relevant to the current study. First, an AB design allows for continuous measurement of the primary dependent

variables. This means that, during each session in which the intervention occurs, data collection occurs, demonstrating a certain degree of experimental rigor (Ledford & Gast, 2018). Second, in an AB design, there is no withdrawal of the intervention. In the case of the current study, because the intervention focused on addressing challenging behavior and increasing student participants' use of socially appropriate communication responses (i.e., FCRs), it was advantageous for the participant to remain in the intervention condition versus having these supports removed to demonstrate a correlation. In the case of programming for behavior change, a withdrawal of an effective intervention may be seen as unethical, especially in the case of dangerous challenging behavior (Ledford & Gast, 2018).

Procedures

Pre-Baseline

Pre-baseline procedures included the FBA (i.e., indirect observation), hypothesis development for the student's challenging behavior, and peer mentor baseline training. The team, including Ms. Lennon, Mr. McCartney, Ms. Starkey, and Ms. Harrison completed these procedures collaboratively. Subsequently, I trained the peer mentor in baseline procedures using Behavior Skills Training (BST). Please refer to Figure 2 for an overview of the procedures used in this study.

Functional Behavior Assessment. As FCT is an FBI, it was critical that the function of the Jude's challenging behavior was determined to inform intervention planning because interventions aligned to behavioral function are more effective than interventions that are not (Goh & Bambara, 2012; Ingram et al., 2005; Jeong & Copeland, 2020). Initially, I conducted an indirect assessment (i.e., Open-Ended Functional Assessment Interview [FAI]; Hanley, 2009; see Appendix DD). I administered the open-ended FAI with the student participant's special

education teachers, Ms. Lennon and Mr. McCartney, to gain insight about his challenging behavior throughout the course of the day. I also administered the open-ended FAI with Ms. Harrison (i.e., Jude's art teacher) and Ms. Starkey (i.e., Jude's classroom paraprofessional), both of whom were present during the time Jude attended art class, to gain insight about his challenging behavior in art class. The resulting hypothesis was as follows: When attention from Lucy, peers, or other adults is unavailable, Jude exhibits inappropriate advances toward Lucy, says or writes swear words, and/or exhibits refusal behaviors, in order to access attention from Lucy, peers, or adults. Based on the information gathered through the open-ended FAI, I attempted to collect data via direct assessment, using ABC data recording, specifically, the Functional Assessment Observation (FAO) form (O'Neill et al., 2015; see Appendix EE). After six observations, the student had displayed very low levels or no occurrences of the targeted challenging behavior indicated in the open-ended FAI. This made direct observation of the challenging behavior impossible.

FCR Development. Jude's FCRs to access attention from the peer mentor were identified during the pre-baseline condition of the study. I, along with other research team members, reviewed FBA videos to identify instances in which the peer mentor-delivered potential opportunities appropriate for teaching FCRs in the future. I then created a table (see Appendix FF) with specific contexts in which the student participant might use FCRs (e.g., student appears to want to talk to the peer mentor) and asked the educator team member participants to add examples of FCRs for these contexts (e.g., "Hey, can we talk?"). It was critical that all educator team member participants contributed to this document to promote good contextual fit for the intervention. In determining Jude's FCRs, the team considered his communication abilities, the age-appropriateness of his responses, and the response effort

required of him. During the planning meeting, the educator team member participants and I finalized a list of appropriate FCRs for the student participant.

Peer Mentor Baseline Training. Prior to baseline, I met with Lucy to determine whether she would be interested in participating in the study as the implementer. As the initial plan was for an educator participant to implement the intervention, Lucy's participation in the study came at a later time. I used a PowerPoint presentation to explain the purpose of the study, her role in the study, the specific procedures she would be asked to complete during art class, next steps, and an opportunity for her to ask questions. She was willing to participate in the study. Following this, the aforementioned consent and assent procedures were then implemented for her. Next, I trained Lucy virtually via Zoom in baseline procedures using a PowerPoint presentation and BST. The PowerPoint presentation included a rationale for the study and why Lucy was being asked to be the implementer (i.e., Jude's challenging behavior being maintained by access to her attention). It also included a high school student friendly definition of the mand opportunities (i.e., an opportunity to communicate is something you say to your peer buddy to give him the chance to tell you what he wants) she would present to Jude and multiple examples of these (e.g., "If you need something, let me know.").

Next, I presented and explained the baseline script or "cheat sheet" to Lucy (see Appendix GG). It also is important to note that I emailed and texted the script to Lucy and had Ms. Lennon print the script out prior to the training session. I encouraged Lucy to refer to the script during the training session and art class with Jude. The script included examples of mand opportunities Lucy could deliver to Jude during art class. It also included the following reminders: (a) provide at least five opportunities during each class period, (b) make sure the opportunities are open-ended (i.e., not yes/no or choice-based questions), and (c) to be as natural

as possible. Lucy completed practice examples with me, she completed practice examples while role playing that she was responding to Jude, and I provided her feedback on each example (i.e., BST). Finally, I offered her an opportunity to ask questions and explained what would be coming up next in the study.

Baseline

All baseline sessions were video recorded and measured during the predetermined target routine (i.e., art class). During the baseline condition, Lucy presented between 5 and 11 mand opportunities to Jude. A mand opportunity was defined as an opportunity to request attention delivered to Jude by Lucy where Jude could respond and access reinforcement (e.g., “Let me know if you want to talk,” “Tell me if you want...,” “I’m going to talk to.... Let me know if you want to chat.”). During this condition, I observed Jude and Lucy in a minimally intrusive manner as previously described. This included collecting data throughout the entire art class where Jude was present on his FCRs and challenging behavior. Due to time constraints and a stable baseline trend (i.e., FCRs were at 0 across 4 sessions), I made the decision to move into the planning and, subsequently, intervention condition (Ledford et al., 2022).

FCT Plan Development

I met with Ms. Lennon, Ms. Starkey, and Ms. Harrison to create an intervention plan collaboratively. Mr. McCartney was unable to attend the planning meeting due to an illness. During the development of an FBI such as FCT, it is critical to collaborate with all relevant team members in order to ensure contextual fit and implementation success (Monzalve & Horner, 2021). I reviewed the results of the FBA (i.e., open-ended FAI) with the educator team member participants so they had a clear understanding of the behavioral function maintaining Jude’s challenging behavior, presented Jude’s baseline data in a graphical format, and provided the

team with an introduction to the FCT intervention (e.g., importance of aligning an intervention to behavioral function, FCT procedures, FCR). We discussed how Lucy, as Jude's peer mentor, was the ideal interventionist to teach Jude FCRs due to his challenging behavior being maintained by access to her attention. I then presented the educator team member participants with a list of Jude's FCRs (e.g., "Can you help me?") that the team had developed together during the pre-baseline condition. The educator team member participants provided their feedback on the FCRs and agreed on appropriate responses to each of the mand opportunities.

Following this, the team determined the specific prompting procedures Lucy would use to teach Jude the FCRs. I presented examples of time delay and system of least prompts and discussed their merits. The educator team member participants decided on system of least prompts, with the first prompt in the hierarchy being an indirect vocal prompt (e.g., "How could you ask if you want help?") and the controlling prompt being a vocal model prompt (e.g., "If you want help with that, say 'I want help.'"). The team determined an implementation fidelity goal for Lucy of 90% fidelity. We then set an FCR goal for Jude (i.e., Jude will independently respond appropriately to mand opportunities delivered by his peer mentor with 70% accuracy across 3 out of 4 class sessions). Finally, the team finalized the FCT plan.

Finally, the team determined whether safety procedures were needed with regard to FCT sessions. As a safety plan was already in place, the team determined that an additional safety plan was not needed as the student did not exhibit any high risk or dangerous behaviors. For the sake of the study, I created a typed-out version of their current safety plan and shared it with the team members (see Appendix S). The following issues were addressed: (a) procedures to maintain safety for the student and those around them, (b) de-escalation procedures, (c) contingencies for when the plan will be implemented, (d) procedures for the event of an injury,

(e) number of people required to implement the plan, (f) behaviors that signal that the safety plan is no longer required, (g) procedures for reintroducing the student to their regular routine, and (h) safety plan review procedures (Bambara & Kern, 2021).

To ensure that the intervention aligned with the educator team member participants' knowledge, skillset, values, and other measures (Monzalve & Horner, 2021), I embedded all components of the Self-Assessment of Contextual Fit in Schools (Horner et al., 2003) by using it as a framework to guide for intervention development. The team discussed each component of the contextual fit protocol throughout the course of the meeting to ensure strong contextual fit among all collaborators. At the end of the meeting, I had the educator team member participants complete check-in questions (see Appendix HH) relating to (a) their knowledge of the key elements of the FCT intervention, (b) the sufficiency of their skills required to implement the FCT intervention, (c) the intervention's alignment with their values as an educators, (d) the availability of adequate resources to successfully implement the intervention, (e) administrative support of the intervention, (f) the effectiveness of the intervention, (g) whether the intervention was in student participant's best interest, and (h) the efficiency of the intervention.

FCT Plan. The FCT plan (see Appendix R) comprised three sections including demographic information and other characteristics pertaining to the intervention, instructional set up instructions and other considerations, and a description of the FCT procedures. The first section included information about Jude such as his challenging behavior and function, the behavioral goal incorporating Jude's FCRs, and his baseline levels of FCRs and challenging behavior. The instructional set up and considerations section included Jude's current stage of learning the FCR, the group arrangement of the class, the specific location, time, days, and intervals in which data would be collected, and example mand opportunities that would serve as

the antecedent in directing the student to use their FCR. The final section of the FCT plan (i.e., description of procedures) included a task analysis of the specific prompting procedures Lucy would use to deliver mand opportunities to Jude, and to teach and subsequently reinforce Jude's FCRs.

FCT Implementer Training Procedures

I trained Lucy in the delivery of the intervention. The initial intervention training session lasted approximately 45 min and included BST (i.e., instruction, modeling, rehearsal, feedback; Kirkpatrick et al., 2019) components. I provided instruction via a PowerPoint presentation that included detailed information about the student participant's FCT plan and examples and non-examples of appropriate implementation. Lucy then engaged in role-playing the delivery of the intervention to which I provided detailed performance feedback. She was required to achieve 100% fidelity during the role play session on each of the role play sessions. I also provided her with a script for intervention that included the prompting procedures and examples of mand opportunities (see Appendix II).

At the end of the training session, I implemented a "check in" with Lucy and asked her three questions pertaining to contextual fit. The questions were adapted from the Self-Assessment of Contextual Fit in Schools (Horner et al., 2003) to be appropriate for a high school-age student serving as a peer mentor. Although she was not an educator, she served as a critical member of the team, and, therefore, it was important that the intervention was aligned with her personal beliefs and values and that she felt comfortable performing the tasks she was being asked to do. The questions included: (a) Do you feel that you have a good understanding of the intervention and in what I am asking you to do? (b) Do you believe you need any additional

training in order to start implementing the intervention today? and (c) Are we asking you to do anything you are uncomfortable with?

Intervention

During intervention data collection, Lucy delivered the FCT intervention to Jude. Lucy was trained to provide at least five mand opportunities to Jude during each session; however, on some days, she delivered fewer than five opportunities. During interventions data collection, Lucy delivered between two and six mand opportunities to Jude. Lucy was trained to use the system of least prompts to deliver the intervention to Jude. As there were multiple appropriate FCRs for each mand opportunity, the first prompt in the hierarchy was an indirect vocal prompt (e.g., “How could you ask if you need help?”) and the controlling prompt was a direct vocal model prompt (e.g., “If you need help, trying saying, ‘Lucy, I need help looking something up’”), with a 5 s delay interval after each prompted and unprompted opportunity.

Follow-up Coaching. I, as the primary researcher, tracked Lucy’s implementation fidelity for her goal of 90% accuracy. The initial decision rule was that if her fidelity dropped below 90%, I would conduct a follow-up coaching session with Lucy. Lucy’s fidelity of implementation was relatively low throughout the entire intervention; however, due to schedule conflicts and other school-related responsibilities, Lucy was only able to attend three follow-up coaching sessions. During follow-up coaching sessions, I provided feedback on procedural elements implemented correctly and incorrectly, shared video examples of correct and incorrect implementation, discussed strategies for implementing procedures with fidelity using the video clips from art class, and facilitated several role-playing examples during which I played the role of Jude. She practiced until she achieved 100% fidelity.

Interobserver Agreement

I trained two secondary observers (i.e., first year doctoral student, first year assistant professor) to collect IOA data on all dependent variables (i.e., student participant FCRs, challenging behavior, communication measures) and peer mentor participant implementation fidelity. IOA data were collected using the same measurement system at the primary data collector and were coded independently (Cooper et al., 2020). IOA was measured for a minimum of 30% of pre-baseline (when applicable), baseline, and intervention sessions.

Student Participant FCRs and Peer Mentor Participant Implementation Fidelity

IOA for Jude's FCRs and Lucy's implementation fidelity was collected using trial-by-trial IOA for baseline and intervention sessions (Cooper et al., 2020). The total number of trials reflecting agreement was divided by the total number of trials, and was then multiplied by 100 to convert into a percentage. For any instance where there was not 100% agreement, the primary data collector and IOA data collector met to review the video and have consensus discussions until we reached 100% agreement. Student participant prompted and independent FCRs and the peer mentor's implementation fidelity were graphed as percentages. Average IOA for student FCRs was 100% during baseline and 75% (range = 50–100%) during intervention. Average IOA for peer mentor fidelity was 100% during baseline and 78.6% (range = 71.4–87.5%) during intervention.

Student Participant Challenging Behavior

IOA for Jude's challenging behavior was completed using interval-by-interval IOA (Cooper et al., 2020) across pre-baseline, baseline, and intervention sessions. The total number of intervals where both data collectors agreed was divided by the total number of intervals across each session (i.e., number of intervals agreed + number of intervals disagreed). This number was then multiplied by 100 to convert the figure to a percentage of 10 s intervals. Challenging

behavior was graphed as a percentage of 10 s intervals. If the coders had less than 100% agreement, we met to have consensus discussions until we reached 100% agreement. Average IOA for student challenging behavior was 94.6% (range = 89.2–100%) during pre-baseline, 94.3% (range = 89.7–99%) during baseline, and 98.9% (range = 97.8–100%) during intervention.

Communication Measures

IOA for Jude's communication measures, including unprompted initiations, unprompted responses, mands, and use of complete sentences, was completed using total count IOA (Cooper et al., 2020). The smaller count of each communication measure (e.g., mand) was divided by the larger count of each measure and then multiplied by 100 to convert into a percentage. Jude's communication measures were graphed as rate per minute. Average IOA for unprompted initiations was 92.9% (range = 85.7–100%) during pre-baseline, 77.8% (range = 55.6–100%) during baseline, and 94.7% (range = 93.8–95.7%) during intervention. For unprompted responses, average IOA was 100% during pre-baseline, 91% (range = 85.7–96.2%) during baseline, and 89.5% (range = 86.7–92.3%) during intervention. For student participant's mands, IOA was 100% across pre-baseline, baseline, and intervention conditions. Finally, IOA was on average 92.9% (range = 85.7–100%) during pre-baseline, 88.7% (range = 85.7–91.7%) during baseline, and 80.9% (range = 71.4–90.3%) during intervention for the student participant's use of a complete sentence.

Procedural Fidelity of Training, Coaching, and Planning Procedures

A secondary observer (i.e., first year doctoral student) collected procedural fidelity data on all training sessions, follow-up coaching sessions, and on the planning meeting. The secondary observer used a researcher-developed checklist for the baseline training session (see

Appendix JJ), for the intervention training session (Appendix KK), and follow-up coaching sessions (see Appendix KK). Procedural fidelity data were also collected for the planning meeting with the educator team member participants (see Appendix LL) to determine whether I completed all required steps in training, follow-up coaching, and planning procedures.

Procedural fidelity IOA was calculated on a trial-by-trial basis by dividing the number of procedural steps completed correctly by the total number of possible steps, and then multiplying by 100. IOA for procedural fidelity for the baseline and intervention training sessions, the follow-up coaching sessions, and planning meeting was 100%.

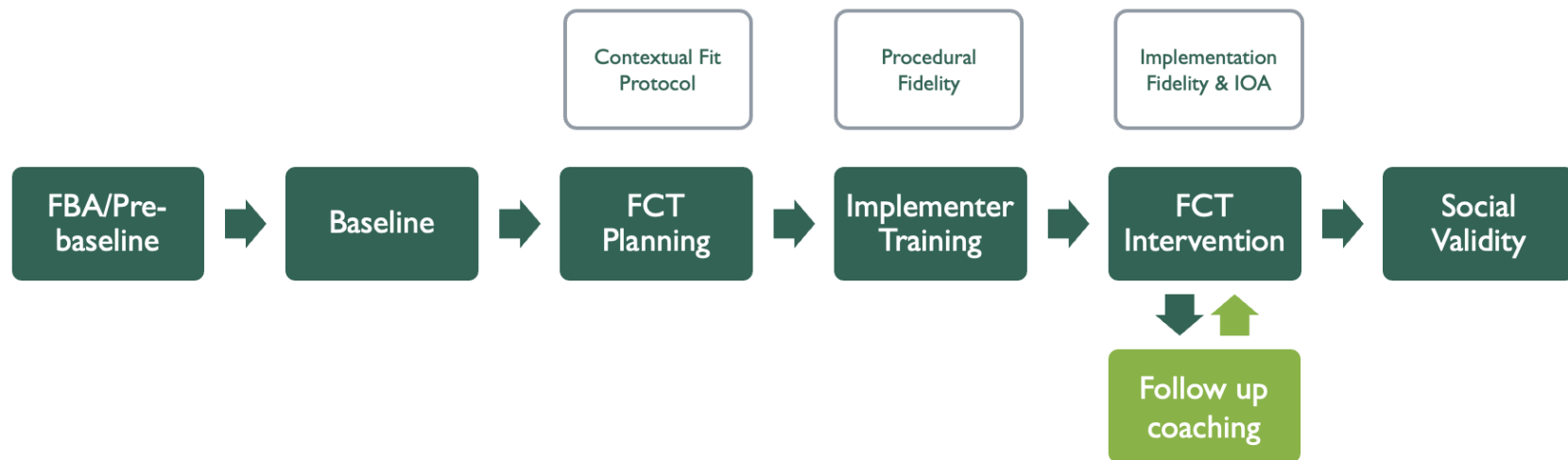
Table 2*Demographic Information of Educator Team Member Participants*

Educator Name	Age	Role	Years in Role	Highest Degree Earned	Licensure	Disability Categories Served	Ages Taught
Ms. Harrison	46	Art Teacher	19	Master's degree	Art education K–12; high school psychology	ASD; DD; ED; ID; OI; S/L; SLD	Elementary; middle school; high school; special school for multiple age groups
Ms. Lennon	34	Special Education Teacher	10	Master's degree	General education K–5; special education K–12; ID endorsement	ASD; DD; ED; HI; ID; MD; OHI; S/L; SLD; TBI	Elementary; high school; special school for multiple age groups
Mr. McCartney	37	Special Education Teacher	11	Master's degree	General education K–5; special education K–12; ID endorsement	ASD; DD; ED; HI; ID; MD; OHI; S/L; SLD; TBI; VI	Elementary; middle school; high school
Ms. Starkey	58	Classroom Paraprofessional	29	Attended some college; no degree	N/A	ASD; ED; ID; OHI	High school

Note. K = kindergarten; ASD = autism spectrum disorder; DD = developmental delay; ED = emotional disturbance; ID = intellectual disability; OI = orthopedic impairment; S/L = speech/language impairment; SLD = specific learning disability; HI = hearing impairment; MD = multiple disabilities; OHI = other health impairment; TBI = traumatic brain injury; VI = visual impairment.

Figure 2

Overview of Method Procedures



CHAPTER 4: RESULTS

Results for Research Question 1: What are the effects of an FCT intervention delivered in an inclusive school setting on the FCRs of a high school student with IDD?

The primary dependent variable in this study was Jude's FCRs. To measure FCRs, I collected data on the total number of mand opportunities (see Appendix T) presented by Lucy, the peer mentor, during the art class period. I also coded whether Jude correctly responded independently, correctly responded with prompting (i.e., indirect vocal prompt, direct vocal prompt), responded incorrectly, or did not respond during each mand opportunity. Figure 3 shows Jude's behaviors across all study conditions. The closed circles represent independent FCRs, the open circles represent prompted FCRs, and the triangles represent Jude's challenging behavior. Additionally, Lucy's implementation fidelity is graphed as stars, and the number of mand opportunities she delivered during each session is depicted by the gray shaded bars.

Across the four baseline data sessions, Lucy delivered an average of 7 (range = 5–11) mand opportunities. During baseline, Jude's total independent and prompted FCRs were at 0, meaning he did not respond using an appropriate FCR (e.g., "Will you sit next to me?") to access attention upon delivery of Lucy's mand opportunities (e.g., "Let me know if you want something.") This is not surprising, as Lucy had not begun teaching him appropriate FCRs. Further, as Lucy had not begun prompting Jude at this time, data were not collected on prompted (i.e., indirect, direct) FCRs.

Due to the end of the school year, only five intervention data points were collected for Jude's FCRs. During intervention, Lucy delivered an average of 4.8 (range = 2–6) mand opportunities per session. Of these opportunities, Jude correctly responded using an appropriate

FCR independently one time during intervention session 4, making the percentage of mand opportunities to which Jude responded using an independent FCR 4% during this session. For prompted FCRs, Jude correctly responded to Lucy's delivery of a mand opportunity 25% (range = 0–50%) of the time on average. Given the general stability of the data with no trend, no demonstration of an effect was observed between the FCT intervention and Jude's independent FCRs. Although Jude's prompted FCRs are higher for some sessions, there is greater variability, a large degree of overlap, and a descending trend for the first four sessions. Regardless, no demonstration of effect could be evaluated, as there were no prompted FCRs delivered during the baseline condition against which to compare intervention data points.

Results for Research Question 2: What are the effects of an FCT intervention delivered in an inclusive school setting on the challenging behavior of a high school student with IDD?

For Jude's challenging behavior, there were three conditions in which data were collected (i.e., pre-baseline, baseline, intervention). During the pre-baseline condition, FBA observations were conducted. This condition was considered the business-as-usual condition as neither the student nor peer mentor had been introduced to the intervention. Across the five pre-baseline data collection sessions, Jude exhibited very low levels of challenging behavior, with an average of 2% (range = 0–3.5%) across 10 s intervals. Visual analysis of the pre-baseline data indicated low levels of challenging behavior, no trend, and general stability across data points. It is important to note that the slight increase in challenging behavior (i.e., increase of 3.4%) for pre-baseline session 5 could have been attributed to the fact that Jude left the art classroom after being in the art class for less than 5 min, positively skewing the percentage of intervals in which he exhibited challenging behavior.

During the baseline condition, Lucy began delivery of mand opportunities but did not implement prompting procedures. Across the four baseline sessions, Jude's percentage of challenging behavior was an average of 3.4% (range = 0–10.3%) across 10 s intervals. Visual analysis indicated stability a very low level. There was a slight decrease in challenging behavior from the first and second baseline sessions (i.e., from 10.3% to 0%) across 10 s intervals. During the intervention condition, Lucy began prompting Jude to use appropriate FCRs to access attention following mand opportunities. During the five intervention sessions, Jude exhibited challenging behavior an average of 6.8% (range = 0.8–13.3%) across 10 s intervals. Although Jude's levels of challenging behavior were low throughout the course of the study, ranging from 0–13.3% across 10 s intervals, there was a slight increase in challenging behavior on average between the pre-baseline and baseline conditions (i.e., 2% to 3.4%), and intervention condition (i.e., 3.4% to 6.8%). In general, however, the average levels of challenging behavior were below 7% of 10 s intervals in each condition. There was no immediacy of effect observed, and no notable change in the levels of challenging behavior across conditions. As such, no demonstration of effect was observed between the FCT intervention and the levels of student challenging behavior.

Results for Research Question 3: What are the effects of an FCT intervention delivered in an inclusive school setting on the various communication behaviors of a high school student with IDD?

I coded several communication behaviors of Jude's across pre-baseline, baseline, and intervention conditions (see Figure 4). These included unprompted initiations (e.g., "Hey look at this!") and unprompted responses (e.g., "No, I'm good."), and subcategories of whether the interaction was a mand and/or a complete sentence. As previously noted, an unprompted

initiation was defined as Jude vocally beginning a conversation with someone without prompting (e.g., Lucy, other peers, Ms. Starkey). An unprompted response was defined as an unprompted vocal response to an interaction from someone. A mand was defined as Jude initiating or responding vocally to an interaction with another person for the purpose of requesting something. Finally, a complete sentence was defined as a word phrase that contained a subject and a finite verb.

During the pre-baseline condition, Jude used an average of 0.4 (range = 0–1.04) unprompted initiations per min and 0.62 (range = 0–0.93) unprompted responses per min. Jude manded via an initiation or response at an average rate of 0.06 (range = 0–0.14) per min and used a complete sentence at an average rate of 0.28 (range = 0–0.59) per min. During the baseline condition, Jude’s unprompted initiations increased to an average of 1.89 (range = 0.41–3.63) per min and his unprompted responses increased to an average of 2.47 (range = 2.14–3) per min. The average rate Jude manded increased to 0.46 (range = 0.19–0.73) per min and his use of complete sentences increased to an average of 0.9 (range = 0.65–1.26) per min. Finally, during intervention, Jude’s unprompted initiations decreased to an average of 1.33 (range = 0.65–2.2) per min and an average of 2.19 (range = 0.57–3.4) unprompted responses per min. Of these, Jude manded at an average rate of 0.42 (range = 0.04–0.66) per min. He spoke using a complete sentence at an average rate of 0.90 (range = 0.22–2) per min.

Results for Research Question 4: To what extent is the intervention socially valid from the perspectives of the student participant, peer mentor participant, and educator team member participants and based on student observations?

I conducted various social validity assessments across all participants, including Jude, Lucy, Ms. Lennon (i.e., special education teacher), Mr. McCartney (i.e., special education

teacher), Ms. Starkey (i.e., paraprofessional), and Ms. Harrison (i.e., general education art teacher). These included surveys for educator team member participants and Lucy, interviews for all participants, and observations for Jude. The content of each participant's survey reflected their specific role in the intervention.

Jude

Interview. Ms. Lennon and Mr. McCartney conducted Jude's social validity interview (see Appendix Z) in an office adjacent to their classroom following the last intervention session. The interview included three yes/no questions about the intervention: (a) Did you like when Lucy helped you talk about what you want during art class?, (b) Do you think Lucy helping you talk about what you want helps you say what you want to say?, and (c) Do you think Lucy helping you talk about what you want helped you have good behavior in art class? Following each question, the teachers presented Jude with follow-up probes to gather more detailed information about his experience (e.g., "Tell me more about that."). When asked, "Did you like when Lucy helped you talk about what you want during art class?", Jude stated he liked when Lucy helped him talk about his wants and needs during art class and noted that she does this by asking him questions about his feelings. He provided examples of Lucy providing opportunities for him to ask to color or to look things up on her phone. He indicated that his friend Lucy helped him request things appropriately. He really liked going to art with Lucy and thought of her as a good friend. When asked, "Do you think Lucy helping you talk about what you want helps you say what you want?", Jude agreed that Lucy had helped him talk about what he wants during art class. Finally, when asked, "Do you think Lucy helping you talk about what you want helps you have good behavior in art class?", Jude stated that he did believe that Lucy had been helping him in art class with asking for things and making better decisions. He indicated that

Lucy felt uncomfortable when he talked about her being his girlfriend or hugging her without asking first. He stated that he can ask for a “side hug” instead. He recognized that if he made Lucy feel uncomfortable, she would not want to hang out with him anymore and “he would be sad.” The teachers talked with Jude about an incident that had occurred in their classroom the previous day (i.e., Jude picked his nose and it upset another student) and asked Jude how he could have handled it differently by asking for something. Jude said he could have “asked for a tissue” instead. Both Ms. Lennon and Mr. McCartney praised Jude during the interview for doing a great job expressing himself. They considered the responses Jude gave to be truthful and valid.

HRE Observations. The degree to which Jude was HRE during the art class was measured by research team members who had not previously viewed data collection videos from this study (see Appendix Y). Videos were 3 min in length and randomized so that coders were naive to whether the clip reflected pre-baseline, baseline, or intervention. The 3-min clips were randomly selected to represent different times during the class period. A full report of the coders’ individual ratings by session is presented in Table 5 and graphically displayed in Figure 5. The coders responded to three questions using a 4-point Likert-type scale (i.e., 1 = *completely not*, 2 = *moderately not*, 3 = *moderately*, 4 = *completely*). For the first question (i.e., To what extent was Jude happy during the observed interval?), the average score for pre-baseline was 3.6 (range = 3–4), 3.63 (range = 3–4) for baseline, and 3.5 (range = 2–4) for intervention. For the second question (i.e., To what extent was Jude relaxed during the observed interval?), the average score for pre-baseline was 3.7 (range = 3–4), 3.63 (range = 3–4) for baseline, and 3.5 (range = 2–4) for intervention. For the third question (i.e., To what extent was Jude engaged during the observed

interval?), the average score for pre-baseline was 3.9 (range = 3–4), 3.25 (range = 3–4) for baseline, and 3.3 (range = 2–4) for intervention.

The scores indicated that both coders agreed that Jude was either moderately or completely happy and moderately or completely relaxed across all pre-baseline, baseline, and intervention sessions, with the exception of the first intervention session, when coder one scored the happy and relaxed measures as moderately unhappy and moderately not relaxed. The coders' scores indicate that they observed Jude to be either moderately or completely relaxed across all pre-baseline, baseline, and intervention sessions, with the exception of intervention session two when coders scored his level of engagement as moderately not engaged. It is important to note that, when there were disagreements between the coders, their ratings were no more than one number off (e.g., coder one scored 4, coder two scored 3). Although there was minimal variability in HRE across conditions, Jude appeared HRE during intervention, which further supports the social validity of the intervention.

Lucy

Survey. Lucy's 15-item social validity survey was disseminated via Google Forms on the last day of the intervention (see Appendix AA). In general, Lucy reported that she found the intervention to be relatively socially valid (see Table 3). She reported that she had a very clear understanding of the intervention, was very willing to serve as the implementer and attend all training and follow-up coaching sessions, and found it easy to implement. She indicated that there were no disadvantages at all to implementing the intervention and learning and implementing the intervention fit into her daily routine very well; however, she also indicated that a moderate amount of time was needed on her part to implement the intervention, it was somewhat disruptive to her class routine, and a moderate degree of undesirable side effects

occurred as a result of the intervention. With regard to student outcomes, Lucy indicated that she believed Jude experienced a small degree of discomfort as a result of the intervention. She also reported that she believed the intervention was very acceptable for Jude, effective, not at all disruptive to Jude's class routine, and was likely to make positive changes in Jude's ability to effectively communicate his wants and needs.

Interview. Lucy's social validity interview was conducted by a research team member and lasted about 10 min. The interview consisted of nine questions (see Appendix AA). When the interviewer asked Lucy the first question related to aspects of the training and coaching meetings she found effective or helpful, Lucy stated that, although the role play activities in the training and coaching sessions were helpful, she thought that the most helpful part was receiving scripts for mand opportunities and supports for the prompting system. She noted, "I really liked when she would give me the papers to tell me how to say it." She indicated that the only component of the training and coaching process she found ineffective was the researcher providing her opportunities to ask questions at the end of the training, as it was redundant. The next two questions related to the FCT intervention and what Lucy found to be most and least effective. Lucy mentioned that providing Jude the direct verbal prompt (e.g., "If you want colored pencils, say, 'Lucy, will you get me colored pencils?'"") was the most effective part of the intervention. She suggested the indirect prompt (e.g., "How could you ask for colored pencils?") was an area of the implementation with which she struggled and, if she had provided this prompt more frequently or with greater fidelity, Jude would have been able to respond appropriately following the indirect prompt. When asked about what was least effective, she acknowledged that she was contradicting herself, but stated that the indirect prompt was the least effective part of the intervention. She noted that sometimes, when she did correctly provide Jude

with an indirect prompt, he became frustrated. She stated, “He would kind of look at me like ‘what are you talking about?’” She thought that he ignored her use of the indirect prompt because he did not understand what she wanted from him. When asked about the most challenging parts of implementing the intervention, Lucy reiterated the use of the indirect prompt and added that delivering correct mand opportunities was very difficult for her. Because she had a history of giving Jude yes/no or choice-based questions, providing open-ended opportunities was very difficult. She indicated that at times, it was difficult to balance her responsibilities as a student in art class with her role as a peer mentor implementing an intervention with Jude. The art teacher had excused a few of her final assignments so she could focus on the intervention with Jude.

During the next questions, Lucy indicated she would consider continuing the intervention in the future with Jude or another student. She felt confident in her ability to implement with another peer buddy so long as she was able to refer to the script and steps of the intervention. It helped her a lot that she knew Jude so well, and acknowledged there might be a learning curve with a different student. She believed she had enough skills and training to train another peer mentor to implement this intervention with their peer buddy in the future. With regard to the effectiveness of the intervention, Lucy said, “Especially toward the end, I feel like he started explaining things more to me and like telling me what he wanted more.” Finally, Lucy believed the communication intervention promoted inclusion for Jude in the art classroom as Jude was included in other peers’ conversations more.

Educator Team Member Participants

Survey. Social validity survey results for Ms. Lennon, Mr. McCartney, Ms. Harrison, and Ms. Starkey are presented in Table 4. Ms. Lennon and Mr. McCartney’s survey comprised

12 questions, whereas Ms. Harrison and Ms. Starkey's survey comprised 15 questions (i.e., the same 12 questions as the special education teachers' survey, plus 3 additional related to student outcomes). All educator team member participants reported that they had a very clear understanding of the intervention ($M = 5$), liked the procedures used ($M = 4.75$), and found it to be reasonable ($M = 4.75$) and very acceptable ($M = 5$) in addressing Jude's behavioral concerns. They indicated that they were very willing to plan and collaborate ($M = 5$) including changing their daily routine ($M = 5$), that a small amount of time was needed each day to plan and support the intervention ($M = 2$), and they found planning and supporting the intervention to be not at all disruptive ($M = 1$). The educator team member participants reported some undesirable side effects that occurred as a result of the intervention ($M = 2$). Ms. Lennon and Mr. McCartney both indicated in their short-answer responses that they had very much enjoyed collaborating with the research team.

Given that Ms. Lennon and Mr. McCartney were not present in the art classroom while the intervention was taking place, they were not asked to answer the questions related to student discomfort or effectiveness of the intervention. Ms. Starkey and Ms. Harrison reported that the intervention was moderately effective ($M = 3.5$) and moderately likely to make permanent improvements on Jude's behaviors ($M = 3$). They reported that Jude experienced a moderate degree of discomfort as a result of the intervention ($M = 3$). Ms. Harrison's open-ended response following the survey indicated that with regard to negative side effects and student discomfort, she noticed that Jude "maybe had thoughts of 'why is [Lucy] talking to me this way?' and knowing [Jude], this seemed to trigger some resistance." Both Ms. Starkey and Ms. Harrison indicated in their short-answer responses that they had wished for more time in the study.

Ms. Lennon and Mr. McCartney's Interview. Ms. Lennon and Mr. McCartney's interview lasted approximately 17 min and comprised eight questions. The first question related to the most effective components of the planning process. Mr. McCartney agreed with Ms. Lennon that having Lucy implement the intervention with Jude "was the most effective part of the whole process." They also viewed working collaboratively as a team as an effective component. Both teachers acknowledged the importance of the planning meeting, indicating that the process went very well, the slides were helpful and effective, and the meetings generally were useful, easy to understand, interactive, and collaborative. Ms. Lennon and Mr. McCartney found the contextual fit component to be helpful in areas such as ensuring the intervention did not interrupt their daily routine and that the video recording process was easy for Lucy and the teachers, and non-invasive for Jude. When asked about factors that made the planning process effective, the teachers acknowledged Lucy's school schedule; because Lucy was in the peer mentor class as part of her daily schedule, she was able to attend training and coaching sessions during this time. Ms. Lennon stated, "It didn't take away from her interactions and time with [Jude] in art." The teachers appreciated the asynchronous planning components. They noted that they found collaborating and planning very effective through the Google Docs (e.g., developing operational definition of Jude's challenging behavior). They liked that each member of the team could add their "own piece" when it was convenient for them without having to attend multiple meetings. Finally, Ms. Lennon reiterated, "The peer support is absolutely the most effective factor of the intervention." Given that educators hypothesized Jude's challenging behavior to be maintained by attention, Lucy's delivery of the intervention, and especially modeling appropriate communication for Jude, was a factor that contributed to the effectiveness and meaningfulness of

the intervention. They noted the study was planned out very well, as everything went very smoothly from start to finish.

When asked to reflect on components of the planning process that could be improved, Ms. Lennon and Mr. McCartney said they could not think of anything specific during the planning process, but wished they would have had more time in the study. Days off school (e.g., spring break), student and peer mentor absences, Jude's variable attendance during art class, and delays in paperwork served as the primary barriers to the intervention. When asked about changes in Jude's behavior, Ms. Lennon indicated that she thought Jude had made improvements in their classroom with expressing his wants and needs. This was an area in which the teachers had seen a lot of room for growth in Jude. Ms. Lennon thought the intervention had helped him express himself more to peers and teachers, especially when they start to see precursor challenging behavior. Mr. McCartney had noticed Jude doing a better job of expressing his feelings and his wants and needs, versus "shutting down" and ignoring them. Next, Ms. Lennon and Mr. McCartney were asked if they believed the intervention improved the student's inclusion in the classroom. Ms. Lennon believed it had helped him be more included in the art classroom but that he still has a long way to go. Both teachers wanted to generalize this intervention to a different inclusive school setting the following school year. They indicated that, because Jude can become overwhelmed in large groups of people, especially when there is little structure, he might be more successfully included in a different type of classroom than art.

Finally, when asked if they would consider implementing this intervention with a student in the future, or whether they would consider training a peer mentor to implement this intervention with a student in your classroom in the future, Ms. Lennon and Mr. McCartney said they would implement the intervention and would train other peer mentors to implement this

intervention in the future. Ms. Lennon and Mr. McCartney had already had conversations about how they could adapt the intervention to implement in their classroom, which of their other students might benefit from this type of intervention, and how they could implement it with them in the classroom the following school year. As the leaders of the peer mentoring program at their school, Ms. Lennon and Mr. McCartney wanted to support other peer mentors to implement this intervention with their peer buddies. At the end of the interview, Mr. McCartney noted that participating in the study “was all in all a great experience.” During the recruitment process, they were worried about the distance (i.e., study being virtual implemented), but that it ended up being flawless. They acknowledged that it was a very challenging time to be a teacher, and they were very grateful their participation in this study did not add anything else to their workload. They were happy to participate, they planned to continue a form of the intervention in the future, and they would love to collaborate in the future on other research projects.

Ms. Starkey’s Interview. Ms. Starkey’s interview lasted approximately 10 min and consisted of 12 questions related to the intervention. When she was asked which components of the planning meeting she found most helpful, she said determining the behavioral goal, having the intervention explained to her, going over acceptable responses for her, and narrowing down how to approach Jude’s behavior were the most effective. Some factors that made this process possible were the team collaboration component, including being able to bounce ideas off of one another. When Ms. Starkey was asked about what parts of the planning process could be improved, she indicated that she wished the intervention had spanned across Jude’s entire school day so that they could have worked with him in their homeroom and that the study could have begun sooner. With regard to implementing the intervention, she noted that Lucy struggled with the mand opportunities and allowing Jude the 5 s interval for processing time, and that Lucy

would have benefitted from more time and support to effectively implement the intervention. Ms. Starkey acknowledged that her role was to serve as a bystander and not interfere but noted her willingness to help Lucy remember what to say or provide her ideas for opportunities.

