A precorrection study: Effects of step reduction for high school students with emotional and behavior disorders in the classroom

by

Sherry A. White

B.S., Kansas State University, 2006
M.S., Fort Hays State University, 2010

AN ABSTRACT OF A DISSERTATION

submitted in partial fulfillment of the requirements for the degree

DOCTOR OF EDUCATION

Department of Special Education, Counseling and Student Affairs
College of Education

KANSAS STATE UNIVERSITY
Manhattan, Kansas

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Abstract

A precorrection is an antecedent-based instructional approach designed to reduce problem behavior before it occurs. Colvin, Sugai, and Patching (1993) outlined seven steps as part of precorrection strategy. The purpose of this study is to determine if two of the seven steps are necessary components of the intervention package to reduce externalizing problem behaviors for students at-risk for or with an emotional behavioral disorder (EBD) in a less restrictive environment to include the general education setting and uses an alternating-treatments design to examine the outcomes in step reduction of contextual factors and reinforcement to reduce externalizing behaviors. The study participants are comprised of three high-school students identified at-risk or with EBD, who attend classes in a less restrictive classroom. The intervention results indicated that all seven-steps of a precorrection strategy to include without contextual factors and without reinforcement are not necessary to reduce externalizing behaviors. This study outlines variability of results related to specific intervention packages and academic engagement for individual students.

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Approved by:

Major Professor
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Dedication

This dissertation is dedicated to my family who believed in me every step of the way. You are my everything, without your love and support I would not be where I am today. Kevin, you are the love of my life, and I could not have accomplished this without you by my side. I know it has been and long haul between military deployments, raising a family, and working through the educational chapters of our life. Thank you for standing by my side for 25 years. I love you always. Next, a shout out to my boys, Skyler and Ethan. From Ukraine and back, you have been a blessing in my life. Your personal challenges have directly put me on the career path that I am on today. Your strength and courage to defeat the odds allowed me to grow as a person, as a mother, and as a professional. Education comes in many forms, and as Gram and Pap use to tell me, if you set your mind to something and work hard you can accomplish the goals you have set. Don't ever give up on your dreams. I love you! To my parents. What were you thinking? You packed up your life and moved half way across the country to put up with me and my endeavors. I know I don't always say it, but I love you both and really appreciate all that you have done for me and my family. You were there when I needed you most, and I am forever grateful for your love and support. Finally, to family that is no longer with us to include my father. Special thanks to my grandparents and my brother Jeff. You are greatly missed and, in many ways, have contributed to my achievements.

Chapter 1 - Introduction

This chapter provides an overview of challenges for students who exhibit problem behavior and describes evidenced-based interventions for these students. First, characteristics of students who exhibit problem behavior and service outcomes are discussed. Next, an overview of externalizing behaviors will be provided followed by legal mandates to address problem behavior. Finally, the study's rationale, purpose, and research questions will be discussed.

Overview of the Issues

Students with Problem Behavior

Perhaps the most perplexing aspect of being a classroom teacher is contending with problem behavior (Walker, Horner, Sugai, Bullis, Sprague, Bricker, & Kauffman, 1996) Gallup polls highlight problem behavior as one of the greatest challenges for public schools (Elam, Rose, & Gallup, 1996; Colvin, Sugai, Good, & Lee 1997). Problem behavior has a direct influence on the rate of crime due to negative outcomes relative to social behavior (Lewis, Colvin, & Sugai, 2000). In addition, the need to address problem behavior continues to be on the rise (OSEP Center on Positive Behavior Interventions, Sugai, Horner, Dunlap, Hieneman, Lewis, Nelson, Scott, Liaupsin, Sailor, Turnbull, 2000).

While the number of students identified under the special education category of Emotional Disturbance remains at less than 1% (U.S. Department of Education, 2007; Forness, Freeman, Paparella, Kauffman, & Walker, 2012), there are also many students that exhibit characteristics of an emotional disturbance (ED) that go unidentified. Often, these students account for more than half of the school's behavior-related incidences (Sugai, et al., 2000) leaving the responsibility of managing the behavior to the general education staff for students not identified or waiting to be identified for services (Walker & Gresham, 2013).

The behaviors of students at-risk or with an emotional behavioral disorder (EBD) are characterized by patterns of behavior typically classified as externalizing or social impairments. (Walker, Ramsey, & Gresham, 2004, p.129). This includes the characteristics described under both internalizing (i.e... depression, anxiety, physical ailments, etc.) (Lane, Oakes, Menzies, & Germer, 2013, p. 129) and externalizing behaviors (aggression, non-compliance, defiance) (Elliott, Gresham, 2013, p. 153). Although it is believed that the rate of internalizing behavior is higher than externalizing behaviors, these behaviors are more likely to go unnoticed by the classroom teacher and less likely to disrupt the learning environment (Forness, et al., 2012).

Externalizing behaviors have been referenced as behaviors that are "uncontrollable" (Kauffman, 1997, p.113) and can interfere with a student having positive academic and social outcomes. Academic skill deficits are common in students that demonstrate aggression, noncompliance, or defiance (Elliott, Gresham, 2013). Although it may be difficult to pinpoint whether the behaviors are a direct result of an academic deficit or if the academic deficit is caused by the behavior, it is important to recognize externalizing behaviors and to approach them with interventions that replace the inappropriate behavior. Nearly 20% of the students who demonstrate externalizing behaviors are disruptive in the learning environment, making it difficult for the teacher to manage (Walker & Gresham, 2013). Disruptive behavior often results in the student's refusal to work, which increases the nature of the problem, and therefore, the student may become disrespectful or lose verbal and physical control (Morris & Mather, 2008, Liaupsin, Scott, Morris, & Mather, 2008). Under these conditions, the teacher may have to temporarily stop instruction to address the problem behavior or call for administrative assistance. Office discipline referrals for these students often result in the student being removed from the classroom, suspended from school, or placed in more restrictive environments. In addition to

lost instructional time for both the teacher and the student (Morris & Mather, 2008; Scott, Jolivette, Ennis, & Hirn, 2012), a tremendous amount of time is required by administration and office staff in managing these behaviors (Morris & Mather, 2008). Furthermore, a financial strain may arise during times that schools may need to incorporate additional staff members and outside consultation supports (Walker, et al., 1996; Sugai, et al., 2000).

Essentially, frequent patterns of disruptive behavior can be detrimental to a student's well-being. In addition to the academic and social deficits, it can be difficult for the student to maintain positive peer and teacher relationships (Walker & Gresham, 2013). This makes it even more difficult for the student to achieve career and college readiness and may include dropping out of school early. Additionally, these behaviors often lead to substance abuse, unemployment, criminal acts, and the development of other mental health conditions (Walker & Gresham, 2013; Morris & Mather, 2008). Behavior disorders and mental health conditions may exist simultaneously in approximately 15% of the students with internalizing or externalizing behaviors (Forness, 2012). Furthermore, some students may be required to receive both special education and mental health services (Merikangas, Burstein, Swendsen, 2011).

The integrated mental health initiative under the Individuals with Disabilities Education Improvement Act (IDEIA) of 2004 requires schools to utilize peer-reviewed research to address the needs of students with mental health issues. Merikangas, et al., (2011) emphasize the current gaps in mental health services while noting that a large population of students demonstrate a need for mental health services; however, they often go unidentified as a recipient of such services. In addition, only two-thirds of the students identified as needing mental health services receive them (Walker & Gresham, 2013).

Providing supports to students who demonstrate problem behavior, including students identified as being at-risk or with emotional behavior disorders (EBD), places schools at the forefront of absorbing necessary financial obligations required to initiate and sustain supports for students until age requirements result in a change-of-hands to the community setting, which is most likely to be disregarded by the student beyond the school years (Walker & Gresham, 2013). Schools often find that most of their resources are directed towards supporting students who demonstrate academic and behavioral needs at the secondary and tertiary levels. Students at the secondary levels often need instructional supports, whereas students at the tertiary levels may require collaboration which may include multiple agencies such as mental health, juvenile justice, and child welfare services. This level of collaboration is known as the wrapround approach, and is designed to address the needs of both the student and their family (Walker & Sprauge, 1999) with the most intensive level of services (Eber, Sugai, Smith, & Scott, 2002). Regardless of whether students with EBD have been identified or are receiving special education services, the first direction schools should take is in the implementation of Positive Behavior Interventions and Supports (PBIS; Forness, 2012).

Positive Behavior Interventions and Supports (PBIS)

Positive Behavior Interventions and Supports (PBIS) is an approach to address academic and behavior problems through the use of a continuum of scientific practices that are evidence-based. One practice that aligns with PBIS involves a system designed with three layers, commonly known as a multi-tiered system, that address various levels of problem behavior with strategies designed to address different levels of intensity specific to each level or tier (Anello, et al., 2017; Carr, et al., 2002). Despite the complexities and conflicts faced by schools regarding inclusive practices, the implementation of Positive Behavior Interventions and Supports (PBIS), specified under the 2004 reauthorization of the Individuals with Disabilities in Education

Improvement Act (IDEA; 2004) serves as an approach that utilizes a continuum of supports across each (Dunlap, Horner, & Sugai 2009; Ennis, Schwab, & Jolivette, 2012). The design of this approach serves to be proactive and positive to prevent problems verses being reactive. Comprised of a continuum level of supports, recognizing that all students will not respond to strategies designed for most students. Specifically, Tier level 1 is a universal design that is available to all students. This level is intended to address the needs of approximately 80% - 90% of a school's student population through stellar instruction (Colvin, et al., 1997). Recognizing that at least (80%) of students demonstrating disruptive behavior, are at-risk for EBD require targeted or intensive interventions which are established within the that can be found within Tier level 2, which serves 10-15 % of a school's student population or Tier level 3 which typically address the needs at a more intensive level of 3-5% of a school's student population (Mitchell, Adamson, & McKenna, (2017). Furthermore, the IDEA (2004) mandates the use of functional behavior assessments when circumstances need to gain a better understanding of the problem behavior to identify an intervention that correlates with the function of the behavior (Dunlap, et al., 2009).

Statement of the Problem

Interventions with ineffective results are assumed to be faulty in their design or incorrectly implemented by staff (Witt, VanDerHeyden, & Gilbertson, 2004). However, it is important to look at the factors that influence an intervention to ensure all the necessary components of an intervention have been considered. Specifically, teachers must make sure that their classroom structure is implemented with consistency. Another common mistake made by teachers is a lack of instructional supports necessary for the intervention to be successful. Too often, a teacher can be quick to implement an intervention to address problem behavior without providing the same type of instruction used for academics (Scott, et al., 2012) including tier one interventions. In fact, it is crucial that teachers implement interventions for problem behavior

with effective instruction prior to implementing any component of the intervention itself. In addition, a comprehensive approach is more likely to support a positive relationship between the students and the teacher (Morris & Mather, 2008). Specifically, even in the case of non-instructional strategies, students require instructional methods that include modeling, opportunities to practice the appropriate desired behavior, data-based feedback, and reinforcement (Colvin, et al., 1997; Colvin, Sugai, and Patching, 1993; Witt, VanDerHeyden, & Gilbertson, 2004; Colvin & Sugai, 1988; Wolery, Bailey, & Sugai, 1988). Even though interventions that address these necessary components are readily available, a teacher may still lack the necessary skills to address the problem behavior. Furthermore, today's classroom teachers are faced with large class sizes, cultural diversity that is linked to prior academic experiences, and language barriers. In addition, teachers must balance whole-class instruction while tending to students who require ongoing learning supports and class disruptions that stem from problem behavior (Colvin, 2009). For teachers to meet the demands of effectively managing today's classroom, they must use practices that are preventative and yet practical to deliver.

Rationale

A precorrection is an instructional approach designed to prevent problem behavior before it occurs; therefore, it limits the amount of time a teacher needs to spend on problem behavior and allows the teacher to focus on academic instruction (Colvin, Sugai, & Patching, 1993; Kauffman, 2005). This approach is made up of three components that are credited for impacting the desired outcome when addressing problem behavior. The first component assumes that problem behaviors are learned (Colvin & Sugai, 1988). The second component recognizes that appropriate desired behaviors must be taught (Kauffman, 2005). The last component stresses the

need to apply instructional approaches to address social skill deficits (Pain, Hops, Walker, Greenwood, Fleishman, & Guild, 1982).

Furthermore, these components stem from principles that are preventative in nature with the understanding and recognition that serious problem behavior is preventable, that students identified as being at-risk are not permanently bound to the characteristics or the directional approach of this label, and that the benefits of the modeling approach have the ability to maintain student behavior in students with or without a disability (Colvin, Sugai, & Patching, 1993).

Colvin, Sugai, & Patching (1993) have identified a seven steps intervention plan. The seven steps of a precorrection strategy include the following: (1) Identifying the context and the predictable behavior, (2) Specifying expected behaviors, (3) Modifying the context, (4) Conducting behavior rehearsals, (5) Providing strong reinforcement for expected behaviors, (6) Prompting expected behaviors, and (7) Monitoring the plan.

Step 1: Identifying the Context and the Predictable Behavior. The objective in this step is to identify immediate environmental variables (event, task condition, circumstance, or other setting or antecedent stimulus) that are functionally related to the student's behavior. This can be done using formal and informal methods such as observations or functional analysis. Colvin provides an example in which predictable behaviors occur between Sally and Harry in the classroom. Harry becomes distracted in the classroom. A determination is made from assessment information that when Sally provokes Harry, the predictable behavior occurs. Once a functional relationship for the behavior is determined, the predictable behavior can be addressed.

Step 2: Specifying Expected Behaviors. The term expected behavior is used interchangeably with replacement behavior. Specifying the expected behavior involves (a) describing the behavior in observable terms (for example, "Raise your hand if you wish to

speak", (b) selecting behaviors that are incompatible with problem behavior, (for example, "wait your turn instead of interrupting."), and (c) selecting expected behaviors that are functional replacements for problem behavior, (for example, the student acquires the teachers attention by staying on task—a replacement for talking out.

Step 3: Modifying the Context. Modification of the context should be made based upon the outcomes of the functional analysis and should be as normal and unobtrusive as possible. Areas of the context that may require modifications include instructions, explanations, tasks, activities, scheduling, seating arrangements, reminders, and curriculum. For example, modifying the context to prevent Sally from disrupting Harry might include assigning her the role of taking attendance or collecting homework when she enters the classroom. Modifying the context to prevent Harry from becoming distracted by Sally could be achieved by moving Harry to a seat away from Sally.

Step 4: Conducting Behavior Rehearsals. Behavior rehearsals involve presenting the student with training on the expected behaviors just before the student enters the target context and may involve having the student recall, read, or demonstrate the expected behaviors to learn and practice the expected behaviors. For example, preventing Tommy from interrupting during group instruction might involve reviewing the expected behavior prior to the group session beginning: "Now remember, Tommy, please wait until someone is finished before you speak." Having Tommy repeat the expectation back to the teacher serves as the rehearsal of the expected behavior and increases the likelihood that Tommy will remember the expectation.

Step 5: Providing Strong Reinforcement for Expected Behaviors. This involves frequently and intermittently reinforcing the student for presenting the expected behavior over a period

of time. The goal of the reinforcer is to disrupt the competitive pattern of the old behavior and increase the pattern of the new expected behaviors. For example, a student demonstrating the expected behavior might earn extra free time or a ticket that can be exchanged for a reward.

Step 6: Prompting Expected Behaviors. The procedures for prompting the expected behaviors involve acknowledging the student immediately when the student exhibits the problem behavior. For example the teacher must say, "I appreciate the way you are putting up your hands." Within this step Colvin, Sugai, & Patching (1993) emphasize how difficult it can be for the student to perform the expected behavior that was previously practiced outside of the context and during times that the context is new. In this case, the next step is to provide the student with a reminder of the expected behavior as part of a direction in a lesson. For example, "Could someone raise his or her hand and tell me the capitol city of Australia?" Students who demonstrate this behavior should be recognized. This is blended at the same time the teacher calls on Tommy. "Tommy, I notice your hand is raised. What is the capital city of Australia?" During times that the predictable problem behavior continues, the first occurrence of the behavior should be ignored. If the student presents a second occurrence of the behavior the teacher should, present the student with a signal to indicate the presence of the behavior. For example, the teacher might raise his or her hand to serve as a model of the expected behavior. If the student presents the expected behavior, a strong reinforcement should be used. A third occurrence of the predictable inappropriate behavior requires the delivery of a warning to the student in the form of a choice that is comprised of the target behavior, a familiar consequence, and follow through. For example, "Tommy, you need to raise your hand instead of calling out, or you will need to go to the office."

Step 7: Monitoring the Plan. This step is designed around the checklist and the plan and services two distinct purposes. First, the checklist itself serves as a guide for the adult to ensure that all seven steps in the plan are followed. Second it allows the adult to collect data on the target behavior as outlined in the plan in order to determine whether the target behavior increases or decreases. In turn, this documentation provides clarity to individual teachers and teams in order to monitor the student's progress and develop or modify plans (Colvin, Sugai, & Patching, 1993).

