

University of Louisville

ThinkIR: The University of Louisville's Institutional Repository

Electronic Theses and Dissertations

5-2022

High-probability tasks and task completion rates of students with emotional and behavioral disorders.

Amy R Hall
University of Louisville

Follow this and additional works at: <https://ir.library.louisville.edu/etd>



Part of the [Special Education and Teaching Commons](#)

Recommended Citation

Hall, Amy R, "High-probability tasks and task completion rates of students with emotional and behavioral disorders." (2022). *Electronic Theses and Dissertations*. Paper 3865.

Retrieved from <https://ir.library.louisville.edu/etd/3865>

This Doctoral Dissertation is brought to you for free and open access by ThinkIR: The University of Louisville's Institutional Repository. It has been accepted for inclusion in Electronic Theses and Dissertations by an authorized administrator of ThinkIR: The University of Louisville's Institutional Repository. This title appears here courtesy of the author, who has retained all other copyrights. For more information, please contact thinkir@louisville.edu.

HIGH-PROBABILITY TASKS AND TASK COMPLETION RATES OF STUDENTS
WITH EMOTIONAL AND BEHAVIORAL DISORDERS

By

Amy R. Hall
B.S., Murray State University, 2012
M.Ed., University of Louisville, 2015

A Dissertation
Submitted to the Faculty of the
College of Education and Human Development of the University of Louisville
in Partial Fulfillment of the Requirements
for the Degree of

Doctor of Philosophy
in Curriculum and Instruction

Department of Special Education
University of Louisville
Louisville, Kentucky

May 2022

Copyright 2002 by Amy R. Hall

All rights reserved

HIGH-PROBABILITY TASKS AND TASK COMPLETION RATES OF STUDENTST
WITH EMOTIONAL AND BEHAVIORAL DISORDERS

By

Amy R. Hall
B.S., Murray State University, 2012
M.Ed., University of Louisville, 2015

A Dissertation Approved on

February 10, 2022

by the following Dissertation Committee:

Dr. Terry Scott
Dissertation Chair

Dr. Amy Lingo
Second Committee Member Name

Dr. Andy Frey
Third Committee Member Name

Dr. Jon Burt
Fourth Committee Member Name

DEDICATION

This dissertation is dedicated to my husband,
Adam, whose never failing support, love, and kindness
made this pursuit possible.

This dissertation is also dedicated to my mother,
Jan, who, coupled with my grandparents,
always encouraged me to reach for the stars
and made continuing education possible.

ACKNOWLEDGEMENTS

I would like to thank my advisor and committee chair, Dr. Terry Scott, for his guidance throughout my Masters and Doctoral programs and commitment to my programming and success. I would also like to thank the other committee members, Dr. Amy Lingo, Dr. Jon Burt, and Dr. Andy Frey for their flexibility, support, and feedback from start to finish. Finally, I would like to thank my family members near and far who cheered me on along the way.

ABSTRACT

HIGH-PROBABILITY TASKS AND TASK COMPLETION RATES OF STUDENTS WITH EMOTIONAL AND BEHAVIORAL DISORDERS

Amy R. Hall

February 10, 2022

This dissertation is an investigation into the effects of high-probability tasks on the task completion rates of three students diagnosed with an emotional and behavioral disorder. It begins with a close look into best practices verses common practices, examines students supports currently available in schools, and highlights gaps present in today's educational system for students who exhibit significant challenging behaviors. The dissertation reviews literature available on the topic of high-probability tasks as a logical solution to combating gaps in behavior support and describes methodology used to investigate the strategy and its effects. It closes by presenting data, conclusions, implications, and gaps.

The dissertation is divided into five chapters which explore current practices, gaps, available literature, methodology, data analysis, and conclusions. Chapter one focuses on current practices in schools and the impacts the practices have on the most behaviorally challenged populations. Chapter two explores thirteen studies which previously investigated high-probability tasks. Chapter three explains a methodology used in the current investigation to determine if high-probability tasks are effective at increasing task completion rates of students with emotional behavior disorders, compares

two types of high-probability tasks to determine if there are differential task completion rates associated (easy math tasks and preferred conversation questions), and reveals student and teacher perceptions and preferences after participation in the study. Chapter four presents the resulting data for each of the student participants. Chapter five discusses conclusions, implications, and limitations associated with the study.

TABLE OF CONTENTS

	PAGE
ACKNOWLEDGEMENTS.....	iv
ABSTRACT.....	v
LIST OF TABLES.....	viii
LIST OF FIGURES.....	ix
INTRODUCTION.....	10
LITERATURE REVIEW.....	37
METHODS.....	75
Research Questions.....	75
Participants and Setting.....	76
Measurement Procedures and Research Design.....	82
RESULTS.....	92
Student Data.....	96
Fidelity and Agreement Data and Qualitative Reflection.....	100
Analysis and Conclusion.....	105
DISCUSSION.....	115
REFERENCES.....	126
APPENDICES.....	143
CURRICULUM VITA.....	145

LIST OF TABLES

TABLE	PAGE
1. Literature Review Inclusion Table: Study Design and Intervention Characteristics...	47
2. Procedural Fidelity Data.....	101
3. Interobserver Agreement Data.....	103

LIST OF FIGURES

FIGURE	PAGE
1. Rate of task completion for Simon.....	94
2. Rate of task completion for Jonathan.....	95
3. Rate of task completion for Donte.....	96

CHAPTER I

INTRODUCTION

Within education there has been a long-standing movement to include students with disabilities in classrooms and activities with their non-disabled peers (Kirby, 2017; Stainback, Stainback, East, & Sapon-Shevin, 1994; Wolfensberger, Nirje, Olshansky, Perske, & Roos, 1972). Known today as inclusion, this movement has become a priority in public education across the country (McKenna, Solis, Brigham, & Adamson, 2018). While efforts have been made to support all students, challenges still exist, especially for students diagnosed with an emotional and behavioral disorder (EBD). Behaviors such as failure to comply, aggression, off-task behaviors, foul or inappropriate language, prolonged latencies to task initiation, and difficulty with appropriate social interactions can be observed in today's classrooms (Kauffman & Landrum, 2013).

Researchers have long analyzed the root cause for the behavioral difficulties that are observed in a small percentage of our school population. Examinations of social relationships, socio-economic statuses, cultural factors, early learning milestones, and access to basic needs all have been investigated (Yorke, et al., 2018) and found to potentially play at least a partial role. But what consistently comes to the forefront in these studies is the need for effective structure, instruction, and behavioral strategies to both prevent and remediate these problems (Blazar & Kraft, 2017).

Students with Behavioral Challenges: Their Needs and Our Failures

Throughout this research and over the years, factors related to poor instruction and management consistently accompany other life and community factors as well as a general lack of teacher training in the area of effective behavior change strategies

(Freeman, Simonsen, Briere, & MacSuga-Gage, 2014; Oliver and Reschly, 2010).

Put simply, many teachers do not know how to support students who exhibit the most challenging behaviors in classrooms (Westling, 2010). Complicating this fact, schools with high numbers of at-risk youth typically house teachers who have the least amount of experience working with and implementing behavioral interventions (Borg, Borg, & Stranahan, 2012). Students with behavioral needs are often pushed into general education classes, but the classroom teachers are not prepared to teach these students.

Paradoxically, supporting inservice teachers with behavioral development is often not a priority and schools are not prepared to make inclusion successful (MacDonald & Speece, 2001).

Graduation Rates

When effective interventions do not occur, these students may move on to the next grade, and eventually graduate, often having never acquired the social and behavioral skills needed to successfully exist in the real world. Further, some students may not graduate at all. Students with significant behavioral problems have higher drop out and attrition rates overall than compared to their same-age peers (Kortering and Blackorby, 1992; Wagner, Marder, et al., 2003). Wagner, Cameto, and Newman (2003) further explain that while graduation rates have increased for students who receive special education services in other categories, the rates for students with EBD have remained the same.

Absentee Supports

Students enter classrooms with behavioral difficulties that could be corrected in the general education classroom, but when these behaviors are not effectively addressed, they tend to grow more pervasive and intense (Dishion & Patterson, 2016). These behaviors should be approached with evidence-based practices that are proven effective for working with students who exhibit maladaptive behaviors.

As is clear throughout the research literature, many of the most effective interventions are left unused as school-based personnel feel ill-equipped to respond (McIntosh, Mercer, Nese, & Ghemraoui, 2016). In fact, some school-based personnel believe that the responsibility of teaching appropriate behaviors falls outside of the realm of their responsibilities. Evertson and Weinstein (2006) noted that some school staff see classroom management as “a bag of tricks” instead of meaningful and explicit instruction that could promote positive growth toward behavioral goals. When adult support is stagnant, student misbehaviors and the probability of larger problems continue to grow.

Piecemeal Responses

Despite a lack of use in classrooms (Cooper, Hirn, & Scott, 2015), the evidence for effective instructional and managerial strategies for students with challenging behaviors is well-established and available. In order for solutions to be effective, however, they have to be provided in a systemic (school-wide availability) and systematic (data-based and consistent) manner. Implementation in an isolated, inconsistent, and disjointed combination is a sure prescription for failure. The piecemeal responses to student behavior in many schools has resulted in a shameful number of students falling through the cracks. For some students, a general set of school rules is not enough: they will

require that rules be explicitly taught and consistently applied across the school and over time. Similarly, these students will likely require consistent application of some rather simple additional interventions and strategies as support inside of the general education classroom (Bruhn, Lane, & Hirsch, 2013).

Given these additional considerations and some additional prompts and reminders, many of these students with challenging behaviors can operate successfully in the classroom and across the school (Bradshaw, Koth, Bevans, Ialongo, & Leaf, 2008). However, a smaller number of these students will likely require more intensive support in small group teaching sessions (Debnam, Pas, & Bradshaw, 2012). While a school's behavioral instructional approach must support all students where they currently are in their behavioral development, there often are large gaps in support for these students.

High-Yield and Effective Structures to Support Behavioral Growth

High-yield systems such as School-Wide Positive Behavioral Interventions and Supports (PBIS) provide a foundation for the consistent application of high-yield strategies including Functional Behavior Assessment (FBA) to examine the causes of problem behaviors. Other related high-yield strategies involve the combination of effective instruction and classroom management.

School-Wide Positive Interventions and Supports

School-wide Positive Behavioral Interventions and Supports (PBIS) is a multi-tiered, systematic approach to building-wide behavioral support (Noltemeyer, Palmer, James, & Weichman, 2018). The three-tiered PBIS model outlines school-wide, small-group, and individual supports that target specific student needs. These tiers are fluid and provide the level of support a student needs based on current data and observations. Strategies within

a system of PBIS are evidence-based and based on predictable interactions between the environment and behavior (Madigan, Cross, Smolkowski, & Strycker, 2016). When implemented with fidelity, PBIS has been demonstrated to be an effective foundation for positive student outcomes (Bradshaw et al., 2010; Sprick, Knight, Reinke, & McKale, 2006).

PBIS foundations and principles. For over 20 years, PBIS has been implemented in schools as a manner of correcting gaps in service provision and to help improve the climate, culture, and safety of a building and community. In addition to developing systematic school-wide intervention strategies, PBIS schools evaluate their systems, practices, and data and modify approaches to behavior change to best fit student needs so all can be academically, behaviorally, and socially successful (Sugai et al., 2000). PBIS is rooted in Applied Behavior Analysis, a scientific approach to understanding behavior (Sugai et al., 1999), and its multi-tiered framework provides both preventative and responsive support for students with varying levels of behavioral needs (Scott, Anderson, & Alter, 2012). PBIS is an example of the umbrella term, multi-tiered systems of support (MTSS), which also includes the academically focused response to intervention (RTI). Horner and Sugai (2015) describe MTSS as focused on foundational practices to prevent failures across all students (primary tier), while simultaneously providing two additional levels of prevention and support for students who require more (secondary and tertiary tiers) in order to maintain success.

As with all MTSS frameworks, PBIS is characterized by three tiers of prevention and intervention. Tier 1 supports involve the teaching of consistent rules and the development of routines and physical arrangements to maximize success across all students in the

school. These structures are put in place to prevent or deter the occurrence of predictable student failures (misbehaviors). Schools determine the specifics of their tier 1 supports (i.e., rules, routines, and arrangements) based on data gathered from needs assessments and whole-school reporting (Simonsen & Sugai, 2013). While tier 1 supports will typically be sufficient for approximately 85% of students, about 15% of students receive tier 2 supports in schools (Bradshaw, Pas, Goldweber, Rosenberg, & Leaf, 2012). These supports typically occur inside a classroom or in smaller groups and address the most common and ongoing misbehaviors. Importantly, tier 2 supports are done in addition to tier 1 supports such that students receiving tier 2 supports continue to receive tier 1 supports. For the approximately 5% of students who do not respond successfully despite both tier 1 and 2 support (Bradshaw, Pas, Debnam, & Johnson, 2015), there is a third tier. Tier 3 supports are intensive, individualized, and based on student-specific data. Adults trained in effective behavior change systems typically make up a tier 3 team that supports the student-centered planning, programming, and implementation.

The effective implementation of PBIS has been associated with a decrease in office referrals (Clonan, McDougal, Clark, & Davison, 2007), an increase in attendance (Kearney & Graczyk, 2014), and a general shift in administration, teacher, and student morale (McIntosh, Kelm, & Delabra, 2015). PBIS has also been observed to have positive effects on environments outside of the physical school building, such as the school bus (Goldin & McDaniel, 2018). Clearly, the evidence suggests that teaching students foundational behavioral skills, with antecedent and proactive strategies, contributes to greater student success.

Functional Behavior Assessment

Understanding the function of an individual or set of behaviors is important for student behavioral programming. When teachers observe students to exhibit a behavior, whether challenging or desirable, that behavior is assumed to serve some purpose, or function, for that student. The most commonly measured functions of behavior are escape, attention, and self-reinforcement (Cooper, Heron, & Heward, 2020). Functional behavior assessment (FBA) is the method of behavior assessment used to identify the function of student behavior. Because the identification of behavioral function is critical for the selection of an appropriate teaching strategy, FBA is a prerequisite for the development of behavioral plans. These assessments provide a systematic foundation for educators to understand exactly what elicits and maintains the problem behavior (Erickson, Stage, & Nelson, 2006).

Without first understanding the function of a behavior, interventions could actually strengthen an undesirable behavior. For example, if a behavior is attention-maintained yet the reactive response is a verbal teacher redirection, the student's undesirable behavior, which is attention-maintained, would receive attention for the exhibition (Davis, et al., 2016), causing it to be maintained or even increase. Similarly, if a student's aggressive behaviors serve the function of escape, but student is taught to access teacher attention, the replacement behavior will not work for the student and thus will not be successful (Gable, Hester, Rock, & Hughes, 2009). In short, multiple studies have demonstrated that knowledge of the function of a behavior as a means of selecting functional intervention is critical in predicting success (Scott & Cooper, 2017).

Effective Instruction

Students with EBD usually have had high incidences of negative school experiences that shape their participation and learning in class (Sutherland, Alder, & Gunter, 2003). Students with EBD can often be described as disengaged, disruptive, and frequently off task (Landrum, Tankersley, & Kauffman, 2003), and when not intervened upon, the behaviors can increase in both frequency and magnitude. These behaviors are observed at higher rates in classrooms where instruction is not engaging and meaningful (Gage, Scott, Hirn, & MacSuga-Gage, 2018), and where teachers are not fluent in their ability to implement high-yield interventions (Tsouloupas, Carson, Matthews, Grawitch, & Barber, 2010). These facts point to the importance that instruction to be provided using effective strategies (McIntosh, Chard, Boland, & Horner, 2006).

Effective instruction for this population usually involves methods that target engagement and limit downtime (Christenson, Reschly, & Wylie, 2012; Wilford, Maier, Downer, Pianta, & Howes, 2013). It is important that these students know the expectations, have opportunities to interact with the content, and receive frequent feedback on their participation. While there are many schools of thought on the best way to teach students with EBD, one common principle found in all approaches is to provide explicit expectations so students know how they can be successful (Billingsley, Scheuermann, & Webber, 2009). This is accomplished by establishing a predetermined set of classroom rules, explicitly teaching the students how to successfully exhibit the rule, and differentially reinforcing their attempts of completing the expectations (Kostewicz, Ruhl, & Kubina, 2008).

Another effective instructional technique is the promotion of active learning through student involvement. This can be accomplished through the teacher's provision of

increased opportunities for students to respond during instruction (Haydon, MacSuga-Gage, Simonsen, & Hawkins, 2012). Opportunities to respond (OTR) maximize student engagement while providing ways for teachers to quickly and frequently measure content mastery (Rila, Estrapala, & Burhn, 2019). This can be achieved through choral responding (Heward, Courson, & Narayan, 1989; Haydon, Marsicano, & Scott, 2013), response cards/clickers (Munro & Stephenson, 2009), guided notes (Blackwell & McLaughlin, 2005) and peer involved strategies (Adamson & Lewis, 2017).

A third best practice within effective instruction is the teacher's delivery of immediate positive feedback to the student when desirable behaviors do occur. This can be done in a number of ways including verbal praise (Markelz & Taylor, 2016), token rewards (Ivy, Meindi, Overly, & Robson, 2017), or access to other preferred student reinforcers. Students with EBD often receive less positive feedback and more negative feedback than other students, regardless of their behaviors (Hirn & Scott, 2014), attention and feedback on undesirable behaviors and, as a result, the undesired behaviors can be unintentionally strengthened (Carr, Taylor & Robinson, 1991; Gunter, Denny, Jack, Shores, & Nelson, 1993; McEvoy & Welker, 2000).

Classroom Management

Although many students with EBD have the academic and cognitive skills necessary to be successful in a general education classroom, significant misbehaviors often lead to removal and placement in a more restrictive setting (Simpson, 2004). In the general education classroom, the stronger the teacher's classroom management skills, the more likely students with EBD will be successful (Simonsen & Myers, 2015). Effective classroom management is a best practice for all students, not just students with

disabilities (Pollirstork, 2015). Good classroom management is consistent and provides opportunities for students to reflect on learning and behavior, sometimes through an effective procedure called self-monitoring (Cook, Rao, & Collins, 2017). The strategy of self-monitoring provides opportunities for students, who have previously been told “how they behave,” to interact daily with their progress and goals and also provides frequent self-check ins with self-regulation.

Another aspect seen in the classrooms of teachers who have outstanding classroom management is intentional time for students to participate in explicit social skills instruction and replacement behavior training (Oliver & Reschly, 2010). Schools often focus on training new academic skills but disregard the need for explicitly teaching needed learning behaviors. Teachers cannot assume that students enter classrooms knowing the appropriate and desired ways to function and interact.

The teaching of replacement behaviors provides students with an adaptive behavior to replace a maladaptive behavior (Dwyer, Rozewski, & Simonsen, 2011; Cooper, Heron, & Heward, 2020). This is a shift from the common “discovery learning” approach in which students “learn as they go.” Through replacement behaviors, students learn the skills needed to be successful. In general, effective teachers are effective classroom managers. The more positive behaviors are taught, reinforced, and addressed within a classroom, the higher the likelihood of a classroom community in which all students get to learn, contact success, and reflect.

**Prevalent Issues Despite the Availability of Effective Practices: The Reality for
Students with Behavioral Challenges in School**

Knowledge of high-yield practices is important, but what if these practices are not being utilized or are not implemented effectively? Unfortunately, this is a phenomenon that students and teachers alike experience when collectively working toward behavior change (Pinkelman, McIntosh, Rasplica, Berg, & Strickland-Cohen, 2015). The effective and proactive interventions so eloquently outlined in research are too often not implemented with fidelity, if at all (McIntosh, Mercer, Nese, & Ghemraoui, 2016). Teachers experience daily challenges that require the use of evidence-based academic and behavioral techniques. In the absence of such high-yield strategies, it is difficult to truly know the degree to which the nature of a student's behavioral deficits.

Lack of Teacher Training and Support

Teachers report a lack of both pre-service and on-the-job training, support, and follow-up in behavior management as one of the most frequently cited reasons for leaving the profession (Cancio & Johnson, 2013). Despite the prevalence of students identified with emotional and behavioral disorders and students who exhibit challenging behaviors, there is little available research describing the perpetuation of this disconnect (Baker, 2005). The results of combined efforts to determine what makes teachers most successful are very clear. Without a solid understanding of classroom management (Poznanski, Hart, & Cramer, 2018), the science of behavior (Smyth, Reading, & McDowell, 2017), and implementation of effective intervention strategies (Allen & Bowles, 2014), new teachers are less likely to have significant positive effects on student outcomes (Nahal, 2010). There are high-yield practices available in each of these areas that successfully promote positive behaviors in students. However, again in this area, these strategies are not widely used. While the need for instruction in these strategies is

clear, very few teacher preparation programs effectively target the areas of classroom management, the science of behavior, and effective strategies (Oliver & Reschly, 2010).

Teacher preparation programs. Oliver and Reschly (2010) examined 26 syllabi from special education teacher preparation programs and specifically looked at classroom organization, behavior reduction strategies, and behavior management components. A formula was used to rate these syllabi based on the listed experiences, assignments, resources, topics, and assessments that specifically targeted these three areas. The results on the classroom organization and behavior management are extremely variable. Of the syllabi reviewed, only 27% ($n=7$) of the associated universities and programs had a specific course dedicated for classroom management. Although teacher standards often guide the planning of college-level education classes, there are no national standards that explicitly explain the expectations for classroom management. For example, the Kentucky Performance Teacher Standards do not mention the words “classroom management” at all. Instead, these standards reference items such as supporting individual and collaborative learning and encouraging social interaction in terms of content knowledge and learning environments (Kentucky Teacher Standards, 2020).

While the other 19 universities (73%) listed content in the behavior management category, the teachings were embedded in other courses: this involved topics such as structured environment, active supervision and student engagement, school-wide behavioral expectations, classroom rules and routines, encouragement of appropriate behavior, and behavior reduction strategies. In terms of the behavior reduction strategies, 96% of examined programs reported either covering this component in classes or providing opportunities for application and feedback to the pre-service teachers. Through

these opportunities, 58% of the universities had embedded class discussions or practical applications of “encouragement of appropriate behavior.” The authors did not explicitly explain the teaching targets that support “encouragement of appropriate behavior.” Similarly, 42% ($n=11$) of the programs had no mention of intentional teaching of how to “establish classroom rules.”

Although the results show that programs do in fact provide instruction on topics that would support students with EBD and behavioral challenges in classrooms in terms of responsive management techniques, there is a significant gap in the programs’ teaching of positive and preventative strategies. The authors identified schoolwide positive behavior supports and classroom rules and routines as the only two preventative and antecedent strategies consistently listed in the syllabi, although 42% (11) of the syllabi had no mention of establishing rules. In contrast 96% ($n=25$) of syllabi had evidence of covering reactive topics in class and/or teaching application with feedback. Overall, reactive measures were listed in syllabi and taught while very few preventative and antecedent supports received this same attention.

Non-applicable preparation curriculum. Across both the applied settings and in literature, the case has been repeatedly made that first-year teachers do not feel prepared for the encounters they will face in the classroom (American Psychological Association, 2019). Educators report that one of the most prevalent missing links is the opportunity for hands-on experiences when learning how to work with challenging students (Baker, 2005; Rollin, Subotnik, Bassford, & Smulson, 2008). Clearly, the typical teacher preparation focus on lesson plan format or memorization of theoretical perspectives is insufficient to prepare teachers to mitigate the needs of America’s most diverse

populations. Further, today's teachers are unintentionally tasked with navigating many different disciplines during the day like mental health, behavioral therapy, and general parenting (Poznanski, Hart, & Cramer, 2018).

Typical teacher preparation programs work to train future teachers in how to craft a 10-page lesson plan, design an engaging and rigorous learning station, and how to engineer a colorful newsletter for families to read each week. While all of these are important teacher skills, the focus is on surface engagement rather than practical actions to benefit these teachers during their daily contact with challenging students. In addition, teachers need to know how to collect and analyze data for current and future planning, communicate with families who are unable to read or write, support students who have had negative school experiences, and implement evidence-based strategies that promote significant student progress (Whitaker, 2000). Most importantly, teachers need to enter the classroom fluent in positive and proactive strategies that are effective with the most challenging of populations. But at the time of this writing, teachers exit preparation programs without the practical, hands-on knowledge necessary to fully support students in their day-to-day learning and needs (Evertson & Weinstein, 2006; Jones, 2006; Stough, 2006).

Lack of Focus on Behavior Support

Many students enter their school-age years without the needed foundational behavior skills to be successful in a classroom (Blood & Neel, 2007). However, in most high-need schools, some type of reform is necessary to modify practices and instruction for students. When prompted to examine their own approaches and philosophies, teachers often look to modify academic instruction and practices, when behavioral needs are

actually the root of impeding progress in the academic domains (Kremer, Flower, Huang, & Vaughn, 2016). When behavior is addressed by teachers, it is typically done as a response, after the behavior has already been exhibited. Teachers are encouraged to analyze their relationships with students and examine their instructional strategies to determine the appropriateness. While effective instruction and relationship-building are important, sometimes the focus needs to be on teaching students the behaviors needed to be successful in the classroom, or academic social skills, independent of academic skills (Snider & Battalio, 2011).