When asked to reflect on the most effective parts of the intervention, she indicated that Jude and Lucy's rapport was a "huge" part of the success of the intervention. When she was asked which parts of the intervention were not effective, Ms. Starkey said that the indirect prompt was not as effective as it might have been. She noted that, in some cases, delivering the indirect prompt caused him to become frustrated and not want to respond. Reported barriers to Jude receiving the intervention included interruptions or misunderstanding from other peers and Jude's refusal behaviors to attend art class or stay the entire period. When asked whether she noted any changes in Jude's behaviors following the study, she said that she did not notice any major changes in Jude's behavior, but she believed he was starting to understand what was expected of him with regard to the intervention and that it had potential to help Jude increase his FCRs.

When she was asked if she thought she would continue to support intervention implementation with Jude or other students in the future, Ms. Starkey said, "Yes. For sure. Because I think that with time it really would make a difference." She planned to continue supporting Lucy or other peer mentors in the intervention when they come back to school in the fall. She said that she would consider training a peer mentor to implement the intervention. She noted that, as they have so many students with a variety of needs, their peer mentors would benefit greatly from this type of training. Finally, Ms. Starkey indicated that the intervention had the potential to increase Jude's inclusion in the art classroom, but Jude and Lucy needed more

time and practice. At the end of the study, she stated that she really enjoyed being part of the study, and that they would continue the intervention in the fall with Jude and his classmates.

Ms. Harrison's Interview. Ms. Harrison's interview lasted approximately 10 min and consisted of 12 questions. Ms. Harrison found several components of the intervention planning meeting helpful, including Jude's baseline data results, FBA results, explanation of the intervention, and going over the acceptable FCRs. She noted that the meeting seemed very well planned out and was effectively delivered. Factors that Ms. Harrison believed made the planning process effective included the effective collaboration of the team members. She stated, "The diversity of the team was good...it was a really well-rounded group and we all have different perspectives [regarding Jude]." She indicated that each team member saw a different facet of Jude, and it was helpful to plan and collaborate together to pool their knowledge and experiences.

When she was asked which components of the planning meeting could be improved, Ms. Harrison said FCRs were difficult to identify. She indicated it would have been helpful if the other educator team member participants could have provided feedback about Lucy's mand opportunities and Jude's FCRs during the intervention, not just during the planning meeting. Ms. Harrison reported that barriers to planning included the timeline, Jude's attendance, spring break, and other days off. Echoing the other educator team member participants' perceptions, Ms. Harrison expressed that delivery of the intervention by Jude's peer mentor was an effective aspect of the intervention. She explained that Jude's rapport with Lucy was an important factor; instead of Lucy telling Jude what to do, the intervention gave Jude the opportunity to ask for something appropriately.

When asked which components of the communication intervention were not effective, Ms. Harrison said some of the FCRs were unnatural sounding for Jude. She acknowledged she agreed to them during the planning meeting, and that, although they “sounded good on paper,” sometimes Jude was resistant to using the FCRs because they were not natural to him. She noted that Lucy struggled with the delay interval, as this was a big change for her. However, she explained that, despite these barriers, the team members were able to collaborate and “make it work.” Ms. Harrison noted barriers to Jude receiving the intervention including the timeline for both Lucy and Jude, Jude’s receptiveness to the intervention, and that it was implemented during only one class period.

When Ms. Harrison was asked if she had noticed any changes in Jude’s behavior, she stated that she had not seen much change due to the short timeline; however, she offered the following anecdote about a student toward whom Jude had previously exhibited inappropriate behavior: “We had a student come in from a different class who is not normally in our class, and [Jude] knows her, and walked up to her and asked for a side hug, which was like wow!” With regard to supporting implementation of the intervention in the future, Ms. Harrison planned to continue in the future. She indicated that Jude will attend her class during the upcoming school year and looked forward to developing more positive responses and appropriate behavior for him. She stated she would be willing to serve as an interventionist for Jude or for other students in her classroom. When asked if she would be willing to train other peer mentors to implement the intervention, Ms. Harrison said she would be willing but felt that she was not qualified. If she and Ms. Lennon could work as a team to train peer mentors, then she would feel comfortable.

Finally, when Ms. Harrison was asked if the intervention improved, or had the potential to improve, Jude’s inclusion in her classroom, she stated she believed the intervention did help

improve Jude's inclusion. She indicated that the intervention gave him a positive way to seek attention, which allowed him to receive attention from Lucy, adults, and other peers, without disruptive behaviors. She saw some positive changes and was excited to follow through in the fall. Ms. Harrison believed the study to be well-organized and highly beneficial to the educator team member participants and Jude. She stated, "It was a huge eye-opener for us to learn things we could do to help him."

Table 3*Results of Peer Mentor Social Validity Questionnaire*

Item	Peer Mentor Response
How clear is your understanding of the communication intervention after having used it with the focus student in an inclusive school setting? ^a	5
How acceptable did you find the communication intervention to be for the focus student? ^a	5
How willing were you to implement the communication intervention? ^a	5
How willing were you to attend training and coaching meetings with the researcher? ^a	5
To what extent were there disadvantages in implementing the communication intervention? ^b	1
How likely is the communication intervention to make permanent improvements in your peer buddy's ability to communicate appropriately? ^a	4
How much time each day was needed for you to carry out the communication intervention? ^c	3
How effective was the communication intervention? ^a	4
How disruptive was it to the student's normal class routine for you to implement the communication intervention? ^a	1
How disruptive was it to your regular class routine to implement the communication intervention? ^a	2
How easy did you find the communication intervention to implement with your peer buddy? ^a	4
To what extent did undesirable side effects occur as a result of the communication intervention? ^b	3

How much discomfort did the focus student experience during the course of the communication intervention? ^c	2
How willing were you to change your daily routine to implement the communication intervention? ^a	5
How well did learning and implementing the communication intervention fit into your routine? ^a	5

Note.

^a Response scale: 1 = *not at all*, 3 = *somewhat*, 5 = *very*

^b Response scale: 1 = *not at all*, 3 = *somewhat*, 5 = *many*

^c Response scale: 1 = *little*, 3 = *somewhat*, 5 = *much*

Table 4*Results of Educator Team Member Participants Social Validity Survey*

Item	Educator Team Member Response				
	Ms. Starkey	Ms. Harrison	Ms. Lennon	Mr. McCartney	<i>M</i>
How clear is your understanding of the communication intervention after planning for and helping develop it for the peer mentor to implement with the focus student in an inclusive school setting? ^a	5	5	5	5	5
How acceptable did you find the communication intervention to be regarding your concerns with the target student's behavior? ^a	5	5	5	5	5
How willing were you to collaborate and plan for the communication intervention? ^a	5	5	5	5	5
Given your student's behavioral and communication needs, how reasonable did you find the communication intervention? ^a	5	4	5	5	4.75
How likely is the communication intervention to make permanent improvements in your student's communication behavior? ^a	3	3			3
How effective was the communication intervention? ^a	4	3			3.5
How disruptive was it to plan and support the implementation of the communication intervention? ^a	1	1	1	1	1

How much did you like the procedures used in the communication intervention? ^a	5	4	5	5	4.75
How willing were you to change your daily routine to plan for and support the communication intervention? ^a	5	5	5	5	5
How well did planning for and supporting the implementation of the communication intervention fit into your routine? ^a	5	5	5	5	5
How costly was it to carry out the communication intervention? ^a	1	1			1
To what extent were there disadvantages in implementing the communication intervention? ^b	1	1	1	1	1
To what extent did undesirable side effects occur as a result of the communication intervention? ^b	3	3	1	1	2
How much time each day was needed for you to plan for and support the implementation of the communication intervention? ^b	2	2	2	2	2
How much discomfort did the focus student experience during the course of the communication intervention? ^c	3	3			3

Note. *M* = average; blank items indicate respondent was not required to answer.

^a Response scale = 1 (*not at all*), 3 (*somewhat*), 5 (*very*)

^b Response scale = 1 (*not at all*), 3 (*somewhat*), 5 (*many*)

^c Response scale = 1 (*little*), 3 (*somewhat*), 5 (*much*)

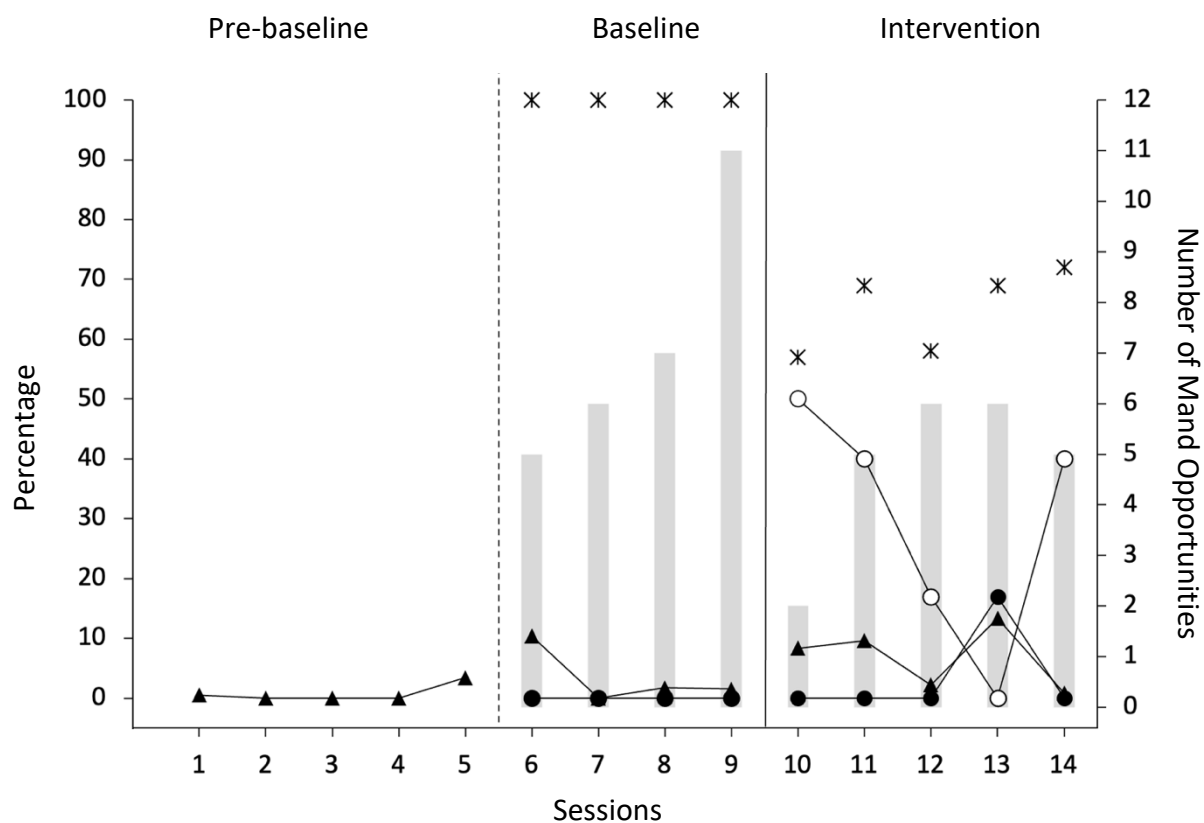
Table 5*Student HRE Scores*

Session	Coder 1			Coder 2		
	Happy	Relaxed	Engaged	Happy	Relaxed	Engaged
Pre-baseline						
Session 1	4	4	4	3	4	3
Session 2	4	4	4	4	4	4
Session 3	3	3	4	4	3	4
Session 4	4	4	4	3	4	3
Session 5	4	4	4	3	4	4
Baseline						
Session 1	4	4	3	4	4	4
Session 2	3	3	3	3	3	3
Session 3	4	4	3	4	4	4
Session 4	4	4	4	3	4	3
Intervention						
Session 1	2	2	3	3	2	3
Session 2	4	4	2	4	4	4
Session 3	4	4	4	3	4	3
Session 4	3	3	3	4	3	4
Session 5	4	4	4	4	4	4

Note. Response scale = 1 (*not at all*), 2 (*moderately not*), 3 (*moderately*), 4 (*completely*).

Figure 3

Student FCRs and Challenging Behavior and Peer Mentor Fidelity and Mand Opportunities



Note. Closed circles represent student independent FCRs. Open circles represent student prompted FCRs. Triangles represent student challenging behavior. Stars represent peer mentor fidelity. Shaded bars represent the number of peer mentor-delivered mand opportunities.

Figure 4

Student Communication Behaviors

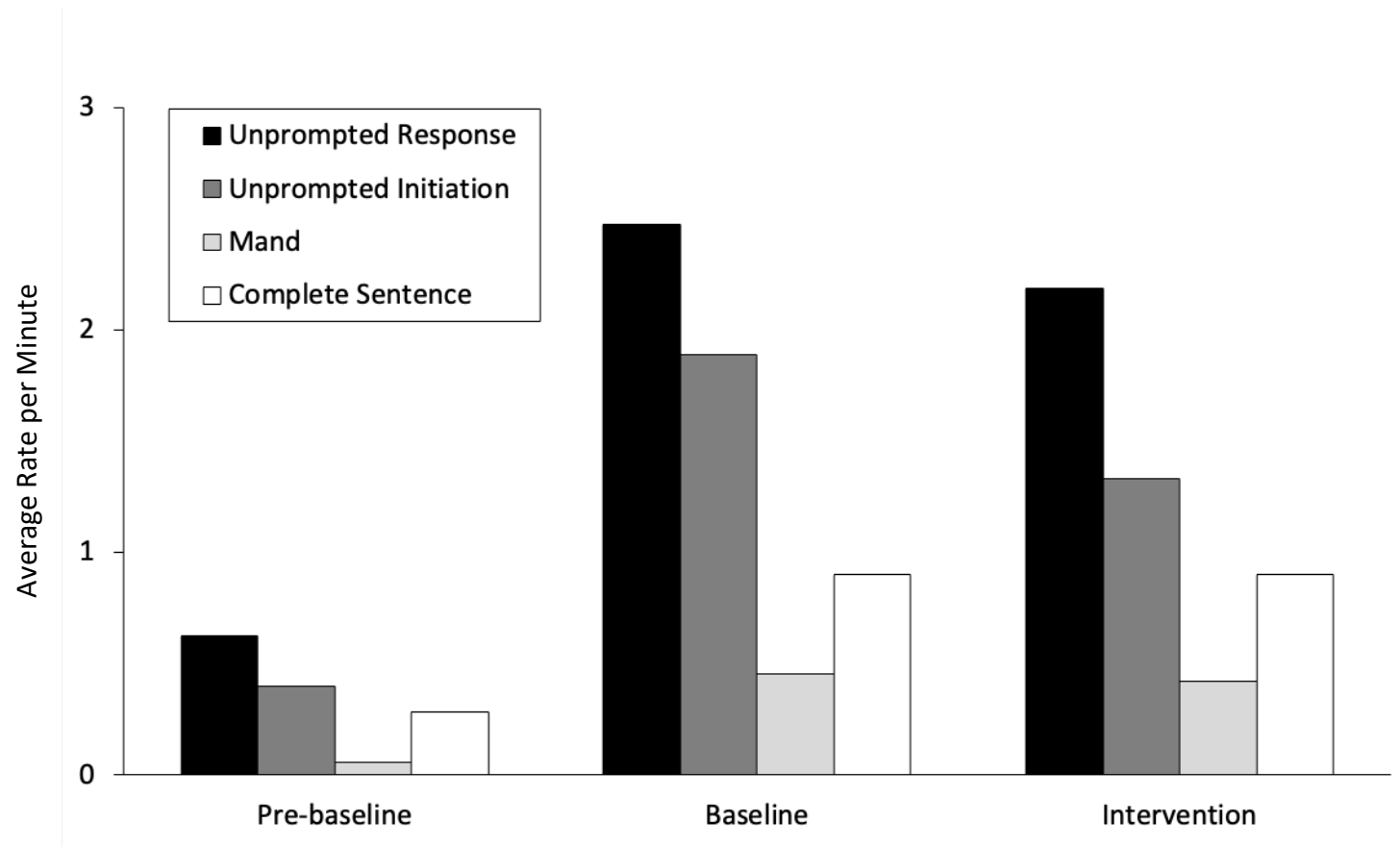
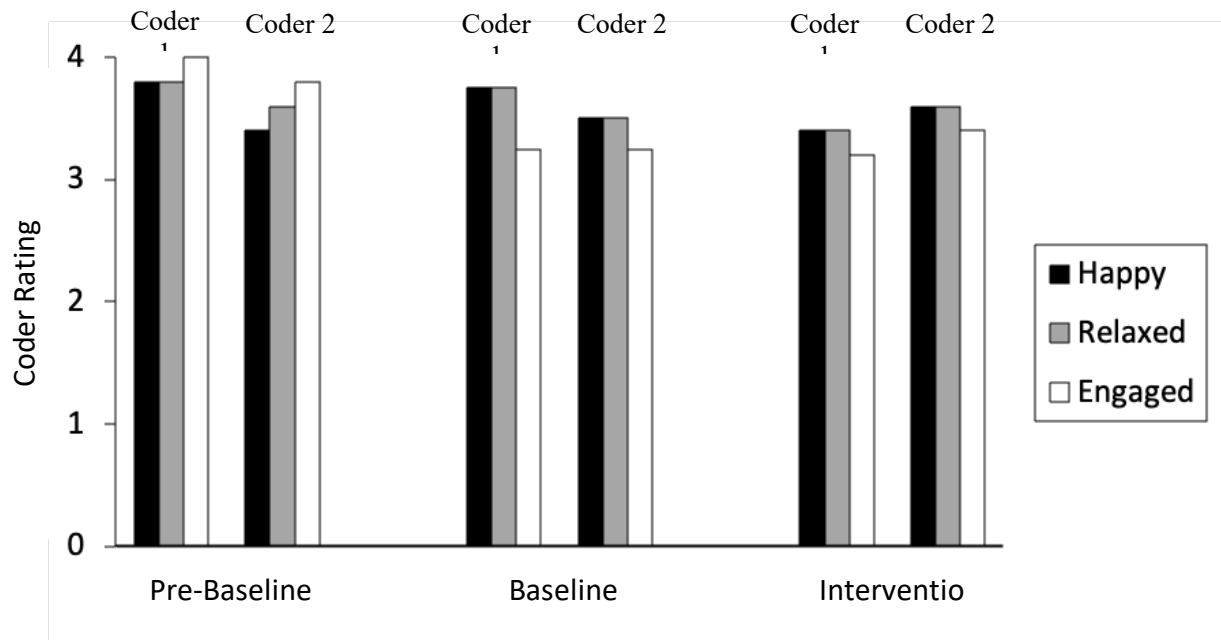


Figure 5*Student HRE Behaviors*

Note. Response scale = 1 (*not at all*), 2 (*moderately not*), 3 (*moderately*), 4 (*completely*).

CHAPTER 5: DISCUSSION

The purpose of this study was to examine the effects of a peer-delivered FCT intervention in an inclusive school setting to a high school student with IDD on student FCRs and challenging behavior. Given that challenging behavior acts as a barrier to accessing inclusive school settings for some students with IDD, it is critical that effective individualized behavior supports, such as FCT, are implemented in inclusive school settings to address this barrier. In order for behavioral supports to be effective, it is critical that they are contextually fit (Monzalve & Horner, 2021) and functionally relevant (Goh & Bambara, 2012; Ingram et al., 2005; Jeong & Copeland, 2020). As noted previously, the student participant did not exhibit the frequency of challenging behavior that the educator team member participants had indicated in the indirect FBA assessment, so the focus of the study shifted from a traditional FCT intervention where an FCR is taught in replacement of challenging behavior to an FCT intervention including proactively teaching multiple FCRs to prevent future challenging behavior. To measure the effects of the FCT intervention on student FCRs and challenging behavior, I used a non-experimental AB design (Birnbrauer et al., 1974; Ledford & Gast, 2018). I also examined the collateral effects of the FCT intervention on Jude's communication behaviors (i.e., unprompted initiations, unprompted responses, mands, whether these reflected complete sentences, to whom they were delivered). Finally, I examined various measures of social validity of the FCT intervention across all participants (i.e., student, peer mentor, educator team members) using observations, interviews, and surveys. Results indicated that the FCT intervention delivered by a peer mentor in an inclusive school setting to a high school student with IDD had no effect on the student FCRs or challenging behavior, as the data path for both remained low throughout the study. Results

indicated the intervention had positive collateral effects on Jude's various communication behaviors including unprompted initiations, unprompted responses, mands, and use of complete sentences. Levels across all measures during baseline and intervention conditions were higher than in the pre-baseline condition. Finally, results of the various social validity measures indicated that, across most measures, participants found the intervention to be socially valid.

Discussion for Research Question 1: What are the effects of an FCT intervention delivered in an inclusive school setting on the FCRs of a high school student with IDD?

Results of visual analysis indicated that there was no demonstration of effect on independent student FCRs as a result of the peer-implemented FCT intervention. During baseline, Jude's total independent FCRs were at 0%. Independent FCRs remained at 0% throughout intervention, with the exception of one occurrence during the fourth intervention session when he used one independent FCR across six mand opportunities delivered by Lucy. For the intervention condition, his average percentage of prompted FCRs was 4%. As previously stated, the percentage of Jude's prompted FCRs during the intervention condition cannot be compared to baseline, as prompted FCRs were not measured during this condition; however, Jude's percentage of prompted FCRs was 25% (range = 0–50%) for the intervention condition.

There is strong evidence and decades of research to support FCT as an effective intervention for increasing socially appropriate behavior and decreasing challenging behavior (Greer et al., 2016; Tiger et al., 2008) across disability categories including IDD (Hume et al., 2021; Gerow et al., 2018) in school settings (Buckley & Newchok, 2005; Hetzroni & Roth, 2003; O'Neill & Sweetland-Baker, 2001). Further, research indicates that with training natural implementers, such as teachers and paraprofessionals, can effectively implement FCT in school settings (Andzik et al., 2016). Additionally, there is emerging evidence that FCT implemented in

inclusive school settings can effectively increase the FCRs of students with IDD (e.g., Blair et al., 2006, 2007; Reeves et al., 2013, 2017; Umbreit & Blair, 1996; Walker & Snell, 2017) as demonstrated in a systematic literature review focused on FCT in inclusive school settings for students with IDD (Masud et al., 2022).

The results of the current study do not support these previous findings, as Jude's percentage of independent FCRs remained low throughout the entire intervention condition, and his prompted FCRs were low and moderately variable. Although the results of the current study do not support preliminary evidence that FCT implemented in inclusive school settings can effectively increase student FCRs, it is critical to consider various factors related to environmental variables and implementation fidelity that may explain these outcomes.

Motivating Operations

A first consideration related to Jude's low levels of independent and prompted FCRs is the strength of motivating operations (MOs) affecting Jude's FCRs. MOs are antecedent variables that have altering effects on behavior and value-altering effects on reinforcement (Cooper et al., 2020). For example, food is more reinforcing or desirable to someone when they are hungry, and a hungry person is more likely to seek out food than someone who is not. In Jude and Lucy's case, it may be possible Jude was satiated with attention from Lucy and responding to the delivery of a mand opportunity was not motivating to Jude. Because Lucy's role was to serve as Jude's peer mentor during their art class, she provided frequent social reinforcement to Jude through attention (e.g., anticipating his needs, acknowledging him each time he talked, asking him questions, helping him get materials). Lucy's delivery of attention may be due in part to the way in which she was formally prepared and trained to serve as a peer mentor through the peer mentoring program.

FCT commonly includes differential reinforcement of alternative behaviors, a procedure that includes reinforcing desired behavior and withholding reinforcement (i.e., extinction) for challenging behavior (Cooper et al., 2020). It is important to note that, in this study, Lucy was not trained to place Jude's challenging behavior on extinction. Lucy delivered attention to Jude regardless of challenging behavior, which was occurring prior to the study. I made the decision to exclude the extinction component from the intervention based on ethical, social validity, and safety concerns related to Lucy being a minor and peer mentor of Jude's.

The possibility that strong enough MOs were not present for Jude is further strengthened from the observational data collected on the number of unprompted responses Jude displayed. During pre-baseline, Jude independently responded to others at an average rate of 0.62 responses per min. An average of 77% of these were directed at Lucy. Similarly, during the baseline condition, Jude independently responded to others at an average rate of 2.47 responses per min. Of these, an average of 93.2% were directed at Lucy. Finally, during the intervention condition, Jude independently responded to others at an average rate of 2.19 per min, and an average of 88.3% of these were directed at Lucy. These data indicate that Lucy provided Jude with frequent social attention in the form of conversation, as a response from Jude was coded when he responded to another person. Given that his challenging behavior was hypothesized to be maintained by access to attention, it is possible that Jude's low percentage of FCRs were in part due to the fact that strong MOs were not present to warrant requesting attention from Lucy using the taught FCRs.

Peer Mentor Implementation Fidelity

Next, intervention implementation fidelity was low (i.e., below the target goal of 90%) throughout the entire invention condition. Low levels of implementation fidelity could have

negatively affected Jude's prompted and independent FCRs (Ledford & Gast, 2018; McKenna et al., 2014). For example, when Lucy did not wait the full 5 s delay interval, Jude might not have had enough processing time following a mand opportunity to use an FCR. Another possibility is that, if Lucy delivered a closed-ended question (e.g., yes/no question) instead of a mand opportunity and Jude responded with a yes/no response, it would not count as an FCR. Lucy's intervention implementation fidelity during the intervention condition was 68.2% (range = 57–87.5%) on average. Despite having attended the initial training session, two synchronous follow-up coaching sessions, and one asynchronous follow-up coaching session, Lucy never met the predetermined fidelity goal of 90%. During each of these sessions, Lucy achieved 100% fidelity across all role-play practice scenarios. Further, all sessions were video recorded and viewed by a secondary observer who determined that I provided training and follow-up coaching to Lucy with 100% fidelity. These findings are in contrast to other FCT studies conducted in inclusive school settings for students with IDD where implementation fidelity was acceptable and student FCRs improved during intervention; for example, in a literature review conducted by Masud et al. (2022), researchers in all included studies reported implementer fidelity to be acceptable (Blair et al., 2006, 2007; Reeves et al., 2013, 2017; Walker et al., 2021; Walker & Snell, 2017). Reported implementer training included researchers modeling the intervention while training the implementer (Reeves et al., 2013), a single training session and follow-up coaching as needed (Walker et al., 2021), and two 1-hr workshops with weekly coaching meetings (Walker & Snell, 2017). It is critical to note a peer mentor was not responsible for implementing FCT in any of these studies. The acceptable implementation fidelity could have positively impacted the percentage of FCRs for the student participants in the reviewed studies.

Although peer-based instruction and intervention (PBII) has been observed to be effective across multiple domains for students with IDD (Hume et al., 2021; Kuntz & Carter, 2019; Saunders et al., 2020), there is no evidence of peer-implemented FCT in the research literature for students with IDD (Andzik et al., 2016; Gerow et al., 2018; Ghaemmaghami et al., 2021), specifically in inclusive school settings (Masud et al., 2022). However, the fact that Lucy was a minor was likely not the reason for her low implementation fidelity, as peer-mediated supports are an established EBP and have been used successfully to support students with challenging behavior (Carter et al., 2022). There also is evidence that peers can effectively implement systematic instructional procedures, such as the system of least prompts (i.e., prompting system Lucy was trained to deliver to teach FCRs). For example, Hudson et al. (2014) examined the effects of a peer-delivered system of least prompts intervention on the educational outcomes of students with IDD in an inclusive science classroom. The results indicated that the peer-delivered intervention was effective across participants.

There are several possible explanations for Lucy's low implementation fidelity. First, Lucy may have required more time, additional practice opportunities, additional follow-up coaching sessions, a different type of coaching, and/or a more robust coaching package in order to increase her levels of implementation fidelity. Research suggests FCT implementers require different dosages and types of training (e.g., Gregori et al., 2022; Ogden et al., 2022; Walker et al., 2021). Unfortunately, with the study occurring toward the end of Jude and Lucy's school year, delivering additional training was not possible. Second, as the intervention data sessions occurred on the final days of the school year, the upcoming end to the school year may have been a distraction for Lucy, as she may have had other priorities on her mind that did not include implementing the intervention with fidelity.

Finally, Lucy's low implementation fidelity may have been associated with the requirement to teach Jude multiple FCRs that were contingent upon the specific type of reinforcement he requested for each trial (e.g., "Let me know if you want me to look at your artwork."). This level of specificity may have affected generalization of teaching FCRs from the training sessions to the art class. Because of his strong vocal repertoire and communication abilities, the educator team member participants and I determined that teaching Jude multiple FCRs was more appropriate than just one mand (e.g., "Talk to me."). Teaching Jude one FCR may have been easier for Lucy as it would not have required her to determine whether Jude used a correct FCR based on the list of examples, thus potentially increasing implementation fidelity. The use of multiple FCRs is dissimilar to other FCT intervention studies that were implemented in inclusive school settings for students with IDD. For these student participants, it was most appropriate based on their communication mode and/or abilities to teach one mand based on the hypothesized behavioral function. For example, implementers in these studies taught student participants one FCR (e.g., signing help [Umbreit & Blair, 1996], displaying a picture card to request play time [Blair et al., 2007], raising hand to ask for help [Reeves et al., 2017], requesting a break using a picture symbol [Walker & Snell, 2017]). Further, Lucy was trained to reinforce Jude's FCRs if they were complete sentences and socially and age-appropriate. Although Lucy practiced multiple scenarios during training and coaching sessions, making these types of determinations in a contrived training environment with a researcher was most likely easier for Lucy than in the classroom setting. Although BST is supported in the research literature as an effective method for training, more research on the generalizability of skills taught with BST is needed (Kirtkpatrick et al., 2019). Lucy's low implementation fidelity could have been associated with issues generalizing from the training environment to the classroom.

Error Analysis of Peer Mentor Fidelity. Results of the error analysis of FCT procedural steps indicated that Lucy made the highest percentage of errors when implementing three procedural steps: (a) the initial mand opportunity, which she delivered incorrectly 40% of the time; (b) the 5 s delay intervals, which she implemented incorrectly 23.1% of the time; and (c) the indirect prompt, which she delivered incorrectly or did not deliver 50% of the time. The potential collateral effects on Jude's behavior resulting from incorrect implementation of these three procedural steps are important to examine.

First, during times when Lucy incorrectly delivered the mand opportunity, her errors included asking Jude a question versus presenting an opportunity for Jude to request. By asking Jude an open-ended question (e.g., "What are you going to draw?") or closed-ended question (e.g., "Do you want to draw or color?"), she removed the opportunity for Jude to use an appropriate FCR. In these cases, Jude would respond using one-word responses (e.g., "Super Mario", "draw"). If Lucy had presented the correct mand opportunity (e.g., "Let me know if you want to talk about your drawing."), he would have had the opportunity to use the FCR (e.g., "Can you look at my drawing?").

Second, Lucy often did not wait the entire 5 s delay interval following delivery of the initial mand opportunity and indirect prompt. During training, I explained the importance of providing Jude sufficient processing time to respond to the mand opportunity or prompt and this decision was made by the educator team member participants during the planning meeting. Lucy's failure to pause for the entire delay interval during intervention sessions could have negatively affected Jude's percentage of using FCRs, both unprompted and prompted. In these cases, if Lucy had implemented with fidelity, Jude may have had sufficient processing time to determine which FCR to use within that specific scenario.

Finally, the procedural step Lucy implemented with the lowest percentage of fidelity was the indirect prompt. In most cases, Lucy would omit the indirect prompt completely and skip to the direct prompt. As a result, there was no opportunity for Jude to respond with a less intrusive prompt. The purpose of the system of least prompts is to teach the learner a skill using the least amount of prompting required, and, in time, the student will eventually learn to perform the skill independently (Billingsley & Romer, 1983). Therefore, Lucy's skipping ahead to a more restrictive prompt was problematic in Jude's acquisition of appropriate FCRs as she did not follow the correct procedural steps for the implementation of the prompting system.

Discussion for Research Question 2: What are the effects of an FCT intervention delivered in an inclusive school setting on the challenging behavior of a high school student with IDD?

Results of visual analysis indicated that there was no demonstration of effect on challenging behavior as a result of the peer-implemented FCT intervention. Jude displayed low percentages of challenging behavior throughout the entire study. Specifically, he engaged in challenging behavior across an average of 2% (range = 0–3.4%) of 10 s intervals during pre-baseline, 3.4% (range = 0–10.3%) of 10 s intervals during baseline, and 6.8% (range = 0.8–13.3%) of 10 s intervals during intervention. Although the average percentage of Jude's challenging behavior did increase from pre-baseline to baseline and from baseline to intervention, the percentage remained low across the duration of the study (range = 0–13.3% of 10 s intervals). It also is important to note that Jude's challenging behavior was not dangerous. They included inappropriate advances toward Lucy, vocalizing or writing swear words, and exhibiting refusal behaviors to leave art class.

This is dissimilar to other FCT studies implemented in inclusive school settings for students with IDD in that students in these studies had high levels of challenging behavior (e.g., Blair et al., 2006, 2007; Umbreit & Blair, 1996; Walker & Snell, 2017) or low levels of on-task behavior prior to the FCT intervention (e.g., Reeves et al., 2013, 2017). It is important to note that the present study was different from these studies in that FCRs were taught to Jude despite the low levels of challenging behavior observed during the FBA. Although FCT is one of the most effective EBPs in the reduction of challenging behavior (Gerow et al., 2018; Greer et al., 2016; Hume et al., 2021; Tiger et al., 2008), a defining feature of FCT is teaching an FCR, and therefore improving socially appropriate communication behavior. In the current study, all educator team member participants had reported that Jude displayed frequent challenging behavior in the target routine classroom (i.e., art classroom) and in other school settings. Therefore, the team decided to continue with the study even in the presence of low levels of challenging behavior to ensure Jude developed the communication skills needed to appropriately request attention from peers and adults. As Ala'i-Rosales and colleagues (2018) stated in their conceptual article on proactively addressing challenging behavior, determining the function(s) that are likely to evoke challenging behavior allows practitioners to effectively plan for these contingencies. One way to do this is by teaching socially appropriate ways in which to gain attention (i.e., replacement behaviors based on the function[s] that are likely to maintain challenging behavior). By forming a hypothesis regarding the function of Jude's challenging behavior (i.e., attention) through indirect assessment, the educator team member participants and I developed an intervention that would proactively teach him socially appropriate replacement behaviors to gain attention (i.e., FCRs) with the goal of preventing future occurrences of Jude's challenging behavior.

As noted in the discussion of the first research question, MOs may not have been strong enough to for Jude to use an FCR, as it may be possible Jude was satiated with attention from Lucy and responding to the delivery of a mand opportunity was not motivating. This same potential explanation could be applied to Jude's infrequent challenging behavior. If the hypothesis that Jude's challenging behavior was maintained by access to attention was true, then having access to frequent attention from Lucy across all study conditions may have served as an abolishing operation to Jude's challenging behavior.

Extinction

Extinction procedures are commonly implemented during FCT, as part of differential reinforcement of alternative behavior procedures, which includes reinforcing one behavior (i.e., FCR) while discontinuing reinforcement of another behavior (i.e., challenging behavior; Cooper et al., 2020). Because the behaviors are functionally equivalent, the future likelihood the individual will use the FCR increases as it is reinforced, while the future likelihood the individual will engage in challenging behavior decreases as reinforcement is withheld (Cooper et al., 2020). Although FCT interventions often include extinction procedures, I did not train the peer mentor to place Jude's challenging behavior on extinction. Lucy's reinforcement of Jude's challenging behavior could have been a factor in Jude's low levels of challenging behavior throughout the course of the study, especially considering Jude's challenging behavior was maintained by attention. This also might explain why Jude did not use FCRs when presented with mand opportunities. If Jude's challenging behavior was continually reinforced, even at low percentages, his motivation for using his FCRs may have not been sufficient.

I made the decision to exclude extinction procedures for several reasons. First, Lucy's role as a peer mentor included supporting Jude throughout their shared class by modeling

appropriate behavior, helping with tasks as needed, and, in general, facilitating an inclusive experience for him. Therefore, it may not have been appropriate for her to ignore Jude or to withhold attention from him, as this was not typical in her role as his peer mentor. One of the foundational components addressed when evaluating social validity is the appropriateness of the procedures implemented (Wolf, 1978). Specifically, this component of social validity measures the degree to which participants in the study, including the student participant, find the intervention implemented to be acceptable. Therefore, I determined that training Lucy to place Jude's behaviors on extinction would not have been socially acceptable or appropriate for her or for Jude. This could have been part of a contextual fit conversation with Lucy to determine how she felt about placing Jude's behaviors on extinction.

Second, the feasibility of training a minor as opposed to an adult to implement extinction procedures raised the potential issues of Lucy's safety and wellbeing. Although Jude had not previously exhibited aggressive behaviors, he did exhibit challenging behavior that was inappropriate (e.g., hugging or kissing peer mentor). Thus, it might not have been appropriate or considered socially valid for Lucy to incorporate extinction procedures as extinction procedures may result in undesirable secondary effects (e.g., extinction burst, extinction-induced variability; Cooper et al., 2020). An extinction burst is the immediate increase in challenging behavior after the behavior is no longer reinforced (Cooper et al., 2020). In Jude's case, this could have included more frequent attempts to gain attention through inappropriate means (e.g., trying to kiss Lucy), which could cause Lucy distress and discomfort. Extinction induced variability is when the individual displays a different or new form of behavior to seek the same reinforcement as their challenging behavior (Cooper et al., 2020). Although Jude had not previously exhibited aggressive behaviors, there was no way to predict whether he might exhibit a novel dangerous

behavior to gain Lucy's attention. Even though the team had developed a safety plan for Jude's challenging behavior, these extinction-related effects would still have been a concern. Further, FCT has been shown to be effective without extinction procedures for students with IDD in school settings (e.g., Davis et al., 2012; Kelley et al., 2002). Thus, there is a possibility that for these studies, and other FCT studies, the extinction component made no difference in the learner's acquisition of the FCR or occurrence of challenging behavior.

Discussion for Research Question 3: What are the collateral effects of an FCT intervention delivered in an inclusive school setting on the various communication behaviors of a high school student with IDD?

Overall, the average rates of Jude's unprompted initiations, unprompted responses, independent mands, and use of a complete sentence when communicating increased from pre-baseline to baseline. Jude's average rates per minute of unprompted initiations, unprompted responses, and mands dropped slightly from baseline to intervention, but still remained higher than in pre-baseline, and his use of complete sentences remained steady from baseline to intervention. Because these communication behaviors were not experimentally measured, there is no way to determine a causal relation between the FCT intervention and Jude's increase in these behaviors; however, there are important points that can be drawn from these findings. In a recent observational study conducted by Carter et al. (2023), peer interactions with classmates with IDD were infrequent. This is dissimilar to the findings from the current study, as even during the pre-baseline condition, Lucy and Jude engaged in relatively high rates of conversation as evidenced by Jude's rates of unprompted initiations and responses to Lucy. During pre-baseline, Jude and Lucy's interactions were business-as-usual; however, during the baseline condition, Lucy began delivering mand opportunities to Jude from a list of examples. The

increase between pre-baseline and baseline in Jude's communication measures may have been due to Lucy providing him opportunities to request attention.

During pre-baseline, Jude's unprompted responses were at an average rate of 0.62 per min. During baseline, Jude's unprompted responses increased by almost four times to 2.47 per min. Finally, during intervention, Jude used unprompted responses at a rate of 2.19 per min. Although this was a slight decrease from baseline, rates of independent responses were 3.5 times higher than what he exhibited during baseline. As noted previously, I did not count responses Jude used following Lucy's delivery of a mand opportunity for the intervention, as I had already counted these as primary data measures. Still, the increase in responses could have been partially attributed to Lucy delivering more opportunities to respond to Jude in general. Following a similar pattern, during pre-baseline, Jude's unprompted initiations were at an average rate of 0.4 per min. During baseline, Jude's unprompted responses increased to 1.89 per min, and then decreased slightly to 1.33 per min during intervention. Likewise, Jude's rate of manding started at 0.06 per min during pre-baseline, increased to 0.46 per min during baseline, and was 0.42 per min during intervention.