The components of the precorrection strategy are grounded in Applied Behavioral Analysis (ABA) and align with the core principles of Positive Behavioral Interventions and Supports. Furthermore, previous studies reveal that the precorrection strategy can be effective as a multi-tiered level of support. For example, precorrection has been used to address problem behavior during school-wide periods of transition (Colvin, et al., 1997) and during morning gym (Haydon & Scott, 2008). Additionally, it has been used to address school-wide problem behaviors in whole classrooms (DePry & Sugai, 2002) and students with individual needs (Faul, Stephensky, & Simonsen, 2012). Moreover, Colvin (1988) conducted a comparison of five effective academic remediation strategies to address chronic problem behavior. The five steps of academic remediation include the following steps: (1) Identify the error pattern or misrule, (2) Identify the rule, (3) Modify examples and presentation to provide clearer focus on rule and provide less opportunity for practice of misrule, (4) Provide differential feedback so that more accurate responses are more strongly reinforced, and (5) Shape context towards target context Similarly, the five steps identified to address chronic behavior problems include: (1) Identifying functional relationships between behavior and environment, (2) Identify expected or acceptable behaviors, (3) Modify environment to allow practice of expected behaviors and remove stimuli

that are likely to occasion the inappropriate behavior, (4) Provide differential reinforcement so that direction of correct responding is reinforced, and (5) Move towards least restrictive environment program for generalization and maintenance. He was able to isolate the fact that these five strategies focus on the student's behavior without considering the ways in which the specific components of context (contingencies) impact the student's ability to demonstrate the expected replacement behavior. Furthermore, Colvin (1988) makes the argument that without addressing contextual factors the intervention package does not meet the standards for being proactive when addressing chronic problem behavior:

Step 1: **Identify the Functional Relationship Between Behavior and the Environment.** This step aligns with the academic procedure to identify the error pattern or misrule.

Step 2: Identify the Expected or Acceptable Behaviors. This step aligns with the academic procedure to identify the rule.

Step 3: Modify the Environment to Allow Practice of the Expected Behaviors and Remove Stimuli That are Likely to Occasion the Inappropriate Behavior. This step aligns with the academic rule to modify examples and the presentation to provide clearer focus on the rule and less opportunity for practice of misrule.

Step 4: Provide Differential Reinforcement So That Direction of Correct Responding is Reinforced. This step aligns with the academic procedure to provide differential feedback so that more accurate responses are more strongly reinforced.

Step 5: Move Towards Least Restrictive Environment Program for Generalization and Maintenance. This step aligns with the academic procedure to shape context towards target context, provide review, and integrate skill with other skills.

Regardless, conditions of implementing any strategy can be more difficult to deliver when the general education classroom is identified as the least restrictive environment for the student identified at-risk for or with EBD. One factor to consider is in the general education teachers' perceptions of the student demonstrating the problem behavior. Typically, general education teachers are not as tolerant to externalizing behaviors and are more likely to support the student being removed from the classroom. General education teachers often lack training to support students demonstrating problem behavior to include addressing social behavior with social emotional learning (SEL). Nevertheless, it is also important to consider the needs of the student and ensure that more good than harm is done. Finally, general education teachers will most likely require support staff to assist in addressing persistent problem behavior (Fang, 1996).

Based on these assumptions, effective implementation of an intervention in the general education classroom to reduce problem behavior for a student at-risk or with EBD must be carefully considered. Individually, the components of the precorrection strategy are identified as effective techniques that support proactive management verses reactive techniques for behavior. Recognizing that a precorrection is an effective practice that occurs right before problem behavior typically occurs, it also seems that simplicity should be considered for use in the general education classroom. Specifically, the precorrection strategy includes seven steps. It makes sense that practitioners and support staff utilize the route of least resistance and yet can make a positive impact on both the student and the general education teacher. When considering the need for contextual factors for example, teachers may be dealing with problem behavior of a student for extended periods of time and at various levels of intensity. From day-to-day, contextual factors may not be ideal due to class components, class sizes, limited scheduling options, staff, etc. Furthermore, team meetings or administrative supports may be required to

address classroom management, factors related to a student's IEP, etc. It is also well-known that throughout the literature, reinforcement can serve a stand-alone intervention or be combined with other interventions. Additionally, reinforcement can be delivered in forms that are positive or negative including attention, verbal praise, tangible items, and can be built into instructional practices for all students. Therefore, reinforcement may not be necessary as an additional component.

Purpose of the study

Colvin, Sugai, and Patching (1993) outlined seven steps as part of the precorrection. The purpose of this study is to determine if two of the seven steps are necessary components of the intervention package to reduce externalizing problem behaviors in students in a less restrictive environment to include the general education setting.

Research Questions

The following research questions were investigated:

1. Are contextual factors a necessary step in Colvin's Seven-Step Precorrection instructional approach to reducing externalizing behaviors?
2. Is reinforcement a necessary step in Colvin's Seven-Step Precorrection instructional approach to reducing externalizing behaviors?

Study organization

This study takes place in a general education setting of a public high school set in a city in the Midwest. The high school is comprised of 1671 students, including students from the district's ninth-grade center. The participants include three students identified as special education who have demonstrated externalizing behaviors that are disruptive to their learning, the learning needs of others, and the teacher's ability to teach. This study utilizes an alternating-

treatments design with random assignment of the intervention conditions. The selection of this design supports the need to compare more than one intervention package comprised of preestablished intervention conditions. The interventions were comprised of four different conditions as follows: (a) all seven steps to a precorrection, (b) seven steps without contextual factors, (c) seven steps without reinforcement, and (d) return to baseline. Intervention conditions were randomly assigned using block scheduling and delivered during two block periods. This study utilizes momentary time sampling based upon a 15-minute interval along with the Precorrection Checklist and Plan (Colvin, Sugai, & Patching, 1993). Finally, visual inspection of graphed data was utilized to determine the effects of the intervention on the dependent variable.

Significance of the Study

This study served to identify whether two of the steps within a precorrection strategy are necessary to reduce externalizing behaviors that disrupt the classroom environment for students identified with EBD. Furthermore, this study serves to determine if reducing the number of steps in an intervention with multiple steps that may be complex can reduce problem behavior, to address the simplicity for regular use by practitioners. Finally, because there are no current studies that evaluate the necessity of the steps within a precorrection strategy, this study serves to contribute to future research and the field of education dedicated to reducing problem behavior.

Summary

In summary, the seven-step precorrection strategy is an effective intervention that aligns with the preventative and proactive approach in support of IDEA (2004) and PBIS. However, to address the problem behavior of students identified with EBD in the general education classroom, additional factors must be considered. Specifically, this study examines whether contextual factors and reinforcers are necessary steps in Colvin's Seven-Step Precorrection

instructional approach to reduce externalizing behaviors with four high school students at risk for or identified with EBD.

Chapter 2 - Review of the Literature

The purpose of this chapter is to provide a review of the existing literature regarding precorrection, the components, and the level in which it has been used to reduce problem behavior of students at-risk or with EBD in the general education setting. To begin, a brief overview of educational initiatives in support of legal requirements to include the College and Career Readiness Standards (CCRS), Social Emotional Learning (SEL), and Positive Behavior Intervention and Supports (PBIS), will be addressed. Next, will be a description of the precorrection strategy, an intervention to address problem behavior. Finally, a systematic review of the literature will be provided.

College and Career Readiness Standards

College and Career Readiness (CCR) is a framework that originated from the Elementary and Secondary Education Act of 1965 (ESEA). More recently, Every Student Succeeds Act (ESSA) and the development of the Common Core Standards (CCSS) refined the CCR standards into the framework that it is today (U.S. Department of Education, 2010). The intent of the CCR framework is to equip all students with the necessary skills required to enter college, a technical program, or the workforce, and focuses on academic and non-academic skills for students with and without disabilities (Morningstar, Lombardi, Fowler, & Test, 2017). The overall objective is to increase the probability that students will be more likely to adjust into adulthood and contribute to society in a way that represents positive citizenship by addressing the key areas of (a) goals and expectations, (b) pathways and supports, (c) resources and structures, and (d) outcomes and measures (CCRS, 2013). Furthermore, the College & Career Readiness & Success Center (2013) emphasize the need for schools to incorporate Social Emotional Learning (SEL) to support the application of the CCRS.

Social Emotional Learning (SEL)

Social Emotional Learning is a school-wide approach that provides students with the skills to support social and emotional competence (Wanless & Domitrovich, 2015). When applied appropriately, social and emotional skills foster a student's ability to achieve academic success and demonstrate appropriate relationships in and out of the classroom (Durlak, Weissber, Dymnicki, Talyor, & Schellinger, 2011). Furthermore, these skills enhance the well-being of the student, the school, and the community. Many states have adopted a set of specific standards to support SEL, such as the Social Emotional Character Development (SECD) standards (Dusenbury & Weissberg, 2016). The instructional strategy designed to meet the SECD standards for the effective delivery of SEL is the Collaborative for Academic, Social, and Emotional Learning (CASEL, 2005) core competencies. This conceptual model addresses the components of (a) self-awareness, (b) self-management, (c) social awareness, (d) responsible decision making, and (e) relationship skills necessary to foster positive outcomes in the areas of (a) classroom curriculum and instruction, (b) the school climate, policies, and practices, in addition to, (c) family and community partnerships (Durlak, et al., 2011; Oberle, Domitrovich, Meyers, Weissberg, 2015). A second component of effective SEL instruction requires schools to use methods that integrate concepts by modeling the desired components while providing opportunities for students to rehearse and apply their acquired skills (Durlak, et al., 2011). Not only do SECD standards address bullying and the growing need to reduce the mental health crisis faced by our schools, but they also serve to support students in their development of employability skills (Lombardi, Freeman, & Rifenbark, 2018).

Positive Behavior Interventions and Support

Positive Behavior Supports (PBS) and Positive Behavior Interventions and Supports (PBIS) are often used interchangeably. The term PBIS will be used for this study and is defined as an approach used to support an individual's behavior in a way that is positive and proactive. By design, PBIS fuses conceptual and technical methods from an applied science with those from educational practices (Carr, 1999; Carr, et al., 2002). The philosophical focus behind PBIS is to provide supports that enhance an individual's quality of life in the applicable areas at home, school, community, and the workplace (Carr, et al., 2002). In support, the technological criterion and the value criterion of PBIS serve as key components that center on developing dignity and allow for personal choice, which enhances an individual's quality of life (Dunlap, et al., 2009). Introduced in the 1980s, the initial design of PBIS was intended to support individuals with intellectual disabilities within the community setting. However, under the Individuals with Disabilities Education Act (IDEA, 1997), legal mandates required schools to use PBIS for students who are at-risk for exhibiting problem behavior that interfere with successful educational outcomes. Furthermore, incorporating PBIS into the educational system, a well-researched practice, can alter environmental outcomes for individual students, classes, and even whole schools by making problem behavior less effective, efficient, and relevant. In turn, PBIS practices result in increased levels of function for the desired behavior (Sugai, et al., 2000).

MTSS. A key component that aligns with the values of PBIS is known as multi-tiered systems of support (MTSS). The foundational framework for this system stems from a model used by the U.S. Public Health Services. The design includes tiered provisions that determine the type of care a patient would receive based upon evidence-based practices in addition to the logistics needed to deliver the identified level of care (Walker, et al., 1996; Walker & Gresham,

2013). Recognizing that MTSS serves as a model that substantiates a practice that is proactive and preventative makes it an effective model for diverse populations (Sugai et al., 2000). Specifically, MTSS guides schools in establishing procedures and supports required to manage academic and behavioral needs of all students including students at-risk for or with disabilities and students identified with EBD.

The educational design for MTSS includes three tier levels of support. This design allows management to implement supports at three different levels. The intent of the universal level is to implement plans to address a range of expectations to address the behavior for all students in common areas and in the classroom. Supports at this level allow school personnel to keep academic and behavioral needs from becoming inflated due to poor management and inconsistent instruction. Because this level serves as the foundation of supports for the next two levels, it is important that stakeholders work collectively to ensure that evidence-based practices are implemented and monitored with fidelity. More specifically, schools should consider incorporating methods of developing consistency with interventions such as using school-wide behavior matrixes and monitoring outcomes through data collection. Furthermore, schools may incorporate individual or combined methods of teaming, coaching, and collaboration to develop, support, and monitor outcomes across all three tier levels (Irvin, Horner, Ingram, Todd, Sugai, Sampson, & Boldand, 2006).

The first level, referred to as Tier Level 1 is implemented as a means of high quality instruction and prevention. This level is often referred to as a universal curriculum, which is a system that delivers instruction to all students on schoolwide expectations including (a) being prepared for class, (b) homework policies, (c) knowledge of available supports, and (d) discipline policies to reduce the likelihood of a student being identified as *at-risk* or with a disability which

could have been otherwise prevented. Furthermore, the design of this tier ensures that all students have access to instruction that aligns with the state standards such as the requirements for Common Core State Standards (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010); and Social Emotional Learning (SEL) which supports character development and bullying prevention by addressing appropriate social skills. In addition, schools need to provide instruction to students regarding schoolwide expectations across school settings to include common areas and schoolwide discipline plans (Lane, 2015; Walker, et al, 1996). Finally, College and Career Readiness Standards (CCRS) frame necessary skills to help students achieve post-secondary outcomes (Morning Star, Lombardi, & Test, 2019).

Tier 2, classified as a secondary level of support is designed to supplement the academic, social emotional, and behavioral needs for students who demonstrate an inadequate response to Tier 1. Approximately 10%-15% of the student population requires supports at the Tier 2 level (Lane & Oaks, 2014; Horner, et al., 2014). Moreover, this level includes a range of interventions and supports that include individual and small group instruction. Student needs at this level may be met with (a) check-in/check-out procedures, (b) practices in self-management, (c) specialized group systems to increase supports and remediation, or (d) more intense instruction to address the fluency and comprehension of academic content (Lane, Menzies, Ennis, & Oaks, 2015; Walker, et al., 1996).

Finally, Tier 3 or the tertiary level of support is a level of instruction that is "more intensive" than the previous two. Traditionally, this level is designed to supplement the first two tiers for 3% - 5% of the student population (Lane, et al., 2015; Walker et al., 1996). Students requiring Tier 3 supports have a high risk of not being able to reverse deficits and, therefore,

require intensive supports. Furthermore, it is not uncommon for students at this level to require Tier 3 supports for more than one content area. For example, a student may require individualized instruction to address math and reading deficits as well as practices to address social, emotional, and behavioral needs. Frequently, this level becomes short-lived or misunderstood, and supports are shifted from general education supports to a special education service. Morris & Mather (2008) emphasize the need for schools to fully acknowledge and implement Tier 3 supports as intended. Specifically, schools must fully acknowledge that students at this level require more intensive, individualized, and highly proficient interventions and instruction (Morris & Mather, 2008). MTSS allows for the implementation of several evidence-based practices to include those that are tier-specific. For example, some Tier 2 interventions include individual behavior support plans, choice, self-monitoring, and precorrection.

Precorrection

A precorrection is an instructional approach that was developed in 1993 by Colvin, Sugai, & Patching; this Tier 2 intervention is comprised of a set of strategies to address problem behavior using a preventative approach (Colvin, Sugai, & Patching, 1993). Colvin and colleagues developed the seven steps as part of the precorrection strategies, which "involve the manipulation of antecedents so that established inappropriate behavior can be replaced by new, more appropriate behavior" (1993, p. 149). Incorporating these steps guides teachers in manipulating the antecedents and prompting the appropriate desired behavior in the classroom prior to the occurrence of the predictable problem behavior. In addition, students are provided the opportunity to learn the expected behavior that is supported through behavioral rehearsals, strong reinforcement, prompts, and a monitoring plan (Colvin, Sugai, & Patching, 1993).

Specifically, implementing a precorrection involves seven steps (1) identifying the context, (2) specifying expected behaviors, (3) systematically modifying the context, (4) conducting behavior rehearsals, (5) providing strong reinforcement for expected behaviors, (6) prompting expected behaviors, and (7) monitoring the plan.

Step 1: Identifying the Context and the Predictable Behavior

The purpose of this step is to identify the contextual variables from the immediate environment that may be functionally related to the target behavior. Some informal methods that teachers may use include (a) simple observations and recall, (b) discussions with teachers, parents, and support personnel, (c) self or peer reports, and (d) survey of archival records. Formal methods such as a functional analysis (Sugai, & Colvin, 1989; Wolery, Bailey, & Sugai, 1988) may also be used to gather precise information regarding the antecedent and consequent events to isolate a possible functional relationship between the contextual variables and the target behavior (Colvin, Sugai, and Patching, 1993).

Step 2: Specifying Expected Behaviors

This step requires teachers to clearly specify the expected replacement behavior for the student demonstrating the target behavior (Sprick, 1985). Recommended approaches to delivering an expected behavior can be used for clarity so that the student knows exactly what to do instead. For example, the teacher may deliver the expected behavior in the form of observable terms that tell the student exactly what the expected behavior should look like. A second approach delivers the expected behavior in the form of an incompatible behavior. In this case, the teacher would let the student know what they want them to do *instead* of the what they are doing (Engelmann & Colvin, 1983). Finally, the teacher may provide the students with a

replacement behavior that serves the same function as the target behavior (Carr & Durrand, 1985; Colvin, Sugai, & Patching, 1993).

Step 3: Modifying the Context

This step involves making changes to the factors within the immediate-environment that directly align with the results of the functional assessment (Colvin, Sugai, & Patching, 1993). Some changes may allow for simple and immediate implementation, whereas others may require a systematic approach that incorporates methods of shaping the environment to support the students' needs. For example, a student may need limited access to a task, student, or location within a classroom. As the student becomes more proficient at demonstrating the expected behavior within the boundaries of the context, gradual access to the original context may be achieved (Colvin, Sugai, & Patching, 1993).

Step 4: Conducting Behavior Rehearsals

The focus of this step is to provide the student with some type of training on the expected behavior (Engelmann & Colvin, 1983). Training methods within this step are not prescribed but may occur in the form of reading, recall, or a demonstration of the expected behavior. Teachers should determine the best approach to ensure the student can access the training "just before the student enters the target context" (Engelmann & Colvin, 1983; 1993, p 146). In turn, this step ensures that the student is less likely to demonstrate the target behavior in the target context.

