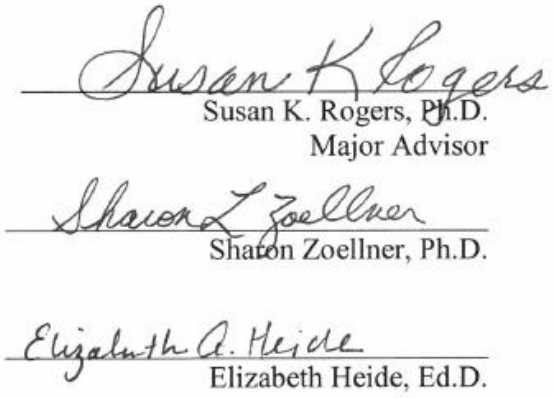
The Effects of PBIS on Attendance, Behavior Referrals, and Academic Achievement in an Urban High School

Krista A. McGee
B.A., University of Missouri- St. Louis, 2001
M.S., Lindenwood University, 2003

Submitted to the Graduate Department and Faculty of the School of Education of Baker University in partial fulfillment of the requirements for the degree of Doctor of Education in Educational Leadership



Date Defended: August 20, 2019

Abstract

Positive Behavioral Interventions and Supports (PBIS) has been identified as an evidence-based approach that integrates strategic interventions to provide benefit for students and schools (Sugai & Simonsen, 2012). PBIS is an effective alternative to managing student behavior when compared to the traditional, punitive approach to student discipline infractions (Sugai & Horner, 2006). However, an extensive literature review revealed the limited application of PBIS in the high school setting. The purpose of this study was to broaden the range of research by determining the impact of PBIS on high school students' major behavior referrals resulting in out-of-school suspension (OSS), major behavior referrals resulting in in-school suspension (ISS), attendance, and academic achievement, specifically examining the state of Missouri End-of-Course exams in Algebra I, Algebra II, English 10, Biology, and Government. The quantitative causal-comparative study was conducted at an urban, Midwest high school, and participants were all students enrolled in grades 9-12. Data from all students were analyzed over five years (two years before PBIS implementation, the year of PBIS implementation, and the two years after PBIS implementation). Inconclusive results were denoted regarding the impact of PBIS on students' major behavior referrals resulting in ISS and OSS. Likewise, evidence was inconclusive when analyzing changes in student attendance. When academic achievement was analyzed by content area, the results were mixed. Due to the inconclusive findings within this study, additional research should be conducted before any actions related to PBIS are taken.

Dedication

This study is dedicated to my husband, Jon, who never stopped believing in me, even on the days I was uncertain. Without your never-ending support, love, and patience, I would not have been able to complete this task.

My children, Quinn, Riley, and Sawyer, were so patient with me over the years and dealing with an exhausted and stressed mom, who at times, was not so patient. You are my everything; have made me stronger, better, and more fulfilled than I could have ever imagined. I love you to the moon and back.

My mother, Janis Arnold, you are my rock and role model. Thank you for showing me how to be an independent woman and instilling the mindset that I could achieve anything I put my mind to accomplishing.

My father, Tom Suda, and stepmother, Melinda Suda, who kept pushing me to do more and never stopped asking, "Are you done yet?" Thank you for the countless offers of "grandparent duty" in order for me to accomplish my goal.

Lastly, my siblings, Angela Mossengren, Tyler Suda, and Tommy Suda, for constantly supporting me throughout this journey. Thank you for talking me off the ledge so many times and encouraging me to "just keep swimming."

Acknowledgements

I want to convey my deepest gratitude to Dr. Susan Rogers and Dr. Peg Waterman for all their time, continued support, and encouragement throughout this process. Dr. Rogers was not only my major advisor but a mentor, guide, confidant, and friend during one of the most difficult years of my career in education. I am forever thankful and will miss her and our conversations greatly when this journey ends. To Dr. Waterman, thank you for your patience and willingness to help me understand the intricacies of Chapter 3, your incredible knowledge of statistics, and mostly your sense of humor that kept me smiling through the chaos. Dr. Sharon Zoellner, thank you for your consistent encouragement, immediate feedback, and the countless hours spent on revisions during this research project.

I would also like to thank members of the Center School District staff. To Dr. Sharon Nibbelink, Superintendent, and Dr. Michael Weishaar, Assistant Superintendent, for helping me obtain permission to conduct this research and for acquiring the data needed. Thank you both for the gift of time and understanding during the completion of this study.

To Joyce Suedmeyer, Supervisor over Data and Student Records and one of my closest friends, thank you for your constant support and advice. You have been instrumental in providing information crucial to the completion of this study. To Neil Corriston and Bethany Sylvester, school counselors and close friends, thank you for constantly pushing me to persevere, being my cheerleading squad and sounding boards. To Brad Sweeten, Athletic Director for Center School District, thank you for loving me even when I had no sleep and was hard to love. To Elizabeth Arbisi, Executive Director

of Academic Services, for being my shoulder to cry on and picking me up every time I fell. To Dr. Elizabeth Heide, Assistant Superintendent of Academic Services, for the Liberty School District, and undoubtedly the best mentor I have ever had, thank you for paving the road and showing me how to be a leader. To Robert Bartman and David Leone, former Superintendents, thank you for being the loud voices in my head to complete this research and for always pushing me to do better. I am so appreciative of our lifelong friendships, learning, working, and laughing together.

Lastly, my most sincere praises and thanks to God for blessing me with the ability, courage, strength, and determination to complete this goal. None of this would be possible without your love and mercy. Thank you for providing guidance and comfort when I needed it most.

Table of Contents

Abstract ii

Dedication iii

Acknowledgements iv

Table of Contents vi

List of Tables ix

Chapter 1: Introduction 1

Background 2

Statement of the Problem 6

Purpose of the Study 6

Significance of the Study 7

Delimitations 8

Assumptions 9

Research Questions 9

Definition of Terms 11

Organization of the Study 13

Chapter 2: Review of the Literature 14

Positive Behavioral Intervention and Supports 14

Benefits and Challenges of PBIS 17

Implementation of Positive Behavioral Intervention and Supports 21

Perceptions of PBIS 35

Summary 42

Chapter 3: Methods 43

Research Design....43
Selection of Participants....44
Measurement....44
Major referrals....44
Attendance....45
EOC assessments....45
EOC Algebra I....46
EOC Algebra II....46
EOC English 10....47
EOC Biology....48
EOC Government....48
Data Collection Procedures....53
Data Analysis and Hypothesis Testing....54
Limitations....59
Summary....61
Chapter 4: Results....62
Hypothesis Testing....62
Summary....77
Chapter 5: Interpretation and Recommendations....78
Study Summary....78
Overview of the problem....78
Purpose statement and research questions....79
Review of the methodology....79

Major findings....80
Findings Related to the Literature....82
Conclusions....83
Implications for action....84
Recommendations for future research....85
Concluding remarks....86
References....87
Appendices....96
Appendix A. District A Approval....97
Appendix B. Baker University IRB Approval....99

List of Tables

Table 1. EOC Scale Score Ranges by Achievement Level, 2013-2017 50

Table 2. EOC Scale Score Ranges by Achievement Level, 2017-2018 51

Table 3. Cronbach's Alpha Coefficients for EOC Assessments.....52

Table 4. Descriptive Statistics for the Test of H1 64

Table 5. Descriptive Statistics for the Test of H2 65

Table 6. Descriptive Statistics for the Test of H3 67

Table 7. Observed and Expected Frequencies for the Test of H4 69

Table 8. Observed and Expected Frequencies for the Test of H5.....71

Table 9. Observed and Expected Frequencies for the Test of H6.....73

Table 10. Observed and Expected Frequencies for the Test of H7 75

Table 11. Observed and Expected Frequencies for the Test of H8 77

Chapter 1

Introduction

Teaching and student learning are disrupted in many schools due to student behaviors (Walker, Ramsey, & Gresham, 2004). Educational leaders in urban school districts have been exploring ways to decrease classroom disruptions and address these problem behaviors (Rose, Gallup, & Elam, 1997). Therefore, attention has been directed toward approaches that offer interventions to reduce the number of office referrals, prevent disruptive behaviors, and increase students' yearly attendance. Rose et al. (1997) suggested that community stakeholders are concerned with the lack of control in schools and discipline. As a result, policies have been established within schools to attempt to increase control and discipline. Sugai and Horner (2006) found many schools implemented "get tough" practices to manage disobedience.

Skiba and Peterson (2000) found the "get tough" practices were ineffective and had little impact on changing student behavior. Horner (2003) proposed a schoolwide systems approach toward positive behavior be used to replace get tough practices. Five elements are defined in "get tough" practices: a) repeat or restate consequences, (b) increase the unfavorable consequences, (c) establish a zero-tolerance level, (d) exclude students from school through in-school-suspension and out-of-school suspension, and (e) offer students and families alternative ways to complete high school (Sugai & Horner, 2006).

Researchers have defined Positive Behavioral Intervention and Support (PBIS) as research-based strategies designed to use in the community, home, and school settings to address problem student behaviors and foster a supportive school environment (McKevitt

& Braaksma, 2008). Sugai and Simonsen (2012) explained PBIS as a systematic framework intended and designed to improve academic achievement (e.g., grades and assessment scores) and social behavior (e.g., attendance, office referrals) outcomes. A Schoolwide Positive Behavior Support (SWPBS) plan is a problem-solving process that consistently reviews school data, develops measurable goals, selects effective practices to achieve those goals, and establishes systems to enable schools to adapt and prepare the implementation of these practices (Sugai, Sprague, Horner, & Walker, 2000). Growing evidence and strategies support the positive impact PBIS can have on students when implemented in K-12 schools.

Background

This study took place in an urban school district (District A) in Kansas City, Missouri. District A was established in 1924 and has served the community and worked cooperatively to provide a quality education for its residents. The Missouri Census Data Center Demographic Profile Census (2015) reported the surrounding community population as 25,475, and the district including over 11.6 square miles. The district consisted of 2,480 students and had a median household income of $43,768. Roughly 73.9% of the district population was living below the poverty level. During the 2017-2018 school year, the only high school (School C) within the district reported an enrollment of 693 students. The student population consisted of 69.7% Black, 14% White, 7.6% Hispanic, 6.6% multi-racial, and 2.1% other students (District A, 2018). Approximately 75% of School C's student population was identified as free and reduced lunch (District A, 2018).

The PBIS framework offers tiers of support to improve educational outcomes for all students (Horner & Sugai, 2015). These tiered practices must be put in place for PBIS to be effective and efficient. PBIS in the classroom should align with the schoolwide framework put in place (Horner & Sugai, 2015). PBIS in the classroom offers strategies to provide positive classroom management for all students, such as the design of the classroom, establishing routines and expectations, consistent reinforcement of routines and expectations, response to undesired behavior, and engagement of all students (Scott, White, Algozzine, & Algozzine, 2009).

According to the Office of Special Education Programs Technical Assistance Center on Positive Behavioral Interventions and Supports (2017), the three tiers of PBIS can be explained as Universal, Selected, and Targeted/Intensive. Tier I strategies, also known as the Universal Tier, support the appropriate behavior of all students and in all settings. Tier I is designed to provide school-wide recognition for positive academics and behaviors, ensure appropriate social-emotional skills are being taught and practiced by all staff and students, and all agreed-upon expectations determined by the building and district PBIS teams are present and being met. Tier II, or the selected Tier, offers more targeted interventions for more at-risk students who display problem behaviors. Tier II consists of 10-20% of the school population and involves small group and classroom-focused strategies. Practices suggested for small groups assist in maintaining check-in/check-out interventions. These interventions refer to the small group leaders/mentors systematically monitoring student progress (e.g., tardies, overall attendance, behavioral referrals, academic performance through daily grades, and required state assessments). Tier III, or Targeted/Intensive, is typically less than 5% of the student population and

entails designing and providing individual intervention plans for students exhibiting more serious behavioral, emotional, or academic concerns (Office of Special Education Programs Technical Assistance Center on Positive Behavioral Interventions and Supports, 2017).

Due to an increase in the number of major behavior referrals resulting in in-school and out-of-school suspensions, and a decrease in overall student attendance, PBIS was introduced at School C during the 2013-2014 school year and was fully implemented during the 2015-2016 school year. Horner and Sugai (2015) suggested completing a schoolwide evaluation, first to determine what is already in place and to assist in creating goals toward change (Horner et al., 2004). Although all schools within the district received the same training, some administrators addressed the implementation differently (high school principal, personal communication, August 2015). At School C, the administration team completed a basic tally of the most commonly repeated undesired behavior according to the school database. The most frequent infractions included disrespect, disruption of the classroom, inappropriate language, and attendance issues, which included tardies and truancy. Once data were collected from all buildings within District A, school and district leaders determined a behavior intervention plan needed to be developed, and the introduction to and future implementation of PBIS began. In School C, three teachers took leadership roles and completed extensive PBIS training with three administrators. This training was conducted by the Missouri Department of Elementary and Secondary Education through the Regional Professional Development Committee (RPDC).

A PBIS representative from RPDC and a district leader were assigned to oversee the implementation. The district leader, Director of Family and Student Services, conducted all schoolwide training for building administration and staff. After training, the three teachers and administrators became the trainers and experts within their building. Building staff, including certified and non-certified, central office personnel, and administration, participated in and completed PBIS training during the 2015-2016 school year. During the 2016-2017 school year, several stakeholders, including staff and students, were invited to discuss concerns about the increased number of occurrences of behavioral referrals and offered suggestions as to how to address them. The PBIS team checklist was used to establish short-term and long-term goals and commitment to the PBIS framework. Teachers, administrators, parents, and students worked collaboratively to create a matrix that outlined major behaviors versus minor behaviors and offered teachers strategies on how to handle unwanted behaviors in the classroom. Likewise, incentives were developed for students who exhibited appropriate behavior, student achievement, and attendance percentage. After goals were established, incentives were put in place, and teachers were equipped with usable strategies, the matrix was communicated throughout the entire building through posters and videos completed by students. Lessons were created by teachers, with student input, during the start of the 2015-2016 school years and were embedded into the weekly curriculum. Students and staff were fully immersed in PBIS during the 2015-2016 school year (high school principal, personal communication, August 2015).

Statement of the Problem

Problem behaviors and troublesome environments that impact student learning and school culture and climate cannot be ignored. Significant student behaviors can lead to in-school-suspension (ISS) and out-of-school suspension (OSS), which decrease a student's opportunity to learn. As a result, attendance rates also suffer, and academic progress drops (Sanders, 2009).

During the 2013-2014 school year, District A reported an increase in major office referrals, attendance, and academic concerns at the elementary level as the reasoning behind the introduction of the PBIS framework (assistant superintendent, personal communication, August 2013). The district chose to make PBIS a district-wide initiative rather than just implementing it at the elementary level. PBIS was introduced to promote a positive climate and provide effective practices to increase student learning and behavioral outcomes. At the time of this study, the principal, staff, and community were unsure that this systematic framework was a proactive approach towards improvement in student behaviors, attendance, and academic achievement.

Purpose of the Study

The focus of this study was to examine whether the implementation of PBIS resulted in a difference in student behaviors and academic success at the high school level. The first purpose of this study was to determine the extent there is a difference in high school students' major behavior referrals resulting in OSS, major behavior referrals resulting in ISS, and attendance one and two years before PBIS implementation, the year of PBIS implementation, and one and two years after PBIS implementation. The second purpose of this study was to determine the extent there is a difference in the number of

high school students who scored proficient or advanced on the Algebra I End-of-Course (EOC), Algebra II EOC, English 10 EOC, Biology EOC, and Government EOC one and two years before PBIS implementation, the year of PBIS implementation, and one and two years after PBIS implementation.

