Positive Behavior Interventions and Supports Influence on Elementary Student Discipline and Reading Achievement

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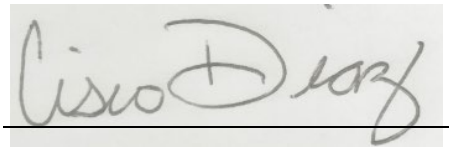
Signature 

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ABSTRACT

Schools across the United States are constantly looking for ways to improve student achievement and behavioral outcomes since student achievement scores continue to remain low and behavioral incidences continue to rise. Positive Behavior Interventions and Supports (PBIS) is an implementation framework with the purpose of improving academic and social behavior outcomes for all students. The purpose of this study was to investigate the impact that PBIS has on student reading achievement and student discipline and to reflect on whether the Georgia PBIS model builds capacity as schools' progress from installing status to operational status.

The study used a mixed methods approach with a sequential explanatory design. A sample of 661 schools in Georgia were selected for the study. The quantitative portion examined discipline and Georgia Milestones Assessment System data (GMAS) from the 2016-2017 school year. The qualitative aspect of this study examined responses from 12 principal interviews regarding their perception of PBIS, and the results from the quantitative portion of the study.

Results indicated a significant difference in the number of referrals as schools move from an installing PBIS school to an operational PBIS school. Results did not find any significant differences between PBIS status and percentage of students reading at or above their Lexile level and PBIS status and percentage of students scoring either a Level II, Level III, or Level IV on the GMAS in third grade. However, the findings for fourth and fifth grade did support that the overall Georgia PBIS framework builds capacity as school's progress toward the operational status. Overall, the results revealed a school must reach the operational status to achieve the best results.

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DEDICATION

This dissertation is dedicated to my wife, Laura, and my two children: Riley and Aiden. Thank you for your love and patience during this journey.

Chapter I

INTRODUCTION

Overview

Misbehavior is a form of communication (Toshalis, 2015). Toshalis noted that both children and adults exhibit misbehavior whenever circumstances threaten their well-being. Children tend to display misbehavior when they feel misunderstood, humiliated, vulnerable, or betrayed.

Toshalis (2015) stated it is considered normal and healthy to react to circumstances which cause negative emotions. Families misbehave at the dinner table, educators misbehave during a faculty meeting, and students misbehave in classrooms. For the most part misbehavior is rarely without cause. However, in the classroom misbehavior is viewed as a problem.

Since 2009, over two-thirds of states have made drastic changes to the way teachers are evaluated (Hull, 2013). Most changes were in response to federal programs such as Race to the Top and No Child Left Behind. Whether to earn additional credits for upgrading teacher evaluations systems or due to new political leadership, the end result is the same; teacher performance is now based on student learning alongside traditional measures such as observations (Hull, 2013).

House Bill 244, passed in 2013 by the Georgia Legislature mandating that teachers be evaluated under the Teacher Keys Effectiveness System (TKES), has changed how teachers are observed and the evidences used by the evaluator to determine a

teacher's level of performance. This new evaluation system, driving over 30% of the evaluation, is derived from student performance data while the remainder of the evaluation is based on 10 Teacher Assessment Performance Standards and Professional Growth (Pence, 2013). While unique to the State of Georgia, many states have created their own evaluation system in response to federal mandates which focus heavily on student performance data (Hull, 2013).

Because of increased accountability over the years, schools across the United States are constantly looking for ways to improve student achievement and behavioral outcomes since student achievement scores continue to remain low and behavioral incidences continue to rise (Evertson & Weinsten, 2006). Skiba and Rausch (2006) noted consequences, such as out of school suspension, impact student achievement negatively. Schools are responsible for providing a safe and disciplined learning environment. Ultimately, they concluded teachers are unable to teach and students are not able to learn in an environment that is chaotic and disruptive. Controversy has arisen due to methods used to establish control and order (Skiba & Rausch, 2006). In addition, academic and behavioral problems can result in extensive cost to families and society as a whole (Reinke, Herman, Petras, & Ialongo, 2008). Disruptive behavior by children in classrooms not only interrupts their learning but the learning of their peers. This has resulted in a search for effective interventions and has increased over the years (Walker, Cheney, Stage, Blum, & Horner, 2005).

Educators are searching for a framework that will support and improve academic and behavioral outcomes. According to Reynolds (2012), numerous schools in the U.S. are beginning to implement an operational framework, Positive Behavior Interventions

and Supports (PBIS). Reynolds described PBIS as an implementation framework with the purpose of improving academic and social behavior outcomes for all students by stressing the use of data for informing decisions regarding selection, implementation, and progress monitoring of evidence-based behavioral practices. In addition, the PBIS framework assists schools with organizing resources and improving implementation fidelity (Reynolds, 2012).

While PBIS is being implemented, educators must provide their students with the knowledge, skills, and dispositions needed to pursue infinite possibilities (Taylor & Pearson, 2002). However, the reality is many students are not reading well enough to keep up with the demands of school and their educational careers are in danger because they cannot meet the demands of an increasingly competitive economy (Snow, Burns, & Griffin, 1998). Snow et al. noted quality instruction in the younger grades, especially kindergarten, is the best weapon against reading failure.

Literacy is vital in schools amongst all subjects: literature, mathematics, science, social science (Torgesen, 1998). Torgesen (1998) increasing the time children read is beneficial; however, children most likely will not read on their own. Schools must find ways to motivate students and provide opportunities throughout the day to allow students time to read. In addition, Torgesen (1998) stated students with reading difficulties tend to have lifelong challenges. Children that struggle with reading are often retained in school, drop out of high school, become teen parents, or enter the juvenile justice system (Rangel, 2009). Preventing reading difficulties early in a child's educational career can have long-term benefits which can carry into society. Through the No Child Left Behind Act of 2001 (NCLB, 2008) and the reauthorization of the Individuals with Disabilities

Education Act (IDEA, 2004), states were required to hold schools accountable for Adequate Yearly Progress (AYP). As a result of increased accountability, literacy issues within schools caused major concerns within the public.

The National Assessment for Educational Progress (NAEP, 2015) found about 66% of the nation's fourth-graders are reading below a basic level of proficiency. This growing concern has communities from politicians to parents searching for methods to address literacy within our schools. Educators are facing new challenges in the area of building a strong foundation for reading at a very young age in order to decrease the number of children experiencing difficulties reading later on in life. As students progress from pre-kindergarten through third grade, they are expected to develop a variety of early literacy skills (Renaissance Learning, 2014). It is vital states have early literacy standards which are developmentally appropriate, while reflecting on critical early literacy competencies and underlying cognitive skills (Bodrova, Paynter, & Isaac, 2000). Bodrova et al. (2000) recommend instructional strategies that support early literacy. These strategies must include extensive teacher guidance as well as considering developmental characteristics of the students such as how they learn. Early intervention is the best single predictor for future academic success and assessing a student's skills and abilities in a student's schooling must be a priority (Torgesen & Burgess, 1998).

Conceptual Framework

Morgan, Farkas, Tufis, and Sperling (2008) described four models that explain the co-occurrence between academic underachievement and problem behaviors. The first "common cause" variables described by them indicated that poor attention or hyperactivity leads to both problems in reading and behavior. This model indicates that

the relationship between reading and behavior is spurious. The second model states reading problems result in behavior problems. Students may become frustrated with the difficulties of reading, leading to acting out, avoidance, or a desire to escape the task. The third model indicates behavior problems result in reading problems. Students that are disruptive and off-task spend less time paying attention to instruction which impacts school performance. Reducing those negative behaviors should improve a child's reading ability. The last model implies that reading and behavior problems cause each other. Both factors may mutually occur over time which leads to a negative feedback cycle impacting both behavior and academic performance.

Schools tend to face a difficult choice when determining which type of deficit to remediate (Snow et al., 1998). They noted deficits in either reading or behavior place children at great risk for negative long-term outcomes because schools have limited resources to deliver effective interventions, the question is: what deficit should a school target? If reading problems cause behavior problems, schools should invest more resources toward reading interventions and expect improvement in behavior. However, if reading and behavior problems cause each other, focusing interventions solely on reading problems and not behavior problems may prove ineffective (Morgan et al., 2008). They identified two different methodologies to determine the causal nature of co-occurring reading and behavior problems. A majority of these methodologies have been an experimental or quasi-experimental design, and the results are mixed.

The Morgan et al. (2008) study resulted in the following: being a poor reader in first grade increases a child's likelihood of displaying behavior problems later in life and task-related behavior problems in first grade strongly predicted reading problems in third

grade. The study revealed that reading problems did increase a child's chance of engaging in problem behaviors. However, by statistically controlling for prior problem behavior, poor attention, and both SES and demographic-related confounds, poor reading ability in the first grade consistently resulted in both a statistically and clinically significant predictor of problem behaviors in the future. These findings are significant because few experimental studies in this area of research have been conducted. This study offers both theoretical and practical implications. The findings within this study highlight the need for more research into the relationship between academic performance problems and behavior problems.

This study is based on Morgan et al. (2008) idea that behavior problems result in reading problems. Stevens, Kaplan, and Hesselbrock (2003) propose reading and behavior problems cause each other is due to the negative feedback cycle. They believe the cycle is initiated by a child's inability to use higher-order skills in planning, initiation, and self-regulation of goal-directed behavior. The self-regulatory process includes selective attention and inhibitory control (Morgan & Lilienfeld, 2000). Morgan et al. (2008) noted that a child's inability to self-regulate his or her behavior would limit his or her ability to manage the learning environment. The inability to self-regulate causes frustration and anxiety resulting in aggression or withdrawal. Behavior problems as well as subsequent behaviors like acting out and withdrawal could contribute to reading problems. They believe reducing those behaviors which are interfering with the ability to learn could improve reading achievement.

Problem Statement

The significant needs of students with behavioral issues pose serious challenges for school systems (Romer & McIntosh, 2005). They believe children that disrupt the learning environment not only disrupt their own learning, but the learning of their peers as well. In addition, student academics and behavioral problems can result in a significant cost to families and society as a whole (Reinke et al., 2008). A substantial body of research has been published documenting the association between problem behaviors and academic achievement (Barriga, Doran, Newell, Morrison, Barbetti, & Robbins, 2002). Researchers have determined there is a relationship between low academic achievement and problem behavior (Trout, Nordness, Pierce, & Epstein, 2003). Behavioral issues such as impulsivity, hyperactivity, and poor concentration have been shown to impact academics resulting in failure. Individual student academic failure in high school was correlated with three or more suspensions in ninth grade (Tobin & Sugai, 1999). Additionally, they noted a correlation between grade point average and office referrals in boys in sixth grade.

Neslon, Benner, Lane, and Smith (2004) established that students classified as having severe behavior problems experienced large academic deficits compared to their peers. They observed that externalizing behaviors were more strongly related to academic performance deficits compared to internalizing behaviors. Studies have noted problem behaviors and poor academic performance serve as a powerful predictor of high school dropout (McIntosh, Flannery, Sugai, Braun, & Cochrane, 2008). This has over the years resulted in a concern about high dropout rates of students in high schools across the United States.

The issue is exacerbated by the fact that individual difficulties in academic achievement and social behavior are usually addressed as separate problems. This dilemma can be attributed to the idea that approaches, practices, and systems assume no relation between academic performance and problem behavior (McIntosh, Chard, Boland, & Horner, 2006). Researchers hypothesized three possible mechanisms that could explain the relationship between problem behaviors and academic difficulties (McIntosh, Horner, Chard, Dickey, & Braun, 2008). The first mechanism is attentional problems. Attentional problems may interfere with learning resulting in problem behaviors. The second mechanism is reduced access to instruction due to a result of the problem behavior. The third mechanism is escape of academic task through problem behaviors due to preexisting low academic skills.

Purpose

The purpose of this study was to investigate the impact PBIS has on student reading achievement and student discipline. The purpose of PBIS is to improve both academic and behavioral outcomes through the selection, integration, and implementation of evidence-based practices. The philosophy of PBIS focuses on four elements: data for decision making, measurable outcomes determined by data, practices with outcomes that are achievable, and systems that efficiently and effectively support these practices. Schools that have opted to implement PBIS with fidelity as well as integrity have environments that are less reactive and dangerous, more productive and engaging, address classroom disciplinary issues and attendance, and maximize student achievement (Skiba & Sprague, 2008).

Research Questions

The following research questions guided the study:

1. Is there a significant difference between schools recognized as an installing PBIS school, emerging PBIS school, operational PBIS, or non-PBIS school on the number of office referrals per 1,000 students in grades kindergarten through fifth grade?
2. Is there a significant difference between a school's PBIS recognition level (installing, emerging, operational, or non-PBIS) and levels of the percentage of students receiving free or reduced lunch on the percentage of students reading at or above their grade level Lexile band on the Georgia Milestones Assessment System (GMAS)?
    a. Is there a significant difference between a school's PBIS recognition level (installing, emerging, operational, or non-PBIS) and levels of the percentage of students receiving free or reduced lunch on the percentage of students reading at or above their grade level Lexile band on the third grade GMAS?
    b. Is there a significant difference between a school's PBIS recognition level (installing, emerging, operational, or non-PBIS) and levels of the percentage of students receiving free or reduced lunch on the percentage of students reading at or above their grade level Lexile band on the fourth grade GMAS?
    c. Is there a significant difference between a school's PBIS recognition level (installing, emerging, operational, or non-PBIS) and levels of the percentage of students receiving free or reduced lunch on the percentage of students reading at or above their grade level Lexile band on the fifth grade GMAS?
3. Is there a significant difference between a school's PBIS recognition level (installing, emerging, operational, or non-PBIS) and levels of the percentage of students receiving

free or reduced lunch on the percentage of students scoring either a Level II, Level III, or Level IV on the English/language arts portion of the Georgia Milestones Assessment System (GMAS)?

a. Is there a significant difference between a school' s PBIS recognition level (installing, emerging, operational, or non-PBIS) and levels of the percentage of students receiving free or reduced lunch on the percentage of students scoring either a Level II, Level III, or Level IV on the third grade English/language arts portion of the Georgia Milestones Assessment System (GMAS)?

b. Is there a significant difference between a school's PBIS recognition level (installing, emerging, operational, or non-PBIS) and levels of the percentage of students receiving free or reduced lunch on the percentage of students scoring either a Level II, Level III, or Level IV on the fourth grade English/language arts portion of the Georgia Milestones Assessment System (GMAS)?

c. Is there a significant difference between a school's PBIS recognition level (installing, emerging, operational, or non-PBIS) and levels of the percentage of students receiving free or reduced lunch on the percentage of students scoring either a Level II, Level III, or Level IV on the fifth grade English/language arts portion of the Georgia Milestones Assessment System (GMAS)?