Step 5: Providing Strong Reinforcement for Expected Behaviors

In this step, teachers provide some form of reinforcement when the student exhibits the expected replacement behavior (Colvin, Sugai, & Patching, 1993). The intent is to offset the reinforcers that may be lingering from the target behavior and serves to encourage the student to

sustain the expected replacement behavior in the context. Recognizing that reinforcers may vary, the type of reinforcement considered should be based upon the individual situation.

Step 6: Prompting Expected Behaviors

This step is designed to support the student within the targeted context in which the targeted behavior is more likely to occur (Colvin, Sugai, & Patching, 1993). Despite the supports offered from preceding steps, the students may experience increased levels of difficulty to perform or maintain the expected behavior. This step outlines three key procedures to support the student in exhibiting the expected behavior in the targeted context. First, the student should be acknowledged at the time he or she exhibits the expected behavior. Second, the teacher should incorporate the expected behavior as part of the directions within the instructions of the lesson. The final procedure is designed to support the teacher in delivering a correction of the targeted behavior within the context. The procedure for the first occurrence is to ignore the target behavior and continue with instruction. If the target behavior continues for a second occurrence, the teacher should respond by providing a two-part signal of the target behavior to address the target behavior and the expected behavior. In the event the target behavior reoccurs for a third time, the teacher should provide the student with a familiar choice and follow-through.

Step 7: Monitoring the Plan

The final step of the precorrection strategy is a two-part step designed to provide ongoing supervision while monitoring an instructional plan (Colvin, Sugai, Patching, 1993). The first part of this step requires staff to utilize and complete the Precorrection Checklist and Plan. This Precorrection Checklist and Plan serves as the instruction plan to address the student's target behavior for each step of the Precorrection Strategy. In addition, the checklist can serve as a reference for a second staff member to ensure the plan is implemented with fidelity. The second

part of this step focuses on collecting and monitoring data collected on the individual student's behavior. In both cases, this step allows individual teachers and school teams to ensure the instructional plan is effective (Colvin, Sugai, & Patching, 1993).

Previous Reviews of Precorrection

Ennis, Royer, Lane, & Griffith (2017) conducted a systematic review of precorrection studies in PK-12 settings. The intent of this review was to determine if the existing literature of the precorrection strategy qualified as being an evidence-Based Practice as outlined by the 2014 CEC *Standards for Evidence-Based Practice in Special Education*. The researchers identified two additional studies from the previous database search, for a total of ten studies. The descriptive data of each study was examined and coded as to whether the study (a) evaluated the effects of the precorrection intervention, (b) occurred in a PK-12 traditional school setting, (c) used experimental or quasi-experimental design, and (d) were published in a peer-reviewed journal (Ennis, Royer, Lane, & Griffith, 2017).

Results were met with 100% accuracy by three studies and at least four articles met the 80% criterion set by the researcher, they were able to establish that a precorrection qualifies in accordance with CEC (2014) as an evidence-based practice. Finally, this study also calls attention to the need for further investigation in order to determine whether precorrection is an effective strategy for high school students that demonstrate problem behavior in inclusive settings. In addition, the researchers emphasize the need to generalize the extent of the findings and how they relate to multiple effect indicators (Ennis, et al., 2017).

Review of the Literature

The purpose of this literature review is to identify and synthesize the findings from the existing literature in support of a precorrection strategy by Colvin, Sugai, & Patching (1993).

This review has been based on the specific questions as follows:

1. Who are the participants receiving the precorrection intervention for examined literature?
2. To what extent does the precorrection strategy qualify as an evidence-based practice as outlined by the CEC (2014) standards for evidence-based practices?
3. What research limitations exist in the literature on precorrection strategies for students identified at-risk or with EBD?

A systematic review of the existing literature was conducted on studies published in peer-reviewed journals and dissertations. A database search using Academic Search Premier, Education Full Text, Eric, PsychINFO, and ProQuest Dissertation Thesis and Global was conducted using the Boolean phrase: ("precorrection" OR "pre-correction") AND ("beh*"). Overall, 14 articles and one dissertation were retrieved from this database search. However, based upon the inclusion criteria in which (a) a precorrection served as at least one of the interventions in the study, (b) the study had to be a single-case design (c) the study took place in a public school, and (d) the intervention served to address problem behavior, resulted in eight studies, and one dissertation meeting the inclusion requirement. In addition, using the same database search, the Boolean phrase: ("precorrection" OR "pre-correction") AND ("review") were used to determine the existence of literature reviews for the precorrection intervention.

Literature on Precorrection

Colvin, Sugai, Good, & Lee (1997) studied the effects of pairing precorrection with active supervision for reducing problem behavior on transition behavior using a multiple-baseline design. This was a school-wide study conducted in a rural/suburban community in a public elementary school (K-5th Grade) with 475 students. The intervention was implemented during student transitions: (a) when entering the school building, (b) entering the cafeteria from the classroom, and (c) when exiting the school building. Study results demonstrated a reduction in observed target behavior across all three transitions (Colvin, et al., 1997).

Sprague and Thomas (1997) examined the use of precorrection as part of a classroom routine and the functional relation it had on neutralizing a student's problem behavior and response to instruction. The study design was comprised of an alternating-treatments functional analysis and a BCB withdrawal design. The specific components examined in this study included the students' (a) level of responsiveness, (b) demonstration of problem behavior and the expected behavior, and (c) academic performance on tasks that were deemed difficult. This study was conducted in an elementary, self-contained special education classroom. The participant involved a 10-year-old student identified as having severe intellectual disabilities. The results of this study showed a functional relation between difficult tasks and problem behavior while reducing problem behavior 6% of the time during difficult tasks and 20% of the time during easy tasks (Sprauge & Thomas, 1997).

Lewis, Colvin, & Sugai (2000) conducted a second study that paired precorrection with at least one other intervention. They also examined the effects of social skills instruction, precorrections, and active supervision on recess behavior using a multiple-baseline design. There were 475 participants from an elementary school (kindergarten through fifth grade) located in a suburban/rural area. This study was a follow-up to the school social skills program

as part of a school-wide initiative. The focus of this study was to address the occurrence of problem behavior during activities (structured and unstructured) at recess. All together interventions resulted in a reduction in problem behavior during unstructured and structured activities, while revealing who students that participated in structured activities had fewer instances of problem behavior at the start (Lewis, Colvin, & Sugai, 2000).

Miao, Darch, & Rabren (2002) applied the precorrection strategies to a study that involved direct instruction on reading performance for students with learning disabilities and problem behavior. Using a multiple baseline design, researchers examined the effects of the precorrection strategies on decoding instruction and on-task behavior in a special education resource room setting located in a public school in southeast Alabama. Using a multiple-baseline design. Participants included six first-graders identified as having mild disabilities to include developmental delays and intellectual disabilities. In addition, two students were identified as having English as a Second Language (ESL), and all students were grouped in pairs. Results showed a 25% increase in the decoding skills across all three groups in which students were required to (a) read similar sounds, (b) read vowel sounds, and (c) read words. Similarly, increased results for on-task behavior ranged from 21-26 percent for all three groups (Miao, Darch, & Rabren, 2002).

De Pry and Sugai examined the effects of precorrection combined with active supervision on minor occurrences of problem behavior in the classroom (De Pry & Sugai, 2002). In addition, daily data review served as an intervention between the researchers and the classroom teacher. This study took place in a rural elementary school located in the Pacific Northwest with a population of 350 students from fourth through sixth grade, none of which were identified as having a disability. The interventions were implemented in a sixth-grade

social studies class with 26 students using an ABAB withdrawal design to address a 90% to 100% occurrence rate in minor behavior infractions involving (a) academic engagement, (b) food consumption, (c) compliance, (d) engaging in note writing or passing, (e) not remaining in assigned area, and (f) copying from others/cheating. Results from this study showed a 34% decrease regarding the occurrence of minor behavior infractions across both phases of the intervention (DePry & Sugai, 2002).

Stormont, Smith, & Lewis (2007) researched the impact of combining pre-correction with positive praise statements as part of a program-wide PBS model at a Head Start center, in an effort to reduce problem behavior for children in preschool. Adult participants for this study included three small group leaders, two teachers, and one teaching assistant. Seven students were assigned to one group, and nine students were assigned to two groups. No students were identified as having disabilities. In this study, precorrections were delivered to the students prior to tasks as part of the instruction. The instructions addressed (a) how to use the materials, (b) expectations about sharing, (c) using materials appropriately, and (d) how to ask for help. This study used a multiple-baseline design to examine outcomes pertaining to the intervention on both the students and the teachers involved in the study. Overall, the results of this study regarding the teachers' implementation of the intervention showed that two teachers increased their use of precorrection at the start of group sessions. When looking at a reduction in problem behaviors the researchers noted that although problem behavior was minimal at the start of the study, and specific use of each intervention was not displayed, the combined intervention resulted in a reduction of problem behaviors across all three groups (Stormont, Smith, & Lewis, 2007).

Haydon & DeGreg (2012) examined the effects of combining (a) precorrection, (b) active supervision, and (c) explicit timing to reduce problem behavior and transition time. The study

took place in an urban public school in a Midwestern City that was made up of that 534 students in the sixth and seventh grade. 20 participants from a seventh-grade health classroom were selected for this study, none of whom were identified as having disabilities. Students identified for this study demonstrated problem behavior that required teacher redirection upon entering the classroom following a transition from the cafeteria. The combined intervention package was delivered using an ABCBC design. Results of the intervention phase showed a reduction in problem behavior from ten teacher redirections to six teacher redirections, and transition times were reduced by four minutes. The inclusion of explicit timing procedures reduced teacher redirections by an additional 50% and reduced transition times by another 60 seconds. Overall, the use of precorrection and active supervision with the addition of explicit timing, proved to be effective in reducing teacher redirection of problem behavior and supporting effective transitions (Haydon & DeGreg, 2012).

More recently, Haydon & Kroeger conducted a replication study from Haydon et al., (2012) using three components: (a) precorrection, (b) active supervision, and (c) explicit timing to simultaneously address problem behavior and transition time for students in high school. The study took place at a Midwestern school that served 517 students across the ninth and tenth grade. Twenty-six percent of the school's population was identified as having a disability. Data to reduce transition time and problem behavior (verbal and physical) was taken across two classrooms, each with approximately 60 students, none of which were identified as having a disability. Adult participants for included two co-teachers that taught a scheduled block that combined language arts instruction and social studies in addition to a student teacher. Results of the study showed a reduction in transition times and problem behavior during the intervention phase (Haydon & Kroeger, 2016).

Due to the limited findings of the literature, two additional studies identified in Ennis, Lane, & Griffith's (2017) systematic review of a precorrection were extracted from the literature and reviewed. The first study was conducted by Smith, Lewis, & Stormont (2011) to address externalizing behaviors in three Head Start programs. The purpose of this study was to support the implementation of school-wide PBIS through the combined intervention package of precorrection and praise to increase expected behaviors for identified students. Similarly, this study replicates Stormont, Smith, & Lewis (2007), with the addition of providing observation feedback as an intervention to support staff on the implementation of the interventions. Participants in this study included three students, each from one of the three centers, one classified as a private daycare. One student demonstrating the target behavior was also identified as having speech language impairments. Using a multiple baseline design, the study outcomes showed a decrease in problem behavior and a functional relation between the students' problem behavior and the frequency in which the teacher implemented the intervention (Stormont, Smith, & Lewis, 2007).

The second study, identified by Ennis, Roywe, Lane & Griffith (2017) conducted by Faul, Stephensky, & Simonsen (2012), examined the delivery of providing a component of a precorrection strategy in an urban middle school (grades 5-8) that serves 1000 students in support of the school's school-wide PBIS initiative. Two students were targeted for this intervention due to their inadequate response to Tier 1 and Tier 2 interventions for on-task behavior. Using an alternating treatments design, verbal prompts were systematically delivered to both students across two class periods per day to address the operationally defined behaviors of (a) getting out of their seats, (b) talking out, (c) making disruptive noises, and (d) talking to peers during group discussions and independent seat work. Results of this sole component of a

precorrection reduced off-task behavior in the first student by 7% and the second student by 23% (Faul, Stephensky, & Simonsen, 2012).

Additionally, one dissertation study (Lyons, 2006) examined the effects of precorrection in isolation from the frequently paired intervention of active supervision of aggressive behavior during recess at three rural elementary schools. Participants in this study were in grades kindergarten through fifth grade. In this study, two antecedent-based interventions (precorrection and active supervision) were interested at in isolation by examining the data between the intervention and control groups at all three schools. Although the results showed only a slight reduction in aggressive behavior for both interventions, the results were not significant. The researcher was not able to discriminate whether the intervention training for the intervention groups altered either the teacher behavior or perceptions of aggressive behavior compared with the teachers assigned to the control group in which intervention training was withheld. Furthermore, the researcher noted that observed behaviors for this study (verbal and physical aggression) in addition to the range of objectivity that occurred with data collection served as limitations to the intervention (Lyons, 2006).

Discussion

The review of the literature (Ennis, Royer, Lane, & Griffith, 2017) concludes that precorrection as a Tier 2 intervention meets the CEC (2014) standards as an evidence-based practice to address problem behavior within the first two tiers when paired with other strategies. Studies have been conducted for students in preschool through tenth grade. Nevertheless, studies were most common for students in elementary school settings. Sixty percent of the identified studies were conducted in an elementary school and paired with another intervention. More specifically, three studies were paired with active supervision and a fourth study was paired with

praise statements (Lewis et al., 2000; De Pry & Sugai, 2002; Stormont, et al., 2007; Colvin et al., 1997) whereas one study added explicit instruction to the existing pair (De Pry & Sugai, 2002). In turn, two studies conducted in an elementary school examined the effects of precorrection as an isolated intervention (Darch, Rabren, 2002; Sprague & Thomas, 1997). Within the middle school setting, one study paired precorrection with active supervision, and the other study focused on the component of prompting (Haydon & DeGreg, 2012; Faul, Stepensky, & Simonsen, 2012). Finally, the sole study conducted in a high school setting combined the use of active supervision, precorrection, and explicit timing as part of a school-wide intervention (Haydon & Kroeger, 2016). Furthermore, the review conducted by Ennis, Lane, and Griffith (2017) substantiated precorrection as an evidence-based practice when paired with other strategies as specified by the CEC (2014) standards in terms of being a "low-intensity, antecedent-based strategy" (Ennis, et al., 2014, p.489).

Limitations of Previous Studies

Several limitations were revealed through the review of the literature. First, the literature lacks consistency and clarification of whether the intervention was implemented in its entirety. Colvin, Sugai, & Patching (1993) define a precorrection as being comprised of seven steps. In addition, the checklist and plan serve as part of the implementation process. The next limitation relates to the student population addressed by the literature. Specifically, only one study (Haydon & Kroeger, 2016) reviewed was used to address problem behavior for students at the high school level. Furthermore, this study paired a precorrection with another intervention and does not serve to support the impact of a precorrection as a stand-alone strategy in a secondary setting. Additionally, no studies specifically identified any of the participants as being at-risk for or with EBD. Finally, there are no studies that look at whether all seven steps in a precorrection

are necessary to reduce the predictable problem behavior. Therefore, the purpose of the current study is to address these gaps as it relates to the intervention components and the student population addressed by conducting a precorrection study involving students at-risk and with EBD in settings that are less restrictive and more inclusive.

Chapter 3 - Methods

The purpose of this study was to determine if two of the seven steps in the precorrection strategy (Colvin, Sugai, & Patching, 1993) are a necessary component of the intervention package in order to reduce externalizing problem behaviors in an environment that is less restrictive or in the general education setting. A single-subject alternating-treatments design (Kazdin, 2011) was used to examine the effectiveness of four randomly assigned intervention packages.

Alternating-treatments designs (ATD) are utilized to examine the outcomes of two or more treatments on an individual stimulus, context, or condition. In addition, an ATD purposefully balances the rapid delivery of randomly-assigned intervention packages across different phases to control for maturation and non-experimental events (Gast & Ledford, 2014; Levin, Ferron, & Kratochwill, 2011). Block randomization was utilized to determine the treatment schedule in order to prevent the same treatments from occurring in two consecutive time periods (Kratochwill & Levin, 2014) (see table 3.1for treatment schedule). Following baseline, the three randomly-assigned and balanced intervention packages and return-to-baseline were delivered across two time periods until five data points were obtained. Data was collected across two time periods during the intervention phases (T_1 and T_2). The time periods were identified as two different classes outside of the behavior strategies classroom in which the student demonstrated problem behavior. Additionally, student class periods were set within a block schedule design that altered blue days and white days for class assignment. In addition, one of three bell schedules can occur on a given day. Typically, Monday and Wednesday are established as Blue Days (blue day classes), Tuesday and Thursday are established as White Days (white day classes), and Friday alternates. During times that a Monday and Friday are not

scheduled to alternate or an administrative decision is made to change a typical day, students may consecutively have a determined block of classes. Although the bell schedule is typically based upon the day of the week, changes can occur for special circumstances to include special school events, snow days, holidays, etc. The first schedule, A, which typically occurs on Monday and Tuesday is a four-block schedule designed to accommodate four 90-minute class periods with two lunch periods 11:45 AM & 12:30 PM. The second schedule, B, is a five-block schedule designed to accommodate four 80-minute class periods and a 45-minute advisory period in the middle of the day. The time period for advisory is scheduled before third period or after third period based upon whether a student is scheduled for first or second lunch 11:25 AM or 12:15 PM. The third bell schedule, C, is a five-block schedule that includes four 80-minute class periods and a 45-minute advisory period occurring at the end of the day. The lunch periods for bell schedule C occur at 11:25 AM, and 12:50 PM.