As noted, the large increase in these three communication measures from pre-baseline to baseline could have been due to the fact that Lucy began delivering mand opportunities during the baseline condition. Further, the slight decrease in Jude's communication measures from baseline to intervention could have been due the focus shifting from delivery mand opportunities only to delivering mand opportunities and teaching FCRs, which may have inadvertently decreased Lucy's interactions with Jude. Although the dependent measure of Jude's FCRs were not shown to be affected by the intervention, it is possible that collateral effects of the intervention increased his rates of manding for attention. Lucy's mand opportunities could have

served as a discriminative stimulus to alert Jude that attention was available throughout the course of the art class. Although he may not have responded correctly immediately following the mand opportunity, he may have learned to do so with continued practice.

Discussion for Research Question 4: To what extent is the intervention socially valid from the perspectives of the student participant, peer mentor participant, and educator team member participants and based on student observations?

Overall, based on the results of social validity surveys and open-ended interview questions, all educator participants found the intervention to have acceptable social validity. They found the intervention to be appropriate for Jude, liked the procedures used, and were very willing to collaborate to plan for the intervention. Ms. Harrison (i.e., art teacher) and Ms. Starkey (i.e., paraprofessional) both expressed concerns related to the effectiveness of the intervention and the side effects and possible discomfort Jude may have experienced as a result of the intervention. Lucy believed the intervention was acceptable for Jude and was very willing to implement the intervention and attend training and coaching sessions. She indicated that a moderate amount of time was required of her, it was somewhat disruptive to her daily routine, and some undesirable side effects occurred as a result of the intervention. Results of Jude's interview indicated that he found the intervention to be socially valid and results of the observations as an indicator of social validity showed that he was moderately or completely HRE during a majority of observations.

Overall, the mean scores of social validity across participants were acceptable. This is similar to other studies in which FCT was implemented in inclusive school settings for students with IDD (e.g., Blair et al., 2006, 2007; Reeves et al., 2013, 2017; Umbreit & Blair, 1996; Walker & Snell, 2017). Across these studies, social validity measures were reported for special

education teachers (Blair et al., 2006; Umbreit & Blair, 1996), general education teachers (Blair et al., 2006, 2007; Umbreit & Blair, 1996), unspecified teachers (Reeves et al., 2007, 2013), and paraprofessionals (Blair et al., 2007; Reeves et al., 2013; Umbreit & Blair, 1996; Walker & Snell, 2017). Unlike the current study, none of the aforementioned studies included formative or summative student social validity measures. Various measures of social validity are important in determining the acceptability of the intervention to all participants involved related to the goals, procedures, and outcomes of the intervention (Ledford & Gast, 2018).

Access to Inclusive School Settings

Although the intervention was ineffective in increasing FCRs and Jude displayed low levels of challenging behavior throughout the study, it is still critical to consider the impact the intervention may have had on Jude's access to inclusive experiences. As challenging behavior is a major barrier to accessing inclusive school settings for students with IDD (Agran et al., 2020; Gee et al., 2020; Giangreco, 2020; Kleinert, 2020), and most students with IDD are served primarily in restrictive educational settings (U.S. Department of Education, 2022), implementing FCT in inclusive school settings has the potential to increase access to inclusive settings for this population of students. All four educators and the peer mentor participant agreed that the FCT intervention implemented with Jude either facilitated inclusion for Jude or had the potential to do so. Ms. Lennon and Mr. McCartney, Jude's classroom teachers, and Ms. Starkey, Jude's paraprofessional, indicated that they believed the intervention had facilitated inclusion for Jude and certainly had the potential to do so to a higher degree after Jude had received the intervention for a longer period of time. Ms. Harrison, Jude's art teacher, indicated that she believed the intervention did promote inclusion for Jude as it gave him a way to seek positive

attention from others. Lucy indicated that she believed the intervention helped promote inclusion for Jude, as she noticed he was included in other peers' conversations more.

As has been previously documented across the research literature, access to inclusive school settings for students with IDD is not only legally required for consideration under IDEA (2004) but is considered best practice by various experts in the field (Agran et al., 2020; Kurth et al., 2019; Morningstar et al., 2016). Further, it affords students greater access to high quality instruction (Agran et al., 2020; Kurth & Mastergeorge, 2010) and is associated with positive outcomes in the areas of social skills (Kleinert et al., 2015; Lyons et al., 2011; Schwab et al., 2015) and communication skills (Ballard & Dymond, 2017; Kleinert et al., 2015). As FCT serves to increase appropriate behavior and reduce challenging behavior (Carr & Durand, 1985; Steinbrenner et al., 2020; Tiger et al., 2008), it is important to consider the use of FBIs, such as FCT, in inclusive school settings to promote inclusion for students with IDD. For example, Blair et al. (2007) examined the effects of an educator-implementer FCT intervention package on the FCRs, challenging behavior, and positive peer interactions of a kindergarten student, with the purpose of promoting inclusive practices. Results indicated positive results across all measures, including increased positive interactions with peers, which effectively promoted inclusion for the participant. In the current study, there was evidence through social validity measures that Jude's inclusive experiences were improving or had the potential to improve.

Contextual Fit

It is important to consider the effect of contextual fit when interpreting the social validity results. Contextual fit refers to the extent to which an intervention is in alignment with the values, skills, resources, and administrative support of the team responsible for planning and implementing the intervention (Horner, 2000). In FCT studies implemented in inclusive school

settings for students with IDD, teachers and paraprofessionals were responsible for implementing the intervention (Masud et al., 2022); however, only three studies mentioned including these implementers in the planning process (i.e., Blair et al., 2006, 2007; Umbreit & Blair, 1996). Because interventions with strong contextual fit have a higher chance at succeeding in promoting positive student outcomes (Monzalve & Horner, 2021), it was imperative that Lucy was included in this process. As noted previously, when Lucy was initially trained in the procedures for the FCT intervention, I asked her three adapted contextual fit questions: (a) Do you feel that you have good understanding of the intervention and in what I am asking you to do?, (b) Do you believe you need any additional training in order to start implementing the intervention today?, and (c) Are we asking you to do anything you are uncomfortable with? She answered affirmatively to the first question and negatively to the second two questions, indicating she believed the intervention had good contextual fit.

Although Lucy was part of the planning process, her low fidelity could have been a result of a mismatch between her knowledge, understanding, and skillset and what was required for the intervention. One relevant contextual fit component includes that the implementer understands the intervention and procedures (Monzalve & Horner, 2021). Although Lucy reported that she understood the intervention and procedures she was expected to implement following the initial training and after each follow-up coaching sessions, it is possible that she did not. In her social validity interview, she indicated several components that were difficult for her to implement. This could have been a result of Lucy not having knowledge of the intervention and procedures; however, it also could have been a result of Lucy not having support within the natural setting of the intervention (i.e., the art classroom). If either were the case, it is likely this would negatively impact implementation fidelity. Lucy may have benefited from in vivo training or coaching (e.g.,

side-by-side coaching, bug-in-ear coaching). As Lucy was a high school student, she did not have the same training as a paraprofessional or teacher. Although PMII are effective EBPs for students with IDD (Hume et al., 2021; Kuntz & Carter, 2019; Saunders et al., 2020), it is likely Lucy required more training or alternative types of training (e.g., coaching package, bug-in-ear coaching).

Results of Lucy and Ms. Harrison's social validity interviews indicated that Lucy made errors in presenting mand opportunities to Jude, delivering the indirect prompt, and waiting the 5 s delay interval. Further training or alternative forms of training (i.e., more intensive) on implementation of the intervention might have increased Lucy's fidelity of implementation. A final contextual fit component that may be relevant includes the implementer's belief the intervention will be effective for the student and efficient to implement (Monzalve & Horner, 2021). It could be that, because Lucy had not observed marked changes in Jude's behavior, she may not have believed the intervention to be effective, thus decreasing fidelity. Further, she indicated concerns regarding the efficiency of the intervention in her social validity results. For example, she stated that at times it was difficult for her to balance her responsibilities as an art student and interventionist.

All educators who attended the planning meeting (i.e., Ms. Lennon, Ms. Harrison, Ms. Starkey) responded positively to all contextual fit check-in questions delivered to them (see Appendix HH), indicating that they felt the intervention had good contextual fit. Further, all educator team member participants indicated that they had a clear understanding of the intervention, that they thought the intervention was appropriate for Jude, they found it reasonable, liked the procedures, and were very willing to plan and collaborate. They indicated that it was not costly and did not require a lot of time to plan. Relatedly, all educator team

member participants indicated that they believed the peer component of the intervention to be highly effective. They spoke to the teamwork and collaboration of the team. These responses indicated that the educator team member participants believed the intervention to have good contextual fit.

Some of the results of Ms. Starkey and Ms. Harrison's social validity surveys and interviews suggested that the team would have benefitted from check-ins following the start of the intervention to further discuss how to better strengthen the contextual fit of the intervention. For example, both educators indicated that they felt neutrally about whether or not the intervention was likely to make permanent changes in Jude's behavior. In their interviews, both educators explained that they believed the intervention would have been more successful if given more time. Next, Ms. Harrison provided feedback about the FCRs, indicating that she did not believe some of them to be natural for Jude. She thought this could have been the cause of some discomfort for Jude. She recognized that during the planning meeting, they were deemed appropriate, but it became clear that they might not have been appropriate upon observing Lucy prompting Jude during intervention.

Contributions of this Study

There are three main contributions to the literature this study adds. First, FCT was implemented in an inclusive school setting with a student with ID and ASD. In a literature review conducted by Masud and colleagues (2022), the authors found that there were a limited number of FCT interventions conducted in inclusive school settings (i.e., 10 students across seven studies). Further, none of the students who participated in these studies were high school-aged. In fact, there is evidence to suggest that a majority of FCT interventions in schools have been implemented with younger-aged participants. For example, in recent literature reviews

addressing FCT for students with IDD, most participants were younger than 12 years of age (Andzik et al., 2016), younger than 10 years of age (Gerow et al., 2020), and early childhood or elementary school-aged (Walker, Lyon, et al., 2018). Therefore, this study adds to the research literature base in that it is the first FCT study implemented in an inclusive high school setting for a student with IDD. This is important as high school is a critical time for students to develop the skills necessary for positive postschool experiences.

A second contribution to the research literature base is that the interventionist was a peer mentor, a natural change agent who already supported the student in the inclusive classroom. In the previously noted systematic literature review (Masud et al., 2022), none of the included studies included peers as FCT implementers. Further, there is no evidence of peer-implemented FCT in the broader FCT research literature (Andzik et al., 2016; Gerow et al., 2018; Ghaemmaghami et al., 2021). It is critical to consider that, although FCT is implemented to reduce student challenging behavior and can successfully address various topographies of challenging behavior including aggression, disruptive behavior, property destruction, and self-injurious behavior (Gerow et al., 2018), it may not always be appropriate for a peer to serve as the implementer due to safety and training concerns. However, in the case of this study, it was appropriate as the student participant displayed low percentages of non-destructive challenging behavior. It was valuable for Lucy to teach Jude the FCRs associated with his attention-maintained challenging behavior, as her attention was reinforcing to him.

A final contribution to the research literature on FCT is that the intervention was implemented in the near absence of challenging behavior during the FBA. Instead of targeting challenging behavior, the FCT intervention focused on proactively preventing the occurrence of challenging behavior that educators reported occurring during art class and in other settings by

teaching communication skills linked to the hypothesized behavioral function (Ala'i-Rosales et al., 2018). By determining Jude's behaviors were likely maintained by access to attention from the peer mentor, I worked with the educational team to develop a plan for Lucy to prompt Jude to use FCRs related to attention-maintained behavior, thus potentially providing Jude with the skills needed to successfully access peer attention.

Limitations of this Study

There are several limitations to this study that should be considered when interpreting the findings. First, due to issues with recruitment, I recruited only one student participant. This small sample substantially limits the generalizability of the study's findings as there is low external validity, meaning that the effects of the intervention may not necessarily translate across participants, settings, or other parameters (Ledford & Gast, 2018). As a result of recruiting one student participant, I used a non-experimental AB research design to examine the effectiveness of the FCT intervention; as such, no causal effects between the FCT intervention and student outcomes could be evaluated. Because I spent several months recruiting participants, I implemented the intervention much later in the school year than was originally planned. Therefore, a related limitation is that Jude's exposure to the FCT intervention was limited to five intervention sessions, which ultimately limited the amount of time Jude received instruction on the FCRs and, likewise, limited opportunities for Lucy to receive additional training to address low implementation fidelity.

Second, as previously noted, Lucy's low implementation fidelity likely affected Jude's prompted and independent FCRs. This was a major limitation to the results of the study given that conclusions about intervention effectiveness cannot be made without evidence of intervention implementation fidelity. A related limitation is the limited amount of time that was

available for data collection across study conditions. As a result, I was not able to meet with the educator team member participants to discuss potential changes to Lucy's training.

Third, although Jude's near absence of challenging behavior throughout the study was well received by the educator team member participants, it may be considered a limitation. Because Jude did not start the study with high levels of challenging behavior, it was impossible to determine whether the FCT intervention would have had an effect on his challenging behavior. Relatedly, Jude's low levels of challenging behavior is a limitation to the hypothesis of the FBA, as only an indirect measure of behavior was analyzed to determine behavioral function. FBAs should include a hierarchy of assessments, including indirect and direct measures, and if needed, experimental measures (Cooper et al., 2020). An indirect measure is the most subjective, least reliable, and least precise method of determining behavioral function, and typically should not be used as the sole assessment method when conducting an FBA (Miltenberger et al., 2019).

A fourth limitation is the potential subjectivity of the social validity measures. For the educator team member participants and Lucy, there is the possibility that their survey and interview responses could have been biased toward pleasing the researcher or interviewer (i.e., Hawthorne Effect; Kratochwill, 1978). Given that Ms. Lennon and Mr. McCartney delivered Jude's survey and interview, Jude may have been led to answer more positively by his teachers. Although Jude's HRE measures were coded by two separate coders independently, they were asked to answer subjectively based on a 3-min clip from each session. There is the possibility that the 3-min clip did not adequately reflect the entire session where Jude may have exhibited behaviors that did not reflect coder scores. Further, coders collected data on the HRE video clips following the conclusion of the study. This is limitation in that the data were not collected as a formative measure of social validity.

As a fifth limitation, the fact that I, as the primary investigator, was the one who trained Lucy to implement the FCT intervention is a limitation for generalizability. This negatively affected the external validity of the intervention, as a teacher or paraprofessional would likely not have the same skill level or familiarity with this type of intervention, and therefore, would not be able to train a student or other implementer without initial instruction. It would be important for the peer mentor's trainer to be an adult in the peer mentor and student participant's classroom to permit in vivo coaching to the peer mentor. For example, in Ms. Starkey's social validity interview, she indicated that she would have been willing to support Lucy's implementation of the intervention.

Sixth, there are several limitations related to the virtual nature of the study. BST might have been simpler and more effective to implement in person (e.g., role play activities), thus potentially improving implementation fidelity. Had I conducted the study in person, I may have been able to train Lucy in the natural classroom setting, with an educator team member participant role-playing as Jude. This may have promoted Lucy's generalization of the intervention from training to practice. There were also limitations about the video and audio quality of the recordings that made some videos unusable for data analysis. Further, as Jude and Lucy were in their normal art classroom setting, there were times when one or both of them were either offscreen, difficult to hear, or too far away from the iPad to hear. This could have caused potential data to be missed or misinterpreted by the observers. Related to this is the potential that Jude and/or Lucy experienced the Hawthorne Effect (Kratonchwill, 1978). Although the iPad used to record video had a black-out screen protector, Jude may have realized that he was being observed and changed his behavior as a result. Further, there is a possibility that Lucy altered the way in which she interacted with Jude in some way as a result of being observed.

A seventh limitation is related to conducting the study in a natural setting. Because this study was implemented in a typical high school art classroom near the end of the school year, there was very little structure to the class. Some students were finishing final art projects, whereas others were already finished and socialized or completed work for other classes. As a result, there were times when Jude and Lucy read through a yearbook, played a game with a ball, or watched a movie across the entire session. This made data collection difficult as it would not have made sense for Lucy to present a mand opportunity to Jude while he was highly engaged in something preferred, like watching a movie. Relatedly, Lucy's schedule near the end of the school year posed some limitations for follow-up coaching. As she would have typically been available during her peer mentoring class, she had already committed to other responsibilities and activities and, therefore, was unable to attend two follow-up coaching sessions.

An eighth limitation is that I was not able to collect generalization or schedule thinning/maintenance data on the effects of the intervention. As it was near the end of the school year as Jude entered into the intervention condition, there was no time for additional data collection. Therefore, because neither Jude nor Lucy's behavioral goals were met, it was not possible, nor would it have made sense, to collect generalization or maintenance data.

A final limitation is the way in which I defined and measured mands. For the study, a mand was defined as initiating or responding vocally to an interaction with another person for the purpose of requesting something wanted or needed, or requesting to end something aversive (e.g., "Will you help me color?"). It is important to note that this definition did not take into consideration the conceptual definition of a mand, which requires that the request is evoked by an establishing operation and is followed by specific reinforcement (Cooper et al., 2020). As the study did not include any contrived MOs, there was no way to measure whether there was an

establishing operation present for Jude. Further, due to the limitations associated with video recording, it was not always possible to determine whether the request was followed by specific reinforcement.

Directions for Future Research

Given the aforementioned limitations, there are several directions for future research that should be considered. First, given that this was a non-experimental study, it will be important to replicate this study using an experimental research design (e.g., multiple baseline across participants design) so that causal relations may be examined. Specific multiple baseline designs could include one participant across multiple routines or implementers or multiple participants receiving the same FCT intervention as was originally planned for this study (see Appendix A). An experimental multiple baseline design across participants would be advantageous in many ways. First, this design requires introduction into intervention in a staggered fashion allowing for a greater degree of internal validity (Ledford & Gast, 2018). Second, this design allows for continuous measurement of the primary dependent variables (i.e., challenging behavior, FCR), meaning that, during each session in which the intervention occurs, data collection will occur, demonstrating a greater degree of experimental rigor (Ledford & Gast, 2018). Third, in a multiple baseline design, there is no withdrawal of the intervention. Because the intent of FCT is to decrease challenging behavior and increase FCRs, it is advantageous for participants to remain in the intervention condition versus having these supports removed to demonstrate a functional relation. Further, in the case of programming for behavior change, a withdrawal of an effective intervention may be seen as unethical, especially in the case of dangerous challenging behavior (Ledford & Gast, 2018).

Other studies focusing on FCT in inclusive school settings have used a multiple baseline design. For example, Umbreit and Blair (1996) used a multiple baseline across time periods design to study the effects of a multicomponent intervention that included FCT on the challenging behavior and FCR of an 11-year-old with ID included in a regular fifth grade classroom. Similarly, Blair et al. (2007) implemented a multiple baseline across routines design to examine the effects of a practitioner-implemented FCT intervention on the challenging behavior and FCR of a kindergarten student across three routines (i.e., music, centers, circle time) in a regular kindergarten classroom. Finally, Blair and colleagues (2006) used a multiple baseline design across participants to examine the effects of an FCT intervention package on the challenging behavior of three children with ID in an inclusive kindergarten classroom.

A second area of future research that will be important to consider is replicating the study with various interventionists. In particular, researchers will need to explore FCT implementation by natural interventionists, including those typically present in inclusive school settings (e.g., general education teachers, paraprofessionals, peers). In Masud et al.'s (2022) systematic literature review focusing on FCT implemented in inclusive school settings, the interventionists in the reviewed studies were special education teachers (Blair et al., 2006, 2007), general education teachers (Blair et al., 2006, 2007; Reeves et al., 2013), teachers whose role was not specified (Umbreit & Blair, 1996), and paraprofessionals (Blair et al., 2007; Reeves et al., 2013; Walker et al., 2021; Walker & Snell, 2017). None of the reviewed studies included peer implementers. Therefore, further research should focus on teacher-, paraprofessional-, or peer-implemented FCT interventions in inclusive school settings.

In the current study, I measured the peer mentor's implementation fidelity as a secondary measure, as it related to the primary dependent variables of student FCRs and challenging

behavior. A third direction for future research might include experimentally examining implementation fidelity as a dependent variable. In the aforementioned systematic review, there were two included studies that focused on interventionists' implementation fidelity as a primary dependent variable. For example, Walker and Snell (2017) measured the effects of researcher-delivered training workshops and coaching on paraprofessionals' implementation of FCT interventions for two students with IDD in inclusive school settings. Results indicated all paraprofessional participants were able to implement the intervention with acceptable fidelity. It will be especially important to replicate the current study examining what type of training is necessary to produce high levels of implementation fidelity among peer mentors as the peer mentor's implementation fidelity was below the target goal during the entire intervention condition. Therefore, due to the potential impact of low implementation fidelity on student behavior, the effects of the intervention could not be determined accurately.

In other examples, Walker et al. (2021) examined the effects of an FCT training package delivered by special education teachers to their classroom paraprofessionals on paraprofessional implementation. Results indicated a positive result in implementation fidelity and student outcomes. Gregori et al. (2022) examined the effects of a special education teacher delivered coaching package that included BST, one-to-one coaching, and self-monitoring on paraprofessionals' implementation fidelity of FCT. All paraprofessional participants achieved 100% as a result. It will be beneficial for future research to examine natural implementers serving as trainers (e.g., district level personnel, teachers, paraprofessionals, training a peer mentor, another teacher, paraprofessional). In the current study, I served as the peer mentor's trainer, which limits the external validity of the study in that not all school districts have access to researchers to train implementers. In her social validity interview, Lucy indicated that she

would be willing to train another peer mentor to implement the same type of intervention with another study; it would be interesting to explore peer-to-peer training in future research as well.

A fourth future research direction is examining the effects of different types of training and coaching procedures on peer mentor implementation fidelity of FCT. In the present study, I provided initial training and follow-up coaching sessions to Lucy using BST. Although BST has been identified as an empirically-based strategy for effective training (Kirkpatrick et al., 2019), this type of training and coaching alone might not have been sufficient. It is possible that Lucy might have benefited from additional coaching package components, rather than just initial training and follow-up coaching sessions. For example, Tapp (2022) implemented a coaching package with special education teachers to increase their delivery rates of opportunities to respond. The coaching package included an initial training, goal setting, performance feedback, and supervisory coaching with a meeting cancellation contingency. In another study, Bethune and Wood (2013) examined the effects of a 1-day 6-hr lecture and in-service training followed by side-by-side coaching on special education teachers' implementation of FBIs using a multiple baseline across participants design. Results indicated that there was a functional relation between the fidelity of implementation of the FBIs and student use of their replacement behavior. In the current study, Lucy's goal of 90% fidelity was determined by the educator team member participants during the planning meeting. Although having Lucy attend a planning meeting for a fellow peer's intervention would not have been appropriate, it would have been advantageous to have Lucy set a goal for her implementation fidelity during the initial training and send daily feedback reports on her performance relative to the self-identified goal. Although Lucy was receptive to the training and follow-up coaching sessions as indicated by her social validity

survey and interview responses, it could be that a meeting cancellation contingency may have been motivating to her and thus increased her implementation fidelity.

Another type of coaching that might be important to explore is multi-level coaching that includes more intensive follow-up coaching based on implementer performance data, such as bug-in-ear coaching. Bug-in-ear coaching is an effective training method for teachers and pre-service teachers and has implications for improving outcomes for students as well (Gander & Dann, 2022). It also has been effective as a coaching method for pre-service behavior analysts' implementation of FCT (Artman-Meeker et al., 2017). Given that Lucy was responsible for delivering mand opportunities to Jude and following specific procedures to implement the system of least prompts, a synchronous coaching method, such as bug-in-ear coaching, might have been effective in increasing Lucy's implementation fidelity. For example, Owens et al. (2020) delivered a multi-level coaching package to four general education teachers consisting of three tiers (i.e., 60 min professional development session, individual coaching sessions, synchronous bug-in-ear coaching sessions) to train teachers in an intervention to increase student on-task behaviors. Results indicated a functional relation between the coaching package and implementation fidelity, and student on-task behaviors were increased.

Relatedly, as a fifth future research direction, it would be interesting to examine or compare the effects of different prompting procedures on both the implementer's fidelity and on student behaviors. In the current study, Lucy was trained to teach Jude FCRs using the system of least prompts. This teaching method was determined in the planning meeting as most appropriate for Jude due to his teachers' belief in his ability to respond to an indirect prompt. Because the error analysis revealed that Lucy's implementation of the indirect prompt was low, a procedure such as time delay may have been easier for her to master. Future research might include

determining how teams should best determine a prompting system that is both effective for the student and feasible for the implementer, and one which all team members agree is contextually fit during the initial planning and throughout the course of the study.

A sixth avenue of future research might focus on manipulating various components of the mand opportunities from the present study. I trained Lucy using multiple examples of potential naturally occurring mand opportunities rather than presenting her with a prescribed set of mand opportunities. Given Lucy's need for follow-up coaching and the results of the error analysis, it might have been beneficial to develop a set list of five mand opportunities for her to use during baseline and intervention. This may have lessened the burden of her coming up with her own mand opportunities or having to make decisions about which sample mand opportunity to use and when. Future research should explore developing a set number of mand opportunities to be delivered throughout the class period as a possible solution to the implementer contriving their own or adapting sample ones from a script in the moment. Another useful direction for future research related to the delivery of mand opportunities could include the use of contrived MOs to increase the value of reinforcement for the student. In the present study, Lucy was not trained to contrive MOs; however, if I had trained her to intentionally withhold attention from Jude prior to delivering a mand opportunity, Jude may have learned and maintained his FCRs to a greater degree (Reeves et al., 2013, 2017; Walker & Snell, 2017). Further, I could have trained Lucy to contrive EOs that had previously occurred naturally. For example, Lucy would periodically get up from her seat next to Jude in the art classroom to get materials or talk to other peers. I could have trained Lucy to get up from her seat at least once per class period to contrive a contingency where she would be unavailable to provide attention to Jude. Without noncontingent access to Lucy's reinforcement, Jude may have been motivated to use the FCRs to request attention from

Lucy. Relatedly, future research on FCT without extinction could include increasing the value of the reinforcement of the FCR to compete with the challenging behavior (longer duration of reinforcement [Peterson et al., 2005], more frequent or higher quality reinforcement [Kelley et al., 2002]).

Finally, as I was not able to collect maintenance or generalization data in this study, a seventh avenue of future research could include extending the current study to include these measures to determine whether students can appropriately generalize their FCRs across implementers or settings, and what training or coaching may be required of implementers. Examining the effects of a peer-implemented FCT intervention in inclusive school settings for high school students with IDD could be generalized across peer mentors or settings. It will also be important to collect data on whether the effects of the intervention maintain across time to determine what types of supports, if any, are needed for implementers and students, so students may effectively maintain their FCR. Further, it would be interesting to examine the effects of various schedules of reinforcement and schedule thinning procedures on the students' FCRs and challenging behavior once students reliably display the target FCR(s).

Implications for Practice

There are several implications for practice that teachers and other practitioners should consider when interpreting the results of this study. First, teachers and other educational professionals should carefully consider who will train the interventionist in FCT procedures. I, as the researcher, trained the interventionist, Lucy, in this study. As a researcher is not a natural implementer for a school-based setting, it will be important for school professionals to consider who is qualified to train and support the interventionist as most school districts do not have regular access to research teams to support their implementation of interventions. A district's

behavior support person could potentially train teachers, who could then train paraprofessionals. For example, in Walker et al. (2021), researchers trained special educational teachers to train their classroom paraprofessional in the implementation of FCT. In an inclusive school setting specifically, it would be beneficial for the general education teacher, a paraprofessional, or a peer to serve as the implementer.

Second, it is important for educational practitioners to keep in mind the frequency, dosage, and time related to training that is required for an interventionist to effectively implement the FCT intervention. Some implementers may require only one training session, whereas others may need follow-up coaching (e.g., Ogden et al., 2022). In the case of this study and others (e.g., Owens et al., 2020), some implementers may require a higher dosage of training or more intensive training sessions (e.g., bug-in-ear coaching). It would be prudent of educators to consider additional coaching components that may increase effective acquisition of the skills required to implement the intervention. These could include the use of multi-level coaching that includes an initial training, supervisory coaching, and side-by-side coaching (Wood et al., 2016). Other effective components might include prompting the interventionist to set a fidelity goal, sending the interventionist regular performance data on achievement of their goal, and/or coaching meeting cancellation contingencies as a reward for high fidelity (e.g., Tapp, 2022). Finally, with regard to training and coaching, it is critical to consider the feasibility, especially if the interventionist is a student. In this study, Lucy had an entire class period dedicated to peer mentoring in addition to her art class with Jude. That made meeting with her for training and follow-up coaching sessions relatively feasible; however, this is likely not the case for all students or educators. For future research focused on peer-implemented FCT, it will be critical to have administrative support, as student schedules may need to be rearranged.

Third, Lucy's low implementation fidelity in delivering the indirect prompt has implications for the use of an alternative prompting system, such as time delay, that would not have required Lucy to deliver a hierarchy of prompts, but only the controlling prompt (i.e., direct verbal prompt) following a 5 s interval after the initial mand opportunity. This would likely have improved Lucy's implementation fidelity; however, as the system of least prompts was deemed most appropriate for Jude by the educator team member participants during the planning meeting, Lucy was trained to implement the system of least prompts with Jude. It is important for educational teams to carefully consider the prompting system most appropriate for the student and the implementer. This might include involving the peer mentor in part of the planning meeting, gathering the peer mentor's feedback before training her in the implementation, or having the entire team meet regularly to reassess contextual fit.

A fourth implication related to the planning and implementation of this intervention is the consideration of contextual fit. In general, the intervention was viewed to have good contextual fit by Lucy and the educator team member participants. The team's collaboration and willingness to be part of the intervention was ideal. It is important that teachers and other educators prioritize the contextual fit of an intervention and the critical nature of collaborative teaming. Educators (i.e., teachers, paraprofessional) in most FCT studies conducted in inclusive school settings for students with IDD were not involved in the intervention planning process (Masud et al., 2022), and this is problematic given their responsibility for implementing FBIs and BIPs. As contextual fit impacts the success of an intervention (Monzalve & Horner, 2021), it is important that teams consider these components when developing an FCT intervention. Relatedly, another implication for practitioners is the importance of frequent formative assessment of the contextual fit of the intervention. In the present study, Ms. Harrison and Ms. Starkey both provided feedback about

aspects of the intervention they wished they could have changed. If the study had been implemented over a greater period of time or if I had provided the opportunity for more frequent check-ins, they could have voiced their opinions sooner. As a result, the team would have been able to alter Jude's FCRs or the prompting system, which potentially could have affected student outcomes.

Finally, educators and other educational team members should consider FCT as a support in inclusive school settings to further promote inclusion for students with IDD who display challenging behavior, especially for students who otherwise might be excluded from inclusive classroom settings due to their challenging behavior. There is preliminary evidence that FCT implemented in inclusive school settings for students with IDD promotes positive student outcomes (Masud et al., 2022), though the results of this study do not support this. This may be particularly relevant for schools with peer mentoring programs like Jude and Lucy's school where peer mentors could be trained in effective practices to support the communication or behavioral needs of their assigned peers with disabilities, especially give Ms. Lennon and Mr. McCartney's willingness to train peer mentors in similar interventions.

In the current study, there were positive collateral effects of the intervention on Jude's unprompted initiations, unprompted responses, mands, and use of complete sentences. This finding has implications for developing intentional, contextually fit peer-delivered communication interventions for students with IDD to promote communication and social interaction with peers, especially in inclusive school settings. Relatedly, it will be important for educators to consider the critical importance of teaching skills proactively to prevent challenging behavior (Ala'i-Rosales et al., 2018). As a field, we need to move in the direction of teaching multiple appropriate FCRs proactively, especially when considering access to inclusive school

settings. Educators can promote access to inclusion by targeting challenging behavior before they develop (Ala'i-Rosales et al., 2018) and eliminate the barrier of challenging behavior to inclusion (Agran et al., 2020; Gee et al., 2020; Giangreco, 2020; Kleinert, 2020). If students are taught the communication skills needed to effectively gain access to or deny attention, items, or tasks, student learning and social opportunities can be maximized. Students could enter inclusive school settings already having learned socially appropriate behavior or FCRs.

Summary

In the current study, I examined the effects of a peer-delivered FCT intervention on the FCRs and challenging behavior of a high school student with IDD. Additionally, I examined the collateral effects of the intervention on specific communication behaviors of the student participant. Finally, I measured social validity of the peer mentor participant, student participant, and educational team member participants using surveys, interviews, and direct observations. Results showed that the FCT intervention did not have an effect on neither the student's independent or prompted FCRs, nor on the student's challenging behavior. This could have been due to the peer mentor participant's low implementation fidelity throughout the intervention condition. Collateral effects of the communication measures indicated that the intervention may have had a positive effect on student unprompted initiations, unprompted responses, mands, and use of complete sentences. Social validity results were acceptable across a majority of measures for all participants. Future research should include experimental replications of the current study, exploring additional or different coaching methods, experimentally examining peer mentor implementation fidelity, and contriving MOs.

REFERENCES

- Agran, M., Jackson, L. B., Kurth, J. A., Ryndak, D. L., Burnette, K., Jameson, M., Zagona, A., Fitzpatrick, H., & Wehmeyer, M. L. (2020). Why aren't students with severe disabilities being placed in general education classrooms: Examining the relations among classroom placement, learner outcomes, and other factors. *Research and Practice for Persons with Severe Disabilities*, 45(1), 4–13. <https://doi.org/10.1177/1540796919878134>
- Albin, R. W., Lucyshyn, J. M., Horner, R. H., & Flannery, K. B. (1996). Contextual-fit for behavioral support plans: A model for “goodness-of-fit.” In L. K. Koegel, R. L. Koegel, & G. Dunlap (Eds.), *Positive behavioral support: Including people with difficult behavior in the community* (pp. 81–98). Paul H. Brookes.
- Alquraini, T., & Gut, D. (2012). Critical components of successful inclusion of students with severe disabilities: Literature review. *International Journal of Special Education*, 27(1), 42–59.
- American Association on Intellectual and Developmental Disabilities. (n.d.). *Definition of intellectual disability*. <https://www.aaidd.org/intellectual-disability/definition>
- Amstad, M., & Müller, C. M. (2020). Students' problem behaviors as sources of teacher stress in special needs schools for individuals with intellectual disabilities. *Frontiers in Education*, 4, 1–11. <https://doi.org/10.3389/educ.2019.00159>
- Anderson, E. J., Brock, M. E., & Shawbitz, K. N. (2022). Philosophical perspectives and practical considerations for the inclusion of students with developmental disabilities. *Education Sciences*, 12(7), 478. <https://doi.org/10.3390/educsci12070478>
- Andzik, N. R., Cannella-Malone, H. I., & Sigafoos, J. (2016). Practitioner-implemented functional communication training: A review of the literature. *Research and Practice for Persons with Severe Disabilities*, 41(2), 79–89. <https://doi.org/10.1177/1540796916633874>
- Artman-Meeker, K., Rosenberg, N., Badgett, N., Yang, X., & Penney, A. (2017). The effects of bug-in-ear coaching on pre-service behavior analysts' use of functional communication training. *Behavior Analysis in Practice*, 10(3), 228–241. <https://doi.org/10.1007/s40617-016-0166-4>
- Austin, J. E., & Tiger, J. H. (2015). Providing alternative reinforcers to facilitate tolerance to delayed reinforcement following functional communication training. *Journal of Applied Behavior Analysis*, 48(3), 663–668. <https://doi.org/10.1002/jaba.215>
- Avramidis, E., & Norwich, B. (2002). Teachers' attitudes towards integration/inclusion: A review of the literature. *European Journal of Special Needs Education*, 17(2). <https://doi.org/10.1080/08856250210129056>

- Axe, J. B., Murphy, C. M., & Heward, W. L. (2022). Functional communication training and most-to-least prompting as treatments for problem behavior. *Clinical Case Studies*, 21(1), 48–60. <https://doi.org/10.1177/15346501211030208>
- Baer, D. M., Wolf, M. M., & Risley, T. R. (1968). Some current dimensions of applied behavior analysis. *Journal of Applied Behavior Analysis*, 1(1), 91–97. <https://doi.org/10.1901/jaba.1968.1-91>
- Baer, R. M., Daviso, A. W., III, Flexer, R. W., Queen, R. M., & Meindl, R. S. (2011). Students with intellectual disabilities: Predictors of transition outcomes. *Career Development for Exceptional Individuals*, 34(3), 132–141. <https://doi.org/10.1177/0885728811399090>
- Balfanz, R., Byrnes, V., & Fox, J. (2014). Sent home and put off-track: The antecedents, disproportionalities, and consequences of being suspended in the ninth grade. *Journal of Applied Research on Children*, 5(2), Article 13. <http://digitalcommons.library.tmc.edu/childrenatrisk/vol5/iss2/13>
- Ballard, S. L., & Dymond, S. K. (2017). Addressing the general education curriculum in general education settings with students with severe disabilities. *Research and Practice for Persons with Severe Disabilities*, 42(3), 155–170. <http://doi.org/10.1177/1540796917698832>
- Ballard, S. L., & Dymond, S. K. (2018). Inclusive education for secondary age students with severe disabilities and complex health care needs. *Intellectual and Developmental Disabilities*, 56(6), 427–441. <http://doi.org/10.1352/1934-9556-56.6.427>
- Bambara, L. M., & Kern, L. (2021). *Individualized supports for students with problem behaviors* (2nd ed.). Guilford Press.
- Bambara, L. M., Goh, A., Kern, L., & Caskie, G. (2012). Perceived barriers and enablers to implementing individualized positive behavior interventions and supports in school settings. *Journal of Positive Behavior Interventions*, 14(4), 228–240. <https://doi.org/10.1177/1098300712437219>
- Bambara, L. M., Nonnemacher, S. L., & Kern, L. (2009). Sustaining school-based individualized positive behavior support. *Journal of Positive Behavior Interventions* 11(3), 161–176. <https://doi.org/10.1177/1098300708330878>
- Banda, D. R., McAfee, J. K., & Hart, S. L. (2012). Decreasing self-injurious behavior and fading self-restraint in a student with autism and Tourette syndrome. *Behavioral Interventions*, 27(3), 164–174. <https://doi.org/10.1002/bin.1344>
- Berg, W. K., Wacker, D. P., Harding, J. W., Ganzer, J., & Barretto, A. (2007). An evaluation of multiple dependent variables across distinct classes of antecedent stimuli pre and post functional communication training. *Journal of Early and Intensive Behavior Intervention*, 4(1), 305–333. <http://dx.doi.org/10.1037/h0100346>

- Biggs, E. E., & Carter, E. W. (2016). Quality of life for transition-age youth with autism or intellectual disability. *Journal of Autism and Developmental Disorders*, 46(1), 190–204. <https://doi.org/10.1007/s10803-015-2563-x>
- Billingsley, F. F., & Romer, L. T. (1983). Response prompting and the transfer of stimulus control: Methods, research, and a conceptual framework. *Journal of the Association for the Severely Handicapped*, 8(2), 3–12. <https://doi.org/10.1177/154079698300800201>
- Billstedt, E., Gillberg, I. C., & Gillberg, C. (2007). Autism in adults: Symptom patterns and early childhood predictors. Use of the DISCO in a community sample followed from childhood. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, 48(11), 1102–1110. <https://doi.org/10.1111/j.1469-7610.2007.01774.x>
- Birnbrauer, J. S., Peterson, C. R., & Solnick, J. V. (1974). Design and interpretation of studies of single subjects. *American Journal of Mental Deficiency*, 79(2), 191–203.
- Blair, K. S., Liaupsin, C. J., Umbreit, J., & Kweon, G. (2006). Function-based intervention to support the inclusive placements of young children in Korea. *Education and Training in Developmental Disabilities*, 41(1), 48–57. <https://www.jstor.org/stable/23879870>
- Blair, K. S., Umbreit, J., Dunlap, G., & Jung, G. (2007). Promoting inclusion and peer participation through assessment-based intervention. *Topics in Early Childhood Special Education*, 27(3), 134–147. <https://doi.org/10.1177/02711214070270030401>
- Bloom, S. E., Iwata, B. A., Fritz, J. N., Roscoe, E. M., & Carreau, A. B. (2011). Classroom application of a trial-based functional analysis. *Journal of Applied Behavior Analysis*, 44(1), 19–31. <https://doi.org/10.1901/jaba.2011.44-19>
- Boesch, M. C., Taber-Doughty, T., Wendt, O., & Smalts, S. S. (2015). Using a behavioral approach to decrease self-injurious behavior in an adolescent with severe autism: A data-based case study. *Education and Treatment of Children*, 38(3), 305–328. <https://doi.org/10.1353/etc.2015.0012>
- Bowman, J. A., McDonnell, J., Ryan, J. H., Coleman, O. F., Conradi, L. A., & Eichelberger, C. (2020). Effects of general education teacher-delivered embedded instruction to teach students with intellectual disability to solve word problems. *Education and Training in Autism and Developmental Disabilities*, 55(3), 318–331.
- Boyle, M. A., Ortman, M. E., Beckman, A. C., Aholt, S. L., & Keenan, G. L. (2018). Functional communication training and noncontingent reinforcement in treatment of stereotypy. *Behavioral Interventions*, 33(1), 79–86. <https://doi.org/10.1002/bin.1514>
- Brady, M. P., Honsberger, C. & Cadette, J., & Honsberger, T. (2016). Effects of a peer-mediated literacy based behavioral intervention on the acquisition and maintenance of daily living skills in adolescents with autism. *Education and Training in Autism and Developmental Disabilities*, 51(2). 122–131.