Significance of the Study

PBIS implementation was established to address the increase in behavior referrals and a decrease in academic achievement and attendance at the high school level. (assistant superintendent, personal communication, August 2013). Through personal communication with the administration team and central office personnel (2013), District A conveyed a need for change. Likewise, after initial PBIS implementation, the administration team and central office personnel found it was necessary to determine whether the implementation of PBIS was reducing student behavior referrals and increasing attendance and academic achievement. Staff, administration, and faculty were hoping to see a reduction in absences and behavior referrals as well as an increase in overall academic achievement (assistant superintendent, personal communication, August 2013). The results of this study might provide the district with the data to determine the effectiveness of the adopted PBIS framework. The results obtained may also assist other urban high schools in deciding whether to implement PBIS at the high school level. PBIS has not been widely examined at the high school level for the main reason that limited high schools participate in the conceptual framework (Horner et al., 2004). The Office of Special Education Programs Technical Assistance Center on Positive Behavioral Interventions and Supports (2017) recognized that few studies had been conducted at the high school level due to the immense time required to implement PBIS.

Although some research has been conducted at the high school level and is still developing, most of the research has been completed at the elementary and middle school levels. Therefore, the results of this research could offer an understanding of how the implementation of PBIS can affect discipline, academic achievement, and attendance at the high school level.

Delimitations

Lunenburg & Irby (2008) noted that boundaries might be established by the researcher for the study. The following delimitations were identified in this study:

- Data regarding student ISS and OSS placements were based on office referrals.
- Student academic success was based on the Missouri EOC assessment scores in Algebra I, Algebra II, English 10, Biology, and Government for grades 9-12.
- The students attending the high school located in a small urban district in Kansas City were the participants in this study. As a result, the results of this study may not be beneficial to other schools.
- The participants in this study were students enrolled in grades 9-12 in District A. Therefore, implications related to the results of this study may not apply to elementary or middle school students.

Assumptions

Assumptions are the "postulates, premises, and propositions that are accepted as operational for purposes of the research" (Lunenburg & Irby, 2008, p. 135). The following assumptions can be made regarding this study:

- All certified and non-certified staff, central office personnel, and administration had completed training on the PBIS framework and implementation.
- All office referrals were accurate and complete.
- Staff controlled the administration of the standardized assessments professionally and ethically.
- Standardized assessment scores were accurate.
- Accurate data was maintained in the school's database.

Research Questions

The following eight research questions were developed to determine the effectiveness of PBIS and its impact on student achievement, behavioral referrals, and attendance.

RQ1. To what extent is there a difference in high school students' major behavior referrals resulting in OSS one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation?

RQ2. To what extent is there a difference in high school students' major behavior referrals resulting in ISS one and two years before PBIS implementation, the year of

PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation?

RQ3. To what extent is there a difference in high school students' attendance one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation?

RQ4. To what extent is there a difference in the number of high school students who scored proficient or advanced on the Algebra I EOC assessment one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation?

RQ5. To what extent is there a difference in the number of high school students who scored proficient or advanced on the Algebra II EOC assessment one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation?

RQ6. To what extent is there a difference in the number of high school students who scored proficient or advanced on the English 10 EOC assessment one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation?

RQ7. To what extent is there a difference in the number of high school students who scored proficient or advanced on the Biology EOC assessment one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation?

RQ8. To what extent is there a difference in the number of high school students who scored proficient or advanced on the Government EOC assessment one and two

years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation?

Definition of Terms

The following section includes definitions of key terms aligned with PBIS components and measures included in this study.

End-Of-Course Assessments (EOC). According to the Missouri Department of Elementary and Secondary Education (DESE, 2018), EOCs monitor and assess students' progress toward the Missouri Learning Standards. The Missouri Learning Standards are Missouri's content standards. Once a student has received instruction on the Missouri Learning Standards, End-of-Course assessments are administered by the school district and completed by the student. EOCs administered at School C for grades 9-12 were Algebra I, Algebra II, English 10, Biology, and Government.

In-school-suspension (ISS). According to School C (2017), ISS is a form of consequence where a building administrator will separate the student from the school environment for a specified amount of time. Students are placed in a designated area and provided daily work from assigned classes. Students are not allowed to attend any school activity either during the ISS period or after school on the day of the ISS. Students found participating in a school activity may be subject to an out-of-school-suspension (School C, 2017).

Office referrals. According to School C (2017), discipline referrals may involve minor or major student behaviors reported in detail to the administration. Minor and major referrals are determined by School C’s student handbook and discipline manual, as well as by the school staff. Minor referrals include tardies, dress code violations, truancy

to class, minor horseplay (where the danger to others is unlikely), and general profanity. Major referrals include dangerous behavior, direct profanity, physical and sexual harassment, bullying, insubordination, and excessive or egregious disrespect. At School C, all office referrals are managed and processed by building administrators.

Out-of-School-suspension (OSS). According to School C (2017), OSS is a form of consequence that will temporarily remove the student from the school community. OSS is not an authorized absence, and make-up work is not provided except in the cases of papers, projects, and major tests. During the duration of the suspension, students are not permitted to participate in or attend school activities. Students found on school grounds during an OSS will be considered trespassing and may be subject to further disciplinary action (School C, 2017).

Positive Behavioral Interventions and Supports (PBIS). Horner et al. (2000) stated that PBIS is an effective and efficient systematic framework that provides schools with interventions and strategies to enhance student learning and support positive student behavior. According to the Office of Special Education Programs (OSEP) Technical Assistance Center on Positive Behavioral Interventions and Supports (2018), "PBIS is an implementation framework for maximizing the selection and use of evidence-based prevention and interventions practices along a multi-tiered continuum that supports the academic, social, emotional, and behavioral supports of all students" (para. 1).

Positive Behavior Supports (PBS). OSEP Technical Assistance Center on Positive Behavioral Interventions and Supports (2018) indicated that PBS are the support strategies that are used within the classrooms, schools, and other education settings, to assist students that may have difficulty in following the rules. The PBS practice

emphasizes the development of systems to support the implementation of procedures that assist students in meeting academic and social goals.

Schoolwide Positive Behavior Supports (SWPBS). When an entire district or school supports, adopts, and implements the evidence-based procedures, OSEP Technical Assistance Center on Positive Behavioral Interventions and Supports (2017) indicated this constitutes an implementation of SWPBS. The PBS strategies are utilized to aid in student learning throughout each individual building.

Organization of the Study

This study is structured within five chapters. Chapter 1 included an introduction, background, the statement of the problem, the significance of the study, delimitations, assumptions, research questions, and the definition of terms used in the study. Chapter 2 consists of a review of the literature and research on PBIS. Chapter 3 is comprised of the research design, the selection of participants, measurements used, data collection procedures, data analysis and hypothesis testing, and the limitations of the study. Chapter 4 contains the results of the hypothesis testing. Presented in Chapter 5 are a study summary, the findings related to the literature, and the conclusions.

Chapter 2

Review of the Literature

The PBIS conceptual framework utilizes data and intervention-based positive behavioral reinforcement and support as an alternative to traditional discipline practices (Turnbull et al., 2002). The purpose of PBIS is prevention and to modify and communicate appropriate alternative actions before negative behavior occurs. These alternative actions correct factors in the environment that may contribute to problem behaviors and concurrently teach and model appropriate conduct (OSEP Technical Assistance Center on Positive Behavioral Interventions and Supports, 2011).

Collaboration between all staff is critical to the success of PBIS. Teacher-driven data is used to assist staff in understanding students' behaviors. Therefore, teachers must understand triggers and outcomes of student behavior and work collaboratively to provide interventions essential in changing negative outcomes to positive (Office of Special Education Programs Technical Assistance Center on Positive Behavioral Interventions and Supports, 2017). The intent of this review of the literature was to examine the implementation of PBIS and its association with behavioral referrals, attendance, and academic progress. In this chapter, the history of PBIS, the benefits and challenges of PBIS, and the research on the implementation of PBIS are explored.

Positive Behavioral Intervention and Supports

The No Child Left Behind (NCLB) Act was created in 2001 to address the needs of all students attending public schools (Sergiovanni, Kelleher, McCarthy, & Wirt, 2004). The provisions of this federal act required states to provide safe learning environments and implement new educational programs within schools. The U.S. Department of

Education's OSEP and the OSEP Technical Assistance Center on Positive Behavioral Supports funded the Schoolwide Positive Behavior Support (SWPBS), where the entire district supports the adoption and implementation and introduces a framework that identifies student triggers and repetitive behaviors within schools. This organizational framework can improve the climate of schools, enhance academic achievement, introduce academic and behavior incentives, and positively support all students, including those at-risk and those who have special needs. Once these triggers are identified, PBIS teams determine the desired appropriate behaviors and work toward creating modifications within the environment to attain these desired behaviors. These modifications include teaching, positive reinforcing and redirecting, and reminding (Colvin & Sugai, 2010). According to Lane, Wehby, Robertson, and Rogers (2007), behavior management must be addressed within three areas: individual, classroom, and schoolwide. SWPBS offers options toward interventions and how to consistently develop and assess programs in order to increase the effectiveness of behavior management within classrooms and the school.

Sugai and Horner (2002) purported that five major elements are necessary for aiding the sustainability of PBIS: the establishment of the leadership team; school-wide collaboration, agreement and supports; data-based action plans and monitoring; high fidelity of implementation; and consistent positive reinforcement. When a leadership team is created, the following criteria are imperative for all members of the team: is respected by colleagues, can represent school staff, have behavior management competency, can communicate with staff, and is endorsed by the principal (Sugai & Horner, 2002). These leadership teams collect data and use the data to design strategies.

The second proposed element, schoolwide collaboration, agreement, and supports, is secured through providing staff development, committing to a 3 to 4-year investment in the PBIS initiative, and taking a preventative and instructional approach to addressing behavior and disciplinary action (Sugai & Horner, 2002). Fiscal support is necessary to ensure PBIS framework implementation success. Some areas that may require a district to secure funding include school activities associated with PBIS, the appointment of a district coordinator, building leaders, paid planning time, and necessary initial training as well as ongoing training for all staff. Scheduled collaboration time was suggested by Sugai and Horner (2002) to consistently determine and evaluate the effectiveness of the implemented PBIS framework. Data-based action plans and monitoring such as attendance patterns and behavior referrals resulting in ISS and OSS are collected, and areas of focus are determined within the teams.

Once teams are established and areas of focus are determined, changes related to problematic behaviors and ways to positively reinforce desired behaviors can begin to be revised. Sugai and Horner (2002) suggested a failure to achieve preferred outcomes may be related to poor implementation. To ensure fidelity, staff should have a clear understanding of the purpose and plan of implementation of PBIS and the supports in place to ensure sustainability. A schoolwide reward system is created to ensure consistent positive reinforcement toward students meeting school improvement goals. The PBIS team uses these goals and responsibilities to guide monitoring academic progress, attendance, and behavior referrals and focuses on rewarding students for their success in these areas.

Benefits and Challenges of PBIS

The PBIS approach, which focuses on individual students, has been shown to be a more effective approach than typical discipline-based approaches. McColley (2010) posited that schools whose students score higher on engagement measures might have a lower number of behavioral referrals. PBIS can have a positive effect on all students in a wide variety of settings including those with severe behavioral and emotional problems, as well as general and special education classrooms, alternative schools, and home settings. PBIS is used to decrease inappropriate behaviors that are destructive and disruptive across a wide range of settings and students' performance and ability (Conroy, Dunlap, Clarke, & Alter, 2005). PBIS can have long-lasting effects on lifestyle, such as increases in communication and psychosocial skills, self-monitoring, social interaction, and school engagement (Conroy et al., 2005).

Additionally, PBIS can have a positive effect on student academic achievement. Students with high numbers of behavior referrals typically have low academic performance, and vice versa; schools with a high number of disciplinary problems tend to have poor academic achievement and low standardized test scores (Irvin, Tobin, Sprague, Sugai, & Vincent, 2004). Students' academic performance and instructional time are hindered when assigned OSS and ISS due to removal from the school environment (Irvin et al., 2004). Decreases in problem behaviors result in increased academic performance. Also, there is evidence to suggest that the implementation of PBIS increases standardized test scores (Putnam, Horner, & Algozzine, 2006).

Bear (2010) identified the SWPBS approach as teacher-centered, where the main goal is to manipulate the school environment to modify, control, and better manage

student behavior. By using strategies to manipulate the environment, PBIS allows better time management, which can result in academic achievement. Through PBIS, teachers have increased instructional time, due to less time spent addressing inappropriate behavior in the classroom. Fewer students with disruptive and destructive behaviors can increase academic engagement for all students. PBIS can increase students' sense of belonging within a school and positively alter a school's overall climate. Positive school climate can contribute to fewer behavior referrals, due to a heightened sense of community and student engagement, which may account for improvements in academic progress (Irvin et al., 2004).

According to Pimper (2015), a high school in Fremont, Nebraska was awarded the School Climate Transformation Grant to implement PBIS over five years. This grant has allowed the district to fully implement the PBIS framework in kindergarten through twelfth grades and improve overall student safety and learning. This grant money has gone toward several PBIS elements that Freemont High School can attribute to implementation success, such as, more appealing incentives for high school students and adding PBIS coaching staff throughout the district. The extra funding and efforts allowed staff more opportunities for positive interactions with students and allowed students to have more control over their own learning and behavior, therefore increasing student commitment (Pimper, 2015).

OSEP Technical Assistance Center on Positive Behavioral Interventions and Supports (2017) suggested many challenges and limitations can hinder the success of PBIS implementation at the high school level. Typically, high school populations are larger than elementary and middle schools; therefore, size can be a major challenge

(Kaufman et al., 2010). Likewise, various types of behavioral problems occur at different ages due to many developmental milestones (Kaufman et al., 2010). A developmental perspective for PBIS implies that differences in development require different practices. These developmental practices target different behaviors and are used with children of different ages and grade levels (Bohanon-Edmonson, Flannery, Eber, & Sugai, 2005). High schools also have different organizational, behavioral, and academic expectations than do elementary and middle schools. The difference in expectations indicates that PBIS at the high school level must be conducted differently (Bohanon-Edmonson et al., 2005).

PBIS is a time consuming and tedious process. Implementation requires extensive planning, efforts toward creating stakeholder buy-in, and thorough, continuous training of school faculty and personnel. Complications in these areas can lead to ineffective implementation (Sugai, Horner, & McIntosh, 2008). Also, the implementation of PBIS requires consistent and detailed data collection and analysis (Tobin, 2012). Bear (2010) stated that research is also mixed regarding the effect of the PBIS extrinsic reward or token system on student intrinsic motivation. Bear (2010) cautioned that without consistent and serious evaluation and modifications to the PBIS framework, rewards might be distributed to students with the mistaken belief they are developing self-discipline skills. When, in fact, they are students simply motivated by the offered external rewards rather than intrinsic motivation. The tangible reward system can essentially have a negative impact on intrinsic motivation, as well as negatively impact student achievement. Bear (2010) suggested the popularity of the motivator is much more important than the frequency of their ability to change behavior. Educators

need to use the behavioral techniques suggested by PBIS strategically and determine what approaches are the most motivating within their classroom and to individual students (Bear, 2010).

White (2015) conducted a qualitative study focusing on staff perceptions of PBIS over five years related to the impact of implementation at the high school level. White (2015) indicated that the original purpose of PBIS implementation was to reduce the number of discipline referrals, increase attendance rates, and increase academic achievement. Although this study was focused on staff perception, the researcher recorded no significant increase or decrease in discipline referrals, attendance rates, or academic achievement. Therefore, indicating that PBIS had little to no impact at the high school level. White (2015) discussed the efficacy of PBIS and its ability to reduce behavior referrals while simultaneously increasing student engagement and academic performance when implemented accurately and with staff buy-in. During face-to-face interviews, White (2015) discovered staff buy-in was not an emphasis at the high school level, and communication with staff was nonexistent. Data related to discipline referrals, attendance rates, and academic achievement was not being shared with them by the PBIS leadership team; likewise, lessons or PBIS strategies were not regularly taught or practiced. White (2015) found some challenges that were exclusive to the high school level, such as incentives. Unless a school has funding from the district or through a grant, incentives for high school age students are much more expensive and more difficult for districts to attain due to availability. The PBIS leadership team, as well as building administration and central office personnel, played more of a critical role on the impact of implementation at the high school level. Staff could not communicate the role

of building administration, central office personnel, or school board within PBIS implementation but felt their support was necessary for the success and sustainability of PBIS. White (2015) also found that student participation was more of a challenge at the high school level, and student input was not welcomed or included during PBIS implementation.