At-risk students in low-performing schools are subjected to a copious number of “programs” and interventions that target deficits in academic performance. While disproportionality measures usually target academic tasks such as improving reading fluency rates and accuracy on math problem computation, academic social skills such as how to appropriately request help, positive peer interactions, and how to accept feedback are often left unsupported (Peters, Kranzler, Algina, Smith, & Daunic, 2014). Explicit instruction in teaching these specific learning behaviors is generally characterized as “special education teaching,” when it is truly effective and appropriate for all students: failure to receive this type of instruction often has negative future implications for students (Gresham, Elliott, Cook, Vance, & Kettler, 2010).

As general education and special education students progress through their school years there is a risk that undesirable behaviors will strengthen unless intervened upon (Dishion & Patterson, 2016). One of the highest documented “reasons for referrals” for at-risk populations of all ages is “failure to comply” (Axelrod & Zank, 2012; Perle, 2018). Especially in the middle and high grades, students are expected to follow

classroom and school-wide expectations with little to no explicit teaching or feedback on the target behaviors. Further, when students have more than one teacher, several sets of classroom expectations are often present. If students lack the basic learning behaviors expected of all students such as hand raising, staying in area, asking for help when needed, remaining quiet when the teacher is instructing, and showing respect to adults and peers, the likelihood of success decreases significantly. Behavior instruction must be viewed in the same manner as academic instruction in that teachers must explicitly teach the behaviors they want to observe from the students and reinforce the exhibitions to increase the probability that the positive behaviors will continue in the future (Sugai & Horner, 2002).

Outdated, Ineffective, Under-supported, and Inconsistently Applied Practices

As our research base continues to grow and evidence-based practices are further identified and refined, some existing practices become outdated, or their probability of providing success is demonstrably less than other practices. They may be based on evidence that has been refuted, or they may simply be inefficient in comparison to more contemporary evidence-based practices.

Outdated practices. “Traditional” methods of teaching, with limited opportunities to respond, are utilized across schools today, despite research indicating the need for more individualized and responsive types of instruction (Kern & Clemens, 2007). Out-dated practices such as lecture, paper pencil assessments, and fill-in-the-blank activities have not worked well for all students in the past, and they likely are not as effective as other strategies that involve more student participation such as opportunities to respond, structured collaboration activities, and increased teacher feedback. Teachers

may be reluctant to attempt more student-centered and effective practices due to perceived time involvement and planning, even though many of these strategies do not involve any major time commitments. This may be the case with practices like group contingencies, differential reinforcement, and token economies. Of course, the benefits associated with simple strategies that involve less steps and fewer materials is that they present less chances for error. When students are more involved, collateral effects in academic increases can also be observed as students contact content elements at higher rates. Although these positive effects have been observed, teachers do not consistently incorporate these practices into their instruction (Whitney, Cooper, & Lingo, 2015).

Ineffective practices. Interventions used with the EBD population should be high-yield, effective, and applicable across settings (Farley, Torres, Wailehua, & Cook, 2012). As has been discussed, interventions are most effective when an FBA is used to first determine the function of behavior (Hansen, Wills, & Kamps, 2014). Unfortunately, function-based approaches are not regularly used to guide behavior planning and programming that schools use to support behavior (Kern, Hilt, & Gresham, 2004). School systems focus on accommodations and modifications, not how to best teach students using specially designed instruction. In most schools, FBAs are seen as a compliance issue, not a programming need (Kern, Hilt, & Gresham, 2004). Moreover, there is little training available for school personnel to learn about behavioral supports or positive interventions, even though these strategies have been known to produce positive results (Iwata et al., 2000; Moore, et al., 2002). Although there is a well-established literature base on how to appropriately conduct FBAs, teachers report a lack of support and follow

through within their school (Westling, 2010; MacDonald & Speece, 2001; Scott, Nelson, & Zabala, 2003).

Ineffective classroom strategies coupled with a lack of classroom management do not promote a learning environment that supports behavioral growth. Common characteristics of ineffective classroom management are reactive and negative responses, including time out, negative points, or removal of preferred item or activity. This fact portends a negative prognosis for academic and behavioral progress (Hamre and Pianta, 2001). Furthermore, when effective classroom management procedures are not in place, students' academic, social, behavioral, and emotional outcomes are negatively affected (Reinke and Herman 2002). These effects can be seen in a lack of motivation, declining grades, and exhibition of negative classroom behaviors. Edwards (2015) suggested students who are not engaged academically most of the time tend to be passive learners. These students give up easily when confronted with challenging tasks, become anxious, withdrawn, frustrated, and experience poor academic outcomes. This is even more prevalent for students diagnosed with an emotional and behavioral disorder or among those who demonstrate consistent and significant behavioral challenges in the classroom. Although there is a myriad of research around the topic of differentiation and classroom management, many educators may either teach the same lesson with the same strategies to all students or have identical responses for different students who have different behavioral needs. What's necessary is a range of strategies that are applied in a systematic manner based on assessment information for individual students.

Limited coaching capacity. Some schools are fortunate enough to have a behavior coach on site whose expertise lies in fundamental behavior change. This individual often

serves on teams that are established to support students throughout the school day (Scott & Martinek, 2006). One of the main jobs of a PBIS coach is to promote consistency among staff so that their school's implementation of PBIS is sustainable. In schools where the PBIS principles are evident, even after initial implementation, three common features exist. These schools have shared and valued outcomes, a record of modifying practices needed for better student support, and effective implementation of the practices determined by the behavior support teams (McIntosh, et al., 2014). In general, the leaders of effective behavioral response teams maximize contextual fit, promote priorities, ensure effectiveness, increase efficiency, and use data for continuous regeneration (McIntosh, Filter, Bennett, Ryan, & Sugai, 2010). During this process, effective coaches evaluate how well the current practices support the school environment and community; take steps so that all stakeholders understand and appreciate the value of the process; ensure practices are implemented with fidelity and that the outcomes are positive; compare feasibility to implementation needs; and monitor, evaluate, and modify practices so that the systems are as effective as possible for the school's student population. These indicators are communicated and analyzed via the School Climate Survey Suite which is completed by all school personnel, students, and families (Luiselli, Putnam, & Sunderland, 2002).

Unfortunately, one behavior coach cannot logistically serve and support all students who need behavioral guidance each time a specific need arises. Because of this gap in support, administrators, teachers, and staff frequently debate about whose responsibility it is to provide behavior supports to students.

Inconsistent application. Another consistent element in schools and classrooms where behavior progress is not observed is a lack of follow-up, reflection, and re-evaluation (Scott, Vitale, & Masten, 1998). A report by Walker and Barry (2017) indicates that teachers rarely implement strategies with fidelity and do not continue to implement the intervention if it is not immediately successful. Again, teachers report lack of training to be one of the main reasons that the behavior programming is not implemented with fidelity (Lindsay, Proulx, Scott, & Thomson, 2014). There are many follow-up and reteaching programs for school-based staff referenced in the literature and these programs have high rates of success. As fidelity of implementation increases, so too do positive student outcomes (Froelich, Bruer, Doepfner, & Amonn, 2012; Walker & Barry, 2017).

Fidelity of implementation should be measured in all behavior-change programs and the interventions should be tailored to the individual school and population. Unfortunately, fidelity measures are not always conducted in schools and the fidelity scores do not always correlate to the student population outcomes (Pas, Johnson, Debnam, Hulleman, & Bradshaw, 2019). The goal of most behavior-change plans and programs should be to produce generalized results (behaviors) that the students can use in their lives moving forward: unfortunately, generalization measures are seldom intentionally programmed and the results of the measures are rarely analyzed, especially with students with EBD (Smith and Giles, 2003). Without skilled professionals instructing the students and following up on the implementations, the learned behaviors may be short-lived. If a behavior plan is implemented incorrectly, a student may learn a new, undesirable behavior during the process. This commonly occurs when

reinforcement procedures are not implemented correctly: the incorrect behavior could be strengthened (Hieneman, 2015).

Lack of buy-in. Although data show that proactive, antecedent and positive supports, such as the strategies included PBIS for example, are effective at supporting school-wide and student-specific behavior change, it is not always welcomed in schools. Many staff have heard or experienced negative comments and attitudes associated with this framework (Bambara, Goh, Kern, & Caskie, 2012). Many teachers express disdain in the areas of consequence delivery, lack of student success, and the overall foundational approach (Houchens, et al., 2017). For example, some think that PBIS specifically does not allow for negative consequences and the only type of interaction with student behavior is “rewards,” while others perceive a lack of student progress after initial implementation (Debnam, Pas, & Bradshaw, 2013). Some adults have even categorized the use of proactive supports and PBIS as “manipulative” (Jones & Shindler, 2016) in that it, by their understanding, “bribes” students to follow directions. There are many variables of which the misconceptions could be attributed including teaching philosophies, prior classroom experiences, lack of training, and lack of understanding (Espin & Yell, 1994).

Lack of support. Ideally, ineffective interventions would result in a critical re-evaluation of the integrity of the plan itself and the fidelity with which it was implemented. The goal of re-evaluation is to produce more effective programming to increase positive outcomes (Cook & Odom, 2013). But without coaching, follow-up, and state and district support, evidence-based practices are likely to be abandoned (Nese, et al., 2016). As with any effective instruction, teachers need feedback to improve their

practice (Sayeski, Hamilton-Jones, Cutler, Earle, & Husney, 2019). Just as misconceptions can be formed in the classroom when students are not provided appropriate chances to receive feedback on their performance, lack of feedback for teachers can lead to misconceptions about the best way to address student difficulties. This often occurs when teachers feel that they have tried everything in their toolbox, and the only other option is to submit a referral for evaluation for special education services.

Is Special Education Really Special? Impacts of More Restriction

Special education is an essential pillar of modern education and is not just considered “good education” or best practices appropriate for all. Rather, special education is specialized and tailored instruction, uniquely crafted for students who do not respond to other tiered strategies. Students in special education have already been exposed to consistent tier 1 and 2 interventions and have demonstrated an insufficient positive response. There are some aspects of special education that accentuate the imperative for high-yield interventions.

Isolation and limited opportunities for maintenance and generalization. Once students are found eligible for services for an emotional and behavioral disorder or severe behavioral discrepancies, there is a high likelihood that they will be served in a self-contained classroom, away from their non-disabled peers. While these students may experience some successes due to the restrictive nature of the self-contained class, they are also limited in several key ways. Critics argue that these settings provide limited access to exemplar behaviors and model students (McLeskey, Waldron, & Redd, 2014). Others have argued that these classrooms are too isolated, regimented, and racially disproportional to sufficiently promote generalization (Raines, Dever, Kamphaus, &

Roach, 2012). As a result, these students are less likely to transition to a less restrictive environment, and at the end of their school journey, these students are likely to exit the system with limited life skills and preparation for the real world (Boardman, Arguelles, Vaugh, Tejero, & Klingner, 2005). In fact, there is little reported maintenance and generalization programming noted in these students' IEPs, even though significant research shows that teaching students to both maintain and generalize must be intentional (Baer, Wolf, and Risley, 1968; Smith & Gilles, 2003).

The goal of special education programming is to teach skills that will be utilized more than just once in a discrete trial and expressed outside the four walls of the classroom. Many teachers report that when students from a self-contained classroom attend classes in the general education environment, they do not retain skills and little real progress is observed (Mastropieri & Scruggs, 1984; MacDonald & Speece, 2001). Further, maintenance and generalization measures are not a focus in typical schools and classrooms, and educators aren't certain how to explicitly program for generalized responding. In fact, there is a significant lack of literature on the maintenance and generalization of skills with behaviorally-discrepant populations in the areas of academics (Reid, Gonzalez, Nordness, Trout, & Epstein, 2004), social competence (Smith & Travis, 2001), and behavior (Gresham, Sugai, & Horner, 2001).

Punitive responses for students with behavioral needs. High amounts of consequential behavioral responses are used in today's schools, especially for students whose circumstances and history put them at risk for larger failures (Wright, Morgan, Coyne, Beaver, & Barnes, 2014; Scott, McIntyre, Liaupsin, Nelson, Conroy, & Payne, 2005). Administrators and specialists with little experience in behavior modification are

often the individuals leading behavioral programming efforts. Because of their lack of expertise in this area, learning histories are rarely considered when choosing appropriate responses to behavioral exhibitions (McKenna & White, 2018). In many districts, there is a push to decrease suspension by finding alternate ways of addressing challenging behavior. Unfortunately, this does not always lead to more classroom time as students spend more time waiting for a conference, attend in-school suspension settings, or “take a break” from the class where the problems occurred by sitting in another classroom to “reflect” (Skiba & Rausch, 2006). All of these options result in more time out of class for the student and, thus, more time taken away from learning opportunities (Sugai et al. 1999).

Research-Based Antecedent Interventions as Part of a Logical Solution

Some higher education sources cite increasing demands of challenging classroom behaviors, student trauma, and associated lack of preparation as reasons for today’s significant teacher shortage. The teacher shortage is especially prevalent in schools with an overwhelming percentage of special education students (Clotfelter, Ladd, & Vigdor, 2006; Mason-Williams, et al., 2019) and in schools with significant challenging behaviors represented across populations (Cancio & Johnson, 2013). Knowledge of effective, positive, and proactive strategies contribute to teachers feeling more equipped and able to tackle the demanding needs of their students (Aloe, Amo, & Shanahan, 2014; Melnick & Meister, 2008).

When examined closer, some essential components of teacher effectiveness are areas in which teacher preparation programs lack, especially when the teachers go on to work with behaviorally challenged populations (Brophy, 1988; Evertson & Weinstein,

2006). The components of effective instruction, understanding the function of a behavior and how to program based on this knowledge, and classroom management are even more fundamental when students present with significant behavioral needs (Flower, McKenna, & Haring, 2017). A comprehensive knowledge of these components is important for all teachers, especially those who work with students with EBD. Overall, these general strategies and techniques are proactive and positive, not responsive or reactive. Students with EBD need strategies to be successful, and there is a research base available that highlights these effective strategies.

Students with EBD have often encountered learning situations in which the environment does not support the behavior change adults wish to see. Although students diagnosed with EBD often have an average IQ and academic ability, they rarely perform on grade level due to repeated removals from class situations which impede their acquisition of new skills. When a difficult task is presented, students with skill discrepancies often exhibit refusal/escape behaviors to avoid completing the task (Sutherland, Alder, & Gunter, 2003). Anecdotally, students have expressed the “fear of being wrong” or “looking dumb in front of the class” as their self-reported justification of why these behaviors occur. Blending our scientific understanding and the observed information from classrooms, it is evident that many students perceive the behaviors of putting their head down, engaging in progressed refusal behaviors, and the ultimate removal from class as less of a consequence than that of getting an answer wrong or having others observe perceived failure.

The core of behavioral intervention is the three-term contingency which consists of an antecedent, behavior, and consequence (Kern, Choutka, and Sokol, 2002).

Researchers have analyzed behaviors using this contingency wherein behaviors have been observed to occur after the onset of an antecedent and are then maintained or lessened if the consequence is reinforcing or punishing, respectively (Pelios, Morren, Tesch, & Axelrod, 1999). Targeting the antecedent component is especially relevant for students diagnosed with EBD. Students in this disability category have long experienced consequential strategies that are perceived as punitive and negative in nature.

One of the most effective antecedent interventions with all ages of students who have these observed behavioral needs is the high-probability task. In general, antecedent interventions occur before the onset of a predicted behavior and differ from the various consequential procedures such as time out, negative points, response cost, positive practice, or loss or removal of a preferred activity (Kern, Choutka, & Sokol, 2002). The environment can be changed in a way in which a student is “set up for success,” provides the occasion for more positive exhibitions of desired behaviors, and less opportunities to engage in maladaptive behaviors. This strategy ensures that students are presented tasks with which they would likely comply or find reinforcing before being asked to engage in tasks that they are less likely to complete. Tasks that would likely promote compliance are identified and presented prior to those that are more likely to result in noncompliance (Planer, DeBar, Progar, Reeve, & Sarokoff, 2018; Wilder, Majdalany, Sturkie, and Smeltz, 2015).

High-probability tasks have been effective at reducing latency to task initiation (Ardoin, Martens, & Wolfe 2003; Vostal & Lee, 2011; Lee, Belfiore, Scheeler, Hua, & Smith, 2004), increasing task completion rates (Lee, Lylo, Vostal, & Hua 2012), decreasing rates of problem behaviors (Cannella-Malone, Tullis, & Kazee, 2011; Wilder,

Majdalany, Sturkie, & Smeltz, 2015; Mace et al., 1988), and increasing participation (Normand, Kestner, & Jessel, 2010; Belfiore, Basile, & Lee, 2008).

Antecedent interventions are an effective treatment for many populations, but have been especially effective for individuals with emotional and behavioral disorders or significant behavioral discrepancies. The effectiveness of high-probability tasks has been observed in diverse classroom environments and suggested impacts across a wide array of target behaviors, age groups, and settings have been proposed. Many behaviors and target skills can be impacted and various treatment designs can be implemented with this intervention. As research continues to identify optimal implementations for specific populations, special and general educators can implement high probability tasks to improve the academic and behavioral outcomes of individuals with EBD in classroom settings and beyond. High-probability tasks are a promising intervention for students who have behavioral needs in the classroom.

CHAPTER II

A REVIEW OF THE LITERATURE

In 2017, the Supreme Court ruled, via *Endrew F. v. Douglas County School District*, that students with disabilities who have Individualized Education Plans (IEPs) should receive more than a *de minus*, or minimal, education, specialized services, and benefits from their programming. This ruling was monumental for families of individuals with disabilities as it provided more protections and guarantees for the use of high-yield instruction and strategies. In turn, schools were obligated to have knowledge of and implement programming that supports all students to make “more than minimal” progress. As a strategy, the strategic use of high-probability tasks has been identified as a high-yield and evidence-based strategy for students with disabilities (Gable, Tonelson, Manasi, Park, & Lee, 2012) and has been shown effective to support a range of target behaviors across settings.

A high-probability task is a specialized antecedent strategy that primes the environment with the delivery of a preferred task so that the learner is more likely to comply with a non-preferred task when it is delivered directly after the high-probability task (Banda, Matuszny, & Therrien, 2009; Cooper, Heron, & Heward, 2020; Mace et al., 1988). High-probability, or *high-p tasks*, can be described as tasks in which the student has demonstrated prior mastery and that he or she would typically choose over others (Banda, Matuszny, & Therrien, 2009). Low-probability, or *low-p tasks*, are tasks or

activities that students find undesirable or aversive or skills that have produced inaccurate, inconsistent, or limited responding in the past (Wehby & Hollahan, 2000).

The literature refers to high-probability tasks using a combination of interchangeable terms. Some studies use the term “high-probability request sequences” (Ardoin, Martens, & Wolfe, 2003; Jung, Sainato, & Davis, 2008; Wilder, Majdalany, Sturkie, & Smeltz, 2015). Other studies refer to this strategy as “high-preference tasks” (Pitts & Dymond, 2012). Some simply label these as “high-p” or “high-probability” (Lee, Stansbery, Kubina, & Wannarka, 2005; Lee, Belfiore, Scheeler, Hua, & Smith, 2004). A small number of studies package both terms together as a broader descriptor called “behavioral momentum” (Vostal & Lee, 2011). All of these terms have been used in studies and reviews that examine the efficacy and efficiency of antecedent interventions. For consistency purposes, the identified antecedent intervention will be referred to as high-probability tasks during the remainder of this review.

Any discussion of this antecedent intervention must start with a description of the process of identifying both high and low-probability tasks. A large number of published studies demonstrate that a range of various preference assessments have been used, most commonly with students with low-incidence disabilities and with students in the pre-school and elementary grades (Baker, Gersten, & Lee, 2002). These assessments seek to determine what tasks, items, and activities students most prefer. The literature also references the use of these preferences in task sequences that are designed and delivered to target behavior change, such as high-probability task request sequences. Unfortunately, most of the implementations of these sequences have occurred in the same settings as the

preference assessments (low-incidence classrooms and with young students) or in self-contained EBD classrooms (Pitts & Dymond, 2012).

There is a significant gap in the literature when it comes to the implementation of high-probability tasks with students in middle and high school grades and in resource and inclusion classrooms that support students with behavioral needs as the primary disability. For students with EBD and behavioral challenges, this strategy has been used to modify behaviors such as task completion (Lee, Lylo, Vostal, & Hua, 2012), aggression (Cannella-Malone, Tullis, & Kazee, 2011), latency to task initiation (Ardoin, Martens, & Wolfe, 2003; Vostal & Lee, 2011), and compliance (Wilder, Majdalany, Sturkie, & Smeltz, 2015). High-probability tasks have also been used in combination with a number of strategies such as a functional behavior assessment (Clinton & Clees, 2015), preference assessments (DeLeon, Frank, Gregory, & Allman, 2009), and reward packages (Fefer, DeMagistris, & Shuttleton, 2016). Clearly, high-probability tasks have been successful at changing target behaviors.

The purpose of this literature review is to thoroughly investigate the use of high-probability tasks as an intervention for students with emotional and behavioral disorders, specifically those who are served in a resource or inclusion classroom. First, a background of information is presented to foundationally explain the underlying scientific principles that comprise high-probability tasks. Directly following, an analysis and summary of the literature findings is presented. Finally, the implications for the current research study is presented and justified based on limitations of current research and implications for future findings.

Foundational Principles

High-probability tasks as a strategy has roots in seminal behavioral research, theory, and laws.

Matching law. One of the most seminal reports that emerged from the experimental analysis of behavior and studies is that of Herrnstein's (1961) Matching Law. Primarily using animals, his investigation targeted choice-making and allocation of reinforcement and their effects on rates of responding. Herrnstein suggested a relationship between rates of responding and relative rates of reinforcement and that this relationship can be quantified and predicted with a formula and ratio: humans perform behaviors in a ratio that matches the same ratio as the given reinforcement rates. An example of this formula is $B_1/B_2=r_1/r_2$ (Herrnstein, 1961). For example, if a student exhibited two attention-maintained disruptive behaviors in a classroom (calling out and putting her head down), all other classroom factors were constant, and the teacher acknowledged, or reinforced each behavior at different rates, the differential rates of behavioral exhibition would be proportional or "match" the rates of reinforcement given by the teacher. If the teacher reinforced calling out 90% of the time and reinforced putting her head down on the desk 25% of the time, the student would likely exhibit those behaviors at the same rate. During the investigation, Herrnstein observed pigeons and their responses to varying rates of reinforcement in the form of food. They received this reinforcer after pressing a button or "pecking." Between the two button choices, the pigeons tended to choose the button that consistently produced greater food rewards (Sutton, Grace, McLean, & Baum, 2008).

Baum (1974) challenged the original formula suggested by Herrnstein because, as he theorized, it did not account for regularities in data, especially when an organism

exhibits indifference, or non-preference, to stimuli and rates of reinforcement. Thus, the term “undermatching” was presented. Undermatching is the term chosen to describe the data when an organism does not indicate a preference toward a particular stimulus, even if one stimulus yields more reinforcers (Fantino, Squires, Delbruck, & Peterson, 1972). Baum also suggested that deprivation and satiation play a major role in rates of responding (Baum, 1972; Herrnstein & Loveland, 1974).

Matching law sought to quantify the relationship between a stimulus and a reinforcer, setting the stage for behavioral predications to be made based on prior reinforcement schedules and histories. High-probability tasks as an intervention uses matching law in that it utilizes prediction and knowledge of previously reinforcing tasks to occasion the likelihood of the completion of a task that has not been observed to produce reinforcement.

Premack principle. The prediction of behavior based on preference of activity was suggested by David Premack in 1965 and explained in the Premack Principle (1959, 1962, 1965, 1971). This principle suggests that activities themselves may serve as reinforcers: an individual could be more likely to complete a less desirable task if the availability of a preferred task was present after the completion of the less preferred task. Simply put, high-probability behaviors reinforce low-probability behaviors. This principle also specified that “intermediate members of the response set would reinforce those that are less probable than themselves, but not those of higher probability” (Danaher, 1974). High-probability tasks inversely utilize this foundational guidance through the reinforcement element.

Behavioral momentum. Behavioral momentum also predicts the effects and performance of a given task based on the sequence of presentation (Mace, et al., 1988). A high-probability task sequence is a technique designed to build behavioral momentum. Other researchers have described this sequence as a “behavioral manifestation of Newton’s second law of motion” (Nevin, 1992; Nevin, Mandell, & Atak, 1983; Plaud & Gaither, 1996; Jaspers, Skinner, Williams, & Saecker, 2007). With Newton’s 2nd law, the eventual acceleration is the direct result of the amount of force and mass an object has (Newton, 1687). Behavioral momentum can be described in much the same way: the focus on compliance is reinforcing a response class. The more an individual contacts reinforcing items prior to the delivery of a task, the more likely the individual will be to complete a subsequent task, even if the individual has exhibited resistance in the past. High-probability tasks are the individual sequencing components that produce that momentum.