- Brock, M. E. (2018). Trends in the educational placement of students with intellectual disability in the United States over the past 40 years. *American Journal on Intellectual and Developmental Disabilities*, 123(4), 305–314. <https://doi.org/10.1352/1944-7558-123.4.305>
- Brock, M. E., & Schaefer, J. M. (2015). Location matters: Geographic location and educational placement of students with developmental disabilities. *Research and Practice for Persons with Severe Disabilities*, 40(2), 154–164. <https://doi.org/10.1177/1540796915591988>
- Browder, D., Spooner, F., Ahlgrim-Delzell, L., Flowers, C., Algozzine, B., & Karvonen, M. (2003). A content analysis of the curricular philosophies reflected in states' alternate assessment performance indicators. *Research and Practice for Persons with Severe Disabilities*, 28(4), 165–181. <https://doi.org/10.2511/rpsd.28.4.165>
- Browder D. M., Wood, L., Thompson J., & Ribuffo C. (2014) Evidence-based practices for students with severe disabilities (document no. ic-3). <http://cedar.education.ufl.edu/tools/innovation-configurations/>
- Brown v. Board of Education, 347 U.S. 483 (1954).
- Brown, F., McDonnell, J., & Snell, M. E. (2020). *Instruction of students with severe disabilities*. (9th ed.). Pearson.
- Buckley, S. D., & Newchok, D. K. (2005). An evaluation of simultaneous presentation and differential reinforcement with response cost to reduce packing. *Journal of Applied Behavior Analysis*, 38(3), 405–409. <https://doi.org/10.1901/jaba.2005.71-04>
- Bui, X., Quirk, C., Almazan, S., & Valenti, M. (2010). *Inclusive education research & practice*. Maryland Coalition for Inclusive Education.
- Call, N., Clark, S. B., Mevers, J. L., Parks, N. A., Volkert, V. M., & Scheithauer, M. (2017). An individualized method for establishing and thinning multiple schedules of reinforcement following functional communication training. *Learning and Motivation*, 62, 91–102. <https://doi.org/10.1016/j.lmot.2017.03.006>
- Camacho, K. A., & Krezmien, M. P. (2019). Individual- and school-level factors contributing to disproportionate suspension rates: A multilevel analysis of one state. *Journal of Emotional and Behavioral Disorders*, 27(4), 209–220. <https://doi.org/10.1177/1063426618769065>
- Campos, C., Bloom, S. E., Weyman, J. R., & Garcia, A. R. (2020). Parent-implemented multiple schedules. *Behavioral Interventions*, 35(4), 524–541. <https://doi.org/10.1002/bin.1743>
- Carr, E. G. (1988). Functional equivalence as a mechanism of response generalization. In R. H. Horner, R. L. Koegel, & G. Dunlap (Eds.), *Generalization and maintenance: Lifestyle changes in applied settings* (pp. 194–219). Paul H. Brookes.

- Carr, E. G., Dunlap, G., Horner, R. H., Koegel, R. L., Turnbull, A. P., Sailor, W., Anderson, J. L., Albin, R. W., Koegel, L. K., & Fox, L. (2002). Positive behavior support: Evolution of an applied science. *Journal of Positive Behavior Interventions*, 4(1), 4–16. <https://doi.org/10.1177/109830070200400102>
- Carr, E. G., & Durand, V. M. (1985). Reducing behavior problems through functional communication training. *Journal of Applied Behavior Analysis*, 18(2), 111–126. <https://doi.org/10.1901/jaba.1985.18-111>
- Carter, E. W., Tuttle, M., Asmus, J. M., Moss, C. K., & Lloyd, B. P. (2023). Observations of students with and without severe disabilities in general education classes: A portrait of inclusion? *Focus on Autism and Other Developmental Disabilities*, Advance online publication. <https://doi.org/10.1177/10883576231178268>
- Casey, S. D., & Mercial, C. L. (2006). The use of functional communication training without additional treatment procedures in an inclusive school setting. *Behavioral Disorders*, 32(1), 46–54. <https://doi.org/10.1177/019874290603200102>
- Causton-Theoharis, J. N., Theoharis, G., Orsati, F., & Cosier, M. (2011). Does self-contained special education deliver on its promises? A critical inquiry into research and practice. *Journal of Special Education Leadership*, 24(2), 61–78.
- Centers for Disease Control and Prevention. *Autism spectrum disorder (ASD)*. (2022). <https://www.cdc.gov/ncbddd/autism/index.html>
- Centers for Disease Control and Prevention. *Facts about developmental disabilities*. (2020). <https://www.cdc.gov/ncbddd/developmentaldisabilities/facts.html>
- Chang, Y. C., & Locke, J. (2016). A systematic review of peer-mediated interventions for children with autism spectrum disorder. *Research in Autism Spectrum Disorders*, 27, 1–10. <https://doi.org/10.1016/j.rasd.2016.03.010>
- Christensen, L., Young, K. R., & Marchant, M. (2007). Behavioral intervention planning: Increasing appropriate behavior of a socially withdrawn student. *Education & Treatment of Children*, 30(4), 81–103. <https://doi.org/10.1353/etc.2007.0022>
- Chung, Y.-C., & Carter, E. W. (2013). Promoting peer interactions in inclusive classrooms for students who use speech-generating devices. *Research and Practice for Persons with Severe Disabilities*, 38(2), 94–109. <https://doi.org/10.2511/027494813807714492>
- Coffey, A. L., Shawler, L. A., Jessel, J., Nye, M. L., Bain, T. A., & Dorsey, M. F. (2019). Interview-informed synthesized contingency analysis (IISCA): Novel interpretations and future directions. *Behavior Analysis in Practice*, 13(1), 217–225. <https://doi.org/10.1007/s40617-019-00348-3>
- Collins, L. W., & Zirkel, P. A. (2017). Functional behavior assessments and behavior intervention plans: Legal requirements and professional recommendations. *Journal of*

- Positive Behavior Interventions*, 19(3), 180–190.
<https://doi.org/10.1177/1098300716682201>
- Cooc, N. (2022). Disparities in general education inclusion for students of color with disabilities: Understanding when and why. *Journal of School Psychology*, 90, 43–59.
<https://doi.org/10.1016/j.jsp.2021.10.002>
- Cook, B. G., & Cook, S. C. (2011). Unraveling evidence-based practices in special education. *The Journal of Special Education*, 47(2), 71–82.
<https://doi.org/10.1177/0022466911420877>
- Cooper, J. O., Heron, T. E., & Heward, W. L. (2020). *Applied behavior analysis* (3rd ed.). Pearson.
- Cosier, M., Gomez, A. S., Ricks-Oddie, J., McKee, A., Doty, M. C., Bonham, E., & Cardinal, D. N. (2021). Where are students with autism and intellectual disability learning? Placement trends in California. *Inclusion*, 9(4), 290–303. <https://doi.org/10.1352/2326-6988-9.4.290>
- Council for Exceptional Children. (2020). *Position on restraint and seclusion procedures in school settings* [Position statement].
<https://exceptionalchildren.org/sites/default/files/2020-11/Restraint%20and%20Seclusion-2020.pdf>
- Courtade, G. R., Test, D. W., & Cook, B. G. (2014). Evidence-based practices for learners with severe intellectual disability. *Research and Practice for Persons with Severe Disabilities*, 39(4), 305–318. <https://doi.org/10.1177/1540796914566711>
- Crosland, K., & Dunlap, G. (2012). Effective strategies for the inclusion of children with autism in general education classrooms. *Behavior Modification*, 36(3), 251–269.
<https://doi.org/10.1177/0145445512442682>
- Davidson, P. W., Cain, N. N., Sloane-Reeves, J. E., Van Speybroech, A., Segel, J., Gutkin, J., Quijano, L. E., Kramer, B. M., Porter, B., & Shoham, I. (1994). Characteristics of community-based individuals with mental retardation and aggressive behavioral disorders. *American Journal of Mental Retardation*, 98(6), 704–716.
- Davis, D. H., Fredrick, L. D., Alberto, P. A., & Gama, R. (2012). Functional communication training without extinction using concurrent schedules of differing magnitudes of reinforcement in classrooms. *Journal of Positive Behavior Interventions*, 14(3), 162–172.
<https://doi.org/10.1177/1098300711429597>
- Day, R. M., Rea, J. A., Schussler, N. G., Larsen, S. E., & Johnson, W. L. (1988). A functionally based approach to the treatment of self-injurious behavior. *Behavior Modification*, 12(4), 565–589. <https://doi.org/10.1177/01454455880124005>
- de Boer, A. A., & Munde, V. S. (2015). Parental attitudes toward the inclusion of children with profound intellectual and multiple disabilities in general primary education in the

- Netherlands. *The Journal of Special Education*, 49(3), 179–187.
<https://doi.org/10.1177/0022466914554297>
- de Bruin, C. L., Deppeler, J. M., Moore, D. W., & Diamond, N. T. (2013). Public school-based interventions for adolescents and young adults with an autism spectrum disorder: A meta-analysis. *Review of Educational Research*, 83(4), 521–550. <https://doi.org/http://dx.doi.org/10.3102/0034654313498621>
- de Graaf, G., & Van Hove, G. (2015). Learning to read in regular and special schools: A follow up study of students with Down syndrome. *Life Span and Disability*, 18(1), 7–39.
- Dekker, M. C., Koot, H. M., van der Ende, J., & Verhulst, F. C. (2002). Emotional and behavioral problems in children and adolescents with and without intellectual disability. *The Journal of Child Psychology and Psychiatry, and Allied Disciplines*, 43(8), 1087–1098. <https://doi.org/10.1111/1469-7610.00235>
- Delgado-Casas, C., Navarro, J. I., Garcia-Gonzalez-Gordon, R., & Marchena, E. (2014). Functional analysis of challenging behavior in people with severe intellectual disabilities. *Psychological Reports*, 115(3), 655–669. <https://doi.org/10.2466/15.PR0.115c26z4>
- Desrochers, M., & Fallon, M. (2014). *Instruction in functional assessment*. Milne Publishing.
- Devlin, S., Healy, O., Leader, G., & Hughes, B. M. (2011). Comparison of behavioral intervention and sensory-integration therapy in the treatment of challenging behavior. *Journal of Autism and Developmental Disorders*, 41(10), 1303–1320.
<https://doi.org/10.1007/s10803-010-1149-x>
- Dolezal, D. N., & Kurtz, P. F. (2010). Evaluation of combined-antecedent variables on functional analysis results and treatment of problem behavior in a school setting. *Journal of Applied Behavior Analysis*, 43(2), 309–314. <https://doi.org/10.1901/jaba.2010.43-309>
- Donnellan, A. M. (1984). The criterion of the least dangerous assumption. *Behavioral Disorders*, 9(2), 141–150. <https://doi.org/10.1177/019874298400900201>
- Doubet, S. L., & Ostrosky, M. M. (2015). The impact of challenging behavior on families: I don't know what to do. *Topics in Early Childhood Special Education*, 34(4), 223–233.
<https://doi.org/10.1177/0271121414539019>
- Dudley-Marling, C., & Burns, M. (2013). Two perspectives on inclusion in the United States. *Global Education Review*, 1(1). 14–31.
- Dufrene, B. A., Kazmerski, J. S., & Labrot, Z. (2017). The current status of indirect functional assessment instruments. *Psychology in the Schools*, 54(4), 331–350.
<https://doi.org/https://doi.org/10.1002/pits.22006>
- Dunlap, G., & Fox, L. (2011). Function-based interventions for children with challenging behavior. *Journal of Early Intervention*, 33(4), 333–343.
<https://doi.org/10.1177/1053815111429971>

- Durand, V. M. (1993). Functional communication training using assistive devices: Effects on challenging behavior and affect. *Augmentative and Alternative Communication*, 9(3), 168–176. <https://doi.org/10.1080/07434619312331276571>
- Durand V. M. (1999). Functional communication training using assistive devices: Recruiting natural communities of reinforcement. *Journal of Applied Behavior Analysis*, 32(3), 247–267. <https://doi.org/10.1901/jaba.1999.32-247>
- Durand, V. M., & Carr, E. G. (1992). An analysis of maintenance following functional communication training. *Journal of Applied Behavior Analysis*, 25(4), 777–794. <https://doi.org/10.1901/jaba.1992.25-777>
- Durand, V. M., & Crimmins, D. B. (1988). Identifying the variables maintaining self-injurious behavior. *Journal of Autism and Developmental Disorders*, 18(1), 99–117. <https://doi.org/10.1007/BF02211821>
- Eisenhower, A. S., Blacher, J., & Bush, H. H. (2015). Longitudinal associations between externalizing problems and student-teacher relationship quality for young children with ASD. *Research in Autism Spectrum Disorders*, 9, 163–173. <https://doi.org/10.1016/j.rasd.2014.09.007>.
- Ellingson, S. A., Miltenberger, R. G., Stricker, J., Galensky, T. L., & Garlinghouse, M. (2000). Functional assessment and intervention for challenging behaviors in the classroom by general classroom teachers. *Journal of Positive Behavior Interventions*, 2(2), 85–97. <https://doi.org/10.1177/109830070000200202>
- Emerson, E., Blacher, J., Einfeld, S., Hatton, C., Robertson, J., & Stancliffe, R. J. (2014). Environmental risk factors associated with the persistence of conduct difficulties in children with intellectual disabilities and autistic spectrum disorders. *Research in Developmental Disabilities*, 35(12), 3508–3517. <https://doi.org/10.1016/j.ridd.2014.08.039>
- Esteves, J. Perry, A., Spiegel R., & Weiss, J. A. (2021) Occurrence and predictors of challenging behavior in youth with intellectual disability with or without autism. *Journal of Mental Health Research in Intellectual Disabilities*, 14(2), 189-201. <https://doi.org/10.1080/19315864.2021.1874577>
- Falcomata, T. S., Wacker, D. P., Ringdahl, J. E., Vinkquist, K. & Dutt, A. (2013). An evaluation of generalization of mands during functional communication training. *Journal of Applied Behavior Analysis*, 46(2), 444–454. <https://doi.org/10.1002/jaba.37>
- Farrell, P. (2000). The impact of research on developments in inclusive education. *International Journal of Inclusive Education*, 4(2), 153–162. <https://doi.org/10.1080/136031100284867>
- Feldman, R., Carter, E. W., Asmus, J., & Brock, M. E. (2016). Presence, proximity, and peer interactions of adolescents with severe disabilities in general education classrooms. *Exceptional Children*, 82(2), 192–208. <https://doi.org/10.1177/0014402915585481>

- Filter, K. J., & Horner, R. H. (2009). Function-based academic interventions for problem behavior. *Education & Treatment of Children*, 32(1), 1–19. <https://doi.org/10.1353/etc.0.0043>
- Fisher, M., & Meyer, L. H. (2002). Development and social competence after two years for students enrolled in inclusive and self-contained educational programs. *Research and Practice for Persons with Severe Disabilities*, 27(3), 165–174. <https://doi.org/10.2511/rpsd.27.3.165>
- Fisher, W. W., Rodriguez, N. M., & Owen, T. M. (2013). Functional assessment and treatment of perseverative speech about restricted topics in an adolescent with Asperger syndrome. *Journal of Applied Behavior Analysis*, 46(1), 307–311. <https://doi.org/10.1002/jaba.19>
- Fisher, W. W., Saini, V., Greer, B. D., Sullivan, W. E., Roane, H. S., Fuhrman, A. M., Craig, A. R., & Kimball, R. T. (2019). Baseline reinforcement rate and resurgence of destructive behavior. *Journal of the Experimental Analysis of Behavior*, 111(1), 75–93. <https://doi.org/10.1002/jeab.488>
- Flynn, S. D., & Lo, Y.-y. (2016). Teacher implementation of trial-based functional analysis and differential reinforcement of alternative behavior for students with challenging behavior. *Journal of Behavioral Education*, 25(1), 1–31. <https://doi.org/10.1007/s10864-015-9231-2>
- Frea, W. D., & Hughes, C. (1997). Functional analysis and treatment of social-communicative behavior of adolescents with developmental disabilities. *Journal of Applied Behavior Analysis*, 30(4), 701–704. <https://doi.org/10.1901/jaba.1997.30-701>
- Gage, N. A., Lewis, T. J., & Stichter, J. P. (2012). Functional behavioral assessment-based interventions for students with or at risk for emotional and/or behavioral disorders in school: A hierarchical linear modeling meta-analysis. *Behavioral Disorders*, 37(2), 55–77. <http://doi.org/10.1177/019874291203700201>
- Gage, N. A., Pico, D. L., & Evanovich, L. (2022). National trends and school-level predictors of restraint and seclusion for students with disabilities. *Exceptionality*, 30(1), 1–13. <https://doi.org/10.1080/09362835.2020.1727327>
- Gander, T., & Dann, C. (2023). Using bug-in-ear technology as a coaching technique: A scoping review. *International Journal of Mentoring and Coaching in Education*, 12(1), 62–81. <https://doi.org/10.1108/IJMCE-05-2022-0040>
- Gee, K., Gonzalez, M., & Cooper, C. (2020). Outcomes of inclusive versus separate placements: A matched pairs comparison study. *Research and Practice for Persons with Severe Disabilities*, 45(4), 223–240. <https://doi.org/10.1177/1540796920943469>
- Gerow, S., Davis, T. Radhakrishnan, S., Gregori, E., & Rivera, G. (2018). Functional communication training: The strength of the evidence across disabilities. *Exceptional Children*, 85(1), 86–103. <https://doi.org/10.1177/0014402918793399>

- Gerow, S., Radhakrishnan, S., Davis, T. N., Hodges, A., & Feind, A. (2020). A comparison of demand fading and a dense schedule of reinforcement during functional communication training. *Behavior Analysis in Practice*, 13(1), 90–103.
<https://doi.org/http://dx.doi.org/10.1007/s40617-019-00403-z>
- Ghaemmaghami, M., Hanley, G. P., & Jessel, J. (2021). Functional communication training: From efficacy to effectiveness. *Journal of Applied Behavior Analysis*, 54(1), 122–143.
<https://doi.org/10.1002/jaba.762>
- Giangreco, M. F. (2020). “How can a student with severe disabilities be in a fifth-grade class when he can’t do fifth-grade level work?” Misapplying the least restrictive environment. *Research and Practice for Persons with Severe Disabilities*, 45(1), 23–27.
<https://doi.org/10.1177/1540796919892733>
- Giangreco, M. F., Suter, J. C., & Doyle, M. B. (2010). Paraprofessionals in inclusive schools: A review of recent research. *Journal of Educational and Psychological Consultation*, 20(1), 41–57. <https://doi.org/10.1080/10474410903535356>
- Gibson, J. L., Pennington, R. C., Stenhoff, D. M., & Hopper, J. S. (2010). Using desktop videoconferencing to deliver interventions to a preschool student with autism. *Topics in Early Childhood Special Education*, 29(4), 214–225.
<https://doi.org/10.1177/0271121409352873>
- Goh, A. E., & Bambara, L. M. (2012). Individualized positive behavior support in school settings: A meta-analysis. *Remedial and Special Education*, 33(5), 271–286.
<https://doi.org/10.1177/0741932510383990>
- Gover, H. C., Staubitz, J. E., & Juárez, A. P. (2022). Revisiting reinforcement: A focus on happy, relaxed, and engaged students. *TEACHING Exceptional Children*, 55(1), 72–74.
<https://doi.org/10.1177/00400599221123185>
- Gratz, O. H., Wilson, A. N., & Glassford, T. (2018). Evaluating the resurgence of problem behavior with three functionally equivalent discriminated operants. *The Psychological Record*, 69(1), 117–129. <https://doi.org/10.1007/s40732-018-0305-0>
- Greer, B. D., Fisher, W. W., Saini, V., Owen, T. M., & Jones, J. K. (2016). Functional communication training during reinforcement schedule thinning: An analysis of 25 applications. *Journal of Applied Behavior Analysis*, 49(1), 105–121.
<https://doi.org/10.1002/jaba.265>
- Gregori, E., Rispoli, M. J., Lory, C., Kim, S. Y., & David, M. (2022). Effects of teachers as coaches for paraprofessionals implementing functional communication training. *Journal of Positive Behavior Interventions*, 24(2), 133–144.
<https://doi.org/10.1177/1098300720983538>
- Gur, A. (2018). Challenging behavior, functioning difficulties, and quality of life of adults with intellectual disabilities. *International Journal of Developmental Disabilities*, 64(1), 45–52. <https://doi.org/10.1080/20473869.2016.1221233>

- Hagopian, L. P., Boelter, E. W., & Jarmolowicz, D. P. (2011). Reinforcement schedule thinning following functional communication training: Review and recommendations. *Behavior Analysis in Practice*, 4(1), 4–16. <https://doi.org/10.1007/BF03391770>
- Hanley, G. P. (2021, September 9). A perspective on today's ABA from Dr. Hanley. *Practical Functional Assessment*. <https://practicalfunctionalassessment.com/2021/09/09/a-perspective-on-todays-aba-by-dr-greg-hanley/>
- Hanley, G. P. (2011). Functional analysis. In J. Luiselli (Ed.). *Teaching and behavior support for children and adults with autism spectrum disorder: A “how to” practitioner’s guide* (pp. 22–29). Oxford University Press.
- Hanley, G. P. (2012). Functional assessment of problem behavior: Dispelling myths, overcoming implementation obstacles, and developing new lore. *Behavior Analysis in Practice*, 5(1), 54–72. <https://doi.org/10.1007/BF03391818>
- Hanley, G. P. (2009). *Open-Ended Functional Assessment Interview*. Retrieved from <https://www.abainternational.org/media/46721/HanleyFAInterview.pdf>
- Hanley, G. P. (2010). Prevention and treatment of severe problem behavior. In E. Mayville & J. Mulick (Eds.), *Behavioral foundations of effective autism treatment* (pp. 233–256). Sloan.
- Hanley, G. P., Jin, C. S., Vanselow, N. R., & Hanratty, L. A. (2014). Producing meaningful improvements in problem behavior of children with autism via synthesized analyses and treatments. *Journal of Applied Behavior Analysis*, 47(1), 16–36. <https://doi.org/10.1002/jaba.106>
- Harris, S. L., & Handleman, J. S. (2000). Age and IQ at intake as predictors of placement for young children with autism: A four- to six-year follow-up. *Journal of Autism Developmental Disorders*, 30(2), 137–142. <https://doi.org/10.1023/a:1005459606120>
- Harrison, J. R., State, T. M., Evans, S. W., & Schamberg, T. (2016). Construct and predictive validity of social acceptability: Scores from high school teacher ratings on the school intervention rating form. *Journal of Positive Behavior Interventions*, 18(2), 111–123. <https://doi.org/10.1177/1098300715596135>
- Harrower, J., & Dunlap, G. (2001). Including children with autism in general education classrooms a review of effective strategies. *Behavior Modification*, 25(5), 762–784. <https://doi.org/10.1177/0145445501255006>
- Hehir, T., Grindal, T., Freeman, B., Lamoreau, R., Borquaye, Y., & Burke, S. (2016). *A summary of the evidence on inclusive education*. ABT Associates. Retrieved from https://alana.org.br/wp-content/uploads/2016/12/A_Summary_of_the_evidence_on_inclusive_education.pdf
- Hetzroni, O. E., & Roth, T. (2003). Effects of a positive support approach to enhance communicative behaviors of children with mental retardation who have challenging

- behaviors. *Education and Training in Developmental Disabilities*, 38(1), 95–105.
<http://www.jstor.org/stable/23880188>
- Hoffman, K., & Falcomata, T. S. (2014). An evaluation of resurgence of appropriate communication in individuals with autism who exhibit severe problem behavior. *Journal of Applied Behavior Analysis*, 47(3), 651–656. <https://doi.org/10.1002/jaba.144>.
- Horner, R. H. (2000). Positive behavior supports. *Focus on Autism and Other Developmental Disabilities*, 15(2), 97–105. <https://doi.org/10.1177/108835760001500205>
- Horner, R. H., Albin, R. W., Storey, K., Sprague, J. R., & O'Neill, R. E. (2013). *Functional assessment and program development for problem behavior* (3rd ed.). Wadsworth Publishing.
- Horner, R. H., Carr, E. G., Halle, J., McGee, G., Odom, S., & Wolery, M. (2005). The use of single-subject research to identify evidence-based practice in special education. *Exceptional Children*, 71(2), 165–179. <https://doi.org/10.1177/001440290507100203>
- Horner, R. H., & Day, H. (1991). The effects of response efficiency on functionally equivalent competing behaviors. *Journal of Applied Behavior Analysis*, 24(4), 719–732.
<https://doi.org/10.1901/jaba.1991.24-719>
- Horner, R. H., Salentine, S., & Albin, R. W. (2003). *Self-Assessment of contextual fit in schools*. University of Oregon.
- Horner, R. H., Sprague, J. R., O'Brien, M., & Heathfield, L. T. (1990). The role of response efficiency in the reduction of problem behaviors through functional equivalence training: A case study. *Journal of the Association for Persons with Severe Handicaps*, 15(2), 91–97. <https://doi.org/10.1177/154079699001500205>
- Horner, R. H., Sugai, G., Smolkowski, K., Eber, L., Nakasato, J., Todd, A. W., & Esperanza, J. (2009). A randomized, wait-list controlled effectiveness trial assessing school-wide positive behavior support in elementary schools. *Journal of Positive Behavior Interventions*, 11(3), 133–144. <https://doi.org/10.1177/1098300709332067>
- Horner, R. H., Sugai, G., Todd, A. W., & Lewis-Palmer, T. (1999-2000). Elements of behavior support plans: A technical brief. *Exceptionality*, 8(3), 205–215.
https://doi.org/10.1207/S15327035EX0803_6
- Hudson, M. E., Browder, D. M., & Jimenez, B. A. (2014). Effects of a peer-delivered system of least prompts intervention with adapted science read-alouds on listening comprehension for students with moderate intellectual disability. *Education and Training in Autism and Developmental Disabilities*, 49(1), 60–77. <https://www.jstor.org/stable/23880655>
- Hughes, C., Cosgriff, J. C., Agran, M., & Washington, B. H. (2013). Student self-determination: A preliminary investigation of the role of participation in inclusive settings. *Education and Training in Autism and Developmental Disabilities*, 48(1), 3–17.
<http://www.jstor.org/stable/23879882>

- Hume, K., Steinbrenner, J. R., Odom, S. L., Morin, K. L., Nowell, S. W., Tomaszewski, B., Szendrey, S., McIntyre, N. S., Yücesoy-Özkan, S., & Savage, M. N. (2021). Evidence-based practices for children, youth, and young adults with autism: Third generation review. *Journal of Autism and Developmental Disorders*, 51(11), 4013–4032. <https://doi.org/10.1007/s10803-020-04844-2>
- Hunt, P. F., Kozleski, E. B., Lee, J., Mortier, K., Fleming, D., Hicks, T. A., Balasubramanian, L., Leu, G., Bross, L. A., Munandar, V. D., Dunlap, K., Stepaniuk, I., Aramburo, C. M., & Oh, Y. (2020). Implementing comprehensive literacy instruction for students with severe disabilities in general education classrooms. *Exceptional Children*, 86(3), 330–347. <https://doi.org/10.1177/0014402919880156>
- Hunt, P., Staub, D., Alwell, M., & Goetz, L. (1994). Achievement by all students within the context of cooperative learning groups. *Journal of the Association for Persons with Severe Handicaps*, 19(4), 290–301. <https://doi.org/10.1177/154079699401900405>
- Hutchins, T. L., & Prelock, P. A. (2014). Using communication to reduce challenging behaviors in individuals with autism spectrum disorders and intellectual disability. *Child and Adolescent Psychiatric Clinics of North America*, 23(1), 41–55. <https://doi.org/10.1016/j.chc.2013.07.003>
- Individuals with Disabilities Education Improvement Act, 20 U.S.C. § 1400 (2004). <https://sites.ed.gov/idea>
- Ingram, K., Lewis-Palmer, T., & Sugai, G. (2005). Function-based intervention planning: Comparing the effectiveness of FBA function-based and non-function-based intervention plans. *Journal of Positive Behavior Interventions*, 7(4), 224–236. <https://doi.org/10.1177/10983007050070040401>
- Iwata, B. A., Dorsey, M. F., Slifer, K. J., Bauman, K. E., & Richman, G. S. (1982). Toward a functional analysis of self-injury. *Analysis and Intervention in Developmental Disabilities*, 2(1), 3–20. [https://doi.org/10.1016/0270-4684\(82\)90003-9](https://doi.org/10.1016/0270-4684(82)90003-9)
- Iwata, B. A., Dorsey, M. F., Slifer, K. J., Bauman, K. E., & Richman, G. S. (1994). Toward a functional analysis of self-injury. *Journal of Applied Behavior Analysis*, 27(2), 197–209. <https://doi.org/10.1901/jaba.1994.27-197>
- Iwata, B. A., & Dozier, C. L. (2008). Clinical application of functional analysis methodology. *Behavior Analysis in Practice*, 1(1), 3–9. <https://doi.org/10.1007/BF03391714>
- Jackson, L. B., Ryndak, D. L., & Wehmeyer, M. L. (2008–2009). The dynamic relationship between context, curriculum, and student learning: A case for inclusive education as a research-based practice. *Research and Practice for Persons with Severe Disabilities*, 34(1), 175–195. <https://doi.org/10.2511/rpsd.33.4.175>
- Jeong, Y., & Copeland, S. R. (2020). Comparing functional behavior assessment-based interventions and non-functional behavior assessment-based interventions: A systematic

- review of outcomes and methodological quality of studies. *Journal of Behavioral Education*, 29, 1–41. <https://doi.org/10.1007/s10864-019-09355-4>
- Jorgenson, C. M. (2005). The least dangerous assumption. *Disability Solutions*, 6(3), 1–16. http://www.uwosh.edu/coehs/cmagentproject/readings/documents/Least_Dangerous_Assumption.pdf
- Jorgenson, C. M. (2018). *It's more than "just being in"*. Paul H. Brookes.
- Kazdin, A. E. (1977). Assessing the clinic or applied importance of behavior change through social validation. *Behavior Modification*, 1(4), 427–452. <https://dx.doi.org/10.1177/014544557714001>
- Kazdin, A. E. (2011). *Single-case research designs: Methods for clinical and applied settings* (2nd ed.). Oxford University Press.
- Kennedy, C. H., Cushing, L. S., & Itkonen, T. (1997). General education participation improves the social contacts and friendship networks of students with severe disabilities. *Journal of Behavioral Education*, 7(2), 167–189. <https://doi.org/10.1023/A:1022888924438>
- Kennedy, C. H., Meyer, K. A., Knowles, T., & Shukla, S. (2000). Analyzing the multiple functions of stereotypical behavior for students with autism: Implications for assessment and treatment. *Journal of Applied Behavior Analysis*, 33(4), 559–571. <https://doi.org/10.1901/jaba.2000.33-559>
- Kennedy, C. H., Shukla, S., & Fryxell, D. (1997). Comparing the effects of educational placement on the social relationships of intermediate school students with severe disabilities. *Exceptional Children*, 64(1), 31–47. <https://doi.org/10.1177/001440299706400103>
- Kern, L., Evans, S. W., Lewis, T. J., State, T. M., Weist, M. D., & Wills, H. P. (2015). CARS comprehensive intervention for secondary students with emotional and behavioral problems: conceptualization and development. *Journal of Emotional and Behavioral Disorders*, 23(4), 195–205. <https://doi.org/10.1177/1063426615578173>
- Kern, L., Gallagher, P., Starosta, K., Hickman, W., & George, M. (2006). Longitudinal outcomes of functional behavioral assessment-based intervention. *Journal of Positive Behavior Interventions*, 8(2), 67–78. <https://doi.org/10.1177/10983007060080020501>
- Kern, L., & Gresham, F. (2002–2007). *Research exploring alternatives for children in schools (REACH)* (National Center Grant funded by the Department of Education, Office of Special Education Programs)
- Killu, K. (2008). Developing effective behavior intervention plans: Suggestions for school personnel. *Intervention in School and Clinic*, 43(3), 140–149. <https://doi.org/10.1177/1053451207311610>

- Kirkpatrick, M., Akers, J., & Rivera, G. (2019). Use of behavioral skills training with teachers: A systematic review. *Journal of Behavioral Education, 28*. <https://doi.org/10.1007/s10864-019-09322-z>
- Kleinert, H. L. (2020). Students with the most significant disabilities, communicative competence, and the full extent of their exclusion. *Research and Practice for Persons with Severe Disabilities, 45*(1), 34–38. <https://doi.org/10.1177/1540796919892740>
- Kleinert, H. L., Towles-Reeves, E., Quenemoen, R., Thurlow, M., Fluegge, L., Weseman, L., & Kerbel, A. (2015). Where students with the most significant cognitive disabilities are taught. *Exceptional Children, 81*(3), 312–328. <https://doi.org/10.1177/0014402914563697>
- Kozleski, E. B., Artiles, A. & Waitoller, F. (2014). Translating inclusive education: Equity concerns. In L. Florian (Eds). *The handbook of special education* (pp. 231–249). Sage Publications.
- Kratochwill, T. R. (Ed.) (1978). *Single subject research—Strategies for evaluating change*. Academic Press.
- Kroesch, A. M., & Peeples, K. N. (2021). High school general education teachers’ perceptions of students with significant disabilities. *Research, Advocacy, and Practice for Complex and Chronic Conditions, 40*(1), 26–41. <https://doi.org/10.14434/rapcc.v40i1.31756>
- Kuntz, E. M., & Carter, E. W. (2019). Review of interventions supporting secondary students with intellectual disability in general education classes. *Research and Practice for Persons with Severe Disabilities, 44*(2), 103–121. <https://doi.org/10.1177/1540796919847483>
- Kuntz, E. M., Carter, E. W., Cassady, K., & Knight, V. F. (2022). Observing inclusion in STEM classes: Academic and social participation of students with and without intellectual and developmental disabilities. *Inclusion, 10*(1), 1–18. <https://doi.org/10.1352/2326-6988-10.1.1>
- Kurth, J. A., Born, K., & Love, H. (2016). Ecobehavioral characteristics of self-contained high school classrooms for students with severe cognitive disability. *Research and Practice for Persons with Severe Disabilities, 41*(4), 227–243. <https://doi.org/10.1177/1540796916661492>
- Kurth, J. A., & Enyart, M. (2016). Schoolwide positive behavior supports and students with significant disabilities: Where are we? *Research and Practice for Persons with Severe Disabilities, 41*(3), 216–222. <https://doi.org/10.1177/1540796916633083>
- Kurth, J. A., Mastergeorge, A. M. & Paschall, K. W. (2016). Economic and demographic factors impacting placement of students with autism. *Education and Training in Autism and Developmental Disabilities, 51*(1), 1–27. <https://www.jstor.org/stable/26420350>

- Kurth, J. A., & Mastergeorge, A. M. (2012). Impact of setting and instructional context for adolescents with autism. *The Journal of Special Education*, 46(1), 36–48. <https://doi.org/10.1177/0022466910366480>
- Kurth, J. A., Miller, A. L., Gross Toews, S., Thompson, J. R., Cortés, M., Dahal, M. H., de Escallón, I. E., Hunt, P. F., Porter, G., Richler, D., Fonseca, I., Singh, R., Šiška, J., Villamero, R., & Wangare, F. (2018). Inclusive education: Perspectives on implementation and practice from international experts. *Intellectual and Developmental Disabilities*, 56(6), 471–485. <https://doi.org/10.1352/1934-9556-56.6.471>
- Kurth, J. A., Morningstar, M. E., & Kozleski, E. B. (2014). The persistence of highly restrictive special education placements for students with low-incidence disabilities. *Research and Practice for Persons with Severe Disabilities*, 39(3), 227–239. <https://doi.org/10.1177/1540796914555580>
- Kurth, J. A., Ruppert, A. L., Toews, S. G., McCabe, K. M., McQueston, J. A., & Johnston, R. (2019). Considerations in placement decisions for students with extensive support needs: An analysis of LRE statements. *Research and Practice for Persons with Severe Disabilities*, 44(1), 3–19. <https://doi.org/10.1177/1540796918825479>
- Kurth, J. A., Zagana, A. L., Hagiwara, M., & Enyart, M. (2017). Inclusion of students with significant disabilities in SWPBS evaluation tools. *Education and Training in Autism and Developmental Disabilities*, 52(4), 383–392. <https://www.jstor.org/stable/26420412>
- Kurth, J. A., & Zagana, A. L. (2018). Involvement and participation of students with severe disabilities in SWPBIS. *The Journal of Special Education*, 52(3), 131–141. <https://doi.org/10.1177/0022466918766523>
- Kurtz, P. F., Leoni, M., & Hagopian, L. P. (2020). Behavioral approaches to assessment and early intervention for severe problem behavior in intellectual and developmental disabilities. *Pediatric Clinics of North America*, 67(3), 499–511. <https://doi.org/10.1016/j.pcl.2020.02.005>
- Lalli, J. S., Browder, D. M., Mace, F. C., & Brown, D. K. (1993). Teacher use of descriptive analysis data to implement interventions to decrease students' problem behaviors. *Journal of Applied Behavior Analysis*, 26(2), 227–238. <https://doi.org/10.1901/jaba.1993.26-227>
- Lambert, J. M., Bloom, S. E., & Irvin, J. (2012). Trial-based functional analysis and functional communication training in an early childhood setting. *Journal of Applied Behavior Analysis*, 45(3), 579–584. <https://doi.org/10.1901/jaba.2012.45-579>
- Lambert, J. M., Bloom, S. E., Samaha, A. L., & Dayton, E. (2017). Serial functional communication training: Extending serial DRA to mands and problem behavior. *Behavioral Interventions*, 32(4), 311–325. <https://doi.org/10.1002/bin.1493>
- Lane, K. L., Carter, E. W., Common, E., & Jordan, A. (2012). Teacher expectations for student performance: Lessons learned and implications for research and practice. In B. G. Cook,