Setting, Participants Materials

Setting

This study took place in the classroom setting of a public high-school which includes students in 9th through 12th grade in the Midwest. The school population is 1671 students of which 48% are female and 52% are male. Student ethnicity is 47% Caucasian, 23% African American, 21% Hispanic, and 9% of combined of other ethnicities. General education students make up 84%, while 16% of students receive special education services. Of the school's population, 39% are military affiliated. Additionally, 55% of students are classified as having economic disadvantages based upon their family income status in which 38% of the students qualify for the free lunch program and 17% qualify for the reduced lunch program and/or the federal McKinney-Vento Homeless Assistance Act. This program provides supports to students

that are experiencing homelessness, ensuring who students have equal access to a public education.

Two classrooms other than the self-contained behavior strategies classroom were identified for each student based upon the results of baseline data across all class periods to identify which classes the student demonstrated the highest rates of externalizing behavior. In addition, design restrictions outlined that the study must include one core class in which the interventions were administered. For example, data collected for one time period must be from a core content class to include language arts, math, science, or social studies, whereas the second intervention period could be during PE, drama, advisory, or a career-based elective held within the designated academy. The selection of classes depended on when and where the problem behaviors occurred for the individual student as determined by assessment data.

The average class size of the general education classrooms was 25 students. Each classroom in the general education setting is equipped with furniture that can be classified as traditional or flexible seating. Classrooms comprised of traditional furniture include uniformed desk and tables, such as standard desks, lab tables, and non-adjustable computer tables. Classrooms that are equipped with flexible seating have a variety of desks and tables within the setting. They are modern in appearance and adjustable. For example, this furniture can be configured in various shapes throughout the classroom, it is made of materials that is lightweight, sleek in color, and allows for vertical and horizontal expansion. Most classrooms are equipped with SMART boards and wall-length white boards. Students are assigned personal device that are hand-carried to each class.

The resource room served as the designated area to address the components of the intervention requiring behavioral rehearsals, reinforcements, and components of progress

monitoring as needed for an individual student. The primary role of the designated resource room or *Behavior Strategies Classroom* was to serve students identified as having social, emotional, or behavioral disorders. The six students assigned to this classroom received direct instruction from the researcher and academic supports from three paraprofessionals. This room used a combination of traditional and non-traditional furniture (regular desks, high-top desk, and various tables). The classroom layout included workspaces that have been designated for individual students and small group instruction.

Student Participants

This study involved three high-school students at-risk for or with EBD to include students placed within the district-level program for identified problem behavior. Students were selected for this study based upon the following criteria: (a) they were enrolled in a public high-school, (b) they were previously identified as being at-risk for an emotional disturbance and assigned to the district-level behavior program through district level procedures or identified with an emotional disturbance, (c) a current record review to include the results of a Behavior Assessment for Children (BASC-2 or BASC-3) or based upon the history of being in a restrictive environment for significant internalizing or externalizing behavior, (d) they attended at least two classes outside of the behavior strategies classroom with one being of academic content (language arts, math, science, social studies), and (e) the student, parent, and teachers provided consent to participate in the study, following IRB approval.

Comprehensive evaluation data provided on each student included results from record reviews from (a) Individual IQ assessments (Weschlers Intelligence Scale for Children III or the Woodcock Johnson IV), (b) Behavior Assessment for Children Second Edition (BASC-2), (c) district academic evaluation measures.

Jason. Jason was a 16-year-old, bi-racial (Caucasian and Korean-American) male who received free and reduced lunch. Although his biological father and step-father are military veterans, their time in the service took place prior to serving in parental roles for Jason. He was placed in the behavior strategies classroom in the 9th grade. He received instruction in the behavior strategies classroom 62% of the time and attended special education classes outside of the behavior strategies classroom 38% for modified language arts, modified history, and as a teacher's assistant. In addition, Jason was a member of the high school golf team and participated in a school-based service-learning project that provides meals to families and community members under the federal McKinney-Vento Homeless Assistance Act. Outside of school, Jason holds a part-time job. His teachers report that Jason was frequently off-task in the classroom, does not engage in academic discussions, and, when prompted to get back on task, walks out of the classroom.

Assessment Information. Jason was administered the Woodcock Johnson IV, Tests of Cognitive Abilities, which indicated that he was slightly below his peer, though this may not be a valid representation of his overall abilities. His strengths were in the categories of verbal communication, reasoning, the ability to sustain, and control visual attention, and match visual information. His deficits were in working memory span, quantitative sequencing, auditory attention and long-term retrieval of auditory attention. Results of the BASC-2 indicated that Jason was "at risk" for externalizing behaviors and problems in the area of conduct, adaptability, socially, attention, and learning. District evaluation measures indicate that Jason was at a 4th grade math level and a 7th grade reading level.

Chris. Chris was a 16-year-old Caucasian male whose father is an active-duty soldier and was gone for training for the duration of this study. Chris was in the 11th grade and has

received special education services in the behavior strategies classroom since 4th grade. He received 12.5% of his academic instruction in the behavior strategies classroom, 62.5% in the general education setting for core classes and electives. In addition, he spent 25% of his time participating in vocational training at a local restaurant. His teachers report that Chris is verbally disruptive to the learning environment and finds it entertaining. He will use profanity and make inappropriate comments that are offensive towards people with differences related to race, gender, sexuality, religion, and various disabilities.

Assessment Information. Chris was administered the Woodcock Johnson IV, Tests of Cognitive Abilities, which indicated that his general intelligence abilities and processing skills were in the average range. Results of the BASC-2 indicated that Chris was "at risk" for externalizing behaviors and problems in the area of conduct, adaptability, socially, attention, and learning. District evaluation measures indicate that Chris is at or above grade level for reading and math.

Susan. Susan was a 16-year-old African American female who lived in a single-parent household and received free lunch during this study. Susan was in the 10th grade and received special education services in the behavior strategies classroom since her 9th grade school year. She received 38% of her academic instruction in the behavior strategies classroom, 37% in special education classes for core classes and 25% of the time in general education classrooms for her electives. She also participated in a school-based service-learning project that provides meals to families and community members under the federal McKinney-Vento Homeless Assistance Act. Classroom teachers reported that Susan frequently demonstrates behavior that disrupts the learning environment. She can often be seen getting out of her seat to wander the room or talk to peers during instructional times. Susan will also use inappropriate language, and

at times become verbally disrespectful towards adults. She frequently blurts out and talks to peers across the classroom.

Assessment Information. Susan was administered the Woodcock Johnson IV, Tests of Cognitive Abilities with standards scores that ranges from 64-89 across and resulted in a very low to low average range qualification. Results of the BASC-2 indicated that Susan's scores were "significant" for externalizing behaviors in the areas of hyperactivity and aggression which may be impeding her academic function. District evaluation measures indicate that Susan was at the 5th grade level for reading and math.

Adult Participants

The intervention agent for this study was a doctoral student with 13 years of teaching experience serving students with disabilities in the general education classroom, a self-contained and resource room setting. The intervention agent trained and oversaw the implementation of the study for three paraeducators. The first paraeducator, Jordan, was a 27-year-old Caucasian male with a bachelor's degree in theology. He is currently attending evening classes to become a secondary history teacher. He has been a paraeducator for two years. The second paraeducator, Matt, was an African American male in his early 20's. He is currently attending evening classes to become a secondary math teacher. He has met the district education requirements as a certified paraeducator by completing the required academic modules and assessments with a minimum score of 80%. He has been a paraeducator for three years. The third paraeducator, Paige was a Caucasian female in her early 20s. She has bachelor's degree in art with a concentration in painting. She is also certified as a women's advocate. Additionally, a secondary team in addition to the researcher, and paraeducators, includes three staff members, all graduate students, which were trained to conduct procedural and reliability checks. The first

graduate student, Meagan is a Caucasian female in her late 20's. She has a bachelor's degree in special education and is in the process of taking courses towards her master's in applied behavior analysis. She has been a special education teacher for four years. The second graduate student, Samantha is completing her master's degree in special education. She served as a paraeducator for one month and is in her second year as a special education teacher. The third graduate student, Sara is in the process of completing her master's degree in special education and is certified in history at the secondary level and teaches foundational levels history classes along with managing her special education caseload. She has been a special education teacher for three years.

Prior to conducting the study, adult participants received training using the Comprehensive, Integrated, Three-Tiered Model of Prevention (Ci_3T) (Lane, Kalberg, & Menzies, 2009) module for the precorrection strategy (Lane & Oaks, 2013). Housed within the Ci_3T tiered intervention library, the module provides an overview of the precorrection strategy and intervention related forms including the (a) implementation checklist, (b) treatment integrity checklist, and (c) social validity forms (Lane, et al., 2015). Initial instruction addresses how to collect data using momentary time sampling for observed externalizing behaviors that have been operationally defined. Next, staff were trained over all seven components of the precorrection strategy to (a) identify the context and the predictable behavior, (b) specify the expected behaviors, (c) systematically modify the context, (d) conducting behavioral rehearsals, (e) providing strong reinforcement for expected behaviors, (f) prompting expected behaviors, and (g) monitoring the plan (Colvin, Sugai, & Patching, 1993). Finally, staff received training that covered the specific intervention packages and the implementation process using random assignment and an alternating-treatments design.

Classroom teachers were provided an overview of the study to include a link to the Ci_3T modules. Although they were not directly providing the intervention, they were utilized to directly support the component of the precorrection strategy that involves monitoring the intervention. Additionally, there will were times that they were consulted regarding contextual factors involving teacher proximity and modifications to the environment. Classroom teachers were administered the pre-and post-Behavior Intervention Rating Scale (BIRS) along with the designated adult participants in this study (See Appendix C).

Materials

A record review was conducted for each student including results of a behavior rating scale qualifying the student as being at-risk for an emotional disturbance and/or the assignment to the district level behavior program and/or identified with an emotional disturbance. Additionally, the researcher completed a Functional Assessment Hypothesis Formulation Protocol (Larson & Maag, 1999) on each student. This protocol served as the selected Functional Behavioral Assessment (FBA) for the purpose of identifying the target behavior for students included in this study (See Appendix F). Daily data collection sheets were utilized to record partial interval data and student progress monitoring throughout the phases of the study (See Appendix E). Finally, Colvin, Sugai, & Patching (1993) Precorrection Checklist and Plan was completed by the intervention agent during the intervention phase and the best treatment phase (See Appendix D).

Experimental Design

An alternating-treatments design (ATD) is a single-case experimental design used to compare two or more interventions. It is useful for filtering the effects of outside stimuli. This

design rapidly delivers multiple intervention across two or more conditions and uses a balanced approach (Kazdin, 2011).

Baseline levels were obtained on one of three target behaviors which are (a) disruptive behaviors, (b) non-compliance, or (c) off-task behavior for each student for a minimum of five sessions or until stable rates of performance. Next, three intervention packages involving a precorrection strategy including: (a) all seven steps of the precorrection strategy, (b) minus step three (context modification), and (c) minus step five (strong reinforcement), and (d) return to baseline were randomly assigned across two different time periods for each student. Block randomization was used to ensure intervention packages did not appear consecutively for each time period. The best treatment phase was determined by comparing the three intervention packages and identifying which one was most effective through visual analysis to include individual results of the participant pool.

The dependent measures included specific aspects of behaviors that are externalized by the student and interfered with the learning environment. The subcategories of externalizing behaviors indicated by the FBA/IEP goals, included disruptive behavior, non-compliance and off-tasks behaviors. The identified target behaviors for this study were specified for each student by outcomes of the FBA.

Dependent Variables

The dependent variables for this study included the observable and measurable target behavior displayed by the individual student. Each target behavior has been operationally defined for the purpose of this study.

Disruptive Behavior. Disruptive behaviors are verbal or physical behaviors that directly impede the teacher's ability to teach and interferes or disrupts the learning of others. Examples

of disruptive behavior include (a) blurting or talking out of turn, (b) talking at inappropriate times or about inappropriate topics or using inappropriate language, (c) making physical or verbal noises, and (d) touching others or objects.

Non-Compliance. Non-compliance occurs when a student (a) verbally or physically refuses an academic or nonacademic request (e.g., student says "no" or "I am not doing that", shoves his or her assignment off the desk, or lays their head on the desk).

On-Task. On-task behavior occurs when the student is engaged and attends to the immediate academic or non-academic task. The student may be observed (a) looking in the direction of the instruction or task, (b) working in his or her assigned area, and (c) is engaged in the assigned task.

Measurement of the Dependent Variable. The recording system was based upon the target for each student. Once the function of the behavior was identified for each student and a target behavior was operationally defined, an aligned method for recording the observable behavior was identified. Frequency Measures (FM) can be utilized to record the occurrence of a target behavior when it is presented with a known start and end time (Kazdin, 2010). An example of this could include how many times a student responds to an adult request. During times that it is necessary to conduct a time-based or response duration forms of measurement, it may be best to utilize a form of interval recording (Kazdin, 2011). The first type of interval recording known as momentary time sampling (MTS), used to indicate that a behavior has occurred at a predetermined moment in time. This recording system is useful when it is difficult to determine the duration of a behavior. The recording method for this system requires the recorder to indicate whether the behavior has occurred during the predetermined interval. Whereas partial interval recordings (PIR) are specifically useful in tracking behaviors that occur

quickly. Examples of these types of behaviors may include blurting out, making statements that are negative, positive, or polite in nature (Harrop & Daniels, 1986). Other variations of recording methods may require the use of latency or duration methods if it is determined that a student's target behavior involves the amount of time it takes him or her to start a task (latency data) or it is necessary to identify the exact amount of time spent on a task (duration).

Interobserver Agreement. The researcher collected Interobserver agreements (IOA) data during at least 30% of the time for each of the three phases to include the (a) baseline phase (no treatment), (b) intervention phase (two or more treatments), and (c) best treatment phase for the subject-pool (the most effective treatment across participants, altered with a continuation of baseline). Based upon the school requirement for teachers to conduct monthly observations in another classroom, students are used to having frequent observers in their classrooms. However, observers, other than the researcher (the primary teacher and case manager for students assigned to the behavior strategies classroom) were utilized to record students' behaviors across conditions to mimic conditions they are used to and minimizes changes that typically occur when the researcher enters the classroom. The primary data collectors, paraeducators, secondary observers, three graduate students all serving in special education positions, within the building were trained in observation protocols by the researcher. Camera recordings from the resource room were utilized to practice observing behaviors and recording data until both sets of observers agree within a ratio of 90%. Observations were recorded by the intervention agent and the secondary observer through direct observation using the individual data collection sheet, and the precorrection checklist to determine if the target behavior was present for the specified time period. Calculating the IOA from the observations recorded was based upon the selected measurement technique known as the frequency ratio method. Specifically, the frequency ratio

was determined by taking the total number of agreements and disagreements, dividing the smaller total by the larger total and multiplying it by 100.

Procedures

Baseline. An initial baseline was taken on all class periods for students who attended two or more classes outside of the behavior strategies classroom (Appendix E). The collected data was utilized to determine two time periods in which the intervention would be implemented for each student. Data collected was used to determine two time periods outside the behavior strategies classroom in which problem behavior occurred and/or was of concern. Due to block scheduling, time periods varied for each student. Baseline observations conducted on the target behaviors occurred for a minimum of five data points or until a pattern of stabilization was established for each student identified in this study. A Functional Behavioral Assessment (FBA) was conducted for the purpose of (a) identifying the target behaviors, (b) the purpose of the behavior, and the (c) contextual factors (Larson & Maag, 1998). Three intervention packages and return to baseline to include (a) all seven steps of the precorrection strategy, (b) without step-three context modification, (c) without step-five strong reinforcement were altered using a random number generator to establish a schedule using block randomization in which the assigned intervention packages and return to baseline occurred for each student within each block.

An FBA was conducted for each student to determine target behaviors and where and when they occurred (Appendix F). Once behaviors were identified, baseline data was collected by primary observers using the determined recording method, partial interval recording (PIR) for each target behavior. Specifically, the observed target behavior was recorded as observed when it occurred during any portion of the 15-minute interval (Harrop & Daniels, 1986). Once five

baseline conditions had been recorded, treatment schedules were established for each student using block randomization. A random number generator was used to assign treatment packages across two time periods for each participant: T_1 class period and T_2 class period with each treatment package occurring at least once per block. No treatment packages were scheduled to occur consecutively per time period to control for variability between blocks. Within each block, treatment schedules consisted of three intervention packages and return to baseline (See Table 3.1 for randomized treatment schedule).

The first intervention package was comprised of all seven steps of Colvin, Sugai, and Patching's (1993) precorrection strategy. Included in these steps are (1) identifying the context and the predictable behavior, (2) specifying the expected behaviors, (3) modifying the context, (4) conducting behavior rehearsals, (5) providing strong reinforcement for the expected behaviors, (6) prompting the expected behavior, and (7) monitoring the plan. The second intervention package excluded step three, modify the context. The third intervention package excluded step five, strong reinforcement. The fourth intervention package, return to baseline, in which the components of a precorrection are withheld from the student . Each block was implemented for five school days. Visual analysis was utilized to determine the intervention effects. The intervention package that demonstrated the best results was continued for a minimum of five observations on all three students.

Treatment. While the delivery of precorrection strategy is intended to serve the student in the general education setting for the purpose of this study, it has been determined by the researcher that some of the steps can be best delivered in an alternate setting, for example the behavior strategies classroom or in a study room that is not being utilized by others. The option was made available to the interventionist to deliver of steps four, five, and seven special resource

room for students with or at risk for EBD as needed for the individual student, each of which have been carefully considered and occurred minimally based upon the time, space, and the impact of completing a step in-front of general education peers.