4. How do selected principals explain the similarities or differences among schools by PBIS recognition level on the number of office referrals per 1,000 students, percentage of students reading at or above their grade level Lexile band, and scores on the English/language arts GMAS?

Methodology

The study used a mixed methods approach with a sequential explanatory design. Archival data was obtained from the Georgia Department of Education (GaDOE) for the quantitative portion of this study. This study utilized data from schools that participated in PBIS as well as non-PBIS comparable schools. A one-way analysis of variance was conducted to answer research question 1, and a factorial analysis of variance was conducted to answer research questions 2 and 3. The qualitative portion of the study consisted of principal interviews across different levels of PBIS schools. The qualitative information was used to address research question 4.

Definition of Terms

The following terms are used throughout the study and provide readers with the definition for understanding the proposed study:

Georgia Department of Education (GaDOE). The Georgia Department of Education oversees public education through the state. State and federal funds are distributed amongst school systems from the GaDOE (Georgia Department of Education, 2016).

Individuals With Disabilities Act (IDEA) of 1997. A United States Law that requires equity, accountability, and excellence in education for students with a disability. The law guarantees the right to a free, appropriate public education within the least-restrictive environment (Individuals with Disabilities Education Act of 1997, 2004.)

Lexile Level. A method used by educators to measure student reading ability. It measures how difficult a text may be or a student's reading ability level (Stenner, 1996).

No Child Left Behind (NCLB) Act of 2001. The NCLB was an Act of Congress that reauthorized the Elementary and Secondary Education Act. The Act increased the federal government in holding schools more accountable for student outcomes. Special focus of the Act was to ensure an increase in performance of certain groups of students, such as special education students, English-language learner students, and economically disadvantaged students. States that agreed to receive federal Title I money had to comply with the requirements of NCLB (No Child Left Behind Act of 2001, 2008).

Positive Behavior Intervention & Support (PBIS). An implementation framework with the purpose of improving academic and social behavior outcomes for all students by stressing the use of data for informing decisions regarding selection, implementation, and progress monitoring of evidence-based behavioral practices (Reynolds, 2012).

Organization of Study

This chapter is the first of five chapters and provided an overview of the study. The purpose of this study was to investigate the impact that PBIS has on student reading achievement and student discipline. This chapter included background information and prior research supportive of this study as well as the conceptual framework utilized. In addition, this chapter referenced the problem statement, the purpose, research questions, a list of definitions, and an overall methodology. Chapter 2 presents a review of literature relevant to this study. Chapter 3 includes the research design utilized, participants who are a part of the study, instrumentation use, and a description of the qualitative and quantitative measures. Chapter 4 reports the findings of

the study while Chapter 5 provides discussion of the findings and areas for further research.

Chapter II

LITERATURE REVIEW

History of PBIS

The matter of students being excluded from educational opportunities attributable to issues associated with behavior arose early in the 1970's court system in Mills v. Board of Education of the District of Columbia (Sugai & Simonsen, 2012). However, the development of PBIS did not begin until the 1980s when a need for effective behavioral interventions was acknowledged. In addition to that need, the implementation and documentation of these interventions was noted by several researchers, specifically researchers at the University of Oregon. Through their efforts, it was acknowledged that future research should focus on prevention, schoolwide systems, research-based practices, team-based implementation and professional development, and student outcomes (Sugai & Simonsen, 2012).

In 1997, congress amended the Individuals with Disabilities Education Act (IDEA) and provided a grant to create a National Center of Positive Behavioral Interventions and Supports (Sugai & Simonsen, 2012). As a result of research in the 1980's, the University of Oregon was granted the opportunity to develop the National PBIS Center. This grant allowed for the establishment of numerous partnerships amongst researchers from several states. Currently, The National Technical Assistance (TA) Center on PBIS is receiving funding through this grant. The TA Center created the PBIS

framework, which currently provides over 16,000 schools with support and professional development (Sugai & Simonsen, 2012).

PBIS emerged from three major sources: applied behavior analysis, the normalization/inclusion movement, and person-centered values. Carr, Dunlap, Horner, Koegel, Turnbull, Sailor, & Fox (2002), shared that applied behavior analysis is an extension from the principals of operant psychology relating to problems and issues of social importance. This analysis resulted in two contributions to the area of PBIS. It provided an element of conceptual framework in regards to behavioral change as well as providing a variety of assessment and intervention strategies for behavior. Subsequently, the notion of the three-term contingency (discriminative stimulus, operant response, and reinforce/punisher) contributed to the development of PBIS. The assessment tool that was derived from applied behavior analysis was a functional analysis. A functional analysis is an assessment tool used for determining the motivation of behaviors which then allows for intervention planning. This type of analysis is another important component of PBIS (Carr et al., 2002).

The philosophy of PBIS is aligned to the principles of normalization (Carr et al., 2002). Carr et al. (2002) acknowledged that students, especially those with disabilities, should be provided the same setting and opportunities as non-disabled students. The normalization principle lends its way to the principle of inclusion. Inclusion pushes for groups, such as students with disabilities, to be mainstreamed meaning these students should be in the general classroom as opposed to being segregated to a specific classroom or facility.

Carr et al. (2002) stated that knowledge is based on experience and subject to continued revisions and falsification. Knowledge should not be replaced by values, as our values should inform our knowledge. Carr et al. (2002) believe science provides us with information on how to make a change; however, our values help us decide what is worth changing. He stated the PBIS philosophy embraces person-centered values. The idea of person-centered values is divided into three processes: person-centered planning, self-determination, and the wraparound approach. Person-centered planning consists of recognizing goals and implementing intervention plans. Goals as well as specific needs of individuals drive the needs required to meet the demands of each individual person. Carr et al. indicated self-determination includes choice and decision making, personal goal setting, self-advocacy, and self-management. Students, especially those with disabilities, are instructed on what they can and cannot do, when they can do it, and whom they can do it with. Self-determination makes the person with a disability the primary person over his/her own life. The last process indicated by Carr et al. (2002) known as wraparound, incorporates both person-centered planning and self-determination. Wraparound incorporates person-centered planning which results in support plans that are based on needs versus services. These plans can ultimately affect the entire family. Basically, the idea is to involve all stakeholders in the decision-making process to ensure the individual's needs are met resulting in an improvement in his/her quality of life. Ultimately, this will either reduce or eliminate problem behavior(s).

Systemic Change

In order for a school to make improvements and change its culture, evidence suggest schools should go through goal-oriented systemic change (Noell & Gansle,

2009). They believe that evidence which supports that goal-oriented systemic change tends to result in positive social and academic outcomes for students. The implementation, along with sustaining goal-directed systemic change, is a complex topic at theoretical, pragmatic, and ethical levels. The process of change begins with a clear framework and map of what needs to occur. Basically, a school must understand how to get from point A to point B. Noell and Gansle (2009) discussed several elements which should be considered when planning for school improvement and systemic change. First, are the vision, aims, and rationale. A vision statement sets the standards that will soon lay the foundation for the improvement and change and serves as an outline that will shape the process. In addition, the rationale underlying change must be analyzed. Underlying rationales can have major ramifications for outcomes. Rationales can guide and limit the nature of the following activity. In order to implement a new vision, that will lead to systemic change, an abundant amount of resources are required (Adelman & Taylor, 2007). If an adequate amount of resources cannot be acquired for the process of change, it is likely that school improvement will not take place.

Once an initiative has been designed, Adelman and Taylor (2007) stated the general function, task, and activities related to systemic change are driven by what is required to effectively plan and implement a sustainable initiative. Adelman and Taylor (2007) suggest four phases should be considered during the establishment of systemic change: creating readiness, initial implementation, institutionalization, and ongoing evolution and creative renewal. They mentioned one of the principle reasons for failure in the overall process of change is not giving sufficient attention and time to the process of creating readiness. In addition, stakeholders, principals, and teachers should be part of

this phase. This phase should include a team to steer the process and ensure capacity is created to accomplish the change. These steering groups are a vital part of the process and should have specific responsibilities. These responsibilities are to serve as a catalyst and manger for change. These individuals are accountable for the follow-through. Ultimately, for systemic change to occur, Thomas and Grimes (2008) stated that reform must begin with adults changing their own behavior. Environmental and social systems influence the habitual behaviors of educators. Typically, poor implementation of systemic initiatives are a result of reactance or resistance (Noell & Gansle, 2009).

A system's accountability is driven by what is measurable (Adelman & Taylor, 2007). Program administrators and staff are typically held accountable for the long-term outcomes since these have a direct relationship to outcomes. This is a result of policymakers mandating accountability, which results in the creation of quick and direct outcome indicators such as achievement test scores; however, very little attention is focused on the unintended outcomes, both positive and/or negative. Adelman and Taylor (2007) suggested these quick and direct outcome indicators, such as achievement tests, produce a disconnect between what is truly required to improve academic performance and the requirements within a school improvement plan. They noted that barriers to learning and ways to meet school improvement are neglected. This creates a culture that disregards short-term and intermediate outcomes which serve as essential indicators that should be gathered. Benchmarks and intermediate outcomes should be used as a way to formally evaluate systemic change. Long-term outcomes do serve as an indicator of whether system changes are effective; however, equally evident are short-term and intermediate outcomes that allow for formal evaluation.

Disciplinary Issues within Schools

Skiba and Sprague (2008) stated, "disruptive behavior consistently tops the list of teachers' and parents' concerns about education" (p. 1). Shocking acts of violence in our schools over the last few years have caught the attention of our nation. In the 1990s, an array of schools within the United States began implementing zero-tolerance policies. The implementation of this policy led to an increase in the number of out-of-school suspensions and expulsions (Wald & Losen, 2003). Skiba and Sprague discussed issues that arose due to zero-tolerance policies included racial disparities in suspension and expulsion. In addition, students were being suspended or expelled for minor infractions. Wald and Losen (2003) revealed zero-tolerance policies were originally created as an approach to drug enforcement. The policy mandated the application of predetermined consequences. Most of these consequences are severe and punitive in nature and are intended to be issued regardless of the seriousness of the behavior. One of the issues with this policy is that there are limited guidelines and clarification. The idea behind this policy is to provide a safe school climate by removing students who are disruptive to themselves or to others (American Psychological Association, 2006).

Skiba and Raush (2006) noted suspension is the most often used disciplinary procedure in schools. It involves the short-term removal of a student from the school environment. Expulsion involves the procedural removal of a student. Expulsion typically includes 10 or more days; however, it can last for a semester, a year, or be permanent. They found suspensions and expulsions are more frequent within middle and high schools versus elementary schools. Skiba and Raush (2006) also noted that urban schools have a higher suspension and expulsion rate than suburban or rural schools.

They documented boys are more prone to suspension or expulsion than girls. Data indicates removing a student by suspension has a negative effect on his or her outcomes and the learning climate; however, it does not improve the school climate (Skiba & Sprague, 2008). According to the American Psychological Association (2006), schools with higher suspension rates focus less on school climate and have lower academic quality. Further, schools with high suspension and expulsion rates have lower achievement results on standardized tests regardless of economic status or demographics (Skiba & Raush, 2006).

The three previous studies support the notion that there is a relationship between academics and behavior. Although academic deficits impact behavior, behavioral deficits have a greater overall impact on academic outcomes. Low academic skills often interfere with social behavior, but behavior problems almost always interfere with academic learning. Typically, academic deficits arise due to problem behaviors, and the relationship continues throughout a student's schooling if no intervention is provided (McIntosh et al., 2008).

Suspension and expulsion have proven to be a moderate to strong predictor of high school dropout (Skiba & Peterson, 2000). They found students who drop out of school tend to have lower incomes and more difficulty finding employment. McIntosh et al., (2008) found high school dropouts also have an impact on our society due to the fact these individuals cost taxpayers billions of dollars in regards to lost revenue, unemployment, welfare, crime prevention, and prosecution. High school dropouts have a higher rate of health issues, incarceration, and substance abuse. They identified high

school dropouts do not arise from a single event, rather culminating events that occurred throughout the student's entire schooling experience.