- M. Tankersley & T. J. Landrum (Eds.), *Classroom behavior, contexts, and interventions* (pp. 95–129). Emerald.
- Lauderdale-Littin, S., Howell, E., & Blacher, J. (2013). Educational placement for children with autism spectrum disorders in public and non-public school settings: The impact of social skills and behavior problems. *Education and Training in Autism and Developmental Disabilities, 48*(4), 469–478. <https://www.jstor.org/stable/24232504>
- Ledford, J. R., & Gast, D. L. (2018). *Single case research methodology: Applications in special education and behavioral sciences* (3rd ed.). Routledge.
- Ledford, J. R., Lambert, J. M., Pustejovsky, J. E., Zimmerman, K. N., Hollins, N., & Barton, E. E. (2023). Single-case-design research in special education: Next-generation guidelines and considerations. *Exceptional Children, 89*(4), 379–396. <https://doi.org/10.1177/00144029221137656>
- Liaupsin, C. J., Umbreit, J., Ferro, J. B., Urso, A., & Upreti, G. (2006). Improving academic engagement through systematic, function-based intervention. *Education and Treatment of Children, 29*(4), 573–591. <https://www.jstor.org/stable/42900554>
- Lloyd, B. P., Barton, E. E., Ledbetter-Cho, K., Pennington, B., & Pokorski, E. A. (2019). Function-based interventions in K–8 general education settings: A focus on teacher implementation. *The Elementary School Journal, 119*(4), 601–628. <https://doi.org/10.1086/703114>
- Lloyd, B. P., & Kennedy, C. H. (2014). Assessment and treatment of challenging behaviour for individuals with intellectual disability: A research review. *Journal of Applied Research on Intellectual Disability, 27*, 187–199. <https://doi.org/10.1111/jar.12089>
- Lohrmann, S., & Bambara, L. M. (2006). Elementary education teachers' beliefs about essential supports needed to successfully include students with developmental disabilities who engage in challenging behavior. *Research and Practice for Persons with Severe Disabilities, 31*(2), 157–173. <https://doi.org/10.1177/154079690603100208>
- Loman, S. L., Strickland-Cohen, M. K., & Walker, V. L. (2018). Promoting the accessibility of SWPBIS for students with severe disabilities. *Journal of Positive Behavior Interventions, 20*(2), 113–123. <https://doi.org/https://doi.org/10.1177/1098300717733976>
- Lory, C., Mason, R. A., Davis, J. L., Wang, D., Kim, S. Y., Gregori, E., & David, M. (2020). A meta-analysis of challenging behavior interventions for students with developmental disabilities in inclusive school settings. *Journal of Autism and Developmental Disorders, 50*(4), 1221–1237. <https://doi.org/10.1007/s10803-019-04329-x>
- Losinski, M., Maag, J. W., Katsiyannis, A., & Ryan, J. B. (2015). The use of structural behavioral assessment to develop interventions for secondary students exhibiting challenging behaviors. *Education and Treatment of Children, 38*(2), 149–174. <https://doi.org/10.1353/etc.2015.0006>

- Lucyshyn, J. M., Albin, R. W., Horner, R. H., Mann, J. C., Mann, J. A., & Wadsworth, G. (2007). Family implementation of positive behavior support for a child with autism: Longitudinal, single-case, experimental, and descriptive replication and extension. *Journal of Positive Behavior Interventions*, 9(3), 131–150. <https://doi.org/10.1177/10983007070090030201>
- Lyons, J., Weiss, J. A., & Cappadocia, M. C. (2011). Social characteristics of students with autism spectrum disorders across various classroom settings. *Journal on Developmental Disabilities*, 17(1), 77–82.
- MacNaul, H. L., & Neely, L. C. (2018). Systematic review of differential reinforcement of alternative behavior without extinction for individuals with autism. *Behavior Modification*, 42(3), 398–421. <https://doi.org/10.1177/0145445517740321>
- Mansouri, M. C., Kurth, J. A., Lockman Turner, E., Zimmerman, K. N., & Frick, T. A. (2022). Comparison of academic and social outcomes of students with extensive support needs across placements. *Research and Practice for Persons with Severe Disabilities*, 47(2), 111–129. <https://doi.org/10.1177/15407969221101792>
- Martella, R., Nelson, J., Marchand-Martella, N., & O'Reilly, M. (2012). *Comprehensive behavior management: Individualized, classroom, and schoolwide approaches* (2nd ed.). SAGE Publications
- Martinez, J. R., Werch, B. L., & Conroy, M. A. (2016). School-based interventions targeting challenging behaviors exhibited by young children with autism spectrum disorder: A systematic literature review. *Education and Training in Autism and Developmental Disabilities*, 51(3), 265–280. <https://www.jstor.org/stable/24827523>
- Masud, A. B., Walker, V. L., Carpenter, M. E., & Anderson, A. (2022). Functional communication training in inclusive school settings for students with intellectual and developmental disabilities: A literature review. *Journal of Positive Behavior Interventions*. Advance online publication. <https://doi.org/10.1177/10983007221126530>
- Matson, J. L., & Vollmer, T. (1995). *Questions about behavioral function (QABF)*. Disability Consultants.
- McCabe, K. M., Ruppar, A., Kurth, J. A., Mcqueston, J. A., Johnston, R., & Toews, S. G. (2020). Cracks in the continuum: A critical analysis of least restrictive environment for students with significant support needs. *Teachers College Record*, 122(5), 1–28. <https://doi.org/10.1177/016146812012200511>
- McCloskey, E. (2016). To the maximum extent appropriate: Determining success and the least restrictive environment for a student with autism spectrum disorder. *International Journal of Inclusive Education*, 20(11), 1204–1222. <https://doi.org/10.1080/13603116.2016.1155667>
- McConnell, A., Sanford, C., Martin, J., Cameto, R., & Hodge, L. (2021). Skills, behaviors, expectations, and experiences associated with improved postsecondary outcomes for

- students with significant cognitive disabilities. *Research and Practice for Persons with Severe Disabilities*, 46(4), 240–258. <https://doi.org/10.1177/15407969211053810>
- McKenna, J. W., Flower, A., & Ciullo, S. (2014). Measuring fidelity to improve intervention effectiveness. *Intervention in School and Clinic*, 50(1), 15–21. <https://doi.org/10.1177/1053451214532348>
- McLeskey, J., Landers, E., Williamson, P., & Hoppey, D. (2012). Are we moving toward educating students with disabilities in less restrictive settings? *The Journal of Special Education*, 46(3), 131–140. <https://doi.org/10.1177/0022466910376670>
- Miltenberger, R. G., Valbuena, D., & Sanchez, S. (2019). Functional assessment of challenging behavior. *Current Developmental Disorders Reports*, 6(4), 202–208. <https://doi.org/10.1007/s40474-019-00180-y>
- Monzalve, M., & Horner, R. (2016). *Contextual fit enhancement protocol (CFEP)*. <https://figshare.com/s/46b517d2ab6efa9108b8>
- Monzalve, M., & Horner, R. H. (2021). The impact of the contextual fit enhancement protocol on behavior support plan fidelity and student behavior. *Behavioral Disorders*, 46(4), 267–278. <https://doi.org/10.1177/0198742920953497>
- Morningstar, M. E., Allcock, H. C., White, J. M., Taub, D., Kurth, J. A., Gonsier-Gerdin, J., Ryndak, D. L., Sauer, J., & Jorgensen, C. M. (2016). Inclusive education national research advocacy agenda: A call to action. *Research and Practice for Persons with Severe Disabilities*, 41(3), 209–215. <https://doi.org/10.1177/1540796916650975>
- Morningstar, M. E., & Kurth, J. A. (2017). Status of inclusive educational placement for students with extensive and pervasive support needs. *Inclusion*, 5(2), 83–93. <https://doi.org/10.1352/2326-6988.5.2.83>
- Morningstar, M. E., Kurth, J. A., & Johnson, P. E. (2017). Examining national trends in educational placements for students with significant disabilities. *Remedial and Special Education*, 38(1), 3–12. <https://doi.org/10.1177/0741932516678327>
- Muharib, R., Alrasheed, F., Ninci, J., Walker, V. L., & Voggt, A. P. (2019). Thinning schedules of reinforcement following functional communication training for children with intellectual and developmental disabilities: A meta-analytic review. *Journal of Autism and Developmental Disorders*, 49(12), 4788–4806. <https://doi.org/10.1007/s10803-019-04191-x>
- Muharib, R., Correa, V. I., Wood, C. L., & Haughney, K. L. (2019). Effects of functional communication training using GoTalk Now™ iPad® application on challenging behavior of children with autism spectrum disorder. *Journal of Special Education Technology*, 34(2), 71–79. <https://doi.org/10.1177/0162643418783479>
- National Center for Education Statistics. (2019). Indicator 15: Retention, suspension, and expulsion. https://nces.ed.gov/programs/raceindicators/indicator_rda.asp

- National Center for Education Statistics. (2022). Search for public schools. <https://nces.ed.gov/ccd/schoolsearch/index.asp>
- Neidert, P. L., Dozier, C. L., Iwata, B. A., & Hafen, M. (2010). Behavior analysis in intellectual and developmental disabilities. *Psychological Services*, 7(2), 103–113. <https://doi.org/10.1037/a0018791>
- Nesselrode, R., Falcomata, T. S., Hills, L., & Erhard, P. (2022). Functional analysis in public school settings: A systematic review of the literature. *Behavior Analysis in Practice*, 15, 958–970. <https://doi.org/10.1007/s40617-022-00679-8>
- Newman, I., Leader, G., Chen, J. L., & Mannion, A. (2015). An analysis of challenging behavior, comorbid psychopathology, and attention-deficit/hyperactivity disorder in Fragile X syndrome. *Research in Developmental Disabilities*, 38, 7–17. <https://doi.org/10.1016/j.ridd.2014.11.003>
- Nicholson-Crotty, S., Birchmeier, Z. and Valentine, D. (2009), Exploring the impact of school discipline on racial disproportion in the juvenile justice system. *Social Science Quarterly*, 90, 1003–1018. <https://doi.org/10.1111/j.1540-6237.2009.00674.x>
- Noltmeyer, A., Palmer, K., James, A., Petrusek, M. (2019). Disciplinary and achievement outcomes associated with school-wide positive behavioral interventions and supports implementation level. *School Psychology Review*, 48(1), 81–87. <https://www.doi.org/10.17105/SPR-2017-0131.V48-1>
- O'Neill, R. E., & Sweetland-Baker, M. (2001). Brief report: An assessment of stimulus generalization and contingency effects in functional communication training with two students with autism. *Journal of Autism and Developmental Disorders*, 31(2), 235–240. <https://doi.org/10.1023/A:1010711518182>
- Ogden, N., Walker, V. L., Tapp, M. C., & Carpenter, M. E. (2022). Efficacy of teachers supporting paraeducators to implement functional communication training. Focus on *Autism and Other Developmental Disabilities*. Advance online publication. <https://doi.org/10.1177/10883576221130715>
- Oram, L., Owens, S., & Maras, M. (2016). Functional behavior assessments and behavior intervention plans in rural schools: An exploration of the need, barriers, and recommendations. *Preventing School Failure: Alternative Education for Children and Youth*, 60(4), 305–310. <https://doi.org/10.1080/1045988X.2016.1144555>
- Osgood, R. L. (2009). *The history of inclusion in the United States*. Gallaudet University Press.
- Owens, T. L., Lo, Y.-y., & Collins, B. C. (2020). Using tiered coaching and bug-in-ear technology to promote teacher implementation fidelity. *The Journal of Special Education*, 54(2), 67–79. <https://doi.org/10.1177/0022466919852706>

- Pane, H. M., Sidener, T. M., Vladescu, J. C., & Nirgudkar, A. (2015). Evaluating function-based social stories™ with children with autism. *Behavior Modification*, 39(6), 912–931. <https://doi.org/10.1177/0145445515603708>
- Pennington, R. C., & Courtade, G. R. (2015). An examination of teacher and student behaviors in classrooms for students with moderate and severe intellectual disability. *Preventing School Failure: Alternative Education for Children and Youth*, 59(1), 40–47. <https://doi.org/10.1080/1045988X.2014.919141>
- Peterson, S. M., Caniglia, C., Royster, A. J., Macfarlane, E., Plowman, K., & Baird, S. J. (2005). Blending functional communication training and choice making to improve task engagement and decrease problem behaviour. *Educational Psychology*, 25, 257–274.
- Polloway, E. A., Bouck, E. C., & Yang, L. (2019). Educational programs for students with intellectual disability: Demographic patterns. *Education and Training in Autism and Developmental Disabilities*, 54(1), 30–40. <https://www.jstor.org/stable/26663960>
- Poppes, P., Van der Putten, A. J. J., & Vlaskamp, C. (2010). Frequency and severity of challenging behaviour in people with profound intellectual and multiple disabilities. *Research in Developmental Disabilities*, 31(6), 1269–1275. <https://www.doi.org/10.1016/j.ridd.2010.07.017>
- Quirk, C., Ryndak, D. L., & Taub, D. (2017). Research and evidence-based practices to promote membership and learning in general education for students with extensive support needs. *Inclusion*, 5(2), 94–109. <https://doi.org/10.1352/2326-6988-5.2.94>
- Reeves, L. M., Umbreit, J., Ferro, J. B., & Liaupsin, C. J. (2013). Function-based intervention to support the inclusion of students with autism. *Education and Training in Autism and Developmental Disabilities*, 48(3) 379–391. <https://www.jstor.org/stable/23880994>
- Reeves, L. M., Umbreit, J., Ferro, J. B., & Liaupsin, C. J. (2017). The role of the replacement behavior in function-based intervention. *Education and Training in Autism and Developmental Disabilities*, 52(3), 305–316. <https://www.jstor.org/stable/26420402>
- Ringdahl, J. E., Berg, W. K., Wacker, D. P., Crook, K., Molony, M. A., Vargo, K. K., Neurnberger, J. E., Zabala, K., & Taylor, C. J. (2018). Effects of response preference on resistance to change. *Journal of the Experimental Analysis of Behavior*, 109(1), 265–280. <https://doi.org/10.1002/jeab.308>
- Rispoli, M., Camargo, S., Machalicek, W., Lang, R., & Sigafos, J. (2014). Functional communication training in the treatment of problem behavior maintained by access to rituals. *Journal of Applied Behavior Analysis*, 47(3), 580–593. <https://doi.org/10.1002/jaba.130>
- Rispoli, M., Neely, L., Lang, R., & Ganz, J. (2011). Training paraprofessionals to implement interventions for people autism spectrum disorders: A systematic review. *Developmental Neurorehabilitation*, 14(6), 378–388. <https://doi.org/10.3109/17518423.2011.620577>

- Rispoli, M., Ninci, J., Burke, M. D., Zaini, S., Hatton, H., & Sanchez, L. (2015). Evaluating the accuracy of results for teacher implemented trial-based functional analyses. *Behavior Modification, 39*(5), 627–653. <https://doi.org/10.1177/0145445515590456>
- Roberts, C. A., Ruppert, A. L., & Olson, A. J. (2018). Perceptions matter: Administrators' vision of instruction for students with severe disabilities. *Research and Practice for Persons with Severe Disabilities, 43*(1), 3–19. <https://doi.org/10.1177/1540796917743931>
- Roberts, J., & Simpson, K. (2016). A review of research into stakeholder perspectives on inclusion of students with autism in mainstream schools. *International Journal of Inclusive Education, 20*(10), 1084–1096. <https://doi.org/10.1080/13603116.2016.1145267>
- Robertson, R. E., Kokina, A. A., & Moore, D. W. (2020). Barriers to implementing behavior intervention plans: Results of a statewide survey. *Journal of Positive Behavior Interventions, 22*(3), 145–155. <https://doi.org/10.1177/1098300720908013>
- Rosenbaum, J. (2020). Educational and criminal justice outcomes 12 years after school suspension. *Youth & Society, 52*(4), 515–547. <https://doi.org/10.1177/0044118X17752208>
- Ruppert, A. L., Allcock, H. C., & Gonsier-Gerdin, J. (2017). Ecological factors affecting access to general education content and contexts for students with significant disabilities. *Remedial and Special Education, 38*(1), 53–63. <https://doi.org/10.1177/0741932516646856>
- Ryan, J. H., Jameson, J. M., Coleman, O. F., Eichelberger, C., Bowman, J. A., Conradi, L. A., Johnston, S. S., & McDonnell, J. (2019). Inclusive social studies content instruction for students with significant intellectual disability using structured inquiry-based instruction. *Education and Training in Autism and Developmental Disabilities, 54*(4), 420–436. <https://www.jstor.org/stable/26822518>
- Ryndak, D. L., Jackson, L. B., & White, J. M. (2013). Involvement and progress in the general curriculum for students with extensive support needs: K–12 inclusive education research and implications for the future. *Inclusion, 1*(1), 28–49. <http://dx.doi.org/10.1352/2326-6988-1.1.028>
- Ryndak, D. L., Moore, M. A., Orlando, A.-M., & Delano, M. (2008). Access to the general curriculum: The mandate and role of context in research-based practice for students with extensive support needs. *Research and Practice for Persons with Severe Disabilities, 34*(1), 199–213. <https://doi.org/10.2511/rpsd.33.4.199>
- Ryndak, D. L., Taub, D., Jorgensen, C. M., Gonsier-Gerdin, J., Arndt, K., Sauer, J., Ruppert, A. L., Morningstar, M. E., & Allcock, H. (2014). Policy and the impact on placement, involvement, and progress in general education: Critical issues that require rectification. *Research and Practice for Persons with Severe Disabilities, 39*(1), 65–74. <https://doi.org/10.1177/1540796914533942>

- Sanford, A. K., & Horner, R. H. (2013). Effects of matching instruction difficulty to reading level for students with escape-maintained problem behavior. *Journal of Positive Behavior Interventions*, 15(2), 79–89. <https://doi.org/10.1177/1098300712449868>
- Santiago, J. L., Hanley, G. P., Moore, K., & Jin, C. S. (2016). The generality of interview-informed functional analyses: Systematic replications in school and home. *Journal of Autism and Developmental Disorders*, 46(3), 797–811. <https://doi.org/10.1007/s10803-015-2617-0>
- Sauer, J., & Jorgensen, C. (2016). Still caught in the continuum: A critical analysis of least restrictive environment and its effect on placement of students with intellectual disability. *Inclusion*, 4(2), 56–74. <https://doi.org/10.1352/2326-6988-4.2.56>
- Saunders, A. F., Wakeman, S., Reyes, E., Thurlow, M. L., & Vandercook, T. (2020). *Instructional practices for students with the most significant disabilities in inclusive settings: A review of the literature* (TIES Center Report 104). University of Minnesota, The TIES Center. <https://tiescenter.org/resource/8j/b6pdFjSmKSVg6x4oGRGw>
- Schaefer, J. M., Cannella-Malone, H. I., & Carter, E. W. (2016). The place of peers in peer-mediated interventions for students with intellectual disability. *Remedial and Special Education*, 37(6), 345–356. <https://doi.org/10.1177/0741932516629220>
- Scheuermann, B., Peterson, R., Ryan, J. B., & Billingsley, G. (2016). Professional practice and ethical issues related to physical restraint and seclusion in schools. *Journal of Disability Policy Studies*, 27(2), 86–95. <https://doi.org/10.1177/1044207315604366>
- Schmidt, J. D., Drasgow, E., Halle, J. W., Martin, C. A., & Bliss, S. A. (2014). Discrete-trial functional analysis and functional communication training with three individuals with autism and severe problem behavior. *Journal of Positive Behavior Interventions*, 16(1), 44–55. <https://doi.org/10.1177/1098300712470519>
- Schwab, S., Gebhardt, M. & Krammer, M. & Gasteiger-Klicpera, B. (2014). Linking self-rated social inclusion to social behaviour. An empirical study of students with and without special education needs in secondary schools. *European Journal of Special Needs Education*, 30(1), 1–11. <http://doi.org/10.1080/08856257.2014.933550>.
- Segall, M. J., & Campbell, J. M. (2014). Factors influencing the educational placement of students with autism spectrum disorders. *Research in autism spectrum disorders*, 8(1), 31–43. <https://doi.org/https://doi.org/10.1016/j.rasd.2013.10.006>
- Shattuck, P. T., Seltzer, M. M., Greenberg, J. S., Orsmond, G. I., Bolt, D., Kring, S., Lounds, J., & Lord, C. (2007). Change in autism symptoms and maladaptive behaviors in adolescents and adults with an autism spectrum disorder. *Journal of Autism and Developmental Disorders*, 37(9), 1735–1747. <https://doi.org/10.1007/s10803-006-0307-7>
- Shogren, K. A., McCart, A. B., Lyon, K. J., & Sailor, W. S. (2015). All means all: Building knowledge for inclusive schoolwide transformation. *Research and Practice for Persons with Severe Disabilities*, 40(3), 173–191. <https://doi.org/10.1177/1540796915586191>

- Sidman, M. (1960). *Tactics of scientific research: Evaluating experimental data in psychology*. Basic Books.
- Sigafoos, J., & Sagers, E. (1995). A discrete-trial approach to the functional analysis of aggressive behaviour in two boys with autism. *Australia & New Zealand Journal of Developmental Disabilities*, 20(4), 287–297.
<https://doi.org/10.1080/07263869500035621>
- Simó-Pinatella, D., Mumbardó-Adam, C., Alomar-Kurz, E., Sugai, G., & Simonsen, B. (2019). Prevalence of challenging behaviors exhibited by children with disabilities: Mapping the literature. *Journal of Behavioral Education*, 38(5), 1–21. <https://doi.org/10.1007/s10864-019-09326-9>
- Simonsen, B., MacSuga-Gage, A. S., Briere, D. E., Freeman, J., Myers, D., Scott, T. M., & Sugai, G. (2014). Multitiered support framework for teachers' classroom-management practices: Overview and case study of building the triangle for teachers. *Journal of Positive Behavior Interventions*, 16(3), 179–190.
<https://doi.org/10.1177/1098300713484062>
- Slaton, J. D., & Hanley, G. P. (2016). Effects of multiple versus chained schedules on stereotypy and item engagement. *Journal of Applied Behavior Analysis*, 49(4), 927–946.
<https://doi.org/10.1002/jaba.345>
- Slaton, J. D., Hanley, G. P., & Raftery, K. J. (2017). Interview-informed functional analyses: A comparison of synthesized and isolated components. *Journal of Applied Behavior Analysis*, 50(2), 252–277. <https://doi.org/10.1002/jaba.384>
- Smith, B. J., & Fox, L. (2003). *Systems of service delivery: A synthesis of evidence relevant to young children at risk of or who have challenging behavior*. University of South Florida, Center for Evidence-Based Practice: Young Children with Challenging Behavior.
- Smith, B.W., & Sugai, G. (2000). A self-management functional assessment-based behavior support plan for a middle school student with EBD. *Journal of Positive Behavior Interventions*, 2(4), 208–217. <https://www.doi.org/10.1177/109830070000200405>
- Soukup, J. H., Wehmeyer, M. L., Bashinski, S. M., & Bovaird, J. A. (2007). Classroom variables and access to the general curriculum for students with disabilities. *Exceptional Children*, 74(1), 101–120. <https://doi.org/10.1177/001440290707400106>
- Sparrow, S. S., Cicchetti, D. V., & Balla, D. A. (2005). *Vineland adaptive behavior scales* (2nd ed.). Pearson Education.
- Spooner, F., Root, J., Saunders, A., & Browder, D. (2018). An updated evidence-based practice review on teaching mathematics to students with moderate and severe developmental disabilities. *Remedial and Special Education*, 40(3), 150–165.
<https://doi.org/10.1177/0741932517751055>

- Sprague, J. R., & Horner, R. H. (1992). Covariation within functional response classes: implications for treatment of severe problem behavior. *Journal of Applied Behavior Analysis*, 25(3), 735–745. <https://doi.org/10.1901/jaba.1992.25-735>
- Sprague, J. R., & Horner, R. H. (2006). *Schoolwide positive behavioral supports*. In S. R. Jimerson & M. Furlong (Eds.), *Handbook of school violence and school safety: From research to practice* (pp. 413–427). Lawrence Erlbaum Associates Publishers.
- Steinbrenner, J. R., Hume, K., Odom, S. L., Morin, K. L., Nowell, S. W., Tomaszewski, B., Szendrey, S., McIntyre, N. S., Yücesoy-Özkan, S., & Savage, M. N. (2020). Evidence-based practices for children, youth, and young adults with autism. The University of North Carolina, Frank Porter Graham Child Development Institute, National Clearinghouse on Autism Evidence and Practice Review Team.
- Stoesz, B. M., Shoostari, S., Montgomery, J., Martin, T., Heinrichs, D. J., & Douglas, J. (2016). Reduce, manage or cope: A review of strategies for training school staff to address challenging behaviours displayed by students with intellectual/developmental disabilities. *Journal of Research in Special Educational Needs*, 16(3), 199–214. <https://doi.org/10.1111/1471-3802.12074>
- Strickland-Cohen, M. K., Pinkelman, S. E., Jimerson, J. B., Berg, T. A., Pinkney C. J., & McIntosh, K. (2019). Sustaining effective individualized behavior support: Barriers and enablers, *Preventing School Failure: Alternative Education for Children and Youth*, 63(1), 1–11, <https://doi.org/10.1080/1045988X.2018.1456399>
- Sugai, G., Horner, R. H., Dunlap, G., Hieneman, M., Lewis, T. J., Nelson, C. M., Scott, T., Liaupsin, C., Sailor, W., Turnbull, A. P., Turnbull, H. R., Wickham, D., Wilcox, B., & Ruef, M. (2000). Applying positive behavior support and functional behavioral assessment in schools. *Journal of Positive Behavior Interventions*, 2(3), 131–143. <https://doi.org/10.1177/109830070000200302>
- Tapp, M. C. (2022). *Effects of a coaching package on teacher delivery of supported opportunities to respond* (Publication No. 29259716). [Doctoral dissertation, University of North Carolina Charlotte]. ProQuest Dissertations & Theses Global. <https://www.proquest.com/dissertations-theses/effects-coaching-package-on-teacher-delivery/docview/2696822238/se-2>
- TASH. (2022). *Inclusive education*. <https://tash.org/advocacy-issues/inclusive-education/>
- Taub, D. A., McCord, J. A., & Ryndak, D. (2017). Opportunities to learn for students with extensive support needs: A context of research-support practices for all in general education classrooms. *The Journal of Special Education*, 5(3), 127–137. <https://doi.org/10.1177/0022466917696263>
- The IRIS Center. (2016). *Autism spectrum disorder (part 2): Evidence-based practices*. <https://iris.peabody.vanderbilt.edu/module/asd2/>

- Tiger, J. H., Hanley, G. P., & Bruzek, J. (2008). Functional communication training: A review and practical guide. *Behavior Analysis in Practice*, 1(1), 16–23. <https://doi.org/10.1007/BF03391716>
- Trader, B., Stonemeier, J., Berg, T., Knowles, C., Massar, M., Monzalve, M., Pinkelman, S., Nese, R., Ruppert, T., & Horner, R. (2017). Promoting inclusion through evidence-based alternatives to restraint and seclusion. *Research and Practice for Persons with Severe Disabilities*, 42(2), 75–88. <https://doi.org/10.1177/1540796917698830>
- Travers, H. E., & Carter, E. W. (2022). A portrait of peers within peer-mediated interventions: A literature review. *Focus on Autism and Other Developmental Disabilities*, 37(2), 71–82. <https://doi.org/10.1177/10883576211073698>
- U.S. Department of Education. (2022). *44th annual report to congress on the implementation of the Individuals with Disabilities Education Act, 2022*. <https://sites.ed.gov/idea/files/44th-arc-for-idea.pdf>
- Umbreit, J., & Blair, K. S. (1996). The effects of preference, choice, and attention on problem behavior at school. *Education and Training in Mental Retardation and Developmental Disabilities*, 31(2), 151–161. <https://www.jstor.org/stable/23879131>
- Umbreit, J., Ferro, J., Liaupsin, C., & Lane, J. (2007). *Functional assessment-based interventions matrix*. Pearson Merrill Prentice Hall.
- University of Minnesota Institute on Community Integration. *What are intellectual and developmental disabilities?* (2022). [https://ici.umn.edu/welcome/definition#:~:text=Intellectual%20and%20developmental%20disabilities%20\(IDDs,multiple%20body%20parts%20or%20systems.](https://ici.umn.edu/welcome/definition#:~:text=Intellectual%20and%20developmental%20disabilities%20(IDDs,multiple%20body%20parts%20or%20systems.)
- Wacker, D. P., Lee, J. F., Padilla Dalmau, Y. C., Kopelman, T. G., Lindgren, S. D., Kuhle, J., Pelzel, K. E., Dyson, S., Schieltz, K. M., & Waldron, D. B. (2013). Conducting functional communication training via telehealth to reduce the problem behavior of young children with autism. *Journal of Developmental and Physical Disabilities*, 25(1), 35–48. <https://doi.org/10.1007/s10882-012-9314-0>
- Wakeman, S., Wu, Y.-C., Ghahre, G., Johnson, H., Bowman, J., & Clausen, A. M. (2022). *Separate school placement trends by category and age for students with extensive support needs* (TIES Center Report 105). TIES Center.
- Walker, V. L., Chung, Y., & Bonnet, L. K. (2018). Function-based intervention in inclusive school settings: A meta-analysis. *Journal of Positive Behavior Interventions*, 20(6), 203–216. <https://doi.org/10.1177/1098300717718350>
- Walker, V. L., Kurth, J., Carpenter, M. E., Tapp, M. C., Clausen, A., & Lockman Turner, E. (2021). Paraeducator-delivered interventions for students with extensive support needs in inclusive school settings: A systematic review. *Research and Practice for Persons with Severe Disabilities*, 46(4), 278–295. <https://doi.org/10.1177/15407969211055127>

- Walker, V. L., Loman, S. L., Hara, M., Park, K. L., & Strickland-Cohen, M. K. (2018). Examining the inclusion of students with severe disabilities in school-wide positive behavioral interventions and supports. *Research and Practice for Persons with Severe Disabilities*, 43(4), 223–238. <https://doi.org/10.1177/1540796918779370>
- Walker, V. L., Lyon, K. J., Loman, S. L., & Sennott, S. (2018). A systematic review of functional communication training (FCT) interventions involving augmentative and alternative communication in school settings. *Augmentative and Alternative Communication*, 34(2), 118–129. <https://doi.org/10.1080/07434618.2018.1461240>
- Walker, V. L., & Snell, M. E. (2017). Teaching paraprofessionals to implement function-based interventions. *Focus on Autism and Other Developmental Disabilities*, 32(2), 114–123. <https://doi.org/10.1177/1088357616673561>
- Wehman, P., Sima, A. P., Ketchum, J., West, M. D., Chan, F., & Luecking, R. (2015). Predictors of successful transition from school to employment for youth with disabilities. *Journal of Occupational Rehabilitation*, 25(2), 323–334. <https://doi.org/10.1007/s10926-014-9541-6>
- Wehmeyer, M. L., Palmer, S. B., Shogren, K., Williams-Diehm, K., & Soukup, J. (2013). Establishing a causal relationship between interventions to promote self-determination and enhanced student self-determination. *The Journal of Special Education*, 46(4), 195–210. <https://doi.org/10.1177/0022466910392377>
- Wehmeyer, M. L., Shogren, K. A., & Kurth, J. (2020). The state of inclusion with students with intellectual and developmental disabilities in the United States. *Journal of Policy and Practice in Intellectual Disabilities*, 18(1), 36–43. <https://doi.org/10.1111/jppi.12332>
- Wehmeyer, M. L., Shogren, K. A., Kurth, J. A., Morningstar, M. E., Kozleski, E. B., Agran, M., & Ryndak, D. L. (2016). Including students with extensive and pervasive support needs. In J. P. Bakken & F. E. Obiakor (Eds.), *General and special education inclusion in an age of change: Impact on students with disabilities* (pp. 129–155). Emerald Group Publishing Limited. <https://doi.org/10.1108/S0270-401320160000031009>
- Westling, D. (2015) Evidence-based practices for improving challenging behaviors of students with severe disabilities (Document No. IC-14). CEEDAR Center. <http://ceedar.education.ufl.edu/tools/innovation-configurations/>
- Westling, D. L. (2010). Teachers and challenging behavior: Knowledge, views, and practices. *Remedial and Special Education*, 31(1), 48–63. <https://doi.org/10.1177/0741932508327466>
- Weyman, J. R. (2019). An application of the trial-based functional analysis to assess problem behavior evoked by ritual interruption. [Doctoral dissertation, University of South Florida]. Graduate Theses and Dissertations. <https://digitalcommons.usf.edu/etd/8423>
- What Works Clearinghouse. (2020). *Standards handbook* (Version 4.1). Institute of Education Sciences. <https://ies.ed.gov/ncee/wwc/Docs/referenceresources/WWC-Standards-Handbook-v4-1-508.pdf>

- White, J. M., Cosier, M., & Wang, Q. (2020). Exploring factors related to access to general education contexts for students with intellectual disability: A survey of district special education administrators in one state. *International Journal of Inclusive Education*. <https://doi.org/10.1080/13603116.2020.1818140>
- Whitman, T. L., Sciback, J., & Reid, D. H. (1983). *Behavior modification with the severely and profoundly retarded: Research and application*. Academic Press.
- Williamson, P., Hoppey, D., McLeskey, J., Bergmann, E., & Moore, H. (2020). Trends in LRE placement rates over the past 25 years. *The Journal of Special Education*, 53(4), 236–244. <https://doi.org/10.1177/0022466919855052>
- Wolf, M. M. (1978). Social validity: The case for subjective measurement or how applied behavior analysis is finding its heart. *Journal of Applied Behavior Analysis*, 11(2), 203–214. <https://dx.doi.org/10.1901/jaba.1978.11-203>
- Wood, C. L., Goodnight, C. I., Bethune, K. S., Preston, A. I., & Cleaver, S. L. (2016). Role of professional development and multi-level coaching in promoting evidence-based practice in education. *Learning Disabilities: A Contemporary Journal*, 14(2), 159–170.
- Wood, C. L., Kisinger, K. W., Brosh, C. R., Fisher, L. B., & Muharib, R. (2018). Stopping behavior before it starts: Antecedent interventions for challenging behavior. *TEACHING Exceptional Children*, 50(6), 356–363. <https://doi.org/10.1177/0040059918775052>
- Yamamoto, S. H., & Alverson, C. Y. (2022). Post-high school outcomes of students with autism spectrum disorder and students with intellectual disability: Utilizing predictive analytics and state data for decision making. *Journal of Intellectual Disabilities*. Advance online publication. <https://doi.org/10.1177/00220574221121582>
- Zagona, A. L., Kurth, J. A., & MacFarland, S. Z. C. (2017). Teachers' views of their preparation for inclusive education and collaboration. *Teacher Education and Special Education*, 40(3), 163–178. <https://doi.org/10.1177/0888406417692969>
- Zangrillo, A. N., Fisher, W. W., Greer, B. D., Owen, T. M., & DeSouza, A. A. (2016). Treatment of escape-maintained challenging behavior using chained schedules: An evaluation of the effects of thinning positive plus negative reinforcement during functional communication training. *International Journal of Developmental Disabilities*, 62(3), 147–156. <https://doi.org/10.1080/20473869.2016.1176308>

Appendix A

Originally Proposed Method for Study

For this study, I will use an experimental, single-case, multiple baseline across student participants design (Baer et al., 1968; Cooper et al., 2020; Ledford & Gast, 2018) to examine the effects of FCT on student challenging behavior and FCRs in inclusive school settings. I also will evaluate the educator participants' and student participants' perceived social validity of the FCT intervention via an adapted version of the School Intervention Rating Form (SIRF) social validity survey (Kern & Gresham, 2002–2007).

Specifically, my research questions were as follows:

1. What are the effects of an FCT intervention delivered in an inclusive school setting on the challenging behavior of secondary students with IDD?
2. What are the effects of an FCT intervention delivered in an inclusive school setting on FCRs of secondary students with IDD?
3. To what extent do both educator and student participants find the FCT intervention to be socially valid?

Participants and Setting

Three dyads, each composed of one student and one educator, will participate in the study. Student participants were eligible for inclusion in the study if they met the following criteria: (a) exhibits challenging behavior in an inclusive school setting that interferes with their own academic or social progress or that of peers, that is harmful to the student or others around them, or is harmful to the student's environment, as confirmed by a functional behavior assessment (FBA), (b) accesses an inclusive secondary school setting (i.e., general education classroom and other school settings that students without disabilities access; IDEA, 2004) for at least 15m on a regular basis, (c) receives special education services under an IDEA eligibility category that is consistent with IDD (e.g., autism, intellectual disability, multiple disabilities) or is medically diagnosed with IDD, (d) attends a public middle or high school in the United States, and (e) has guardian consent to participate in the study. The educator participant was eligible if they were an adult employee of the school district who accompanied the student participant to the inclusive school setting where FCT implementation occurred, or supported the student in this setting in some way.

This study will take place in one or more school districts located outside a major city in the Southeastern United States.

- Size of school district(s)
- Setting of school(s) (e.g., rural, urban)
- Student population of school(s)
- Percentage of free and reduced lunch at school(s)
- Racial/ethnic makeup of the student population at school(s)

Recruitment

To recruit participants for this study, I will reach out via email to several district-level support personnel in several large school districts located outside of a large city. I will send the recruitment email to district-level support personnel and have them share the information with the Exceptional Children's (EC) director for the district. In my email, I will request permission to work with teachers and other team members who accompany and/or support students with IDD in inclusive secondary settings in the district and have at least one student with IDD who

accesses an inclusive school setting regularly and exhibits persistent challenging behavior. This email will include a thorough description of my research study. Upon receiving informal permission from district-level support personnel, I will request written permission from the district's EC director via DocuSign.

After receiving formal permission from the EC director to conduct my research with educators and students in the school district, I will begin recruitment procedures for educators. I will request a meeting with educators (i.e., special education teachers, paraprofessionals) who serve secondary students with IDD to present on my study. At the end of my presentation, a district representative will send an email to all attendees so that teachers who are interested in my study may indicate so. If they are interested, the district representative will provide their contact information to me. I will also include a section for teachers who are not interested in participating but are interested in helping with recruitment. Because the FCT intervention in my study may be delivered by adults other than the student's teacher (e.g., classroom paraprofessional) and other educational team members will likely be involved (e.g., general education teacher in inclusive classroom setting), I will ask the district representative to disseminate the same educator interest and consent forms to those relevant team members.

Consent. Following this, I will email educators who have indicated their interest in participating in my study consent forms via DocuSign. Because I will be video recording sessions during this study, I will include a video consent form. I will then ask all relevant educators interested in participating to collaborate with members of their classroom to identify potential student participants they deem eligible for inclusion in the study. I will then have the teachers contact these students' legal guardians via email to determine whether they would agree to having their child participate in the study. This email will include a link to a GoogleForm so that guardians may express their interest in having their child participate in the study and to share their contact information. I will email consent forms via DocuSign to those guardians, who, along with their child, expressed interest. Along with the guardian consent form, I will also include a guardian video consent form. I will also have the educator participants send home printed copies of all forms for guardians and student participants if they prefer printed material over digital. All digital materials will be downloaded and stored in a secure, password protected DropBox account. Materials will only be shared with research team members approved by the university's institutional review board.

Participant Demographic Information

To collect relevant information about student and educator participants, I will provide a link to Google Forms to educator participants and to guardians of student participants. For the educator participant form, I will request information including their age, race/ethnicity, job title and description of role, years of experience in special education, years of experience in their current role, other work experience, prior training in challenging behavior in general and in FCT specifically, specific role with regard to the student participant, current strategies implemented for student participant's challenging behavior, and experience with supporting students in inclusive school settings.

On the student information form, I will request that the student's classroom teacher provides information such as the student participant's age, disability diagnosis (if applicable), IEP eligibility category, race, and ethnicity; their special education services and service delivery times, communication level and mode, relevant standardized assessment results (e.g., IQ, adaptive behavior); information related to formal or informal behavioral intervention plans and

behavioral goals; and anecdotal reports from their classroom teacher and other classroom team members about the student participant's challenging behavior, including current supports.

After I receive these responses for both educator and student participants, I will download them, store them in the password protected DropBox account, and delete the responses permanently from the UNC Charlotte GoogleDrive.

Dyad 1

The first dyad will include...

Student Participant.

- Age
- Disability/eligibility category
- Race/ethnicity
- Special education services/service delivery
- Communication level/mode
- Information related to BIP or behavioral goals
- Anecdotal reports from teacher/classroom team members about challenging behavior
- Current individualized supports for challenging behavior
- Standardized assessment results (e.g., IQ, adaptive behavior, etc.)