Behavioral Rehearsal. Step four of the precorrection strategy involves conducting behavior rehearsals. This area requires the student to have some type of training just before going into the classroom. Because this training may require direct instruction, modeling, and the opportunity for the student to go through the motions of the appropriate desired behavior, the hallway and classroom may not be appropriate. In this case, the student may carry out this step in the resource room with an adequate amount of time allotted prior to transitioning to the designated class. In some cases, this may have involve having the student leave the previous class five or ten minutes early or excusing the required bell work.

Strong Reinforcement. Step five, strong reinforcement, requires the use of the resource room for students requiring a level of reinforcement that may invite a peer response that is negative or in times that the general education classroom is not adequate to deliver the positive response. Reinforcement was determined for each student by conducting an individual reinforcement inventory in conjunction with the FBA Times, when the resource room would be utilized, include both positive and negative reinforcement. Examples of these reinforcements that may not be appropriate or feasible to deliver in the general education setting include (a) receiving specific tangible reinforces, (b) activity or technology-based time, or (c) time away.

Monitoring the Plan. The last step of the precorrection strategy involved monitoring the plan. For the purpose of this study, the selected method for the student included a student and teacher (classroom teacher) monitoring chart. This chart was designed to have the student rate his or her progress for that class period by receiving points for demonstrating appropriate behavior as

specified by his or her individual target behavior. An example of this for a students who has disruptive behavior identified as a target behavior might receive points for each of the following (a) keeping my hands and feet to oneself, (b) using class materials as they are intended to be used (e.g., pencils for writing, scissors for cutting, etc.) and (c) raise ones hand to talk (instead of blurting out), and (d) at the end of each class period, the student and the classroom teacher both rated the student's behavior with the student rating his or her behavior first. Finally, the classroom teacher and the student briefly (approximately 30-60 seconds) conferenced about the positive and negative aspects of the students' scores prior to the student heading to him or her next class period. Monitoring of the student's overall scores was conducted between the student and the researcher during the student's designated resource room time. During this time, the researcher collected the data sheets, record the student's daily points on an individual graph, and briefly (30 seconds) conferenced with the student regarding points earned.

Procedural Reliability. The implementation of the Precorrection Checklist (Colvin, Sugai, and Patching 1993) identifying the seven steps of the intervention and was utilized to document the implementation of the intervention (Appendix D). Additional data was collected using momentary interval time sampling (MTS), in which both the target behavior and academic engagement were observed per time period (See Appendix E for data collection forms). To control for "nuisance" variables, the same experimenter was assigned to an individual student for a designated time period throughout the study (Byiers, Reichle, and Symons, 2012, p.199). Secondary observers conducted procedural reliability during baseline and the intervention phase on at least 30% of the sessions using the frequency ratio method between two observers to ensure all steps in the intervention package were implemented with fidelity. Inner-rater reliability was

calculated by totaling the total number of steps completed for each intervention package and dividing by the total number and multiplying by 100 (Kazdin, 2011).

Social Validity

Social validity makes certain that an intervention and the procedures have been deemed acceptable for all social parties involved to include community members and stakeholders (Fawcett, 1991; Kazdin, 2011). The primary component of social validity is to determine whether the intervention addresses a need that is significant to daily living (Kazdin, 2011). A student who demonstrates problem behavior in the classroom faces social stigmas and academic outcomes that can directly impact opportunities for secondary education and future employment. Additionally, not addressing these behaviors can have negative impacts on other areas of the learning environment (Kazdin, 1977; Maag, 2004; Wolf, 1978; Simpson, 2004).

Goal. The goal for student participants of this study was to reduce the frequency of externalizing behaviors. In achieving this in an inclusive setting, the intervention must be practical for both the adult implementing the intervention as well as the student receiving the intervention. Essentially, the goal of the study is to be able to achieve the student goal with the intervention package that involves the least number of steps. This was measured by comparing the frequency of behaviors recorded from identified intervention periods of the initial baseline to conditions of the intervention phases with a continuing baseline phase.

Effects. Another important factor measured by social validity relates directly to the outcome of the intervention. The intervention should not only be practical and acceptable, but it should also be able to produce the desired effects (Spears, Strickland-Cohen, Romer, & Albin, 2013) of reducing the problem behavior, therefore minimizing disruptions to the students own learning, while increasing positive adult and peer interactions. These students demonstrate

behavior that can be difficult to manage and disrupt learning with inconsistent variations of intensity, which can greatly impact outcomes of generalization (Horner, Carr, Halle, Magee, Odem, & Wolery, 2005). In turn, students identified with EBD that are not able to generalize these skills are at risk for poor academics, social, and post-secondary outcomes (Cook, Landrum, Tanker, & Kauffman 2003). Using the least number of steps of the precorrection strategy serves as a practical and preventative approach to reducing problem behavior while eliminating the risk associated with future outcomes. In this study, the social validity was measured by cross-examining the data from the precorrection checklist, the frequency of problem behavior, and academic engagement.

BIRS. The Behavior Intervention Rating Scale (BIRS) was utilized to measure the social validity of an intervention, by assessing teachers' perception on acceptability and effectiveness of the intervention. This measurement tool is an extension of the Intervention Rating Profile (IRP-15; Martens, Witt, Elliott, & Darveaux, 1985) and includes nine additional items that directly question the teacher's perceptions of the effectiveness of the intervention (Elliott & Von Brock Treuting, 1991). The BIRS rating scale is comprised of a 24-item, five-point Likert-type scale (score range of 24-120) that is designed to measure the factors of (a) Acceptability (all 15 items on the IRP-15), (b) Effectiveness (7 of the 9 items), and (c) Time to Effect (2 items) (Von Brock & Elliot, 1987). A score is obtained by adding up the scores for each item. Scores with higher results indicate acceptability of treatment evaluation and effectiveness. For the purpose of this study mean scores are reported in percentage form. Overall, this rating scale holds an internal consistency of 0.97 (Carter, 2009). This survey was given to each classroom teacher in addition to the assigned paraeducator who also served as the interventionist for each student.

Ratings of 3 and below indicate levels of disagreement. (Table 3.2, 3.3, and 3.4 show results by student).

Data Analysis

Visual inspection was utilized to determine the line of best-fit or the slope of each condition. The variability visual inspection of graphed data was used to interpret whether a functional relationship was apparent between the dependent and independent variable by examining the level, trend, and variability of the baseline and intervention phases. The level was identified by determining the mean for each intervention condition. The trend looked at the degree to which the mean of the slope increased or decreased for each condition in order to determine the intensity of the data (Horner, et al., 2005).

Summary

In summary, the methodology for this single cased study utilized an ATD for the purpose of determining whether all seven steps in the precorrection strategy (Colvin, Sugai, & Patching, 1993) were necessary to reduce problem behavior in the general education setting for student with ED.

Table 3.1

Random Assignment of Intervention Packages

Jason

Days	**1**	**2**	**3**	**4**	**5**
Time Periods					
T1	2	4	1	3	4
T2	1	3	1	4	2

Chris

Days	**1**	**2**	**3**	**4**	**5**
Time Periods					
T1	2	3	2	1	4
T2	4	3	4	2	1

Susan

Days	**1**	**2**	**3**	**4**	**5**
Time Periods					
T1	2	1	4	3	2
T2	2	3	1	4	2

Table 3.2

Jason's Scale Score Results

	Adult Role	Pre	Score Range	Post	Score Range
Mrs. Devine	Teacher	76%	3 thru 6	63%	1 thru 6
Mrs. Welch	Teacher	79%	3 thru 6	82%	3 thru 6
Paige	Paraeductor	48%	4 thru 6	81%	4 thru 6

Note. Non-agreeable scores results include the following: *Pre (3, and 14-24); Post (16, 20, and 21).*

Table 3.3

Chris's Scale Score Results

	Adult Role	Pre	Score Range	Post	Score Range
Mrs. Burgess	Teacher	71%	4 thru 6	89%	4 thru 6
Mr. Burch	Teacher	87%	3 thru 6	82%	4 thru 6
Jordan	Paraeductor	79%	4 thru 6	89%	4 thru 6

Note. Non-agreeable score results include the following: *Pre (5, 9, 18, and 23); Post (5)*

Table 3.4

Susan's Scale Score Results

	Adult Role	Pre	Score Range	Post	Score Range
Mrs. Oliver	Teacher	60%	3 thru 4	89%	3 thru 4
Mrs. Devine	Teacher	89%	4 thru 6	88%	4 thru 6
Matt	Paraeductor	61%	4 thru 6	80%	4 thru 6

Note. Non-agreeable score results include the following: *Pre (4, 10, and 16-24); Post all responses involved a level of agreeance.*

Chapter 4 - Results

The primary purpose of this study was to determine if two of the seven steps in the precorrection strategy (Colvin, Sugai, & Patching, 1993) were necessary components of the intervention package to reduce problem behavior in less restrictive classrooms. Participants of this study consisted of three high school students who are at-risk for or identified with EBD. The classrooms identified for this study included both general education classrooms and special education classrooms. The special education classrooms, also referred to as foundational classes were identified as less-restrictive within the school setting and include class-wide modifications made to academic content, delivery of instruction, and were taught by a special education teacher. The classrooms selected for each participant were determined to be a less restrictive setting because they were located outside of the behavior strategies classroom.

Results of this study are comprised of data collected on each participant for observed target behaviors determined by a functional behavioral assessment (Larson & Maag, 1998) and whether the student was academically engaged during the observed interval. Individual results are discussed for each participant and include findings on the following: (a) functional behavioral assessment (FBA), (b) observed target behavior, and (c) observed academic engagement. Finally, overall findings of best practice are discussed.

Participants

Jason

Jason a student who uses both disruptive behaviors and off-task behaviors to escape adult requests and academic tasks. Prior to starting this study, Jason's Individual Education Team met and agreed to utilize planned ignoring to address his display of disruptive behavior in the

classroom. Therefore, data collected for Jason's FBA was centered on Jason's problem behavior related to academic engagement. The results of the functional hypothesis are as follows:

Functional Hypothesis: When in the classroom Jason will be off- task in order to escape an academic task.

Baseline. Jason did not demonstrate disruptive behaviors during this study. The mean occurrence of academic engagement in foundational history was (*M* = 43%, range = 0% to 100%), in foundational English (*M* = 56%, range 33% to 100%), with an overall (*M* = 50%,). This is a new English class for Jason. Prior to the start of the semester, although still foundational English, Jason was in an English class with instruction presented for students with lower reading levels', however, his most recent reading scores resulted in a placement change. His teacher is the same, but the class period and peers in attendance have changed. There was also one student in the class who Jason does not like and repeatedly complained to the point of becoming agitated. In addition, baseline was taken the first week following winter break. These factors may be directly related to Jason's high rates of off-task behavior.

Intervention. The mean occurrence of academic engagement in foundational history was (*M* = 30%, range = 0% to 100%), in foundation English (*M* = 72%, range 50% to 100%), with an overall (*M* = 51%). The intervention package without context resulted in a 20% decrease in off-task behavior (*M = 67%*) and a 16% increase in academic engagement; without reinforcement resulted in a 27% decrease in behaviors (*M = 60%*) and a 28% increase in academic engagement (*M = 79%*). Figures (4.1) shows Jason's mean scores for each intervention package. During this phase contextual factors used to address Jason's off-task behaviors involved the use of (a) proximity, (b) seating arrangement, and (c) overcrowding. Based upon the results of a reinforcement inventory, Jason's reinforcements include written and

verbal praise from an adult. Jason demonstrated a decrease in off-task behaviors during both time periods. Results indicated when the intervention without context was implemented, Jason's behaviors decreased. Whereas, academic engagement improved for foundational English class, but declined in history. Additional factors that may be related to these outcomes are as follows (a) an undesired classmate had a schedule change, (b) history had a substitute for 2/3 data collection days, (c) academic eligibility is required for golf participation.

Best Practice. The mean occurrence for off-task behavior in foundational history was (*M* = 94%, range = 71% to 100%), in foundation English (*M* = 91%, range 71% to 100%), with an overall (*M* = 93%). Academic engagement decreased by more than 50% from baseline; foundational history was (*M* = 9%, range = 0% to 29%), in foundation English (*M* = 26%, range 0% to 71%), with an overall (*M* = 18%).

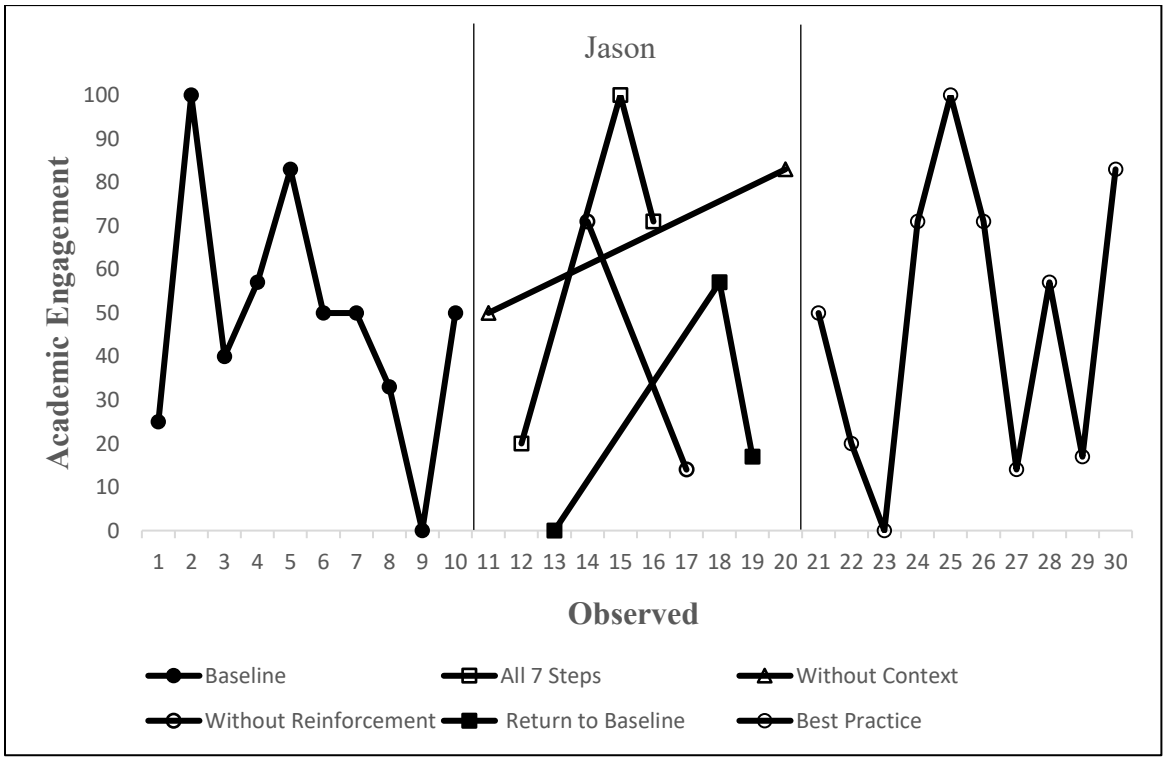

Figure 4.1 *Jason's Results for Academic Engagement*

Chris

Chris demonstrates disruptive behavior by making inappropriate comments and jokes that may be offensive towards others regarding race, gender, religion, sexual orientation, etc. Data collected for Chris's FBA was centered on Chris's problem behavior related to inappropriate language. Teachers also report that Chris is more likely to show respect with male authority figures over females. The results of the functional hypothesis indicate that Chris demonstrates this behavior two to three times per class periods in the general education classroom for various periods of time. These behaviors typically occur during small groups, when not in proximity of an adult, and when noise levels in the classroom are elevated. The results of the functional hypothesis are as follows:

Functional Hypothesis: When Chris is in a small group setting and not in proximity of an adult, or noise is elevated in the classroom, Chris will demonstrate disruptive behavior by making inappropriate comments and/or use inappropriate language in order to seek attention from peers.

Baseline. The Mean occurrence of disruptive behavior in Chemistry was (*M* = 3%, range = 0% to 14%), in English (*M* = 0%, with an overall (*M* = 3%, range = 0% to 14%). These results are minimal and do not reflect reported behaviors during the first half of the school year and may be related to schedule changes and increased class sizes. On the contrary, Chris's teachers report consistency with levels of academic engagement from the previous semester in chemistry (*M* = 68%, range = 57% to 85%), in English (*M* = 75%, range 50% to 100%), with an overall (*M* = 72%).

Intervention. The Mean occurrence of disruptive behavior in Chemistry was (*M* = 3%, range = 0% to 100%), in English (*M* = 3%, range = 0% to 16%), with an overall (*M* = 3%).

Chris's disruptive behavior appeared to increase overall, however; results were variable during a return to baseline. In addition, results of the sole data point for all seven-steps, disruptive behaviors were elevated. The mean occurrence of academic engagement in chemistry was (*M* = 80%, range = *5*0% to 100%), in English (*M* = 73%, range 20% to 100%), with an overall (*M* = 77%). The intervention package without context resulted in a 3% decrease for disruptive behavior (*M = 0*) and an 11% increase in academic engagement (*M = 83%*), similarly without reinforcement resulted in a 3% decrease in disruptive behavior (*M = 0%*) and a 22% decrease in academic engagement (*M = 50%*). Figures (4.3) and Figures (4.4) show Chris's mean scores for each intervention package.