While there are variations present when comparing each of these foundational principles, the overall connection of each to high-probability tasks is clear. Subject preferences, the order of presentation, and the availability of reinforcement make it more likely that an individual will complete a task that they have previously not completed or found undesirable. Reinforcer histories, success of the preferred and target responses, and the reinforcer value of completing the desired task to build momentum for the more difficult presentation (i.e. is it worth it to complete the easy task if the harder task is unattainable) must be clearly understood by those creating the high-probability task sequence before the presentation of the task sequence to the individual.

High-probability tasks across behaviors, populations, and settings. In general, high-probability tasks promote behavioral success without a removal of preferred stimuli, setting, or activity (Kern, Choutka, & Sokol, 2002). Students with EBD, Autism Spectrum Disorder (ASD), High-Functioning Autism Spectrum Disorder (HFASD), Attention Deficit Hyperactivity Disorder (ADHD), psychological diseases and cognitive impairments have all exhibited behavioral changes as a result of this intervention. While differing amounts of research are available on each of the instructional locations, high-probability tasks has shown positive effects when used in general education, self-contained, inclusive, resource, and transition classrooms across the scope of the day. Many behaviors have been assessed using this intervention and parameters such as latency, frequency, rate, and duration have all shown effects from this treatment. The mobility of this intervention makes it an applicable tool for many individuals seeking to change behavior.

Review of the Literature: High-Probability Tasks

Many researchers have conducted experiments to study the effects of different antecedent interventions on various types of behaviors, settings, and populations. The specific antecedent interventions chosen have often been paired with other treatments to investigate collateral effectiveness. There have been several literature reviews focusing on antecedent interventions as a whole, but none have focused on high-probability tasks alone. That is, while many reviews have included high-*p* tasks taking place in clinics or at home, they did so in the larger context of antecedent interventions or choice tasks (Clinton & Clees, 2015; Howell, Dounavi, & Storey, 2019; Knowles, Meng, & Machalicek, 2014; Morgan, 2006). The purpose of this systematic review is to analyze

and synthesize the existing literature on high-probability tasks when implemented with individuals with emotional and behavioral disorders or behavioral deficits in a classroom setting at a public school. The specific research questions this review seeks to answer are:

1. What specific skills or behaviors have individuals with EBD been demonstrated to acquire as a result of high-probability tasks?
2. What types of intervention or procedural models have been used to investigate the effects of high-probability tasks?
3. Have high-probability tasks been demonstrated to be an effective antecedent procedure for individuals with EBD?

Methods

Literature Search

A broad literature search was conducted to locate and identify published studies recounting the implementation of high-probability tasks for individuals with EBD and/or significant behavioral deficits. The review initially utilized the search engines of ERIC, PubMed, and University of Louisville Online Libraries. The following search terms were used: (1) high-probability requests, (2) high-probability task sequence, (3) high-*p* requests, and (4) antecedent requests. The search term of EBD was used as an “and” term as it was combined in a statement with each of the other search terms. This ensured that the articles and studies solicited included the target population of this study. Restrictions of peer reviewed, origin in scholarly journal, and 2000 and later were also selected. This process yielded 127 studies, and a subsequent electronic search was conducted with the selection of the following journals that typically publish intervention research in the area of behavior: *Journal of Applied Behavior Analysis*, *Journal of Positive Behavior*

Interventions, Education and Treatment of Children, Behavioral Disorders, Journal of Behavioral Education, Intervention in School and Clinic, Journal of Emotional and Behavioral Disorders, and Education and Treatment of Children, yielding an additional thirteen studies. The reference sections of all 140 identified studies were further examined, but no additional studies were found for this review.

Eligibility Criteria

To be included in this review, a study had to meet all of the following criteria. First, high-probability tasks were defined as specific tasks given to students before the introduction of a low-probability task to increase the likelihood of compliance or task completion (Radley & Dart, 2015). Studies not using interventions covered under this definition were excluded. Second, all studies had to include individuals who were either diagnosed with EBD or who had otherwise demonstrated significant behavioral deficits that resulted in participation in a special education classroom for one or more classes due to behavior needs. Each student's behavioral discrepancy had to be the most impacting and present need (i.e., students included in the studies would have average IQ scores and no comorbid health impairments). Third, all individuals must have attended a public school in the United States and the intervention must have utilized a classroom teacher in some fashion as part of the intervention. Finally, both group designs and single case research were included while case studies and qualitative studies were not. However, no group research designs were identified so all studies were single subject in nature and it was required that each must be designed in manner sufficient to demonstrate a functional relationship (i.e., internal validity) between high-probability requests and a change in observable and measured behavior.

Article Coding Procedures

After identifying an initial set of studies, a quick review of titles and abstracts was conducted to determine which might be immediately excluded for not meeting the most basic inclusion criteria of involving an individual with EBD or a behavioral discrepancy and the use of high-probability tasks as defined herein. If this information was not easily obtained from the abstract, the full article was reviewed to confirm that the needed components were present. When a study was found to not to include all necessary components it was discarded. 13 studies met all criteria and were included in the final analysis. These were then coded for participant demographics, location of treatment, target behavior for intervention, treatment design, and if the high-probability tasks were used alone or in a treatment package.

Results of the Literature Review

Of the 127 results, 18% (n=23) were duplicate or repeated listings, 28% (n=35) were not included because the intervention description was not specific, and 39% (n=49) included other populations of students other than EBD or individuals with specific behavioral discrepancies. 4% (n=5) were excluded due to the lack of quantitative results and 11% (n=13) were not reviewed because high-probability tasks were not a main part of a treatment package.

After the resulting studies were evaluated, 13 were officially selected for review. These articles were organized in a hierarchy based on specific target behavior. The summary of each study's design, intervention, results, and participant demographics is presented in Table 1.

Table 1

Study design and intervention characteristics

Study	Year	Population	Age or Level/Participant #	Target Behavior	Design	Intervention Location/Package	Results
Lee	2012	EBD	High School/3	Task Completion- Math	MB-S	Classroom	Decrease in latency and increase in task completion
Lee	2004	EBD	Elementary/2	Task Completion- Writing	MB-S	Classroom	Increase in rate of completion
Cannella -Malone	2011	EBD	Middle/3	Aggression	MB	Classroom/Hallway Transition	Decrease in aggressive behaviors
Ardoin	2003	EBD	Elementary/3	Latency- Transitions	Multi- element	Classroom	Latency to task initiation decreased and % of compliant behaviors increased
Vostal	2011	EBD	Middle/3	Latency- Reading	Multi- element	Classroom	Decrease in latency to initiation of reading passage and higher acquisition of reading skills
Lee	2004	EBD/LD	Elementary/4	Latency and Academic Achievement	ATD	Classroom- Self Contained	Decrease in latency to task initiation
Belfiore	2002	EBD/LD	Elementary/2	Latency- Math	ATD	Classroom	Decrease in latency to low-preference tasks

Lee	2006	EBD/LD	Primary/2	Latency- Writing	Multi- element	Classroom	Decrease in latency to low- preference tasks
Lee	2006	EBD/LD	Elementary/2	Latency- Writing	ATD	Classroom	Decrease in latency to low- preference tasks
Wilder	2015	Behavioral Discrepanci es	Primary/2	Compliance	Reversal	Classroom/ Reinforcement	Increase in compliant behavior when paired with reinforcement
Wilder	2015	Behavioral Discrepanci es	Primary/2	Compliance	Reversal	Classroom/ Lower Quality Reinforcement	Increase in compliant behavior when paired with high quality reinforcement
Belfiore	2008	EBD	Elementary/1	Compliance- Math	Withdraw al	Classroom/Self- monitoring	Increase in compliant behavior when paired or alone
Normand	2010	Behavioral Discrepanci es	Primary/1	Compliance and Responding	Reversal	Classroom	Increase in compliance when low- <i>p</i> tasks are present

The examination of elements of each of the final 13 studies resulted in an initial division into four clear categories by target behavior emerged. Thus, each study was categorized based on target behavior related to task completion, aggression, response latency and academic achievement, and compliance.

Task Completion

Students with prior negative learning experiences often struggle to complete requested tasks in class, especially in larger instructional settings (Bradley, Doolittle, & Bartolotta, 2008). It is important for students to complete assignments as these are the activities by which students build fluency. Further, instructors utilize these methods for assessment. Individuals with emotional and behavioral disorders are less likely to complete tasks that they find unappealing, undesirable, or unattainable (Cook, Rao, & Collins, 2017). This increases the importance of the teacher's ability to implement strategies that promote all students' increased task completion, but especially those who exhibit negative behaviors in the classroom.

Lee, Lylo, Vostal, and Hua (2012) used a two-phase procedure in a multiple baseline design to evaluate the effectiveness of high-probability tasks on math problem completion among three high school students that exhibited refusal behaviors when presented with academic tasks. Latency to initiate problems, percent of problems correct, and digits correct per minute were all measured. After a preference assessment was conducted, single digit problems were identified as high-probability and multi-digit exercises were listed as low-probability. After being given 10 minutes to complete low-probability problems during baseline, the average latency to task initiation was 5.2 seconds with a 71% average accuracy rate across all participants. The average number of problems completed was 19.2 out of the 50 possible. During the intervention phase, when three high-probability problems were presented before the low-probability, multi-digit problem, all students' latencies decreased to an average of 2.9 seconds. The academic accuracy and completion rates increased to an average of 76% and 21.3 respectively. In

sum, the introduction of the high-probability instructional sequence (1) decreased the latency to task initiation when less preferred problems were presented, (2) variably increased the accuracy, and (3) increased the response rate and completion for all three students. Since two of the three areas of impact involved task completion and task accuracy, this study was included in this section as opposed to latency to task initiation.

In a similar investigation, Lee, Belfiore, Scheeler, Hua, and Smith (2004) used a multiple baseline design across students to compare task completion rates of two elementary-aged students during academic assignments. During Language Arts class, these students exhibited problem behaviors including refusal to initiate assignments, initiating but not completing tasks, and inaccurate assignment completion. Both students also had below to well-below average reading scores when compared to their same-aged peers. After a language arts writing choice assessment was administered, single letter words were identified as high-probability tasks while 7-12 letter words were identified as low-probability tasks. During the baseline phase, students were directed to copy words that contained 7-12 letters. The mean rate per minute of writing letters was 15.1 and 22.4 for each student, respectively. During the intervention phase, the students were again presented words with 7-12 letters to copy, but this time each longer word was preceded by a single letter word. The mean rate of letter writing increased for both students (21.1 and 25.4 letters per minute). Additionally, the completion rates across sessions increased for both participants. During baseline, the mean rate of low-probability letters completed from the start to the midpoint of the session was 18.88 and 24.00 for both participants. After the introduction of the intervention, the mean rate of low-probability letters increased to 22.00 and 25.38 respectively. These results support prior findings in that the

use of high-probability tasks prior to low-probability tasks will increase the rate of task completion for students identified with behavioral deficits.

Aggression

Students with EBD often exhibit aggressive behaviors, sometimes to avoid completing tasks or to circumvent an undesirable situation (Tyler-Wood, Cereijo, & Pemberton, 2010). These students have behaviors in their repertoire such as hitting, kicking, biting, spitting, and fighting that can be expressed on a spectrum of magnitude and severity (Maggin, Wehby, Moore-Partin, Robertson, & Oliver, 2009). If students with EBD have no other comorbid disabilities, they typically have average cognitive ability. Although they are capable of performing age and grade-level tasks, they usually perform below grade-level expectations due to missed learning opportunities as a result of negative behavioral exhibitions (Morgan, Farkas, Hillemeier, & Maczuga, 2012). Combining a learning history where these aggressive behaviors have been shaped and strengthened with academic skills that are well below their same-age peers, students with EBD learn to exhibit aggressive behaviors to avoid non-preferred tasks or activities.

Cannella-Malone, Tullis, and Kazee (2011) used a multiple baseline design to investigate the use of antecedent exercise and its effect on the escape-maintained aggressive behaviors of three boys diagnosed with emotional and behavioral disorders. All participants exhibited three or more challenging behaviors including yelling, hitting, spitting, kicking, fecal smearing, inappropriate sexual conduct, and property destruction during non-preferred activities. Prior to the study, exercise had been identified as a preferred task for all three boys. The number of student aggressive behaviors were measured during both baseline and intervention conditions. During baseline, while the

students participated in their normal daily routines and received their typical behavioral supports, they engaged in an average of 7.2 aggressive behaviors a day. In the intervention phase, the students participated in intermittent exercises (hula hoop jumps, arm circles, wall pushes, leg and arm stretches, running or jumping in place, jumping jacks, yoga poses, sit ups, and chair or toe raises) during the day right before an academic task was presented. The results show a significant decrease in the exhibition of aggressive behaviors across all three participants as the average number of aggressive behaviors observed decreased to 1.3 a day. Two of the three participants' behaviors demonstrated maintenance effects after the intervention phase was complete: one participant went three days without a problem behavior while another had only one behavior incident across a five-day span. The results of this study demonstrate the impacting effect of antecedent exercise (high-probability tasks) on the aggressive behaviors of students with emotional and behavior disorders.

Latency to Task Initiation and Academic Achievement

Although the concern of task completion is prevalent for students with emotional and behavioral disorders (Lee, Lylo, Vostal, & Hua, 2012; Lee, Belfiore, Scheeler, Hua, & Smith, 2004), the difficulty of initial task initiation is also of concern (Sutherland, Alter, and Gunter, 2003). Students with EBD are typically behind in academics and need every minute of current classroom instructional time and activity engagement possible. If students exhibit increased latency when requested to begin tasks, they then have less time to engage with the lesson content. Further, because of this decreased time engaged, teachers may have difficulty accurately assessing a student's academic needs. Issues with

latency translate into overall compromised task completion and achievement rates (Cancio, West, & Young, 2004).

In an effort to increase student compliance and decrease latency to initiate tasks during transitions, Ardoin, Martens, and Wolfe (2003) used a multi-element design to investigate high-probability tasks and the resulting behavioral outcomes of three second grade students identified with specific behavioral concerns. Behaviors such as pushing the chair to table, walking to the carpet, sitting in an assigned spot, and walking back to the assigned desk after calendar time was complete were observed. During the baseline condition, where only low-probability tasks in the form of normal daily commands or directives were given, the students were only compliant an average of less than 30% of the time and demonstrated a latency of 20 seconds or more to task initiations. During the intervention phase, the teacher delivered three high-probability tasks (touch your nose, clap your hands, jump up and down) prior to delivering the non-preferred transition directive. During this condition, compliance rates increased to an average of 87% across the three participants. Latency to initiation of the non-preferred directive decreased to 7.4s across participants. Maintenance data show that two students' compliance levels remained above 85%, with one participant sustaining at 100% compliance and less than 4s response latency.

In a similar study, Vostal and Lee (2011) investigated the use of high-probability tasks during reading fluency instruction and assessment to measure the latency to task initiation and reading performance of three middle school students with EBD. They used a multi-element design that integrated passages which reflected the independent reading level, modified to two grades below, of each student into the daily oral fluency reading

passage probes. The normal probes were on grade level, and the students exhibited reading deficit levels that were significantly below their same-age peers. All materials were about the same topic, The Great Depression, and this topic had been labeled “boring” by the participants. The dependent variable measurement was defined as the time in between the oral reading of the last word in a paragraph and the beginning oral reading of the first word in the following sentence. Oral Reading Fluency was also measured using Words Correct Per Minute (WCPM). The presentations of high and low-probability tasks were counterbalanced to avoid the same type of passage presentation three times in a row.

The results of the study concluded that all participants exhibited a shorter latency to reading the 5th grade passage when the 3rd grade passage was presented first. The speed of initiation increased by 21%, 19% and 38% for each respective participant. The mean latencies to initiate the 3rd grade reading decreased back to baseline levels when the 5th grade passage was presented first. Each participant also had greater fluency with the 3rd grade passages during the traditional condition, and this momentum carried over into the initial passage segment of the 5th grade task. All participants indicated a preference for the intervention passages when given the choice. These results suggest that the presentation of high-probability tasks prior to low-probability tasks decreased the latency to task initiation, which could promote greater acquisition and fluency of academic tasks that would typically be avoided by some students.

Lee, Belfiore, Scheeler, Hua and Smith (2004) also investigated the integration of high-probability tasks on the math academic task completion of four elementary students diagnosed with behavioral and learning disabilities in a self-contained class: the students

had past histories of non-compliance during academic tasks, especially during mathematics instruction. To identify the specific high and low-probability tasks, the classroom teacher created a list of math problems, single and multi-digit, that resulted in a display of noncompliant or other undesirable behaviors. All students selected the one-digit worksheet so this was chosen for the high-probability task. An alternating treatments design was used to determine the effects of three different intervention presentations on the latency to task initiation to the low-probability math problems after only solving baseline/low-probability problems initially (a): Low-probability problems plus tokens (b), high-probability problem given before low-probability problem (c), and a combination of both (b + c). Latency was defined as the time in between the completion of one low-*p* problem and the start of the next low-*p* problem.

The results implied a decrease in latency when other interventions were used in conjunction with low-probability tasks. Three out of four students' latencies decreased when low-probability tasks were accompanied by tokens. Reductions of 12%, 16% and 19% were observed for each respective student. Both conditions that included high-probability tasks (traditional high-*p* and high-*p* plus tokens) produced greater results than those that utilizing only low-probability tasks (low-*p* and low-*p* plus tokens). During the high-probability and high-probability with token conditions, significant latency decreases were observed across students: 31% and 37%, 50% and 55%, 27% and 33%, and 47% and 41%. Generally, three out of four students performed better when the high-probability tasks were supplemented with tokens with decreases of 8.6%, 10%, and 7.5% observed. The results of this study support the prior investigation's results indicating that high-probability tasks are an effective intervention to use on the latent academic

behaviors of individuals with EBD, especially when the preferred requests are combined with a reinforcer.

In a study conducted by Belfiore, Lee, Scheeler, and Klein (2002), a high-probability task strategy was implemented to decrease the latency behaviors of two upper elementary school students diagnosed with learning, behavioral, and emotional disorders. Latency was defined as the time in between the completion of one problem and the initiation of the following task. The specific high and low-probability instructions were determined during a preference assessment and consisted of single and multiple digit problems presented separately on worksheets. The results of this assessment identified single digit problems as the high-probability task and multiple digit problems as low-probability for both students.

The study consisted of a baseline condition in which low-probability problems were presented in isolation, followed by two subsequent intervention phases. First, a traditional high-probability phase occurred in which students were given a stack of 10 low-preference problems (identical to baseline) with the addition of a series of high-probability problems directly preceding each presentation. The second intervention condition was an escape from demand paired with high-probability instructions. Because math was identified as aversive, this intervention utilized negative reinforcement and the quicker students completed problems, the sooner an opportunity would occur to escape. During this phase, students were again given a stack of 10 problems that mimicked the traditional high-probability condition. But in this condition every other card contained a problem with a dashed line through it, signaling that students could skip it.

During the initial baseline phase, the latencies were 6.9 seconds and 8.7 seconds, respectively. After the introduction of the two high-probability phases, latencies decreased for both participants. During the traditional high-probability phase, specific latencies diminished to 5.5 seconds and 5.9 seconds and when escape was introduced, the latencies further decreased slightly to 5.15 seconds and 6.76 seconds which was an increase from the previous phase, but still less than baseline. After the intervention was removed, latency increased back to baseline levels. With the reintroduction of interventions, the latencies again decreased for both participants. Only minimal differences were observed between the two intervention conditions. These results support other findings that demonstrate the same effect of high-probability tasks on latent behaviors of individuals with emotional, behavioral or learning disabilities.

High-probability tasks were also investigated on the latent behavior of two preschool students observed to exhibit noncompliance when academic instructional tasks were introduced (Lee, et al., 2006). Similar to previous studies, a preference assessment was first conducted to determine specific high-*p* and low-*p* tasks. The results of the preference assessment showed basic tracing tasks to be preferred and counting activities to be non-preferred. A multi-element design was utilized to record student behavior throughout the experiment. For all phases, latency was defined as the time in between the completion of the first task and the start of the following instruction, respectively.

The first (A) phase (latency L-L) was considered baseline and involved both students and the implementation of only low-probability tasks. The second condition and first latency phase (H-L) consisted of a presentation of a high-probability task directly before the introduction of a low-probability task. The third condition, second latency

phase, (L-H) was similar to the prior except latency was measured from the conclusion of the low-probability task to the initiation of the high-probability instruction. During the baseline phase, both participants' latencies to task initiations were 4.6 seconds and 5.9 seconds, individually. When the high-*p* intervention preceded the low-probability task, the latencies marginally increased to 5.7 seconds and 6.8 seconds. After the completion of the low-probability problems, student mean latencies demonstrated 5.2 seconds and 8.0 seconds. These results showed support for high-probability tasks as effective interventions, but the researchers determined that further investigation was needed.

To satisfy the inquiry, Lee, et al., (2006) further investigated the use of high-probability tasks in classroom settings with the addition of reinforcers to hopefully strengthen the effects of the intervention. Two fifth grade students who received special education services for learning and behavioral disorders participated in the study. These students had been observed to not initiate and remain engaged in seatwork. The researchers followed their previous model as they began with a preference assessment to determine the specific high-*p* and low-*p* requests for this investigation. The preference assessment identified the single-digit problems as high-probability and the multi-digit as low-probability.

This investigation used an alternating treatments design to assess the effects of additional incentives on student responding after high-*p* and low-*p* instructions, low-*p* and high-*p* instructions, followed by the same phases with additional reinforcement. Throughout the first condition, high-probability (HP), the participants were given a worksheet specifically composed of four low-probability problems with three high-*p* problems printed directly before the low-probability instruction. The following condition,

high-*p* with added incentives (HP +) mimicked the prior condition with the exception of an appearance of a small check-box after each low-preference problem on the worksheet: three high-probability tasks preceded each low-probability problem. After students completed the trial, the participants could trade in the completed boxes for prizes. Data gathered during this experiment supported information collected from the first. During the first condition (H-L), the participants had an average latency of 1.46s and 1.83s, respectively. When the phase was altered (L-H), the latency increased to 2.85s and 3.85s. When incentives were added, the latencies decreased to 2.85 seconds and 3.34 seconds (L-H), and 1.89 seconds and 2.89 seconds (H-L), respectively. These latencies were marginally greater than the traditional phases, and the authors suspected that the high-probability tasks produced a behavioral momentum effect with compliant responding. This further supports prior research involving students with emotional, behavioral, or learning disabilities.

Compliance

No matter the age, setting, or needed support level of a student, compliance is an issue consistently observed in classrooms. The goal of every teacher is to engage students in presented activities where they will learn, retain, and apply new skills taught (Walker, Ramsey, & Gresham, 2004). It is difficult for students, especially those with emotional and behavioral disorders, to fully engage in a lesson when they do not comply with given directives: this directly impedes their potential success (Cooper & Jacobs, 2011). Students with EBD are often several grade levels behind their same-age peers in academic areas, and this deficit frequently externalizes in the form of non-compliance when tasks are presented (Maag & Anderson, 2006). Non-compliant behaviors can range

from putting one's head on the desk, walking out of the classroom, pushing materials off the desk, yelling, throwing objects, or becoming verbally aggressive (Wehby, Lane, & Falk, 2003). Non-compliance can function in one of two ways for the student. It can result in peer attention, which detracts from the lesson presentation, or it can result in escape or removal from the task (Cooper, Heron, & Heward, 2020). Both of these functions results in the student, who is already likely to be behind in the presented academic skill, missing more instruction. Finding ways to promote compliance is tremendously important.

Wilder, Majdalany, Sturkie, and Smeltz (2015) assessed the use of programmed reinforcement paired with high-probability and low-probability tasks on the compliant behaviors of two preschool boys whose consistent refusal to complete a directive impeded daily instruction, especially when that directive involved giving up a preferred toy or item. A paired-choice stimulus preference assessment was administered to determine preferred edible items and the level of preference each item represented. High and low-probability tasks were chosen based on prior classroom observations. During the reversal design sequence, compliance was determined to be the completion of the given task within 10 seconds of the verbal direction and 2 seconds during the high-probability phases due to the quick progression of presentation.

The baseline phase (A) consisted of presentations of low-probability instructions once every three minutes: if compliance was observed, the student received pre-access to a preferred toy two minutes before the succeeding trial. A high-probability plus reinforcement phase (B) followed which involved the presentation of three high-*p* requests directly preceding each low-probability instruction. If compliance was observed

with the high-probability task, the second choice edible reinforcer was delivered and if compliance with the low-*p* instruction was observed, the first preference edible was given. During the third phase (C), high-probability tasks without reinforcement mimicked the prior high-*p* phase except no edible reinforcer was delivered contingent on the exhibition of compliant behavior after a high-probability task. The edible was available only after compliance occurred after a low-*p* task presentation. Verbal praise was not delivered during any phase of this experiment and there were no programmed consequences for noncompliance.

The results of this study suggest that high-probability tasks are most effective when paired with programmed reinforcement. During baseline, participants complied with 2% and 3% of instructions. After the implementation of high-probability tasks and programmed reinforcement, the compliance rates increased to 87% and 94%. After the programmed reinforcement was removed, neither of the participants demonstrated any compliance as 0% of instructions produced the desired behavior. This study supports prior findings in that it suggests the use of high-probability tasks is an effective support for students with behavioral needs, and is especially productive when in a combined treatment package.