Criticism towards suspension and expulsion take aim at racial disparity. African American students are suspended at rates two to three times higher than other students (Skiba, Michael, Nardo, & Peterson, 2002). They noted African American students are over-represented in office referrals as well. African American students tend to be punished more severely for minor infractions that are often considered to be subjective. Skiba et al. (2002) believe the disparities are due to cultural mismatch or lack of cultural proficiency. Socioeconomic status (SES) has been associated as a risk factor for suspension; however, studies continue to reflect race is a significant contributor to disciplinary outcomes. They noted racial/ethnic disproportionality in school discipline has been analyzed through quantitative and qualitative studies across the United States. They concluded that an evidence-based rationale is lacking in current research and is necessary in order to explain widespread disparities in disciplinary treatment. Skiba, Horner, Chung, Rausch, May, and Tobin (2011) discussed the long history in our society that stereotypes African American males as being more prone to disorderly conduct or criminal acts regardless of little available evidence to support this stereotype. They noted the removal of a disproportionate amount of African American students in regards to other races/ethnicity can represent a violation of civil rights protections such as those referenced in *Brown v. Board of Education.*

Skiba and Sprague (2008) found administrators do not suspend or expel students because they wish to remove the student from the learning environment. They believe administrators use suspension and expulsion because they do not know what else can be

done; hence, a lack in disciplinary tools. Administrators are looking for effective strategies as alternatives to suspensions and expulsions. Regardless, they agree maintaining a safe school must be a school's highest priority. Skiba and Peterson (2000) indicated harsh and punitive disciplinary measures are not proven to produce a school climate that can prevent violence. Their belief is punishment alone cannot teach new behaviors, unless the punishment is followed by some type of positive consequences or goals. Otherwise the reaction can be unpredictable and lead to escape or counter aggression. They noted in their research the word discipline arose from the Latin word disciple which means to teach or to comprehend.

Student Engagement

Students tend to be engaged in school if their psychological needs are meet. Typically, these needs refer to relatedness, competence, and autonomy (Roorda, Jake, Zee, Oort, & Koonmen, 2017). Roorda et al. (2017) discussed that teachers can support student needs by showing interest in their students, providing structure such as clear expectations and consequences, and by allowing student choice. Ultimately increased levels of engagement results in higher grades and more proficient scores on achievement test. Students that are engaged in academics tend to experience more positive emotions, more effort, and pay better attention (Thijs & Verkuyten, 2009). In addition, since student engagement is associated with positive outcomes, research reveals it can increase grades and decrease dropouts (Connell, Spencer, & Aber, 1994). Student engagement has been defined as "the quality of a student's connections or involvement with the endeavor of schooling and hence with the people, activities, goals, values, and place that compose it" (Skinner, Kindermann, & Furrer, 2009, p. 494). According to Thijs and

Verkuyten (2009), student engagement occurs when a student is behaviorally, emotionally, and cognitively involved in academic activities.

Roorda et al. (2017) describe three types of student engagement. The first is behavioral engagement which refers to participation in academics and social or extracurricular activities. The second type is emotional engagement which describes a students' feelings (positive and/or negative) and their reactions to academics, teachers, students, and overall school experience. The last type is cognitive engagement which defines a students' willingness to invest in mastering of difficult skills. Most empirical studies do not distinguish between these three types. Most studies focus on the first or second type (Roorda et al., 2017). Typically, engagement is viewed as one multidimensional concept.

Engagement depends on whether basic psychological needs are met (Thijs & Verkuyten, 2009). They stated people need to feel competent, and teachers play a vital role in satisfying student needs. Teachers can meet student needs through both structure and involvement. Thijs and Verkuyten (2009) described the structure aspect as teacher behaviors that include formal and informal rules and clear expectations. These behaviors increase a student's feeling of competence. In addition, they noted teacher involvement involves affection and concern which in turn allows a student to feel a sense of affiliation to his or her social environment. Martin (2006) noted teacher enjoyment, confidence in teaching, and pedagogical efficacy also have a positive impact on student engagement.

Hirschfield and Gasper (2009) conducted a study to determine whether engagement predicts delinquency, delinquency predicts engagement, or both. They noted emotional engagement in school should reduce school misconduct resulting in stronger

emotional connections with teachers and peers; hence, resulting in lower rates of delinquency. School engagement may also decrease off-campus delinquency via peer and parental interaction. If engagement increases the positive feedback a child receives at home, it could result in stronger relationship between the child and parent. However, delinquency could in turn lower engagement. School delinquency could result in peer rejection, discipline referrals, and negative stigma at home or within the school.

Hirschfield and Gasper's (2009) study was conducted in inner-city Chicago within 22 public elementary schools. Survey data was collected twice annually over the course of five years from fifth through eighth grade students. A total of 11,000 youths participated in the study. Students took an attitude and behavior survey which measured academic and psyco-social adjustments. This survey also included a component on delinquency and cognitive, behavioral, and emotional engagement. The results of the study revealed the three measures of engagement are only modestly intercorrelated. Emotional engagement is modestly correlated with behavioral engagement and cognitive engagement. Behavioral and cognitive engagement are uncorrelated. These results suggest emotional, cognitive, and behavioral domains of school engagement are independent of one another. In regard to misconduct, emotional and behavioral engagement had a small effect on school misconduct; however, cognitive engagement had a significant role in increasing school misconduct and off-campus delinquency. Lastly, Frederick (1977) discussed a correlation between academic engagement and academic achievement. Frederick's study discussed that academic engagement can improve academic achievement. The study revealed high-achieving students in high

schools were academically engaged 75% of the time, compared to 51% for low-achieving students.

Reading Achievement and Problem Behaviors

Reading skills are the most important measurement of academic competence in elementary school and the primary focus of most academic interventions (Fleming, Harachi, Cortes, Abbott, & Catalano, 2004). Fleming et al. (2004) believed the relationship between academic performance and problem behaviors was important. They noted many interventions attempt to improve academic competency in elementary school which should in theory reduce problem behaviors. Based on their research, the notion that preventive interventions can increase reading skills while reducing problem behaviors can be validated. However, they indicated little research has been conducted on the latter theory. McIntosh, et al. (2008) found reading competence in kindergarten was statistically a predictor of discipline referrals in third grade. He noted students entering kindergarten vary in reading skills; however, if students did not respond to quality instruction in kindergarten and fell behind, a negative spiral of achievement and behavior was more likely to occur.

Morgan et al. (2008) noted first grade students who were poor readers at the end of the year were more likely to engage in problem behaviors by the end of their third grade year. It was stated within this study few experimental studies regarding problem behaviors and reading achievement had been conducted. Adams, Snowling, Hennessy, and Kind (1999) reported behavior problems were more strongly associated with reading achievement than with mathematics achievement in early elementary school. Pierce, Wechsler-Zimring, Noam, Wolf, and Katzier's (2013) findings discussed the need for

early intervention focused not only on reading challenges but also on interventions that dealt with social, emotional, and behavior challenges. They suggested early positive behavior support could be a protective agent against future academic problems.

Fleming et al. (2004) conducted a longitudinal study within several public suburban schools located in the Pacific Northwest region of the United States. The study revealed an increase in reading test scores associated with the implementation of PBIS with students at-risk for academic and behavioral issues. A study conducted by Muscott, Mann, and LeBrun (2008) found 41% of participating schools that implemented and sustained schoolwide PBIS improved the reading proficiency scores of their students, as measured by the New Hampshire Educational Improvement and Assessment Program. Results from research continue to suggest teachers must attempt to create positive interactions and enhance the quality of student-teacher relationships (Dee & Boyle, 2006). There is strong evidence the quality of student-teacher interactions directly affects student outcomes (Danielsen, Wiium, Wihelmsen, & Wold, 2010). Kellam (1999) noted aggressive and disruptive first grade students that were in a poorly managed classroom were 59 times more likely than average kids to be aggressive later. The same first grade students in a well-managed classroom were only three times more likely to be aggressive later.

Measuring Reading Achievement

Stenner (1996) indicated reading comprehension is recognized as one of the best predictors of success in higher education and is also one of the most tested concepts in the educational realm. The ability to read has become a survival skill in today's society. He stated reading comprehension scores produced from normative measures only indicate

how a student performed compared to other students of the same age or grade. Typically, these scores are reported as a percentile. Percentile scores are derived from standardized testing and do not provide information regarding what a student can and cannot read. Therefore, Stenner (1996) believes parents lack true understanding of their child's reading ability while teachers struggle to provide relevant instruction. He serves as the co-founder of the company MetaMetrics® which developed the Lexile® Framework for Reading. MetaMetrics is an educational measurement and technology organization with the mission of connecting assessments with instruction. The framework is used by millions of educators to differentiate instruction and improve learning across all levels of education.

The Lexile scale provides educators with a normative and criterion-referenced interpretation of a reading measure. The Lexile scale is based upon the Rasch model (Stenner, 1996). Stenner (1996) stated the following:

> The probability of a person answering a reading item correctly is governed only by the difference between the person's measure and the task's calibration. If a person's measure is equal to the task's calibration, then the Lexile scale predicts that the individual has a 75 percent comprehension rate on that task. If 20 such tasks were given to this person, one would expect three-fourths of the responses to be correct. If the task is more difficult than the person is able, then the probability is less than 75% that the response of the person to the task will be correct; similarly, if the task is easier compared to a person's measure, then the probability is greater that the response will be correct. (pp. 19-20)

The Lexile scale is used to match students to books with a high comprehension rate; hence, providing them with a level of challenge (Stenner, 1996). Before the introduction of Lexile levels, it was almost impossible to identify appropriate text to match a student's reading level. Based on the Lexile Framework, a person's measure and text measure is provided on the same scale. The Lexile level is a great way for educators to measure reading achievement amongst students. The Lexile Framework is not an instructional program but more of a way to inform a student's reading development (Copeland & Liben, 2013).

According to Stenner (1996), a student with a Lexile level of 400L should have a 75% comprehension rate if given a text measured at 400L. If the same student was given a text measured at 250L, his or her comprehension improves to 96%. There is a correlation between a person's Lexile measure and the Lexile measure for a task. As a person's Lexile measure exceeds the text Lexile measure, the overall comprehensions rate increases. Squires, Huitt, and Segars (1983) noted student achievement in second-grade reading drastically improved as the proportion of task completed at a high success level increased up to 75%. Students reading at a 50% comprehension tend to experience frustration; however, students reading at a 75% comprehension have reported comfort as well as confidence with their text.

In Georgia, the Lexile score is derived from the Georgia Milestones Assessment System (GMAS). According to the GaDOE (2016), the Georgia Milestones Assessment System is a comprehensive summative assessment used in Georgia schools for grades third through high school. The GaDOE has worked with MetaMetrics to allow the Georgia Milestones English Language Arts assessments to report Lexile levels. In

Georgia, students receive a Lexile measure when taking the GMAS at the end of the school year. This Lexile measure is based on the reading portion of the ELA test (GaDOE, 2016). All Georgia public schools must assess their students on the GMAS at the end of each academic year. Educators in Georgia use the Lexile measure to inform parents about their child's reading level. In addition, the Lexile measure allows educators to match students with text, targeting the student's reading ability. Students that read text within their targeted range optimize growth in reading ability (GaDOE, 2016).

The Lexile® Framework provides information to all stakeholders including text complexity necessary for students to meet the demands of being college and career ready. The framework provides Lexile bands in table form and establishes a visual of what text is appropriate for each grade and text that will "stretch" the students to gain in literacy skills (Copeland & Liben, 2013). The GMAS is administered to students in grades third through fifth in the elementary level. Students in third grade have a Lexile band of 520L to 820L. Students in fourth grade have a Lexile band 740L to 940L, and students in fifth grade have a Lexile band of 830L to 1010L (GaDOE, 2016).

Implementing Schoolwide Positive Behavior Supports

Skiba and Sprague (2008) discussed how schoolwide positive behavior supports (SWPBS), which is interchangeable with the term PBIS, uses evidence-based strategies and systems to assist with decreasing referrals by addressing problem behaviors, changing the school culture to a more positive culture, increasing academic performance, and increasing safety. As of 2007, over 5,000 schools participated in the PBIS program (Skiba & Sprague, 2008). Kincaid, Childs, Blasé, and Wallace (2007) mentioned

considerable research has been conducted to determine components that aid the effective implementation of evidence-based programs; however, research is lacking in the area of factors affecting the successful implementation of PBIS. Skiba and Sprague (2008) revealed PBIS can change the course for students with disciplinary issues as well as shift their path from destructive outcomes. They noted the number of schools using this comprehensive, systemic program for reducing disruption and improving school climate while keeping students in school is continuously increasing.

According to the U. S. Department of Education's Office of Special Education Programs' (OSEP) Center on Positive Behavioral Interventions and Supports (2004) PBIS is designed for all students in a school; however, PBIS implementation must address five components. The major components of a successful PBIS program are (a) establishing and defining clear and consistent schoolwide expectations, (b) teaching the schoolwide expectations to students, (c) acknowledging students for demonstrating the expected behaviors, (d) developing a clear and consistent consequence system to respond to behavioral violations, and (e) using data to evaluate the impact of schoolwide efforts.

The first component recommended by the OSEPs' Center on PBIS (2004) is for a schoolwide PBIS team to establish three to five behavioral expectations that meet the needs and culture of the school. The expectations should be worded in a positive manner. Expectations should be brief and lacking any negative rules. Expectations should be memorable for staff and students. Creating an acronym can assist students and staff with remembering the schoolwide expectations. These expectations should cover all locations within the school as well as be visible throughout the school building.

The second component recommended by the OSEPs' Center on PBIS (2004) is teaching students the expectations. The expectations must be defined for each specific location within the school. For example, "be respectful" in the cafeteria may be defined differently than in the bathroom or hallway. A matrix should be created for each expectation and each location. Specific behavioral examples should be listed within the matrix for each expectation in each location. Behavioral expectations must be explicitly taught to all students.