Best Practice. The mean occurrence of disruptive behavior in Chemistry was (*M* = 39%, range = 0% to 14%), in English (*M* = 37%, range = 0% to 14%), with an overall (*M* = 38%). The mean occurrence of academic engagement in Chemistry was (*M* = 67%, range = *4*0% to 100%), in English (*M* = 77%, range 33% to 100%), with an overall (*M* = 72%). Further, a 10-day gap occurred between the intervention phase and the implementation of best practice due to Chris's absence for a surgical procedure. Following his procedure, Chris was taking medication during this phase, making it difficult for him to remain awake at the start of the day. Overall, results showed a decline in Chris's behavior, like the previous semester, while maintaining levels of academic engagement.

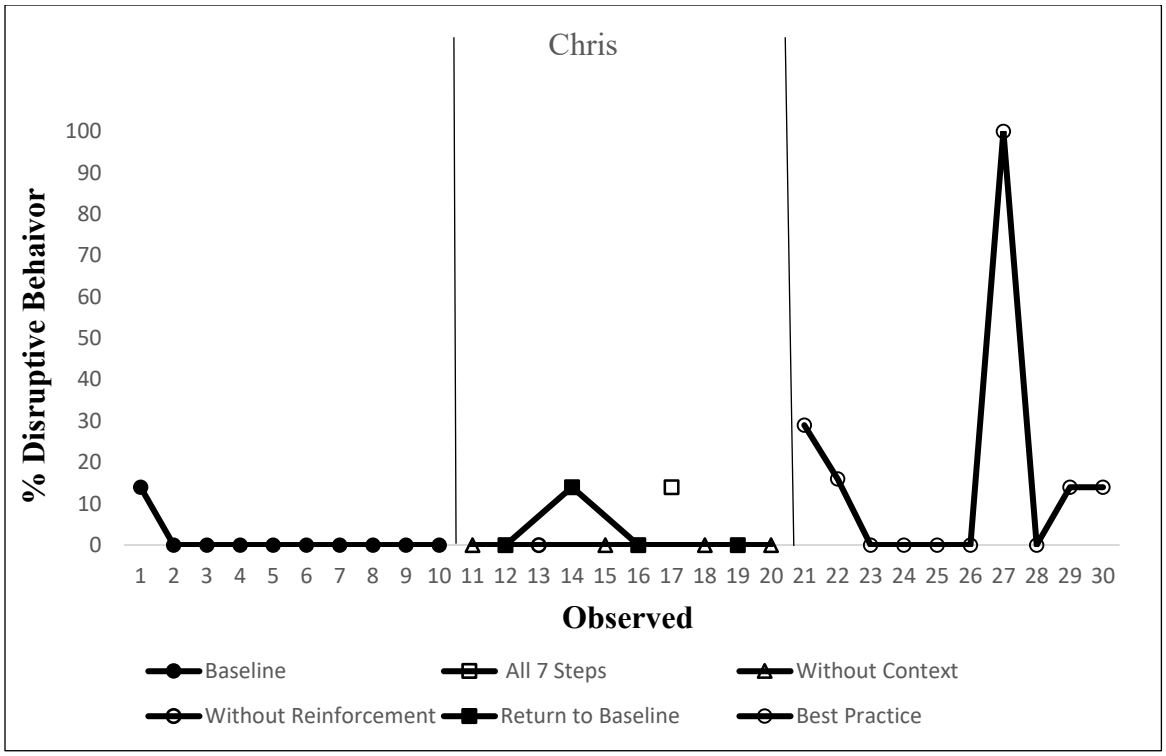

Figure 4.2 *Chris's Results for Disruptive Behavior.*

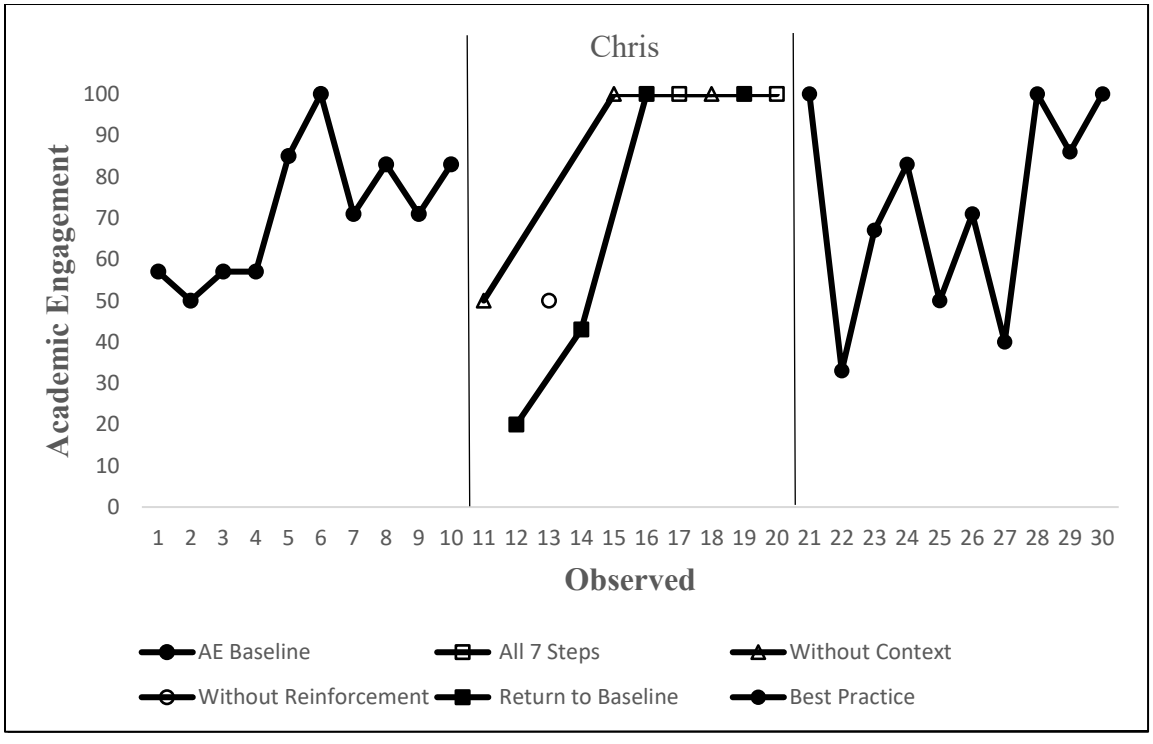

Figure 4.3 *Chris's Results for Academic Engagement.*

Susan

Susan demonstrates disruptive behavior by talking across the room, using inappropriate language, and discussing inappropriate topics during classes outside of the behavior strategies classroom to include foundational history and Lit Lab, a tier-2 literature class. She is often out of her seat and around the classroom and disturbing others. Data collected for Susan's FBA indicates that she demonstrates these behaviors three to four times per class period for periods that range from 15 seconds to five minutes and involves classmates. The results of the functional hypothesis are as follows:

Functional Hypothesis: When in the classroom with classmates, Susan will demonstrate disruptive behaviors in order to gain both positive and negative peer attention.

Baseline. The mean occurrence of disruptive behavior in foundational math was (*M* = 29%, range = 0% to 43%), in Lit Lab (*M* = 30%, range = 0-71%, with an overall (*M* = 30%). The mean occurrence of academic engagement during foundational math was (*M* = 57%, range = 14% to 86%), in Lit Lab (*M* = 69%, range 50% to 100%), with an overall (*M* = 63%).

Intervention. The mean occurrence of disruptive behavior in foundational math was (*M* = 25%, range = 0% to 75%) in Lit Lab (*M* = 46%, range = 14% to 67%), with an overall (*M* = 36%), indicating a slight decline in disruptive behavior in math, with a 16% increase in disruptive behavior during history in which a substitute was present on 2/5 data collection days. However, Susan's level of academic engagement increased across all classes throughout the intervention with all classes during the intervention phases in which the intervention without reinforcement was the greatest. The mean occurrence of academic engagement in foundational math was (*M* = 94%, range = *83*% to 100%), in Lit Lab (*M* = 72%, range 50% to 100%), with an overall (*M* = 83%).

The intervention package without context resulted in a 5% decrease in off-task behavior (*M = 25%*) and a 25% increase in academic engagement (*M = 88)*; without reinforcement resulted in a 1% decrease in disruptive behavior (*M = 29%*) and a 12% increase in academic engagement (*M = 75%*). Figure (4.5) and Figure (4.6) shows an scores for each intervention package.

Best Practice. The mean occurrence of disruptive behavior in foundational math was (*M* = 39%, range = 14% to 100%), in Lit Lab (*M* = 37%, range = 14% to 100%), with an overall (*M* = 38%). While implementing the intervention package without reinforcement Susan's display of disruptive behaviors were maintained. Levels of academic engagement presented a slight decline from the intervention, but a strong increase from baseline also occurred. The mean occurrence of academic engagement in math was (*M* = 71%, range = *33*% to 100%), in Lit Lab (*M* = 85%, range 67% to 100%), with an overall (*M* = 78%).

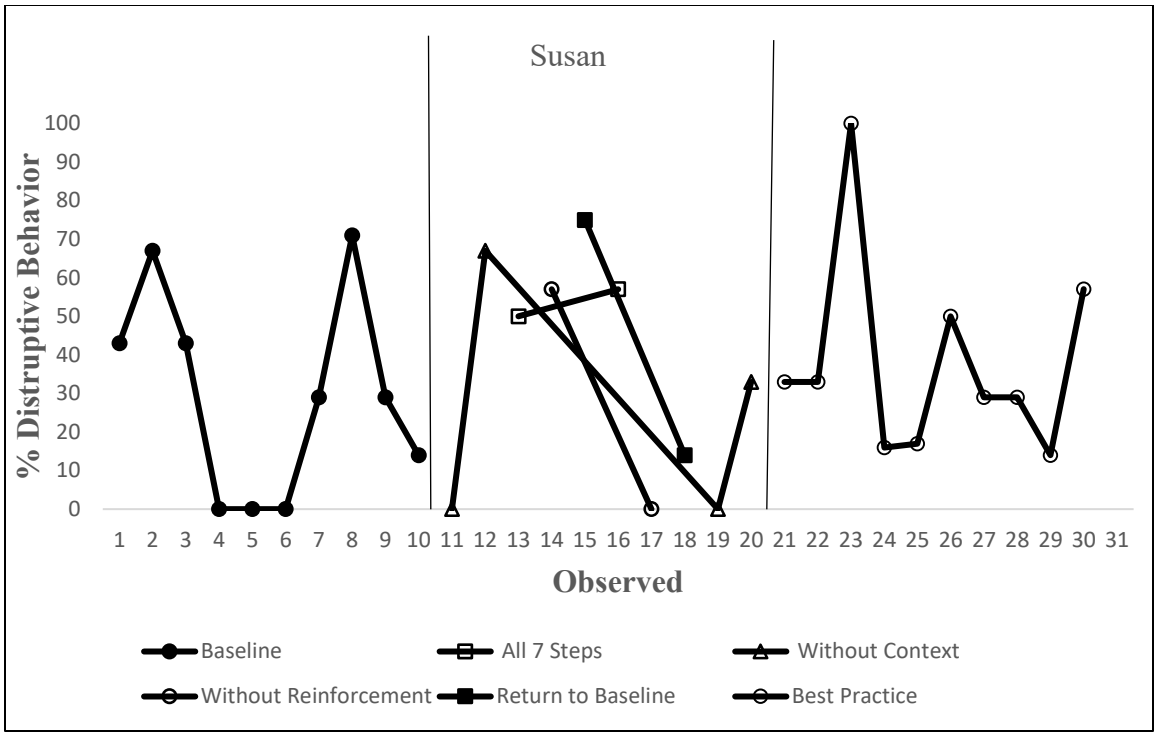

Figure 4.4 *Susan's Results for Disruptive Behavior.*

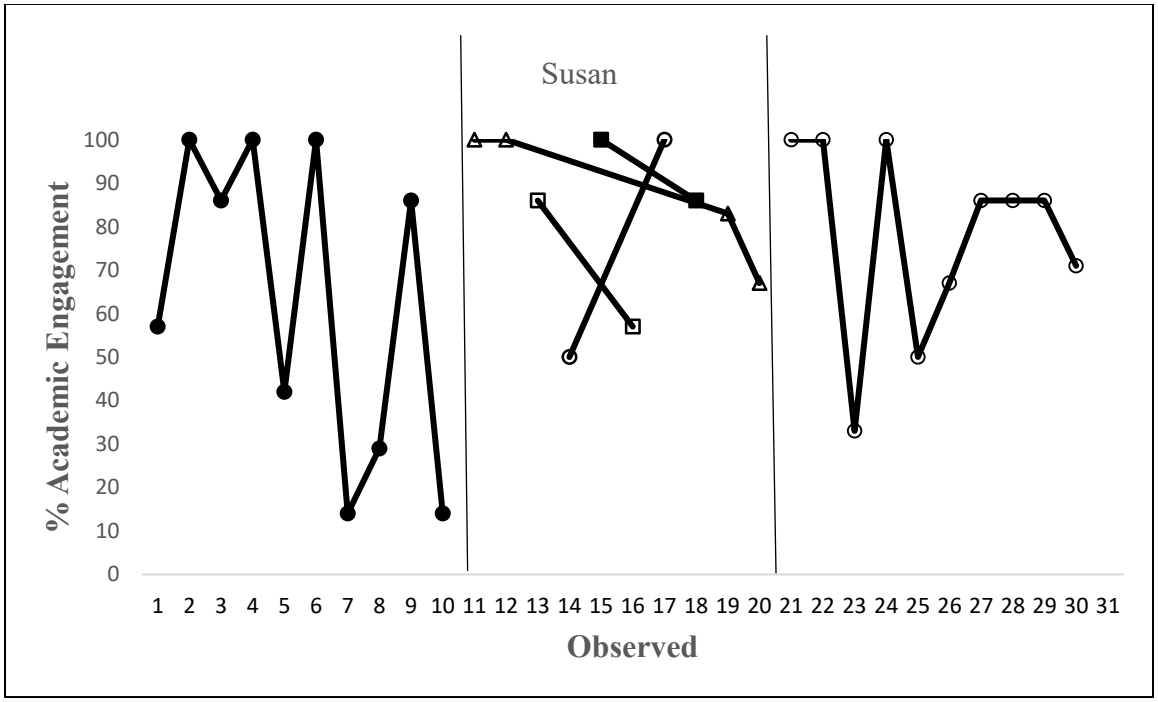

Figure 4.5 *Susan's Results for Academic Engagement.*

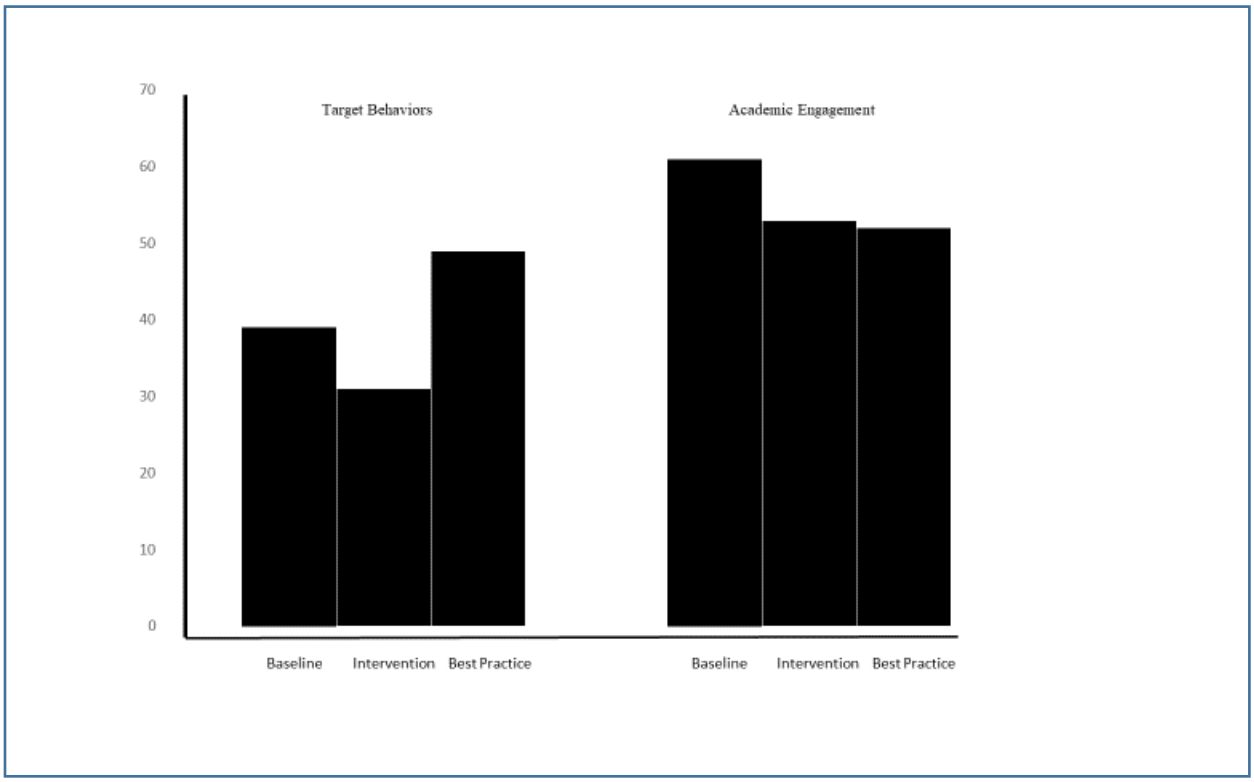

Figure 4.6 *Mean Results of Intervention Per Subject Pool.*

Precorrection Subject Pool Results

Overall, the mean results for the target behaviors from baseline (*M = 39%*) to the intervention phase (*M =31%*) show a slight decline. Results during the best practice phase (*M = 49%*) indicate an increase of observed target behaviors by (*M = 18%*) and an overall difference of (*M = 10%*) from baseline. Academic engagement declined slightly from baseline (*M = 61%*) to (*M = 53%*) during the intervention phase, and (*M = 52%*) observed during the best practice phase.