After the conclusion of the prior study and to extend Mace, Mauro, Boyajian, & Eckert (1997), Wilder, Majdalany, Sturkie, and Smeltz (2015) wanted to further investigate the effects of reinforcement and high-probability tasks on the compliant behavior of two young boys who exhibited noncompliance when low-probability instructions were presented. Specifically, this study utilized verbal praise as the lower

quality reinforcer in lieu of edibles, as the prior study implemented. The same two students, mentioned in the above investigation, also participated in this study.

The conditions and preference and reinforcer assessment in this investigation mimicked the arrangement of the aforementioned. During this preference assessment, however, five social praise statements were delivered contingent on compliance with high-*p* instructions for each participant. A second preference assessment that used edibles and verbals was then conducted to compare relative preferences to edible and verbal stimuli. During this evaluation, the relative reinforcing value of each stimuli was identified.

A reversal design was used to investigate the compliant behaviors of the participants. During all the phases, noncompliance did not produce a consequence and an edible was given when the participant was compliant after a low-probability task was presented. During baseline (A), low-probability tasks were presented and compliance resulted in an edible. After the implementation of high-probability tasks with praise, (B), three high-*p* requests were presented, followed by a low-probability instruction, and an enthusiastic verbal statement after compliance was voiced. Any compliance with the low-*p* instruction resulted in an edible reinforcer. The third phase (C), high-*p* without praise was identical to the prior (B) phase except that praise was withheld if compliance was demonstrated after the presentation of the high-probability task. The final phase (D) copied the high-probability with praise phase except that the prior level-two edible reinforcer was delivered accompanied by verbal praise. This final phase was added because the prior phases did not increase compliance.

The results of this study are consistent with Mace, Mauro, Boyajian, & Eckert's (1997) findings that the quality of reinforcement given for compliance with high-probability tasks had collateral effects on the compliance of low-probability tasks. Neither participant complied with instructions during the baseline or programmed social reinforcement phase. During the high-*p* without programmed reinforcement phase, one participant demonstrated compliance in 5% of the trials, while the other student exhibited 0% compliance. When the final phase was implemented, which included an edible reinforcer for compliance to both high-*p* and low-*p* tasks, one participant complied on 83% of trials and the other demonstrated compliance during 62% of trials. The combined results from these two studies suggest that reinforcers paired with high-probability tasks may increase compliance to low-probability instructions, but reinforcer quality may affect the improved results.

In an effort to further investigate the effects of high-probability tasks on the compliance and responding behavior of one preschool student, Normand, Kestner, and Jessel (2010) used a reversal design and a multiple-stimulus without replacement preference assessment. The study participant had exhibited a long history with noncompliance when new instructional items were introduced and when a preferred item or activity was removed. For this study, compliance was defined as "the participant initiating the response specified by the instruction within 10s of the instruction being delivered." Prior to baseline, the classroom teacher selected five high- and low-probability instructions and responses (10 total.)

The reversal design consisted of a high-*p* instructional analysis, high-*p* sequence plus low-*p* instruction, high-*p* instructions without low-*p* stimuli, and was completed by

high-*p* instructions with low-*p* stimuli. Non-compliance did not result in any delivered consequences. The high-probability instructional analysis confirmed the previously selected high-*p* instructions were accurate. These instructions were “touch your nose,” “clap your hands,” “touch your ears,” “give me a high five,” and “pat your tummy.” Following this analysis, the researcher delivered three high-probability instructions in a rapid progression, followed by praise. After the participant exhibited responding and compliance to the requests, a low-*p* instruction was delivered (high-*p* sequence plus low-*p* instruction.) Immediate responding and compliance to this instruction resulted in verbal praise. If compliance was not exhibited after the presentation of a high-*p* request, the instructional sequence was terminated. During the high-*p* instructions without low-*p* stimuli condition, the experimenters arranged a phase where high-*p* instructions were delivered when the low-*p* stimuli (toy box) were not present and low-*p* instructions were not delivered.

The presence of the stimuli was the most notable feature and difference in the previous two conditions, and the resulting effects needed investigation. Due to this integrated phase insertion, five solo high-*p* instructions were delivered without the presence of the low-*p* stimuli. The final intervention phase utilized high-*p* instructions with low-*p* stimuli to assess the impact and influence of associated low-*p* stimuli on responding and compliance during high-*p* instructional presentations. The toy box (low-probability) was present during this condition, but the low-*p* instruction was not delivered. The five high-*p* instructions were delivered with a 60s (approximate) separation.

The results suggest that the low-probability stimuli (toy box) had a direct suppressive and aversive effect on the compliance and responding of the young participant. During the initial high-probability instructional sequence, 100% of the directives were successfully completed, but when the low-probability tasks were introduced during the following phase, only 20% of directives were completed. Responding increased back to 80% after the low-*p* stimuli were removed and high-*p* tasks remained. Once the high-probability tasks were again presented without other stimuli, responding increased back to 100%. The findings of this study support several prior investigations that sought to display and demonstrate the effectiveness of high-probability tasks on responding behavior of individuals with emotional or behavioral disorders.

In a similar study, Belfiore, Basile, and Lee (2008) investigated the effects of high and low-probability commands on the compliant behaviors of an elementary age student with severe problem behaviors: this student attended math class in a general education setting. Compliance was defined as the completion of a given task or question within 7s of presentation or request. A withdrawal design was used to compare the baseline condition, where only low-*p* commands were delivered, to the intervention condition, which included the delivery of 3 to 5 high-*p* requests prior to low-*p* tasks, immediate teacher praise, and ignoring of non-compliant behavior.

A return to baseline, re-introduction of intervention phase, and maintenance occurred throughout the investigation. During the baseline phase, low-probability requests produced student compliance less than 13% of the time. The intervention phase produced a mean compliance rate of 78%. After the high-*p* requests and praise were removed, compliance rates decreased to 17%. Once the intervention was re-introduced,

compliance increased to 85%, and increased again to 90% when observed 7 days after the completion of the intervention. The resulting data extended prior findings about high-*p* tasks in small and large class settings. Prior to this study, high-probability tasks had been implemented in small class settings during transitional periods. This study took place in a diverse general education environment and utilized the classroom teacher as the primary intervention provider.

Summary of Findings

Overall, this review found numerous studies that suggest high-probability tasks to be effective at changing the behaviors of individuals with emotional and behavioral disorders or significant behavioral discrepancies. High-probability tasks are a part of a larger collection of treatments and antecedent interventions that have been most widely used with individuals with moderate and severe disabilities. After these interventions were proven effective with other populations, it was eventually transferred to groups with larger amounts of prerequisite skill, including students with EBD. Through the years, several literature reviews have been conducted to examine the effects of antecedent interventions across populations, but none have solely concentrated on high-probability tasks as its own intervention for individuals with EBD. In general, high-probability tasks have been utilized as an intervention across settings, participants, target behaviors and treatment packages and have been consistently successful in modifying behavior.

In response to the first question regarding the specific target behaviors impacted by this intervention, the results show that academic and behavioral progress has resulted after the implementation of this strategy. The rate of task completion increased for math, writing, and reading prompts as a result of this intervention. Students completed the same

instructional task as prior, but at a significantly higher rate. Similarly, when exercise was identified as a preferred or high-probability activity for students who exhibited challenging behaviors during transitions, the intervention was found to be associated with a decrease in aggressive behaviors. Latency was one of the most affected behaviors as six of the 13 selected studies focused on this target. Specifically, latency to task initiation of high-probability tasks following other high-probability tasks and latency to low-preference tasks as a result of high-probability instructions were assessed. Tasks such as writing, reading, and math were all targeted in the various investigations. In the selected research, latency to task initiation decreased for all participants. The second largest body of selected research was compliance as it accounted for four of 13 studies. Compliance during academic, specific non-preferred activities, and transitions were all measured. The rates of compliance increased for all participants after the introduction of this intervention. This intervention has been proven effective with several target behaviors.

The second research question regarding the types of investigative models used for the various studies was answered with the identification of six various single subject research designs. The multiple-baseline design was used to investigate task completion and aggression. A multi-element design investigated the effects of high-probability tasks on the latent behavior of participants. Latency was also explored with an alternating treatment design and a multi-element design. Compliance was tested using a reversal and withdrawal design. All of the designs were utilized in a classroom setting.

The third research question sought to determine the intervention's overall effectiveness when implemented and if the treatment produced the intended results. All studies reviewed reported a functional relation between the introduction of high-

probability tasks and the observed behavioral results. Particular effects were observed on other high-probability tasks as well as low-probability tasks. Student choice and teacher input was utilized in each study during initial interviews and preference assessments. Two specific studies suggested the use of high-probability tasks in a treatment package (paired with programmed reinforcement) could produce greater effects.

Further Considerations

There are several further significant factors that should be considered in future research and intervention with high-probability tasks. First, most reviewed studies utilized teachers in the preference assessment portion of the design, but did not utilize their instruction during the baseline and intervention phases: a clinician or researcher implemented the strategy with the students. To further explore the applicability of use of this intervention across various types of classrooms, an increase in classroom teacher involvement warrants investigation. Also, most selected studies employed this intervention during controlled presentation times outside of the normal classroom time. Increased research on the administration of high-probability tasks during inclusionary instruction with whole-class involvement would promote the extension of this intervention into more classrooms.

Thirdly, only three studies in this review reported generalization or maintenance data after the intervention was complete. This information is important for practitioners who work with students who receive instruction in combined-type classroom settings or in resource/pull out environments. Furthermore, no study included specific procedural steps for fading this intervention after the target responding criterion had been achieved and only one specifically addressed fading in the methods section at all. Future

investigation into these procedures is important for students who reach mastery criterion after the introduction of this intervention to continue promoting future success.

Conclusion

High-probability tasks, a type of antecedent intervention, are an effective treatment for many populations, especially individuals with emotional and behavioral disorders or significant behavioral discrepancies. Many behaviors and target skills can be impacted and various treatment designs can be implemented with this intervention. Although abundant amounts of research have been conducted in the area of antecedent interventions, less focus has been given to high-probability tasks specifically, and even less when used specifically with the EBD population. When research has been conducted in this area, the trials have been controlled presentations in a classroom, but not during typical instructional time.

Antecedent Interventions and Application

The applicability, flexibility, and positivity of antecedent interventions supports the shift in mindset that is present in today's educators in the behavior support field in general. Students who benefit most from high-yield practices have also experienced some of the most negative interactions in school settings. Students diagnosed with EBD enter classrooms with long behavioral histories of noncompliance with directives. The use of positive and proactive strategies, like antecedent interventions, occasion more opportunities for successful behavioral sequences and promote more success for each student. Thus, the interventions identified as "antecedent" have been characterized across the literature as effective at changing the behavior of individuals with various disabilities who receive instructional support in diverse classroom settings and can be implemented

with fidelity by numerous types of providers- teachers, paraprofessionals, and therapists alike (Park & Scott, 2009).

Assorted antecedent interventions can be observed in many public schools today. For example, Sugai and Horner (2002) described antecedent principles, with both planning and implementation, in the Positive Behavior Intervention Support model that is widely used throughout school systems. In this program, data are used to make informed decisions about interventions before they are selected and implemented, goals, objectives, and resources are analyzed prior to utilization to ensure that the outcomes expected are realistic, and interventions are put in place to prevent undesirable behaviors from occurring. In contrast, small-scale implementations of antecedent interventions have been seen across research and implementation as well. One of the most common antecedent interventions, teacher greetings, was investigated by Allday and Pakurar (2007). This simple and unobtrusive intervention was found to have powerful effects on the on-task behaviors of the students in the classroom.

High-probability Tasks as Antecedent Interventions

Finding effective and unobtrusive ways to increase productivity and decrease problem behaviors of students with EBD, in all settings, has been a challenge for many teachers and researchers (Sutherland, Alder, & Gunter, 2003). To achieve success, students with EBD need constant and consistent feedback, ample opportunities to respond (OTRs,) explicit instruction, concise expectations, and opportunities to self-monitor. Intensive classroom interventions often require multiple people, countless resources, and rigorous training to effectively implement the chosen strategy with fidelity. Public

education school districts often cite “lack of staffing” as one of the most pressing issues their administrations face (Simpson, 2004).

One specific type of antecedent intervention, behavior momentum via the use of high-probability (high-*p*) tasks, has been demonstrated to be especially effective at promoting behavior change in individuals with disabilities (Clinton and Clees, 2015). This intervention consists of a series of highly preferred tasks in which the student is likely to engage successfully, creating momentum for the completion of subsequent lower-preference (low-*p*) activities (Kern, Choutka, & Sokol, 2002). To determine what the high-*p* and low-*p* tasks are for an individual, a preference assessment and data analysis of present level of performance must be completed as part of intervention planning. A defining characteristic of all high-probability studies is the integration of student and caregiver input and choice on the tasks used for the research and treatment (Radley & Dart, 2015). That is, students and families can have input when designing treatment packages that support behavior change, as opposed to being told what strategies are best.

One type of high-probability request frequently cited in the literature is the easy academic task. In this case the teacher determines what academic tasks are easiest or most reinforcing for the student and provides a series of such requests prior to a low-*p* request. Another type of high-*p* request involves preferred conversations, or conversations that are highly reinforcing for the student. This strategy employs conversations based on favorite student topics as a way to build momentum toward completion of a non-preferred task or directive. Conversation topics are pre-determined through the use of a questionnaire or survey, and the teacher begins the high-*p* interaction

directly prior to the presentation of a low-*p* task. This is an applicable modification to a high-probability task as these candid conversations occur in classrooms throughout the day. Both when implemented alone and when paired with other interventions, several studies have investigated the effects of these strategies on the academic task completion, noncompliant behavior, latency to task initiation, responding, and time on task of students with EBD or other behavioral needs.

From the review of the research, high-probability tasks appear to be effective at changing target behaviors in a myriad of categories across settings and participants. This strategy is effective when used in isolation, and can be included in intervention packages when paired with reinforcers. In order to fully understand the value and efficacy of high-probability tasks and to promote application in special education and general education classrooms, the current study will evaluate the effect of this intervention on the most frequently reported misbehavior of students with EBD in comprehensive school programs: failure to complete tasks. Students exhibit this misbehavior in small and large classrooms, transitional hallway times, and common areas such as the cafeteria, bus, and gymnasium. Students with EBD are also served in a variety of environments. It is important to investigate the effectiveness of high-probability tasks in the diverse settings students learn in each day.

Importance of Effective Use

The importance of effective interventions increases when students have observed behavioral difficulties and receive instruction in a mixture of settings including resource and general education. When students are in a self-contained special education classroom for all core content, they have consistent opportunities to respond, immediate corrective

behavioral feedback, and specially designed behavioral instruction implemented in partnership with high-yield academic strategies. One of the reasons students receive instruction in this type of setting is to promote growth in academics while also providing comprehensive behavioral support from one consistent and specialized individual.

For students who attend general education classes and/or resource classes, they may experience as many as seven teachers in one day. It is even more important that they participate in learning opportunities that include high-yield, effective, positive, and unobtrusive strategies. There are many students who have transitioned out of a more restrictive environment, like a self-contained classroom, who do not continue to progress due to the difference of instructional delivery, pacing, schedules of reinforcers, and types of strategies used in the classroom. High-probability tasks fit the need of the students who need the supports and strategies who are served in less restrictive environments.

The research selected for this review is supportive of the use of high-probability tasks with students with EBD or behavioral discrepancies and involves various designs and target behaviors. This intervention has been utilized with many populations and in various realms of treatments: this strategy is not confined to strict use in educational settings. As research continues to identify optimal implementations for specific populations, families, practitioners, teachers, and clinicians can continue implementing this procedure to improve the academic and behavioral lives of individuals with EBD in inclusive settings and beyond.

Literature Gaps Present Today

To address these gaps, various antecedent interventions have been implemented on both large and small scales in numerous districts, schools, and classrooms (Carr, et al.,

2002). Kern, Choutka, and Sokol (2002) described antecedent interventions simply as a “divergence from consequentially-based procedures.”

A unique extension of these studies that was not considered in any of the reviewed research would be to explore the idea of using preferred conversations as high-probability tasks. For example, before beginning a low-probability classroom task, the teacher would talk with the student about a preferred topic. This conversation would serve as momentum to promote compliance in beginning the task, a decrease in latency, and overall task completion rates. A preference assessment would be conducted to determine the preferred conversation topics. In general, gaps are particularly present when using antecedent-based, positive procedures with students diagnosed with emotional behavior disorders.

CHAPTER III

METHODS

Lack of teacher preparation, inconsistent support from administration, and district and state curricular and pacing mandates lead special educators to require strategies that are appropriate for classroom use, easy to implement, and applicable for behavioral and academic supports alike. Students who have behavioral needs also have academic deficits, and strategies that can support both are beneficial to student progress and invaluable to a teacher's toolkit. In addition, the behavioral benefits may also produce collateral academic achievement. This study sought to investigate a strategy that initially targeted maladaptive behavior, but was also likely produce progress in the academic domain.

Because of the identified gaps present such as limited use of antecedent and positive strategies with students with behavioral needs as well as non- diversified types of high-probability tasks, this study sought to investigate the following questions:

- 1) Is there a functional relation between the delivery of high-probability tasks during the independent task portion of math workshop and the academic task completion rates of middle school students who are eligible for special education services under the categorical label of emotional and behavioral disorders?
- 2) Does type of high-probability task given (easily attainable math problems vs. questions about non-academic interests) make a difference in terms of the effect on academic

task completion rates of middle school students during independent work times who are eligible for special education services under the categorical label of emotional and behavioral disorders?

3) What are teacher and student perceptions as to the value of high-probability tasks as a strategy in a resource classroom for students who are eligible for special education services under the categorical label of emotional and behavioral disorders?

Participants and Setting

This section provides details on the student participants involved in this study, the settings in which the study took place, and the materials that were used.

Participants

Three male middle school students participated. To protect confidentiality, pseudonyms are used for names of each. One student was in 6th grade (Simon, 12-years old) and the other two students were in 8th grade (Donte and Jonathan, both 13-years old). These students were referred by their school's special education coordinator due to observed difficulties in the area of task completion and the need for significant support in their current educational placement. All three students had Individualized Education Plans (IEPs) and received services for a behavioral discrepancy under the disability category of Emotional and Behavioral Disorder (EBD). Each student had an IEP goal focused specifically on task completion of non-preferred tasks, and none had exceeded or met this goal at any time during their learning experiences over the past three years. Current progress monitoring data analyzed from the previous and current year indicated that all students completed an average of 20% of non-preferred tasks or less across all subject areas. All three students received ELA, Math, and Social Skills instruction in a

resource classroom. These students participated in general education for Science, Social Studies, and Related Arts. At their current school, they were all on a comprehensive team, which means they transitioned with general education peers throughout the day.

The three students attended a rural public school in Kentucky that housed 450 students in grades 6, 7, and 8. According to the staff website, 35 teachers instructed a class, and the administrator roles were filled by one principal, an assistant principal, and an academic instructional coach. There was one resource special education class with a certified teacher and a classroom instructional assistant. According to a school comprehensive improvement plan, 53% of students were coded as free and reduced lunch, which is lower than the state average of 62.2%. In terms of demographics, 84.3% of students were White, 7.2% of students were Hispanic, and 3.8% of students were two or more races. At the time of this review, only 6.4% of students had documented behavior incidents. The school was described by parents and students via wall posters as “inviting,” “welcoming,” and “supportive.” An area of focus for this school year was that all adults should be “visible” to students during transitions and entrance procedures in the classroom, according to daily staff announcement reminders.

The three selected students had behavioral needs that were supported with special education programming. During the last calendar school year, the three students had 22 (Donte), 28 (Jonathan), and 40 incidents recorded (Simon). The incidents reported mainly involved leaving class without permission, excessive noise, fighting/striking, profanity/vulgarity, and disruptions during learning. An analysis of the behavioral incidents and their Functional Behavior Assessments (FBAs) suggested that the presentation of non-preferred academic tasks and directives as a consistent antecedent

noted by classroom teachers. All three students were also recommended by either their special education teacher of record or another general education teacher on their team for more restrictive placement. Further, all three students began their continuum of services in the co-teaching arena, but as a result of behavior needs, were determined more appropriate for part-day resource support.

Not only did these students have observed behavior needs they also had academic concerns. Over the last school year alone, these students missed 45 hours of class time collectively as a result of out of school suspension, in school suspension, and time talking with the assistant principal due to behavior. All three students had academic goals on their IEPs in the areas of reading, writing, and math as well as their accompanying task completion/on task and behavioral goals and all three have shown academic deficiencies throughout their time in school.

According to the most recent district assessment results, all three students perform well below grade level in math and reading, with scores at or below 202. One student, Simon, was in the 16th percentile, and the other two, Jonathan and Donte, were in the 1st percentile. This result places all at the “spring 3rd grade” level. Reported reading scores were higher, but still below grade level with all between 202-206. Jonathan earned a score of 202 and Donte a score of 204, placing them at the 4th grade level. Simon received a score of 206, placing him at the 5th grade level. In the most recent six-week progress report, all students received a B or higher in English Language Arts, but grades were more discrepant in Math. Simon received an A, while Jonathan and Donte earned Cs. All students’ behavioral conduct grades were NI (needs improvement) for 75% of classes or greater for each grading period last school year and all have consistently earned

Novices in each Kentucky Performance Rating for Educational Progress (KPREP) subsection (reading, writing, math, science, and social studies).

Each student received grade level reading, writing, and mathematics instruction in a workshop style format. The lessons began with a warm-up, followed by direct instruction, one on one targeted instruction, and concluded with an independent performance task. Cognitive assessments performed by a school psychologist during initial and re-evaluation testing indicated that all three students had a normal IQ and did not present with academic discrepancies that supported the further diagnosis of a Specific Learning Disability. Quarterly progress reports, parent conference notes, IEP data, and teacher observations indicated that specific observed behaviors continued to impede the learning of themselves or others, especially in math class, and had a direct effect on the amount of work completed in class.

Two of the three students also had a previous FBA and Behavior Intervention Plan (BIP) in their service programming. The results of the assessment, for the two participants, indicated the function of their off-task behaviors to be maintained by escape from non-preferred academic tasks. Behaviors exhibited during math independent work time included “talking,” “laying head down,” “work refusal for periods of time greater than 50% of the work time,” and “inappropriate language.” After a broad list was provided by the classroom teacher, students were selected for this study after meeting the following criteria: a) participated in the special education program with eligibility as emotional and behavioral disability, b) received 40-80% of their instruction in a resource classroom, c) had an IEP with goals targeting task completion behaviors, d) had an FBA and BIP on file listing off-task as the target behavior and support are a or had

documented behavior logs with the target behaviors listed, and e) had parent/guardian permission to participate in the study via district release form and university permission documentation.

Setting

During one-on-one targeted instruction time in the students' special education resource classroom, the special education teacher was responsible for implementing the preference assessment for non-academic interests, all intervention sessions, and all follow up interviews. The primary instructional environment was comprised of five 6th, 7th, and 8th grade students being served under EBD (emotional behavioral disorder), OHI (other health impairment), and MMD (mild mental disability) labels, one certified classroom teacher, and a full-time paraprofessional. The students were together for most classes as they rotated as a team. During math and language arts classes, the special education teacher worked with the class as a collective group during the majority of the 40-minute class period, then worked individually with students on their specific learning goals. The classroom had various seating options including a circular table for small group instruction, individual student desks, and a high-top table. It also had a book corner for free-time reading, four computers, a SMARTBoard, dry-erase white board, and a row of cubbies for student items brought from home. There were numerous of motivational posters and visual skill prompts displayed on the walls.

Measurement Procedures

This section describes measurement procedures including pre-assessment, dependent measures, interobserver reliability, and social validity.

Pre-Assessment Procedures

A pre-assessment was used to glean preferred conversation topics and a pre-review was used to obtain each student's high and low-probability task preferences for academic tasks. The pre-assessment for conversation topics was conducted one on one via a student-teacher oral interview and consisted of 4 questions (Appendix A). This interview began with the question of, "What are your three favorite things to talk about?" Then the teacher asked the student to give three details about each topic they presented. All three students were able to communicate three preferred conversation topics along with associated details for each. Jonathan's three preferred topics were wrestling, animals, and Indiana Jones. Donte's favorites included gaming, Wild Kratz, and playing outside. Simon's topics involved basketball, baseball, and XBOX NBA 2K22.

Materials

Prior to the introduction of any materials, a choice-format preference assessment, in the form of a student interview, was given to assess personal interests/preferred conversation topics (Appendix A). During all study phases a standard digital timer was used to measure the total time of the one-on-one math session. The selected high and low-probability math skills were chosen based on each student's individual IEP math goal and previous benchmarks and targets already mastered. The students' goals focused on foundational skills needed to properly solve grade-level math problems. The low-probability problems were based on goals and targets not mastered by the student and impacted their success in correctly answering grade-level standard problems. High-probability math problems were be selected from activities and standard topic areas in

which each student has demonstrated 80% or greater task completion rates for the target skill area.