The third recommended component of the OSEPs' Center on PBIS (2004) is to acknowledge students for demonstrating desired behaviors. Once students have been taught such expected behavioral expectations, students must be recognized for exhibiting the expected behaviors. This is where positive reinforcement becomes crucial. Students should be "caught" demonstrating the expected behavior. PBIS teams should create incentives/rewards for recognizing students as well as establish guidelines addressing the frequency of rewards. Students should play a role in the process of determining and creating rewards to be offered throughout the school. Lastly, since PBIS focuses on changing the climate within the school, a system for acknowledging staff is vital as well.

The fourth component suggested by the OSEPs' Center on PBIS (2004) is having a clear and consistent consequence system in place. Students should be provided with a corrective consequence when acting inappropriately. Staff must understand what types of behaviors result in an infraction and when behavioral issues need to be documented. Consequences should match the intensity and severity of the behavior and be consistent from child to child. In addition, the consequence should include a teaching component that practices the desired behavior(s) in the location where the offense took place.

The last component the OSEPs' Center on PBIS (2004) recommends is the use of data. Administrators along with PBIS teams need to monitor the implementation of PBIS within their school. Several tools are available to help evaluate the effectiveness of the program. Thomas and Grimes (2008) noted behavioral referrals are efficient and effective ways of measuring the success of the program. Analysis of the data should take place monthly for decision-making. They discussed the importance of the team identifying any trends or patterns that may be occuring within the school. Once a trend or pattern has been identified, the team should provide support to addresses the area of concern. Lastly, they recommended discipline referral data should be analyzed at the end of each school year. This serves as a summative evaluation tool to determine the impact PBIS had on the school climate.

Outcomes of PBIS

Reynolds (2012) found schools utilizing PBIS in North Carolina have experienced a change in their climate and student outcomes. He documented suspension rates have declined over a seven-year time period. Schools in North Carolina that implemented PBIS discovered an increase in student achievement data over a one-year period. In addition, he noted graduation rates have increased in high schools within North Carolina that have implemented PBIS for at least four years.

Kartub, Taylor-Green, March, and Horner (2000) studied a rural middle school in western Oregon. The sample population was 535 students from grades 6 through 8. Teachers within the school complained the magnitude of noise in the hallway from transitioning to and from lunch was interfering with instruction. An intervention was designed to review acceptable and unacceptable levels of noise while transitioning to and

from lunch, change the look of the hallway, and provide rewards to encourage the behavior. Pre and post noise levels were measured using a Realistic Sound Level Meter. After the intervention was conducted, the average decibel level dropped 8.8 decibels. After 10 days, it was reported students were reminding each other to be quiet during transition times. It was also noted by the staff noise was significantly reduced. The change within the school occurred without using punishers for noisy students.

Franzen and Kamps (2008) focused on an urban elementary school playground. The study addressed the growing rate of problem behaviors and the lack of teacher supervision during recess. This study examined how the implementation of a recess intervention along with PBIS would impact behavioral and supervisory issues on the playground. The first step was to establish five school rules along with a matrix detailing the expected behaviors for each specific setting. Compliance to any expectation was reinforced with rewards. Faculty members taught recess-related lessons and allowed the students an opportunity to practice. Teachers on duty during recess were required to interact with their students six times within a five-minute period. After the study was concluded, it was noted recess intervention increased active teacher supervision and decreased student problem behaviors. The intervention served as a prompt for the teachers as well as the students to engage in behaviors deemed appropriate. Problem behaviors were not completely eliminated; however, the playground did become a much safer and enjoyable environment.

McCurdy, Mannella, and Eldridge (2003) conducted a case study of the implementation of PBIS in a racially diverse inner-city elementary school. Several studies concluded urban schools are seeing an increase in the number of students with

antisocial behaviors (Biglan,1995; Walker, Colvin, & Ramsey, 1995). Many children from urban communities come from single-parent families and/or have an older sibling who has already encountered problems with law enforcement. Parents may be addicted to drugs and these children are usually exposed to abusive conditions. These students tend to require more teacher discipline, suffer from truancy, and engage in risk-taking behaviors. These students also tend to begin school lacking necessary and/or fundamental skills (McCurdy et al., 2003).

The McCurdy et al. (2003) study took place in a large urban area in the northeastern United States. The enrollment of the school was approximately 500 students in grades K through fifth grade. A large percentage of students were at or below the poverty level. A team was selected to implement PBIS, with two main goals being to develop a positive approach to address behavior and to promote student's prosocial development. After two years of implementation, a 46% reduction was noted in office discipline referrals while fighting was reduced by 54%.

Another case study was conducted by Warren, Edmonson, Griggs, Lassen, McCart, Turnball, and Sailor (2003) on an inner-city middle school in Kansas City. The enrollment of the school totaled 724 students and was comprised of three grades (grades 6-8). The demographics of the school consisted of 40% African American, 32% Hispanic, 20% White, 8% Asian or Pacific Islander, and .001% Native American. In addition, 90% of the students qualified for free or reduced lunch. Prior to the implementation of PBIS, 42 programs that focused on student behavior were being implemented. Due to the number of programs already in place that focused on behaviors, teachers were resistant to the implementation of PBIS. Regardless, after the first year of

implementation, school data indicated a number of encouraging outcomes. The total number of office discipline referrals decreased by 20% and time-outs decreased by 23%. The most notable was short-term suspensions, which decreased by 57%. Teachers and administrators stated the combination of universal, group, and individual supports had a positive impact on the overall school climate as well as student behaviors.

Georgia Department of Education PBIS Model

The Georgia Department of Education (GaDOE) recognizes both districts and schools for the implementation of the PBIS framework (Positive Behavioral Interventions and Supports, 2015). In order for a district or school to be recognized as a PBIS district or school, the Local Education Agency (LEA) must have an active District Leadership Team, District Coordinator, and a District Action Plan. In addition, the LEA must have active technical support from the GaDOE Team. The GaDOE awards LEA's with one of three titles: Installing, Emerging, and Operational. Prior to receiving one of these titles, schools must undergo implementation for at least one school year. Schools are required to complete and submit an end of year report to the GaDOE. The GaDOE then reviews the data and assigns a level to the school/LEA. Schools receiving operational status meet the following requirements: school has participated in the GaDOE training covering all 10 critical elements of Tier I PBIS, the school has developed and implemented all 10 of the PBIS critical elements for at least one full year, the school has completed two walkthroughs, team implementation checklist, and an end of year Benchmarks of Quality (BoQ). Furthermore, schools must have a BoQ score at or above 85%, minimum of 80% students having zero to one office referral, and lastly a decrease in discipline office

referrals, in-school suspension days, and out-of-school suspensions days (Positive Behavioral Interventions and Supports, 2015).

The GaDOE uses the BoQ to examine the fidelity of the PBIS framework. The document helps individuals and teams determine if Tier I implementation has been effective. In addition, this document identifies strengths and weaknesses in the Tier I implementation. This form is a reflection of the team members' consensus with results consolidated and final scores compiled on a scoring form. A scoring guide provides a description of each item on the scoring form. The BoQ was developed by the Florida's Positive Behavior Support Project and was created to access and monitor PBIS team activities (Positive Behavioral Interventions and Supports, 2015).

The 10 critical elements that must be present in order to receive operational status are: PBIS team, clear expectations and rules, teaching of behavior, data entry and analysis, recognition (feedback), effective discipline process, faculty commitment, implementation, classroom fidelity, and evaluation. Each school must establish a core PBIS team to lead the charge within the school. Once the team has been established, the team must create clear expectations and rules for each area of the school. Teaching expected behavior is crucial to PBIS. According to Wong and Wong (2009) a child must repeat something new eight times in order for them to learn it. In order for a child to unlearn an old behavior and replace that behavior with a desired behavior, the new behavior must be repeated around 28 times.

The next critical element is schoolwide discipline referrals must be entered electronically into a system that can analyze referrals. A system for schoolwide recognition for both students and staff members must be established. A schoolwide

progressive discipline plan must also be created to ensure consistency and fairness to all students. Once these crucial elements have been established, the school must secure faculty commitment and begin implementation. The last two crucial elements focus on classroom fidelity and ongoing evaluation of the program for improvements.

Summary

The review of literature provides an overview of issues most often associated with education: reading performance and student discipline. There is a wealth of literature that addresses co-occurring academic performance (i.e. deficiencies) and student behavior problems. Additionally, there has been a heavy focus in recent years on the implementation and effectiveness of the PBIS frameworks. Few studies exist on the effectiveness of PBIS and reading achievement. Current research centers primarily on PBIS and either academic achievement or student discipline. There has been limited focus on the effectiveness of PBIS and Lexile levels and currently no knowing literature exists that examines the effectiveness of different PBIS categories within the Georgia DOE framework as well as the impact PBIS may have on the Georgia Milestones Assessment System's reading component. The goal of this research study is to determine the impact PBIS has on reading achievement levels and student discipline. This study aims to add to the existing research base of PBIS by examining the different categories of PBIS and its impact on reading achievement as measured by the Georgia's DOE assessment system and its impact on total student discipline counts. After this study is completed, suggestions will be offered for additional and future research regarding PBIS implementation and subsequent impacts on reading achievement and disciplinary issues.

Chapter III

METHODOLOGY

This chapter contains a description of the methodology used in the study. The first section describes the research design and the rationale for the use of that design. Section 2 will discuss the population, sample, and sampling procedures. Section 3 describes the instrument that was used for the study. The fourth section will discuss how the data was collected for the quantitative and qualitative portions of the study. The last section will detail the quantitative data analysis, statistical considerations and assumptions, and qualitative data analysis. The following research questions guided the study:

Research Questions

1. Is there a significant difference between schools recognized as an installing PBIS school, emerging PBIS school, operational PBIS school, or non-PBIS school on the number of office referrals per 1,000 students in grades kindergarten through fifth grade?

2. Is there a significant difference between a school's PBIS recognition level (installing, emerging, operational, or non-PBIS) and levels of the percentage of students receiving free or reduced lunch on the percentage of students reading at or above their grade level Lexile band on the Georgia Milestones Assessment System (GMAS)?

    a. Is there a significant difference between a school's PBIS recognition level (installing, emerging, operational, or non-PBIS) and levels of the percentage

of students receiving free or reduced lunch on the percentage of students reading at or above their grade level Lexile band on the third grade GMAS?

b. Is there a significant difference between a school's PBIS recognition level (installing, emerging, operational, or non-PBIS) and levels of the percentage of students receiving free or reduced lunch on the percentage of students reading at or above their grade level Lexile band on the fourth grade GMAS?

c. Is there a significant difference between a school's PBIS recognition level (installing, emerging, operational, or non-PBIS) and levels of the percentage of students receiving free or reduced lunch on the percentage of students reading at or above their grade level Lexile band on the fifth grade GMAS?

3. Is there a significant difference between a school's PBIS recognition level (installing, emerging, operational, or non-PBIS) and levels of the percentage of students receiving free or reduced lunch on the percentage of students scoring either a Level II, Level III, or Level IV on the English/language arts portion of the Georgia Milestones Assessment System (GMAS)?

a. Is there a significant difference between a school's PBIS recognition level (installing, emerging, operational, or non-PBIS) and levels of the percentage of students receiving free or reduced lunch on the percentage of students scoring either a Level II, Level III, or Level IV on the third grade English/language arts portion of the Georgia Milestones Assessment System (GMAS)?

b. Is there a significant difference between a school's PBIS recognition level (installing, emerging, operational, or non-PBIS) and levels of the percentage

of students receiving free or reduced lunch on the percentage of students scoring either a Level II, Level III, or Level IV on the fourth grade English/language arts portion of the Georgia Milestones Assessment System (GMAS)?

c. Is there a significant difference between a school's PBIS recognition level (installing, emerging, operational, or non-PBIS) and levels of the percentage of students receiving free or reduced lunch on the percentage of students scoring either a Level II, Level III, or Level IV on the fifth grade English/language arts portion of the Georgia Milestones Assessment System (GMAS)?

4. How do selected principals explain the similarities or differences among schools by PBIS recognition level on the number of office referrals per 1,000 students, percentage of students reading at or above their grade level Lexile band, and scores on the English/language arts GMAS?

Research Design

This study used a sequential explanatory design to investigate the association between PBIS and discipline referrals, Lexile levels and GMAS ELA proficiency, and perception of principals on these findings. A mixed-methods approach was determined to be the most appropriate design in order to understand the association between PBIS and school discipline referrals, PBIS and Lexile levels, PBIS and ELA GMAS proficiency, and perception of principals in regard to PBIS and those variables. A mixed-methods design focuses on combining both quantitative and qualitative data in either a single study or series of studies (Creswell & Plano Clark, 2011). This method allows for

a better understanding of research problems than either approach alone (Creswell & Plano Clark, 2011). In addition, this method can help clarify and explain relationships found between variables while also allowing for the exploration of relationship between variables in depth. A mixed-methods study can conform or cross-validate relationships discovered between variables (Fraenkel & Wallen, 2009). This design is most often used when qualitative data is sought to assist with interpreting quantitative data (Creswell, 2009).

The independent variable was the PBIS recognition level of each school and levels of the percentage of students receiving free or reduced lunch. The PBIS recognition level was divided into four categories: installing, emerging, operational, or non-PBIS school. The levels of the percentage of students receiving free or reduced lunch was divided into four quartiles.

The dependent variables of this study was the number of office referrals per 1,000 students, the overall percentage of students reading at or above their grade level Lexile band according to the GMAS, and percentage of students scoring either a Level II, III, or IV on the ELA portion of the GMAS. A school's PBIS recognition level was considered nominal data. Discipline data was considered interval data, and the percentage of students receiving free or reduced lunch, percentage of students within their grade level Lexile band, and percentage of students scoring a Level II, Level II, or Level IV on the ELA portion of the GMAS were considered ratio data.