Best Practice. The purpose of the best practice phase involved (a) identifying the intervention that demonstrated the best results, and (b) to strengthen the answers to the research questions. The selection of the best practice phase was based upon (a) visual analysis, (b) levels of academic engagement, and (c) the individual student. In addition, results of identifying best

practice aligned with the research questions (a) Are contextual factors a necessary step in Colvin's 7-Step Precorrection instructional approach to reducing externalizing behaviors and(b) Is reinforcement a necessary step in Colvin's Seven-Step Precorrection instructional approach to reducing externalizing behaviors. The collection of best practice data occurred for five data points across both time periods (T1 and T2).

Selection of Best Practice. The selection of the intervention package without reinforcement was based upon the results from the student subject pool. Results of visual analysis indicated variability across all three students. When all Seven-steps were implemented two of the three students had an increase in the target behavior in lieu of a decrease in the overall presentation of the target behavior (M = 28%), with only one student showing an increase in academic engagement. Further, the intervention package without context (M =47%), and academic engagement (M =79%) was comparable without reinforcement (M = 44%), and academic engagement (M = 68%). Moreover, two of the three students respond to proximity of an adult, therefore the selection of the intervention package without reinforcement appeared to provide an advantage and was implemented for the best practice phase of this study.

Results of Best Practice. Results of the best practice phase, without reinforcement showed an increase of 16% in the observed target behaviors (M = 56%) for all three students. Academic engagement remained the same for one of the three students with an overall decline of 13% with students being academically engaged (M = 56%) of the time. Finally, when the results of best practice were examined by class period across students, while it increased academic engagement for a total of three class periods across students, the observed target behaviors only decreased for one student in one class period.

Summary of Findings

The purpose of this research was to determine if two of the seven steps in the precorrection strategy (Colvin, Sugai, & Patching, 1993) were necessary components of the intervention package to reduce problem behavior in less restrictive classrooms for students identified at-risk or with ED. Two main research questions were explored: (a) are contextual factors a necessary step in Colvin's Seven-Step Precorrection instructional approach to reducing externalizing behaviors? and (b) is reinforcement a necessary step in Colvin's Seven-Step Precorrection instructional approach to reducing externalizing behaviors? The data from this study indicates that all seven-steps of a precorrection are not necessary to reduce externalizing behaviors in high school students at-risk for or with ED in less restrictive classrooms. However, individual and classroom factors may be directly related to the presented outcomes. Specifically, implementing a precorrection strategy for both without contextual factors and without reinforcement resulted in a decrease in the observed target behaviors. However, the impact on academic engagement differed in that it decreased for one student. Moreover, although outcomes were not prominent during the best practice phase, a two-week gap occurred for one student between the intervention and best practice phase due to a medical absence. Furthermore, implementing all seven-steps of the precorrection strategy resulted in an increase in the observed target behaviors for two of the three students.

Chapter 5 - Discussion

The purpose of this study was to determine if all the seven steps of a precorrection strategy (Colvin, Sugai, and Patching, 1993) were necessary components of the intervention package to reduce externalizing behaviors for high school students identified at-risk or with ED in a less restrictive classroom. Specifically, this study examines the results of removing the steps for modifying the context and providing strong reinforcement on the outcomes for the observed target behaviors using an alternating treatments design across four phases (a) all seven steps, (b) without context, (c) without reinforcement, and (d) return to baseline. This chapter will summarize the results in relation to each of the research questions, the implications for practice, limitations for research, and recommendations for future research.

Without Contextual Factors

Addressing contextual factors in the classroom requires educational staff, including special education teacher, classroom teachers, and paraeducators to hypothesize the functional relationship between the context and the target behavior demonstrated by the student (Colvin, Sugai, and Patching, 1993). Although, the context is not limited to the environment and may include factors that extend from the specific component of an assignment to the arrangement in the room (Conroy & Strichter, 2003). It was hypothesized that addressing the needs of students from a more restrictive environment to a less restrictive environment poses limitations for both classroom teachers and special education staff. From a special education standpoint, there may be limits based on teacher perception and logistics to coordinate such adjustments. Based upon the results of an FBA, two out of the three students respond to proximity, including attention from adults and therefore contextual factors were limited to room arrangement and proximity to an adult.

Results of implementing the steps within a precorrection strategy without addressing contextual factors reduced disruptive behavior for two out of three students, while increasing levels of academic engagement for all three students. Although these results indicate that contextual factors are not a necessary component of a precorrection, when all seven steps were implemented disruptive behavior increased for two students and academic engagement decreased for third student. It may be important to consider the range of contextual factors was limited and academic content was not addressed.

Furthermore, it is not known the extent in which outside variables described served as an additional reinforcement for the student participants. For example, on the days that Susan had JROTC, she was expected to wear her military uniform. Based upon observations, she carried herself in a way that was more defined of her fellow classmates, even when she was observed outside of the classroom. Similarly, Jason knew that having passing grades was required to maintain eligibility for golf. In particular, during the intervention phase of best practice, an increase in academic engagement was observed so that he could attend a golf event, but once he met the criteria for the immediate event, we saw a decline in his academic engagement.

Finally, it is unknown whether the schedule itself served as a contextual factor during times this step was withheld. Not only, does the complexity of the highschool schedule make it difficult to manage the logistics of an intervention with limited resources, it may be that a relationship exist with days that classes were shorter, lunch was earlier than later, the unknown impact of snow days, and/or even the students class preference depending on which block was occurring.

Without Reinforcements

The purpose of providing strong reinforcement as part of a precorrection strategy is intended to disrupt patterns of problem behavior with a new behavior (Colvin, Sugai, and Patching, 1993). Essentially, a reinforcer is something desired by a student to encourage and increase the likelihood that the problem behavior will be reduced.

Reinforcers used for this study were limited to adult attention and access to small tangible items including small snacks. For the purpose of this study, it was hypothesized that reinforcement was not a necessary component of a precorrection strategy to reduce externalizing behaviors. Specifically, reinforcers can be used as a stand-alone intervention. Recognizing that students may not be exposed to the basic components of a precorrection to include identifying expected behavior and taking steps to ensure the student is aware of the expectation, is given an opportunity to practice the expected behavior, and that being aware of their progress may be enough to reduce the externalizing behaviors. Furthermore, taking the time to implement these components may simultaneously serve as a reinforcer for students that desire adult attention.

Results of this intervention package showed a reduction in disruptive behavior for two out of three students, similarly, academic engagement increased for two out of three students. The nature of the results for the student subject-pool were similar to those in contextual factors with the exception that the percentage of increase in academic engagement was greater for the intervention without reinforcement. Likewise, isolating whether outside variables served as a specific reinforcer for the individual student may have been relevant, but was not examined further. Although reinforcers were withheld, for example, extracurricular activities, particular classes, and factors related to the schedule may have served as a reinforcer, therefore results may mislead. Overall, when looking at the individual results of all seven steps, it may be important to

consider whether other steps served as a reinforcer for the student, or a stronger reinforcer is desired.

Implications for Practice

This study resulted in variations in reduction of externalizing behaviors across three students. While overall results of the randomly assigned interventions showed a reduction in the observed target behaviors across students, aligning best practice for each student is more likely to address variability related to the individual student. Furthermore, findings across students were not isolated to a specific target behavior. Although each students' levels of academic engagement served to provide comprehensive results, it was also conflicting with the results of interventions across students at various phases.

The initial hypothesis for this study maintained that two of the steps in a precorrection strategy (Colvin, Sugai, & Patching, 1993) were unnecessary to reduce problem behavior with this population in less-restrictive classrooms. Furthermore, the selection of without reinforcement in the case of best practice was not only based upon results of the intervention, but also the assumption that it was likely that adult attention could be provided through proximity, serving as a suitable reinforcer of the expected behavior for two of the three students. Nevertheless, results of the current participant pool indicate that although this may be true in individual cases, generalization across individual participants was not demonstrated. This study did not go beyond the use of proximity in terms of seating arrangement or proximity to an adult to address contextual factors, nor did it go beyond verbal praise and simple snacks when implementing positive reinforcement. Similarly, challenges exist with other interventions that involve multiple components.

Although the results of academic engagement did not serve as sole answer to a research question, the results provide a comprehensive look at the impact of the interventions. Specifically, the impact of examining levels of academic engagement raised raises questions as pertaining to the impact on the target behavior. For example, when the reinforcement step was eliminated increased the academic engagement for two students was noted within the intervention phase. It does not reflect the same results during the best practice phase across students.

What is most interesting is that when without reinforcement was continued as best practice, academic engagement was maintained for one student and increased from baseline for another, but when results were compared to those from without context two students showed a reduction in academic engagement. Furthermore, implications to practice may be directly related to the complexity of a student who is identified at-risk or with EBD. Specifically, a precorrection strategy is a tier-2 intervention and although the identified students are being served in a less restrictive environment, they may best be served with interventions that are paired or at the tier-3 level.

In addition, it is not known what impact the daily schedule has on the individual participants or the intervention. Recognizing that although the blocks intend to serve as a visual schedule, the variation in bell schedules varies the duration of class depending on whether it is a blue or white day and what time the student will eat lunch. These changes within the schools' control may serve as the foundation for contextual factors, making it difficult for the participants to regulate their behavior throughout the school day. When adding components outside of the school's control to include holidays and unpredictable weather, that alone raises questions the importance of providing a structure that serves to address day to day instruction. Essentially, the

extent to which the schedule served as a contextual factor and may have directly impacted the outcomes of this study.

Limitations

This study has several limitations that may impede the generalization of the intervention and findings, including participant factors, school-imposed factors, study design, and human factors. These limitations are discussed in detail and should be considered when making conclusions about whether addressing contextual factors and strong reinforcement are necessary to reduce externalizing behaviors in less-restrictive classrooms for students at-risk for and with ED. Furthermore, the lack of research involving a precorrection strategy for this population and at the high-school level is also noteworthy in making generalizations of the findings within this study.

Participant factors. This study was comprised of a small sample size. This study began with four students as outlined in the original design, however due to the attrition of one student and lack of available participants that met the study's criteria, this study was comprised of three students. Moreover, one of the students baseline scores did not represent observed levels of problem behavior. Further, the small sample size put limitations on the target behaviors that were addressed. Specifically, off-task behavior was only studied for one student and non-compliance was not examined at all. Additionally, the use of proximity to an adult and seating arrangements may not have been the only contextual factors needed by the student. For example, Conroy & Strichter (2003) describe a list of contextual factors that should be considered in future studies to include making academic modifications (Losinski, Maag, Katsiyannis, & Ennis, 2014). Similarly, strong reinforcement was limited to verbal praise and simple snacks, which also may have limited the results based on the desires of the individual

student. Another issue was related to student attendance. During the study, one student had a 10-day absence for a medical procedure that occurred between the intervention phase and the best practice phase. Upon his return to school, he was on pain medication and behind on his work.

School-Imposed Factors. This study took place at the start of a new schedule in which all the participants had some level of schedule change to include class content and the attendance of peers, and other influences. For instance, Chris was extremely excited to start work study for the first time at the start of the semester. This allowed him to be out of the school setting for two class periods per Blue day, which may have contributed to a change in his behavior between semesters. Similarly, Jason's academic engagement appeared to be influenced by golf. He would do nothing for days, cram to meet eligibility, and then be back to doing nothing again. Susan participated in JROTC, and teachers report that she had less problem behaviors on days that she wore her uniform to school. Furthermore, school scheduling put limitations on the research team and classroom teachers to provide consistency. First, the high school uses block scheduling with three different bell schedules, which impacted the length of time classes were from one time period to the next. Lunch occurred at different times on different days depending on the bell schedule. The overall design of the schedule is structured to provide consistency as follows: The first two days of the week align with the A bell schedule A (90 minute classes), the second two days of the week align with the B bell schedule (80 minute classes with a 45 minute advisory period in the middle of the day), and on the last day of the week the C bell schedule is followed (80 minute classes with a 45 minute period at the end of the day which rotates for advisory and special events). In addition, the schedule incorporates one late start day per month. On these days school begins 90 minutes late, and bell schedule C is incorporated

without advisory at the end of the day. This study took place during second semester when school sessions did not equate to a full school week for the duration of this study due to two non-school days, one late start, and school cancellations due to winter weather. In turn, frequent adjustments to the scheduled block and bell schedule were made to compensate for the missed school days. Finally, schedule changes resulted in some blocks occurring consecutively, interfering with the studies design for rapid delivery of an intervention.

Study Design. The purpose of using an alternating-treatments design was to distinguish between multiple intervention packages (Kazdin, 2011) to answer the research questions for this study. The intervention packages included (a) all seven steps, (b) without context, (c) without reinforcement, and (d) return to baseline. Although the packages were delivered randomly, an equal number of conditions did not occur for all participants. Return to baseline was incorporated to strengthen the results of the intervention, however with time constraints and limited opportunities for the intervention to occur, the return to baseline within the phases may have hindered these results. Furthermore, the unequal number of data points and the unequal occurrence of the intervention packages made it difficult to validate the results of the data to determine best practice.

Human Factors. Two human factors occurred. The first involved the inconsistent rating on the students self-monitoring charts by the classroom teacher. Specifically, the role of the classroom teacher involved rating the student's daily student and teacher monitoring charts. Teachers were individually trained on how to rate students based upon the written criteria of the target behavior, located at the bottom of each chart. Two teachers consistently rated the student based upon how they compared to the other students in that class period instead of on the student's criteria. Despite individual conferences with the teacher's ratings on individual

behavior charts did not always align with data collected by the interventionist. Although, this data is not directly tied to the results of the interventions, the student may have been under the impression that the behaviors exhibited were acceptable.

Recommendations for Future Research

In lieu of the limitations noted above, future researches should not only replicate the relics of this study within the high school setting, but replicate previous research with students identified at-risk and with ED. In addition, replications from studies conducted with students in elementary school and middle school, based upon suitability, should be conducted in high school settings (e.g., Sprauge & Thomas, 1997; De Pry & Sugai, 2002, Haydon & Kroeger, 2012, etc.). While this study examined the impact of implementing a precorrection strategy without the steps of addressing contextual factors and providing strong reinforcement, these steps should be further examined beyond the limitations of the interventions used within this study (proximity, seating arrangements, verbal praise, snacks).

Moreover, future studies should examine a wider range of participants in order to increase a comprehensive understanding of how function and various target behaviors are impacted by the various components of a precorrection strategy. Although this study indirectly examined the impact that the identified step-reduction had on academic engagement, results were promising in providing a comprehensive look at how the components of a precorrection impacted the participant pool in less-restrictive classrooms and therefore, future research should address the impact of academic engagement along with externalizing behaviors.

Finally, when implementing studies within the high school setting, future research should be conducted at the beginning of the school year to support time constraints, schedule adjustments, and challenges that may be presented with high school scheduling.

Conclusion

This study found that all seven steps are not necessary to reduce externalizing behaviors for high school students identified at-risk or with ED in less-restrictive classrooms. Although results in reducing externalizing behaviors were sought during the interventions of without contextual factors and without reinforcement, they were comparable. In addition, results with all seven steps showed a reduction in behaviors.

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Appendix A - Informed Consent Statements

KANSAS STATE UNIVERSITY

INFORMED CONSENT

PROJECT TITLE: Antecedent Interventions to Reduce Problem Behaviors in Students
APPROVAL DATE OF PROJECT: 10/5/18 EXPERIATION DATE OF PROJECT: 8/13/19
PRINCIPAL INVESTIGATOR: CO-INVESTIGATOR(S): Sherry A. White, ABD
CONTACT AND PHONE FOR ANY PROBLEMS/QUESTIONS: (785) 717-4200, ext. 4280
IRB CHAIG CONTACT/PHONE INFORMAITON: Rick Scheidt (785) 532-3224

PURPOSE OF THE RESEARCH: The purpose of the study is to see if all of the steps in a precorrection strategy are necessary to reduce problem behavior and increase academic engagement in highschool aged students.

PROCEDURES OR METHODS TO BE USED: Participating students will interact with a member of the research team who will lead them through a precorrection strategy. Precorrection is essentially taking time before a high stress situation to go over the rules and expectations for the student in the situation to go over the rules and expectations for the student in that situation. We will implement the intervention, and observe your child's behavior directly after the intervention.

LENGTH OF STUDY: 6 weeks
RISK ANTICIPATED: None
BENEFITS ANTICIPATED: Improved student classroom behavior and academic engagement.

EXTENT OF CONFIDENTIALITY: A member of the research team will be responsible for carrying out this intervention and collecting data. Data will be collected by direct observation of the students in class. Participants will be identified using a pseudonym developed by the research team. Only members of the research team will know the true identify linked to the pseudonyms. Data will then be stored in a locked cabinet in Dr. Losinski's office in the college of education at K-State. Data will only be available to Sherry White or Dr. Losinski.

IS COMPENSATION OR MEDICAT TREATMENT AVAILABLE IF
INJURY OCCURS: No
PARENTAL APPROVAL FOR MINORS: _____
TERMS OF PARTICIPATION: I understand this project is research, and that my participation is completely voluntary. I also understand that if I decide to participate in this study, I may withdraw my consent at any time, and stop participating at any time without explanation, penalty, or loss of benefits, or academic standing to which I may otherwise be entitled.