For all three students, the high-probability academic tasks selected were one-digit addition and subtraction problems. For Jonathan, the low-probability tasks selected were two-digit addition and subtraction problems with regrouping. For Donte and Simon, the low-probability problems selected were one-step equations, addition and subtraction, with a missing variable. This information was obtained through collaboration with the classroom teacher (interview) and anecdotal observation reports, progress monitoring data, behavioral check-lists associated with IEP goals and BIPs, and prior classroom activity/assessment permanent products.

Dependent Measures: Behavioral Measures and Recording Procedures

The dependent measure was the rate of completed low-probability math problems. Task completion was defined as completing all components of a given math problem using pre-taught strategies such as task analyses, formula sequences, and skill standard processes (not simply “guessing”). The rate was calculated by counting the number of low-probability math problems completed and dividing by the length of time of the session. Baseline sessions continued until data were stable across at least 5 days, and were followed by ten alternating-treatment intervention sessions. The interventions were removed for two days, then reinstated for another three days. The type of intervention was randomly chosen by placing the name of each condition on a slip of paper, and drawing one each day. The paper was replaced after it was drawn. The location of the pre-assessment, baseline, and intervention conditions was at the small group table.

Social Validity

Social validity was directly evaluated via an oral survey with teachers and students (Appendix B). Immediately after all data were gathered during the primary investigation phases, the teacher and students participated in an independent interview regarding the implementation of the strategy and the resulting progress. The goal was that the classroom teacher found this strategy easy to implement and that students enjoyed the procedure while present.

Consent and Approval

This section provides descriptions of the university and school district IRB procedures.

University of Louisville

To obtain permission from the University of Louisville, the researcher followed the IRB approval process detailed on the university's website. A written protocol, which included the title of the research study, a priori background knowledge obtained from literature, research objectives, the study design and methodology, information regarding subject recruitment methods, procedures for informed consent, research procedures, detailed information regarding procedures in place to ensure confidentiality, data analysis models, materials needed, information about research subjects to be included in the study and where the information came from, and references was created. After writing, the researcher sought two signatures by the Department Chairperson and Scholarly Merit Reviewer. No portion of the study was conducted prior to obtaining district permissions and research until IRB approval was finalized.

District Approval

The researcher also took appropriate steps to secure permission from the participating school district through the outlined protocol provided by the district's Superintendent. The researcher first reached out to the Superintendent and provided the written protocol and IRB approval notice. The Superintendent then scheduled a meeting with the researcher, Director of Special Education, Assistant Superintendent, and the Superintendent himself. During this meeting, the researcher explained the study in detail, showcased all study documents, provided examples of potential student work products, and answered any questions the committee posed. The committee then approved the study and assigned a school, classroom, and teacher to the researcher.

After the approval and assignment was provided to the researcher, and email to the building principal occurred which included the study information, timeline, and an offering to answer any questions. The principal invited the researcher to move forward and begin directly collaborating with the classroom teacher.

The researcher first solicited names from the classroom special education teacher after reviewing the inclusion criteria. The researcher made parent/guardian contact via phone to introduce herself and explained the purpose of the study. The parents/guardians were alerted as to the types of resources their child will be bringing home for approval, and the dates and scope of the study were highlighted. A consent form template from the IRB website was used which included the current study information. All signed copies were kept in a locked location once they were turned in. Since the participants were between the ages of 7 and 17, as noted by best practice outlines on the IRB website, students also completed an assent form in the classroom. The provided IRB assent template was used as a guide.

Research Design

This section describes the research design, procedures, and fidelity measures that will be applied.

Alternating Treatments Design

An alternating treatments design was used to investigate and analyze the potential differing task completion rates resulting from each type of high-probability task presented (easily attained math problems vs. preferred topics vs. no intervention) to each participant. This design provided the opportunity to investigate two different interventions and a control using the same participants, settings, and materials. Because of student learning effects that may have taken place due to exposure to math instruction during the course of the study, the effects of the intervention were measured across participants. The removal of the intervention was not needed to demonstrate a functional relationship (it was removed, however, to add an additional layer of evidence in the event of student absences for suspensions or illness when session numbers would not be the same across students), the target behavior was reversible (task completion rates), the independent variable (high-probability tasks) could be implemented sequentially which emulated the way teachers instruct on a typical school day, behavior change was easily observable as the intervention was introduced at different times in the scope of the participant learning and intervention experience, and the design was easy to implement and conceptualize (Pearson, 2016). This design also allowed for strong experimental evidence in relatively few sessions (Cooper, Heron, & Heward, 2007).

Pre-Intervention Teacher training

Prior to any introduction of interventions, the classroom special education teacher was trained on each type of antecedent request. Specifically, the participating teacher attended a 30-minute session after school hours with the researcher, via Zoom, to learn the basic characteristics and premise of high-probability task sequences. She also learned about the overall structure of the study (i.e. how high probability tasks were to be investigated during math classes in three conditions). The teacher then participated in another 30-minute after school session and learned the specific implementation including the control (no high-probability task), preferred conversation, and high-probability math task. For the high-probability math problems, the teacher was instructed how to orally ask students the easily mastered problems prior to presenting the daily foundational math task worksheet. For the preferred conversation condition, the teacher was trained to reference the student question sheet (prepared by the researcher based on student preference responses) to ask three questions about that topic. The teacher practiced each presentation method with the researcher three times and received feedback on the process during the after-school Zoom session. The researcher planned to reteach the procedures if the teacher did not implement the procedure with 100% fidelity during the session. The after-school sessions were planned to occur until this benchmark was met.

Baseline

During baseline, the teacher conducted one-to-one math time as usual (independent math practice) and delivered the normal amount of feedback, support, and praise throughout. No preferred conversations or student work modifications occurred. After the student completed the given foundational math task for the day, or after three

minutes, whichever occurred first, the student rejoined the rest of his class. This phase continued until at least five stable data points had been recorded.

Control

No intervention implemented. The control condition was identical to baseline: no preferred conversations or high-probability math tasks were provided prior to the presentation of the daily foundational math task. The teacher did not give any verbal feedback or redirection during the session, except for a prompt at the beginning to “show your work.” The teacher was prepared to redirect students if safety needs became present. Once the student had completed the daily foundational math task for the day, or after three minutes, whichever occurred first, he returned to the group for the remainder of the class.

Intervention

High-probability tasks. Prior to the presentation of the daily foundational math task, the teacher orally asked the student three easily mastered math problems (ex: one digit addition problems). No verbal feedback was provided after the answer (i.e. no correction was administered if a problem was answered incorrectly and no verbal praise was given for a correct response). These easily attainable math problems were tasks that the student had exhibited greater than 80% of task completion rates and greater than 80% accuracy in prior learning sessions. These tasks were individualized based on specific student data. The students were instructed to answer the high-*p* problems orally first, then to move forward with the remaining math practice presented in worksheet form. The daily foundational math topics were standards or skills in which the student had not yet met greater than 80% accuracy or compliance rates when answering and topics that

require mastery in order to complete grade level standards (i.e., two digit addition and subtraction). The teacher did not give any verbal feedback or redirection during the session, except for a prompt at the beginning to “show your work.” The teacher was prepared to redirect students if safety needs became present. After the daily foundational math task was completed or after three minutes, whichever occurred first, the student rejoined the rest of the class.

Preferred conversations. Directly preceding the presentation of the daily foundational math task, the teacher orally asked the student three questions about a preferred topic such as, “When was the last time the Chicago Bulls played?”, “Who did they play and where?”, and “What was the most exciting thing that happened during the game?” During the questioning sequence, the teacher did not provide any verbal response, affirmation, or praise. After the third question was answered by the student, the daily foundational math worksheet was presented. The teacher did not give any verbal feedback or redirection during the session, except for a prompt at the beginning to “show your work.” The teacher was prepared to redirect students if safety needs became present. After three minutes, or when the student had completed the task, whichever occurred first, the student rejoined the class.

The control, high-probability tasks, and preferred conversation conditions were variably implemented to reduce the likelihood of multiple treatment interference. A total of 20 sessions occurred (15 non-baseline) and each of the three conditions was be presented to each student at least two times (Forsyth & Finlay, 2001).

Interobserver Agreement and Procedural Fidelity

Interobserver agreement was assessed across 100% of the intervention sessions for all treatments by the independent observer and the researcher. This was completed by both individuals as they scored the student work samples to determine task completion rates. An acceptable level of agreement was set to be 100%. If IOA did not meet the requirements, this would indicate a discrepancy in the definition of the target behavior or the scoring criteria. If IOA fell below 100% at any point, the researcher was prepared to conduct a training session with the independent observer.

When student work samples were completed each day, the independent observer took a screen shot on an iPad, sent the product to the researcher for scoring, and also independently scored the product herself to ensure the rate was reliably calculated. Prior to the start of the sessions, the researcher and the observer met, via Zoom, to discuss the study outline and to collaborate on reliability scoring. An acceptable level of agreement was set at 100%: if data were not in agreement at any time, the researcher was prepared to schedule another session with the observer to retrain and recalibrate on the scoring procedures.

Procedural fidelity was assessed across 40% of the intervention sessions for all treatments using a checklist by the independent observer. This checklist was answered in a yes/no fashion and required the observer to determine if (during the high-*p* sessions) the teacher provided three high-probability tasks prior to starting the math sheet and if (during the preferred conversations sessions) the teacher asked the student three questions about their preferred topic. To calculate, the number of completed steps was divided by the number of total steps possible and multiplied by 100. An acceptable level of procedural fidelity was set at 95% or higher. If fidelity dropped below 95% at any time,

the researcher was prepared to retrain the teacher on the procedure. The recording document used to collect the procedural data would also be examined. If the document supported the data collection, then the teacher would be retrained on the specific steps in implementing the procedure. The teacher would receive explicit instruction, practice the steps with feedback, and once the teacher had reached 100%, the intervention would be implemented once more with the students.

Intervention data are summarized with a narrative discussion and displayed with a visual graph. IOA, and procedural fidelity data are communicated in the narrative discussion and table in the results section.

Each student participated in a minimum of five baseline condition sessions. Baseline was required to be stable before the intervention began. If a student was absent, they made up the missed baseline prior to beginning any intervention. The intervention sessions were counterbalanced and the decision regarding which intervention was introduced which day was randomly selected so that, at the end of the study, each condition was presented at least two times. There were ten treatment days in which the conditions were randomly alternated. The intervention was removed for two subsequent days, and then the treatments were again alternated for the final three days of the study.

To determine if there was a functional relation between the independent and dependent variables, the researcher examined where changes in data were present (did the data change when an intervention is introduced?) If there was an observed change, the researcher then examined the data prior to the introduction of the intervention (were the data already increasing during baseline prior to any intervention being introduced?) If the data trends were stable prior to an intervention introduction, and there was an observed

change in the opposite direction of the non-intervention data, then a functional relation was hypothesized to exist if the replication of the effect was present across sessions and students.

To further analyze, the researcher visually analyzed and compared the level of data points across treatments and participants to determine where task completion rates could be described as low, moderate, or high. The researcher investigated the data path and trend on the graphical representation and determined whether there was an increasing, decreasing, or zero trend. Finally, the entire set of data was visually reviewed numerically and graphically to determine the amount of variability in the collected set: a line of best fit was drawn through the data points. If the data points appeared close to the line, low variability was suspected. If data points lied outside and deviated from the line of best fit, then variability was speculated to be high.

To analyze overlapping data points and to quantify the visual analysis, the researcher considered the extent and degree to which overlap occurred between conditions, was the overlap expected, and did the overlap impede confidence in a functional relation. If data points were at similar levels in adjacent conditions, then confidence levels decreased. To increase confidence in the functional relation, the percentage of nonoverlapping data points (Scruggs, Mastropieri, & Casto, 1987) was calculated by dividing the non-overlapping data points by all the data points and then multiplied by 100 to derive a final percentage.

The results of all visual analyses are reported numerically and graphically along with a narrative write-up in the subsequent section. To answer the third research question regarding social validity, the classroom teacher used prompts to answer questions about

the applicability, ease, efficiency, and authenticity of the intervention. The teacher also interviewed the student participants about their experience with high-probability tasks. These results are reported in a narrative report in the subsequent section as well.

CHAPTER IV

RESULTS

This chapter contains the results of the investigation conducted to examine the following research questions:

- 1) Is there a functional relation between the delivery of high-probability tasks during the independent task portion of math workshop and the academic task completion rates of middle school students who are eligible for special education services under the categorical label of emotional and behavioral disorders?
- 2) Does type of high-probability task given (easily attainable math problems vs. questions about non-academic interests) make a difference in terms of the effect on academic task completion rates of middle school students during independent work times who are eligible for special education services under the categorical label of emotional and behavioral disorders?
- 3) What are teacher and student perceptions as to the value of high-probability tasks as a strategy in a resource classroom for students who are eligible for special education services under the categorical label of emotional and behavioral disorders?

Data

Figures 1, 2 and 3 present data for each of the three subjects across all phases of the study. These data as well as interobserver reliability rates and procedural fidelity are described below.

Figure 1

Rate of Task Completion for Simon

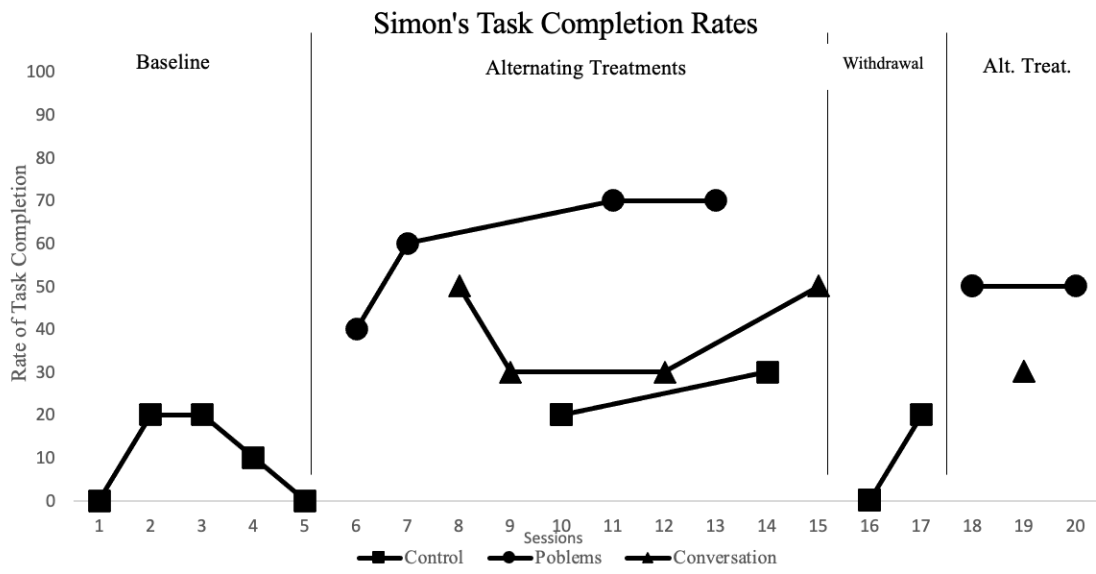


Figure 2

Rate of Task Completion for Jonathan

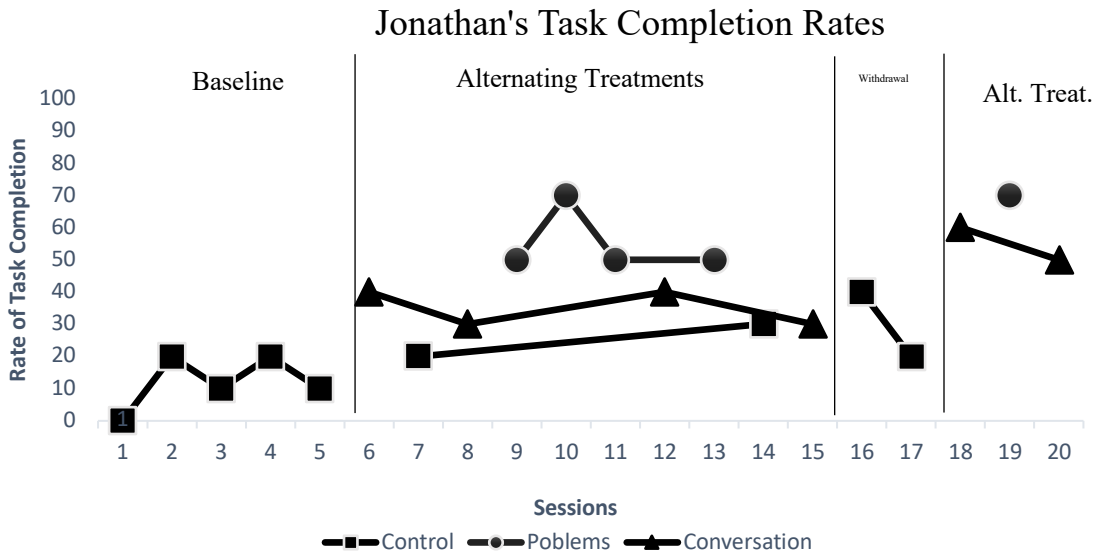
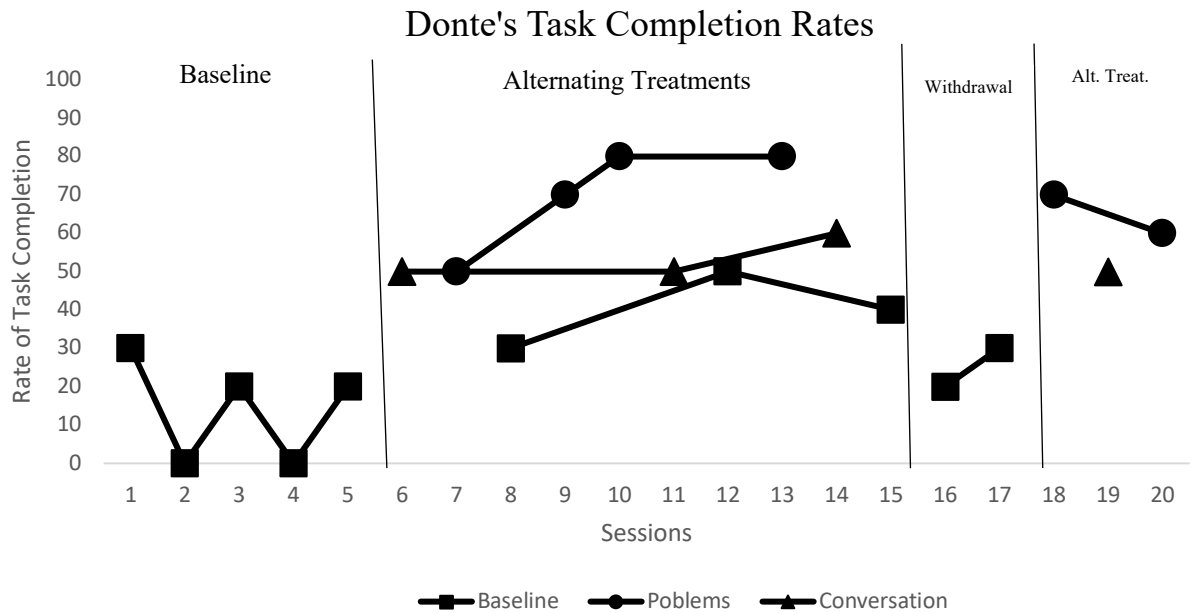


Figure 3

Rate of Task Completion for Donte



Baseline and Intervention Data

Baseline data. During baseline sessions, Simon’s average task completion rate was 10%. He completed 0% of tasks on two occasions, 10% on one occasion, and 20% on two occasions. He started and ended the baseline condition with 0% task completion. Observer notes indicate that Simon “rushed through the task” and did not use the entire 3-minute work time during any of the presentations. He did not have to be prompted or redirected during the session for any negative behavior. An analysis of the work samples suggests that Simon only attempted the exact number of problems considered “completed.” Simon had a 20% accuracy across all work samples from the baseline condition.

During baseline sessions, Jonathan’s average task completion rate was 12%. He completed 0% of tasks on one occasion, 10% on two occasions, and 20% on two

occasions. He started the baseline condition with 0% task completion and ended with 10%. Observer notes indicate that Jonathan “attempted tasks but worked quickly” and did appear to use the entire 3-minute work time. Even when he said he was done, he sat at the table with the teacher and continued working on the problems he did complete. He required at least one prompt during each session that involved a verbal redirection to “not talk to other peers.” An analysis of the work samples suggests that Jonathan only attempted the exact number of problems considered “completed,” similar to Simon (student 1). Jonathan had a 0% accuracy across all sessions in the baseline condition.

During baseline sessions, Donte’s average task completion rate was 14%. He completed 0% of tasks on two occasions, 20% on two occasions, and 30% on one occasion. He started the baseline condition with 30% task completion and ended with 20%. Observer notes indicate that Donte “rushed through and wrote something on each problem given.” He did not use the 3-minute work time during any session. His longest work time was 45 seconds, and his average work time was 25 seconds. As soon as he was complete, he left the work area and returned to his seat. He required an average of three prompts during each session that involved a verbal redirection to either “sit in your seat,” or “stop talking to peers.” An analysis of the work samples suggests that Donte was able to accurately complete some of the tasks as he had the highest accuracy of all three students at 40%. His writing can only be described as “scribbling” and he appeared to rush through the entirety of the prompt.

High-probability tasks as easy math problems. Simon received easy to achieve math problems in four of the sessions during the initial alternating treatment condition. His easy problems consisted of one step addition and subtraction problems like $3+2=5$

and $7-3=4$. His resulting task completion rates when low-probability problems were presented ranged from 40% to 70% and averaged 60%. Simon's task completion rates incrementally increased during this phase and then leveled off at the conclusion of these sessions.

Jonathan received easy to achieve math problems in four of the sessions during the initial alternating treatment condition. His easy problems also consisted of one step addition and subtraction problems. His resulting task completion rates when low-probability problems were presented ranged from 50% to 70% and averaged 55%. Jonathan's task completion rates were consistent during this phase with one jump during the second installation of this intervention.

Donte received easy to achieve math problems in four of the sessions during the initial alternating treatment condition. His easy problems consisted of one step addition and subtraction problems similar to the other two participants. His resulting task completion rates when low-probability problems were presented ranged from 50% to 80% and averaged 70%. Donte's task completion rates incrementally increased during this phase and then leveled off at the conclusion of these sessions.

High-probability tasks as preferred conversation questions. Simon participated in four sessions during the initial alternating intervention phase where he received preferred conversation questions prior to engaging in low-probability math problems. His task completion rates ranged from 30% to 50% completion and averaged 40% across these four sessions. He began and ended with 50% task completion with a decrease for the median two sessions.

Jonathan also participated in four sessions during the initial alternating intervention phase where he received preferred conversation questions prior to engaging in low-probability math problems. His task completion rates ranged from 30% to 40% completion and he averaged 35% across these four sessions. He began with 40% and ended with 30% task completion and the median two sessions alternated between 30% and 40% as well.

Donte participated in three sessions during the initial alternating intervention phase where he received preferred conversation questions prior to engaging in low-probability math problems. His task completion rates ranged from 50% to 60% completion and he averaged 53% across these three sessions. He began with 50% completion and ended with 60% completion: his task completion rates increased across the three sessions.

Control during alternating treatments. During the alternating treatments phase, Simon had two sessions of control (no high-probability task administered prior to presenting the low-probability task). He completed 20% and 30% of tasks respectively, which averaged 25%. Similarly, Jonathan also participated in two control sessions during the alternating treatments phase. He completed 20% and 30% of tasks, which averaged 25%. Without the introduction of the high-probability task, Donte completed 30%, 50%, and 40% of given tasks during his three opportunities. This averaged a mean task completion rate of 40%.

Withdrawal. All three subjects next participated in two consecutive sessions without receiving a high-probability task before the low-probability math problems were presented. Across these two days Simon completed an average of 10% of tasks (0% and

20%), Jonathan completed an average of 30% of tasks (40% and 20%), and Donte completed an average of 25% of tasks across these two days (20% and 30%).

Intervention reinstatement. To close out the sessions, all three subjects participated in three additional workshop times where both the conversation and easy problems as high-probability tasks were alternated. For Simon, two of his sessions included the use of easy to complete problems and the resulting task completion rates were both 50%. One session utilized the preferred topic questions and this resulted in 30% of low-probability tasks completed. With Jonathan, two of his sessions utilized easy to complete problems (70% resulting task completion rate. The other two sessions included preferred topic questions and produced task completion rates of 60% and 50% respectively. With Donte, two sessions involved easy problem administrations and one preferred topic question treatment. His resulting task completion rates were 70% (problems), 60% (problems), and 50% (preferred topic questions).

Procedural Fidelity

An independent observer assessed implementation fidelity across 40% of the total individual student sessions and the resulting data are reported in Table 1. The observer took in person data while the session occurred in the classroom. The teacher implemented the intervention with 100% accuracy across the observed sessions which included alternating patterns of no intervention (control), high-probability tasks as easy math problems, and high-probability tasks as preferred conversation questions. No re-teaching or re-training was necessary during the study as procedural fidelity data maintained at 100% each session and for each condition.