Educator Participant.

- Prior training in challenging behavior
- Prior training in FCT
- Role with regard to student participant
- Current strategies to support challenging behavior
- Experience with inclusion

Team Members.

Setting.

- Grade level of school
- Type of school
- Specific setting in which FCT will occur
- Setting where training will occur and when
- Physical description of the setting in which FCT will occur
- Other students (how many, grade level, disability category/not)
- Furniture
- Dimensions of space

Dyad 2

The second dyad will include...

Student Participant.

- Age
- Disability/eligibility category
- Race/ethnicity
- Special education services/service delivery
- Communication level/mode
- Information related to BIP or behavioral goals
- Anecdotal reports from teacher/classroom team members about challenging behavior
- Current individualized supports for challenging behavior

- Standardized assessment results (e.g., IQ, adaptive behavior, etc.)

Educator Participant.

- Age
- Race/ethnicity
- Job title
- Years experience/work experience
- Prior training in challenging behavior
- Prior training in FCT
- Role with regard to student participant
- Current strategies to support challenging behavior
- Experience with inclusion

Setting.

- Grade level of school
- Type of school
- Specific setting in which FCT will occur
- Setting where training will occur and when
- Physical description of the setting in which FCT will occur
- Other students (how many, grade level, disability category/not)
- Furniture
- Dimensions of space

Dyad 3

The third dyad will include...

Student Participant.

- Age
- Disability/eligibility category
- Race/ethnicity
- Special education services/service delivery
- Communication level/mode
- Information related to BIP or behavioral goals
- Anecdotal reports from teacher/classroom team members about challenging behavior
- Current individualized supports for challenging behavior
- Standardized assessment results (e.g., IQ, adaptive behavior, etc.)

Educator Participant.

- Age
- Race/ethnicity
- Job title
- Years experience/work experience
- Prior training in challenging behavior
- Prior training in FCT
- Role with regard to student participant
- Current strategies to support challenging behavior
- Experience with inclusion

Setting.

- Grade level of school
- Type of school

- Specific setting in which FCT will occur
- Setting where training will occur and when
- Physical description of the setting in which FCT will occur
- Other students (how many, grade level, disability category/not)
- Furniture
- Dimensions of space

Materials

Materials in this study will include a researcher-developed PowerPoint presentation for training purposes, a hard copy of the FCT plan for each participant, data collection materials (e.g., FBA forms, cell phone and Insight application for interval recording, laptop computer and/or GoPro camera for video recording sessions), and student materials related to the session in which FCT will be implemented (i.e., naturally occurring materials). Student materials also will include any materials required for students to communicate and to display their FCR (e.g., speech-generating device, picture symbol).

Dependent Measures

There will be two primary dependent variables in this study. I will measure each student participant's challenging behavior and FCRs across baseline, intervention, and reinforcement schedule thinning procedures conditions. Additionally, I will measure the social validity of the FCT intervention according to both educator and student participants.

Challenging behavior

As the appropriate measurement strategy for challenging behavior may vary depending on the nature of the behaviors, I will not make a final decision on measurement until after I conduct the FBA. For example, it might be most appropriate to measure each student participant's challenging behavior using 10s partial interval recording across the entirety of the student's target routine. Partial interval recording is advantageous for following reasons: (a) it accounts for behaviors that occur frequently or quickly (i.e., this is appropriate for challenging behavior that might be miscounted or missed completely in a frequency count), (b) it often overestimates the total duration of behavior (i.e., since the goal is to reduce challenging behavior, this measure is more appropriate than whole interval recording which might not capture an appropriate measure of the rate of challenging behavior if the behavior does not occur during the entire interval, such off-task behaviors like inappropriate vocalizations that may not have a clear beginning or end) and (c) it allows for the measurement of multiple behaviors simultaneously (e.g., measuring challenging behavior and FCR; Cooper et al., 2020). Each student participant's challenging behavior will be operationally defined based on anecdotal data from each student's educators, results of FBA interviews, and observation sessions conducted by the researcher. The number of 10s intervals in which challenging behavior occurred at any point during the observation session will be divided by the total number of intervals in the session. This number will be converted into a percentage by multiplying it by 100. Finally, it will be graphed as a percentage of intervals in which challenging behavior occurred.

FCRs

I will measure each student participant's FCRs using either 10s partial interval recording or event recording across the entirety of the student's target inclusive setting routine. This decision will depend on the specific nature of all student participants' specific FCRs. During the FCT planning condition, the team will determine an individual FCR for each student. If 10s partial interval recording is the most appropriate measure, the same procedures for measurement as outlined in the previous section will be implemented. If event recording is found to be the

most appropriate method for measuring student FCRs, then occurrences of each FCR (i.e., both prompted and independent) will be tallied on an event recording data sheet and summed to determine the total occurrences of FCRs per each routine. Event data would be used so that each occurrence of a student's FCR is counted versus an estimation such as in interval recording. In this way, if a student exhibits their FCR multiple times in short succession, each occurrence will be counted as an individual behavior instead of as an occurrence or nonoccurrence in one interval.

Social Validity

I will measure the social validity of the FCT intervention at the conclusion of the study using a subjective evaluation method, meaning that I will collect information regarding perceptions related to the goals, procedures, and outcomes of the FCT intervention (Kazdin, 1977, 2011; Wolf, 1978). Specifically, I will use a survey adapted from the SIRF (Kern & Gresham, 2002–2007). The SIRF is a self-reported survey used to measure educator and student perceptions of the social validity of school-based interventions. To measure educator participants' perceptions, I will disseminate the survey anonymously via Google Forms. It will contain 19 closed-ended questions that educator participants will score using a 7-point Likert-type scale (1 = *not at all* to 7 = *many*) and four open-ended questions. The survey questions will measure the educator participant's understanding of the FCT intervention, their perception of acceptability with regard to their concerns, the amount of time they spent implementing the intervention, their willingness to implement the intervention, the feasibility of the intervention, and the effectiveness of the intervention. The open-ended questions will serve as follow-up questions to some of the close-ended questions, such as specific changes in the student's performance, components of the intervention that were effective and ineffective, and specific barriers to implementation.

Additionally, I will disseminate a social validity survey to the student participants, adapted from Kern & Gresham (2002–2007) anonymously via Google Forms; however, other formats will be made available for the students depending on their unique needs. The 3-question close-ended survey will measure whether students liked the intervention, and whether they perceived the FCT intervention as helpful to them in reducing challenging behavior and increasing replacement behavior. The student's social validity survey will be formatted with yes/no responses. Adaptations such as picture symbols representing response options will be made based on each student's specific needs.

Data Collection

Each session during baseline, intervention, and schedule thinning conditions will be video recorded so that both primary dependent variables (i.e., challenging behavior, FCRs) can be examined and coded separately, as they may require two separate measurement procedures (i.e., 10s partial interval recording, event recording). My plans for video recording will either be in-person using a GoPro camera or online via Zoom, depending on whether I am physically present. I chose to use Zoom for its ease of use, common familiarity among educators, ability to record sessions automatically, and cloud storage system for large videos. Additionally, Zoom is free to download and use and therefore will place no additional financial burden on either the research team or study participants.

Data Analysis

I will use visual analysis to determine whether there is a functional relation between the FCT intervention and the study's primary dependent measures (i.e., student challenging behavior, student FCRs). As the most commonly used form of data analysis in single-case design

research, visual analysis is a formative systematic method that involves the researcher to analyze data shortly after each data collection session. In the case of this study, this means that I will record each instructional session in which an educator participant delivers FCT to a student participant, code the recorded video to collect data on each dependent variable, graph the data each day of data collection, and then use visual analysis to examine the graphical data. Specifically, I will analyze the level (e.g., high rate), trend (e.g., increasing, decreasing, stable), and variability (i.e., how far apart the data points are from one another) of the data; the immediacy of effect from one condition to another; and the amount of data-point overlap that occurs per dependent variable (Ledford & Gast, 2018). This is critical in determining the effects of the intervention on the dependent variables and thus in making data-based decisions about how to proceed with the study (e.g., continue with intervention, enter into FCT+ condition).

Visual analysis also includes the utilization of baseline logic (Sidman, 1960) to determine whether there are adequate demonstrations of prediction (i.e., stable baseline trend in first tier of multiple baseline can be assumed to continue until intervention is introduced), verification (i.e., verification of the stable baseline trend across subsequent tiers of the multiple baseline until intervention is introduced), and replication across tiers (i.e., change from baseline to intervention has similar effect across tiers; Baer et al., 1968). I will analyze social validity results using basic descriptive statistics (e.g., mean, range, mode).

Experimenter

I will be the primary experimenter for this study. Educator participants will serve as the primary interventionists in delivering the FCT intervention to the student participants. My responsibilities will include (a) conducting the FBA; (b) working with team members to develop, and revise as needed, the FCT intervention; (c) training educator participants as interventionists in delivery of the the FCT intervention; (d) providing coaching sessions as needed to educator participants during weekly meetings; (e) collecting student data during baseline, intervention, and schedule thinning conditions; and (f) monitoring educator participant implementation fidelity of the FCT intervention during intervention, and schedule thinning conditions. I have a master's degree in Teaching Special Education (Adapted Curriculum K–12) from UNC Charlotte, and am currently a doctoral student in special education at UNC Charlotte. My special education background is in teaching high school-aged students with IDD in a self-contained classroom at a rural, Title I school district for 5 years. While teaching, I included my students in social and educational opportunities with same-age peers without disabilities, regardless of whether they exhibited challenging behavior. My current research interests and areas of expertise include Applied Behavior Analysis, Positive Behavior Interventions and Supports, and evidence-based behavior interventions for high school and transition-aged students with IDD.

Research Team

The research team will comprise myself, the principal investigator and experimenter, a secondary data collector, an interobserver agreement (IOA) data collector, and three faculty members who will serve as consulting experts in content areas (e.g., inclusive practices, FBIs, FCT) and in single-case design. The secondary data collector is a first-year doctoral student in special education who has experience as a classroom teacher of students with IDD, and in supporting student access to inclusive school settings. She has content expertise in ABA and in FCT. Her primary role will include data collection of students' challenging behavior and FCRs. The IOA data collector is a first-year assistant professor in special education. Her research interests include FBIs and other challenging behavior interventions and access to communication, for students with IDD. She has over 5 years of experience in single-case

research. Her role will include collecting IOA data. The first faculty member is an associate professor of special education who has content area expertise in inclusive practices, challenging behavior interventions, and communication access for students with IDD. The second and third faculty members are both professors in special education who have expertise in challenging behavior interventions and access to communication for students with IDD. All three faculty members have expertise in single-case research design and are Board Certified Behavior Analysts and have thus content area expertise in ABA, including FCT. The first faculty member's role will be to monitor the intervention the intervention and advise the principal investigator. The role of the second and third faculty members will be to serve as consultants to the principal investigator as needed.

Experimental Design

To study the effects of an FCT intervention on the challenging behavior and FCRs of secondary students with IDD in inclusive school settings, I will use an experimental, single-case, multiple baseline across student participants design (Baer et al., 1968; Ledford & Gast, 2018).

Procedures

Functional Behavior Assessment

As FCT is a function-based intervention (FBI), it is critical that the function of each student participant's challenging behavior is determined to inform intervention planning, as interventions aligned to behavioral function are more effective than interventions that are not (Goh & Bambara, 2012; Ingram et al., 2005; Jeong & Copeland, 2020). To determine the consequence maintaining each student's challenging behavior, I will conduct an FBA including an indirect assessment (i.e., Open-Ended Functional Assessment Interview; Hanley, 2009) and a direct assessment (i.e., ABC Data recording). If the function of the student's challenging behavior is unclear following these measures, the research team will conduct an experimental functional analysis (FA), which promotes the highest degree of precision when determining behavioral function (Cooper et al., 2020). I will administer the open-ended FAI with each educator participant and with each student participant's classroom teacher (i.e., if they are not the same). As a team, we will (a) determine and then operationally define each student participant's target challenging behavior and their precursor behaviors for safety purposes when developing the FCT plan, (b) identify the target routine in which FCT will be implemented for the student participant, (c) establish session termination procedures for each student's challenging behavior individually to ensure the safety of all participants, and (d) form hypotheses regarding each student participant's behavioral function.

If the indirect and direct assessment results are not sufficient in making a strong hypothesis related to the function of a student's challenging behavior, the function of their behavior will be experimentally assessed using a trial-based FA (Bloom et al., 2011; Lambert et al., 2012; Sigafos & Sagers, 1995), which includes a series of trials embedded in naturally occurring classroom routines or activities. The FA will be conducted by the educator participant and observed by the primary researcher. Each trial has a test condition and control condition that lasts 1–2 min each. The test condition involves evoking challenging behavior through an establishing operation and specific contingency for challenging behavior (e.g., a teacher saying, "Okay, let's start our math work!" to a student whose challenging behavior is maintained by escape from mathematics tasks). The control condition involves continuous, noncontingent access to the student's reinforcers (e.g., free-time, adult attention). There will be 20 trials per condition across five school days. If the educator participant does not implement the trial-based FA with fidelity, the researcher will end the session and retrain the educator participant.

Results of the FBA will allow the experimenter and members of the team to determine the target routines in which data collection will occur during baseline and intervention conditions of the study for each student participant. For example, if a student has access to an inclusive setting multiple times throughout the day, the team will target the routine in which challenging behavior is most likely to occur or interferes with student progress to the highest degree.

Baseline Sessions

All baseline sessions will be video recorded and measured during the predetermined target routine identified through the FBA. This condition will contain no intervention and will be business as usual in the student's classroom. The primary interventionist will observe educator-student dyads during this routine in a minimally intrusive manner. This will include collecting data for at least 15 min on occurrences of challenging behavior and FCRs across for as many sessions as necessary until a stable (i.e., data path has low variability and is similar in regard to value, and approximately 80% of values are within 25% of the median value; Ledford & Gast, 2018) or ascending trend in challenging behavior has been established. If student challenging behavior shows either a stable or an ascending trend, intervention will be implemented following at least six baseline sessions.

FCT Plan Development

Following the observation of a stable or ascending baseline trend, I will meet with members of the team, including the educator participant and other relevant members of the student participant's educational team who may offer expertise about the student participant and/or the setting in which the intervention will be implemented (e.g., classroom general education teacher, behavioral support staff, special education teacher, paraprofessional). During the development of an FBI such as FCT, it is critical to collaborate with all relevant team members in order to ensure contextual fit and implementation success (Monzalve & Horner, 2021). Prior to the meeting, I will disseminate blank copies of the FCT plan template so that educator participants and other team members, may take notes and contribute their ideas effectively throughout the meeting. I will have a copy of the draft FCT plan displayed on a screen and, as a team, we will fill out the plan throughout the meeting.

In order to ensure that the FCT intervention aligns with the implementer and other team members' knowledge, skillset, values, and other measures (Monzalve & Horner, 2021), I will embed all components of the Self-Assessment of Contextual Fit in Schools (Horner et al., 2003) throughout the planning meeting. I will make adaptations to the original assessment including changing the term "Behavior Support Plan" to "Functional Communication Training Intervention." The Self-Assessment of Contextual Fit in Schools contains 16 closed-ended questions and is scored using a 6-point Likert-type scale (1 = *strongly disagree* to 6 = *strongly agree*). As this assessment will be used as a framework to guide for intervention development, participants will not score the intervention plan using the assessment, but instead will engage in ongoing discussions about each component throughout the planning meeting. These components will include team members' perceptions regarding (a) their own knowledge of the key elements of the FCT intervention, (b) the sufficiency of their skills required to implement the FCT intervention, (c) the intervention's alignment with their values as an educator, (d) the availability of adequate resources to successfully implement the intervention, (e) administrative support of the intervention, (f) the effectiveness of the intervention, (g) whether the intervention is in student's best interest, and (h) the efficiency of the intervention. I will video record this meeting and will take detailed notes to effectively use the results from these discussions to individualize

the FCT plan as well as FCT training procedures for each educator participant to ensure a sufficient contextual fit.

During the meeting, I will first review the results of the FBA with team members so they have a clear understanding of the behavioral function or functions maintaining the student's challenging behavior. I will present the information via PowerPoint and will include results from the FAI and the trial-based FA. I will then present the student baseline data in the same manner. Next, I will provide the team with an introduction to FCT. This will include the importance of aligning an intervention to behavioral function and FCT procedures including teaching the FCR. I will provide my initial ideas for the FCT plan. As a team, we will then identify an appropriate FCR for student participants based on their strengths and needs with regard to communication and ability. In order to be effective and appropriate for the student, the FCR must be selected for the student based on their current behavioral and communication repertoires and should require less effort than the student's functionally equivalent challenging behavior (Tiger et al., 2008). Specifically, the FCR must be a behavior the student is capable of exhibiting (e.g., raising hand to ask for a break) and in a communication modality accessible to the student (e.g., vocal speech, voice-generating device). It also is important that the FCR is something that is functional and recognizable across the context of the student's environment (Tiger et al., 2008). Following this, the team will determine how the FCR will be taught to the student (i.e., the specific prompting procedures). Next, the team will set a behavioral goal for the student based on their occurrence of challenging behavior (e.g., Johnny will exhibit challenging behavior for 30% of intervals or less across three out of four sessions). Third, the team will determine safety procedures with regard to FCT sessions. The team will determine session termination procedures based on the student's challenging behavior and the risk to the student or others associated with these. The safety plan will be established based on the school district policy related to challenging behavior. The following issues will be addressed on the safety plan: (a) procedures to maintain safety for the student and those around them, (b) de-escalation procedures, (c) contingencies for when the plan will be implemented (e.g., student exhibits specific precursor behavior), (d) procedures for the event of an injury, (e) number of people required to implement the plan, (f) behaviors that signal that the safety plan is no longer required (e.g., student is sitting calmly), (g) procedures for reintroducing the student to their regular routine, and (h) safety plan review procedures (Bambara & Kern, 2021). After determining these procedures for students, the team will determine an implementation fidelity goal for educator participants. For example, educator participants will need to achieve 90% or higher implementation fidelity across three out of four sessions. Finally, we will finalize the FCT plan as a team, ensuring that all members of the team agree with the plan moving forward. I will create a PDF version of the plan and disseminate to each team member via email and printed copy.

FCT Plan. The FCT plan will include three sections including demographic information and other characteristics pertaining to the intervention, instructional set up instructions and other considerations, and a description of the FCT procedures. The demographic information section will include the student's name, name of the school, start date, educator participant implementing FCT, student challenging behavior(s), student precursor behavior(s), function of the student's challenging behavior(s), the behavioral goal incorporating the student's challenging behavior, and student's present level of performance on their behavioral goal. The instructional set up section will include the student's current stage of learning the FCR (e.g., acquisition), the group arrangement of the class (e.g., small group), the time interval in which the FCT plan will be implemented, the specific activity or routine during which FCT will be implemented (e.g., during

morning meeting), the days of the week in which FCT will be implemented, the setting in which FCT will be implemented (e.g., gymnasium), the instructional cue that will serve as the antecedent directing the student to use their FCR (e.g., “do you need something?”), a detailed description of the prompt system (e.g., system of least prompts) the implementer will use to teach the FCR, materials required for the FCT intervention (e.g., picture card with the word *help*), and a detailed description of the student’s reinforcers (e.g., high five, piece of candy) including the conditions in which they will be delivered. The final section of the FCT plan (i.e., description of procedures) will include a task analysis of the specific prompting procedures for which FCT will be taught and delivered to the student.

FCT Implementer Training Procedures

I will train the educator participant how to deliver the FCT intervention for their student participant. The training will last up to 1 hr and will include Behavioral Skills Training (BST; i.e., instruction, modeling, rehearsal, feedback; Kirkpatrick et al., 2019) components. Instruction will be provided via a PowerPoint presentation that will include detailed information about the student participant’s FCT plan as well as video examples and non-examples of appropriate FCT implementation. The educator participant will then engage in role-playing the delivery of the FCT intervention to which I will provide detailed performance feedback. The educator participant will be required to achieve 100% fidelity during the role play session.

Intervention

FCT. The student with the most need with regard to challenging behavior will be introduced to FCT first, based on the severity, intensity, rate, and degree of disruption of the challenging behavior. If this cannot be easily determined, a member of the research team will randomly select a student participant (Ledford & Gast, 2018). This process will continue until all student participants are introduced to the intervention condition. Data collection will occur in the same manner as described for baseline procedures. Implementation of the FCT intervention will include the educator participant delivering FCT to the student participant when the student exhibits precursor behaviors as outlined on the FCT plan. I, as the primary researcher, will track implementation fidelity and make data-based decisions according to the behavioral goal that was agreed upon by the team. If an implementer requires a coaching session, coaching will occur after the observed session but prior to the next scheduled observation. When the student meets their predetermined behavioral goal (e.g., challenging behavior less than 30% of intervals across class sessions across 4 out of 5 sessions), this condition will be the student’s terminal condition. Following the terminal condition, schedule thinning procedures will be implemented.

FCT+. If the student participant has consistently not met their behavioral goal (e.g., across 4 of 5 sessions), and the implementation fidelity of this condition is 90% or higher, the team will have a second planning meeting to determine which additional supports may be required for the student in addition to FCT (e.g., visual supports, choice making). The same training and implementation procedures will be implemented prior to the student entering into this condition. Decisions about the addition of specific components will be guided by the same contextual fit procedures as described above.

Schedule Thinning

Reinforcement schedule thinning will be implemented following the terminal condition for each student participant. This will include delay to reinforcement procedures in which the educator participant will insert a delay interval between the student’s FCR and delivery of reinforcement, instead of reinforcing the FCR immediately. For example, if the FCT plan stated that the student would receive immediate reinforcement in the form of making a selection from a

choice board of reinforcers, during schedule thinning procedures, the student might wait 30s for reinforcement instead of receiving it immediately. The educator participant might say, “great job asking for help! You can make a choice on your choice board in just a minute!” and then set a timer for the student. This delay will be gradually increased in length until it reaches a predetermined tolerance level (e.g., 5 m). Educator participants will be trained to implement schedule thinning procedures in the same method as described above (i.e., BST).

Interobserver Agreement

I will train a secondary observer (e.g., doctoral student) to collect IOA data on both primary dependent variables (i.e., challenging behavior, FCR). This secondary observer will collect agreement data on a minimum of 30% of sessions per condition for each student participant. Prior to any student entering baseline, the secondary observer will be trained using sample videos. We will practice coding independently until we come to an agreement at a minimum of 90% agreement across three sample videos. IOA data on challenging behavior, and possibly on FCRs, will be collected on an interval-by-interval agreement basis (Kazdin, 2011). IOA for these behaviors will be calculated by dividing the total number of agreements by the total number of intervals per session (i.e., agreements plus disagreements), and multiplying by 100. If event recording is implemented for student FCRs, then IOA data on the student participant’s FCRs will be collected via event ratio (Kazdin, 2011). In order to calculate this, I will divide the smaller number of FCRs by the larger number of FCRs, and multiply by 100.

Procedural Fidelity of Training Procedures

A secondary observer (e.g., doctoral student) will collect procedural fidelity data on all training sessions and follow-up coaching sessions, if required. The secondary observer will use a researcher developed checklist for training sessions and follow-up coaching sessions to determine whether I completed all required steps in training and follow-up coaching procedures. Procedural fidelity data will be calculated by dividing the number of procedural steps completed correctly by the total number of possible steps, and then multiplying by 100. If procedural fidelity is lower than 90%, I will meet with the secondary observer to determine the specific steps I did not complete. I will then meet with the educator participant again to recover these missing steps.

Educator Participant Implementation Fidelity of FCT

I will collect implementation fidelity data on the educator participant’s implementation of FCT procedures for 100% of sessions during each condition i.e., baseline, intervention, schedule thinning) to ensure implementation fidelity issues are not negatively impacting results of the FCT intervention. For IOA purposes, at least 30% of these sessions during each condition will be coded. The research team member will observe the educator participant delivering FCT and follow a researcher developed checklist to determine whether the educator participant completed all required steps for FCT procedures. Implementation fidelity data will be calculated by dividing the number of steps the educator participant completed correctly by the total number of possible steps, and then multiplying by 100. If educator participants do not achieve the predetermined goal (e.g., 90%), they will receive follow-up coaching with me which will include reviewing a video of their implementation of FCT with their student participant and follow-up BST as outlined in the training procedures.

Appendix B

District Recruitment Letter

To Whom It May Concern:

My name is Andy Masud. I am third year doctoral candidate in special education at the University of North Carolina at Charlotte. For my dissertation project, I would like to request permission to conduct research in your district. Below you will find information about my research project. If you consent, I will send a formal consent to research document. If you have any questions, please feel free to reach out at 704-743-7716 or amasud@uncc.edu

Title of the Project: *Effects of Functional Communication Training in Inclusive School Settings for Students with Intellectual and Developmental Disabilities*

Principal Investigator: Andy Masud, M.A.T., Doctoral Candidate in Special Education, University of North Carolina at Charlotte

Faculty Advisor: Virginia Walker, Ph.D., BCBA-D, Associate Professor, Department of Special Education and Child Development, University of North Carolina at Charlotte

Faculty Advisory Email: virginia.walker@uncc.edu

Co-investigators: Virginia Walker, Ph.D., BCBA-D, Associate Professor, Department of Special Education and Child Development, University of North Carolina at Charlotte and Allie Reilly, M.A.T., Doctoral Student in Special Education, University of North Carolina at Charlotte

Educators and students are invited to participate in a research study. Their participation in this research study is voluntary.

Important information:

- The purpose of this study is to examine the effects of an evidence-based behavior intervention (i.e., Functional Communication Training) on the challenging behavior of students with intellectual and developmental disabilities who are educated in an inclusive school setting (i.e., settings where there are with peers without disabilities).
- Research is needed on the implementation of effective practices for reducing challenging behavior of students with intellectual and developmental disabilities so they may continue to access inclusive school settings.

- This study will involve multiple sessions across several weeks and each session will last up to 20 minutes. The sessions will occur during typical instructional time and daily routines to measure the effectiveness of the intervention.
- This study will involve at least one 1-hour training session lasting where the educator participant will be trained to implement the intervention.

Educator Requirements:

1. Provide consent and complete educator and student information forms.
2. Send consent (drafted by researcher) to parents of potential student participants.
3. Provide typical instruction during daily targeted routine during baseline.
4. Participate in training session (up to 60 min) for intervention.
5. Implement intervention during daily targeted routine during intervention.
6. Video record daily targeted routine of up to 20 min in person or via Zoom (3-5 times per week).
7. After each session is completed, upload video to Dropbox folder (provided by researcher).
8. Meet with researcher weekly to review progress toward goal.
9. Complete online social validity survey and interviews at the conclusion of the study.

What will students do in this study?

Students will receive the challenging behavior intervention (i.e., Functional Communication Training). This will include being taught a replacement behavior to their challenging behavior. There will be no interruption to their instruction or services.

What benefits might teachers or students experience?

Although there are no guaranteed direct benefits to teacher or student participants, teachers and students may experience decreased levels of student challenging behavior.

I look forward to hearing back from you,

Very sincerely,

Andy B. Masud, M.A.T.
 Doctoral Candidate | Special Education
 Department of Special Education and Child Development
 University of North Carolina at Charlotte
 9201 University City Blvd
 Charlotte, NC 28223
amasud@uncc.edu
 704-743-7716

Appendix C

District Consent to Conduct Research

[Add District Letterhead]

[Insert Date]

To Whom It May Concern:

I am in support of a research project, entitled *Effects of Functional Communication Training in Inclusive School Settings for Secondary Students with Intellectual and Developmental Disabilities*. The purpose of this study is to examine the effects of a behavior intervention on student challenging behavior in inclusive secondary school settings. I understand that the study will involve multiple sessions of up to 20 minutes during typical instructional time and daily routines to measure the effects of the intervention. I understand that it will require participants to be videorecorded or to use videorecording via Zoom. The study is being conducted by a research team in the Department of Special Education and Child Development at the University of North Carolina at Charlotte. I look forward to this project.

Warmest Regards,

Signature

Printed Name

Title

Date

Appendix D

Educator Team Member Recruitment

Dear Teachers and Paraprofessionals:

A research team in the Department of Special Education and Child Development at the University of North Carolina at Charlotte (i.e., Andy Masud, Virginia Walker, Allie Reilly) is interested in examining the effects of a behavior intervention on challenging behavior of elementary, middle, and high school students in inclusive school settings.

Title of the Project: *Effects of Functional Communication Training in Inclusive School Settings for Students with Intellectual and Developmental Disabilities*

Principal Investigator: Andy Masud, M.A.T., Doctoral Candidate in Special Education, University of North Carolina at Charlotte

Faculty Advisor: Virginia Walker, Ph.D., BCBA-D, Associate Professor, Department of Special Education and Child Development, University of North Carolina at Charlotte

Faculty Advisory Email: virginia.walker@uncc.edu

Co-investigators: Virginia Walker, Ph.D., BCBA-D, Associate Professor, Department of Special Education and Child Development, University of North Carolina at Charlotte and Allie Reilly, M.A.T., Doctoral Student in Special Education, University of North Carolina at Charlotte

Participation in this research is not a requirement of employment with the district/school and whether the you decide to participate or not will have no impact on your relationship with the district representative or their school leadership. Your participation is entirely voluntary.

Adult participants can be any teacher or paraprofessional who accompanies and supports a student to an inclusive school setting. An inclusive school setting is defined as any school setting where peers without disabilities are present. Examples may include PE class, specials such as art class, the lunchroom, and hallways during transitions.

Student Participants must (a) exhibit challenging behavior in an inclusive school setting that interferes with their own academic or social progress or that of peers, (b) accesses an inclusive school setting on a regular basis, (c) receives special education services under an IDEA eligibility category that is consistent with IDD (e.g., autism, intellectual disability, multiple disabilities) or is medically diagnosed with IDD.

If you have questions about the inclusion criteria or are unsure whether you or your students meet the requirement, please reach out to Andy.

If you decide to participate, your role will include:

1. Provide consent and complete educator and student information forms.
2. Send consent (drafted by researcher) to parents of potential student participants.
3. Provide typical instruction during daily targeted routine during baseline.
4. Participate in a brief interview related to the student's challenging behavior and a meeting to plan the intervention for the student participant (up to 60 min)
5. Participate in training session (up to 60 min) for intervention.

6. Implement intervention during daily targeted routine during intervention.
7. Video record daily targeted routine of up to 20 min in person or via Zoom (3-5 times per week).
8. Meet with researcher weekly to review progress toward goal.
9. Complete an online social validity survey (5 min) and/or participate in a brief (up to 20 min) interview at the conclusion of the study.

If you are interested in participating, please contact Andy Masud, the principal investigator directly via email, by cell phone, or by filling out the following Google Form to indicate your interest.

Email: amasud@uncc.edu

Cell phone: 704-743-7716

[Google Form](#)

Thank you,

[NAME]

Appendix E

Educator Team Member Consent**Educator Team Member Consent for Participation in Research**

Title of the Project: *Effects of Functional Communication Training in Inclusive School Settings for Students with Intellectual and Developmental Disabilities*

Principal Investigator: Andy Masud, M.A.T., Doctoral Candidate in Special Education, University of North Carolina at Charlotte

Faculty Advisor: Virginia Walker, Ph.D., BCBA-D, Associate Professor, Department of Special Education and Child Development, University of North Carolina at Charlotte

Faculty Advisory Email: virginia.walker@uncc.edu

Co-investigators: Virginia Walker, Ph.D., BCBA-D, Associate Professor, Department of Special Education and Child Development, University of North Carolina at Charlotte and Allie Reilly, M.A.T., Doctoral Student in Special Education, University of North Carolina at Charlotte

You are invited to participate in a research study. Your participation in this research study is voluntary. Only educator participants (i.e., those who implement the FCT intervention with student participants) will receive a \$100 Amazon gift card at the completion of the study. If participants withdraw from the study, they will not be eligible for the gift cards.

The information provided is to help you decide whether or not to consent to participate. If you have any questions, please feel free to ask.

Important information you need to know

- The purpose of this study is to examine the effects of an evidence-based behavior intervention (i.e., Functional Communication Training) on the challenging behavior of students with intellectual and developmental disabilities who are educated in an inclusive school setting (i.e., settings where there are with peers without disabilities).
- Research is needed on the implementation of effective practices for reducing challenging behavior of students with intellectual and developmental disabilities so they may continue to access inclusive school settings.
- This study will involve multiple sessions across several weeks that will last up to 20 minutes each. The sessions will occur during typical instructional time and daily routines to measure the effectiveness of the intervention.
- This study will involve at least one 1-hour training session lasting where the educator participant will be trained to implement the intervention.

- As this is a challenging behavior intervention, there is a risk that challenging behavior will increase. However, to mitigate this risk we will develop a safety plan based on the school district's policy and your student's specific needs. Further, Functional Communication Training targets precursor behaviors and works to teach your student a replacement behavior to their challenging behavior. Therefore, the risk of increased challenging behavior is low. Additionally, the research team believes that any risk is heavily outweighed by the potential benefit of a decrease in challenging behavior.
- You will be asked to provide demographic information about yourself and information related to your role with the student participant. This will include your role, years in your role, gender identity, age, race, ethnicity, education, licenses/certifications, disability categories of students you serve, employment settings in which you have worked, your role related to the student participant, strategies used with student participant related to challenging behavior, and any previous training/experience related to the intervention or setting.

Why am I being asked to be in this research study?

You are being asked to participate because you currently attend inclusive school settings with students who have intellectual and developmental disabilities and exhibit challenging behaviors.

What will the student do in this study? What is my role?

Students will receive the challenging behavior intervention. This will include being taught a replacement behavior to their challenging behavior. There will be no interruption to their instruction or services.

If you agree to participate, your role will include:

1. Provide consent and complete educator and student information forms.
2. Send consent (drafted by researcher) to parents of potential student participants.
3. Provide typical instruction during daily targeted routine during baseline.
4. Participate in a brief interview related to the student's challenging behavior and a meeting to plan the intervention for the student participant (up to 60 min)
5. Participate in training session (up to 60 min) for intervention.
6. Implement intervention during daily targeted routine during intervention.
7. Video record daily targeted routine of up to 20 min in person or via Zoom (3-5 times per week).
8. Meet with researcher weekly to review progress toward goal.
9. Complete an online social validity survey (5 min) and/or participate in a brief (up to 20 min) interview at the conclusion of the study.

The sessions will be recorded so the research team can collect and analyze the data. Sessions will be videorecorded. Videos may be used for training purposes following the conclusion of the study.

What benefits might student experience?

Although there are no guaranteed direct benefits to educator or student participants, students may experience decreased levels of student challenging behavior. Further, data gathered from this study may be used to inform practices for educator and students with intellectual and developmental disabilities and for future research studies for this population.

What risks might I experience?

The potential risks of this study include loss of confidentiality (infrequent likelihood due to precautions taken), potential increase in challenging behavior, as the intervention addresses challenging behavior, increased anxiety of both classroom team members and students due to the presence of observers and video recording devices, loss of time for classroom team members due to training and coaching potentially held outside of school hours, potential feelings of stress (e.g., inadequacy or regret from

classroom team members) due to the coaching process, and risks to employability and reputation for educators and reputation for child participants.

To minimize risks associated with loss of confidentiality, the researcher will provide all participants with a consent process that effectively communicates what the study entails to enable participants to make the decision that is best for them, protect data through storage methods as described above, and refrain from using personally identifiable information that can be linked to data. However, a loss of confidentiality unlikely will put participants at risk. To minimize risks associated with increases in strategies that serve to prevent challenging behavior from occurring. Should a harmful or dangerous situation arise, the school members will utilize school procedures for such situations and the researcher will record the event and report to the UNC Charlotte IRB office. To minimize the risks associated with potential anxiety due to the presence of observers and/or video recording, the researcher will discuss these procedures with participants prior to the onset of the study and provide participants with a schedule of observation and video recording dates. In addition, the researcher will use a small video camera or computer to reduce potential distraction of participants and other students and/or adults in the classroom. To minimize risks associated with the loss of time for participation in training sessions, the researcher will discuss this scheduling need with participants prior to the onset of the study and identify the amount of time loss. To minimize the risks associated with potential feelings of stress, the researcher will incorporate into the training sessions opportunities to discuss participants' reaction to training materials in terms of feelings of inadequacy, regret, etc. Furthermore, the training materials include content related to the history of how challenging behavior has been addressed and why such strategies have been implemented (e.g., use of various strategies such as punishment-based strategies has been reinforced by short-term reductions in challenging behavior). To minimize risks to employability and reputation for educators and reputation for child participants, all data will be securely stored, analyzed in private locations, and only available to the researchers. Further I will include a safety plan for FCT procedures. This will include session termination procedures based on the student's challenging behavior and the risk to the student or others associated with these. The safety plan will be established based on the school district policy related to challenging behavior. The following issues will be addressed on the safety plan: (a) procedures to maintain safety for the student and those around them, (b) de-escalation procedures, (c) contingencies for when the plan will be implemented (e.g., student exhibits specific precursor behavior), (d) procedures for the event of an injury, (e) number of people required to implement the plan, (f) behaviors that signal that the safety plan is no longer required (e.g., student is sitting calmly), (g) procedures for reintroducing the student to their regular routine, and (h) safety plan review procedures. This study protects against any impacts on the classroom and other students with regard to instructional time and classroom disruption in that FCT is a proactive intervention that addresses precursor behaviors to challenging behavior, thereby reducing potential disruption in having to address challenging behavior after it has already occurred. It will be implemented within naturally occurring routines; therefore no instructional time will be lost and there will no more than minimal disruption to the classroom (e.g., teacher saying "remember to ask for help if you are frustrated").

How will information be protected?

To protect the privacy and confidentiality of participants, the researchers will obtain consent to conduct the study, obtain separate video consent from educators and guardians of student participants, allow participants to refrain from completing any study tasks they find questionable, meet with teachers in private areas, handle data confidentially by assigning a code to participant information, and protect data through protected storage methods (e.g., stored on secure UNC Charlotte Dropbox). Codes will be kept in a separate Dropbox folder from the data. The researchers will use video recordings to collect data. All electronic materials, including video recordings, will be stored in a secure UNC Charlotte Dropbox folder on a password-protected computer. All data from video recording devices will be uploaded to UNC Charlotte Dropbox and deleted from other devices. The list linking participant information to assigned codes will be destroyed after the conclusion of the study. The list linking the participant's code to the

participant will be deleted following data analysis. All other electronic data files will be destroyed after 3 years.

How will information be used after the study is over?

These data may be shared through publication of our results. The data shared for publication will NOT include information that could identify you and your child. Following the conclusion of the study, all video recordings will be stored in the UNC Charlotte secure drop box folder. The videos will be destroyed after 3 years, except for those used for educational or training purposes. Only videos that do not capture non-participants will be used for educational or training purposes. It is important to keep the videos for at least 3 years, as in previous research the faculty advisor has been asked to recode videos during the publication review process. We want to retain these videos for 3 years in the event we are asked to revisit.

Will I receive an incentive for taking part in this study?

You will receive a \$100 Amazon gift card for participating in this study. After all components of the study are completed, you will be sent your incentive payment. Incentive payments are considered taxable income. Therefore, we are required to give the University's Financial Services division a log/tracking sheet with the names of all individuals who received a gift card. This sheet is for tax purposes only and is separate from the research data.

What other choices are there if I do not to take part in this study?

If you decline participation or choose to stop, you and your students will not be penalized, and you will not lose any benefits to which you are otherwise entitled.

What are rights I take part in this study?

Participating in this study is voluntary. Even if you decide to be part of the study now, you may change your mind and stop your participation at any time. You and your students will not lose any benefits to which you are entitled.

Who can answer my questions about this study and participant rights?

For questions about this research, you may contact Andy Masud at 704-743-7716 or amasud@uncc.edu or Dr. Virginia Walker (responsible faculty) at vwalke10@uncc.edu.

If you have questions about research participant's rights, or wish to obtain information, ask questions, or discuss any concerns about this study with someone other than the researcher(s), please contact the Office of Research Protections and Integrity at 704-687-1871 or uncc-irb@uncc.edu.