Participants

Quantitative Component

According to the Georgia Department of Education (GaDOE) there are 199 installing PBIS elementary schools, 163 emerging PBIS schools, 100 operational PBIS elementary schools, and 596 elementary schools that did not participate in the state recognized PBIS framework. All schools selected served students in one or more of the following grades: kindergarten through fifth grade. A total of 1,062 K-5 elementary schools participated in the GMAS testing in grades third through fifth during the 2016-2017 school year; however, only 1,058 were part of the population since four schools were missing part of their GMAS data. Online schools or Georgia Network for Educational and Therapeutic Support (GNETS) schools were not included in the study.

Total student enrollment, minority enrollment, and each school's College & Career Readiness Performance Index scores (CCRPI) were used to ensure non-PBIS schools were comparable to PBIS schools. Out of the 596 non-PBIS schools, schools that were comparable to the PBIS schools were included in the population. Random sampling was utilized in order to select 199 of the eligible non-PBIS schools for the study. One hundred ninety-nine non-PBIS schools were equivalent to the largest PBIS group.

Qualitative Component

Purposeful sampling was used to select three principals for each PBIS recognition level (operational, developing, emerging, and no recognition). A total of 12 principals were interviewed for the study. The interviews were semi-structured in order to explain the similarities or differences among schools by PBIS recognition level on the number of office referrals per 1,000 students, percentage of students reading at or above their grade

level Lexile band, and scores on the English/language arts GMAS? Principals received an email requesting participation along with a consent form (see Appendices C and D).

Instrumentation

Quantitative Component

According to the GaDOE (2016), the Georgia Milestones Assessment System (GMAS) is a comprehensive summative assessment used in Georgia schools' grades third through high school. The state indicates the purpose of the GMAS is to measure how well students have learned the knowledge and skills that are embedded in the state standards for English Language Arts, mathematics, science, and social studies. Students in third grade through eighth grade take the GMAS in ELA and mathematics. Students in fifth and eighth grade take the GMAS in science and social studies. The GMAS consists of open-ended items, a writing component, and norm-referenced items to complement the criterion-referenced information as well as to provide a national comparison. In addition, the GaDOE (2016) specifies the GMAS was designed to provide students with critical information about their own readiness for the next academic school year and achievement levels relative to the current school year.

The GaDOE GMAS reports results for each content area as a scale score which falls into four achievement levels: Beginning Learner (Level I), Developing Learner (level II), Proficient Learner (Level III), and Distinguished Learner (Level IV). Each level provides meaning and context by describing the knowledge and skills students must demonstrate to achieve each level. Beginning Learners (Level I) do not yet demonstrate proficiency in the knowledge and skills necessary at their grade level. These students need a substantial amount of academic support to be on track for college and career

readiness. Developing Learners (Level II) demonstrate partial proficiency in the knowledge and skills necessary at their grade level. These students also need additional academic support to be on track for college and career readiness. Proficient Learners (Level III) demonstrate proficiency in the knowledge and skills necessary at this grade level. These students are prepared for the next grade level and are on track for college and career readiness. Distinguished Learners (Level IV) demonstrate advanced proficiency in the knowledge and skills necessary at this grade level. These students are well prepared for the next grade level and for college and career readiness. The state considers any level above level I to be passing (GaDOE, 2016).

Validity

Validity refers to whether an assessment measures what it claims to measure. The GMAS originated when the state legislature required the GaDOE to create an assessment to measure how well students mastered the state's content standards. Once this law was in effect, the purpose of the assessment was established. In order to create this assessment, the GaDOE (2016) relied heavily on the inclusion of educators from around the state. Committees of educators were created to review content standards and discuss concepts, knowledge, and skills that would be assessed. From these committees, a basic blueprint for the assessment was created. Items were then written by qualified, professional assessment specialists. Committees of Georgia educators then reviewed the items to ensure alignment with the curriculum, suitability for the assessment, and avoidance of bias. Items that were selected by the committees were then field-tested to ensure the items were appropriate and not unclear or misleading for students. After field

testing, additional committees of Georgia educators examined the items again while also reviewing data from field testing.

The committee examined the number of students that selected correct answers versus the number of students that selected incorrect answers. This review also considered how different groups of students performed in order to detect potential question bias. The committee chose to accept items as is, revise for re-field testing, or reject items. The next stage consisted of producing and publishing the final assessment. The final stage was to produce scores and distribute results on an annual basis to stakeholders, school districts, parents, and students. GMAS scores are reported as scale scores and performance levels. The GaDOE ensures the GMAS consists of valid instruments and careful attention was given to establishing content validity (GaDOE, 2016). Documentation is available for each phase of the test development process along with supporting evidence. The GaDOE conducted an independent evaluation to ensure the assessment is aligned to Georgia's academic standards. The results of the six studies indicated the GaDOE meets the professional standards for quality and rigor and reflects the state-mandated academic content standards.

Reliability

For an assessment to be considered reliable, the assessment must produce similar scores when administered to the same group of students over time. The GaDOE (2016) used the Cronbach's alpha reliability coefficient as one reliability measure to ensure reliability. The Cronbach's alpha looks at how closely related a set of items are as a group. The reliability coefficient is considered to be a unit less index and ranges from zero to one. The median reliability indices as well as the minimum and maximum values across all

forms and administrations of the GMAS by subject area ranged from .85 to .94. The reliabilities are similar across grades/course and subject areas. These scores indicate the GMAS is reliable for its intended purpose and scores reported to students and schools are an accurate indicator of student performance (GDOE, 2016).

Qualitative Component

According to Creswell (2009) credibility and trustworthiness must exist on the qualitative portion as well, and the researcher is responsible for documenting procedures and steps of the process. Guidelines from Patton (2002) were taken into consideration while developing research question 4. The purpose of this question was to help clarify and explain relationships found between variables. The question was developed to allow the respondents to tap into their experiences and expertise as well as be motivated to answer the question completely and honestly. The question was worded using "how" rather than "why" to focus on stories of process rather than accounts of behavior. The wording of the question was developed to ensure the question was phrased to be impartial. Prior to conducting the research, feedback from a panel of four experts in the area of education was taken into consideration (see Appendices A and B).

In order to address validity, interviews were semi-structured to develop a keen understanding of the information being studied. An interview guide was created to ensure structure and consistency with each interviewee. Each principal had a copy of the questions prior to the interview. Questions were open-ended, neutral, and clear and concise. The interviewer played a neutral role and avoided biases by not inserting his or her opinion during the interview. A tape recorder was used to record interview responses amongst each principal. Each interview was transcribed and a manuscript was created.

Each participant interviewed was given the opportunity to review the transcript for accuracy and ensuring the text fully explained the findings. In addition to ensuring credibility, transcripts were checked for mistakes, and a continued solid understanding of coding themes, and cross-checking themes for inter-coder agreement took place.

Data Collection

Quantitative Component

Once the Valdosta State University's Institutional Review Board (IRB) granted permission, data collection began (see Appendix E). No potential ethical concerns with treatment groups arose since these groups were already established with the intervention in place and this information is considered public knowledge. The data source for the quantitative portion came from the GaDOE as well as the Governor's Office of Student Achievement (GOSA) website. Each year the GaDOE releases a document on their website indicating each school's PBIS recognition. GMAS scores/Lexile bands are released each year on the GaDOE website. Enrollment, demographic, and free or reduced lunch percentages were obtained from the GOSA's website. Annually in June, each school in Georgia is mandated to upload student information for that academic year to the GaDOE. State laws mandate all student disciplinary referrals must be entered into some type of student informational system and uploaded to the GaDOE at the end of each school year. This report contained the number of referrals at each school across Georgia. The GaDOE makes this document public by record's request. Schools are held accountable for ensuring student records meet GaDOE standards, and a school's accountability status could be compromised in the event inaccurate data was reported.

All data for the study was collected from the 2016-2017 school year as this was the most recent data available at the time of the study.

Qualitative Component

The data source from the qualitative portion were collected from principals' responses to interview questions. The interview questions were designed to assist in explaining and interpreting the quantitative results. Principals were provided a copy of the questions prior to the interview. A tape recorder was used to record each interview. Each interview was transcribed, and a manuscript was created. Each participant interviewed was given the opportunity to review the transcript for accuracy. Confidentiality was maintained by using numerical codes to identify principals. Documents are securely stored and will be disposed of properly.

Data Analysis

Quantitative Component

The computer software used to perform statistical analysis on quantitative data was RStudio. RStudio is used for complex calculations to analyze numerical data.

The purpose of research question 1 was investigate whether the PBIS framework improves student behaviors. Descriptive statistics such as mean, standard deviation, skewness, and kurtosis were computed on the number of office referrals per 1,000 students by PBIS recognition level. In order to answer this research question, a one-way analysis of variance (ANOVA) was computed to determine whether there was a significant difference between the PBIS recognition level and number of office referrals. Assumptions for using the one-way ANOVA include data at the interval or ratio level,

independence of observations, normal distribution, and homogeneity of variance. Statistical considerations were missing data and outliers (Mertler & Vannatta, 2013).

No missing data was found for this question. Data was converted to z-scores to examine outliers. Three outliers greater than 3 were found; however, the decision to include those values was made. Normality test such as skewness, kurtosis and Shaprio-Wilk were conducted to assure the data sets had a normal distribution. Both skewness and kurtosis test values had a higher than normal value, and the Shapiro-Wilk test indicated evidence of non-normality in all of the independent groups. The assumption of homogeneity of variance was violated, as assessed by Levene's test for equality of variance. Due to several outliers, data lacking normal distribution, and homogeneity of variance assumption not being met, a Box-Cox transformation was performed to address the assumptions that were not met. After the transformation was complete, all assumptions were met except of the assumption of homogeneity of variance. A one-way analysis of variance (ANOVA) not assuming equal variance was computed.

The purpose of research question 2 was to investigate whether there is a significant difference between a school's PBIS recognition level and levels of the percentage of students receiving free or reduced lunch in a school on the percentage of students reading at or above their grade level Lexile band on the GMAS. Research question 2 was divided into three sub-questions based on third grade, fourth grade, and fifth grade results. Using RStudio software, schools were divided into four quartiles. Quartiles were based on the percentage of students receiving free or reduced lunch. Descriptive statistics such as mean, standard deviation, skewness, and kurtosis were computed on the percentage of students reading at or above their grade level Lexile band

on the GMAS by PBIS school type. A factorial analysis of variance (ANOVA) was computed. Statistical considerations for the factorial ANOVA are missing data and outliers. Assumptions for using the factorial ANOVA include data at the interval or ratio level, independence of observations, normal distribution, and homogeneity of variance. Normality test such as skewness and kurtosis, Shapiro-Wilk were conducted to assure the data sets had a normal distribution. Homogeneity of variance was assessed through the use of the Levene's test (Mertler & Vannatta, 2013).

No missing data were found in any of the three sub-questions. Data was converted to z-scores to examine outliers for all three sub-questions. Few outliers greater than 3 were found in each data set; however, the decision to include those values was made. Normality test such as skewness, kurtosis, and Shaprio-Wilk were conducted to assure the data sets had a normal distribution. Both skewness and kurtosis test indicated normal distribution for sub-questions 2a and 2b; however, sub-question 2c kurtosis test did not indicate normal distribution. In addition, the Shapiro-Wilk test indicated evidence of non-normality within some of the independent groups for all three sub-questions. The assumption of homogeneity of variance was violated, as assessed by Levene's test for equality of variance for all three sub-questions. Due to data lacking normal distribution, and homogeneity of variance assumption not being met, the Scheirer-Ray-Hare nonparametric two analysis of variance was used.

The purpose of research question 3 was to investigate whether a school's PBIS recognition level and level of percentage of students receiving free or reduced lunch has a significant impact on the percentage of students scoring either a Level II, III, or IV on the ELA portion of the GMAS. Using RStudio, schools were divided into four quartiles.

Research question 3 was divided into three sub-questions based on third grade, fourth grade, and fifth grade results. Quartiles were based on the percentage of students receiving free or reduced lunch and descriptive statistics such as mean, standard deviation, skewness, and kurtosis were computed on the percentage of students scoring either a Level II, III, or IV on the ELA portion of the GMAS by PBIS school type. A factorial analysis of variance (ANOVA) was computed. Statistical considerations for the factorial ANOVA were missing data and outliers. Assumptions for using the factorial ANOVA included data at the interval or ratio level, independence of observations, normal distribution, and homogeneity of variance. Normality test such as skewness, kurtosis, and Shaprio-Wilk were conducted to assure the data sets had a normal distribution. Homogeneity of variance was assessed through the use of the Levene's test (Mertler & Vannatta, 2013).

No missing data were found in any of the three sub-questions. Data was converted to z-scores to examine outliers for all three sub-questions. Few outliers greater than 3 were found in each data set; however, the decision to include those values was made. Normality test such as skewness and kurtosis and Shaprio-Wilk were conducted to assure the data sets had a normal distribution. Both skewness and kurtosis test indicated normal distribution for sub-questions 3a and 3b; however, sub-question 3c kurtosis test did not have indicate normal distribution. In addition, the Shapiro-Wilk test indicated evidence of non-normality within some of the independent groups for all three sub-questions. The assumption of homogeneity of variance was violated, as assessed by Levene's test for equality of variance for all three sub-questions. Due to data lacking normal distribution, and homogeneity of variance assumption not being met, the

Scheirer-Ray-Hare nonparametric two analysis of variance was used.