Table 1*Procedural Fidelity Data*

Date	Time (min)	Conversation	Pref.	Prob.	Control	No Rein.	Fidelity Perc.
10/18/21	2	n/a	n/a	Yes	Yes=1	100	
10/18/21	2:30	n/a	n/a	Yes	Yes=1	100	
10/19/21	3	n/a	n/a	Yes	Yes=1	100	
10/20/21	1:50	n/a	n/a	Yes	Yes=1	100	
10/20/21	3	n/a	n/a	Yes	Yes=1	100	
10/21/21	3	n/a	n/a	Yes	Yes=1	100	
10/22/21	2:10	n/a	n/a	Yes	Yes=1	100	
10/22/21	2:50	n/a	n/a	Yes	Yes=1	100	
10/25/21	3	n/a	III	n/a	Yes=1	100	
10/26/21	1:55	III	n/a	n/a	Yes=1	100	
10/27/21	3	III	n/a	n/a	Yes=1	100	
11/01/21	3	n/a	III	n/a	Yes=1	100	
11/02/21	3	n/a	III	n/a	Yes=1	100	
11/03/21	1:40	n/a	n/a	Yes	Yes=1	100	
11/03/21	1:50	n/a	n/a	Yes	Yes=1	100	
11/05/21	3	III	n/a	n/a	Yes=1	100	
11/09/21	3	n/a	III	n/a	Yes=1	100	
11/10/21	3	n/a	n/a	Yes	Yes=1	100	
11/12/21	2:40	III	n/a	n/a	Yes=1	100	
11/15/21	3	n/a	n/a	Yes	Yes=1	100	
11/23/21	2	n/a	n/a	Yes	Yes=1	100	
12/01/21	3	n/a	III	n/a	Yes=1	100	
12/01/21	2:30	n/a	n/a	Yes	Yes=1	100	
12/08/21	3	III	n/a	n/a	Yes=1	100	
						Overall Fidelity:	100

Interobserver Agreement

Interobserver agreement data were collected for 100% of work samples for each student and scored by the researcher and the independent observer. These data are reported in Table 2. Upon completion of student work samples, the teacher collected the products and stored them in a folder locked in her desk. The independent observer would first score the product upon re-entrance to the classroom, and then send a digital copy to the researcher for a second scoring. Each tabulation was reported on individual spreadsheets, and then the researcher compared both scores. The scores were in 100% agreement throughout the study and no re-teaching occurred because of the agreement.

Table 2*IOA – Reported Student Task Completion Rates from Two Independent Scorers*

Session	Student 1		Student 2		Student 3	
	Obs. 1	Obs. 2	Obs. 1	Obs. 2	Obs. 1	Obs. 2
1	0	0	0	0	30	30
2	20	20	20	20	0	0
3	20	20	10	10	20	20
4	10	10	20	20	0	0
5	0	0	10	10	20	20
6	40	40	40	40	50	50
7	60	60	20	20	50	50
8	50	50	30	30	30	30
9	30	30	50	50	70	70
10	20	20	70	70	80	80
11	70	70	50	50	50	50
12	30	30	40	40	50	50
13	70	70	50	50	80	80
14	30	30	30	30	60	60
15	50	50	30	30	40	40
16	0	0	40	40	20	20
17	20	20	20	20	30	30
18	50	50	60	60	70	70
19	30	30	70	70	50	50
20	50	50	50	50	60	50

Qualitative Reflection

After the conclusion of alternating treatment sessions, a follow-up questionnaire (Appendix B) was individually orally administered to each student by the special education teacher. The teacher also completed a survey (Appendix B). Questions included in the student questionnaire were “What did you like about one-to-one math sessions over the past few weeks, if anything?”, “Did you notice anything different? If so, explain.”, “Your teacher provided some strategies... Which strategy did you like better and why?”, and “Do you think this strategy would help you in the future and/or with other academic tasks or instructional areas?” Teacher questions included “Which condition felt more natural during the teaching sequence?”, “Which condition did you

prefer and why?”, “What do you prefer in terms of student results?” “What do you prefer in terms of ease and fluidity?” and “Would you use this intervention again? If not, why?”

Student feedback. In response to the questions, Simon reported that he liked one-to-one math sessions over the past week because he “completed them.” He noticed that he was asked “random questions.” Simon preferred the easy math questions because he “knew the answers almost all the time.” He stated that he did think this would be helpful in the future.

Jonathan included that during one-to-one math sessions, he felt like he “got more practice on math” over the past few weeks. He did not notice anything different during math sessions. Jonathan preferred when his teacher asked about things he was “interested in.” He does not think any of the strategies used would be helpful in the future.

When asked about one-to-one sessions recently, Donte replied that they “were OK.” He included that he did notice he was asked questions each day about “math and sports.” He added that this helped him take his time and try harder. Donte preferred questions about sports and when these were “asked first.” Donte also replied that “getting to talk before doing work made the day easier.”

Teacher feedback. The classroom special education teacher answered her questions via written response. She reported that the practice problems felt more natural during the teaching sequence when compared to the preferred topic questions. She felt that the practice problems elicited a “stronger response” and that the students were “more likely to consistently know the answers to these problems.” In terms of student preference, she anecdotally felt that the participants preferred the conversation questions, but for ease and fluidity, the easy problems were preferred on her part. The teacher

concluded by writing she would use these strategies again because they were “easy to use and built classroom and teacher/student community.” Additionally, she stated that she “felt students completed more work over the last few weeks than they ever have before.”

Analysis

Simon. It was evident that changes in the independent variable were associated with predictable changes in the dependent variable for Simon, especially when comparing the control sessions to the easy math problem presentations. Without any intervention, average task completion rates across all control sessions, including baseline, withdrawal, and alternating treatments control sessions, were 13%. When preferred question sessions occurred in both alternating treatment phases, average task completion rates increased to 38%. Easy to solve math problems produced the highest rate of task completion with an average of 57%.

When treatments were alternated, Simon’s task completion rates corresponded to the averages presented above. For example, after the final baseline session, easy math problems were instated, and his rates increased from 0% to 40%. When the condition changed from easy problems to preferred questions, his task completion rate increased to 50%, then dropped to 30%. Then, when no intervention was given, his task completion rates continued to decrease to 20%. Simon’s range of task completion in the control condition ranged from 0% to 30%. In the preferred conversation condition, his range reflected percentages of 30% to 50%. His highest rates of task completion, by far, were reported when easy math problems were presented prior to low-probability tasks and these percentages ranged from 40% to 70%. A functional relation existed between high-probability tasks and task completion rates for Simon. Further, easy math problems,

presented as high-probability tasks, produced higher rates of task completion when compared to preferred conversation questions.

Simon's data levels, or relationship with the vertical axis, was easily grouped by intervention into the levels of high, moderate and low. High data levels could be observed when the easy math problems were implemented, moderate levels occurred when preferred conversation questions were asked, and low data levels were reported during control sessions.

In terms of trend, Simon's baseline data represent a zero trend when visually analyzed. While higher data levels, the preferred conversations as high-probability tasks also represent a zero trend as there is not a clear uptick of performance. During the first alternating treatments condition, Simon's easy math problem task completion rates could be described as gradually increasing, but the second phase data produced lower, consistent rates, that decreased from the first implementation.

To investigate variability, a line of best fit was drawn first through the entire graphical representation, and then through the three individual conditions (control, preferred questions, and easy math problems). As a whole, the data's variability is high across the entire data set as the set represents three different implementations of antecedent tasks. Simon's individual condition data represent low variability. The data were at consistent levels for each control, preferred conversations, and easy math problems respectively.

Simon's percent of non-overlapping data points was calculated to be 82%. On three occurrences, his intervention data overlapped with baseline data (conversation and

control). On zero occasions did his easy math problem intervention data overlap with control data.

Upon analysis, student accuracy data indicated collateral effects as different conditions produced varying rates of accuracy as well as task completion. During the control sessions, Simon averaged permanent product accuracy of 20% with levels as low as 0% and as high as 30% when asked to complete low-probability tasks. During the preferred conversation question sessions, Simon was able to complete his low-probability tasks with an average accuracy of 20% with levels as low as 10% and as high as 30%. The easy math problem sessions yielded accuracy rates of 40% with levels as low as 0% and as high as 50%.

Further, while Simon's control task completion rates were lowest among all permanent product reviews, during the phase in which preferred conversations and easy math problems were also implemented as high-probability tasks, control data increased slightly: the one control data point that is the highest occurred on the last day of control implementation during the alternating treatments phase. Additionally, the other control data point during the alternating treatments phase was among the highest across all control sessions. It is not unreasonable to suspect that this could be a mild collateral effect as a result of other antecedent interventions implemented directly prior to control sessions. More data and targeted analysis would be needed to further investigate this effect.

Jonathan. Throughout the study for Jonathan, the control condition produced lower task completion rates, followed by preferred conversations, and the highest task completion rates were consistently due to the implementation of easy math problems as

high-probability tasks. During all of the control sessions, including baseline, withdrawal, and alternating treatments control sessions, task completion rates were 19% on average. When preferred question sessions occurred in both alternating treatment phases, average task completion rates increased to 42%. Easy to solve math problems produced the highest rate of task completion with an average of 58%.

During the alternating treatments sessions, Jonathan's task completion rates represented the above differing percentages. For example, after the final baseline condition, preferred conversation questions were instated, and his rates increased from 10% to 40%. When the condition changed from preferred conversation questions back to control, his task completion rate dropped 20%, then increased to 30% when preferred questions were asked. Then, when easy math problems were asked, his task completion rates increased to 50%. Jonathan's range of task completion in the control condition ranged from 0% to 40%. In the preferred conversation condition, his range reflected percentages of 30% to 60%. His highest rates of task completion, by far, were reported when easy math problems were presented prior to low-probability tasks and these percentages ranged from 50% to 70%. A functional relation existed between high-probability tasks and task completion rates for Jonathan. Further, easy math problems, presented as high-probability tasks, produced higher rates of task completion when compared to preferred conversation questions.

Jonathan's data levels could be grouped into three levels of low, moderate, and high. While there were obvious overlapping data points in each condition, the levels remained fairly consistent relative to prior implementations of the same condition. Control session data could be described as low, preferred conversation sessions appear to

show a moderate level, and easy math problems are the highest level, consistently, out of the three types of sessions in which Jonathan participated.

In terms of trend, Jonathan's baseline phase represented an increasing trend, during the alternating treatments phase it could be described as increasing, and during withdrawal it showed a decreasing trend. In general, control sessions do indicate an increase throughout the study relative to the first baseline session. Preferred conversation topics as high-probability tasks also represented an increase compared to the first implementation and final session of the condition. During the first alternating treatments phase, easy math problem task completion rates could be described as consistent and a zero trend, but the one implementation during the final phase of the study highlighted an increase in the direction of the data.

To examine variability, a line of best fit was drawn first through the entire graphical representation, and then through the three individual conditions (control, preferred questions, and easy math problems). As a whole, the data's variability is high across the entire data set as the set represents three different implementations of antecedent tasks, just as Simon's did. Jonathan's individual condition data, similar to the previous student, represent low variability. The data were at consistent levels for each control, preferred conversations, and easy math problems respectively.

Jonathan's percent of non-overlapping data points was calculated to be 82%. On four occasions, his intervention (preferred conversation) data overlapped control data and on one occasion control was actually higher than task completion rates produced by the preferred questions. Jonathan's intervention (easy math problems) data did not overlap with control data during a single session reported.

While accuracy data were not intentionally observed during sessions, after permanent products were analyzed, potential collateral effects in the form of increased accuracy were present. For Jonathan, during the control sessions, he averaged permanent product accuracy of 40% with levels as low as 20% and as high as 60% when asked to complete low-probability tasks. During the preferred conversation question sessions, he was able to complete his low-probability tasks with an average accuracy of 40% with levels as low as 10% and as high as 60%. The easy math problem sessions yielded accuracy rates of 50% with levels as low as 20% and as high as 60%.

Another collateral effect that is present is control session data increase across the life of the study: this increase also has low variability. Momentum could have occurred as a result of the perceived personal success of the student and this momentum could have transferred to sessions where high-probability tasks were not provided prior to low-probability tasks.

Donte. Similar to the other two students, Donte's task completion rates increased with intervention, especially with the introduction of the easy math tasks, and decreased when intervention was not present. Without any intervention, average task completion rates across all control sessions, including baseline, withdrawal, and alternating treatments control sessions, were 24% on average. When preferred question sessions occurred in both alternating treatment phases, average task completion rates increased to 53%. Easy to solve math problems produced the highest rate of task completion with an average of 68%.

During the alternating treatments sessions, his task completion rates related to the average percentages reported. For example, after the final baseline condition, preferred

conversation questions occurred, and his rates increased from 20% to 50%. When the condition changed from preferred questions to easy problems, his task completion rate initially stayed the same (50%) and then increased to 70% and ultimately 80%. In between the two installments of easy questions, a control session occurred and his task completion rate dropped to 30%. Donte's range of task completion in the control condition ranged from 0% to 30%. In the preferred conversation condition, his range reflected percentages of 50% to 60%. Donte's highest rates of task completion were reported when easy math problems were presented prior to low-probability tasks and these percentages ranged from 50% to 80%. A functional relation existed between high-probability tasks and task completion rates for Donte. Further, easy math problems, presented as high-probability tasks, produced higher rates of task completion when compared to preferred conversation questions.

Donte's data can also be easily separated into three distinct levels: low, moderate, and high. Control levels are described as low, preferred questions as high-probability tasks' data displayed a moderate level, and easy math questions were the highest level relatively during each phase.

Donte's baseline data trends during the initial phase slightly declined, rose during the alternating treatments phase, but again declined during the withdrawal phase. These data are higher than initial baseline rates, however. Preferred conversation task completion rates were steady throughout and can be described as a zero trend. During the first phase of alternating treatments, easy math problem task completion rates increased, but declined during the final phase.

Donte's variability across all data points was high, as evidenced by the line of best fit. These data represented three different conditions and three different antecedent implementations of high-probability tasks and control. This line first encompassed the entire graph, and then three individual lines were drawn to investigate each condition's variability (control, preferred questions, and easy math problems). Donte's individual condition data represent low variability. The data were at consistent levels for each control, preferred conversations, and easy math problems respectively.

Donte's percent of non-overlapping data was calculated to be 80%. He had three total occasions where data points overlapped with control levels. Two times included preferred questions as high-probability tasks and one time occurred after the implementation of easy math problems. The overlap with control occurred during the middle of the alternating treatments period and represents the highest baseline session recording (50%).

Donte's average accuracy was the highest across all three students. During the control sessions, he averaged permanent product accuracy of 60% with levels as low as 40% and as high as 70% when asked to complete low-probability tasks. During the preferred conversation question sessions, Donte was able to complete his low-probability tasks with an average accuracy of 70% with levels as low as 40% and as high as 80%. The easy math problem sessions yielded accuracy rates of 60% with levels as low as 50% and as high as 70%.

Similar to the other two students, Donte's highest control data point occurred during the alternating treatments condition and declined slightly, not to baseline levels, when intervention was withdrawn. This increase in control data could be described as a

collateral effect as task completion rates were higher, even when no intervention was present, after the student directly experienced perceived momentum and success in the prior session due to a high-probability task.

Conclusion

The investigation's results clearly suggest that the use of high-probability tasks prior to the introduction of low-probability tasks is effective at increasing task completion rates of students with emotional and behavioral disorders. Further, when a specific examination occurred to compare effects of two different types of high-probability tasks (questions about preferred topics and easy to accomplish math problems) it was clear that easy problems produced more favorable results. All three students completed tasks at the highest rate during the easy math problems sessions. The next highest rates occurred when preferred conversation questions were asked. Finally, the lowest rates of task completion were observed for all three students when no high-probability tasks were administered prior to the low-probability task (control).

While data for all three students was variable across all sessions, individual condition data were stable and consistent. All three student's saw an increase in their control data during the alternating treatments phase and increased accuracy was observed in two students' work samples during intervention sessions (Simon and Jonathan). Two of the three students began this study completing 0% of low-probability tasks (baseline) and all three students experienced higher rates of task completion consistently throughout the study.

Student preference was indicated to be the preferred conversation, and Donte indicated that "talking before working" helped start his day on the right path. Two

students noted that they were able to engage in conversations prior to working and one student noted he completed more math one-on-one sessions during the study. The classroom teacher suggested the easy math problems were more fluid to implement and noted student preference to be preferred conversation questions. The special education teacher included that she would use this type of intervention again because not only did it produce better academic results for students, it also helped build community. Procedural fidelity and IOA data both remained steady at 100% throughout the study.

CHAPTER V

DISCUSSION

Interpretation of Findings

The results of this study suggest that high-probability tasks (both easy math problem and preferred conversation) promote increased task completion rates among students with emotional and behavioral disorders compared to students completing low-probability tasks without any antecedent intervention. During data collection, all three students were consistent in their performance when participating in individual sessions: data were consistently lower during control, moderate when preferred conversation questions were introduced, and highest when easy math problems were provided. Additionally, the data show a clear difference between the two high-probability conditions with easy math problem being associated with higher task completion than preferred conversations.

Potential and unintentional collateral effects were observed throughout the study. First, all three student's permanent product accuracy increased when either of the two antecedent interventions was provided. In terms of problem completion accuracy, two students' accuracies were highest during the easy math problems while the other student's accuracy was highest when preferred conversation questions were implemented. For all students, the data dropped precipitously when all intervention was removed during withdrawal, demonstrating a functional relationship between high-probability intervention conditions and task completion.

Despite performance being higher in the easy math condition, when interviewed, all three students reported a preference for topic questions over easy math problems. Further, interviews revealed that participants noted at least one positive thing they from their experiences with the one-on-one sessions. These observations ranged from recalling that they got to talk about a favorite topics to the fact that they got more math work done during sessions. One student concluded that getting to engage in conversation prior to working made his day “better.” The classroom special education teacher summarized that she would use this intervention again as it was easy, applicable, and built community amongst her and the students. While student preference was preferred conversation topic questions, and she acknowledged this would be their preference, she would likely use easy math problems in the future due to the fluidity and ease they provided during the instructional sequence.

In sum, the probability of more task completion increased when easy math problems were utilized, but student preference maintained for preferred conversation questions for all three participants. Overall, high-probability tasks increased task completion rates compared to sessions where no intervention was available. A thorough discussion as to how preference verses probability impacts applicable classroom settings is provided below.

Implications for Future Application

This study yielded applicable, relevant, and beneficial information for special education classrooms and teachers who support students with behavioral needs. While minimizing problem behaviors and increasing prosocial interactions is typically a main focus in these classrooms, it is important to acquire and utilize strategies that promote

student success, build classroom community capacity, and flexibly respond to the ever-changing preferences and needs of the students.

Student Success

Student success was one of the most evident benefits of the use of high-probability tasks in the one-on-one math session setting. The students who participated in this study had experienced a history of limited success across all academic areas in school, especially in math. These students found math to be unappealing, aversive, and often demonstrated high rates of problem behaviors to avoid engaging in any activity during the sessions prior to this study. As a result, the students also produced minimal completed tasks to be scored for progress and it was difficult for the classroom teacher to have a consistent pulse on the mathematical academic needs of her students. During the study when intervention was in place, all three students experienced rates of task completion higher than any previous one-on-one math session elicited prior this year. They completed more work in sum, and the work was higher quality than typical. When asked, the three participants noted that something was different during these math sessions and one even shared that he “got more work done.” This intervention set up the environment so that students could experience academic success. These results seem very promising in terms of the likelihood of high-probability tasks being applicable in supporting these students in other academic areas, potentially generalizing to other subjects where limited achievement had been observed.

Classroom Community and Rapport

Another implication to emerge from this study is that of building classroom community and teacher/student rapport. It is not uncommon for teachers who support

students with the most extreme behaviors to have the most significant challenges when forming working relationships with their classroom community. Teachers asking students to complete work is inevitable and is a requirement in all classrooms. This interaction often leads to negative engagements that are often the beginning of larger problems that can inhibit student success for the remainder of the class or school day. One student reported he “liked talking before work time,” while another stated the conversations helped him have a better day. The classroom teacher also indicated that this strategy resulted in an increased rapport with her students. This intervention could support a strengthened classroom community as it promotes positive interactions between students and teachers.

Ease of Implementation

A concern of most teachers when new strategies are introduced is how intrusive, disruptive and time-consuming they will be on classroom routines and daily activities. Further, teachers have concerns with the degree to which an intervention will be responsive and appropriate to the needs of the students. Aside from pre-planning questions and problems that supported the students’ interests and present levels, no other materials were needed to implement high-probability as an antecedent interventions. In this study, the intervention was implemented during work sessions that typically occur in the students’ everyday learning routines. This is important because students with behavioral needs do often respond negatively to changes in routine and schedule, and this intervention posed no threat to upending the typical routine. Further, the classroom teacher had no additional preparation during the study, and during a normal classroom

day outside of this intervention, a teacher could easily ask questions and talk about topics with little time invested.

During the study, two students did experience absences due to being diagnosed with COVID-19 and suspensions incurred that resulted from significant and threatening behaviors during transitions. Being out for illness or disciplinary suspension is common in schools, especially those that support students with behavioral needs. This intervention did not rely on perfect attendance and was able to be implemented with the math task the student was ready to complete upon return.

Finally, this intervention does not require students to perform to a certain criterion or level to engage in the strategy or move to a new level like some other strategies. Like all human beings, students' performance often have high variability caused by a variety of factors. Each session and intervention implementation was independent of the prior day. High-probability tasks, as confirmed by the classroom teacher, was easy to use, responsive to student needs, and emulated (and enhanced) typical classroom interactions to promote more task completion during math.

The use of high-probability tasks as a strategy to support student task completion progress has been noted in literature previously, and this study supported previous findings. As has been noted, prior investigations studied easy questions as high-probability tasks. This study expands the knowledge base on high-probability antecedent interventions by also examining the use of preferred conversations. Both antecedent strategies promoted student success, built classroom community and rapport, and were easy to implement. The use of both high-probability math problems and conversations

could support teachers in their efforts to strengthen student skills and collaborative interactions during learning and social environments across the school day.

Implications for Future Research

Although the results of this study indicated significance with the use of high-probability tasks for students with behavioral needs, and thus supported previous research, additional future investigations are needed to further examine various intricacies that have come to light. Future research must further examine collateral effects of high-probability tasks. For example, more information about accuracy, generalization, and preferred topic questions that are more naturalistic is warranted. Further, researchers should undertake to collect data on behavioral exhibitions before, during, and after the sessions as a secondary measure of generalization or transfer across settings and contexts.

Collateral Effects: Accuracy and Generalization

Once permanent product work samples were reviewed, it became evident that not only were differential effects present in the rate of task completion for the student participants, but accuracy in responding increased as well for all three when intervention was present. Further investigation and intentional examination into this additional benefit would be important for special education teachers as students with behavioral needs often struggle not only to complete tasks, but also with finding the correct answer even after being taught the procedure and standard.

Another potential collateral effect that emerged during the study during a few sessions was that of the increase in control session task completion data when the other two interventions were alternated directly before the control session occurred. Momentum could have carried over from the previous session into the control task and

affected student performance. More information is needed on this potential advantage of strategy use as students with behavioral needs often struggle to generalize learning behaviors from day to day and from setting to setting. An intentional focus on the use of high-probability tasks to support generalization of learning behaviors could lead to additional uses of this strategy for students with behavioral needs.

Naturalistic Question Delivery

A phenomenon that arose during the qualitative review was effect versus preference for the student participants. Although preferred questions were the clear student preference, the resulting data and teacher reflection supported the use of easy math problems as the more effective of the two types of the intervention. In her review, the teacher noted that easy questions were more “fluid” to use, and this could be because teachers are used to asking academic questions from written prompts, but conversational and anecdotal community building prompts are often not pre-prescribed. A look into the effects of more naturalistic preferred questions would be useful as this is what typically happens in classrooms. Instead of the teacher asking three premade questions for the day, she could simply talk with the student about what they want to discuss prior to providing a low-probability task. Student interests change, and they likely did throughout the life of this study, and allowing the teacher to use current student preference and a resulting naturalistic conversation to promote task completion, if effective, would be applicable to daily classroom life. In addition, naturalistic conversations can be used in a more impromptu manner, with less planning and the ability to implement as opportunities randomly occur during the day.

Behavioral Coding

The students who participated in this study were all chosen because of their difficulty completing tasks, especially in math, but they also struggled to exhibit school and age-appropriate behaviors throughout the day. Anecdotally, the classroom teacher noted that behavior during sessions improved and that students completed more math than they had during one-on-one sessions in the past. A study that focuses on the behavior of the students before, during, and after the one-on-one sessions using no intervention and then high-probability tasks would shed more light on the additional effects on student behavioral exhibitions in the classroom. Often, students' behaviors and the redirections they receive guide the rest of their school day: a positive interaction can promote better days and negative interactions often lead to more undesirable behaviors and the associated consequences. Finding strategies to support additional positive behaviors across the school day would be beneficial, if effective, in supporting the comprehensive behavioral needs of students.

Study Limitations

While this study yielded positive, relevant, and potentially significant results, limitations were present which could impact broader generalization of these findings. These limitations were unavoidable due to the nature of the study, the setting, and extraneous circumstances involving illnesses and suspensions. The study took place in the assigned school and classroom allowed by the superintendent and director of special education of the district and this assignment dictated many setting elements of the study.