Consent to Participate

By signing this document, you are agreeing to participate in this study. Make sure you understand what the study is about before you sign. You will receive a copy of this document for your records. If you have any questions about the study after you sign this document, you can contact the study team using the information provided above.

I understand what the study is about, and my questions so far have been answered.

I consent to my participation in:

Effects of Functional Communication Training in Inclusive School Settings for Students with Intellectual and Developmental Disabilities ☐ Yes ☐ No

I consent to audio/videorecording during sessions in person and via Zoom: ☐ Yes ☐ No

(Please see a separate videorecording consent form)

Participant Name (PRINT)

Signature Date

Name and Signature of person obtaining consent Date

Appendix F

Educator Team Member Participant Video Consent Form

For good and valuable consideration, the receipt and sufficiency of which I hereby acknowledge, I hereby consent and agree to be audio recorded and videorecorded, both in person and via Zoom, by the University of North Carolina at Charlotte (herein “UNC Charlotte”) or anyone authorized by UNC Charlotte, including but not limited to Principal Investigators and researchers (herein “Agents”), while I participate in the research “*Effects of Functional Communication Training in Inclusive School Settings for Students with Intellectual and Developmental Disabilities*” (herein “Research”). I give permission to UNC Charlotte and its Agents to use, publish, or reproduce any such photographs, videos, or recordings (“Recordings”) for the following purposes (initial):

Scholarship and the dissemination of research findings; and/or

Classroom and professional training and education.

I agree that the use herein may be without compensation. I hereby waive any right to inspect or approve the finished Recordings and agree that such Recordings shall be solely owned by UNC Charlotte and/or its Agents. I expressly release UNC Charlotte and its Agents from any and all claims which I may have arising from or related to the use of the Recordings, including but not limited to claims for invasion of privacy, right of publicity, defamation, copyright infringement, or any other causes of action arising out of the use, adaptation, reproduction, distribution, broadcast, or exhibition of such Recordings.

I understand that neither the University nor its Agents will release my name without my consent in conjunction with the Recordings. I agree that Recordings may be used internally by the University and/or its Agents for future trainings. I further understand that I have the right to revoke this permission, which must be in writing. However, I understand that any such revocation shall not affect disclosures or publications previously made by UNC Charlotte and its Agents prior to the receipt of such written revocation.

I am 18 years of age or older, and I am competent to enter into this agreement. I acknowledge that prior to signing this release I have had an adequate opportunity to read and understand it, and any questions I have had have been directed to UNC Charlotte and/or its Agents and have been answered to my satisfaction.

I HAVE READ THIS AGREEMENT, I UNDERSTAND IT AND I AGREE TO BE BOUND BY IT.

(Signature)

(Date)

(Printed Name)

Appendix G

Legal Guardian Recruitment Letter for Student Participant

[Date]

Dear [Guardian Name],

A research team at the University of North Carolina at Charlotte is currently seeking participants for a research study. The research team consists of two doctoral students, Andy Masud and Allie Reilly, and their advisor Dr. Virginia Walker. The purpose of the study is to examine the effects of an evidence-based behavior intervention (i.e., Functional Communication Training) on the challenging behavior of students with intellectual and developmental disabilities who participate in an inclusive school setting (i.e., settings where there are with peers without disabilities).

Title of the Project: *Effects of Functional Communication Training in Inclusive School Settings for Students with Intellectual and Developmental Disabilities*

Principal Investigator: Andy Masud, M.A.T., Doctoral Candidate in Special Education, University of North Carolina at Charlotte

Faculty Advisor: Virginia Walker, Ph.D., BCBA-D, Associate Professor, Department of Special Education and Child Development, University of North Carolina at Charlotte

Faculty Advisory Email: virginia.walker@uncc.edu

Co-investigators: Virginia Walker, Ph.D., BCBA-D, Associate Professor, Department of Special Education and Child Development, University of North Carolina at Charlotte and Allie Reilly, M.A.T., Doctoral Student in Special Education, University of North Carolina at Charlotte

The research sessions will occur during typical instructional time and daily routines to measure the effectiveness of the intervention. There will be no interruption to your child's instruction or services. Your child will receive an evidence-based challenging behavior intervention called Functional Communication Training. Educators will be coached by the researcher to deliver Functional Communication Training to your child. This includes determining the function or cause of their challenging behavior and then teaching them a replacement behavior to their challenging behavior. The sessions will occur daily during the same instructional routine and will involve multiple sessions across several weeks.

If you are interested in your child's participation in this research study, please click [this link](#) to fill out a Google Form to indicate your interest. Next, the research team will send an Informed Consent Form which will be sent to you through UNC Charlotte's DocuSign. This will allow you to sign the form digitally and once completed will immediately be delivered back to the research team.

If you would prefer this form printed and mailed to you, or should you have any questions about the study, please do not hesitate to contact the research team:

Thank you for your time.

Sincerely,

[Teacher Name]

Appendix H

Legal Guardian Consent for Student Participant**Parent or Legal Guardian Consent for Child/Minor Participation in Research**

If you would prefer this form printed and mailed to you instead, please contact Andy Masud at 704-743-7716 or amasud@uncc.edu

Title of the Project: *Effects of Functional Communication Training in Inclusive School Settings for Students with Intellectual and Developmental Disabilities*

Principal Investigator: Andy Masud, M.A.T., Doctoral Candidate in Special Education, University of North Carolina at Charlotte

Faculty Advisor: Virginia Walker, Ph.D., BCBA-D, Associate Professor, Department of Special Education and Child Development, University of North Carolina at Charlotte

Faculty Advisory Email: virginia.walker@uncc.edu

Co-investigators: Virginia Walker, Ph.D., BCBA-D, Associate Professor, Department of Special Education and Child Development, University of North Carolina at Charlotte and Allie Reilly, M.A.T., Doctoral Student in Special Education, University of North Carolina at Charlotte

Your child is invited to participate in a research study. Your child's participation in this research study is voluntary. The information provided is to help you decide whether or not to allow your child to participate. If you have any questions, please ask.

Important information you need to know

- The purpose of this study is to examine the effects of an evidence-based behavior intervention (i.e., Functional Communication Training) on the challenging behavior of students with intellectual and developmental disabilities who are educated in an inclusive school setting (i.e., settings where there are with peers without disabilities).
- Research is needed on the implementation of effective practices for reducing challenging behavior of students with intellectual and developmental disabilities so they may continue to access inclusive school settings.
- This study will involve sessions that will last up to 20 minutes. The sessions will occur during typical instructional time and daily routines to measure the effectiveness of the intervention.
- This study will involve at least one 1-hour training session lasting where the educator participant (i.e., the adult who attends the inclusive school setting with your child and who will deliver the intervention) will be trained to implement the intervention.
- This study could last between 6 and 14 weeks.

- As this is a challenging behavior intervention, there is a risk that challenging behavior will increase. However, to mitigate this risk we will develop a safety plan based on the school district's policy and your child's specific needs. Further, Functional Communication Training targets precursor behaviors and works to teach your child a replacement behavior to their challenging behavior. Therefore, the risk of increased challenging behavior is low. Additionally, the research team believes that any risk is heavily outweighed by the potential benefit of a decrease in challenging behavior.
- School staff (e.g., teacher, paraprofessional) will be asked to provide information about your child including age, race, ethnicity, gender, disability category, communication level and mode, assessment results, special education services and delivery time, challenging behavior, information related to their Behavior Intervention Plan (if applicable), information related to social skills, information related to their support needs, and their preferences/likes.

Why is your child being asked to be in this research study?

Your child is being asked to participate because they currently receive instruction on the adapted general education curriculum/extended content standards, may exhibit persistent challenging behaviors in an inclusive school setting, and they receive special education services under the eligibility category that is consistent with IDD (e.g., autism, intellectual disability, multiple disabilities) or is medically diagnosed with IDD.

What will children do in this study?

Educators will be coached by the researcher to deliver the challenging behavior intervention. This will include your student being taught a replacement behavior to their challenging behavior. There will be no interruption to their instruction or services. The sessions will occur daily during the same instructional routine and will involve multiple sessions across several weeks. The challenging behavior intervention, Functional Communication Training, will include the following:

1. **A Functional Behavior Assessment:** The purpose of a functional behavior assessment is to determine the function, or purpose, of your child's challenging behavior. Examples of function could include to access attention or tangibles, or to escape difficult work or nonpreferred adults. The educator participant will provide information via an open-ended interview related your child and their challenging behavior. Following this, as a team, we will (a) determine and then operationally define your child's target challenging behavior and their precursor behaviors for safety purposes when developing the FCT plan, (b) identify the target routine in which FCT will be implemented for the student participant, (c) establish session termination procedures for your child's challenging behavior to ensure the safety your child and those around them, and (d) form hypotheses regarding your student's behavioral function. Next, they will work with the research team to conduct a functional behavior assessment, which involves observing your child's behavior in their natural routines and collecting data on the occurrences of challenging behavior, its antecedents, and consequences. If the function of your child's challenging behavior is difficult to determine from observation, the research team may conduct a functional analysis, wherein they will systematically embed a series of trials in naturally occurring routines. Each trial has a test condition and control condition that lasts 1–2 min each. The test condition involves evoking challenging behavior through an establishing operation and specific contingency for challenging behavior (e.g., a teacher saying, "Okay, let's start our math work!" to a student whose challenging behavior is maintained by escape from math tasks). The control condition involves continuous, noncontingent access to the student's reinforcers (e.g., free-time, adult attention). There will be 20 trials per condition across five school days. If the educator participant does not implement the trial-based FA with fidelity, the researcher will end the session and retrain the educator participant.
2. **FCT Plan Development:** The educator participant and other relevant members of the student participant's educational team (e.g., classroom general education teacher, behavioral support

staff, special education teacher, paraprofessional) will meet to form an intervention plan for your student. During the meeting, will identify an appropriate replacement behavior to your child's challenging behavior that aligns with their behavioral function. For example, if the function of your students' challenging behavior is to escape difficult work, their replacement behavior might be to raise their hand and ask for a break from their work. The team also will create a safety plan that will be established based on the school district policy related to challenging behavior. The following issues will be addressed on the safety plan: (a) procedures to maintain safety for the student and those around them, (b) de-escalation procedures, (c) contingencies for when the plan will be implemented (e.g., student exhibits specific precursor behavior), (d) procedures for the event of an injury, (e) number of people required to implement the plan, (f) behaviors that signal that the safety plan is no longer required (e.g., student is sitting calmly), (g) procedures for reintroducing the student to their regular routine, and (h) safety plan review procedures.

3. **FCT intervention:** During the FCT intervention sessions, the educator participant will be prompting your student to use their replacement behavior as soon as they see precursor behaviors to your student's challenging behaviors. Once your student has exhibited their replacement behavior, the educator participant will provide them with reinforcement/praise. These sessions will occur during naturally occurring times during your student's school day and will not interrupt any instruction. All baseline and intervention sessions will be videorecorded.
4. **Social Validity Survey:** Following the study, your child will be asked to complete a 3-question social validity survey about the intervention. Questions will include: whether they liked the intervention, whether it helped them refrain from exhibit the challenging behavior, and whether it helped them remember to exhibit the replacement behavior. It will be adapted as needed based on your child's strengths and needs.

What benefits might children experience?

Although there are no guaranteed direct benefits to educator or student participants, students may experience decreased levels of student challenging behavior. Further, data gathered from this study may be used to inform practices for educator and students with intellectual and developmental disabilities and for future research studies for this population.

What risks might students experience?

The potential risks of this study include loss of confidentiality (infrequent likelihood due to precautions taken), potential increase in challenging behavior, as the intervention addresses challenging behavior, increased anxiety of both classroom team members and students due to the presence of observers and video recording devices, loss of time for classroom team members due to training and coaching potentially held outside of school hours, potential feelings of stress (e.g., inadequacy or regret from classroom team members) due to the coaching process, and risks to employability and reputation for educators and reputation for child participants.

To minimize risks associated with loss of confidentiality, the researcher will provide all participants with a consent process that effectively communicates what the study entails to enable participants to make the decision that is best for them, protect data through storage methods as described above, and refrain from using personally identifiable information that can be linked to data. However, a loss of confidentiality unlikely will put participants at risk. To minimize risks associated with increases in strategies that serve to prevent challenging behavior from occurring. Should a harmful or dangerous situation arise, the school members will utilize school procedures for such situations and the researcher will record the event and report to the UNC Charlotte IRB office. To minimize the risks associated with potential anxiety due to the presence of observers and/or video recording, the researcher will discuss these procedures with participants prior to the onset of the study and provide participants with a schedule of observation and video recording dates. In addition, the researcher will use a small video camera or computer to reduce potential distraction of participants and other students and/or adults in the classroom. To minimize risks

associated with the loss of time for participation in training sessions, the researcher will discuss this scheduling need with participants prior to the onset of the study and identify the amount of time loss. To minimize the risks associated with potential feelings of stress, the researcher will incorporate into the training sessions opportunities to discuss participants' reaction to training materials in terms of feelings of inadequacy, regret, etc. Furthermore, the training materials include content related to the history of how challenging behavior has been addressed and why such strategies have been implemented (e.g., use of various strategies such as punishment-based strategies has been reinforced by short-term reductions in challenging behavior). To minimize risks to employability and reputation for educators and reputation for child participants, all data will be securely stored, analyzed in private locations, and only available to the researchers. Further I will include a safety plan for FCT procedures. This will include session termination procedures based on the student's challenging behavior and the risk to the student or others associated with these. The safety plan will be established based on the school district policy related to challenging behavior. The following issues will be addressed on the safety plan: (a) procedures to maintain safety for the student and those around them, (b) de-escalation procedures, (c) contingencies for when the plan will be implemented (e.g., student exhibits specific precursor behavior), (d) procedures for the event of an injury, (e) number of people required to implement the plan, (f) behaviors that signal that the safety plan is no longer required (e.g., student is sitting calmly), (g) procedures for reintroducing the student to their regular routine, and (h) safety plan review procedures. This study protects against any impacts on the classroom and other students with regard to instructional time and classroom disruption in that FCT is a proactive intervention that addresses precursor behaviors to challenging behavior, thereby reducing potential disruption in having to address challenging behavior after it has already occurred. It will be implemented within naturally occurring routines; therefore no instructional time will be lost and there will be no more than minimal disruption to the classroom (e.g., teacher saying "remember to ask for help if you are frustrated").

How will information be protected?

To protect the privacy and confidentiality of participants, the researchers will obtain consent to conduct the study, obtain separate video consent from educators and guardians of student participants, allow participants to refrain from completing any study tasks they find questionable, meet with teachers in private areas, handle data confidentially by assigning a code to participant information, and protect data through protected storage methods (e.g., stored on secure UNC Charlotte Dropbox). Codes will be kept in a separate Dropbox folder from the data. The researchers will use video recordings to collect data. All electronic materials, including video recordings, will be stored in a secure UNC Charlotte Dropbox folder on a password-protected computer. All data from video recording devices will be uploaded to UNC Charlotte Dropbox and deleted from other devices. The list linking participant information to assigned codes will be destroyed after the conclusion of the study. The list linking the participant's code to the participant will be deleted following data analysis. All other electronic data files will be destroyed after 3 years.

How will information be used after the study is over?

These data may be shared through publication of our results. The data shared for publication will NOT include information that could identify you and your child. Following the conclusion of the study, all video recordings will be stored in the UNC Charlotte secure drop box folder. The videos will be destroyed after 3 years, except for those used for educational or training purposes. Only videos that do not capture non-participants will be used for educational or training purposes. It is important to keep the videos for at least 3 years, as in previous research the faculty advisor has been asked to recode videos during the publication review process. We want to retain these videos for 3 years in the event we are asked to revisit.

Will children receive an incentive for taking part in this study?

Your child will not receive any payment for being in this study.

What other choices are there if I don't want my [child/legal ward] to take part in this study?

If you decline participation or choose to stop, you and your child will not be penalized, and you and your child will not lose any benefits to which you are otherwise entitled. **Your child will continue to receive ALL eligible services and supports as outlined if he/she has an individual education program (IEP).**

What are my child's/legal ward's rights if he/she takes part in this study?

Participating in this study is voluntary. Even if you decide to allow your child to be part of the study now, you may change your mind and stop his/her participation at any time. You and your child will not lose any benefits to which you are entitled.

Who can answer my questions about this study and participant rights?

For questions about this research, you may contact Andy Masud at 704-743-7716 or amasud@uncc.edu or Dr. Virginia Walker (responsible faculty) at vwalke10@uncc.edu.

If you have questions about research participant's rights, or wish to obtain information, ask questions, or discuss any concerns about this study with someone other than the researcher(s), please contact the Office of Research Protections and Integrity at 704-687-1871 or uncc-irb@uncc.edu.

Parent or Legally Authorized Representative Consent

By signing this document, you are agreeing to your child's participation in this study. Make sure you understand what the study is about before you sign. You will receive a copy of this document for your records. You also will be asked to document assent by your child on a separate document. If you have any questions about the study after you sign this document, you can contact the study team using the information provided above.

I understand what the study is about and my questions so far have been answered.

I consent to my child's participation in:

Effects of Functional Communication Training in Inclusive School Settings for Students with Intellectual and Developmental Disabilities ☐ Yes ☐ No

I consent to the use of audio and videorecording during sessions in person or via Zoom: ☐ Yes ☐ No
(Please see a separate videorecording consent form)

Participant Name (PRINT)

Parent/Legally Authorized Representative Name and Relationship to Participant (PRINT)

Signature

Date

Name and Signature of person obtaining consent

Date

Appendix I

Legal Guardian Video Consent Form

If you would prefer this form printed and mailed to you instead, please contact Andy Masud at 704-743-7716 or amasud@uncc.edu

For good and valuable consideration, the receipt and sufficiency of which I hereby acknowledge, I hereby consent and agree for my child to be audio recorded and videorecorded, in person or via Zoom, by the University of North Carolina at Charlotte (herein “UNC Charlotte”) or anyone authorized by UNC Charlotte, including but not limited to Principal Investigators and researchers (herein “Agents”), while my child participates in the research “*Effects of Functional Communication Training in Inclusive School Settings for Students with Intellectual and Developmental Disabilities*” (herein “Research”). I give permission to UNC Charlotte and its Agents to use, publish, or reproduce any such photographs, videos, or recordings (“Recordings”) for the following purposes (initial):

Scholarship and the dissemination of research findings; and/or

Classroom and professional training and education.

I agree that the use herein may be without compensation to me or my child. I hereby waive any right to inspect or approve the finished Recordings and agree that such Recordings shall be solely owned by UNC Charlotte and/or its Agents. I expressly release UNC Charlotte and its Agents from any and all claims which I or my child may have arising from or related to the use of the Recordings, including but not limited to claims for invasion of privacy, right of publicity, defamation, copyright infringement, or any other causes of action arising out of the use, adaptation, reproduction, distribution, broadcast, or exhibition of such Recordings.

I understand that neither the University nor its Agents will release my child’s name without my consent in conjunction with the Recordings. I agree that Recordings relating to my child’s participation in the Research may be used internally by the University and/or its Agents for future trainings. I further understand that I have the right to revoke this permission, which must be in writing. However, I understand that any such revocation shall not affect disclosures or publications previously made by UNC Charlotte and its Agents prior to the receipt of such written revocation.

I am 18 years of age or older, and I am competent to enter into this agreement on behalf of myself and my child. I acknowledge that prior to signing this release I have had an adequate opportunity to read and understand it, and any questions I have had have been directed to UNC Charlotte and/or its Agents and have been answered to my satisfaction.

**I HAVE READ THIS AGREEMENT; I UNDERSTAND IT AND
I AGREE TO BE BOUND BY IT.**

(Signature or Parent/Guardian)

(Date)

(Printed Name)

(Printed Name of Child)

Appendix J

Legal Guardian Consent for Peer Mentor Participant

CATO College of Education
 Department of Special Education and Child Development
 9201 University City Boulevard, Charlotte, NC 28223-0001

Parent/Legal Guardian Consent for Peer Mentor Participation in Research

Title of the Project: *Effects of Functional Communication Training in Inclusive School Settings for Students with Intellectual and Developmental Disabilities*

Principal Investigator: Andy Masud, M.A.T., Doctoral Candidate in Special Education, University of North Carolina at Charlotte

Faculty Advisor: Virginia Walker, Ph.D., BCBA-D, Associate Professor, Department of Special Education and Child Development, University of North Carolina at Charlotte

Faculty Advisory Email: virginia.walker@uncc.edu

Co-investigators: Virginia Walker, Ph.D., BCBA-D, Associate Professor, Department of Special Education and Child Development, University of North Carolina at Charlotte and Allie Reilly, M.A.T., Doctoral Student in Special Education, University of North Carolina at Charlotte

Your child is invited to participate in a research study due to their involvement as a peer mentor at their school. Their participation in this research study is voluntary. Those who implement the FCT intervention with student participants will receive a \$50 Amazon gift card at the completion of the study. If they withdraw from the study, they will not be eligible for the gift card.

The following information provided is to help you decide whether or not to consent for your child to participate. If you or your child have any questions, please feel free to ask.

Important information you need to know

- The purpose of this study is to examine the effects of an evidence-based behavior intervention (i.e., Functional Communication Training) on the challenging behavior and socially appropriate behavior of students with intellectual and developmental disabilities who are educated in an inclusive school setting (i.e., settings where there are with peers without disabilities).
- This study will involve multiple sessions across several weeks that will last up to 20 minutes each. The sessions will occur during typical instructional time and daily routines to measure the effectiveness of the intervention.
- This study will involve a 15-minute training session where your child will be trained to provide prompts to promote communication skills for their assigned peer mentee.
- As this is an intervention to support positive behavior, there is a risk that some challenging behavior will increase/occur. However, there is a plan in place should this occur. All educators in the room will be trained in this plan.
- Your child will be asked to provide demographic information about themselves and information related to their role as peer mentor to the student participant. This information will include their gender identity, age, grade, race, ethnicity, and role related to the student participant.

Why is my child being asked to be in this research study?

Your child is being asked to participate because they are currently a peer mentor to a student in this study and they attend an inclusive school setting with this student.

What is my child's role in this study?

You child's peer buddy will receive an intervention to support their communication skills and decrease their challenging behavior. There will be no interruption to your child's instruction or services.

If you agree to allow your child to participate, your child's role will include:

1. Participate in a training session (about 15 min) about how to support the peer mentee's communication skills.
2. Support the peer mentees communication skills daily during the target class period.
3. Meet with researcher if needed to gain additional training providing prompts to promote the peer mentee's communication skills.
4. Complete an online social validity survey (5 min) and/or participate in a brief (up to 20 min) interview at the conclusion of the study.

The sessions will be videorecorded so the research team can collect and analyze the data.

What benefits might my child experience?

Although there are no guaranteed direct benefits to peer mentor participants, peer buddies may experience improved communication skills and decreased levels of challenging behavior. Further, data gathered from this study may be used to inform practices for educators and students with intellectual and developmental disabilities, including peer mentor programs, and for future research studies for this population.

What risks might my child experience?

The potential risks of this study include loss of confidentiality (infrequent likelihood due to precautions taken), increased anxiety due to the presence of observers and video recording devices, and potential feelings of stress (e.g., inadequacy or regret) due to the process, and a potential increase in challenging behavior on the part of the peer buddy.

To minimize risks associated with loss of confidentiality, the researcher will provide participants with a consent process that effectively communicates what the study entails to enable participants to make the decision that is best for them, protect data through storage methods as described above, and refrain from using personally identifiable information that can be linked to data. However, a loss of confidentiality unlikely will put you at risk. To minimize the risks associated with potential anxiety due to the presence of observers and/or video recording, the researcher will discuss these procedures with participants prior to the onset of the study and provide participants with a schedule of observation and video recording dates. To minimize the risks associated with potential feelings of stress, the researcher will incorporate into the training sessions opportunities to discuss participants' reaction to training materials in terms of feelings of inadequacy, regret, etc. To mitigate the risks associated with an increase in challenging behavior, the peer mentor will be focused on promoting age-appropriate requests and not on addressing challenging behavior. Therefore, while challenging behavior could increase, this is more unlikely given that challenging behaviors are not what the peer mentor will be focused on. Further the researcher will include a safety plan for FCT procedures. This will include session termination procedures based on the student's potential challenging behavior and the risk to the student or others associated with these. The safety plan will be established based on the school district policy related to challenging behavior. All educators in the classroom will be trained in this plan. This study protects against any impacts on the classroom and other students with regard to instructional time and classroom disruption in that it will be implemented within naturally occurring routines; therefore, no instructional time will be lost and there will no more than minimal disruption to the classroom.

How will information be protected?

To protect the privacy and confidentiality of participants, the researchers will obtain consent to conduct the study, obtain separate video consent from educators and guardians of student participants, allow participants to refrain from completing any study tasks they find questionable, meet with teachers in private areas, handle data confidentially by assigning a code to participant information, and protect data through protected storage methods (e.g., stored on secure UNC Charlotte Dropbox). Codes will be kept in a separate Dropbox folder from the data. The researchers will use video recordings to collect data. All electronic materials, including video recordings, will be stored in a secure UNC Charlotte Dropbox folder on a password-protected computer. All data from video recording devices will be uploaded to UNC Charlotte Dropbox and deleted from other devices. The list linking participant information to assigned codes will be destroyed after the conclusion of the study. The list linking the participant's code to the participant will be deleted following data analysis. All other electronic data files will be destroyed after 3 years.

How will information be used after the study is over?

These data may be shared through publication of our results. The data shared for publication will NOT include information that could identify you and your child. Following the conclusion of the study, all video recordings will be stored in the UNC Charlotte secure drop box folder. The videos will be destroyed after 3 years, except for those used for educational or training purposes. Only videos that do not capture non-participants will be used for educational or training purposes. It is important to keep the videos for at least 3 years, as in previous research the faculty advisor has been asked to recode videos during the publication review process. We want to retain these videos for 3 years in the event we are asked to revisit.

Will my child receive an incentive for taking part in this study?

Your child will receive a \$50 Amazon gift card for participating in this study. After all components of the study are completed, your child will be sent their incentive as an e-gift card to their school email address. We are required to log/list the names of individuals who received a gift card. We will log your child's name and your name. This information is needed to meet the University's Financial Services requirements and this log/list will be separate from the research data.

What other choices are there if your child does not want to take part in this study?

If your child declines participation or chooses to stop, they will not be penalized, and will not lose any benefits to which they are otherwise entitled.

What are my child's rights if they take part in this study?

Participating in this study is voluntary. Even if your child decides to be part of the study now, they may change their mind and stop participation at any time. Your child will not lose any benefits to which they are entitled.

Who can answer my questions about this study and participant rights?

For questions about this research, you may contact Andy Masud (Principal Investigator) at 704-743-7716 or amasud@uncc.edu or Dr. Virginia Walker (responsible faculty) at vwalke10@uncc.edu. If you have questions about research participant's rights, or wish to obtain information, ask questions, or discuss any concerns about this study with someone other than the researcher(s), please contact the Office of Research Protections and Integrity at 704-687-1871 or uncc-irb@uncc.edu.

Parent or Legally Authorized Representative Consent

By signing this document, you are agreeing to your child's participation in this study. Make sure you understand what the study is about before you sign. You will receive a copy of this document for your records. You will also be asked to document assent by your child on a separate document. If you have any

questions about the study after you sign this document, you can contact the study team using the information provided above.

I understand what the study is about and my questions so far have been answered.

I consent to my child's participation in:

Effects of Functional Communication Training in Inclusive School Settings for Students with Intellectual and Developmental Disabilities ☐ Yes ☐ No

I consent to the use of audio and videorecording during sessions in person or via Zoom: ☐ Yes ☐ No

(Please see a separate videorecording consent form)

Peer Mentor Participant Name (PRINT)

Parent/Legally Authorized Representative Name and Relationship to Participant (PRINT)

Signature Date

Name and Signature of person obtaining consent Date

Appendix K

Legal Guardian Video Consent for Peer Mentor

If you would prefer this form printed and mailed to you instead, please contact Andy Masud at 704-743-7716 or amasud@uncc.edu

For good and valuable consideration, the receipt and sufficiency of which I hereby acknowledge, I hereby consent and agree for my child to be audio recorded and videorecorded, in person or via Zoom, by the University of North Carolina at Charlotte (herein “UNC Charlotte”) or anyone authorized by UNC Charlotte, including but not limited to Principal Investigators and researchers (herein “Agents”), while my child participates in the research “*Effects of Functional Communication Training in Inclusive School Settings for Students with Intellectual and Developmental Disabilities*” (herein “Research”). I give permission to UNC Charlotte and its Agents to use, publish, or reproduce any such photographs, videos, or recordings (“Recordings”) for the following purposes (initial):

_____ Scholarship and the dissemination of research findings; and/or

_____ Classroom and professional training and education.

I agree that the use herein may be without compensation to me or my child. I hereby waive any right to inspect or approve the finished Recordings and agree that such Recordings shall be solely owned by UNC Charlotte and/or its Agents. I expressly release UNC Charlotte and its Agents from any and all claims which I or my child may have arising from or related to the use of the Recordings, including but not limited to claims for invasion of privacy, right of publicity, defamation, copyright infringement, or any other causes of action arising out of the use, adaptation, reproduction, distribution, broadcast, or exhibition of such Recordings.

I understand that neither the University nor its Agents will release my child’s name without my consent in conjunction with the Recordings. I agree that Recordings relating to my child’s participation in the Research may be used internally by the University and/or its Agents for future trainings. I further understand that I have the right to revoke this permission, which must be in writing. However, I understand that any such revocation shall not affect disclosures or publications previously made by UNC Charlotte and its Agents prior to the receipt of such written revocation.

I am 18 years of age or older, and I am competent to enter into this agreement on behalf of myself and my child. I acknowledge that prior to signing this release I have had an adequate opportunity to read and understand it, and any questions I have had have been directed to UNC Charlotte and/or its Agents and have been answered to my satisfaction.

**I HAVE READ THIS AGREEMENT; I UNDERSTAND IT AND
I AGREE TO BE BOUND BY IT.**

(Signature or Parent/Guardian)

(Date)

(Printed Name)

(Printed Name of Child)

Appendix L

Peer Mentor Assent



CATO College of Education
 Department of Special Education and Child Development
 9201 University City Boulevard, Charlotte, NC 28223-0001

Peer Mentor Assent Form

Title of the Project: *Effects of Functional Communication Training in Inclusive School Settings for Students with Intellectual and Developmental Disabilities*

Principal Investigator: Andy Masud, M.A.T., Doctoral Candidate in Special Education, University of North Carolina at Charlotte

You are invited to participate in a research study because of your involvement as a peer mentor at the student participant's school. If you complete the study, you will receive a \$50 Amazon gift card at the completion of the study. The following information provided is to help you decide whether to participate. If you have any questions, please feel free to ask. Participating in this study is voluntary. Even if you decide to be part of the study now, you may change your mind and stop participation at any time. You will not lose any benefits to which you are entitled. If you agree to participate, your role will include:

1. Participate in a training session (about 15 min) about how to support the peer buddy's communication skills.
2. Support the peer buddy communication skills daily during the target class period.
3. Meet with researcher if needed to gain additional training providing prompts to promote the peer buddy's communication skills.
4. Complete an online social validity survey (5 min) and/or participate in a brief (up to 20 min) interview at the conclusion of the study.

Although there are no guaranteed direct benefits to you, peer mentees may experience improved communication skills and decreased levels of challenging behavior. Further, data gathered from this study may be used to inform practices for educators and students with intellectual and developmental disabilities, including peer mentor programs, and for future research studies for this population.

When I am done with the study, I plan to write it up and publish it. I will not use your real name or any other identifiable information about you in the project.

By signing this document, you are assenting to your participation in this study. If you have any questions about the study after you sign this document, you can contact the study team using the information provided above.

 Participant Name

 Participant Signature

 Date

 Signature of Investigator

 Date

Appendix M

Legal Guardian Re-Consent Form for Student Participant**Parent or Legal Guardian Consent for Child/Minor Participation in Research**

If you would prefer this form printed and mailed to you instead, please contact Andy Masud at 704-743-7716 or amasud@uncc.edu

Title of the Project: *Effects of Functional Communication Training in Inclusive School Settings for Students with Intellectual and Developmental Disabilities*

Principal Investigator: Andy Masud, M.A.T., Doctoral Candidate in Special Education, University of North Carolina at Charlotte

Faculty Advisor: Virginia Walker, Ph.D., BCBA-D, Associate Professor, Department of Special Education and Child Development, University of North Carolina at Charlotte

Faculty Advisory Email: virginia.walker@uncc.edu

Co-investigators: Virginia Walker, Ph.D., BCBA-D, Associate Professor, Department of Special Education and Child Development, University of North Carolina at Charlotte and Allie Reilly, M.A.T., Doctoral Student in Special Education, University of North Carolina at Charlotte.

This re-consent form is being sent to the parent/legal guardian of a student participant in the aforementioned study due to changes being made to the study. Your child's participation in this study continues to be entirely voluntary, and if you do not agree with the following changes, your child can be withdrawn from the study at any time with no repercussions.

Important information you need to know about the changes to the study

- The purpose of this study is still to examine the effects of an evidence-based behavior intervention (i.e., Functional Communication Training) on the challenging behavior of students with intellectual and developmental disabilities who are educated in an inclusive school setting (i.e., settings where there are with peers without disabilities).
- **Instead of an educator participant (e.g., teacher, paraprofessional) delivering the intervention to your child, their peer mentor will be trained to deliver the intervention.**

Does this change impact what my child will do the study?

Yes, it does. You child's peer mentor will now be coached by the researcher to deliver the intervention. Therefore, you child will receive the intervention from their peer mentor instead of an educator.

Does this change the benefits my child might experience?

No, it does not.

Does this change the risks my child might experience?

No, it does not.

Does this change how information will be protected?

No, it does not.

Does this change how information will be used after the study is over?

No, it does not.

What other choices are there if I don't want my child to continue to take part in this study?

If you choose to stop your child's participation, you or your child will not be penalized and will not lose any benefits to which you are entitled. Your child will continue to receive ALL eligible services and supports as outlined if they have an individual education program (IEP).

What are my child's rights if they continue to take part in this study?

Participating in this study is voluntary. Even if you decide to allow your child to be part of the study now, you may change your mind and stop his/her participation at any time. You and your child will not lose any benefits to which you are entitled.

Who can answer my questions about the change to this study and participant rights?

For questions about this change or about the research study, you may contact Andy Masud at 704-743-7716 or amasud@uncc.edu or Dr. Virginia Walker (responsible faculty) at vwalke10@uncc.edu.

If you have questions about research participant's rights, or wish to obtain information, ask questions, or discuss any concerns about this study with someone other than the researcher(s), please contact the Office of Research Protections and Integrity at 704-687-1871 or uncc-irb@uncc.edu.

Parent or Legally Authorized Representative Consent

By signing this document, you are agreeing to your child's participation in the change to this study, for which you have already provided consent. Make sure you understand the changes before you sign. You will receive a copy of this document for your records. If you have any questions about the study after you sign this document, you can contact the study team using the information provided above.

I understand what the proposed change to the study is about and my questions so far have been answered. I consent to the aforementioned changes in the study and to my child's continued participation in *Effects of Functional Communication Training in Inclusive School Settings for Students with Intellectual and Developmental Disabilities* ☐ Yes ☐ No

Participant Name (PRINT)

Parent/Legally Authorized Representative Name and Relationship to Participant (PRINT)

Signature

Date

Name and Signature of person obtaining consent

Date

Appendix N

Non-Focal Student Informational Letter

[Insert Date]

Parents and Guardians,

The purpose of this letter is to inform you of a research study that will be conducted in one of your child's classrooms. **Your child is not involved in this study.** The study focuses on a classmate in one of your child's classes. This letter provides information about the study, an explanation of how videorecorded data will be used, and research contact information.

This study has been approved by and is covered under the University of North Carolina at Charlotte's Institutional Review Board and has full support and approval of the administration in your child's school and district.

Title of the Project: *Effects of Functional Communication Training in Inclusive School Settings for Secondary Students with Intellectual and Developmental Disabilities*

Principal Investigator: Andy Masud, M.A.T., Doctoral Candidate in Special Education, University of North Carolina at Charlotte

Principal Investigator Email: amasud@unc.edu

Faculty Advisor: Virginia Walker, Ph.D., BCBA-D, Associate Professor, Department of Special Education and Child Development, University of North Carolina at Charlotte

Faculty Advisory Email: virginia.walker@uncc.edu

Co-investigators: Virginia Walker, Ph.D., BCBA-D, Associate Professor, Department of Special Education and Child Development, University of North Carolina at Charlotte and Allie Reilly, M.A.T., Doctoral Student in Special Education, University of North Carolina at Charlotte

Overview of the Study

- An educator in your child's class will be trained to deliver an evidence-based behavior intervention (i.e., Functional Communication Training) to a student in your child's class.
- Videorecorded sessions will last about 20 minutes and will occur 3-4 times per week for approximately 10 weeks. The method used for videorecording will be as minimally invasive as possible, will occur during naturally occurring routines, and will not impact your child's learning experience.
- No other aspects of the study will negatively impact your child's learning experience.
- The study's approved Institutional Review Board protocol through the University of North Carolina at Charlotte includes a waiver of consent for classroom students not involved in this study. Without the waiver, this study could not practically occur.

Information about Videorecording

- Because the focal student will be videorecorded for the purpose of this research study, there is an unlikely chance that your child may appear in a video recording. The research team will take all actions necessary to keep non-participating students off camera.

- The researchers will use video recordings to collect data. Video recordings will be stored in a secure UNC Charlotte Dropbox folder on a password-protected computer and will be destroyed after 3 years.
- Videos that capture your child will not be used for any purpose, other than collecting data on the focal student. Further, the research team will not show videos that capture non-participants outside of the research team.

For questions about this research study or if you have any concerns about the study taking place in your child's classroom, you may contact Andy Masud at 704-743-7716 or amasud@uncc.edu or Dr. Virginia Walker (responsible faculty) at vwalke10@uncc.edu. Thank you very much for your time.