Qualitative Component

The purpose of research question 4 was to investigate how principals explain the similarities or differences among schools by PBIS recognition level on the number of office referrals, percentage of students reading at or above their grade level Lexile band, and scores on the ELA portion of the GMAS. In order to answer this question, interviews were conducted with principals from around the state. A tape recorder was used to record each interview. Each interview was transcribed, and a manuscript was created. Continual reflection of the data resulted in coding and helping organize categories and similar themes. Results were double-checked for agreement or discrepant findings. This process assisted in supporting or refuting quantitative findings. A continued solid understanding of coding themes and cross-checking themes for inter-coder agreement took place.

Summary

The National Assessment for Educational Progress (NAEP, 2015) found about 40% of the nation's fourth-graders are reading below a basic level of proficiency. This trend continues year to year. Educators are facing new challenges in regard to building a strong foundation for reading, especially at a young age. Educators have been searching for a framework that will support and improve academic and behavioral outcomes. Many schools across the country have implemented the PBIS framework to improve both academic and behavioral outcomes through the selection, integration, and implementation of evidence-based practices (Reynolds, 2012). The purpose of this study is to investigate the impact PBIS has on student reading achievement and student discipline.

This chapter described the proposed methodology that was used in this study. The sequential explanatory mixed methods study design was described along with the participants and instrumentation that was used in the study. The data-collection procedure and data-analysis process for both the quantitative and qualitative components of the study was outlined. Careful consideration was given to the proposed design and methodology of this study in order to increase reliability and validity. By mixing both quantitative and qualitative research and data, this study will provide a deeper understanding of the variables being examined while offsetting the weakness inherent to using each approach by itself.

Chapter IV

RESULTS

There were two purposes in this mixed methods study. The primary purpose was to determine if there were significantly different outcomes between PBIS status and discipline referrals, Lexile levels, and GMAS ELA proficiency. The secondary purpose was for selected principals to explain the similarities or differences among schools by PBIS recognition level on the number of office referrals per 1,000 students, percentage of students reading at or above their grade level Lexile band, and scores on the English/language arts GMAS.

The following questions were answered in this study.

1. Is there a significant difference between schools recognized as an installing PBIS school, emerging PBIS school, operational PBIS school, or non-PBIS school on the number of office referrals per 1,000 students in grades kindergarten through fifth grade?
2. Is there a significant difference between a school's PBIS recognition level (installing, emerging, operational, or non-PBIS) and levels of the percentage of students receiving free or reduced lunch on the percentage of students reading at or above their grade level Lexile band on the Georgia Milestones Assessment System (GMAS)?
    a. Is there a significant difference between a school's PBIS recognition level (installing, emerging, operational, or non-PBIS) and levels of the percentage of students receiving free or reduced lunch on the percentage of students reading at or above their grade level Lexile band on the third grade GMAS?

b. Is there a significant difference between a school's PBIS recognition level (installing, emerging, operational, or non-PBIS) and levels of the percentage of students receiving free or reduced lunch on the percentage of students reading at or above their grade level Lexile band on the fourth grade GMAS?

c. Is there a significant difference between a school's PBIS recognition level (installing, emerging, operational, or non-PBIS) and levels of the percentage of students receiving free or reduced lunch on the percentage of students reading at or above their grade level Lexile band on the fifth grade GMAS?

3. Is there a significant difference between a school's PBIS recognition level (installing, emerging, operational, or non-PBIS) and levels of the percentage of students receiving free or reduced lunch on the percentage of students scoring either a Level II, Level III, or Level IV on the English/language arts portion of the Georgia Milestones Assessment System (GMAS)?

a. Is there a significant difference between a school's PBIS recognition level (installing, emerging, operational, or non-PBIS) and levels of the percentage of students receiving free or reduced lunch on the percentage of students scoring either a Level II, Level III, or Level IV on the third grade English/language arts portion of the Georgia Milestones Assessment System (GMAS)?

b. Is there a significant difference between a school's PBIS recognition level (installing, emerging, operational, or non-PBIS) and levels of the percentage of students receiving free or reduced lunch on the percentage of students scoring either a Level II, Level III, or Level IV on the fourth grade English/language arts portion of the Georgia Milestones Assessment System (GMAS)?

c. Is there a significant difference between a school's PBIS recognition level (installing, emerging, operational, or non-PBIS) and levels of the percentage of students receiving free or reduced lunch on the percentage of students scoring either a Level II, Level III, or Level IV on the fifth grade English/language arts portion of the Georgia Milestones Assessment System (GMAS)?

4. How do selected principals explain the similarities or differences among schools by PBIS recognition level on the number of office referrals per 1,000 students, percentage of students reading at or above their grade level Lexile band, and scores on the English/language arts GMAS?

This chapter presents findings of this study. The first section of this chapter will describe the demographic characteristics of the schools in each sample. The second section will report the results of the one-way ANOVA for Question 1. The third and fourth section will report the results of the factorial ANOVA for Questions 2 and 3. The findings of the quantitative section will be followed by responses from principal interviews in the qualitative portion. Interview questions were developed based upon the quantitative findings. The final section will report the data gathered from responses in the principals' interviews.

Quantitative Results

Demographic Characteristics of the Schools

According to the Georgia Department of Education (GaDOE, 2016) in 2016-2017 there were 199 installing PBIS elementary schools, 163 emerging PBIS schools, 100 operational PBIS elementary schools, and 596 elementary schools that did not participate

in the state recognized PBIS framework. All schools selected served students in one or more of the following grades: kindergarten through fifth grade.

Total student enrollment, minority enrollment, and each school's College & Career Readiness Performance Index scores (CCRPI) were used to determine which schools in the larger population provided the best match for comparison to the smaller groups. Random sampling was utilized in order to select 199 of the eligible non-PBIS schools for the study. One hundred ninety-nine non-PBIS schools is equivalent to the largest PBIS group.

The enrollment for the non-PBIS (n = 199) ranged from 222 to 1,375 students with a mean enrollment of 645.90 students (*SD* = 214.15). The CCRPI score for the non-PBIS schools ranged from 45.3 to 100 with a mean CCRPI score of 74.14 (*SD* = 12.12). The enrollment for the schools classified as installing PBIS schools (n = 199) ranged from 162 to 1,308 students with a mean enrollment of 645.96 students (*SD* = 212.68). The CCRPI score for the installing PBIS schools ranged from 47.3 to 104.5 with a mean CCRPI score of 72.20 (*SD* = 13.28). The enrollment for the schools classified as emerging PBIS schools (n = 163) ranged from 269 to 1,630 students with a mean enrollment of 672.71 students (*SD* = 252.51). The CCRPI score for the emerging PBIS schools ranged from 46.9 to 97.4 with a mean CCRPI score of 72.80 (*SD* = 12.58). The enrollment for the schools classified as operational PBIS schools (n = 100) ranged from 206 to 1,480 students with a mean enrollment of 665.75 students (*SD* = 234.04). The CCRPI score for the operational PBIS schools ranged from 49.4 to 97.5 with a mean CCRPI score of 77.42 (*SD* = 11.24). See Table 1.

Table 1

Descriptive Statistics of Schools by PBIS Recognition Level

		Enrollment		CCRPI Score		Percentage	
Group	n	*M*	*SD*	*M*	*SD*	White	Black
Non-PBIS	199	645.90	214.15	74.14	12.12	39.8	35.2
Installing	199	645.96	212.68	72.20	13.28	34.2	44.1
Emerging	163	672.71	252.51	72.80	12.58	31.4	39.9
Operational	100	665.75	234.04	77.42	11.24	40.9	30.9

Results by Question

1. Is there a significant difference between schools recognized as an installing PBIS school, emerging PBIS school, operational PBIS school, or non-PBIS school on the number of office referrals per 1,000 students in grades kindergarten through fifth grade?

Descriptive statistics indicated the overall mean for all 661 schools on the number of office referrals per 1,000 students was *M* = 157.60 referrals (*SD* = 180.84). Schools that did not participate in PBIS (n = 199) had a range from 0 to 1181.60 office referrals per 1,000 students with an average mean of 155.05 (*SD* = 187.59). Schools designated as installing PBIS schools (n = 199) had a range from 0 to 1201.70 office referrals per 1,000 students with an average mean of 184.52 (*SD* = 210.52). Schools designated as emerging PBIS schools (n = 163) had a range from 4.9 to 808 office referrals per 1,000 students with an average mean of 162.62 (*SD* = 165.18). Schools designated as operational PBIS schools (n = 100) had a range from 1.8 to 670.70 office referrals per 1,000 students with an average mean of 100.94 (*SD* = 97.97). See Table 2.

Table 2

Descriptive Statistics of Office Referrals per 1,000 Students by PBIS Recognition Level

Group	n	*M*	*SD*	Min[a]	Max[b]	Skewness	Kurtosis
Non-PBIS	199	155.05	187.59	0	1181.60	2.44	7.41
Installing	199	184.52	210.52	0	1181.60	2.20	5.64
Emerging	163	162.62	165.18	0	1201.70	2.00	4.33
Operational	100	100.94	97.97	1.8	670.70	2.71	11.78

Note. [a]Minimum value; [b]Maximum value

A one-way analysis of variance (ANOVA) was computed to determine whether there was a significant difference between the four PBIS recognition levels and number of office referrals per 1,000 students. Statistical considerations and assumptions were checked prior to running the ANOVA. There was no missing data for this question. The data was converted to z-scores to examine outliers. It was determined there was only one outlier greater than 3 found in schools not using PBIS (z-score = 3.37) and two outliers greater than 3 found in schools with an operational PBIS recognition level (z-scores = 3.5, 5.8). The decision was made to include these values. No outliers were found in schools with an installing PBIS recognition level or Emerging PBIS recognition level. Normality tests such as skewness and kurtosis and Shapiro-Wilk were conducted to assure the data sets had a normal distribution. Both skewness and kurtosis test values had a higher than normal value. The results of the Shapiro-Wilk test indicated none of the independent groups were found to be approximately normally distributed: non-PBIS Schools ($W(199) = .72, p < .001$), installing PBIS Schools ($W(199) = .76, p < .001$), emerging PBIS Schools ($W(163) = .78, p < .001$), operational PBIS Schools ($W(100) = .77, p < .001$). The assumption of homogeneity of variance was violated, as assessed by Levene's test for equality of variance ($F(3, 657) = 4.99, p < .001$). Due to several

outliers, data lacking normally distribution, and homogeneity of variance assumption not being met, the decision to transform the data was made. A Box-Cox transformation (Lambda = .2) was performed to addresses the three assumptions not met.

Statistical considerations and assumptions were checked after the Box-Cox transformation was performed. The data was converted to z-scores to examine outliers. No outliers were detected with the transformed data. Normality tests such as skewness, kurtosis, and Shapiro-Wilk were conducted to assure the data sets had a normal distribution. Both the skewness test and kurtosis test indicated a normal distribution (See Table 3). The results of the Shapiro-Wilk test indicated all of the independent groups were found to be approximately normally distributed: non-PBIS Schools ($W(199) = .98$, $p = .08$), installing PBIS Schools ($W(199) = .99$, $p = .62$), emerging PBIS Schools ($W(163) = .99$, $p = .37$), operational PBIS Schools ($W(100) = .99$, $p = .78$). The assumption of homogeneity of variance was violated, as assessed by Levene's test for equality of variance ($F(3, 657) = 4.08$, $p < .001$).

Table 3

Box-Cox Transformation Descriptive Statistics of Office Referrals per 1,000 Students by PBIS Recognition Level

Group	n	*M*	*SD*	Min[a]	Max[b]	Skewness	Kurtosis
Non-PBIS	199	7.40	3.04	0	15.58	.05	.05
Installing	199	7.87	3.16	0	15.65	-.05	-.22
Emerging	163	7.89	2.59	2.13	14.08	.21	-.37
Operational	100	6.79	2.33	1.14	13.38	-.12	-.06

Note. [a]Minimum value; [b]Maximum value

The one-way ANOVA showed a significant difference among office referrals per 1,000 students and schools PBIS recognition level ($F(3, 332.83) = 5.27$, $p < .001$, $\omega^2 =$

.03). A Games-Howell post-hoc comparison was conducted to determine which of the four types of schools' means differed significantly. The Games-Howell post hoc test analysis revealed the mean decrease from installing to operational was statistically significant ($t(257) = 3.53$, $p = .01$). In addition, the analysis revealed the mean decrease from emerging to operational was statistically significant ($t(227) = 3.55$, $p < .01$).

2a. Is there a significant difference between a school's PBIS recognition level (installing, emerging, operational, or non-PBIS) and levels of the percentage of students receiving free or reduced lunch on the percentage of students reading at or above their grade level Lexile band on the third grade GMAS?

The two independent variables in this question are PBIS recognition level and percentage of students on free or reduced lunch. For the free or reduced lunch variable, schools were divided into four quartiles based on their percentage of students on free or reduced lunch (Quartile 1: 4-48.27%, Quartile 2: 48.28-74.56%, Quartile 3: 74.57-94.52%, and Quartile 4: 94.53-95%). The dependent variable is the percentage of students reading at or above their grade level Lexile band on the third grade GMAS. Descriptive statistics were computed on the two variables (see Table 4).