First, this study only involved three students and one teacher who all learned and worked at a small rural school with limited diversity. The special education population at

the assigned school was small, and only a fraction of students participated in resource classes for core content instruction. Using a single case design (alternating treatments) allows for the determination of whether a functional relationship exists, generalization to a larger population is not possible without both direct and systematic replication. The results of this study could be significantly strengthened by including more students and teachers as the data would be replicated across multiple classrooms and participants. Additionally, expanding inquiry to a larger, more diverse school could also increase applicability to more urban settings where special education students with behavioral needs are served.

Second, it is difficult for a classroom to be a completely controlled setting as other influences and variables are constantly present. Conducting a study in a classroom also presents challenges for consistency as student needs must supersede research schedules. Further, the single classroom and context limits application of results as the focus was solely on math and all participating students received instruction in a special education resource setting. Additional investigations using low-probability tasks in other academic areas and in classrooms where special and general education students are present would strengthen the case for the high-probability task strategy.

Finally, during the study, two students were absent eight and five days respectively. One student's absences were due to contracting the COVID-19 virus and the need for quarantining until symptoms were absolved. The second student was absent due to suspensions incurred for behaviors that warranted progressive discipline as the response. When students miss school it is difficult to control for learning and retention effects, but these inconsistencies were unfortunately unavoidable.

Conclusion

The results of this study support and extend prior investigations which used high-probability tasks as a strategy to increase task completion rates in students with emotional and behavioral disorders. This study further examined prior results by comparing two types of high-probability tasks (easy math problems and preferred conversation questions). This comparison yielded interesting findings as easy math problems produced higher task completion rates than preferred conversation questions, but students overwhelmingly preferred answering questions about favorite topics. All student's task completion rates increased as well as permanent product accuracy. During the study, students experienced success during one-on-one math sessions and classroom and community rapport was built between teacher and students. Upon completion of the study, the teacher reported that she would use this strategy again in the future because of the ease, fluidity, and positive effects she saw on her students during the time the study took place.

The use of high-probability tasks has been observed in literature mostly in low-incidence classrooms and elementary schools. Students with behavioral needs are often met with consequences instead of positive and proactive approaches, and the responsive strategies stifle any progress previously made. High-probability tasks occasioned positive interactions between the teacher and students and punishment did not occur as a result of non-completion of tasks. Even without consequences, student achievement improved. At a time when teacher and student connection is especially important, after school closures for COVID-19, the need for use of antecedent strategies, like high-probability tasks, is ever present. This study concluded that this strategy supported an increase in task

completion of students with emotional and behavioral disorders while also building student confidence, academic achievement, and classroom community rapport.

REFERENCES

- Adamson, R. M., & Lewis, T. J. (2017). A comparison of three opportunity-to-respond strategies on the academic engaged time among high school students who present challenging behavior. *Behavioral Disorders, 42*, 41-51.
- Allday, R. A. & Pakurar, K. (2007). Effects of teacher greetings on students on-task behavior. *Journal of Applied Behavior Analysis, 40*, 317-320.
- Allen, K. A., & Bowles, T. V. (2014). Examining the effects of brief training on the attitudes and future use of behavioral methods by teachers. *Behavioral Interventions, 29*, 62-76.
- Aloe, A. M., Amo, L. C., & Shanahan, M. E. (2014). Classroom management self-efficacy and burnout: A multivariate meta-analysis. *Educational Psychology and Foundations, 26*, 101-126.
- American Psychological Association. Coalition for Psychology in Schools and Education. (2019). Report on the teacher needs survey. Washington, DC: American Psychological Association. Center for Psychology in Schools and Education.
- Ardoin, S., Martens, B., & Wolfe, L. (2003). Using high-probability instruction sequences with fading to increase student compliance during transitions. *Journal of Applied Behavior Analysis, 32*, 339-351.
- Axelrod, M., & Zank, A. (2012). Increasing classroom compliance: Using a high-probability command sequence with noncompliant students. *Journal of Behavioral Education, 21*, 119-133.
- Baer, B. M., Wolf, M. M., & Risley, T. R. (1968). Some current dimensions of applied behavior analysis. *Journal of Applied Behavior Analysis, 1*, 91-97.
- Baker, P. H. (2005). Managing student behavior: How ready are teachers to meet the challenge?. *American Secondary Education, 33*, 51-64.
- Baker, S., Gersten, R., & Lee, D. S. (2002). A synthesis of empirical research on teaching mathematics to low-achieving students. *The Elementary School Journal, 103*, 73.

- Banda, D. R., Matuszny, R. M., & Therrien, W. J. (2009). Enhancing motivation to complete math tasks using the high-preference strategy. *Intervention in School and Clinic, 44*, 146-150.
- Baum, W. M. (1972). Choice in a continuous procedure. *Psychonomic Science, 28*, 263-265.
- Baum, W. M. (1974). On two types of deviation from the matching law: Bias and undermatching. *Journal of the Experimental Analysis of Behavior, 22*, 231-242.
- Belfiore, P. J., Basile, S. P., Lee, D. L. (2008). Using a high probability command sequence to increase classroom compliance: The role of behavioral momentum. *Journal of Behavioral Education, 17*, 160-171.
- Belfiore, P. J., Lee, D. L., Scheeler, M. C., & Klein, D. (2002). Implications of behavioral momentum and academic achievement for students with behavior disorders: Theory, application, and practice. *Psychology in the Schools, 39*, 171-179.
- Billingsley, G., Scheuermann, B., & Webber, J. (2009). A comparison of three instructional methods for teaching math skills to secondary students with emotional/behavioral disorders. *Behavioral Disorders, 35*, 4-18.
- Blackwell, A. J., & McLaughlin, T. F. (2005). Using guided notes, choral responding, and response cards to increase student performance. *International Journal of Special Education, 20*, 1-5.
- Blazar, D., & Kraft, M. (2017). Teacher and teaching effects on students' attitudes and behaviors. *Educational Evaluation and Policy Analysis, 39*, 146-170.
- Blood, E., & Neel, R. S. (2007). From FBA to implementation: A look at what is actually being delivered. *Education and Treatment of Children, 30*, 67-80.
- Boardman, A. G., Arguelles, M. E., Vaughn, S., Tejero, M., & Klinger, J. (2005). Special education teachers' views of research-based practices. *Journal of Special Education, 39*, 168-180.
- Borg, J. R., Borg, M. O., & Stranahan, H. A. (2012). Closing the achievement gap between high-poverty schools and low-poverty schools. *Research in Business and Economics Journal, 5*, 1-24.
- Bradley, R., Doolittle, J., & Bartolotta, R. (2008). Building on the data and adding to the discussion: The experiences and outcomes of students with emotional disturbance. *Journal of Behavioral Education, 17*, 4-23.

- Bradshaw, C., Koth, C., Bevans, K., Jalongo, N., & Leaf, P. (2008). The impact of school-wide positive behavioral interventions and supports (PBIS) on the organizational health of elementary schools. *School Psychology Quarterly*, *23*, 462–473.
- Bradshaw, C. P., Mitchell, M. M., & Leaf, P. J. (2010). Examining the effects of schoolwide positive behavioral interventions and supports on student outcomes. *Journal of Positive Behavior Interventions*, *12*, 133-148.
- Bradshaw, C. P., Pas, E. T., Debnam, K. J., & Johnson, S. L. (2015). A focus on implementation of positive behavioral interventions and supports (PBIS) in high schools: Associates with bullying and other indicators of school disorder. *School Psychology Review*, *44*, 480-498.
- Bradshaw, C. P., Pas, E. T., Goldweber, A., Rosenberg, M. S., & Leaf, P. J. (2012). Integrating school-wide positive behavioral interventions and supports with tier 2 coaching to student support teams: The PBISplus model. *Advances in School Mental Health Promotion*, *5*, 77-193.
- Brophy, J. (1988). Educating teachers about managing classrooms and students. *Teaching and Teacher Education*, *4*, 1–18.
- Bruhn, A. L., Lane, K. L., & Hirsch, S. E. (2013). A review of tier 2 interventions conducted within multitiered models of behavioral prevention. *Journal of Emotional and Behavioral Disorders*, *22*, 171-189.
- Cancio, E.J., & Johnson, J. W. (2013). Designing effective classwide motivation systems for students with emotional and behavioral disorders. *Preventing School Failure*, *57*, 49-57.
- Cancio, E. J., West, R. P., & Young, K. R. (2004). Improving mathematics homework completion and accuracy of students with EBD through self-management and parent participation. *Journal of Emotional and Behavioral Disorders*, *12*, 9-22.
- Cannella-Malone, H. I., Tullis, C. A., & Kazee, A. R. (2011). Using antecedent exercise to decrease challenging behavior in boys with developmental disabilities and an emotional disorder. *Journal of Positive Behavior Interventions*, *13*, 230-239.
- Carr, J. E., 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*, 4-20.
- Carr, E. G., Taylor, J. C., & Robinson, S. (1991). The effects of severe behavior problems in children on the teaching behavior of adults. *Journal of Applied Behavior Analysis*, *24*, 523-535.

- Christenson, S. L., Reschly, A. L., & Wylie, C. (Eds.). (2012). Handbook of research on student engagement. Springer Science & Business Media.
- Clinton, E., & Clees, T. J. (2015). High-preference strategies and other interspersal procedures for learners with disabilities: A review of the literature. *Journal of Special Education Apprenticeship, 4*, 1-27.
- Clonon, S. M., McDougal, J. L., Clark, K., & Davison, S. (2007). Use of office discipline referrals in school-wide decision making: A practical example. *Psychology in the Schools, 44*, 19-27.
- Clotfelter, C. T., Ladd, H. F., & Vigdor, J. L. (2006). Teacher-student matching and the assessment of teacher effectiveness. *Journal of human Resources, 41*, 778-820.
- Cook, B. G., & Odom, S. L. (2013). Evidence-based practices and implementation science in special education. *Exceptional Children, 79*, 135-144.
- Cook, S. C., Rao, K., & Collins, L. (2017). Self-monitoring interventions for students with EBD: Applying UDL research-based practice. *Beyond Behavior, 26*, 19-21.
- Cooper, J. O., Heron, T. E., & Heward, W. L. (2020). *Applied behavior analysis* (3rd ed.). Columbus, OH: Merrill Prentice Hall.
- Cooper, J., Hirn, R. G., & Scott, T. M (2015). The teacher as change agent: Considering instructional practice to prevent student failure. *Preventing School Failure, 59*, 1-4.
- Cooper, P., & Jacobs, B. (2011). *From inclusion to engagement: Helping students engage with schooling through policy and practice*. Wiley-Blackwell.
- Danaher, B. C. (1974). Theoretical foundations and clinical applications of the premack principle: A review and critique. *Behavior Therapy, 5*, 307-324.
- Davis, T. N., Machalicek, W., Scalzo, R., Kobylecky, A., Campbell, V., Pinkelman, S., Chan, J. M., & Sigafos, J. (2016). A review and treatment selection model for individuals with developmental disabilities who engaged in inappropriate sexual behavior. *Behavior Analysis in Practice, 9*, 389-402.
- Debnam, K. J., Pas, E. T., & Bradshaw, C. P. (2012). Secondary and tertiary support systems in schools implementing school-wide positive behavioral interventions and supports: A preliminary descriptive analysis. *Journal of Positive Behavior Interventions, 14*, 142-152.

- Debnam, K. J., Pas, E. T., & Bradshaw, C. P. (2013). Factors influencing staff perceptions of administrator support for tier 2 and tier 3 interventions: A multilevel perspective. *Journal of Emotional and Behavioral Disorders, 21*, 116-126.
- DeLeon, I. G., Frank, M. A., Gregory, M. K., & Allman, M. J. (2009). On the correspondence between preference assessment outcomes and progressive-ratio schedule assessments of stimulus value. *Journal of Applied Behavior Analysis, 42*, 729-733.
- Dishion, T. J., & Patterson, G. R. (2016). The development and ecology of antisocial behavior: Linking etiology, prevention, and treatment. In D. Cicchetti (Ed.), *Developmental psychology: Maladaptation and Psychopathology, 3*, 647-678. Hoboken, NJ: John Wiley & Sons, Inc.
- Dwyer, K., Rozewski, D., & Simonsen, B. (2011). A comparison of function-based replacement behaviors of escape-motivated students. *Journal of Emotional and Behavioral Disorders, 20*, 115-125.
- Edwards, S. (2015). Active learning in the middle grades. *Middle School Journal, 46*, 26-32.
- Erickson, M. J., Stage, S. A., & Nelson, R. (2006). Naturalistic study of the behavior of students with EBD referred for functional behavioral assessment. *Journal of Emotional and Behavioral Disorders, 14*, 31-40.
- Espin, C. A., & Yell, M. L. (1994). Critical indicators of effective teaching for preservice teachers: Relationship between teaching behaviors and ratings of effectiveness. *Teacher Education and Special Education, 3*, 154-169.
- Fantino, E., Squires, N., Delbruck, N., & Peterson, C. (1972). Choice behavior and the accessibility of the reinforcer. *Journal of the Experimental Analysis of Behavior, 18*, 35-43.
- Farley, C., Torres, C., Wailehua, C. T., & Cook, L. (2012). Evidence-based practices for students with emotional and behavioral disorders: Improving academic achievement. *Beyond Behavior, 21*, 37-43.
- Fefer, S., DeMagistris, J., & Shuttleton, C. (2016). Assessing adolescent praise and reward preferences for academic behavior. *Translational Issues in Psychological Science, 2*, 153-162.
- Flower, A., McKenna, J. W., & Haring, C. D. (2017). Behavior and classroom management: Are teacher preparation programs really preparing our teachers?. *Preventing School Failure: Alternative Education for Children and Youth, 61*, 163-169.

- Freeman, J., Simonsen, B., Briere, D. E., & MacSuga-Gage, A. S. (2014). Pre-service teacher training in classroom management: A review of state accreditation policy and teacher preparation programs. *Teacher Education and Special Education, 37*, 106-120.
- Froelich, J., Breuer, D., Doepfner, M., & Amonn, F. (2012). Effects of a teacher training programme on symptoms of attention deficit hyperactivity disorder. *International Journal of Special Education, 27*, 76-87.
- Gable, R. A., Hester, P. P., Rock, M. L., & Hughes, K. (2009). Back to basics: Rules, praise, ignoring, and reprimands revisited. *Intervention in School and Clinic, 44*, 195-205.
- Gable, R. A., Tonelson, S. W., Manasi, S., Park, C., & Lee, C. (2012). Importance, usage, and preparedness to implement evidence-based practices for students with emotional disabilities: A comparison on knowledge and skills of special education and general education teachers. *Education and Treatment of Children, 35*, 499-519.
- Gable, R. A., & Van Acker, R. (2000). The challenge to make schools safe: Preparing education personnel to curb student aggression and violence. *The Teacher Educator, 35*, 1-18.
- Gage, N., Scott, T. M., & Hirn, R. G., & MacSuga-Gage, A. (2018). The relationship between teachers' implementation of classroom management practices and student behavior in elementary school. *Behavioral Disorders, 43*(2), 302-315.
- Goldin, J. T. & McDaniel, S. C. (2018). Reducing discipline and safety issues: A district-wide bus-PBIS initiative. *Beyond Behavior, 27*, 99-107.
- Gresham, F. M., Elliott, S. N., Cook, C. R., Vance, M. J., & Kettler, R. (2010). Cross-informant agreement for ratings for social skill and problem behavior ratings: An investigation of the social skills improvement system-rating scales. *Psychological Assessment, 22*, 157-166.
- Gresham, F. M., Sugai, G., & Horner, R. H. (2001). Interpreting outcomes of social skills training for students with high-incidence disabilities. *Exceptional Children, 67*, 331-344.
- Gunter, P. L., Denny, R. K., Jack, S. L., Shores, R. E., & Nelson, C. M. (1993). Aversive stimuli within academic interactions between students with serious emotional disturbance and their teachers. *Behavioral Disorders, 18*, 265-274.
- Hamre, B. K., & Pianta, R. C. (2001). Early teacher-child relationships and the trajectory of children's school outcomes through eighth grade. *Child Development, 72*, 625-638.

- Hansen, B., Wills, H., & Kamps, D. (2014). Effects of aligning self-management interventions with functional behavioral assessment. *Education and Treatment of Children, 37*, 393-406.
- Haydon, T., MacSuga-Gage, A., Simonsen, B., & Hawkins, R. (2012). Opportunities to respond A key component of effective instruction. *Beyond Behavior, 22*, 23-31.
- Haydon, T., Marsicano, R., & Scott, T. M. (2013). A comparison of choral and individual responding: A review of the literature. *Preventing School Failure, 57*, 181-188.
- Herrnstein R. J. (1961). Relative and absolute strength of response as a function of frequency of reinforcement. *Journal of the Experimental Analysis of Behavior, 4*, 267-272
- Herrnstein, R. J., & Loveland, D. H. (1974). Hunger and contrast in a multiple schedule. *Journal of the Experimental Analysis of Behavior, 21*, 511-517.
- Heward, W. L., Courson, F. H., Narayan, J. S. (1989). Using choral responding to increase active student response. *Teaching Exceptional Children, 21*, 72-75.
- Hieneman, M. (2015). Positive behavior support for individuals with behavior challenges. *Behavior Analysis in Practice, 8*, 101-108.
- Hirn, R. G., & Scott, T. M. (2014). Descriptive analysis of teacher instructional practices and student engagement among adolescents with and without challenging behavior. *Education and Treatment of Children, 36*(4), 585-607.
- Horner, R. H., & Sugai, G. (2015). School-wide PBIS: An example of applied behavior analysis implemented at a scale of social importance. *Behavior Analysis in Practice, 8*, 80-85.
- Houchens, G. W., Zhang, J., Davis, K., Niu, C., Chon, K. H., & Miller, S. (2017). The impact of positive behavior interventions and supports on teachers' perceptions of teaching conditions and student achievement. *Journal of Positive Behavior Interventions, 19*, 168-179.
- Howell, M., Dounavi, K., & Storey, C. (2019). To choose or not to choose?: A systematic literature review considering the effects of antecedent and consequence choice upon on-task and problem behaviour. *Review Journal of Autism and Developmental Disorders, 6*, 63-84.
- Ivy, J. W., Meindi, J. N., Overley, E., & Robson, K. M. (2017). Token economy: A systematic review of procedural descriptions. *Behavior Modification, 41*, 708-737.

- Iwata, B. A., Wallace, M. D., Kahng, S. W., Lindberg, J. S., Roscoe, E. M., Conners, J., Hanley, G. P., Thompson, R. H., & Worsdell, A. S. (2000). Skill acquisition in the implementation of functional analysis methodology. *Journal of Applied Behavior Analysis, 33*, 181-194.
- Jaspers, K. E., Skinner, C. H., Williams, R. L., & Saecker, L. B. (2007). Effects of problem order on accuracy, preference, and choice of multiplication assignments. *The Behavior Analyst Today, 8*, 347-359.
- Jones, V. (2006). How do teachers learn to be effective classroom managers? In C. M. Evertson & C. S. Weinstein (Eds.), *Handbook of classroom management: Research, practice, and contemporary issues* (pp. 887–907). Mahwah, NJ: Lawrence Erlbaum.
- Jones, A., & Shindler, J. V. (2016). Exploring the school climate-student achievement connection: Making sense of why the first precedes the second. *Educational Leadership and Administration: Teaching and Program Development, 27*, 35-51.
- Jung, S., Sainato, D. M., & Davis, C. A. (2008). Using high-probability request sequences to increase social interactions in young children with autism. *Journal of Early Intervention, 30*, 163-187.
- Kauffman, J. M., & Landrum, T. J. (2013). *Characteristics of emotional and behavioral disorders of children and youth* (10th ed.). Pearson.
- Kearney, C. A., & Graczyk, P. (2014). A response to intervention model to promote school attendance and decrease school absenteeism. *Child & Youth Care Forum, 43*, 1-25.
- Kentucky Teacher Standards, (2020). *16 KAR 5:010*.
- Kern, L., Choutka, C. M., & Sokol, N. G. (2002). Assessment-based antecedent interventions used in natural settings to reduce challenging behavior: An analysis of the literature. *Education and Treatment of Children, 25*, 113-130.
- Kern, L., & Clemens, N. H. (2007). Antecedent strategies to promote appropriate classroom behavior. *Psychology in the Schools, 44*, 65-75.
- Kern L., Hilt, A. M., & Gresham. (2004). An evaluation of the functional behavioral assessment process with students with or at risk for emotional and behavioral disorders. *Education and Treatment of Children, 27*, 440-452.
- Kirby, J. (2017). Compassion interventions: The programs, the evidence, and implications for research and practice. *Cognitive Behavioral Therapy, 90*, 432-455.

- Knowles, C., Meng, P., & Machalicek, W. (2014). Task sequencing for students with emotional and behavioral disorders: A systematic review. *Behavior Modification, 39*, 136-166.
- Kortering, J. L., & Blackorby, J. (1992). High school dropout and students identified with behavioral disorders. *Behavioral Disorders, 18*, 24-32.
- Kostewicz, D. E., Ruhl, K. L., & Kubina, R. M., Jr. (2008). Creating classroom rules for students with emotional and behavioral disorders: A decision-making guide. *Beyond Behavior, 17*, 14-21.
- Kremer, K. P., Flower, A., Huang, J., & Vaughn, M. G. (2016). Behavior problems and children's academic achievement: A test of growth-curve models with gender and racial differences. *Children and Youth Services Review, 67*, 95-104.
- Landrum, T. J., Tankersley, M., & Kauffman, J. M. (2003). What is special about special education for students with emotional or behavioral disorders. *The Journal of Special Education, 37*, 148-156.
- Lee, D. L., Belfiore, P. J., Ferko, D., Hua, Y., Carranza, M., & Hildebrand, K. (2006). Using pre and post low-p latency to assess behavioral momentum: A preliminary investigation. *Journal of Behavioral Education, 15*, 203-214.
- Lee, D. L., Belfiore, P. J., Scheeler, M. C., Hua, Y., & Smith, R. (2004). Behavioral momentum in academics: Using embedded high-p sequences to increase academic productivity. *Psychology in Schools, 41*, 789-801.
- Lee, D. L., Lylo, B., Vostal, B., & Hua, Y. (2012). The effects of high-preference problems on the completion of nonpreferred mathematics problems. *Journal of Applied Behavior Analysis, 45*, 223-228.
- Lee, D. L., Stansbery, S., Kubina, R., & Wannarka, R. (2005). Explicit instruction with or without high-p sequences: Which is more effective to teach multiplication facts?. *Journal of Behavioral Education, 14*, 267-281.
- Lindsay, S., Proulx, M., Scott, H., & Thomson, N. (2014). Exploring teachers' strategies for including children with autism spectrum disorder in mainstream classrooms. *International Journal of Inclusive Education, 18*, 101-122.
- Luiselli, J., Putnam, R., & Sunderland, M. (2002). Longitudinal evaluation of behavior support intervention in a public middle school. *Journal of Positive Behavior Interventions, 4*, 182.
- Maag, J. W., & Anderson, J. M. (2006). Effects of Sound-Field Amplification to Increase Compliance of Students With Emotional and Behavior Disorders. *Behavioral Disorders, 31*, 378-393.

- MacDonald, V., & Speece, D. L. (2001). Making time: A teacher's report on her first year of teaching children with emotional disabilities. *The Journal of Special Education, 35*, 84-91.
- Mace, F. C., Mauro, B. C., Boyajian, A. E., & Eckert, T. L. (1997). Effects of reinforcer quality on behavioral momentum: Coordinated applied and basic research. *Journal of Applied Behavior Analysis, 30*, 1-20.
- Mace, F. C., Hock, M. L., Lalli, J.S., West, B.J., Belfiore, P., Pinter, E., & Brown, D.K. (1988). Behavioral momentum in the treatment of noncompliance. *Journal of Applied Behavior Analysis, 21*, 123-141.
- Madigan, K., Cross, R. W., Smolkowski, K., & Strycker, L. A. (2016). Association between schoolwide positive behavioural interventions and supports and academic achievement: A 9-year evaluation. *Educational Research and Evaluation, 22*, 402-421.
- Maggin, D. M., Wehby, J. H., Moore-Partin, T. C., Robertson, R., & Oliver, R. M. (2009). A comparison of the instructional context for students with behavioral issues enrolled in self-contained and general education classrooms. *Behavioral Disorders, 36*, 84-99.
- Markelz, A. M., & Taylor, J. C. (2016). Effects of teacher praise on attending behaviors and academic achievement of students with emotional and behavioral disabilities. *Journal of Special Education Apprenticeship, 5*, 1-15.
- Mason-Williams, L., Bettini, E., Peton, D., Harvey, A., Rosenberg, M., & Sindelar, P. T. (2019). Rethinking shortages in special education: Making good on the promise of an equal opportunity for students with disabilities. *Teacher Education and Special Education: The Journal of the Teacher Education Division of the Council for Exceptional Children, 43*, 45-62.
- Mastropieri, M. A., & Scruggs, T. E. (1984). Generalization: Five effective strategies. *Academic Therapy, 19*, 427-431.
- McEvoy, A., & Welker, R. (2000). Antisocial behavior, academic failure, and school climate a critical review. *Journal of Emotional and Behavioral Disorders, 8*, 130-140.48-470.
- McIntosh, K., Chard, D., Boland, J., & Horner, R.H. (2006). A Demonstration of Combined Efforts in School-Wide Academic and Behavioral Systems and Incidence of Reading and Behavior Challenges in Early Elementary Grades. *Journal of Positive Behavior Interventions, 8*, 146-154.