Sincerely,

Andy B. Masud, MAT
Doctoral Candidate | Special Education
Department of Special Education and Child Development
University of North Carolina at Charlotte

Appendix O

Educator Team Member Participant Demographic Form

Name:

Date:

Student participant:

Please respond to the following items about yourself:

1. Role:

- ☐ General education teacher
- ☐ Special education teacher
- ☐ Teaching assistant (i.e., paraprofessional, classroom aide)
- ☐ Other:

2. Years in role:

3. Gender Identity:

4. Age:

5. Race:

- ☐ White
- ☐ Black or African American
- ☐ American Indian or Alaska Native
- ☐ Asian
- ☐ Native American or Other Pacific Islander

6. Ethnicity:

- ☐ Hispanic or Latino
- ☐ Not Hispanic or Latino

7. Highest Education Level:

- ☐ No high school degree or GED
- ☐ High school degree or GED

- ☐ Some college
- ☐ Associate degree (2 years)
- ☐ Bachelor of Art/Bachelor of Science degree (4 years)
- ☐ Graduate work or degree
- ☐ Other:

8. Please describe the type of teaching license and endorsement(s)/certification(s), if any, you currently hold in the state of North Carolina:

9. Disability categories of students currently and previously served (select all that apply):

- ☐ Intellectual disabilities
- ☐ Hearing impairment
- ☐ Speech or language impairment
- ☐ Visual impairment
- ☐ Emotional disturbance (can include emotional disability)
- ☐ Orthopedic impairment
- ☐ Other health impairment
- ☐ Autism (can include certain areas under autism spectrum disorder)
- ☐ Specific learning disability
- ☐ Deaf blindness
- ☐ Multiple disabilities
- ☐ Developmental delay
- ☐ Traumatic brain injury
- ☐ Other:

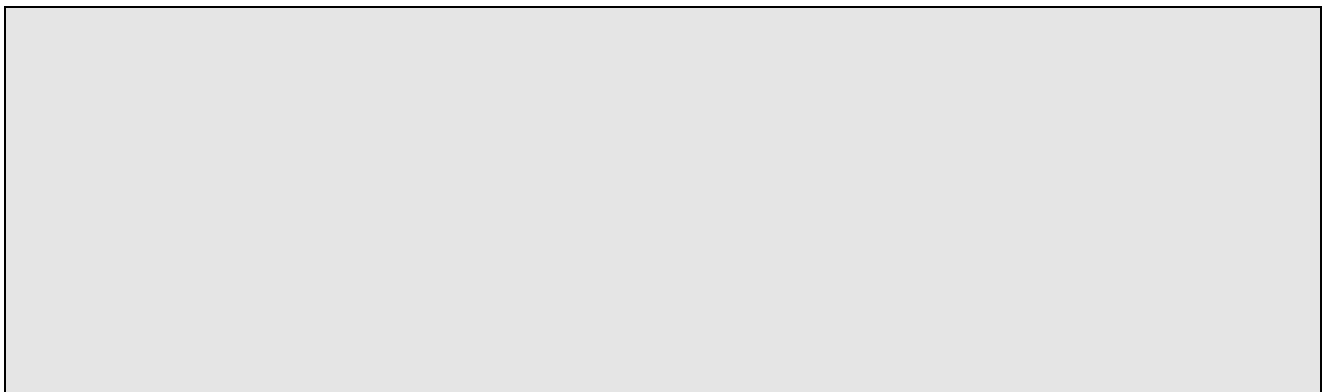
10. Current and previous employment settings (select all that apply):

- ☐ Early childhood setting
- ☐ Elementary school
- ☐ Middle school
- ☐ High school
- ☐ Post high school program
- ☐ Special education school with multiple age groups
- ☐ Other:

11. Please describe your role with regard to the target student:



12. Please describe the strategies that you have used to prevent target student's challenging behavior:



13. Please describe the strategies that you have used to teach appropriate behavior to the target student:

14. Please describe the strategies that you have used to respond to target student's challenging behavior:

15. Please describe any training you have received to address challenging behavior of students with or without disabilities. Please note any specific training in Functional Communication Training (FCT) if applicable:

16. Please describe any experience you have or training you have received to support students with disabilities in inclusive school settings:

17. Please describe any history you have of supporting students with disabilities in inclusive school settings:

Appendix P

Student Participant Demographic Form

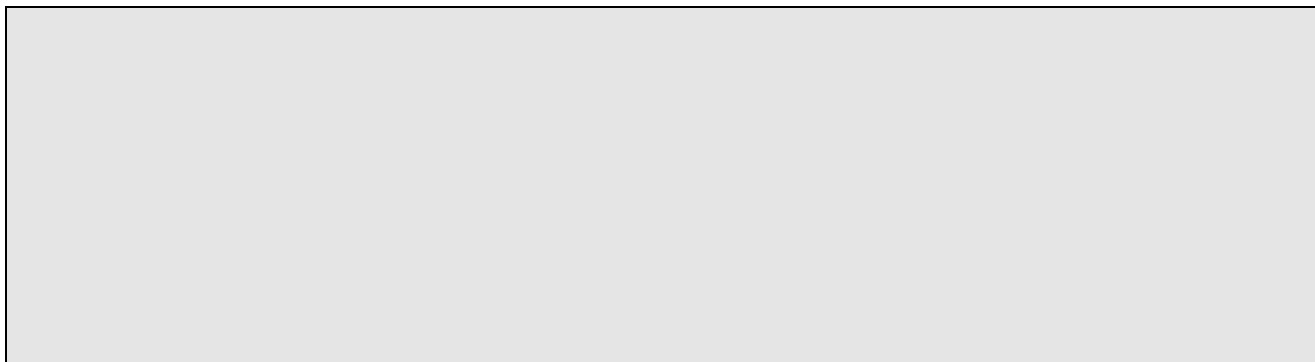
Student participant:

Date:

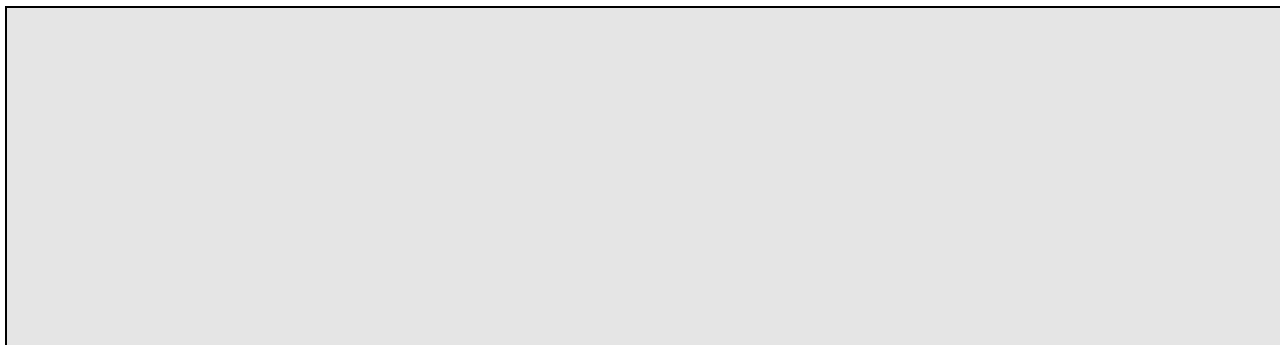
Respondent(s):

Please respond to the following items about the student participant:

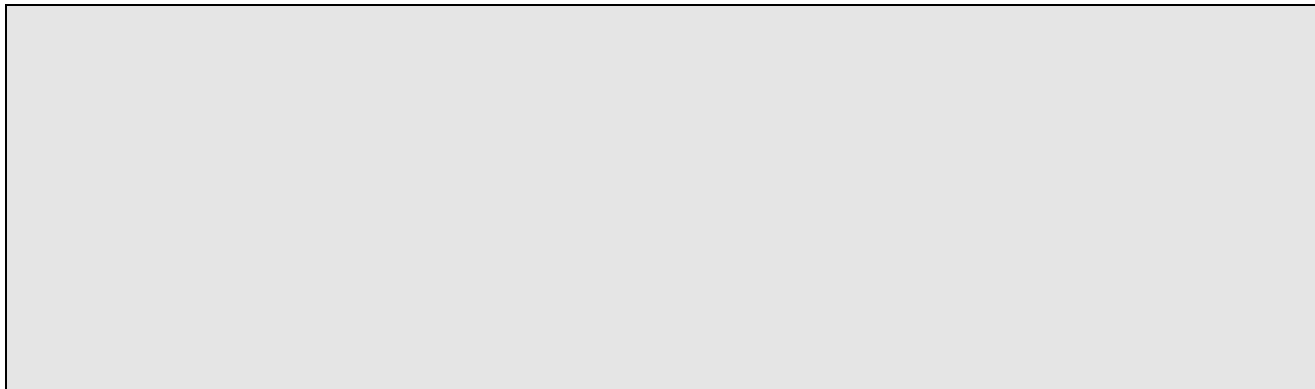
1. Age:
2. Gender identity:
3. Please list and describe results of the student's most recent assessment(s) of adaptive behavior, intelligence quotient (IQ), etc. Please also include the name of the assessment(s):



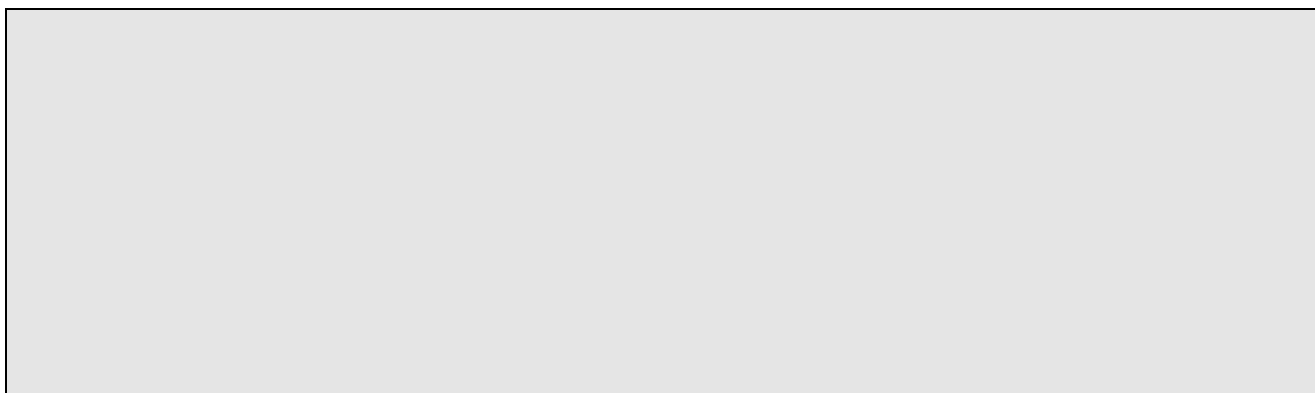
4. Please describe student's special education services and service delivery times:



5. Please describe student's challenging behaviors and current supports for each:



6. If your student has a Behavior Intervention Plan (BIP), please summarize the goals and list any supports here, or attach a copy of the BIP to this document:



7. Race:

- ☐ White
- ☐ Black or African American
- ☐ American Indian or Alaska Native
- ☐ Asian
- ☐ Native American or Other Pacific Islander

8. Ethnicity:

- ☐ Hispanic or Latino
- ☐ Not Hispanic or Latino

9. Disability diagnosis (select all that apply):

- ☐ Intellectual disabilities
- ☐ Hearing impairment
- ☐ Speech or language impairment
- ☐ Visual impairment
- ☐ Emotional disturbance (can include emotional disability)
- ☐ Orthopedic impairment
- ☐ Other health impairment
- ☐ Autism (can include certain areas under autism spectrum disorder)
- ☐ Specific learning disability
- ☐ Deaf blindness
- ☐ Multiple disabilities
- ☐ Developmental delay
- ☐ Traumatic brain injury

10. Communication level:

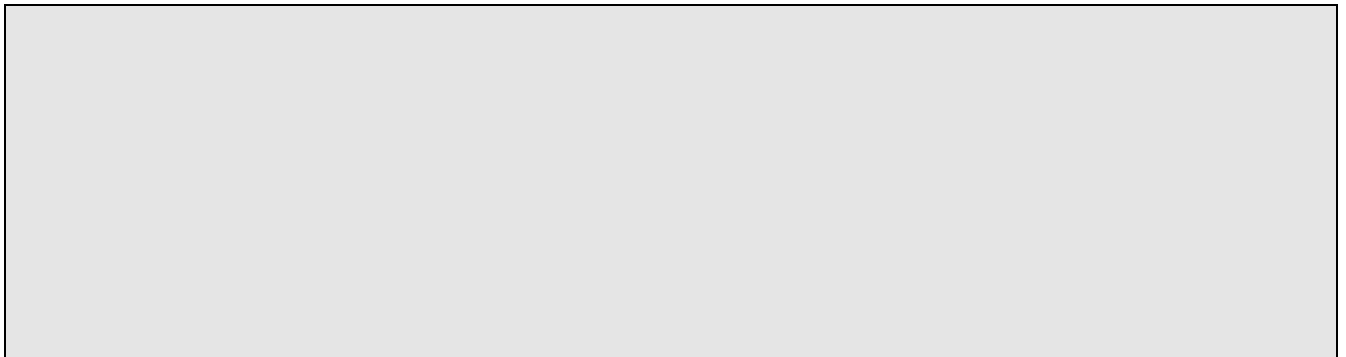
- ☐ Prelinguistic: the student does not use real words in any mode
- ☐ Emerging: the student uses single words in any mode or rote word combinations (e.g., "Thank you.")
- ☐ Multiword: the student uses non-rote combinations of two or more words in any mode
- ☐ Unsure

11. Please describe student's current communication level:

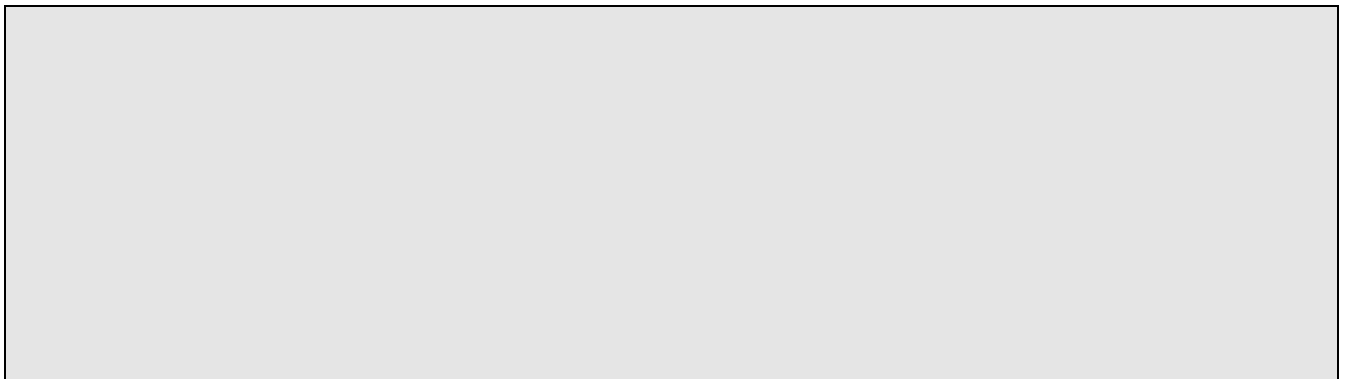
12. Student's current communication mode (select all that apply):

- ☐ Speech
- ☐ Augmentative and alternative communication – unaided (e.g., American Sign Language)
- ☐ Augmentative and alternative communication – device with speech output (e.g., speech generating system)
- ☐ Augmentative and alternative communication – device with no speech output (e.g., picture communication systems)
- ☐ Gestures/vocalizations
- ☐ Other:

13. Please describe student's social skills and interactions with peers and adults:



14. Please describe student's abilities and support needs in the areas of self-care, health, and mobility:



15. Please describe student's preferences (i.e., reinforcing activities, objects, or people):



Appendix W

Peer Mentor Participant Demographic Form

Peer mentor participant name:

Date:

Please respond to the following items about yourself:

1. Age:

2. Grade:

3. Gender identity:

4. Race:

- ☐ White
- ☐ Black or African American
- ☐ American Indian or Alaska Native
- ☐ Asian
- ☐ Native American or Other Pacific Islander

5. Ethnicity:

- ☐ Hispanic or Latino
- ☐ Not Hispanic or Latino

6. Length of time you have known your peer buddy:

7. Length of time you have served as peer mentor to your peer buddy:

8. Length of time during the school day you serve as peer mentor to your peer buddy:

9. Please describe your roles and responsibilities with regard to your peer buddy:

Appendix R

FCT Plan Template

FCT Plan			
Student:	School:	Start Date:	
Instructor(s):		Aim Date:	
Challenging behavior(s):	Precursor behavior(s):	Behavioral function(s):	
Behavioral objective:			
Present level of performance:			
Instructional Setup and Considerations			
Stage of learning:		Grouping arrangement:	
Teaching times:		Activity:	Teaching days:
Setting:			
Instructional cue:			
Prompt system:			
Prompts:			
Delay:			
Materials:			
Reinforcers:			
Description of the Teaching Procedures			

Appendix S

Safety Plan**Safety Plan**

Adapted from Bambara & Kern (2021)

Student Name:**Date:****Reason for Plan:**

[describe the reason for the safety plan, e.g., *to avoid escalation to a point where aggression occurs*]

Challenging behavior cycle:

[describe the specific behavioral contingency in which challenging behavior occurs including precursor and target behaviors and how these progress]

Implementation Team:

[list all required team members and their roles]

Procedures:

[provide a detailed list of all procedures required to implement the safety plan including:

- How the team will maintain safety of the all students and adults
- How to respond to precursor behaviors
- The exact contingencies for when the plan will be implemented
- Procedures for the event of an injury
- Behaviors that signal the safety plan is no longer required
- Procedures for reintroducing the student into their normal routine
- Safety plan review procedure

Appendix T

FCR Data Collection Sheet

Date								
Condition								
Data Collector								
Role								
Trial 1								
Trial 2								
Trial 3								
Trial 4								
Trial 5								
Trial 6								
Trial 7								
Trial 8								
Trial 9								
Trial 10								
Trial 11								
Total # of trials								
# Trials Independent FCR								
% Independent FCR								
# Trials Prompted FCR								
% Prompted FCR								

Coding legend:

+ = emitted FCR correctly independently

IM = emitted FCR correctly after an indirect model verbal prompt

DM = emitted FCR correctly after a direct model verbal prompt

- = did not emit FCR correctly

0 = no response

Appendix U

Challenging Behavior Data Collection Form

Interval	INT start	INT end	CB	Interval	INT start	INT end	CB	Interval	INT start	INT end	CB	Interval	INT start	INT end	CB
1	00:01	00:10		26	04:11	04:20		51	08:21	08:30		76	12:31	12:40	
2	00:11	00:20		27	04:21	04:30		52	08:31	08:40		77	12:41	12:50	
3	00:21	00:30		28	04:31	04:40		53	08:41	08:50		78	12:51	13:00	
4	00:31	00:40		29	04:41	04:50		54	08:51	09:00		79	13:01	13:10	
5	00:41	00:50		30	04:51	05:00		55	09:01	09:10		80	13:11	13:20	
6	00:51	01:00		31	05:01	05:10		56	09:11	09:20		81	13:21	13:30	
7	01:01	01:10		32	05:11	05:20		57	09:21	09:30		82	13:31	13:40	
8	01:11	01:20		33	05:21	05:30		58	09:31	09:40		83	13:41	13:50	
9	01:21	01:30		34	05:31	05:40		59	09:41	09:50		84	13:51	14:00	
10	01:31	01:40		35	05:41	05:50		60	09:51	10:00		85	14:01	14:10	
11	01:41	01:50		36	05:51	06:00		61	10:01	10:10		86	14:11	14:20	
12	01:51	02:00		37	06:01	06:10		62	10:11	10:20		87	14:21	14:30	
13	02:01	02:10		38	06:11	06:20		63	10:21	10:30		88	14:31	14:40	
14	02:11	02:20		39	06:21	06:30		64	10:31	10:40		89	14:41	14:50	
15	02:21	02:30		40	06:31	06:40		65	10:41	10:50		90	14:51	15:00	
16	02:31	02:40		41	06:41	06:50		66	10:51	11:00		91	15:01	15:10	
17	02:41	02:50		42	06:51	07:00		67	11:01	11:10		92	15:11	15:20	
18	02:51	03:00		43	07:01	07:10		68	11:11	11:20		93	15:21	15:30	
19	03:01	03:10		44	07:11	07:20		69	11:21	11:30		94	15:31	15:40	
20	03:11	03:20		45	07:21	07:30		70	11:31	11:40		95	15:41	15:50	
21	03:21	03:30		46	07:31	07:40		71	11:41	11:50		96	15:51	16:00	
22	03:31	03:40		47	07:41	07:50		72	11:51	12:00		97	16:01	16:10	
23	03:41	03:50		48	07:51	08:00		73	12:01	12:10		98	16:11	16:20	
24	03:51	04:00		49	08:01	08:10		74	12:11	12:20		99	16:21	16:30	
25	04:01	04:10		50	08:11	08:20		75	12:21	12:30		100	16:31	16:40	

Appendix V

Communication Measures Data Collection Form

[illegible]

Appendix W

Peer Mentor Implementation Fidelity Baseline Data Collection Form

Procedural Steps	Trials									
	1	2	3	4	5	6	7	8	9	10
Deliver opportunity										
Total number of steps completed correctly divided by the total number of steps possible										
Percentage of steps completed correctly										

Date:

BL Session:

Data collector/role:

Coding legend:

+ = step completed correctly by peer mentor

Appendix X

Peer Mentor Implementation Fidelity Intervention Data Collection Form

Student:

Data Collector/Role:

Date:

BL/INT and Session #:

Procedural steps number →	Trial	1	2	3	4	5	6	7	8	9	10	11	12	13
Deliver opportunity														
Wait delay interval (5 seconds)						-	-	-	-		-			
If student responds correctly within the 5 seconds, immediately reinforce correct response by giving him what he requested						-	+	+	+		-			
If student (a) responds incorrectly or does not respond, peer mentor provides a partial verbal model prompt or (b) responds correctly, peer mentor provides reinforcement by giving the student what he requested														
Wait delay interval (5 seconds)														
If student responds correctly within the 5 seconds, immediately reinforce by giving student what he requested						-	-	-	-		-			
If student responds incorrectly or does not respond, peer mentor provides verbal model prompt														
Total number of steps completed correctly →														
Percentage of steps completed correctly →														

Coding legend:

+ = step completed by peer mentor

- = step not completed by peer mentor

0 = no opportunity to complete the step

Appendix Y

HRE Observation Protocol

1. To what extent was Jude **HAPPY** during the observed interval?

Unhappy	Moderately unhappy	Moderately happy	Happy
1	2	3	4

2. To what extent what Jude **RELAXED** during the observed interval?

Unrelaxed	Moderately unrelaxed	Moderately relaxed	Relaxed
1	2	3	4

3. To what extent what Jude **ENGAGED** during the observed interval?

Unengaged	Moderately unengaged	Moderately engaged	Engaged
1	2	3	4

Appendix Z

Student Social Validity Interview Questions

Student Social Validity

1. Did you like when [peer mentor] helped you talk about what you want during art class? Tell me more about it.

[YES]

[NO]

Comments:

2. Do you think [peer mentor] helping you talk about what you want helps you say what you want to say? Why/how?

[YES]

[NO]

Comments:

3. Do you think [peer mentor] helping you talk about what you want helps you have good behavior in art class? Why/how?

[YES]

[NO]

Comments:

Appendix AA

Peer Mentor Social Validity Survey and Interview Questions**Survey: Peer Mentor**

1. How clear is your understanding of the communication intervention after having used it with the focus student in an inclusive school setting?

1	2	3	4	5	6	7
Not at all clear			Somewhat clear			Very clear

2. How acceptable did you find the communication intervention to be for the focus student?

1	2	3	4	5	6	7
Not at all acceptable			Somewhat acceptable			Very acceptable

3. How willing were you to implement the communication intervention?

1	2	3	4	5	6	7
Not at all willing			Somewhat willing			Very willing

4. How willing were you to attend training and coaching meetings with the researcher?

1	2	3	4	5	6	7
Not at all willing			Somewhat willing			Very willing

5. To what extent were there disadvantages in implementing the communication intervention?

1	2	3	4	5	6	7
Not at all			Some			Many

6. How likely is the communication intervention to make permanent improvements in your peer buddy's ability to communicate appropriately?

1	2	3	4	5	6	7
Not at all likely			Somewhat likely			Very likely

7. How much time each day was needed for you to carry out the communication intervention?

1	2	3	4	5	6	7
Little time was needed			Moderate amount needed			Much time was needed

8. How effective was the communication intervention?

1	2	3	4	5	6	7
Not at all effective			Somewhat effective			Very effective

9. How disruptive was it to the student's normal class routine for you to implement the communication intervention?

1	2	3	4	5	6	7
Not at all disruptive			Somewhat disruptive			Very disruptive

10. How disruptive was it to your regular class routine to implement the communication intervention?

1	2	3	4	5	6	7
Not at all disruptive			Somewhat effective			Very disruptive

11. How easy did you find the communication intervention to implement with your peer buddy?

1	2	3	4	5	6	7
Not at all easy			Somewhat easy			Very easy

12. To what extent did undesirable side effects occur as a result of the communication intervention?

1	2	3	4	5	6	7
Not at all			Some			Many

13. How much discomfort did the focus student experience during the course of the communication intervention?

1	2	3	4	5	6	7
No discomfort			Some discomfort			A lot of discomfort

14. How willing were you to change your daily routine to implement the communication intervention?

1	2	3	4	5	6	7
Not at all willing			Somewhat willing			Very willing

15. How well did learning and implementing the communication intervention fit into your routine?

1	2	3	4	5	6	7
Not at all well			Somewhat well			Very well

Interview Questions: Peer Mentor

1. Which components of the training and coaching meetings did you find effective or helpful?
2. Which components of the training and coaching meetings did you find ineffective or a waste of time?
3. What parts of the communication intervention have you found to be most effective?
4. What parts of the communication intervention were not effective?
5. What were some of the most challenging parts of implementing the intervention?
6. Would you consider continuing this communication intervention in the future with your peer buddy or another student?
7. Do you think you have sufficient skills/training to train another peer mentor to implement this intervention with another peer buddy in the future?
8. Do you feel like the communication intervention promoted inclusion for your peer buddy in the classroom?

Appendix BB

Art Teacher and Paraprofessional Social Validity Survey and Interview Questions**Survey Questions: Art Teacher and Paraprofessional**

1. How clear is your understanding of the communication intervention after observing it used it with the focus student in an inclusive school setting?

1	2	3	4	5	6	7
Not at all clear			Somewhat clear			Very clear

2. How acceptable did you find the communication intervention to be regarding your concerns about the student's challenging behavior?

1	2	3	4	5	6	7
Not at all acceptable			Somewhat acceptable			Very acceptable

3. How willing were you to collaborate and plan for the communication intervention?

1	2	3	4	5	6	7
Not at all willing			Somewhat willing			Very willing

4. Given your student's behavioral and communication needs, how reasonable did you find the communication intervention?

1	2	3	4	5	6	7
Not at all reasonable			Somewhat reasonable			Very reasonable

5. How costly was it to carry out the communication intervention?

1	2	3	4	5	6	7
Not at all costly			Somewhat costly			Very costly

6. To what extent were there disadvantages in implementing the communication intervention?

1	2	3	4	5	6	7
Not at all			Some			Many

7. How likely is the communication intervention to make permanent improvements in your student's communication behavior?

1	2	3	4	5	6	7
Not at all likely			Somewhat likely			Very likely

8. How much time each day was needed for you to plan for and support the implementation of the communication intervention?

1	2	3	4	5	6	7
Little time was needed			Moderate amount of time was needed			Much time was needed

9. How effective was the communication intervention?

1	2	3	4	5	6	7
Not at all effective			Somewhat effective			Very effective

10. How disruptive was it to plan for and support the implementation of the communication intervention?

1	2	3	4	5	6	7
Not at all disruptive			Somewhat disruptive			Very disruptive

11. How much did you like the procedures used in the communication intervention?

1	2	3	4	5	6	7
Not at all			Somewhat			Very much

12. To what extent did undesirable side effects occur as a result of the communication intervention?

1	2	3	4	5	6	7
Not at all			Some			Many

13. How much discomfort did the focus student experience during the course of the communication intervention?

1	2	3	4	5	6	7
No discomfort			Some discomfort			A lot of discomfort

14. How willing were you to change your daily routine to plan for and support the communication intervention?

1	2	3	4	5	6	7
Not at all willing			Somewhat willing			Very willing

15. How well did planning for and supporting the implementation of the communication intervention fit into your routine?

1	2	3	4	5	6	7
Not at all well			Somewhat well			Very well

Interview Questions: Art Teacher and Paraprofessional

9. Which components of the planning meeting did you find effective or helpful? Why?
 - a. FBA results, baseline results, explanation of the intervention, going over acceptable responses, determining how to teach the communication skills, determining the student's behavioral goal, discussing the need for a safety plan, creating the intervention plan, contextual fit goal check in questions
10. Which components of the planning meeting could be improved? Why?
 - a. FBA results, baseline results, explanation of the intervention, going over acceptable responses, determining how to teach the communication skills, determining the student's behavioral goal, discussing the need for a safety plan, creating the intervention plan, contextual fit goal check in questions
11. Now that the intervention is complete, what changes have you noticed in the student's behavior (if any)?
12. What parts of the communication intervention have you found to be most effective?
13. What components of the communication intervention were not effective?
14. What were some factors that made the intervention planning process possible/effective (e.g., team collaboration, support for peer mentor, having common planning time)? Why were these factors?
15. What were some of the barriers to planning for and implementing the communication intervention? Why were these barriers?
16. What were the barriers to the student receiving the intervention? Why were these barriers?
17. Do you think you will continue to support the implementation the communication intervention with the target student or with other students in the future? Why or why not?
18. Would you consider implementing this intervention with a student in the future? Why or why not?
19. Would you consider training a peer mentor to implement this intervention with a student in your classroom in the future? Why or why not?
20. Do you feel like this intervention improved the student's inclusion in the classroom? Why or why not?

Appendix CC

Special Education Teachers Social Validity Survey and Interview Questions**Survey Questions: Special Education Teachers**

1. How clear is your understanding of the communication intervention after planning for and helping develop it for the peer mentor to implement with the focus student in an inclusive school setting?

1	2	3	4	5	6	7
Not at all clear			Somewhat clear			Very clear

2. How acceptable did you find the communication intervention to be regarding your concerns with the target student's behavior?

1	2	3	4	5	6	7
Not at all acceptable			Somewhat acceptable			Very acceptable

3. How willing were you to collaborate and plan for the communication intervention?

1	2	3	4	5	6	7
Not at all willing			Somewhat willing			Very willing

4. Given your student's behavioral and communication needs, how reasonable did you find the communication intervention?

1	2	3	4	5	6	7
Not at all reasonable			Somewhat reasonable			Very reasonable

5. To what extent were there disadvantages in implementing the communication intervention?

1	2	3	4	5	6	7
Not at all			Some			Many

6. How much time each day was needed for you to plan for and support the implementation of the communication intervention?

1	2	3	4	5	6	7
Little time was needed			Moderate amount of time was needed			Much time was needed

7. How disruptive was it to plan for and support the implementation of the communication intervention?

1	2	3	4	5	6	7
Not at all disruptive			Somewhat disruptive			Very disruptive

8. How much did you like the procedures used in the communication intervention?

1	2	3	4	5	6	7
Not at all			Somewhat			Very much

9. To what extent did undesirable side effects occur as a result of the communication intervention?

1	2	3	4	5	6	7
Not at all			Some			Many

10. How willing were you to change your daily routine to plan for and support the communication intervention?

1	2	3	4	5	6	7
Not at all willing			Somewhat willing			Very willing

11. How well did planning for and supporting the implementation of the communication intervention fit into your daily routine?

1	2	3	4	5	6	7
Not at all well			Somewhat well			Very well

Interview Questions: Special Education Teachers

1. Which components of the planning meeting did you find effective or helpful? Why?
 - a. FBA results, baseline results, explanation of the intervention, going over acceptable responses, determining how to teach the communication skills, determining the student's behavioral goal, discussing the need for a safety plan, creating the intervention plan, contextual fit goal check in questions
2. Which components of the planning meeting could be improved? Why?
 - a. FBA results, baseline results, explanation of the intervention, going over acceptable responses, determining how to teach the communication skills, determining the student's behavioral goal, discussing the need for a safety plan, creating the intervention plan, contextual fit goal check in questions
3. Now that the intervention is complete, what changes have you noticed in the student's behavior (if any)?
4. What were some factors that made the intervention planning process possible/effective (e.g., team collaboration, support for peer mentor, having common planning time)? Why were these factors?
5. What were some of the barriers to planning for the communication intervention? Why were these barriers?
6. Would you consider implementing this intervention with a student in the future? Why or why not?
7. Would you consider training a peer mentor to implement this intervention with a student in your classroom in the future? Why or why not?
8. Do you feel like this intervention improved the student's inclusion in the classroom? Why or why not?

Appendix DD

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 things that the child often attempts to control.

⇒ *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?

													Perceived Functions										
	Behaviors				Predictors								Get/Obtain Escape/Avoid							Actual Conseq.			
					Demand/Request	Difficult Task	Transitions	Interruption	Alone (no attention)				Attention	Desired Item/Activity	Self-Stimulation		Demand/Request	Activity ()	Person		Other/Don't Know		
Totals																							
EVENTS: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24																							
DATE:																							

Appendix FF

Team-developed FCRs for Jude

Context	Examples of Student FCRs
Student wants to talk to/get attention from the peer mentor.	Hey, can we talk? Will you sit by me? What's up? What are you up to? Look at my paper.
Student wants to ask the peer mentor to get him materials or items for class (e.g., art supplies, chair, paper).	Could you get me [colored pencils]? Can you help me get [colored pencils]? Can I have more paper?
Students wants guidance about what to draw/color.	What should I draw? Will you help me? Can you spell ... for me? Can we look something up on your phone?
Student wants to show a friend his art work.	Look what I did. Will you look at my paper? Do you like this? Should I add more colors or characters?
Student starts to get inappropriate through words or actions.	Can we be friends? Are you my friend? Can I have a high five? Can I have a fist bump? Can I have a side hug? Can we be friends?

Appendix GG

Baseline Script for Peer Mentor

When this happens in class	You could say...
When he walks into class you could say...	"If you want me to get your chair for you, let me know " "I can get your colored pencils if you want, just ask "
Anytime during class, you could say...	"If you want to chat, let me know. " " Tell me about your drawing" " Let me know if you want me to look at your drawing" " Let me know if you want to look something up" " Tell me if you need help spelling something"
While you are looking at your cellphone, you could say...	"I'm looking at my phone, if you want to talk, let me know "
You could walk away from your seat to do something. Before you get up you could say...	"I'm going to go _____, let me know if you want to talk" "I can sit by you, just ask "
When he is inappropriate with hugging, kissing, comments, you could say...	"If you want a high five, let me know " "Tell me if you want a fist bump" "I can give you a side hug if you ask "
When he puts his head down or gets angry in some way, you could say...	"If you don't want to _____, tell me " "If you need something, let me know " " Tell me what's wrong" "If you tell me what's wrong, I can help" "If you want to be left alone, tell me "
When he wants an idea for what to draw, you say...	"If you want help with an idea of what to draw, let me know "
When it is time to leave class, you could say...	"If you want help cleaning up, tell me " "I can put your stuff up for you if you ask "

Other Guidelines:

- Provide at least **5 opportunities** during each class (you can do more)
- Say the opportunity **one time only** (don't repeat or follow up)
- **If the student does not respond, move on** and go back to what you were doing before
- Make sure these 5 opportunities are **open-ended**, giving him an opportunity to request something (not yes/no or either/or questions)
- Be as natural as possible during class and while providing opportunities

Appendix HH

Contextual Fit Questions Delivered at the Planning Meeting

Contextual Fit Goal	Questions
Team members have an understanding of the intervention.	<ul style="list-style-type: none"> ➤ Do you feel that you have an understanding of the intervention? ➤ What questions do you have for me? ➤ What can I do to support your understanding?
Team members believe their knowledge and skills sufficient in contributing to the intervention.	<ul style="list-style-type: none"> ➤ Do you feel that your current knowledge and skillset is sufficient to contribute to the intervention? ➤ Do you believe you require additional training in order to contribute to the intervention?
Team members believe the intervention is in alignment with their values as an educator.	<ul style="list-style-type: none"> ➤ Does this intervention align with your values as an educator? ➤ If not, how might we change/adapt this intervention so that it aligns with your values as an educator?
Team members believe there are adequate resources available for the intervention.	<ul style="list-style-type: none"> ➤ Do you believe there are adequate resources available to the team in order to successfully implement the intervention? ➤ If not, what additional resources might the team benefit from, and how might we attain them?
Team members believe that there is adequate support from the school's administration.	<ul style="list-style-type: none"> ➤ Do you believe your administrators adequately support the team in implementing the intervention? ➤ If not, what steps might we take in order to gain adequate support?

<p>Team members believe that the intervention will be successful for the student.</p>	<ul style="list-style-type: none"> ➤ Do you believe the intervention will be successful in improving communication for the student? ➤ What questions can I answer?
<p>Team members believe that the intervention is in the student's best interest.</p>	<ul style="list-style-type: none"> ➤ Do you believe the intervention is in the student's best interest? ➤ If not, what can we change so that all team members agree the intervention is in the student's best interest? ➤ What questions can I answer?
<p>Team members believe that the intervention is efficient.</p>	<ul style="list-style-type: none"> ➤ Do you believe the intervention will be efficient? ➤ If not, what can we change to make the process more efficient?

Appendix II

Intervention Script for Peer Mentor**Intervention Steps:**

1. **Choose an opportunity and say it** to the student
2. **Count to 5 in your head** to give the student time to process what you said
 - a. If student responds correctly, you give him what he wants
 - b. If student does not respond or if he responds incorrectly, **you help him a little** (for example, "Jude, what could you say if you want help?")
 - i. If student responds correctly, you give him what he wants
 - ii. If the student If student does not respond or if he responds incorrectly, **you tell him what to say** ("Jude, try saying 'Can you help me, Lucy?'"")

You say....	Examples of Correct Responses from Student
Tell me if you want help with anything.	Can you help me...? I want help... Help me...
Let me know if you want to talk.	Hey, can we talk? Will you sit by me? What's up?
If you want to talk about what you're doing, let me know.	I want to show you this. Look what I did. Will you look at my paper?
Tell me if you want to look something up on the computer together.	Can we look something up? Will you help me look something up? I want to look up....
Let me know if you want help cleaning up.	Will you help me clean up? Will you clean up...? Help me.
Tell me what's wrong.	I want to do something else. I don't want to talk. I want to go home.
If you want [a fist bump/high five/side hug], tell me.	Can I have a fist bump? Let's high five. Can I have a side hug?
You seem [silly/happy/sad/upset]. Let me know if you want to talk about it.	I am... I think... I feel...

Appendix JJ

Procedural Fidelity Checklist for Baseline Training

Date:

Trainer:

Trainee:

Data collector:

Primary ☐ IOA ☐

Steps for Behavior Skills Training	
1. Provide peer mentor rationale for the intervention	+ - 0
2. Define "opportunities to communicate"	+ - 0
3. Provide examples of opportunities to communicate	+ - 0
4. Provide peer mentor with summary of procedures (cheat sheet)	+ - 0
5. Delivering opportunities to communicate	
a. Describe procedure	+ - 0
b. Model	+ - 0
c. Role play/practice	+ - 0
d. Provide feedback	+ - 0
e. Repeat steps if necessary	+ - 0
6. Provide opportunity for peer mentor to ask questions	+ - 0
Procedural Fidelity	/ %

Appendix KK

Procedural Fidelity Checklist for Intervention and Follow-up Coaching

Date:

Trainer:

Trainee:

Data collector:

Primary ☐ IOA ☐

Steps for Behavior Skills Training	
1. Describe the intervention	+ - 0
2. Explain "correct responding" for student	+ - 0
3. Provide examples of correct student responses	+ - 0
4. Provide peer mentor with summary of procedures (cheat sheet)	+ - 0
5. Delivering opportunities to communicate	
a. Describe procedure	+ - 0
b. Model	+ - 0
c. Role play/practice	+ - 0
d. Provide feedback	+ - 0
e. Repeat steps if necessary	+ - 0
6. Conduct modified contextual fit assessment	+ - 0
7. Provide opportunity for peer mentor to ask questions	+ - 0
Procedural Fidelity	/ %

Appendix LL

Procedural Fidelity Checklist for Training Session

Date:

Data Collector/Role:

Trainer:

Trainee:

Steps for Behavior Skills Training	
1. Review Results of FBA	+ - 0
2. Review baseline data collection results	+ - 0
3. Provide a rationale and description of the intervention	+ - 0
4. Present and discuss acceptable FCRs for the student	+ - 0
5. Explain and determine the prompting procedure the peer mentor will use (i.e., time delay, system of least prompts)	+ - 0
6. Determine a behavioral goal for the student	+ - 0
7. Determine whether a safety plan is necessary; and if so, determine the logistics of the plan	+ - 0
8. Review the FCR plan	+ - 0
9. Define contextual fit and address the following components	+ - 0
a. Team members have an understanding of the intervention	+ - 0
b. Team members believe they have sufficient knowledge and skills to contribute to the intervention	+ - 0
c. Team members believe the intervention is alignments with their values as educators	+ - 0
d. Team members believe there is are adequate resources available to successfully implement the intervention	+ - 0
e. Team members believe there is adequate support from their administration	+ - 0
f. Team members believe the intervention will be successful for the student	+ - 0
g. Team members believe the intervention is in the best interest of the student	+ - 0
h. Team members believe the intervention to be efficient	+ - 0
Procedural Fidelity	/ %