Implementation of Positive Behavioral Intervention and Supports

The OSEP Technical Assistance Center on Positive Behavioral Interventions and Supports (2018) described SWPBS as a variety of diverse approaches that cause desired learning and social outcomes for students. SWPBS provides interventions and best practices that can lead to positive changes within school systems. SWPBS is a plan that has been researched, implemented, and delivers a positive system for schools to address misbehaviors. Research related to PBIS has shown mixed results.

Luiselli, Putnam, Handler, and Feinberg (2005) conducted a study at an elementary school consisting of kindergarten through fifth grade in an urban setting, located in the Midwest region of the United States, with approximately 600 students enrolled. PBIS was implemented, and interventions were established over three years to improve student discipline practices and academic performance. Office discipline referrals, suspensions, and the Metropolitan Achievement Test, Seventh Edition (MAT7) scores were used to determine the results of this quantitative study. Luiselli et al. (2005) found discipline referrals increased during the initial three months of implementation. However, the frequency of the referrals decreased in the last two months of the school year as well as decreased throughout the second year of the intervention. Likewise, the decrease in office discipline referrals was evident during year three of the

implementation. Regarding suspensions, the frequency did not significantly change, and average results, pre-intervention, were recorded. When examining academic achievement, Luiselli et al. (2005) stated, "our results suggest that this intervention approach can benefit students' academic performance" (p. 192). Due to the implementation of PBIS, reading comprehension scores increased by 18%, and math scores on standardized tests increased by 25%. Luiselli et al. (2005) found that major office discipline referrals and suspensions directly affected academic achievement and through the implementation of PBIS, the elementary school was able to decrease discipline referrals, therefore, increasing academic achievement.

Lassen, Steele, and Sailor (2006) conducted a study where PBIS was implemented over three years in a low income, inner-city school district in the Midwest. The purpose of the study was to determine the effect of PBIS on discipline referrals, suspensions, and academic achievement. There was a significant reduction in suspensions and referrals as well as an estimated recovery of over 600 hours of instructional time. Before the implementation of PBIS, instructional time was lost due to students' dismissal from the classroom as well as time taken from administrators' schedules to handle the problem behaviors. The researcher credited the recovery of instructional time for the significant improvement of standardized test scores in reading and math. Lassen et al. (2006) stated, "instructional strategies, student motivation, and student test-taking skills certainly all play a role in academic outcomes" (p. 710).

Norton (2009) conducted a quantitative study that explored the impact of PBIS on student behavior and academic achievement on seventh graders. Norton (2009) compared 350 seventh-grade students from three different middle schools within an

urban district in South Carolina. The three middle schools were chosen due to low academic achievement. Seventh graders from the 2007-2008 school year were compared to the seventh-grade class from the 2008-2009 school year. Norton (2009) used the district student database to gather data on office discipline referrals resulting in ISS and OSS. Likewise, data from the school database was used to compare math and reading scores on the state standardized MAP test. The comparison results indicated a significant effect on ISS and OSS, resulting in an overall decrease. Norton (2009) also chose to examine the impact of PBIS on discipline by gender and socioeconomic status. Data showed a significant decrease in overall discipline referrals of males over females as well as students who qualified for free and reduced lunch. No significant decrease in overall discipline referrals was found for full-pay lunch students. Norton (2009) found students exposed to PBIS performed better on reading and math MAP assessments. Reading and math scores increased significantly; however, math scores were affected more than reading. Students exposed to PBIS scored 24 points higher than the group without PBIS exposure. The result of Norton's (2009) study revealed a positive impact of PBIS on student achievement. The results also showed PBIS was effective as a schoolwide behavior management program. The PBIS framework offered teachers strategies that increased classroom management and resulted in environments with maximum instruction taking place. The researcher conjectured the findings from this study could have had the opposite effect if the leadership team did not follow the systematic structures provided by the PBIS framework.

Guest (2011) utilized archived data in a quantitative study from an urban high school in the metropolitan area of the Pacific Northwest region. Guest examined the

impact of PBIS on a cohort of secondary school students over four years. Data were collected once at the end of each school year in the following areas: office referrals resulting in in-school and out-of-school suspensions, attendance rates, and academic achievement, specifically pertaining to student GPA and course credits. Guest (2011) concluded that several unique characteristics of PBIS implementation at the secondary level existed. Guest (2011) purported, due to lack of research, secondary schools are not able to fully learn from others and have fewer choices for interventions. Guest (2011) suggested, due to higher enrollments at the high school level, students have less personal interaction with staff. Therefore, relationships tend to be content-focused rather than student-focused. Guest (2011) indicated a significant decrease in office referrals resulting in in-school and out-of-school suspensions throughout the four years. From year one to two, only 8.8% of all students earned two or more office referrals that resulted in suspensions or expulsions. From year two to three, only 7.4% of students reported, and from years three to four, 3.4% of all students earned two or more office referrals resulting in ISS or OSS. Guest (2011) determined attendance rates by evaluating enrollment numbers only. The researcher did not explore overall daily attendance rates. Guest (2011) discussed a significant decrease in dropout rates from year one to year four. Year one, Guest (2011) reported a loss of 111 students due to dropout. Year four, 51 students were reported as dropouts. Guest (2011) indicated the decrease in suspensions and expulsions, which result in removing a student from instruction, might be the cause of a significant increase in academic achievement. When analyzing GPA and course credits, Guest (2011) found a significant relationship between students' academics and their behavior. Prior to PBIS implementation, punitive

discipline measures were taken against students who did not follow building grading procedures. During this time, over 30% of the student body failed at least one course and earned a 1.9 GPA or lower. At the end of year four of PBIS implementation, 2.4% of students had a 1.9 GPA or lower due to academic supports being put in place for all students. The researcher stated that her findings directly aligned with the SWPBS framework. The findings highlighted the practices that help create a better school climate, decrease behavioral concerns, and favorably impact overall academic achievement.

A study by Taylor (2011) was used to determine if the implementation of PBIS decreased discipline office referrals within Grades 6-8. Likewise, this study was conducted to determine if PBIS implementation increased academic achievement on the reading and math portion of the end-of-course exams in North Carolina. Taylor (2011) used archived data to compare the academic achievement of students enrolled at two middle schools, East Elm and Roughedge, one year prior to implementation, during implementation, and one year after PBIS implementation. Academic achievement showed significant impact from PBIS implementation. Taylor (2011) indicated a 25-point proficiency gain in reading for all sixth graders at East Elm from the year before implementation to the year after. Roughedge students also showed a 19.6-point gain in reading proficiency over the same time period. Gains in math were not significant for sixth graders at either school. Similarly, the seventh-grade classes significantly raised reading proficiency scores within both schools, and additionally, made substantial gains in math. When examining eighth-grade academic achievement, Taylor (2011) found students at Roughedge had higher proficiency scores for reading when compared to East

Elm. However, East Elm's students showed more substantial gains in math than the students at Roughedge. Taylor found a considerable decrease in the number of office discipline referrals from both middle schools between the pre-implementation, implementation, and one-year after implementation years. East Elm's archived data showed discipline referrals dropping from 2,600 referrals a year, prior to implementation, to 2,200 referrals the first year of implementation. Office referrals continued to decrease one year after implementation. East Elm reported 1,545 referrals, one year after implementation, more than a 50% decrease. Taylor (2011) determined the PBIS framework had a positive impact on both middle school students' academic achievement and the number of office referrals.

Ross (2012) used six years of archived data from a Kentucky elementary school to determine if PBIS affected the number of in-school discipline referrals and attendance rates. The population examined in this study was considered urban with high poverty and transiency rates. During two of the six years, a dramatic decrease in major in-school discipline referrals such as theft and fighting occurred. Ross (2012) suggested factors such as lack of food, safety, housing concerns, and other concerns students of poverty face may have influenced the inconsistency of changes over the six years. The small percentage of students who maintained enrollment status from kindergarten through fifth grade showed improvement due to consistent exposure to PBIS measures such as, common language, incentives, and student buy-in. However, the students who would enter and exit the district showed no evidence of the effect of PBIS on in-school discipline referrals. Likewise, attendance rates did not increase nor decrease. Ross (2012) stated that prior to the study, the elementary school attendance rate was 96%,

indicating little room for growth. Ross (2012) noted that low socioeconomic students are more likely to experience attendance concerns, but to the credit of this elementary school attendance was strongly maintained and remained successful. Although there was no decrease over the six years, Ross (2012) could not determine if the PBIS framework affected attendance.

Deutsch (2013) conducted a study in a low-income suburban high school in western North Carolina. The purpose of this study was to determine if there was a significant decrease in overall discipline referrals for tenth- and eleventh-grade students after one year of PBIS implementation. The school requested this study to be completed to identify areas of improvement and determine the value and effectiveness of PBIS within the high school. Archived data from the school's software database was used to compare all discipline referrals from the year prior to PBIS implementation and referrals from one-year after PBIS implementation. Deutsch (2013), acknowledged that despite the lack of prior research conducted on PBIS in high schools, archived data confirmed a significant decrease in overall discipline for all tenth-and eleventh-grade students after one year of implementation. The researcher indicated the buy-in by a majority of the staff and the incentive program created might have attributed to the success and effectiveness of PBIS after only one year of implementation.

Buettner (2013) examined the effectiveness of PBIS implemented over five years across K-12 classrooms in an urban district with 4,200 students. The purpose of the study was to determine whether the implementation of PBIS reduced the number of office referrals, the severity of misbehavior, and suspension rates. Buettner (2013) also analyzed standardized state test scores to determine the effect of PBIS on student

academic achievement. Quantitative and qualitative measures were utilized in this study. Surveys, constructed of open-ended questions where respondents were asked to explain and provide examples, were distributed to staff and parents regarding the effect of PBIS on the environment and school climate. Survey results indicated teachers' optimistic feelings towards PBIS and that they had a strong belief that PBIS had a positive effect on the school climate. Equally, the parent responses indicated a belief in and support of the SWPBS framework. Through a summary of responses, Buettner concluded that PBIS was having a positive impact on the climate of the schools within the district. Contrary to survey results, Buettner (2013) discovered that there was no measurable difference in the number of office referrals during the four years of PBIS implementation and the year preceding the implementation. Likewise, there were no measurable differences in the types or severity of behavior reflected in office discipline referrals. Beuttner's (2013) results indicated a measurable difference in academic achievement for only the eighth graders. Measurable differences in academic achievement and standardized tests were not found for any other grade level within the urban district.

Tobin (2012) used archived data pertaining to office discipline referrals that were provided by 42 high schools, grades 9-12, across the United States. The researcher stated, at the time of his study, the PBIS research had been available for less than fifteen years and primarily showing effectiveness, or lack of, within elementary and middle schools. Tobin (2012) used the archived data and a checklist submitted by each school to determine if PBIS had an impact on behavior problems, in-school and out-of-school suspensions, office discipline referrals, and overall graduation rates. Schools were classified by regular, alternative, urban, and rural. Office discipline referrals were also

classified. Tobin (2012) stated a violent referral signified fighting, aggression, harassment, bullying, property damage, and weapons. Nonviolent referrals suggested disrespect, lying, disruption, theft, and dress code violations. Other office referrals indicated students being tardy or possessing drugs or alcohol. Tobin's (2012) checklist included a list of features, items, and variables vital for the PBIS framework implementation. Schools were asked to self-assess on items such as the commitment by faculty, specifically administration, and the components of establishing and maintaining a well-functioning PBIS team. Other items included expectations, rewards, and violations. Tobin (2012) requested that each of the 42 schools evaluate how their expectations, rewards, and violations were defined, taught to students and staff, supported, and how often reflected upon to determine areas of strength and weakness. Tobin's (2012) analysis suggested no significant difference in discipline referrals or expulsions in high schools before or after the implementation of PBIS. Some of his conclusions discussed the struggle with behavior problems at the high school level, and high schools, overall, still rely heavily on out-of-school suspensions as the main disciplinary action. Tobin (2012) also found that full implementation was not happening at any of the 42 schools that submitted data. Likewise, it appeared the implementation of the PBIS framework was a much more gradual approach at the high school level compared to elementary and middle schools. The self-evaluation indicated most schools wanted to be fully committed but could not fulfill all the variables, items, and features deemed necessary to the success of PBIS implementation. Tobin (2012) found no difference in behaviors or severity of behaviors between urban and rural schools. However, he concluded alternative schools

have much greater, serious behavior problems and high schools overall struggle to support students with significant behavior concerns.

Bliese (2013) conducted a mixed-methods study within three suburban elementary schools in Kansas. Data were collected over four years from 93 students, two teachers, and a principal. The purpose of the study was to determine if SWPBS was an effective intervention for the district to improve behavior and academic achievement. Bliese (2013) also examined teacher and administration perceptions regarding the effect of PBIS implementation on school culture and climate. The results of the study indicated a significant decrease in office discipline referrals throughout all four years of the study. ISS significantly decreased; however, OSS did not show a significant decrease. Similar to Luiselli et al. (2005), overall reading scores increased. In contrast, Bliese (2013) found elementary math scores did not significantly increase. Through interviews, Bliese (2013) found both teachers and the administrator perceived a significant positive change in behavior, academics, and overall school climate.

Miles (2013) conducted a qualitative study to determine if there was a difference in suspended students' grades, attendance, and the number of discipline referrals after participating in PBIS. In an inner-city school, 69 students, grades 9-11 were suspended during fall 2010 when no PBIS had been implemented within the school. The following school year, PBIS was implemented, and the same students returned. Miles (2013) compared the same students' grades, attendance, and number of discipline referrals after PBIS implementation in 2011 to the year with no implementation. Miles (2013) found a slight increase in students' overall grades and GPA. However, the increase was not substantial; therefore, Miles (2013) determined PBIS did not significantly affect student

grades. Miles (2013) determined a significant increase in attendance after the implementation of PBIS. Similarly, a significant decrease in office discipline referrals was evident after the implementation of PBIS, suggesting that it was an effective behavioral intervention.

Rhodes-Monette (2014) designed a quantitative study to determine the differences in student performance in schools with different levels of PBIS implementation across five years. Ten high schools, within the same district, were used to examine the effect of PBIS on discipline infraction rates, math and reading TAKS passing rates, attendance, dropouts, and graduation rates. Rhodes-Monette (2014) commented that results from her study contradicted the designers of PBIS, Sugai and Horner, and concluded that PBIS does not decrease the number of office discipline referrals. All six areas researched by Rhodes-Monette (2014) resulted in no significant impact due to the implementation of PBIS. Likewise, five of the six areas researched showed no significant impact due to the level at which the school fell on implementation. The dropout rates were the only indicator researched that showed a significant interaction between the PBIS level of implementation and the years of involvement by the school. Rhodes-Monette (2014) purported no significant difference in student academic performance reading or math, discipline infractions, graduation rates, attendance, or dropout rates between PBIS and non-PBIS schools.