Table 4

Descriptive Statistics of Percentage of Students Reading At or Above their Grade Level Lexile Band on the Third Grade GMAS by PBIS Recognition Level and Percentage of Students Receiving Free or Reduced Lunch

Group	n	*M*	*SD*	Min[a]	Max[b]	Skewness	Kurtosis
Non-PBIS	199	70.04	17.16	11.48	98.10	-.78	1.2
Installing	199	67.74	16.17	25.18	99.12	-.32	-.64
Emerging	163	67.19	16.35	26.53	96.40	-.47	-.56
Operational	100	72.65	13.82	38.33	95.90	-.33	-.56
Free/Reduced[c] Q[d] 1	166	85.39	7.19	66.67	99.12	-.49	-.43
Free/Reduced Q 2	165	74.69	8.09	49.33	93.33	-.20	-.17
Free/Reduced Q 3	165	64.67	10.89	30.00	90.74	-.37	.22
Free/Reduced Q 4	165	51.31	14.80	11.48	90.70	.18	-.19

Note. [a]Minimum value; [b]Maximum value; [c]Free or Reduced Lunch; [d]Quartiles

Descriptive statistics indicated the overall mean for all 661 schools on the percentage of students reading at or above their grade level Lexile band on the third grade GMAS was *M* = 69.04 (*SD* = 16.27). Schools that did not participate in PBIS (n = 199) had a range from 11.48 to 98.10 percent of students reading at or above their grade level Lexile band on the third grade GMAS with an average mean of 70.04 (*SD* = 17.16). Schools designated as installing PBIS schools (n = 199) had a range from 25.19 to 99.12 percent of students reading at or above their grade level Lexile band on the third grade GMAS with an average mean of 67.74 (*SD* = 16.17). Schools designated as emerging PBIS schools (n = 163) had a range from 26.53 to 96.40 percent of students reading at or above their grade level Lexile band on the third grade GMAS with an average mean of 67.19 (*SD* = 16.35). Schools designated as operational PBIS schools (n = 100) had a range from 38.33 to 99.12 percent of students reading at or above their grade level Lexile

band on the third grade GMAS with an average mean of 72.65 (*SD* = 13.82) (see Table 4).

Schools within the first quartile for percentage of students receiving free or reduced lunch had a range from 66.67 to 99.12 percent of students reading at or above their grade level Lexile band on the third grade GMAS with an average mean of 85.39 (*SD* = 7.19). Schools within the second quartile for percentage of students receiving free or reduced lunch had a range from 49.33 to 93.33 percent of students reading at or above their grade level Lexile band on the third grade GMAS with an average mean of 74.69 (*SD* = 8.09). Schools with the third quartile for percentage of students receiving free or reduced lunch had a range from 30 to 90.74 percent of students reading at or above their grade level Lexile band on the third grade GMAS with an average mean of 64.67 (*SD* = 10.89). Schools within the fourth quartile for percentage of students receiving free or reduced lunch had a range from 11.48 to 90.70 percent of students reading at or above their grade level Lexile band on the third grade GMAS with an average mean of 51.31 (*SD* = 13.80) (see Table 4). Descriptive Statistics for the interaction between PBIS recognition level and percentage of students on free or reduced lunch on the percent of students reading at or above their grade level Lexile band on the third grade GMAS is described in Table 5.

Table 5

Descriptive Statistics for the Interaction between PBIS Recognition Level and Percentage of Students on Free or Reduced Lunch on the Percent of Students Reading at or above their Grade Level Lexile Band on the Third Grade GMAS

	PBIS Recognition Level											
	Non-PBIS Schools			Installing Schools			Emerging Schools			Operational Schools		
	n	*M*	*SD*	n	*M*	*SD*	n	*M*	*SD*	n	*M*	*SD*
Q[b] One	61	85.1	7.6	43	84.9	7.4	35	85.8	5.4	27	86.2	7.9
Q Two	45	75.8	7.4	46	74.5	9.1	38	73.6	7.5	36	75.3	8.4
Q Three	44	64.8	12.2	53	64.1	10.8	41	66.2	10.7	27	63.2	8.9
Q Four	49	51.2	15.9	57	52.6	13.9	49	49.7	12.0	10	52.2	10.2

Note. [a]Quartiles

A factorial analysis of variance (ANOVA) was computed to determine the effects PBIS recognition level and percentage of students receiving free or reduced lunch have on percent of students reading at or above their grade level Lexile band on the third grade GMAS. Statistical considerations and assumptions were checked prior to running the factorial ANOVA. There was no missing data for this question. The data was converted to z-scores to examine outliers. It was determined there was only one outlier greater than 3 found with the percentage of students scoring at or above their grade level Lexile band on the third grade GMAS (z-score = -3.54). The decision was made to include this value. Normality tests such as skewness and kurtosis and Shapiro-Wilk were conducted to assure the data sets had a normal distribution. Both the skewness test and kurtosis test indicated normal distribution (see Table 4). The results of the Shapiro-Wilk test indicated evidence of non-normality within some of the groups: non-PBIS schools ($W(199) = .95$, $p < .01$), installing PBIS schools ($W(199) = .98$, $p < .01$), emerging PBIS

schools ($W(163) = .97$, $p < .01$), operational PBIS schools ($W(100) = .97$, $p = .02$), free or reduced lunch quartile one (($W(166) = .97$, $p < .01$), free or reduced lunch quartile two (($W(165) = .99$, $p = .86$), free or reduced lunch quartile three ($W(165) = .99$, $p = .17$), and free or reduced lunch quartile four ($W(165) = .99$, $p = .51$). The assumption of homogeneity of variance was violated, as assessed by Levene's test for equality of variance ($F(15, 645) = 5.24$, $p < .001$).

The Scheirer-Ray-Hare nonparametric two-way analysis of variance (ANOVA) (Sokal & Rohlf, 1995) was used due to data being non-normal and due to homogeneity of variance being violated. The Scheirer-Ray-Hare test showed a statistically significant main effect for a school's PBIS recognition level ($H(3, 645) = 9.27$, $p = .026$, $\omega^2 = .012$). A significant main effect for the levels of the percentage of students receiving free or reduced lunch was found ($H(3, 645) = 402.33$, $p < .001$, $\omega^2 = .608$). The interaction between the two variables (school's PBIS recognition level and levels of the percentage of students receiving free or reduced lunch) was not significant ($H(3, 645) = 2.51$, $p = .98$, $\omega^2 = -.001$). A Dunn's test of multiple comparisons was conducted to determine which of the four types of PBIS schools means differed significantly. The results revealed no significant difference between any of the four types of PBIS schools on the mean of the percentage of students reading at or above their grade level Lexile band on the third grade GMAS.

In addition, a Dunn's test of multiple comparisons was conducted to determine which of the levels of the percentage of students receiving free or reduced lunch means differed significantly. The results display in Table 6 reveal the mean of the percentage of students reading at or above their grade level Lexile band on the third grade GMAS

differed significantly (p <.001) between all four levels of the percentage of students receiving free or reduced lunch.

Table 6

Dunn's Test of Multiple Comparisons on Percentage of Third Grade Students Reading at or above their Grade Level Lexile Band on the GMAS by Free or Reduced Lunch Quartiles

	Z			
Quartile	1	2	3	4
1	0.00			
2	7.19**	0.00		
3	13.42**	6.22**	0.00	
4	19.28**	12.07**	5.85**	0.00

** $p < .001$

2b. Is there a significant difference between a school's PBIS recognition level (installing, emerging, operational, or non-PBIS) and levels of the percentage of students receiving free or reduced lunch on the percentage of students reading at or above their grade level Lexile band on the fourth grade GMAS?

The two independent variables in this question are PBIS recognition level and percentage of students on free or reduced lunch. For the free or reduced lunch variable, schools were divided into four quartiles based on their percentage of students on free or reduced lunch (Quartile 1: 4-48.27%, Quartile 2: 48.28-74.56%, Quartile 3: 74.57-94.52%, and Quartile 4: 94.53-95%). The dependent variable is the percentage of students reading at or above their grade level Lexile band on the fourth grade GMAS. Descriptive statistics were computed on the two variables (see Table 7).

Table 7

Descriptive Statistics of Percentage of Students Reading at or above their Grade Level Lexile Band on the Fourth Grade GMAS by PBIS Recognition Level and Percentage of Students Receiving Free or Reduced Lunch

Group	n	*M*	*SD*	Min[a]	Max[b]	Skewness	Kurtosis
Non-PBIS	199	58.24	18.57	14.89	95.61	-.18	-.73
Installing	199	56.08	18.82	14.89	92.92	0	-.72
Emerging	163	55.39	18.21	15.38	93.20	-.03	-.77
Operational	100	63.54	14.26	28.57	93.88	-.19	-.53
Free/Reduced[c] Q[d] 1	166	78.03	9.07	57.59	95.61	-.21	-.59
Free/Reduced Q 2	165	63.14	9.62	35.90	90.48	-.03	.09
Free/Reduced Q 3	165	50.55	11.04	22.73	80.20	-.31	.03
Free/Reduced Q 4	165	38.91	13.09	14.89	85.37	.6	.52

Note. [a]Minimum value; [b]Maximum value; [c]Free or Reduced Lunch; [d]Quartile

Descriptive statistics indicated the overall mean for all 661 schools on the percentage of students reading at or above their grade level Lexile band on the fourth grade GMAS was *M* = 57.69 (*SD* = 18.14). Schools that were non-PBIS (n = 199) had a range from 14.89 to 95.61 percent of students reading at or above their grade level Lexile band on the fourth grade GMAS with an average mean of 58.24 (*SD* = 18.57). Schools designated as installing PBIS schools (n = 199) had a range from 14.89 to 92.92 percent of students reading at or above their grade level Lexile band on the fourth grade GMAS with an average mean of 56.08 (*SD* = 18.82). Schools designated as emerging PBIS schools (n = 163) had a range from 15.38 to 93.2 percent of students reading at or above their grade level Lexile band on the fourth grade GMAS with an average mean of 55.39 (*SD* = 18.21). Schools designated as operational PBIS schools (n = 100) had a range from

28.57 to 93.88 percent of students reading at or above their grade level Lexile band on the fourth grade GMAS with an average mean of 63.54 (*SD* = 14.26).

Schools within the first quartile for percentage of students receiving free or reduced lunch had a range from 57.59 to 95.61 percent of students reading at or above their grade level Lexile band on the fourth grade GMAS with an average mean of 78.03 (*SD* = 9.07). Schools within the second quartile for percentage of students receiving free or reduced lunch had a range from 35.9 to 90.48 percent of students reading at or above their grade level Lexile band on the fourth grade GMAS with an average mean of 63.14 (*SD* = 9.62). Schools with the third quartile for percentage of students receiving free or reduced lunch had a range from 22.73 to 80.2 percent of students reading at or above their grade level Lexile band on the fourth grade GMAS with an average mean of 50.55 (*SD* = 11.04). Schools within the fourth quartile for percentage of students receiving free or reduced lunch had a range from 14.89 to 85.37 percent of students reading at or above their grade level Lexile band on the fourth grade GMAS with an average mean of 38.91 (*SD* = 13.09) (see Table 7). Descriptive Statistics for the interaction between PBIS recognition level and percentage of students on free or reduced lunch on the percent of students reading at or above their grade level Lexile band on the fourth grade GMAS is described in Table 8.

Table 8

Descriptive Statistics for the Interaction between PBIS Recognition Level and Percentage of Students on Free or Reduced Lunch on the Percent of Students Reading at or above their Grade Level Lexile Band on the Fourth Grade GMAS

	PBIS Recognition Level											
	Non-PBIS Schools			Installing Schools			Emerging Schools			Operational Schools		
	n	*M*	*SD*	n	*M*	*SD*	n	*M*	*SD*	n	*M*	*SD*
Q[b] One	61	77.3	9.1	43	78.5	9.9	35	78.7	8.6	27	78.1	8.5
Q Two	43	78.5	9.9	46	63.1	11.2	53	49.8	11.7	57	39.4	14.2
Q Three	35	78.7	8.6	38	61.7	7.3	41	51.7	11.8	49	36.9	11.1
Q Four	27	78.1	8.5	36	66.1	7.9	27	52.2	9.3	10	45.7	11.3

Note. [a] Percentage of Students Receiving Free or Reduced Lunch by Quartiles; [b]Quartiles

A factorial analysis of variance (ANOVA) was computed to determine the effects PBIS recognition level and percentage of students receiving free or reduced lunch have on percent of students reading at or above their grade level Lexile band on the fourth grade GMAS. Statistical considerations and assumptions were checked prior to running the factorial ANOVA. There was no missing data for this question. The data was converted to z-scores to examine outliers. It was determined there was only two outliers greater than 3 found with the percentage of students scoring within their grade level Lexile band on the fourth grade GMAS (z-score = -3.04 and -3.14). The decision was made to include these values. Normality tests such as skewness and kurtosis and Shapiro-Wilk were conducted to assure the data sets had a normal distribution. The skewness and kurtosis test indicated normal distribution (see Table 7). The results of the Shapiro-Wilk test indicated evidence of non-normality within some of the groups: non-PBIS schools ($W(199) = .98$, $p = .01$), installing PBIS schools ($W(199) = .98$, $p = .02$),

emerging PBIS schools ($W(163) = .99$, $p = .10$), operational PBIS schools ($W(100) = .99$, $p = .54$), free or reduced lunch quartile one ($W(166) = .98$, $p = .01$), free or reduced lunch quartile two ($W(165) = .99$, $p = .85$), free or reduced lunch quartile three ($W(165) = .99$, $p = .08$), and free or reduced lunch quartile four ($W(165) = .97$, $p < .01$). The assumption of homogeneity of variance was violated, as assessed by Levene's test for equality of variance ($F(15, 645) = 1.83$, $p < .01$).