- McIntosh, K., Filter, K. J., Bennett, J. L., Ryan, C., & Sugai, G. (2010). Principles of sustainable prevention: Designing scale-up of school-wide positive behavior support to promote durable systems. *Psychology in the Schools, 47*, 5-21.
- McIntosh, K., Kelm, J. L., & Delabra, A. C. (2015). In search of how principals change: A qualitative study of events that help and hinder administrator support for school-wide PBIS. *Journal of Positive Behavior Interventions, 18*, 100-110.
- McIntosh, K., Mercer, S. H., Nese, R. N., & Ghemraoui, A. (2016). Identifying and predicting distinct patterns of implementation in a school-wide behavior support framework. *Prevention Science, 17*, 992-1001.
- McIntosh, K., Predy, L. K., Upreti, G., Hume, A. E., Turri, M. G., & Matthews, S. (2014). Perceptions of contextual features related to implementation and sustainability of school-wide positive behavior support. *Journal of Positive Behavior Interventions, 16*, 29-41.
- McKenna, J. W., Sollis, M., Brigham, F., & Adamson, R. (2018). The responsible inclusion of students receiving special education services for emotional disturbance: Unraveling the practice to research gap. *Behavior Modification, 43*, 587-611.
- McKenna, J. M., & White, S. R. (2018). Examining the use of police in schools: How roles may impact responses to student misconduct. *American Journal of Criminal Justice, 43*, 448-470.
- McLeskey, J., Waldron, N., & Redd, L. (2014). A case study of a highly effective, inclusive elementary school. *The Journal of Special Education, 48*, 59-70.
- Melnick, S. A., & Meister, D. G. (2008). A comparison of beginning and experienced teachers' concerns. *Educational Research Quarterly, 31*, 39-56.
- Moore, J. W., Edwards, R. P., Sterling-Turner, H. E., Riley, J., DuBard, M., & McGearge, A. (2002). Teacher acquisition of functional analysis methodology. *Journal of Applied Behavior Analysis, 35*, 73-7.
- Morgan, P. L. (2006). Increasing task engagement using preference or choice-making. *Remedial and Special Education, 27*, 176-187.
- Morgan, P. L., Farkas, G., Hillemeier, M. M., Maczuga, S. (2012). Are minority children disproportionately represented in early intervention and early childhood special education? *Educational Researcher, 41*, 339-351.
- Munro, H., & Stephenson, J. (2009). The effects of response cards on student and teacher behavior during vocabulary instruction. *Journal of Applied Behavior Analysis, 42*, 795-800.

- Nahal, S. P. (2010). Voices from the field: Perspectives of first-year teachers on the disconnect between teacher preparation programs and the realities of the classroom. *Research in Higher Education Journal*, 1-19.
- Nese, R., McIntosh, K., Nese, J., Hoselton, R., Bloom, J., Johnson, N., Richter, M., Phillips, D., & Ghemraoul, A. (2016). Predicting abandonment of school-wide positive behavioral interventions and supports. *Behavioral Disorders*, 42, 261-270.
- Nevin, J. A. (1992). An integrative model for the study of behavioral momentum. *Journal of the Experimental Analysis of Behavior*, 57, 301-316.
- Nevin, J. A., Mandell, C., & Atak, J. R. (1983). The analysis of behavioral momentum. *Journal of the Experimental Analysis of Behavior*, 39, 49-59.
- Newton, I. (1687). *Philosophiae Naturalis Principia Mathematica*.
- Noltmeyer, A., Palmer, K., James, A. G., & Weichman. (2018). School-wide positive behavioral interventions and supports (SWPBIS): A synthesis of existing research. *International Journal of School & Educational Psychology*, 7, 253-262.
- Normand, M. P., Kestner, K., & Jessel, J. (2010). An analysis of stimuli that influence compliance during the high-probability instruction sequence. *Journal of Applied Behavior Analysis*, 43, 735-738.
- Oliver, R. M., & Reschly, D. J. (2010). Special education teacher preparation in classroom Management: Implications for students with emotional and behavioral disorders. *Behavioral Disorders*, 35, 188-199.
- Park, K. L., & Scott, T. M. (2009). Antecedent-based interventions for young children at risk for emotional and behavioral disorders. *Behavioral Disorders*, 34, 196-211.
- Pas, E. T., Johnson, S. R., Debnam, K. J., Hulleman C. S., & Bradshaw, C. P. (2019). Examining the relative utility of PBIS implementation fidelity scores in relation to student outcomes. *Remedial and Special Education*, 40, 6-15.
- Pelios, L., Morren, J., Tesch, D., & Axelrod, S. (1999). The impact of functional analysis methodology on treatment choice for self-injurious and aggressive behavior. *Journal of Applied Behavior Analysis*, 32, 185-195.
- Perle, J. G. (2018). Teacher-provided positive attending to improve student behavior. *Teaching Exceptional Children*, 50, 204-212.

- Peters, C. D., Kranzler, J. H., Algina, J., Smith, S. W., & Daunic, A. P. (2014). Understanding disproportionate representation in special education by examining group differences in behavior ratings. *Psychology in the Schools, 51*, 452-465.
- Pinkelman, S. E., McIntosh, K., Rasplica, C. K., Berg, T., & Strickland-Cohen, M. K. (2015). Perceived enablers and barriers related to sustainability of school-wide positive behavioral interventions and supports. *Behavioral Disorders, 40*, 171-183.
- Pitts, L., & Dymond, S. (2012). Increasing compliance of children with autism: Effects of programmed reinforcement for high-probability requests and varied inter-instruction intervals. *Research in Autism Spectrum Disorders, 6*, 135-143
- Planer, J., DeBar, R., Progar, P., Reeve, K., & Sarokoff, R. (2018). Evaluating tasks within a high-probability request sequence in children with autism spectrum disorder. *Behavioral Interventions, 33*, 380-390.
- Plaud, J. J., & Gaither, G. A. (1996). Behavioral momentum. Implications and development from reinforcement theories. *Behavior Modification, 20*, 183-201.
- Polirstork, S. (2015). Classroom management strategies for inclusive classrooms. *Creative Education, 6*, 927-933.
- Poznanski, B., Hart, K. C., & Cramer, E. (2018). Are teachers ready? Preservice teacher knowledge of classroom management and ADHD. *School Mental Health: A Multidisciplinary Research and Practice Journal, 10*(3), 301-313.
- Premack, D. (1959). Toward empirical behavior laws: I. Positive reinforcement. *Psychological Review, 66*, 219-233.
- Premack, D. (1962). Reversibility of the reinforcement relation. *Science, 136*, 255-257.
- Prince, A. M., Yell, M. L., & Katsiyannis, A. (2018). Endrew f. V. douglas county school district: The U.S. supreme court and special education. *Intervention in School and Clinic, 53*, 321-324.
- Radley, K. & Dart, E. (2015). Antecedent strategies to promote children's and adolescents' compliances with adult requests: A review of the literature. *Clinical Child and Family Psychology Review, 19*, 39-54.
- Raines, T. C., Dever, B. V., Kamphaus, R. W., & Roach, A. T. (2012). Universal screening for behavioral and emotional risk.: A promising method for reducing disproportionate placement in special education. *Journal of Negro Education, 81*, 283-296.
- Rila, A., Estrapala, S., & Burhn, A. L. (2019). Using technology to increase opportunities to respond. *Beyond Behavior, 28*, 36-45.

- Reid, R., Gonzalez, J. E., Nordness, P. D., Trout, A., & Epstein, M. H. (2004). A meta-analysis of the academic status of students with emotional/behavioral disturbance. *The Journal of Special Education, 38*, 130-143.
- Reinke, W. M., & Herman, K. C. (2002). Creating school environments that deter antisocial behaviors in youth. *Psychology in the Schools, 39*, 549-560.
- Rollin, S. A., Subotnik, R. F., Bassford, M., & Smulson, J. (2008). Bringing psychological science to the forefront of educational policy. *Psychology in the Schools, 45*, 194-205.
- Safran, S. P., & Oswald, K. (2003). Positive behavior supports: Can schools reshape disciplinary practices?. *Exceptional Children, 69*, 361-373.
- Sayeski, K. L., Hamilton-Jones, B., Cutler, G., Earle, G. A., & Husney, L. (2019). The role of practice and feedback for developing teacher candidate's opportunities to respond expertise. *Teacher Education and Special Education: The Journal of the Teacher Education Division of the Council for Exceptional Children, 42*, 18-35.
- Scott, T. M., Anderson, C. M., & Alter, P. (2012). *Managing classroom behavior using positive behavior supports*. Upper Saddle River, NJ: Pearson.
- Scott, T. M., & Cooper, J. T. (2017). The keys to managing instruction and behavior: Considering high probability practices. *Teacher Education and Special Education, 40*, 102-113.
- Scott, T. M., & Martinek, G. (2006). Coaching positive behavior support in school settings: Tactics and data-based decision making. *Journal of Positive Behavior Interventions, 8*, 165-173.
- Scott, T. M., McIntyre, J., Liaupsin, C. J., Nelson, C. M., Conroy, M., & Payne, L. D. (2005). An examination of the relation between functional behavior assessment and selected intervention strategies with school-based teams. *Journal of Positive Behavior Interventions, 7*, 205-215.
- Scott, T. M., Nelson, C. M., & Zabala, J. (2003). Functional behavior assessment training in public schools. *Journal of Positive Behavior Interventions, 5*, 216-224.
- Scott, B. J., Vitale, M. R., & Masten, W. G. (1998). Implementing instructional adaptations for students with disabilities in inclusive classrooms: A literature review. *Remedial and Special Education, 19*, 106-119.
- Simonsen, B., & Myers, D. (2015). *Classwide positive behavior interventions and supports: A guide to proactive classroom management*. Guilford Press.

- Simonsen, B., & Sugai, G. (2013). PBIS in alternative education settings: Positive support for youth with high-risk behavior. *Education and Treatment of Children, 36*, 3-14.
- Simpson, R. L. (2004). Inclusion of students with behavior disorders in general education settings: Research and measurement issues. *Behavioral Disorders, 30*, 19-31.
- Skiba, R. J., & Rausch, M. K. (2006). *Zero Tolerance, Suspension, and Expulsion: Questions of Equity and Effectiveness*. In C. M. Evertson & C. S. Weinstein (Eds.), *Handbook of classroom management: Research practice, and contemporary issues* (p. 1063-1089). Lawrence Erlbaum Associates Publishers.
- Smith, S. W., & Gilles, D. L. (2003). Using key instructional elements to systematically promote social skill generalization for students with challenging behavior. *Intervention in School and Clinic, 39*, 30-37.
- Smith, S. W., & Travis, P. C. (2001). Conducting social competence research considering conceptual frameworks. *Behavioral Disorders, 26*, 360-369.
- Smyth, S., Reading, B. E., & McDowell, C. (2017). The impact of staff training on special educational needs professionals' attitudes toward and understanding of applied behavior analysis. *Journal of Intellectual Disabilities, 23*, 541-551.
- Snider, V. E., & Battalio, R. (2011). Application of academic design principles to social skills instruction. *Beyond Behavior, 21*, 10-19.
- Sprick, R., Knight, J., Reinke, W., & McKale, T. (2006). *Coaching classroom management: Strategies and tools for administrators and coaches*. Eugene, OR: Pacific Northwest Publishing.
- Stainback, S., Stainback, W., East, K., & Sapon-Shevin, M. (1994). A commentary on inclusion and the development of a positive self-identity by people with disabilities. *Exceptional Children, 60*, 486-490.
- Edmund T. Emmer & Laura M. Stough (2001) Classroom management: A critical part of educational psychology, with Implications for teacher education. *Educational Psychologist, 36*, 103-112.
- Sugai, G., & Horner, R. H. (2002). Introduction to the special series on positive behavior support in schools. *Journal of Emotional and Behavioral Disorders, 10*, 130-135.
- Sugai, G. M., Horner, R. H., Dunlap, G., Hieneman, M., Lewis, T. J., Nelson, C. M., Scott, T., Liaupsin, C., Sailor, W., Turnbull, A. P., Turnbull III, H. R., Wicham, D., Wilcox, B., Ruef, M. (1999). Applying positive behavior support and functional behavioral assessments in schools. *Journal of Positive Behavior Interventions, 2*, 131-143.

- 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., III, Wickham, D., Reuf, M., & Wilcox, B. (2000). Applying positive behavioral support and functional behavioral assessment in schools. *Journal of Positive Behavioral Interventions, 2*, 131– 143.
- Sutherland, K. S., Alder, N., & Gunter, P. (2003). The effect of varying rates of opportunities to respond to academic requests on the classroom behavior of students with ebd. *Journal of Emotional and Behavioral Disorders, 11*, 239-248.
- Sutton, N. P., Grace, R. C., McLean, A. P., & Baum, W. M. (2008). Comparing the generalized matching law and contingency discriminability model as accounts of concurrent schedule performance using residual meta-analysis. *Behavioural Processes, 78*, 224-230.
- Tsouloupas, C. N., Carson, R. L., Matthews, R., Grawitch, M. J., & Barber, L. K. (2010). Exploring the association between teachers' perceived student misbehaviour and emotional exhaustion: The importance of teacher efficacy beliefs and emotion regulation. *Educational Psychology, 30*, 173-189.
- Tyler-Wood, T., Cereijo, M. V. P., & Pemberton, J. B. (2010). Comparison of discipline referrals for students with emotional/behavioral disorders under differing instructional arrangements. *Preventing School Failure: Alternative Education for Children and Youth, 48*, 30-33.
- Vostal, B. R., & Lee., D. L. (2011). Behavioral momentum during a continuous reading task: An exploratory study. *Journal of Behavioral Education, 20*, 163-181.
- Wagner, M. M., Cameto, R., & Newman, L. (2003). Youth with disabilities: A changing population. A report of findings from the National Longitudinal Transition Study (NLTS) and the National Longitudinal Transition Study-2 (NLTS2). Menlo Park, CA: SRI International.
- Wagner, M. M., Marder, C., Bkackorby, J., Cameto, R., Newman, L., Levine, P., et al., The achievements of youth with disabilities during secondary school. Menlo Park, CA: SRI International.
- Walker, J. D., & Barry, C. (2017). Improving outcomes of behavioral intervention plans. *Intervention in School and Clinic, 53*, 12-18.
- Walker, H. M., Ramsey, E., & Gresham, F. M. (2004). *Antisocial behavior in school: Evidence-based practices*. Belmont, CA: Wadsworth.
- Wehby, J. H., & Hollahan, M. S. (2000). Effects of high-probability requests on the latency to initiate academic tasks. *Journal of Applied Behavior Analysis, 33*, 259-262.

- Wehby, J. H., Lane, K. L., & Falk, K. B. (2003). Academic instruction for students with emotional and behavioral disorders. *Journal of Emotional and Behavioral Disorders, 11*, 194–197.
- Westling, D. L. (2010). Teachers and challenging behavior: Knowledge, views and practices. *Remedial and Special Education, 31*, 48-63.
- Whitaker, S. D. (2000). What do first-year special education teachers need: Implications for induction programs. *Teaching Exceptional Children, 33*, 28-36.
- Whitney, T., Cooper, J. T., & Lingo, A. S. (2015). Providing student opportunities to respond in reading and mathematics: A look across grade levels. *Preventing School Failure, 59*, 14-21.
- Wilder, D. A., Majdalany, L., Sturkie, L., & Smeltz, L. (2015). Further evaluation of the high-probability instructional sequence with and without programmed reinforcement. *Journal of Applied Behavior Analysis, 48*, 511-522.
- Wiliford, A. P., Maier, M. F., Downer, J. T., Pianta, R. C., & Howes, C. (2013). Understanding how children's engagement and teachers' interactions combine to predict school readiness. *Journal of Applied Developmental Psychology, 34*, 299-309.
- Wolfensberger, W., Nirje, B., Olshansky, S., Perske, R., & Roos, P. (1972). *The principle of normalization in human services*. Toronto, Canada: National Institute on Mental Retardation.
- Wright, J. P., Morgan, M. A., Coyne, M. A., Beaver, K. M., & Barnes, J. C. (2014). Prior problem behavior accounts for the racial gap in school suspensions. *Journal of Criminal Justice, 42*, 257-266.
- Yorke, I., White, P., Weston, A., Rafla, M., Charman, T., & Simonoff, E. (2018). The associated between emotional and behavioral problems in children with autism spectrum disorder and psychological distress in their parents: A systematic review and meta-analysis. *Journal of Autism and Developmental Disorders, 48*, 3393-341.

APPENDICES

Appendix A

Student Interview: Preferred Conversation Topics

1) What are three of your favorite things to talk about?

-
-
-

2) Topic one: Give me some details about (the topic).

3) Topic two: Give me some details about (the topic).

4) Topic three: Give me some details about (the topic).

Appendix B
Follow-Up Questionnaire

Teacher:

1. Which condition felt more natural during the teaching sequence?
2. Which condition did you prefer and why?
3. What do you prefer in terms of student results?
4. What do you prefer in terms of ease and fluidity?
5. Would you use this intervention again? If not, why?

Student:

1. What did you like about one-to-one math sessions over the past few weeks, if anything?
2. Did you notice anything different? If so, what?
3. Your teacher provided some strategies to help complete your math work including preferred conversations and math tasks you have easily completed in the past. You also had some time when you were asked to start your daily math task without any strategy. What did you like better and why?
4. Do you think this strategy would help you in the future and/or with other academic tasks or instructional areas?

CURRICULUM VITA

Amy R. Hall

amy.hall2@jefferson.kyschools.us

Contact Information

Office Email: amy.hall2@jefferson.kyschools.us

Office Number: (502) 485-8307

Educational Background

Murray State University

Murray, KY

Degree: Bachelor of Science

Area: Special Education LBD, P-12/Elementary Education

Date of Completion: May 2012

Cumulative GPA: 3.65/4.00

University of Louisville

Louisville, KY

Degree: Master of Education

Area: Teacher Leadership Specializing in Learning and Behavioral Disorders

Date of Completion: December 2015

Cumulative GPA: 4.00/4.00

University of Louisville

Louisville, KY

Certificate: Autism and Applied Behavior Analysis

Date of Completion: December 2016

Cumulative GPA: 4.00/4.00

University of Louisville

Louisville, KY

Degree: Ph.D.

Area: Curriculum and Instruction

Specialization: Emotional and Behavioral Disorders

Dissertation Defended: February 10, 2022

Certifications

Kentucky Teaching Certificate

Primary-5th Elementary Education

Primary-12th Special Education

Teacher Leader Endorsement
Learning and Behavior Disorders

Teacher Consultant in Programs for Exceptional Children

Professional Employment History

**August 2019- Noe Middle School, Jefferson County Public Schools
Louisville, KY**

- Current** ECE Implementation Coach
- Chair all Admission and Release Committee meetings for Noe Middle School
 - Ensure all provided services and special education documents are compliant with federal and state laws and regulations
 - Support teachers in their planning, programming, and delivering of high quality instruction
 - Collaborate with related service providers and other associated therapists to ensure quality and comprehensive student support
 - Advocate for ECE students while serving on school-based administration team

August 2015- Academy @ Shawnee, Jefferson County Public Schools Louisville, KY

May 2019

ECE Teacher

- Taught all content area subjects and a reading and math intervention class in a self-contained, collaborative, and/or resource
- Served as liaison for the middle school faculty and work closely with each teacher on collaborative strategies, implementation of evidence-based practices, data collection and behavior management as lead ECE teacher
- Designed innovative and engaging lessons that are applicable to each student's present levels and overall goals
- Implemented daily self-management strategies for students to monitor behavior and progress
- Engaged in leadership opportunities and teams that promote the growth of classroom, school and global communities

**August 2012- Saint Agnes Parish School, Archdiocese of Louisville
Louisville, KY**

May 2015

Kindergarten Teacher

- Partnered with parents, collaborative teachers and students to design and implement instructional plans that supported each child's individual needs from the beginning of kindergarten until transition into first grade
- Presented at faculty and levels meetings on the topics of classroom behavioral assessment and modifications and served as a consultant for teachers implementing these plans

- Worked one-on-one with students, in various grades, who were working to meet grade-level benchmarks and goals
- Used research-based methods and *Best Practices* as guides for decisions, planning and teaching

Professional Development Delivered

Jefferson County Public Schools:

PBIS Basics, 2020

Technoversity, ECE and Technology, 2019

ECEIT Teacher Conference, 10 High-Yield Classroom Practices for All Learners, 2019

Round Table Conference, Beyond the Basics for Technology Integration for All Learners, 2019

IEP Implementation, Data Collection and Manifestation Determinations, Embedded PD, 2016-2017

Embedding Behavioral Strategies in All Lessons, 2016-2017

The Basics of ECE, 2016-2017

Behavior Basics, 2016-2017 Opening Teacher In-service

Positive Intervention Behavior Supports, 2016-2017

Classroom Management and Behavior- The “Why” and “How,” 2015-2016 Gold Day

How To Read IEP’s, 2015-2016

The Framework of Self-Management, 2015-2016

Archdiocese of Louisville:

Kindergarten Cohort: Transitions and Support for Students with Special Needs, 2012-2013

Designing Authentic Lessons for Students with Special Needs, 2012-2013 and 2013-2014

Common Core ELA Overview, 2013-2014

ELA Textbook Support and Implementation, 2013-2014

Behavioral Assessment and Intervention, 2013-2014 and 2014-2015

Professional Presentations

KYABA Spring 2015- Poster Presentation on DRL and Self-Monitoring

Leadership and Community Involvement

Jefferson County Public Schools:

PBIS Lead, 2016-2017, 2017-2018, 2018-2019, 2019-2020, 2020-Present

Teacher Mentor, 2016-2017, 2016-2017, 2017-2018, 2018-2019

KTIP Mentor, 2016-2017, 2017-2018

Instructional Leadership Team (ILT,) 2015-2016, 2016-2017, 2017-2018, 2018-2019

Site Based Decision Making Council, Teacher Representative, 2017-2018, 2018-2019

PLC Lead, 2015-2016, 2016-2017

HERO Behavior Management Team Lead (Middle School) 2016-2017, 2017-2018, 2018-2019

PBIS Team Member, 2015-2016, 2016-2017, 2017-2018, 2018-2019, 2019-2020, 2020-current

Supervising Teacher for a Student Teacher, 2015-2016
Novice Reduction Plan Team and Data Manager, 2015-2016
Intervention Lead, 2016-2017
Co-Department Chair (ECE,) 2015-2016
Step and Dance Team Coach, 2015-2016, 2016-2017, 2017-2018
Louisville Regional Science Fair Board (LRSEF,) Member

Archdiocese of Louisville:

Primary Level's Chairperson, 2013-2014
Mentor Teacher for Long-Term Substitute, 2013-2014
Archdiocese Common Core ELA Committee Representative, 2013-2014
Archdiocese ELA Textbook Selection Committee Representative, 2013-2014
Academy of Catholic Educators School Representative, 2014-2015
Behavioral Consultation and Assessment Trainer, 2014-2015

Professional and Academic Recognitions

Karen Miller Jackson Leadership Scholarship Award (2012)
Elizabeth Bird Small Leadership and Service Award (2012)
Outstanding Senior in Learning and Behavior Disorders (2012)
College of Education Service Award, Murray State University (2012)
Outstanding Student in Learning and Behavior Disorders, University of Louisville (2015)
Outstanding Teacher Award, Academy @ Shawnee (2016)

Professional Communities and Positions Held

Behavior Analysis Society of Louisville (BASAL,) Vice-President
Kentucky Association for Behavior Analysis (KYABA,) Member
Council for Exceptional Children (CEC,) Member
National Association of Special Education Teachers (NASSET,) Member

References

Dr. Amber Jagers, *Assistant Principal*
Noe Middle School
Jefferson County Public Schools
121 W. Lee Street
Louisville, Kentucky 40208
amber.jagers@jefferson.kyschools.us
Office: (502) 485-8307

Ms. Jennifer Cave, *Principal*
Noe Middle School
Jefferson County Public Schools
121 W. Lee Street
Louisville, Kentucky 40208
jennifer.cave@jefferson.kyschools.us
Office: (502) 485-8307

Dr. Terrance Scott, *Professor*
University of Louisville
2301 S. 3rd Street
College of Education and Human Development
Louisville, Kentucky 40292
t.scott@louisville.edu
Office: (502) 852-0576

Dr. Erick Dubuque, *Professor*
University of Louisville
2301 S. 3rd Street
College of Education and Human Development
Louisville, Kentucky 40292
erick.dubuque@louisville.edu
Office: (502) 852-2633

Mrs. Julie Daly, *Principal*
Saint Agnes School
Archdiocese of Louisville
1920 Newburg Road
Louisville, KY 40205
jdaly@stagneslouisville.org
Cell: (502) 500- 6604