A mixed-method study completed by Hanley-Noworyta (2015) was used to determine the effectiveness of a tier-2 PBIS model to reduce office discipline referrals for low-level disruptive behavior in a high school in western New York State over 20 weeks. Hanley-Noworyta (2015) chose 100 students to participate in an experimental check-in

and check-out process with an assigned mentor and the use of more positive behavior supports rather than punitive measures to reduce students unwanted behaviors. At the end of 20 weeks, quantitative data extracted from the school database reflected a significant decrease in office discipline referrals for all 100 student participants. Survey responses from assigned mentors and students varied. Staff mentor responses recognized the decrease in office discipline referrals and felt the mentor check-in and check-out process was beneficial to all students. However, students, despite being presented with quantitative data indicating a decrease in referrals, responded negatively to the program. Some students stated they enjoyed having someone they could trust to check on them. Hanley-Noworyta (2015) found a significant decrease in office discipline measures due to the consistent intervention of tier-2 PBIS measures and full commitment by team members to participate in a check-in and check-out, assigned mentoring program.

Priester (2015) completed a quantitative, quasi-experimental, causal-comparative study to examine the effects of PBIS on the academic achievement of ninth graders. The entire ninth-grade population of 242 students, in one urban South Carolina high school was used in this study. Priester (2015) indicated that the district was exploring platforms to implement in order to increase student achievement in math and reading. Priester (2015) piloted PBIS for one year to determine the effect on student achievement. Priester (2015) exposed 122 students to full implementation throughout one school year. The other 120 ninth graders received no exposure to PBIS during the same school year. The school district utilized MAP standardized test scores to determine academic achievement. Results indicated no significant effect on the academic achievement of students. Priester (2015) found no significant difference between the control group and experimental group

in reference to academic achievement in reading and math. Therefore, concluding that PBIS did not affect the academic achievement of students. Priester (2015) stated, although her study did not support other research on PBIS, that states the positive influence on teaching and learning, she had limited research regarding the impact and implementation of PBIS at the high school level to compare her results.

Wilkerson-Arbisi (2015) conducted a quantitative study to examine the effects of PBIS implementation within a suburban Kansas City school district. The purpose of the study was to determine if PBIS implementation had a positive impact on behavior, attendance, and academics at the elementary level. Other variables were also considered, such as race, socioeconomic status, special education placement, gender, and grade level as possible factors that may affect the implementation of PBIS. The results of this study indicated no significant changes in behavior, attendance, or academics. Although there were no significant changes, behavior, attendance, and academics were maintained throughout PBIS implementation. Behaviors resulting in office discipline referrals did not decrease; however, no increase was evident either. Likewise, no significant changes were evident related to student attendance. However, Wilkerson-Arbisi (2015) found a slight increase when specifically examining students who qualified for free or reduced lunch status. Academic achievement was determined by examining standardized test scores. A non-significant increase was evident from first to second grade, and a decrease in academic achievement was apparent at the third-grade level. The implementation of PBIS within this suburban district did not show any significant shifts in behavior, attendance, or academic achievement. Nevertheless, similar to Lassen et al.'s (2006) findings, behavior, attendance, and academics were maintained.

Pitts (2017) conducted a study in a large, rural high school. The purpose of this comparative study was to determine if there were differences among the current ninth graders who were exposed to PBIS during middle school and ninth-grade students who had no prior exposure to the program. Pitts (2017) examined office discipline referrals, student academic achievement based on standardized test scores, and teacher perceptions provided through interviews to determine the impact of PBIS on student behavior. After Pitts (2017) conducted staff interviews, she concluded that "staff did not believe PBIS was an effective tool for a high school setting" (p. 60). Pitts purported some staff believed that PBIS could be effective if it was enforced from the top, yet they believed that PBIS could not impact their school. Pitts' (2017) results showed no significant difference in academic achievement between ninth graders who had been exposed to PBIS compared to those who had not. Students who had two or fewer office referrals were more likely to score proficient or higher on the standardized math assessment regardless of their exposure or lack of exposure to PBIS. Pitts (2017) indicated that students who had exposure to the PBIS framework underperformed academically and essentially had a higher number of office discipline referrals. Ninth graders within the secondary school where PBIS was implemented showed a higher percentage of office discipline referrals than other ninth graders in the district where no PBIS framework was implemented. Pitts (2017) found "that there were significant relationships among students with high numbers of office referrals and academic deficits" (p. iv). Pitts (2017) also discovered that "The correlation among students with academic deficits and behavioral issues is existent, but there are many influential outside and uncontrollable variables" (p. 66). Some of these variables may be boundaries, changes in the

environment, and things beyond the academic setting. Pitts (2017) stated that many teachers had the mentality that students either care or do not care, and it has nothing to do with PBIS impact or implementation.

Perceptions of PBIS

In a holistic multiple case study, Fox (2013) examined the effects of SWPBS on student discipline, academic achievement, and overall school climate at two Pennsylvania high schools, three years after implementation. Fox (2013) used interviews, site observations, a review of discipline data from the Pennsylvania Office of Safe Schools, and a review of state standardized test results to collect the data for this study. After interviewing three administrators and six teachers from each site, Fox (2013) found their comments to be consistent with current SWPBS research regarding staff perceptions and beliefs toward an improvement in school climate. All staff interviewed at Site A believed that SWPBS had improved school climate. Also, the results from site B indicated all three administrators and 87% of the teachers felt strongly that SWPBS made a positive effect on their school climate. The teachers also stated that the SWPBS model provided their school with a consistent plan and expectations for staff and students to follow. Observations were conducted one time, for four hours each, in hallways, the bus area, and the school cafeteria. Site A was observed in October, and site B was observed in November. Fox (2013) felt this timeline offered both sites time to establish behavioral expectations at the beginning of the year. Fox (2013) noted that the behavioral expectations were clearly stated on the matrices, and it was evident that staff had collaborated; however, matrices were not consistently posted at each site. Additionally, observations revealed a lack of implementation, reinforcement, and modeling by staff.

Fox (2013) presumed through interviews and observations that implementation by staff was not being conducted with fidelity. Therefore, the SWPBS model had little impact on the behavior in the common areas observed at both Pennsylvania high schools. Likewise, site A and B had clear expectations established for students but lacked supervision to monitor student and staff accountability. The Pennsylvania Office of Safe Schools requires all public schools to submit yearly discipline statistics for each school, including suspensions, theft, violent acts, drug offenses, and other offenses. Fox (2013) found the data from sites A and B to be inconclusive in determining any effect the SWPBS model has on the discipline system at the high schools. Implementation of SWPBS showed no effect on reduction of discipline over the three years. Likewise, state standardized test scores did not show any impact of the SWPBS model toward increasing academic achievement. There were no significant changes in scores documented over any of the three years of implementation. Fox (2013) stated, due to lack of research on the high school level, the information provided in this study could be beneficial to other administrators and staff, at the high school level, considering the implementation of SWPBS.

Youngblom (2014) used a yearly, state-wide survey to investigate self-reported perceptions, feelings, and behaviors of students in schools where PBIS had been implemented and compared those to schools without PBIS implementation. Youngblom (2014) explored whether schools that implemented PBIS saw a positive impact on students' perceptions of their own behavior, academic achievement, as well as the behavior of others. Survey results were collected from 286 elementary, middle, and high schools in Minnesota, 143 schools had implemented PBIS, and 143 schools had not

implemented PBIS. Results from schools with PBIS implementation were compared to schools of the same grade level but without PBIS implementation. Students self-reported responses addressed behavior, discipline, adult treatment toward students, bullying and harassment, and high-risk behavior, such as drugs, alcohol, and weapons. Youngblom (2014) found consistent positive responses among elementary and middle school students who attended the schools where PBIS was implemented with fidelity. Elementary and middle school students reported lower grades but felt they cared more about doing well in PBIS schools, and they felt safe at school. Youngblom (2014) stated, although students' grades were self-reported and may not reflect actual academic achievement; students felt as if they were treated fairly by adults within the building, were listened to more, and nurtured. When compared to non-implemented PBIS schools, students reported higher instances of being sent to the office for discipline but lower instances of high-risk behavior such as drugs, alcohol, and weapons. Youngblom (2014) found fewer positive PBIS responses from high school students. The researcher believed that high schools had a more difficult time implementing PBIS with fidelity due to larger populations, less time to connect with students, and lack of staff buy-in. High school student responses reported that they were sent to the office more often for discipline-related issues in schools with PBIS. Additionally, she reported results showing higher instances of bullying and harassment within the schools that implemented PBIS, specifically grades 8-11. Youngblom (2014) purported that mixed results would be skewed due to PBIS schools choosing to participate in implementation. This choice may indicate a need for a behavioral management system within these schools and an assumption that behavior incidents were higher prior to the study.

Rubalcaba (2015) examined the characteristics of high school communities that had successfully implemented PBIS schoolwide. Data provided by the U.S. Department of Education allowed the researcher to select five high schools from across the United States that had exhibited success in decreasing ISS and OSS rates as a result of PBIS implementation. Rubalcaba (2015) compared interview responses from five different high school principals as well as five PBIS field experts. Interview questions were focused on five areas: leadership, specifically the role of the building administrator; challenges specific to high school that may arise during the implementation of PBIS; expected resources needed; necessary professional development; and the evaluation and reflective components needed at the high school level. All 10 interviewees indicated the critical role of the building principal when implementing PBIS in high schools. The building administrator's role is to primarily ensure the accountability of all stakeholders and fidelity of implementation. However, the principal is also responsible for facilitating and determining funding, collaboration time, professional development, and above all, commit to active participation. According to the five PBIS field experts, the challenges are not specific to high schools. Rubalcaba (2015) stated all 10 interviewees reported lack of staff buy-in as the most significant challenge faced during PBIS implementation. Responses also indicated a lack of resources and the apprehension to move from punitive discipline practices such as ISS and OSS toward positively supporting students. Rubalcaba (2015) purported the resource challenges specific to high school varied, yet the greatest concerns were funding for incentives due to higher cost as well as compensation for staff working above contractual hours to aid in the additional duties required to sustain the program. Rubalcaba (2015) found the biggest difference in

responses between PBIS experts and high school principals was regarding professional development. All five high school principals concentrated on who delivered professional development. While the five PBIS experts focused on the type and quality of the professional development rather than the source, all responses supported ongoing professional development and the importance of consistently embedding it into the school culture as well as daily instruction. When determining the best evaluation tools, Rubalcaba (2015) determined that both qualitative and quantitative measures are necessary at the high school level. High school principals conveyed quantitative measures such as office discipline referrals, attendance rates, and academic achievement were used consistently to determine accountability, fidelity as well as determine benefits to the school. Likewise, qualitative measures such as observations, classroom walk-throughs, and overall interactions with the students assisted in the evaluation of the success of PBIS. Rubalcaba (2015) concluded that all aspects of building leadership are required and necessary to improve school culture and create the most effective learning environment for a high school.

In a qualitative study, Carter (2017) interviewed and surveyed 22 teachers in a Georgia middle school to explore their perceptions and experiences with PBIS as it related to student in-school and out-of-school suspensions. Carter (2017) suggested discipline that excludes students from the classroom setting, such as ISS and OSS, can create a negative school environment and might have damaging consequences to all students. Through extensive interviews and surveys, Carter (2017) identified four major themes of PBIS and implementing proactive and restorative practices. Theme one focused on consistent incentives and the power of strong relationships between teachers

and students. Carter (2017) determined, through survey results, when students perceived their school climate as caring and trustworthy, they were more likely to respond positively toward staff and school rules. Teachers believed that through consistent incentives, students learned from their mistakes. However, when incentives were not consistent, students lost trust in the overall system. Theme 2 was determined to be a long-term commitment to PBIS. Carter (2017) questioned the implementation of the PBIS framework and its effectiveness. The researcher found that teachers believed, when implemented with fidelity, PBIS could positively affect ISS and OSS rates. However, a collaborative effort from the district, administration, as well as teachers, was required. Survey results indicated inconsistencies in discipline and support of the implementation of PBIS. Many responses indicated that teachers were not consistent within their classrooms as well; therefore, students' expectations could differ from class to class. Theme 3 was dedicated to improving student retention. Carter (2017) reported that the process of PBIS is designed to keep students in the classroom and engaged. Teachers perceptions and experiences agreed. When students were consistently removed from the classroom for discipline reasons, they had a much harder time returning the classroom. Teachers reported that the removal of students, such as ISS or OSS, did not solve any behavioral problems, and many times, the student exhibited the same concerns when returning. Likewise, the student was more likely to be retained due to the loss of instructional time. Theme 4 drew attention to the importance of teacher and student buy-in and how critical this is to ensure the success of PBIS. Staff conveyed buy-in as the biggest barrier to implementation. With full buy-in, they believed that behaviors would be further decreased. Survey results indicated staff believed lack of strong, building

administration support was the most important factor when determining sustainability. To warrant the success of this schoolwide approach to behavior, Carter (2017) communicated that all staff must have active and consistent involvement in the implementation.

Wheeler (2017) conducted a qualitative cross-sectional study to explore teachers' perceptions of teacher buy-in of the PBIS system at a Title I Georgia metro high school. Individual interviews were conducted with 19 teachers. The interviewees included members of the PBIS team and teachers who were not members of the PBIS team. The interview questions asked revolved around factors that contribute to or hinder teacher buy-in. Five overarching themes emerged from the interview responses as the most important factors necessary for teacher buy-in: administrator support, time, consistency, professional development, and staff incentives. The top three factors were administrator support, time, and consistency. Of the 19 participants interviewed, 10 did not buy in, and nine did buy in. Wheeler (2017) stated that administrative support was proven to be essential to implementation. Likewise, the analysis of the interviews revealed that if there is no teacher buy-in, then the schoolwide PBIS framework would fail. Teachers commented they wanted more communication in order to increase commitment. Results should be reported to teachers monthly to determine if the impact of PBIS is effective. Teacher participants reported that incentives could provide continuous support and purpose to keep staff informed and excited. Many teachers believed due to their large size, demographics, and academic roadblocks, PBIS did not work, and they needed to stop jumping from platform to platform to manage behavior. Wheeler (2017) stated time is always a factor for educators when attempting to implement any system into a school.

Wheeler's (2017) study results exposed data that indicated the perceptions teachers have regarding buy-in are some of the same factors that hinder teacher buy-in of the PBIS framework at this Georgia high school.

Summary

The purpose of Chapter 2 was to offer the background and description of PBIS as well as examine the benefits and challenges of using the framework. PBIS allows schools to identify problems collaboratively and design desired interventions toward outcomes. The availability of research related to high school PBIS implementation is limited. However, SWPBS implementation at the high school level is possible when all factors are considered. Chapter 3 includes the research design, selection of participants, measurement, data collection procedures, data analysis and hypothesis testing, and limitations of the current study.

Chapter 3

Methods

After recognizing an increase in major behavior referrals and a decrease in student achievement and attendance, District A chose to implement PBIS. The first purpose of this study was to determine the extent there was a difference in high school students' major behavior referrals resulting in OSS, major behavior referrals resulting in ISS, and attendance the two years before PBIS implementation, the year of PBIS implementation, and the two years after PBIS implementation. The second purpose of this study was to determine the extent there was a difference in high school students' scores on the Algebra I, Algebra II, English 10, Biology, and Government EOCs the two years before PBIS implementation, the year of PBIS implementation, and the two years after PBIS implementation. This chapter contains the methodology used to conduct this study. Included in this chapter are a description of the research design, the selection of participants, measurement, data collection procedures, data analyses and hypothesis testing, and the limitations of the study.

Research Design

A quantitative causal-comparative research design was used for this study. According to Lunenburg & Irby (2008), a causal-comparative research design is used when the independent variable is not manipulated and has not been controlled because it has already occurred. The dependent variables in this study were OSS behavior referrals; ISS behavior referrals; attendance rates; and student achievement scores on Algebra I, Algebra II, English 10, Biology, and Government EOCs. The independent variable was year of implementation (two years prior, one-year prior, implementation year, one-year

after, and two years after). Archived data two years prior to PBIS, the implementation year, and two years after implementation were used to assess the impact on the dependent variables.