I verify that my signature below indicates that I have read and understand this consent form, and willingly agree to participate in this study under the terms described, and that my signature acknowledges that I have received a signed and dates copy of this consent form.

(Remember that it is my requirement for the P.I to maintain a signed and dated copy of the same consent form signed and kept by the participants).
Participants Name: _____
Parent Name: _____
Parents Signature: _____ Date: _____
Witness to Signatures: (Project Staff) _____ Date: _____

Appendix B - Teacher Information

(Pre-baseline):

Dear all,
I am currently in the process of completing my dissertation at Kansas State University. I will have staff in your classes for the next two weeks taking baseline data on (student participant's) behavior as identified for my study.

During this time, interactions will be minimal in order to maintain the integrity of the intervention. Thereafter, the intervention phase will only include two class periods. If your class period is selected for my study, I will share additional information with you at that time. Please note, students identified for this study have not been informed for the purpose of maintaining intervention integrity. Do contact me if you have concerns with your student participant's behavior during the study.

Sincerely,

(Post-baseline):

Hello teachers!

I have recently reviewed my collection of baseline data as part of my research. If you are reading this email students assigned to your class from my caseload met the criteria to receive a Tier 2, antecedent-based intervention known as a precorrection. A precorrection is an instructional approach comprised of seven-steps, involving the manipulation of antecedents to replace the predictable problem behavior with a new or expected behavior. The steps are as follows: (1) identify the context and the predictable behavior, (2) identify and define the expected behavior, (3) modify the context, (4) practice the expected behavior (behavioral rehearsal/check for understanding (5) provide strong reinforcement for the expected behavior, (6) provide prompts (should occur just before) for the expected behavior, (7) monitor student progress. The steps will be delivered using an alternating-treatments design to identify whether all 7 steps of a precorrection are necessary to reduce the targeted problem behavior. This means that data will be collected for the identified students across two different class periods for 5 data collection days each. Each student has been randomly assigned one of four intervention packages for each data collection day to include (a) implementing all 7 steps, (b) implementing all 7 steps minus contextual factors, (c)

implementing all 7 steps minus strong reinforcement, and (d) return to baseline. Following the collection of 5 data points per class I will examine the data to determine the intervention package that serves as the best practice to reduce problem behavior in the classroom. This practice will be implemented for an additional 5 data collections days to complete my study.

The implementation of the intervention will be done primarily paraeducators. However, the intervention package that requires the paraeducator to address contextual factors may require a change that pertains to the following areas: (a) the environment, (b) classroom management and organization, (c) curricular and instructional factors, and/or (d) social structure and interactions. In this case, you will receive explicit instructions from me for that specific class period. For example, the student may need to move seats, other students may need to be redirected from disruptive behavior, or you could be asked to increase your proximity near the student. In addition, students in this study will be provided a teacher/self-monitoring checklist specifically designed to allow monitoring of their target behavior (disruptive behavior/on-task behavior). At the end of each class period the paraeducator will prompt the student to rate their progress in the form of positive points on a chart based upon an outlined criterion for that class period. Next, they are to bring the chart to you, and have you rate their progress. All my para's have been trained on these charts and will walk you through the process. Finally, I will provide you with a behavior rating scale (BIRS), comprised of 24 questions. This scale measures your perception as to whether the intervention, an evidence-based practice, will be effective in reducing problem behavior in the classroom for high school students assigned to my caseload. Please complete these and return them to me (via school mail or send back with the paraeducator) by Monday January 28th.

I have attached the research article (Colvin, Sugai, & Patching, 1993) in which my study is based upon along with the forms that the student and paraeducator will be using. I will email you individually regarding details that pertain to the individual students assigned to your class. I would be happy to answer any questions or concerns that you may have about this intervention.

Sincerely

Sherry White

(Pre-intervention)

Dear Mr./Mrs. _____

_____ is your assigned para for the following student(s) _____. I will also have a second staff member in your classroom 20%-30% of the time to conduct interobserver agreements for reliability purposes. Please let me know if you have any questions or concerns.

Study Participants/Hour/Target Behavior

Sincerely,

Sherry White

Appendix C - BIRS

The Behavior Intervention Rating Scale.

Behavior Intervention Rating Scale

You have just read about a child with a classroom problem and a description of an intervention for improving the problem. Please evaluate the intervention by circling the number which best describes your agreement or disagreement with each statement. You must answer each question.

	strongly disagree	slightly disagree	disagree	agree	slightly agree	strongly agree
1. This would be an acceptable intervention for the child's problem behavior.	1	2	3	4	5	6
2. Most teachers would find this intervention appropriate for behavior problems in addition to the one described.	1	2	3	4	5	6
3. The intervention should prove effective in changing the child's problem behavior.	1	2	3	4	5	6
4. I would suggest the use of this intervention to other teachers.	1	2	3	4	5	6
5. The child's behavior problem is severe enough to warrant use of this intervention.	1	2	3	4	5	6
6. Most teachers would find this intervention suitable for the behavior problem described.	1	2	3	4	5	6
7. I would be willing to use this intervention in the classroom setting.	1	2	3	4	5	6
8. The intervention would not result in negative side-effects for the child.	1	2	3	4	5	6
9. The intervention would be appropriate for a variety of children.	1	2	3	4	5	6
10. The intervention is consistent with those I have used in classroom settings.	1	2	3	4	5	6
11. The intervention was a fair way to handle the child's problem behavior.	1	2	3	4	5	6

12. The intervention is reasonable for the behavior problem.	1	2	3	4	5	6
13. I liked the procedures used in the intervention.	1	2	3	4	5	6
14. The intervention was a good way to handle this child's behavior problem.	1	2	3	4	5	6
15. Overall, the intervention would be beneficial for the child.	1	2	3	4	5	6
16. The intervention would quickly improve the child's behavior.	1	2	3	4	5	6
17. The intervention would produce a lasting improvement in the child's behavior.	1	2	3	4	5	6
18. The intervention would improve the child's behavior to the point that it would not noticeably deviate from other classmates' behavior.	1	2	3	4	5	6
19. Soon after using the interventions the teacher would notice a positive change in the problem behavior.	1	2	3	4	5	6
20. The child's behavior will remain at an improved level even after the intervention is discontinued.	1	2	3	4	5	6
21. Using the intervention would not only improve the child's behavior in the classroom, but also in other settings (e.g., other classrooms, home).	1	2	3	4	5	6
22. When comparing this child with a well-behavior peer before and after use of the intervention, the child's and the peer's behavior would be more alike after using the intervention.	1	2	3	4	5	6
23. The intervention should produce enough improvement in the child's behavior, so the behavior no longer is a problem in the classroom.	1	2	3	4	5	6
24. Other behaviors related to the problem behavior also are likely to be improved by the intervention.	1	2	3	4	5	6

(Elliott and Treuting, 1991)

Appendix D - Precorrection Checklist/Plan

Precorrection Checklist and Plan	**Teacher:** _____ **Student:** _____ **Date:** _____ /_____ /_____
☐ 1. Context	
Predictable behavior	
☐ 2. Expected behavior	
☐ 3. Context modification	
☐ 4. Behavior rehearsal	
☐ 5. Strong reinforcement	
☐ 6. Prompts	
☐ 7. Monitoring Plan	

(Colvin, Sugai, & Patching, 1993)

Appendix E - Data Collection Sheets

Baseline Data: Overall & individual determination of T_1 & T_2

Time	M	T	W	Th	F	Staff/Initials	Notes (ex. Sleep, absent, office, etc.)
8:30-8:45							
8:45-9:00							
9:00-9:15							
9:15-9:30							
9:30-9:45							
9:45-10:00							
10:00-10:15							
10:15-10:30							
10:30-10:45							
10:45-11:00							
11:00-11:15							
11:15-11:30							
11:30-11:45							
11:45-12:00							
12:00-12:15							
12:15-12:30							
12:30-12:45							
12:45-1:00							
1:00-1:15							
1:15-1:30							
1:30-1:45							
1:45-2:00							
2:00-2:15							
2:15-2:30							
2:30-2:45							
2:45-3:00							
3:00-3:15							
3:15-3:30							
3:30-3:45							
TOTALS AE/TB Daily %							Weekly %: _____ / _____

(White, 2018)

Student (Pseudonym): _____ Date: (T1) _____/(T2)_____

Time	T1	AE	IV	T2	AE	IV	Adult/Initials	Notes
Class								
8:30-8:45								
8:45-9:00								
9:00-9:15								
9:15-9:30								
9:30-9:45								
9:45-10:00								
⇓								
3:30-3:45								
TB Totals								TB Percentages T1_____ T2____
AE Totals								AE Percentages T1_____ T2____

Baseline Data T_1 & T_2

Target Behavior (Circle One): Disruptive behaviors Non-compliance Off-Task (White, 2018)

Disruptive behaviors are verbal or physical behaviors that directly impeded the teacher's ability to teach and interferes or disrupts the learning of others. Examples of disruptive behavior include (a) blurting or talking out of turn, (b) talking at inappropriate times or about inappropriate topics or using inappropriate language, (c) making physical or verbal noises, and (d) touching others or objects.

Non-compliance occurs when a student (a) verbally or physically refuses an academic or non-academic request (e.g., student says "no" or "I am not doing that", shoves his or her assignment off the desk, or lays their head on the desk).

Off-task occurs when the student is disengaged with from the immediate academic task or teacher request. **On-task** occurs when the student is engaged and attends to the immediate academic or non-academic task. The student may be observed (a) looking in the direction of the instruction or task, (b) the student is working in their assigned area, and (c) the student is engaged in the assigned task.

How to complete this form: Part 1: (a) Put a (+) in the corresponding box for target behavior (TB) to indicate the target behavior occurred, (b) put a (-) to indicate the behavior did not occur, (c) leave blank if the student was not observed. **Part 2:** (a) Put a (+) in the corresponding box for academic engagement (AE) to indicate a student was "ON-TASK". **Part 3:** Under the box marked IV indicate record the intervention package for the appropriate period. This information will be provided by the researcher daily.

Student (Pseudonym): _____ Date: (T1) _____/(T2)_____

Time	T1	AE	IV	T2	AE	IV	Adult/Initials	Notes
Class			3			3		
8:30-8:45								
8:45-9:00								
9:00-9:15								
9:15-9:30								
9:30-9:45								
9:45-10:00								
⇓								
⇓								
3:30-3:45								
TB Totals								TB Percentages T1_____ T2____
AE Totals								AE Percentages T1_____ T2____

Best Practice Data T_1 & T_2

Target Behavior (Circle One): Disruptive behaviors Non-compliance Off-Task (White, 2018)

Disruptive behaviors are verbal or physical behaviors that directly impeded the teacher's ability to teach and interferes or disrupts the learning of others. Examples of disruptive behavior include (a) blurting or talking out of turn, (b) talking at inappropriate times or about inappropriate topics or using inappropriate language, (c) making physical or verbal noises, and (d) touching others or objects.

Non-compliance occurs when a student (a) verbally or physically refuses an academic or non-academic request (e.g., student says "no" or "I am not doing that", shoves his or her assignment off the desk, or lays their head on the desk).

Off-task occurs when the student is disengaged with from the immediate academic task or teacher request. **On-task** occurs when the student is engaged and attends to the immediate academic or non-academic task. The student may be observed (a) looking in the direction of the instruction or task, (b) the student is working in their assigned area, and (c) the student is engaged in the assigned task.

How to complete this form: Part 1: (a) Put a (+) in the corresponding box for target behavior (TB) to indicate the target behavior occurred, (b) put a (-) to indicate the behavior did not occur, (c) leave blank if the student was not observed. **Part 2:** (a) Put a (+) in the corresponding box for academic engagement (AE) to indicate a student was "ON-TASK". **Part 3:** Under the box marked IV indicate record the intervention package for the appropriate period. This information will be provided by the researcher daily.

Student/Teacher Monitoring Forms

Name (pseudoname): _____
Student/Teacher Self-Monitoring

BLOCK Check-in/turn-in behavior chart/get a new one for the day.	Student Monitoring *Do First	Teacher Rating	COMMENTS	Teacher Initial
Date for T1:				
T1 B/W Hour 1 2 3 4				
Date for T2:				
T2 B/W Hour 1 2 3 4				
			Total Points:	

One positive point will be given for each item when the student demonstrates non-disruptive behavior. Please list item # of concern for your hour and initial.

Target Behavior: Non-disruptive behavior

1. Did not blurt out or talk out of turn
2. Did not talk at inappropriate times or about inappropriate topics or use inappropriate language.
3. Did not make verbal or physical noises during class
4. Did not tough others or objects

Name (pseudoname): _____
Student/Teacher Self-Monitoring

BLOCK Check-in/turn-in behavior chart/get a new one for the day.	Student Monitoring *Do First	Teacher Rating	COMMENTS	Teacher Initial
Date for T1:				
T1 B/W Hour 1 2 3 4				
Date for T2:				
T2 B/W Hour 1 2 3 4				
			Total Points:	

One positive point will be given for each item when the student demonstrates on-task behavior. Please list item # of concern for your hour and initial.

Target Behavior:

1. Looking in the direction of the instruction or task
2. Staying in my assigned area
3. Engaging in and/or completing the assigned task

(White, 2018)

Appendix F - FBA

FUNCTIONAL ASSESMENT HYPOTHESIS
FORMULATION PROTOCOL

I. BEHAVIOR DEFINITION

A. Definition Components: Operationally defining the problem behavior is the first step in conducting an effective functional assessment. In order to arrive at a reliable definition that can be observed and measured, answer the following questions:

1. What does the problem behavior look like? (check one that is the greatest concern)

___talks out/disrupts class	___tardy/late to class
___insubordination	___out of seat/place
___not completing work	___excessive movement/fidgeting
___inappropriate language	___threatening
___destruction of property	___theft
___aggression	___ other (specify_____

2. How is the behavior performed (topography)? *Consider the following categories: type of physical movement; use of objects;*

_____

_____

3. How long does it last when it occurs (duration) ? *Check box that corresponds to the approximate length of action and circle the appropriate time measurement*

___ 1-2 seconds/minutes	___ 15-20 seconds/minutes
___ 3-5 seconds/minutes	___ 20-25 seconds/minutes
___ 5-10 seconds/minutes	___ 25-30 seconds/minutes
___ 10-15 seconds/minutes	___ other_____

(Maag, J.W., 1998)

4. How often does it occur (frequency) ? *Indicate the rate of occurrence using formula:*

   _____ times per _____ . Ex: three or four times an hour.

5. How damaging or destructive is the behavior (intensity)? *Ex: with no physical injury*

6. Where does the behavior occur and who is typically involved (setting)?

B. Definition Summary: Using the answers to the questions above, write an operational definition of the target behavior. *Ex: During the transition periods when new students are present, Jane uses aggression by striking peers with an open hand on the back for one to two seconds three or four times a periods with no physical injury.*

II. FACTOR IDENTIFICATION

A. Setting Events: Using the checklists below, identify factors that usually occur prior to or as a result of the problem behavior.

1. Factors that appear to set off/and or precede the problem behavior :

   Teacher behaviors:
   _____Task explanation/demand
   _____ Performance feedback/evaluation
   _____ Lesson presentation/lecture
   _____Teacher reprimand

(Maag, J.W., 1998)

_____Teacher encouragement/praise
_____Individual attention to student
_____Independent work/lack of attention

Student behaviors:
____Drowsy/sleepy appearance
____Physical complaints (hunger, pain, etc.)
____Disturbed affect (sad, angry appearance)
____Excessive motor activity (fidgety, restless)
____Peer attention (negative)
____Peer attention (positive)

Environmental factors:
____Elevated/excessive noise levels
____Presence of unusual/extra adult(s)
____Presence of unusual/extra peer(s)
____Transition task/activity (expected/routine)
____Transition task/activity (unexpected/irregular)
____Access/availability of preferred activity/task
____Termination of preferred activity/task
____Access/availability of food

2. Factors that appear to maintain/follow the occurrence of problem behavior:

Teacher behaviors:
____Teacher reprimand
____Teacher encouragement/praise
____Task removal
____Withdrawal of teacher attention/ignoring

Student Behaviors:
____Peer attention (negative)
____Peer attention/affirmation (positive)
____Withdrawal of peer attention/isolation

Environmental factors:
____Access/availability of preferred activity/task
____Removal of student to alternative setting

(Maag, J.W., 1998)

B. Behavioral Intent Identification: Using the checklist below, identify the possible functions or outcomes that the behavior may serve for the student. If more than one function appears to be a reasonable explanation, rank order your responses from 1 to 3 with 1 being the most likely function of the behavior.

___Attention
___Tangible
___Gain access to objects/activities
___Gratification
___Escape/avoid task/event
___Power/control
___Acceptance/affiliation/approval
___Sensory stimulation
___Expression of self
___Justice/revenge
___Escape/avoid attention
___Other_____

III. OBSERVATION

Observer: _____ Date
Began_____

Target Behavior:
_____

Activity	Time	Days									
		M	T	W	TH	F	M	T	W	TH	F

Note: Baseline data sheets were utilized to record data.

(Maag, J.W., 1998)

IV. FUNCTIONAL HYPOTHESIS

A. Hypothesis statement: Using the information from sections I, II and III, construct a hypothesis statement according to the form.

When

_____

(identify setting events)

_____ will

_____

(student) (behavior)

in order to

_____

(intended outcome/function)

B. Functional Analysis Plan: In order to test the hypothesis, the following functional analysis will be attempted:

1. Contextual Modification: (What changes in environment/and or teacher behavior will be attempted?)

2. Curricular Accommodation: (What changes in instructional materials/techniques will be attempted?)

Replacement Strategy: (What new behaviors/strategies will be taught?)