Selection of Participants

Although the purposive sample in this study was made up of students enrolled at School C from 2013 to 2018, the students who made up the subgroups each year were different based on the dependent variable. All students enrolled at School C during the two years before PBIS implementation, during implementation year, and the two years after PBIS implementation met the criteria for inclusion in the study. Measurement of the variable, academic achievement, involved obtaining the scores of the designated students who participated in the Missouri EOC testing. The Algebra I EOC sample consisted of all freshman participants, the English 10 and Biology EOCs sample consisted of all sophomore participants, and the Algebra II and Government EOCs consisted of all junior participants during the two years before PBIS implementation, and during the implementation year, and two years after PBIS implementation.

Measurement

The quantitative measurements used are detailed in the following subsections. The measurement of major behavior referrals resulting in OSS or ISS, attendance, and academic achievement in School C is explained. A description of the EOC assessments and the reliability and validity for them is also included.

Major referrals. Student behavior issues resulting in a major referral where the student was assigned to OSS or ISS are archived in the school database. This data is analyzed monthly, quarterly, and yearly. The yearly number of major referrals resulting

in OSS, as well as ISS, for students enrolled at School C was collected and analyzed from each school year, 2013-2018. OSS assignment can result from the following behaviors: physical altercations, drug or alcohol possession, multiple offenses, digital citizenship infraction, inappropriate sexual behaviors (including sexual harassment), and significant threats made toward individuals or groups. The district database provided yearly, total numbers of ISS and OSS for each student based on the infractions denoted by the administration. Behaviors resulting in ISS were verbal altercations, disrespect toward staff, insubordination, disrupting the classroom environment, dress code violations, inappropriate language, and multiple attendance violations including truancy.

Attendance. Daily attendance is entered into District A's secure database. The daily attendance is recorded by classroom teachers and school attendance secretary. District A's central office distributes monthly attendance updates to all district employees. The state of Missouri requires a school to provide a minimum term of 174 days in an academic year. District A's attendance percentages were noted for each individual student for each school year from 2013-2018. The number of days attended by a student was divided by 174 and reported as a percentage of time attended.

EOC assessments. DESE (2015) provided EOC Assessments in Algebra I, Algebra II, English 10, Biology, and Government to communicate expectations for students, assist in measuring students' excellence toward post-secondary readiness, and identify weaknesses and strengths of all students. EOCs are an evaluation program that serves as the state of Missouri and national accountability plans. During the 2013-2017 academic years, the EOC scale scores ranged from 100-250. "The EOC scale score

determines the student's achievement level." (DESE, 2016, p. 3). For the academic year 2017-2018, the scores ranged from 100-800 (DESE, 2016).

EOC assessments are administered during the allotted testing window provided for each content area. All EOCs are completed online by students. After completion, all scoring is done by the state of Missouri. DESE (2015) explained that all tests involve a degree of measurement error. Therefore, no EOC assessment shows a perfect measure of a student's ability.

EOC Algebra I. According to DESE (2016), the Algebra I EOC tests knowledge and proficiency in the following areas: "numbers and operations, algebraic relationships, geometric and spatial relationships, measurement, and data probability" (p. 4). Algebra I EOC exams consist of multiple-choice questions as well as a performance component such as graphing linear equations. Question format remained consistent for all academic years. During the 2013-2017 academic years, a student received a scale score ranging in value from 100 to 250. The scores ranged from 325-409 or higher during the 2017-2018 school years. A student's achievement level is determined by the earned EOC scale score. This EOC assessment is not timed. During the 2013-2017 school years, students with a scale score between 225 and 250 and during 2017-2018, students with a scale score of 409 and higher were considered advanced. These students were able to carry out strategies with high precision and fluency to solve problems (DESE, 2016).

EOC Algebra II. According to DESE (2016), the Algebra II EOC tests the knowledge and proficiency in the following areas: "numbers and operations, algebraic relationships, geometric and spatial relationships, measurement, and data probability" (p. 6). This EOC assessment is not timed. Algebra II EOC exams consist of multiple-

choice questions as well as a performance component such as graphing. Question format remained consistent for all academic years. During the 2013-2017 academic years, a student received a scale score ranging in value from 100 to 250. The scores ranged from 325-411 or higher during the 2017-2018 school year. During the 2013-2017 school years, students with a scale score between 225 and 250 and during 2017-2018, students with a scale score of 409 and higher were considered advanced. These students were able to carry out strategies with high precision and fluency to solve problems (DESE, 2016).

EOC English 10. The English 10 EOC tests the knowledge and proficiency in the following areas:

> Developing and applying effective research process skills to gather, analyze, and evaluate information, developing and applying effective skills and strategies to analyze and evaluate oral and visual media, developing and applying effective listening skills and strategies, developing and applying effective speaking skills and strategies for various audiences and purposes, developing and applying skills and strategies to the reading process, developing and applying skills and strategies to comprehend, analyze, and evaluate nonfiction from a variety of cultures and times, and applying a writing process in composing text, and composing well developed text, writing effectively in various forms and types of writing. (DESE, 2016, p. 5)

English 10 EOC exams consist of multiple-choice questions as well as a performance component that consists of writing an essay. Question format remained consistent for all academic years. This EOC assessment is not timed (DESE, 2016).

During the 2013-2017 academic years, a student received a scale score ranging in value from 100 to 250. The scores ranged from 325-420 or higher during the 2017-2018 school year. During the 2013-2017 school years, students with a scale score between 225 and 250 and during 2017-2018, students with a scale score of 411 and higher were considered advanced. These students were able to effectively demonstrate their ability to organize and create adequate examples of writing, literary and information texts, and reading processes.

EOC Biology. The Biology EOC tests the knowledge and proficiency in the following areas: matter and energy; force and motion; characteristics of living organisms; processes of the earth; the universe; scientific inquiry, and technology and the environment (DESE, 2016). Biology EOC exams consist of multiple-choice questions, short answer, as well as a performance component such as graphing. Question format remained consistent for all academic years. Students receive a scale score ranging in value from 100 to 250. This EOC assessment is not timed. During the 2013-2017 school years, students with a scale score between 225 and 250 were considered advanced and were able to demonstrate their understanding of the biological concepts and their ability to apply their skills. The Biology EOC was considered a field test during the 2017-2018 school years; therefore, no scale scores were issued for Missouri students (DESE, 2016).

EOC Government. The Government EOC tests the knowledge and proficiency in the following areas:

> Principles of the republic, principles of processes of governance systems, Missouri, United States, and World History, economic concepts and principles, elements of geographical study and analysis, relationships of individuals and

> groups to institutions and traditions, and tools of social science inquiry. (DESE, 2016, p. 5)

Government EOC exams consist of multiple-choice as well as short answer questions. Students receive a scale score ranging in value from 100 to 250. This EOC assessment is not timed. Students with a scale score between 225-250 were considered advanced and were able to understand and apply a range of strategies to understand government (DESE, 2016).

Table 1 contains the EOC scale score ranges from school years 2013-2017. All EOC Assessments are based on the Missouri Learning Standards and serve as the foundation for state and national accountability goals and expectations. The EOCs assist school districts in identifying students who score below proficient in a particular content area. This information helps schools determine a course of action, to initiate, that will meet the needs of all students.

Table 1

EOC Scale Score Ranges by Achievement Level, 2013-2017

Assessment	Below Basic	Basic	Proficient	Advanced
Algebra I	100-186	187-199	200-224	225-250
Algebra II	100-185	186-199	200-224	225-250
Biology	100-176	177-199	200-224	225-250
English II	100-181	182-199	200-224	225-250
Government	100-178	179-199	200-224	225-250

Note: Adapted from *End-of-Course Assessments Technical Report*, by Missouri Department of Elementary and Secondary Education, 2017, p. 70. Retrieved from: https://dese.mo.gov/sites/default/files/asmt-eoc-gir-spring-15.pdf

The EOC format for all content areas began to change in 2017-2018 to include more short answer and writing opportunities (DESE, 2016). The scale scores were altered as well. Table 2 includes the EOC scale score ranges and achievement levels from the 2017-2018 school year. All EOC Assessments are based on the Missouri Learning Standards and serve as the foundation for state and national accountability goals and expectations. The EOCs provide school districts with pertinent information to identifying students who score below proficient in a particular content area.

Table 2

EOC Scale Score Ranges by Achievement Level, 2017-2018

Assessment	Below Basic	Basic	Proficient	Advanced
Algebra I	325-388	389-399	400-800	409 and higher
Algebra II	325-387	388-399	400-410	411 and higher
Biology[a]	NA	NA	NA	NA
English II	325-383	384-399	400-419	420 and higher
Government	100-178	179-199	200-224	225-250

Note: Adapted from *End-of-Course Assessments Technical Report*, by Missouri Department of Elementary and Secondary Education, 2018, pp. 7-17. Retrieved from: https://mo.nextera.questarai.com/Help/21208_MO1806_GIR_FINAL.pdf

[a]No student data was available for Biology EOC. DESE determined school year a field test

DESE (2016) stated reliability is intended to reflect the degree of inconsistency in test scores due to random error. Additionally, "reliability coefficients are group specific and tend to be higher in populations that are more heterogeneous and lower in populations that are more homogeneous" (p. 85). Reliability coefficients can range from 0.0 to 1.0. The coefficients for the MAP assessments are shown in Table 3. All reliability coefficients were above .8 which indicates strong evidence for the reliability of the tests.

Table 3

Cronbach's Alpha Coefficients for EOC Assessments

Course	Spring 2015	Fall 2015	Spring 2016
Algebra I	.85	.89	.87
Algebra II	NA[a]	.86	.87
Biology	.89	.92	.89
English II	.87	.89	.85
Government	.92	.90	.87

Note. Adapted from *End of Course Assessments Technical Report*, 2015-2016, by Missouri Department of Elementary and Secondary Education, 2016, pp. 88-112. Retrieved from https://dese.mo.gov/sites/default/files/asmt-eoc-tech-report-1516.pdf

[a]test not administered

Evidence of validity is related to the test content and the adequacy of alignment of the EOC assessments to the Missouri Learning Standards. "Validity evidence based on the internal structure of the EOC assessments is then provided through a correlational analysis of EOC assessment content clusters" (DESE, 2016, p. 130).

Likewise, DESE (2016) indicated

> The validity of an intended interpretation of test scores relies on all the available evidence relevant to the technical quality of a testing system . . . [This includes] evidence of careful test construction; adequate score reliability; appropriate test administration and scoring; accurate score scaling, equating, and standard setting; and careful attention to fairness for all test takers, as appropriate to the test interpretation in question. (p. 130)

The EOC assessments measure students' progress toward the Missouri Learning Standards. To ensure sufficient content is represented, DESE used a test blueprint and construction process. The following steps were taken by DESE (2016) to certify content validity: test questions were designed by Missouri teachers from diverse backgrounds, to include a wide variety of contexts and cultures; all teachers received training; detailed developmental specifications were established and were aligned with the content standards; Missouri teachers ensured all items were accessible to as many students as possible.

Data Collection Procedures

Before data collection began, permission was sought and granted from District A to use archival data in this study. The students and the District remained anonymous. The Baker University request letter was sent to the assistant superintendent of District A on August 19, 2018, requesting permission to utilize archived data and approval was received the same day (see Appendix A). An IRB proposal was submitted to Baker University on November 2, 2018, requesting permission to conduct this study. Once approval was granted (see Appendix B), data collection began.

Data were gathered from several sources. The director of district data and student records extracted pertinent data from the district database. Student discipline and attendance records were obtained from District A's iCampus database. Staff used an online discipline form in iCampus to submit behavioral referrals. Once referrals were submitted, they were electronically assigned to administration. Discipline was then managed, necessary consequences were assigned, and administrators recorded actions into iCampus. Attendance was recorded by teachers and secretaries into iCampus.

Academic achievement scores were acquired through DESE. All archived data from 2013-2018 within the district database were electronically extracted and imported to an Excel file for use in this study. The data were entered into IBM SPSS Statistics Faculty Pack 25 for Windows for analysis.

Data Analysis and Hypothesis Testing

"Hypotheses are predictions the researcher makes about the expected relationships among variables" (Creswell, 2009, p. 132). Hypotheses were created to address the eight research questions in this study. Three one factor analyses of variance (ANOVAs) were conducted to address RQ1-RQ3 because the means for the numerical variables, high school students' major behavior referrals resulting in OSS, high school students' major behavior referrals resulting in ISS, and high school students' attendance, were compared across five years. Four chi-square tests of independence were used to address RQ4-RQ8 because the categorical variables, Algebra I, Algebra II, English 10, Biology, and Government EOC assessment level (proficient or advanced, below basic, or basic) were compared across five years.

RQ1. To what extent is there a difference in high school students' major behavior referrals resulting in OSS one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation.

H1. There is a difference in high school students' major behavior referrals resulting in OSS one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation?

A one-factor ANOVA was conducted to test H1. The categorical variable used to group the dependent variable, major behavior referrals resulting in OSS, was implementation year (2013-2014, two years before PBIS; 2014-2015, one year before PBIS implementation; 2015-2016, the year of PBIS implementation; 2016-2017, one year after PBIS implementation; and 2017-2018, two years after PBIS implementation). The level of significance was set at .05.

RQ2. To what extent is there a difference in high school students' major behavior referrals resulting in ISS one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation?

H2. There is a difference in high school students' major behavior referrals resulting in ISS one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation.

A second one-factor ANOVA was conducted to test H2. The categorical variable used to group the dependent variable, major behavior referrals resulting in ISS, was implementation year (2013-2014, two years before PBIS; 2014-2015, one year before PBIS implementation; 2015-2016, the year of PBIS implementation; 2016-2017, one year after PBIS implementation; and 2017-2018, two years after PBIS implementation). The level of significance was set at .05.

RQ3. To what extent is there a difference in high school students' attendance one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation?

H3. There is a difference in high school students' attendance one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation.

A third one-factor ANOVA was conducted to test H3. The categorical variable used to group the dependent variable, attendance, was implementation year (2013-2014, two years before PBIS; 2014-2015, one year before PBIS implementation; 2015-2016, the year of PBIS implementation; 2016-2017, one year after PBIS implementation; and 2017-2018, two years after PBIS implementation). The level of significance was set at .05.

RQ4. To what extent is there a difference in the number of high school students who scored proficient or advanced on the Algebra I EOC assessment one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation?

H4. There is a difference in the number of high school students who scored proficient or advanced on the Algebra I EOC assessment one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation.

A chi-square test of independence was conducted to test H4. A two-way table was constructed with year (2013-2014, two years before PBIS; 2014-2015, one year before PBIS implementation; 2015-2016, the year of PBIS implementation; 2016-2017, one year after PBIS implementation; and 2017-2018, two years after PBIS implementation) as the row variable and Algebra I proficiency level (proficient or

advanced, below basic or basic) as the column variable. The observed frequencies were compared to those expected by chance. The level of significance was set at .05.

RQ5. To what extent is there a difference in the number of high school students who scored proficient or advanced on the Algebra II EOC assessment one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation?

H5. There is a difference in the number of high school students who scored proficient or advanced on the Algebra II EOC assessment one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation.

A chi-square test of independence was conducted to test H5. A two-way table was constructed with year (2013-2014, two years before PBIS; 2014-2015, one year before PBIS implementation; 2015-2016, the year of PBIS implementation; 2016-2017, one year after PBIS implementation; and 2017-2018, two years after PBIS implementation) as the row variable and Algebra II proficiency level (proficient or advanced, below basic or basic) as the column variable. The observed frequencies were compared to those expected by chance. The level of significance was set at .05.

RQ6. To what extent is there a difference in the number of high school students who scored proficient or advanced on the English 10 EOC assessment one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation?

H6. There is a difference in the number of high school students who scored proficient or advanced on the English 10 EOC assessment one and two years before PBIS

implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation.

A chi-square test of independence was conducted to test H6. A two-way table was constructed with year (2013-2014, two years before PBIS; 2014-2015, one year before PBIS implementation; 2015-2016, the year of PBIS implementation; 2016-2017, one year after PBIS implementation; and 2017-2018, two years after PBIS implementation) as the row variable and English 10 proficiency level (proficient or advanced, below basic or basic) as the column variable. The observed frequencies were compared to those expected by chance. The level of significance was set at .05.

RQ7. To what extent is there a difference in the number of high school students who scored proficient or advanced on the Biology EOC assessment one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation?

H7. There is a difference in the number of high school students who scored proficient or advanced on the Biology EOC assessment one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation.

A chi-square test of independence was conducted to test H7. A two-way table was constructed with year (2013-2014, two years before PBIS; 2014-2015, one year before PBIS implementation; 2015-2016, the year of PBIS implementation; 2016-2017, one year after PBIS implementation; and 2017-2018, two years after PBIS implementation) as the row variable and Biology proficiency level (proficient or

advanced, below basic or basic) as the column variable. The observed frequencies were compared to those expected by chance. The level of significance was set at .05.

RQ8. To what extent is there a difference in the number of high school students who scored proficient or advanced on the Government EOC assessment one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation?

H8. There is a difference in the number of high school students who scored proficient or advanced on the Government EOC assessment one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation.

A chi-square test of independence was conducted to test H8. A two-way table was constructed with year (2013-2014, two years before PBIS; 2014-2015, one year before PBIS implementation; 2015-2016, the year of PBIS implementation; 2016-2017, one year after PBIS implementation; and 2017-2018, two years after PBIS implementation) as the row variable and Government proficiency level (proficient or advanced, below basic or basic) as the column variable. The observed frequencies were compared to those expected by chance. The level of significance was set at .05.

Limitations

"Limitations of a study are not under the control of the researcher. Limitations are factors that may have an effect on the interpretation of the findings or on the generalizability of the results" (Lunenburg & Irby, 2008, p. 133). The limitations of this study include:

1. Teacher bias toward students could positively or negatively impact the number of major behavior referrals completed an individual basis.
2. Teacher perception of what student behavior requires a referral can influence the referral process.
3. The inconsistency among teachers regarding the fidelity of implementing best practices of PBIS strategies can increase or decrease the number of discipline referrals.
4. Variation of consequences assigned by the administration can result in inconsistent outcomes.
5. Teachers and secretaries may not accurately record daily attendance in the database as expected.
6. Outside factors, such as transportation issues, can impact student academic success due to lack of attendance.
7. Due to students' testing in many locations, the testing environment might have affected the results of this study.
8. All testing was completed online; therefore, technical problems, as well as device issues, may have occurred.
9. Time may not have been dedicated to extensive planning and efforts toward creating stakeholder buy-in.
10. Designated time toward continuous training of school faculty and personnel may not have been a priority.
11. Student participation may not have been welcomed during implementation, which can challenge the effectiveness of PBIS implementation.

12. A tangible reward system may have changed or not maintained due to turnover in staff and administration.
13. Data related to discipline referrals, attendance rates, and academic achievement may not have been consistently shared with staff to verify the importance of the PBIS framework.
14. Due to staff and administration turnover, the PBIS training process might not have been carried out with fidelity from year to year.

Summary

Chapter 3 included the methodology used in this study. The quantitative causal-comparative design was used to evaluate the impact of PBIS on behavior referrals, attendance, and student achievement. Also included in this chapter were the selection of participants, measurement, data collection procedures, data analysis and hypothesis testing, and the limitations. The results of the hypothesis testing are reported in Chapter 4.

Chapter 4

Results

The purpose of this study was to determine whether there were differences in high school students' major behavior referrals resulting in OSS, major behavior referrals resulting in ISS, attendance one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation. Additionally, the study was conducted to determine whether there were differences in the number of high school students who scored proficient or advanced on the Algebra I, Algebra II, English 10, Biology, and Government EOCs one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation. This chapter includes the results of the hypothesis testing.

Hypothesis Testing

"Hypotheses are predictions the researcher makes about the expected relationships among variables" (Creswell, 2009, p. 132). Hypotheses were created to address the eight research questions in this study. The statistical analyses used to test the hypotheses were three one-factor ANOVAs and five chi-square tests of independence.

RQ1. To what extent is there a difference in high school students' major behavior referrals resulting in OSS one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation.

H1. There is a difference in high school students' major behavior referrals resulting in OSS one and two years before PBIS implementation, the year of PBIS

implementation, one year after PBIS implementation, and two years after PBIS implementation.

A one-factor ANOVA was conducted to test H1. The categorical variable used to group the dependent variable, major behavior referrals resulting in OSS, was implementation year (2013-2014, two years before PBIS; 2014-2015, one year before PBIS implementation; 2015-2016, the year of PBIS implementation; 2016-2017, one year after PBIS implementation; and 2017-2018, two years after PBIS implementation). The level of significance was set at .05.

The results of the analysis indicated at least two means were significantly different, $F(4, 3398) = 6.102$, $p = .000$. The descriptive statistics for this test are included in Table 4. A follow-up post hoc, the Tukey's honestly significant difference (HSD) test, indicated that four of the differences between the means were statistically significant ($p < .05$). The average number of major behavior referrals resulting in OSS during 2016-2017 ($M = 2.20$) was greater than the average number of major behavior referrals resulting in OSS during 2013-2014 ($M = 1.09$), 2014-2015 ($M = 1.17$), and 2015-2016 ($M = 0.72$). The average number of major behavior referrals resulting in OSS during 2017-2018 ($M = 1.93$) was greater than the average number of major behavior referrals resulting in OSS during 2015-2016 ($M = 0.72$). There is a difference in high school students' major behavior referrals resulting in OSS based on year. H1 was supported. The effect size, as indexed by partial eta squared = .007, indicated that .7% of the variability in the number of major behavior referrals resulting in OSS is explained by the year. This is considered to be a small effect.

Table 4

Descriptive Statistics for the Test of H1

Year	*M*	*SD*	*N*
2013-2014 (Two years before)	1.09	3.32	673
2014-2015 (One year before)	1.17	3.63	676
2015-2016 (Implementation)	0.72	2.41	680
2016-2017 (One year after)	2.20	11.85	697
2017-2018 (Two years after)	1.93	6.46	677

RQ2. To what extent is there a difference in high school students' major behavior referrals resulting in ISS one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation?

H2. There is a difference in high school students' major behavior referrals resulting in ISS one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation.

A second one-factor ANOVA was conducted to test H2. The categorical variable used to group the dependent variable, major behavior referrals resulting in ISS, was implementation year (2013-2014, two years before PBIS; 2014-2015, one year before PBIS implementation; 2015-2016, the year of PBIS implementation; 2016-2017, one year after PBIS implementation; and 2017-2018, two years after PBIS implementation). The level of significance was set at .05.

The results of the analysis indicated at least two means were significantly different, $F(4, 3398) = 19.113$, $p = .000$. The descriptive statistics for this test are included in Table 5. A follow-up post hoc, the Tukey's HSD test, indicated that four of the differences between the means were statistically significant ($p < .05$). The average number of major behavior referrals resulting in ISS during 2014-2015 ($M = 1.13$) was greater than the average number of major behavior referrals resulting in ISS during 2013-2014 ($M = 0.77$), 2015-2016 ($M = 0.63$), 2016-2017 ($M = 0.59$) and 2017-2018 ($M = 0.64$). There is a difference in high school students' major behavior referrals resulting in ISS based on year. H2 was supported. The effect size, as indexed by partial eta squared = 0.022, indicated that 2.2% of the variability in the number of major behavior referrals resulting in ISS is explained by the year. This is considered to be a small effect.

Table 5

Descriptive Statistics for the Test of H2

Year	*M*	*SD*	*N*
2013-2014 (Two years before)	0.77	1.27	673
2014-2015 (One year before)	1.13	1.76	676
2015-2016 (Implementation)	0.63	1.22	680
2016-2017 (One year after)	0.59	1.03	697
2017-2018 (Two years after)	0.64	1.16	677

RQ3. To what extent is there a difference in high school students' attendance one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation?

H3. There is a difference in high school students' attendance one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation.

A third one-factor ANOVA was conducted to test H3. The categorical variable used to group the dependent variable, attendance, was implementation year (2013-2014, two years before PBIS; 2014-2015, one year before PBIS implementation; 2015-2016, the year of PBIS implementation; 2016-2017, one year after PBIS implementation; and 2017-2018, two years after PBIS implementation). The level of significance was set at .05.

The results of the analysis indicated at least two means were significantly different, $F(4, 3397) = 13.003$, $p = .000$. The descriptive statistics for this test are included in Table 6. A follow-up post hoc, the Tukey's HSD test, indicated that five of the differences between the means were statistically significant ($p < .05$). The average days a student attended during 2013-2014 ($M = 0.94$) was greater than the average during 2016-2017 ($M = 0.92$), and 2017-2018 ($M = 0.91$). The average days a student attended during 2014-2015 ($M = 0.93$) was greater than the average during 2017-2018 ($M = 0.91$). The average days a student attended during 2015-2016 ($M = 0.94$) was greater than the average during 2016-2017 ($M = 0.92$), and 2017-2018 ($M = 0.91$). There is a difference in high school students' attendance based on year. H3 was supported. The effect size, as indexed by partial eta squared = 0.015, indicated that 1.5% of the variability in the number of days students attend school. This is considered to be a small effect.

Table 6

Descriptive Statistics for the Test of H3

Year	*M*	*SD*	*N*
2013-2014 (Two years before)	0.94	0.077	673
2014-2015 (One year before)	0.93	0.079	676
2015-2016 (Implementation)	0.94	0.082	680
2016-2017 (One year after)	0.92	0.104	696
2017-2018 (Two years after)	0.91	0.130	677

RQ4. To what extent is there a difference in the number of high school students who scored proficient or advanced on the Algebra I EOC assessment one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation?

H4. There is a difference in the number of high school students who scored proficient or advanced on the Algebra I EOC assessment one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation.

A chi-square test of independence was conducted to test H4. A two-way table was constructed with year (2013-2014, two years before PBIS; 2014-2015, one year before PBIS implementation; 2015-2016, the year of PBIS implementation; and 2017-2018, two years after PBIS implementation) as the row variable and Algebra I proficiency level (proficient or advanced, basic or below basic) as the column variable. When the data were examined prior to the hypothesis testing, Algebra I EOC scores were not available for the 2016-2017 year. Therefore, the analysis only included data from the

other four years. The observed frequencies were compared to those expected by chance. The level of significance was set at .05.

The results of the chi-square test indicated a statistically significant difference between the observed and expected values, $\chi^2(3) = 37.208$, $p = .000$. The descriptive statistics for this test are included in Table 7. During the 2013-2014 year, the observed frequency of students scoring below basic or basic on the Algebra I EOC ($n = 45$) was greater than the frequency expected by chance ($n = 43.3$). During the 2014-2015 year, the observed frequency of students scoring proficient or advanced on the Algebra I EOC ($n = 45$) was greater than the frequency expected by chance ($n = 31.2$). During the 2015-2016 year, the observed frequency of students scoring proficient or advanced on the Algebra I EOC ($n = 41$) was greater than the frequency expected by chance ($n = 35.9$). During the 2017-2018 year, the observed frequency of students scoring below basic or basic on the Algebra I EOC ($n = 43$) was greater than the frequency expected by chance ($n = 25.8$). There is a difference in the number of high school students who scored proficient or advanced on the Algebra I EOC assessment based on year. H5 was supported. The effect size, as measured by Cramer's V = .369, indicated that 36.9% of the variability in Algebra I EOC proficiency level is explained by the implementation year. This is considered to be a large effect.

Table 7

*Observed and Expected Frequencies for the Test of H*4

Implementation Year	Level	Observed	Expected
2013-2014 (Two years before)	Below Basic, Basic	45	43.3
	Proficient, Advanced	37	38.7
2014-2015 (One year before)	Below Basic, Basic	21	34.8
	Proficient, Advanced	45	31.2
2015-2016 (Implementation year)	Below Basic, Basic	35	40.1
	Proficient, Advanced	41	35.9
2017-2018 (Two years after)	Below Basic, Basic	43	25.8
	Proficient, Advanced	6	23.2

Note: DESE did not release Algebra I EOC scores to school districts during the 2016-2017 school year.

RQ5. To what extent is there a difference in the number of high school students who scored proficient or advanced on the Algebra II EOC assessment one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation?

H5. There is a difference in the number of high school students who scored proficient or advanced on the Algebra II EOC assessment one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation.

A chi-square test of independence was conducted to test H5. A two-way table was constructed with year (2013-2014, two years before PBIS; 2014-2015, one year before PBIS implementation; 2015-2016, the year of PBIS implementation; 2016-2017, one year after PBIS implementation; and 2017-2018, two years after PBIS

implementation) as the row variable and Algebra II proficiency level (proficient or advanced, basic or below basic) as the column variable. The observed frequencies were compared to those expected by chance. The level of significance was set at .05.

The results of the chi-square test indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 125.670$, $p = .000$. The descriptive statistics for this test are included in Table 8. During the 2013-2014 year, the observed frequency of students scoring proficient or advanced on the Algebra II EOC ($n = 36$) was greater than the frequency expected by chance ($n = 28.9$). During the 2014-2015 year, the observed frequency of students scoring proficient or advanced on the Algebra II EOC ($n = 68$) was greater than the frequency expected by chance ($n = 59.5$). During the 2015-2016 year, the observed frequency of students scoring proficient or advanced on the Algebra II EOC ($n = 81$) was greater than the frequency expected by chance ($n = 70.4$). During the 2016-2017 year, the observed frequency of students scoring proficient or advanced on the Algebra II EOC ($n = 89$) was greater than the frequency expected by chance ($n = 75.5$). During the 2017-2018 year, the observed frequency of students scoring below basic or basic on the Algebra II EOC ($n = 59$) was greater than the frequency expected by chance ($n = 20.3$). There is a difference in the number of high school students who scored proficient or advanced on the Algebra II EOC assessment based on year. H5 was supported. The effect size, as measured by Cramer's V = .562, indicated that 56.2% of the variability in Algebra II EOC proficiency level is explained by the implementation year. This is considered to be a large effect.

Table 8

Observed and Expected Frequencies for the Test of H5

Implementation Year	Level	Observed	Expected
2013-2014 (Two years before)	Below Basic, Basic	5	11.2
	Proficient, Advanced	36	29.8
2014-2015 (One year before)	Below Basic, Basic	14	22.5
	Proficient, Advanced	68	59.5
2015-2016 (Implementation year)	Below Basic, Basic	16	26.6
	Proficient, Advanced	81	70.4
2016-2017 (One year after)	Below Basic, Basic	15	28.5
	Proficient, Advanced	89	75.5
2017-2018 (Two years after)	Below Basic, Basic	59	20.3
	Proficient, Advanced	15	53.7

RQ6. To what extent is there a difference in the number of high school students who scored proficient or advanced on the English 10 EOC assessment one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation?

H6. There is a difference in the number of high school students who scored proficient or advanced on the English 10 EOC assessment one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation.

A chi-square test of independence was conducted to test H6. A two-way table was constructed with year (2013-2014, two years before PBIS; 2014-2015, one year

before PBIS implementation; 2015-2016, the year of PBIS implementation; 2016-2017, one year after PBIS implementation; and 2017-2018, two years after PBIS implementation) as the row variable and English 10 proficiency level (proficient or advanced, basic or below basic) as the column variable. The observed frequencies were compared to those expected by chance. The level of significance was set at .05.

The results of the chi-square test indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 108.314$, $p = .000$. The descriptive statistics for this test are included in Table 9. During the 2013-2014 year, the observed frequency of students scoring proficient or advanced on the English 10 EOC ($n = 87$) was greater than the frequency expected by chance ($n = 79.9$). During the 2014-2015 year, the observed frequency of students scoring below basic or basic on the English 10 EOC ($n = 57$) was greater than the frequency expected by chance ($n = 51.2$). During the 2015-2016 year, the observed frequency of students scoring proficient or advanced on the English 10 EOC ($n = 126$) was greater than the frequency expected by chance ($n = 94.0$). During the 2016-2017 year, the observed frequency of students scoring proficient or advanced on the English 10 EOC ($n = 78$) was greater than the frequency expected by chance ($n = 65.2$). During the 2017-2018 year, the observed frequency of students scoring below basic or basic on the English 10 EOC ($n = 95$) was greater than the frequency expected by chance ($n = 48.9$). There is a difference in the number of high school students who scored proficient or advanced on the English 10 EOC assessment based on year. H6 was supported. The effect size, as measured by Cramer's V = 0.405, indicated that 40.5% of the variability in English 10 EOC proficiency level is explained by the implementation year. This is considered to be a large effect.

Table 9

Observed and Expected Frequencies for the Test of H6

Implementation Year	Level	Observed	Expected
2013-2014 (Two years before)	Below Basic, Basic	32	39.1
	Proficient, Advanced	87	79.9
2014-2015 (One year before)	Below Basic, Basic	57	51.2
	Proficient, Advanced	99	104.8
2015-2016 (Implementation year)	Below Basic, Basic	14	46.0
	Proficient, Advanced	126	94.0
2016-2017 (One year after)	Below Basic, Basic	19	31.8
	Proficient, Advanced	78	65.2
2017-2018 (Two years after)	Below Basic, Basic	95	48.9
	Proficient, Advanced	54	100.1

RQ7. To what extent is there a difference in the number of high school students who scored proficient or advanced on the Biology EOC assessment one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation?

H7. There is a difference in the number of high school students who scored proficient or advanced on the Biology EOC assessment one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation.

A chi-square test of independence was conducted to test H7. A two-way table was constructed with year (2013-2014, two years before PBIS; 2014-2015, one year

before PBIS implementation; 2015-2016, the year of PBIS implementation; 2016-2017, and one year after PBIS implementation) as the row variable and Biology proficiency level (proficient or advanced, basic or below basic) as the column variable. When the data were examined prior to the hypothesis testing, Biology EOC scores were not available for the 2017-2018 year. Therefore, the analysis only included data from the other four years. The observed frequencies were compared to those expected by chance. The level of significance was set at .05.

The results of the chi-square test indicated a statistically significant difference between the observed and expected values, $\chi^2(3) = 8.774$, $p = .032$. The descriptive statistics for this test are included in Table 10. During the 2013-2014 year, the observed frequency of students scoring below basic or basic on the Biology EOC ($n = 75$) was greater than the frequency expected by chance ($n = 72.9$). During the 2014-2015 year, the observed frequency of students scoring proficient or advanced on the Biology EOC ($n = 95$) was greater than the frequency expected by chance ($n = 79.6$). During the 2015-2016 year, the observed frequency of students scoring below basic or basic on the Biology EOC ($n = 83$) was greater than the frequency expected by chance ($n = 73.9$). During the 2016-2017 year, the observed frequency of students scoring below basic or basic on the Biology EOC ($n = 78$) was greater than the frequency expected by chance ($n = 73.9$). There is a difference in the number of high school students who scored proficient or advanced on the Biology EOC assessment based on year. H7 was supported. The effect size, as measured by Cramer's V = .121, indicated that 12.1% of the variability in Biology EOC proficiency level is explained by the implementation year. This is considered to be a small effect.

Table 10

Observed and Expected Frequencies for the Test of H7

Implementation Year	Level	Observed	Expected
2013-2014 (Two years before)	Below Basic, Basic	75	72.9
	Proficient, Advanced	71	73.1
2014-2015 (One year before)	Below Basic, Basic	64	79.4
	Proficient, Advanced	95	79.6
2015-2016 (Implementation year)	Below Basic, Basic	83	73.9
	Proficient, Advanced	65	74.1
2016-2017 (One year after)	Below Basic, Basic	78	73.9
	Proficient, Advanced	70	74.1

Note: DESE determined a field test would be administered during the 2017-2018 school years; therefore no biology scores were released to school districts during those school years.

RQ8. To what extent is there a difference in the number of high school students who scored proficient or advanced on the Government EOC assessment one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation?

H8. There is a difference in the number of high school students who scored proficient or advanced on the Government EOC assessment one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation, and two years after PBIS implementation.

A chi-square test of independence was conducted to test H8. A two-way table was constructed with year (2013-2014, two years before PBIS; 2014-2015, one year before PBIS implementation; 2015-2016, the year of PBIS implementation; 2016-2017,

one year after PBIS implementation; and 2017-2018, two years after PBIS implementation) as the row variable and Government proficiency level (proficient or advanced, basic or below basic) as the column variable. The observed frequencies were compared to those expected by chance. The level of significance was set at .05.

The results of the chi-square test indicated a statistically significant difference between the observed and expected values, $\chi^2(4) = 12.699$, $p = .013$. The descriptive statistics for this test are included in Table 11. During the 2013-2014 year, the observed frequency of students scoring proficient or advanced on the Government EOC ($n = 83$) was greater than the frequency expected by chance ($n = 67.2$). During the 2014-2015 year, the observed frequency of students scoring proficient or advanced on the Government EOC ($n = 76$) was greater than the frequency expected by chance ($n = 71.4$). During the 2015-2016 year, the observed frequency of students scoring below basic or basic on the Government EOC ($n = 74$) was greater than the frequency expected by chance ($n = 68.9$). During the 2016-2017 year, the observed frequency of students scoring below basic or basic on the Government EOC ($n = 71$) was greater than the frequency expected by chance ($n = 66.0$). During the 2017-2018 year, the observed frequency of students scoring below basic or basic on the Government EOC ($n = 81$) was greater than the frequency expected by chance ($n = 70.8$). There is a difference in the number of high school students who scored proficient or advanced on the Government EOC assessment based on year. H8 was supported. The effect size, as measured by Cramer's V = 0.135, indicated that 13.5% of the variability in Government EOC proficiency level is explained by the implementation year. This is considered to be a small effect.

Table 11

Observed and Expected Frequencies for the test of H8

Implementation Year	Level	Observed	Expected
2013-2014 (Two years before)	Below Basic, Basic	45	60.8
	Proficient, Advanced	83	67.2
2014-2015 (One year before)	Below Basic, Basic	60	64.6
	Proficient, Advanced	76	71.4
2015-2016 (Implementation year)	Below Basic, Basic	74	68.9
	Proficient, Advanced	71	76.1
2016-2017 (One year after)	Below Basic, Basic	71	66.0
	Proficient, Advanced	68	73.0
2017-2018 (Two years after)	Below Basic, Basic	81	70.8
	Proficient, Advanced	68	78.2

Summary

This chapter included the results of the hypothesis testing for this study. ANOVAs were conducted to determine the extent of the effects of PBIS implementation on high school students' major behavior referrals resulting in OSS, major behavior referrals resulting in ISS, and overall attendance. Chi-square tests of independence were chosen to determine statistical significance in high school students who scored proficient or advanced on the Algebra I, Algebra II, English 10, Biology, and Government EOCs one and two years before PBIS implementation, the year of PBIS implementation, one year after PBIS implementation and two years after PBIS implementation. Chapter 5 includes a study summary, findings related to the literature, and conclusions.

Chapter 5

Interpretation and Recommendations

The PBIS framework consists of strategies to define and support appropriate student behavior in order to create and maintain a positive school environment. Research related to PBIS has been commonly conducted at the elementary and middle school levels; however, research with a focus on PBIS at the high school level has been limited (Sugai & Horner, 2006). Chapter 5 includes a study summary, the findings related to the literature, and the conclusions of the research.

Study Summary

Educators face many challenges while schools consistently search for strategies to provide an environment that promotes progressive academic achievement and positive social competencies. According to Rose et al. (1997), behavior is an important factor in the overall success of the school and students. The increasing number of student behavior incidents in schools is interrupting learning and disrupting the school environment. Within this section, an overview of the problem, purpose statement and research questions, review of the methodology, and major findings are presented.

Overview of the problem. According to Sanders (2009), problematic, negative student behaviors can affect school culture and climate. Major behavior resulting in ISS and OSS can also decrease the opportunity for student learning and unfavorably affect attendance rates. District A chose a district-wide implementation of PBIS due to a reported increase in office referrals, decrease in attendance, and academic concerns. PBIS was introduced to promote a positive climate and provide a proactive approach

toward improvement in student behaviors, attendance, and academic achievement. District leaders were unsure of the effectiveness of PBIS implementation.

Purpose statement and research questions. The first purpose of this study was to determine the extent there is a difference in high school students' major behavior referrals resulting in OSS, major behavior referrals resulting in ISS, attendance the two years before PBIS implementation, the year of PBIS implementation, and the two years after PBIS implementation. The second purpose of this study was to determine the extent there is a difference in high school students who scored proficient or advanced on the Algebra I End-of-Course (EOC), Algebra II EOC, English 10 EOC, Biology EOC, and Government EOC the two years before PBIS implementation, the year of PBIS implementation, and the two years after PBIS implementation. To address the purposes of the study, eight research questions were posed, and eight hypotheses were tested.

Review of the methodology. A quantitative causal-comparative research design was used for this study. All students enrolled at School C the two years before PBIS implementation, during the implementation year, and the two years after PBIS implementation were the participants for this study. School data were used to examine the number of behavior referrals resulting in ISS as well as OSS for students. Likewise, attendance percentages were noted for each individual student for the school years 2013-2018. EOC scale scores for Algebra I, Algebra II, Biology, English 10, and Government were also compared the two years before PBIS implementation, during implementation year, and the two years after PBIS. One-factor ANOVAs and chi-square tests of independence were conducted to test the hypotheses.

Major findings. A thorough description of the results of the eight research questions and hypotheses was presented in Chapter 4. For all behavioral and achievement variables, the results of the analysis of the effect of PBIS implementation were inconclusive. A summary of the results of the analysis for each of the behavior variables and the achievement variables is included in this section.

When the number of OSS occurrences were compared, more OSS were observed during the first year after implementation than two years prior to, one year prior to, and the year of implementation. The number of OSS occurrences two years after implementation was greater than the year of implementation. When the number of ISS occurrences were compared, more ISS were observed the year before implementation than two years before, the year of, one year after, and two years after implementation. When the attendance rates were compared, the attendance rate for two years before the implementation was higher than the attendance rate one year after and two years after the implementation. The attendance rate for one year before the implementation was higher than the attendance rate two years after the implementation.

Academic achievement disaggregated by content area, and EOC proficiency levels were evaluated over the five years. When the Algebra I EOC proficiency levels were analyzed for 2013-2014 (two years before implementation), more students scored at the below basic or basic levels. When the Algebra I EOC proficiency levels were analyzed for 2014-2015 (one year before implementation) and 2015-2016 (the year of implementation), more students scored at the proficient or advanced levels. When the Algebra I EOC proficiency levels were analyzed for 2017-2018 (two years after implementation), more students scored at the below basic or basic levels. When the

Algebra II EOC proficiency levels were analyzed for 2013-2014 (two years before implementation), 2014-2015 (one year before implementation), 2015-2016 (the year of implementation), 2016-2017 (the first year after implementation), more students scored at the proficient or advanced levels. During 2017-2018 (two years after implementation), more students scored at the basic or below basic levels on the Algebra II EOC assessment. An analysis of the 2013-2014 (two years before implementation) English 10 EOC proficiency levels indicated more students scored proficient or advanced. For 2014-2015 (one year before implementation), more students scored at the below basic or basic levels on the English 10 EOC. When the English 10 proficiency levels were analyzed for 2015-2016 (the year of implementation) and 2016-2017 (the first year after implementation), more students scored at the proficient or advanced levels. During 2017-2018 (two years after implementation), more students scored at the basic or below basic levels on the English 10 EOC assessment. When the Biology EOC proficiency levels were analyzed for 2013-2014 (two years before implementation), more students scored at the below basic or basic levels. For 2014-2015 (one year before implementation), more students scored at the proficient or advanced levels on the Biology EOC. When the Biology proficiency levels were analyzed for 2015-2016 (the year of implementation) and 2016-2017 (the first year after implementation), more students scored at the below basic or basic levels. For the 2013-2014 (two years before implementation) and 2014-2015 (one year before implementation), more students scored at the proficient or advanced levels on the Government EOC assessment. When the Government EOC proficiency levels were analyzed for 2015-2016 (the year of implementation), 2016-2017

(the first year after implementation), and 2017-2018 (two years after implementation), more students scored at the below basic or basic levels.

Findings Related to the Literature

The objective of this study was to determine whether the implementation of PBIS had an impact on students' major discipline office referrals resulting in ISS or OSS, their overall attendance, and academic achievement as measured by EOC scores. Research related to this study was included in Chapter 2. During the time this study was conducted, no research was found related to the impact of PBIS implementation on Biology EOC scale scores. Similarly, there was no research found to compare the results related to the impact of PBIS implementation on Government EOC scores. Only previous research related to the impact of PBIS implementation on student achievement for English and mathematics were located. Furthermore, a large amount of research was completed on the impact of PBIS at the elementary school, middle school, and school district level. For this reason, the findings related to the literature focused on previous research completed at the high school level.

Results from the current study were inconclusive and inconsistent with Guest (2011) and Deutsch (2013), who found a significant decrease in OSS referrals after the implementation of PBIS. Furthermore, the results of the current study are in contrast with Tobin (2012), who showed no significant difference in the number of OSS referrals after the implementation of PBIS. Additionally, the current study results were inconclusive and inconsistent with Miles (2013), who found a significant increase in attendance following the implementation of PBIS. Likewise, the results of the current study were inconsistent with Rhodes-Monette (2014), who showed no significant

difference in attendance after the implementation of PBIS. The current study results were inconclusive and were inconsistent with Deutsch (2013), Miles (2013), and Hanley-Noworyta (2015), who found a significant decrease in ISS referrals after one year of PBIS implementation. Additionally, the results of the current study were inconsistent with Tobin (2012) and Rhodes-Monette (2014), who reported no difference in the number of ISS referrals after the implementation of PBIS. Finally, the results of this study are inconsistent with Pitts (2017), who found that the number of ISS referrals increased after the implementation of PBIS.

With regard to mathematics academic achievement, Algebra I and Algebra II, the results of this current study were mixed and inconsistent with Rhodes-Monette (2014), Priester (2015), and Pitts (2017), who found no significant effect on math academic achievement scores after the implementation of PBIS. In addition, academic achievement results were mixed and in contrast with Rhodes-Monette (2014), and Priester (2015), who found no significant effect on reading and academic achievement related to English content, after PBIS implementation. As previously stated, no research was found related to the impact of PBIS implementation on Biology or Government academic achievement scores at the secondary level.

Conclusions

The conclusion section of this study reviews three subsections. Suggestions of implications for action will be the first area discussed. The second subsection includes recommendations for future research. Concluding remarks concerning this study is the final subsection explored.

Implications for action. The results of this study provide implications for further action. Data were collected over five years, and the changes in the number of major discipline office referrals resulting in ISS or OSS, overall student attendance, and academic achievement related to EOC scale scores were analyzed. Due to inconclusive and mixed results, a possible action for District A is to discontinue the implementation of PBIS at the high school level. If District A chooses to continue implementing PBIS, reviewing the implementation is the first recommendation. Due to the inconclusive results from this study, reviewing the implementation process and making minor changes could result in different outcomes. Another recommendation is to review the current curriculum. Results from this study indicated a decline in EOC scores two years after the implementation of PBIS; therefore, reviewing the curriculum to ensure alignment to state standards is necessary to warrant student success. Likewise, an exploration of a system ensuring that student progress is being monitored should be considered.

In order to monitor the fidelity of the facilitation of PBIS, District A should research tools to ensure consistency within the staff. School leaders need to have continuous feedback from staff and students in order to make adjustments when necessary. A surveying tool that would offer feedback several times throughout the year would open the lines of communication between administrators and teachers, provide information for staff to continue to develop strategies, and provide data during designated intervals throughout the year for staff to reflect. With a highly transient student and faculty population, the district would need to secure consistent and explicit training. Additionally, if multiple staffing changes are occurring every year, it is recommended

District A examine the recruiting and hiring process to guarantee the highest quality of staff are found.

Recommendations for future research. The recommendations for future research are based on the findings of this study. The results presented evidence for the need to conduct further research to strengthen the findings on the impact of PBIS implementation on high school students' major behavior referrals resulting in OSS and ISS, attendance, and academic achievement. It is recommended that a qualitative or mixed-method study be developed to determine the perceptions of PBIS staff members at the secondary level and to determine if teachers believe PBIS has an overall impact on behavior, attendance, and academic achievement. Additionally, interviews or direct feedback with administrators, as well as students, from secondary schools that show positive results due to the implementation of PBIS would be beneficial to research.

An additional recommendation for future research might be to consider specific demographics within the district, such as race, grade level, and gender. Other variables to consider are a student's free and reduced lunch status, transition rate, and exposure to trauma. Due to the lack of research at the secondary level, introducing different variables may provide an opportunity for comparison to other similar districts. Likewise, the researcher recommends replicating this study in other, urban, secondary school environments to gain additional information to support the implementation of PBIS.

A final recommendation for future research might be to consider conducting a similar study at the elementary and middle school levels within the same district. It is imperative the district determine whether the discipline referrals, attendance, and academic achievement have improved at these school levels. The results of this type of

study could assist the district in determining whether to continue to implement PBIS at these school levels.

Concluding remarks. According to Walker et al. (2004), disruptive student behaviors are interfering with teaching and student learning. Educational leaders in urban school districts have been exploring ways to decrease classroom disruptions and address these problem behaviors (Rose et al., 1997). Although the results from this study were inconclusive and mixed regarding the impact of PBIS on OSS, ISS, attendance, and student achievement, it is imperative to continue the research in order to better understand how to improve the educational environment at the secondary level and to help students continue to achieve academically and socially.

References

Bear, G. G. (2010). *School discipline and self-discipline: A practical guide to promoting prosocial student behavior.* New York, NY: The Guilford Press.

Bliese, J. (2013). *The effects of school-wide discipline using positive behavior supports*. (Doctoral dissertation, Baker University). Retrieved from https://www.bakeru.edu/images/pdf/SOE/EdD_Theses/Bliese_Juliann.pdf

Bohanon-Edmonson, H., Flannery, B., Eber, L., & Sugai, G. (Eds.). (2005). *Positive behavior support in high schools: Monograph from the 2004 Illinois high school forum of positive behavioral interventions and supports.* Eugene, OR: OSEP Center on Positive Behavioral Interventions and Supports.

Buettner, D. A. (2013). *The effect of PBIS on the school environment and test scores* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database. (UMI No. 3598020)

Carter, C. E. (2017). *A qualitative action research study of barriers to implementation of positive behavior intervention support in a metro-Atlanta school district* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database. (UMI No. 1965515393)

Colvin, G., & Sugai, G. (2010). *School-wide discipline: A behavior instruction model.* Eugene, OR: University of Oregon.

Conroy, M. A., Dunlap, G., Clarke, S., & Alter, P. J. (2005). A descriptive analysis of positive behavioral intervention research with young children with challenging behavior. *Topics in Early Childhood Special Education, 25*(3), 157-159. doi:10.1177/02711214050250030301

Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches* (3rd ed.). Los Angeles, CA: Sage Publications.

Deutsch, A. J. (2013). *A case study of first year implementation of positive behavioral interventions and supports in a high school* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database. (UMI No. 1355174693)

District A. (2018). *Missouri public school accountability report card.* Retrieved from https://apps.dese.mo.gov/MCDS/home.aspx?categoryid=[redacted]&view=2

Fox, J. D. (2013). *School-wide positive behavior support: Effects on Pennsylvania high school achievement, discipline, and climate* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database. (UMI No. 1430307176)

Guest, E. M. (2011). *The impact of positive behavioral interventions and support in secondary school settings* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database. (UMI No. 884788813)

Hanley-Noworyta, E. T. (2015). *Reducing office discipline referrals through positive behavior supports* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database. (UMI No. 1710460645)

Horner, R. H. (2003, March 27). *Extending positive behavior support to whole schools: Sustainable implementation.* Keynote address, First International Conference on Positive Behavior Support, Orlando, FL.

Horner, R. H., Todd, A. W., Lewis-Palmer, T., Irvin, L. K., Sugai, G., & Boland, J. B. (2004). The School-Wide Evaluation Tool (SET): A research instrument for assessing school-wide positive behavior support. *Journal of Positive Intervention, 6*(1), 3-12. https://doi.org/10.1177/10983007040060010201

Horner, R. H., & Sugai, G. (2015). School-wide PBIS: An example of applied behavior analysis implemented at a scale of social importance. *Behavior Analysis Practice, 8*(1), 80-85. https://doi.org/10.1007/s40617-015-0045-4

Irvin, L. K., Tobin, T. J., Sprague, J. R., Sugai, G., & Vincent, C. G. (2004). Validity of office discipline measures as indices of school-wide behavioral status and effects of school-wide behavioral interventions. *Journal of Positive Behavior Interventions, 6*(3), 131-147. https://doi.org/10.1177/10983007040060030201

Kaufman, J. S., Jaser, S. S., Vaughan, E. L., Reynolds, J. S., Di Donato, J., Bernard, S. N., & Hernandez-Brereton, M. (2010). Patterns in office referral data by grade, race/ethnicity, and gender. *Journal of Positive Behavior Interventions, 12*(1), 44-54. doi:10.1177/1098300708329710

Lane, K. L., Wehby, J. H., Robertson, E. J., & Rogers, L. A. (2007). How do different types of high school students respond to schoolwide positive behavior support programs? Characteristics and responsiveness of teacher-identified students. *Journal of Emotional and Behavioral Disorders, 15*(1), 3-20. https://doi.org/10.1177/10634266070150010201

Lassen, S. R., Steele, M. M., & Sailor, W. (2006). The relationship of schoolwide positive behavior support to academic achievement in an urban middle school. *Psychology in the Schools, 43*(6), 701-712. http://doi.org/10.1002/pits.20177

Luiselli, J. K., Putnam, R. F., Handler, M. W., & Feinberg, A. B. (2005). Whole-school positive behavior support: Effects on student discipline problems and academic performance. *Educational Psychology, 25*(2), 183-198. doi:10.1080/0144341042000301265

McColley, C. (2010). *Staff and student perceptions of school climate: The need for school-wide positive behavioral interventions and supports* (Specialist's thesis, University of Wisconsin-La Crosse). Retrieved from http://minds.wisconsin.edu/bitstream/handle/1793/46656/McColleyChelsea2010.pdf?sequence=1

McKevitt, B. C., & Braaksma, A. D. (2008). Best practices in developing a positive behavior support system at the school level. In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology* (pp. 735-748). Bethesda, MD: National Association of School Psychologists.

Miles, A. C. (2013). *Effects of positive behavioral interventions and supports on attendance, grades, and discipline referrals* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database. (UMI No. 1427854195)

Missouri Department of Elementary and Secondary Education. (2015). *Online end-of-course assessments: Guide to interpreting results*. Retrieved from https://dese.mo.gov/sites/default/files/asmt-eoc-gir-spring-15.pdf

Missouri Department of Elementary and Secondary Education. (2016). *Guide to interpreting results.* Retrieved from http://www.dese.mo.gov

Missouri Department of Elementary and Secondary Education. (2018). *Guide to interpreting results.* Retrieved from http://www.dese.mo.gov

Norton, L. C. (2009). *The impact of positive behavior interventions and supports (PBIS) on student behavior and academic achievement* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database. (UMI No. 751613282)

Office of Special Education Programs Technical Assistance Center on Positive Behavioral Interventions and Supports. (2017). *Positive Behavioral Interventions & Supports*. Retrieved from www.pbis.org

Office of Special Education Programs Technical Assistance Center on Positive Behavioral Interventions and Supports. (2018). *PBIS frequently asked questions.* Retrieved from https://www.pbis.org/school/swpbis-for-beginners/pbis-faqs

Pimper, S. (2015, July 14). District praised for its use of school climate transformation grant. *Fremont Tribune*. Retrieved from https://fremonttribune.com/news/local/district-praised-for-its-use-of-school-climate-transformation-grant/article_4251c471-ed5e-52be-a691-7f7533fcf72f.html

Pitts, K. N. (2017). *A comparative study on the impact of PBIS on student academic achievement and behavior* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database. (UMI No. 2024196833)

Priester, T. K. (2015). *The effects of positive behavior intervention support (PBIS) on the academic achievement of high school students.* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database. (UMI No. 1756269979)

Putnam, R. F., Horner, R. H., & Algozzine, R. (2006). Academic achievement and the implementation of the school-wide behavior support. *PBIS Newsletter, 3*(1). Retrieved from: http://www.pbis.org/pbis_newsletter/volume_3/issue1.aspx

Rhodes-Monette, K. L. (2014). *An analysis of four implementation levels for the positive behavioral interventions and supports (PBIS) on selected aggregated high school student performance outcomes.* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database. (UMI No. 1716036569)

Rose, L. C., Gallup, A. M., & Elam, S. M. (1997). *The 29th annual Phi Delta Kappa/Gallup poll of the public's attitudes towards the public schools.* Retrieved from http://Pdkmembers.org/members_online/ publications/Gallup129_1997pdf

Ross, G. E. (2012). *The effects of positive behavioral interventions and support on student discipline referrals and attendance* (Doctoral dissertation, Western Kentucky University). Retrieved from http://digitalcommons.wku.edu/diss/30

Rubalcaba, R. (2015). *The characteristics of high schools that have successfully implemented positive behavioral interventions and supports* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database. (UMI No. 2066820602)

Sanders, N. E. (2009). *The effect of participating in school-wide positive behavior support on academic performance and number of office discipline referrals* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database. (UMI No. 3364360).

School C. (2017). *School C 2017-2018 parent/student handbook.* Retrieved from https://www.[redacted].k12.mo.us/uploaded/schools/[redacted]/pdfs/[redacted]_Student_Handbook_17-18.11-09-17.pdf

Scott, J. S., White, R., Algozzine, B., & Algozzine, K. (2009). Effects of positive unified behavior support on instruction. *The International Journal on School Disaffection, 6*(2), 41-48. https://doi.org/10.18546/IJSD.06.2.07

Sergiovanni, T., Kelleher, P., McCarthy, M., & Wirt, F. (2004). *Educational governance and administration.* Boston, MA: Pearson Education, Inc.

Skiba, R. J., & Peterson, R. L. (2000). School discipline at a crossroads: From zero tolerance to early response. *Exceptional Children, 66*(3), 335-346. https:doi.org/10.1177/001440290006600305

Sugai, G., & Horner, R. (2002). The evolution of discipline practices: School-wide positive behavior supports. *Child and Family Behavior Therapy, 24*(1-2), 23-50. https://doi.org/10.1300/J019v24n01_03

Sugai, G., & Horner, R. (2006). A promising approach for expanding and sustaining schoolwide positive behavior support. *School Psychology Review, 35*(2), 245-249. Retrieved from https://www.icareby.org/sites/www.icareby.org/files/spr352sugai.pdf

Sugai, G., Horner, R., & McIntosh, K. (2008). Best practices in developing a broad-scale system of school-wide positive behavior support. In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology V* (pp. 765-780). Bethesda, MD: National Association of School Psychologists.

Sugai, G., & Simonsen, B. (2012). *Positive behavioral interventions and supports: History, defining features, and misconceptions.* Retrieved from https://www.pbis.org/common/cms/files/pbisresources/PBIS_revisited_June19r_2012.pdf

Sugai, G., Sprague, J. R., Horner, R. H., & Walker, H. M. (2000). Preventing school violence: The use of office discipline referrals to assess and monitor school-wide discipline interventions. *Journal of Emotional and Behavioral Disorders, 8*(2), 94–101. https://doi.org/10.1177/106342660000800205

Taylor, D. J. (2011). *The effects of school-wide positive behavior interventions and supports on the number of office discipline referrals and academic achievement at East Elm Middle School compared to Roughedge Middle School* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database. (UMI No. 912371697)

Tobin, T. J. (2012). *Different ways to measure fidelity of implementation of PBIS.* Retrieved from http://pages.uoregon.edu/ttobin/Different.pdf

Turnbull, A., Edmondson, H., Griggs, P., Wickman, D., Sailor, W., Freeman, R., & Warren, J. (2002). A blueprint for schoolwide positive behavior support: Implementation of three components. *Exceptional Children, 68*(3), 377-402. https://doi.org/10.1177/001440290206800306

Walker, H. M., Ramsey, E., & Gresham, F. M. (2004). *Antisocial behavior in school: Evidence based practices* (2nd ed.*).* Belmont, CA: Wadsworth/Thomson Learning.

Wheeler, T. L. (2017). *Impact of teachers' perceptions of the implementation of school-wide positive behavioral interventions and supports* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database. (UMI No. 1964285540)

White, B. D. (2015). *Implementation of positive behavior intervention and support at the high school level* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database. (UMI No. 10179994)

Wilkerson-Arbisi, E. L. (2015). *The influence of participation in school-wide positive behavior support on elementary student behavior* (Doctoral dissertation, Baker University). Retrieved from http://www.bakeru.edu/images/pdf/SOE/EdD_Theses/Wilkerson-Arbisi_Elizabeth.pdf

Youngblom, R. (2014). *Using a state-wide survey to determine the impact of positive behavior interventions and supports on students' self-reported perceptions, feelings, and behaviors* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database. (UMI No. 1648176169)

Appendices

Appendix A: District A Approval

[redacted]

Baker University
Graduate School of Education
7301 College Blvd., Suite 120
Overland Park, KS 66210

Subject: Site Approval Letter

[redacted]

This letter acknowledges that I have received and reviewed a request by Krista McGee to conduct a research project entitled "*The effects of PBIS on attendance, behavior referrals, and academic achievement at the secondary level*" at [redacted] School and I approve of this research to be conducted at our district.

When the researcher receives approval for his/her research project from Baker University's Institutional Review Board, I agree to provide access for the approved research project. If we have any concerns or need additional information, we will contact *Dr. Susan Rogers* at *(913) 334-1226* or Susan.Rogers@bakeru.edu.

Sincerely,

[redacted]

Appendix B. Baker University IRB Approval

Baker University Institutional Review Board

November 13th, 2018

Dear Krista McGee and Susan Rogers,

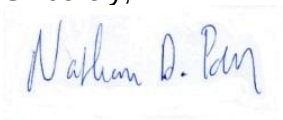
The Baker University IRB has reviewed your project application and approved this project under Exempt Status Review. As described, the project complies with all the requirements and policies established by the University for protection of human subjects in research. Unless renewed, approval lapses one year after approval date.

Please be aware of the following:

1. Any significant change in the research protocol as described should be reviewed by this Committee prior to altering the project.
2. Notify the IRB about any new investigators not named in original application.
3. When signed consent documents are required, the primary investigator must retain the signed consent documents of the research activity.
4. If this is a funded project, keep a copy of this approval letter with your proposal/grant file.
5. If the results of the research are used to prepare papers for publication or oral presentation at professional conferences, manuscripts or abstracts are requested for IRB as part of the project record.

Please inform this Committee or myself when this project is terminated or completed. As noted above, you must also provide IRB with an annual status report and receive approval for maintaining your status. If you have any questions, please contact me at npoell@bakeru.edu or 785.594.4582.

Sincerely,



Nathan Poell, MA
Chair, Baker University IRB

Baker University IRB Committee
Scott Crenshaw
Erin Morris, PhD
Jamin Perry, PhD
Susan Rogers, PhD