The Scheirer-Ray-Hare nonparametric two-way analysis of variance (ANOVA) (Sokal & Rohlf, 1995) was used due to data being non-normal and due to homogeneity of variance being violated. The Scheirer-Ray-Hare test showed a statistically significant main effect for a school's PBIS recognition level ($H(3, 645) = 14.89$, $p < .001$, $\omega^2 = .021$). A significant main effect on the levels of the percentage of students receiving free or reduced lunch was found ($H(3,645) = 428.40$, $p < .001$, $\omega^2 = .647$). The interaction between the two variables (school's PBIS recognition level and levels of the percentage of students receiving free or reduced lunch) was not significant ($H(3, 645) = 2.18$, $p = .99$, $\omega^2 = -.001$). A Dunn's test of multiple comparisons was conducted to determine which of the four types of PBIS schools means differed significantly. The results revealed the mean percentage of students reading at or above their grade level Lexile band on the fourth grade GMAS differed significantly ($Z = -2.38$, $p < .05$) between the non-PBIS schools and operational PBIS schools group. The mean percentage of students reading at or above their grade level Lexile band on the fourth grade GMAS differed significantly ($Z = -3.39$, $p < .01$) between the installing PBIS schools and operational PBIS schools group. The mean percentage of students reading at or above their grade

level Lexile band on the fourth grade GMAS differed significantly ($Z = -3.52$, $p < .01$) between the emerging PBIS schools and operational PBIS schools group.

In addition, a Dunn's test of multiple comparisons was conducted to determine which of the levels of the percentage of students receiving free or reduced lunch means differed significantly. The results revealed the mean of the percentage of students reading at or above their grade level Lexile band on the fourth grade GMAS differed significantly ($p < .001$) between all four levels of the percentage of students receiving free or reduced lunch (see Table 9).

Table 9

Dunn's Test of Multiple Comparison on Percentage of Fourth Grade Students Reading at or above their Grade Level Lexile Band on the GMAS by Free or Reduced Lunch Quartiles

	Z			
Quartile	1	2	3	4
1	0.00			
2	7.58**	0.00		
3	14.56**	6.97**	0.00	
4	19.74**	12.14**	5.17**	0.00

** $p < .001$

2c. Is there a significant difference between a school's PBIS recognition level (installing, emerging, operational, or non-PBIS) and levels of the percentage of students receiving free or reduced lunch on the percentage of students reading at or above their grade level Lexile band on the fifth grade GMAS?

The two independent variables in this question are PBIS recognition level and percentage of students on free or reduced lunch. For the free or reduced lunch variable,

schools were divided into four quartiles based on their percentage of students on free or reduced lunch (Quartile 1: 4-48.27%, Quartile 2: 48.28-74.56%, Quartile 3: 74.57-94.52%, and Quartile 4: 94.53-95%). The dependent variable is the percentage of students reading at or above their grade level Lexile band on the fifth grade GMAS. Descriptive statistics were computed on the two variables (see Table 10).

Table 10

Descriptive Statistics of Percentage of Students Reading at or above their Grade Level Lexile Band on the Fifth Grade GMAS by PBIS Recognition Level and Percentage of Students Receiving Free or Reduced Lunch

Group	n	*M*	*SD*	Min[a]	Max[b]	Skewness	Kurtosis
Non-PBIS	199	69.38	15.7	29.41	97.12	-.45	-.58
Installing	199	66.81	17.04	24.53	98.44	-.37	-.52
Emerging	163	66.58	15.98	25.68	96.47	-.22	-.64
Operational	100	72.18	13.16	37.07	97.44	-.38	-.42
Free/Reduced[c] Q[d]1	166	85.60	7.68	41.46	98.44	-1.39	5.2
Free/Reduced Q 2	165	73.11	7.92	53.06	90	-.21	-.42
Free/Reduced Q 3	165	63.2	10.23	30.3	87.10	-.41	.42
Free/Reduced Q 4	165	51.59	13.02	24.53	88.71	.27	-.36

Note. [a]Minimum value; [b]Maximum value; [c]Free or Reduced Lunch; [d]Q

Descriptive statistics indicated the overall mean for all 661 schools on the percentage of students reading at or above their grade level Lexile band on the fifth grade GMAS was $M = 68.34$ ($SD = 15.93$). Schools that were non-PBIS (n = 199) had a range from 29.41 to 97.12 percent of students reading at or above their grade level Lexile band on the fifth grade GMAS with an average mean of 69.38 ($SD = 15.7$). Schools designated as installing PBIS schools (n = 199) had a range from 24.53 to 98.44 percent of students reading at or above their grade level Lexile band on the fifth grade GMAS

with an average mean of 66.81 (*SD* = 17.04). Schools designated as emerging PBIS schools (n = 163) had a range from 25.68 to 96.47 percent of students reading at or above their grade level Lexile band on the fifth grade GMAS with an average mean of 66.58 (*SD* = 15.98). Schools designated as operational PBIS schools (n = 100) had a range from 37.07 to 97.44 percent of students reading at or above their grade level Lexile band on the fifth grade GMAS with an average mean of 72.18 (*SD* = 13.16).

Schools within the first quartile for percentage of students receiving free or reduced lunch had a range from 41.46 to 98.44 percent of students reading at or above their grade level Lexile band on the fifth grade GMAS with an average mean of 85.6 (*SD* = 7.68). Schools within the second quartile for percentage of students receiving free or reduced lunch had a range from 53.06 to 90 percent of students reading at or above their grade level Lexile band on the fifth grade GMAS with an average mean of 73.11 (*SD* = 7.92). Schools within the third quartile for percentage of students receiving free or reduced lunch had a range from 30.3 to 87.1 percent of students reading at or above their grade level Lexile band on the fifth grade GMAS with an average mean of 63.2 (*SD* = 10.23). Schools within the fourth quartile for percentage of students receiving free or reduced lunch had a range from 24.53 to 88.71 percent of students reading at or above their grade level Lexile band on the fifth grade GMAS with an average mean of 51.59 (*SD* = 13.02) (see Table 10). Descriptive Statistics for the interaction between PBIS recognition level and percentage of students on free or reduced lunch on the percent of students reading at or above their grade level Lexile band on the fifth grade GMAS is described in Table 11.

Table 11

Descriptive Statistics for the Interaction between PBIS Recognition Level and Percentage of Students on Free or Reduced Lunch on the Percent of Students Reading at or above their Grade Level Lexile Band on the Fifth Grade GMAS

	PBIS Recognition Level											
	Non-PBIS Schools			Installing Schools			Emerging Schools			Operational Schools		
	n	*M*	*SD*	n	*M*	*SD*	n	*M*	*SD*	n	*M*	*SD*
Q[b] One	61	84.9	6.7	43	85.6	8.2	35	86.3	6.5	27	84.6	10.4
Q Two	45	73.5	6.7	46	73.1	8.9	38	71.6	8.1	36	74.2	7.9
Q Three	44	61.9	11.0	53	62.7	10.9	41	64.0	10.31	27	65.0	6.9
Q Four	49	52.9	12.5	57	51.3	15.5	49	50.7	11.3	10	50.6	7.9

Note. [a] Percentage of Students Receiving Free or Reduced Lunch by Quartiles; [b]Quartiles

A factorial analysis of variance (ANOVA) was computed to determine the effects PBIS recognition level and percentage of students receiving free or reduced lunch have on percent of students reading at or above their grade level Lexile band on the fifth grade GMAS. Statistical considerations and assumptions were checked prior to running the factorial ANOVA. There was no missing data for this question. The data was converted to z-scores to examine outliers. It was determined there was no outliers were found with the percentage of students scoring within their grade level Lexile band on the fifth grade GMAS. Normality tests such as skewness and kurtosis and Shapiro-Wilk were conducted to assure the data sets had a normal distribution. The skewness test indicated normal distribution; however, the kurtosis test did not indicate normal distribution (See Table 10). The results of the Shapiro-Wilk test indicated evidence of non-normality within some of the groups: non-PBIS schools ($W(199) = .96, p < .001$), installing PBIS schools ($W(199) = .98, p < .01$), emerging PBIS schools ($W(163) = .98, p = .02$),

operational PBIS schools ($W(100) = .98$, $p = .08$), free or reduced lunch quartile one ($W(166) = .92$, $p < .001$), free or reduced lunch quartile two ($W(165) = .99$, $p = .18$), free or reduced lunch quartile three . ($W(165) = .98$, $p < .01$), and free or reduced lunch quartile four ($W(165) = .99$, $p = .26$). The assumption of homogeneity of variance was violated, as assessed by Levene's test for equality of variance ($F(15, 645) = 6.09$, $p < .001$).

The Scheirer-Ray-Hare nonparametric two-way analysis of variance (ANOVA) (Sokal & Rohlf, 1995) was used due to data being non-normal and as well as homogeneity of variance being violated. The Scheirer-Ray-Hare test showed a statistically significant main effect for a school's PBIS recognition level ($H(3, 645) = 9.73$, $p = .02$, $\omega^2 = .013$). A significant main effect on the levels of the percentage of students receiving free or reduced lunch was found ($H(3,645) = 414.59$, $p < .05$, $\omega^2 = .626$). The interaction between the two variables (school's PBIS recognition level and levels of the percentage of students receiving free or reduced lunch) was not significant ($H(3, 645) = 2.25$, $p = .99$, $\omega^2 = -.001$). A Dunn's test of multiple comparisons was conducted to determine which of the four types of PBIS schools means differed significantly. The results revealed the mean percentage of students reading at or above their grade level Lexile band on the fifth grade GMAS differed significantly ($Z = -2.47$, $p = .04$) between the installing PBIS schools and operational PBIS schools group. The mean percentage of students reading at or above their grade level Lexile band on the fifth grade GMAS differed significantly ($Z = -2.73$, $p = .04$) between the emerging PBIS schools and operational PBIS schools group.

In addition, a Dunn's test of multiple comparisons was conducted to determine which of the levels of the percentage of students receiving free or reduced lunch means differed significantly. The results revealed the mean of the percentage of students reading at or above their grade level Lexile band on the fifth grade GMAS differed significantly ($p < .001$) between all four levels of the percentage of students receiving free or reduced lunch (see Table 12).

Table 12

Dunn's Test of Multiple Comparisons on Percentage of Fifth Grade Students Reading at or above their Grade Level Lexile Band on the GMAS by Free or Reduced Lunch Quartiles

	Z			
Quartile	1	2	3	4
1	0.00			
2	7.89**	0.00		
3	14.15**	6.26**	0.00	
4	19.54**	11.63**	5.38**	0.00

** $p < .001$

3a. Is there a significant difference between a school's PBIS recognition level (installing, emerging, operational, or non-PBIS) and levels of the percentage of students receiving free or reduced lunch on the percentage of students scoring either a Level II, Level III, or Level IV on the third grade English/language arts portion of the Georgia Milestones Assessment System (GMAS)?

The two independent variables in this question are PBIS recognition level and percentage of students on free or reduced lunch. For the free or reduced lunch variable, schools were divided into four quartiles based on their percentage of students on free or

reduced lunch (Quartile 1: 4-48.27%, Quartile 2: 48.28-74.56%, Quartile 3: 74.57-94.52%, and Quartile 4: 94.53-95%). The dependent variable is the percentage of students scoring either a Level II, Level III, or Level IV on the third grade English/language arts portion of the GMAS. Descriptive statistics were computed on the two variables (see Table 13).

Table 13

Descriptive Statistics of Percentage of Students Scoring either a Level II, Level III, or Level IV on the Third Grade English/Language Arts Portion of the GMAS by PBIS Recognition Level and Percentage of Students Receiving Free or Reduced Lunch

Group	n	*M*	*SD*	Min[a]	Max[b]	Skewness	Kurtosis
Non-PBIS	199	68.91	18.22	11.48	99.05	-.68	-.1
Installing	199	66.32	17.16	20.74	99.12	-.31	-.56
Emerging	163	66.37	17.40	24.49	95.58	-.43	-.7
Operational	100	71.70	14.38	35.00	95.08	-.3	-.87
Free/Reduced[c] Q[d] 1	166	85.26	7.79	63.64	99.12	-.61	-.21
Free/Reduced Q 2	165	73.79	9.04	48.67	93.07	-.23	-.41
Free/Reduced Q 3	165	63.12	11.73	28.33	91.98	-.18	-.17
Free/Reduced Q 4	165	49.42	14.46	11.48	90.7	.19	-.17

Note. [a]Minimum value; [b]Maximum value; [c]Free or Reduced Lunch; [d]Quartiles

Descriptive statistics indicated the overall mean for all 661 schools on the percentage of students scoring either a Level II, Level III, or Level IV on the third grade English/language arts portion of the GMAS was $M = 67.93$ ($SD = 17.24$). Schools that were non-PBIS (n = 199) had a range from 11.48 to 99.05 percentage of students scoring either a Level II, Level III, or Level IV on the third grade English/language arts portion of the GMAS with an average mean of 68.91 ($SD = 18.22$). Schools designated as installing PBIS schools (n = 199) had a range from 20.74 to 99.12 percentage of students

scoring either a Level II, Level III, or Level IV on the third grade English/language arts portion of the GMAS with an average mean of 66.32 (*SD* = 17.16). Schools designated as emerging PBIS schools (n = 163) had a range from 24.49 to 95.58 percentage of students scoring either a Level II, Level III, or Level IV on the third grade English/language arts portion of the GMAS with an average mean of 66.37 (*SD* = 17.4). Schools designated as operational PBIS schools (n = 100) had a range from 35 to 95.08 percentage of students scoring either a Level II, Level III, or Level IV on the third grade English/language arts portion of the GMAS with an average mean of 71.7 (*SD* = 14.38).

Schools within the first quartile for percentage of students receiving free or reduced lunch had a range from 63.64 to 99.12 percentage of students scoring either a Level II, Level III, or Level IV on the third grade English/language arts portion of the GMAS with an average mean of 85.26 (*SD* = 7.79). Schools within the second quartile for percentage of students receiving free or reduced lunch had a range from 48.67 to 93.07 percentage of students scoring either a Level II, Level III, or Level IV on the third grade English/language arts portion of the GMAS with an average mean of 73.79 (*SD* = 9.04). Schools with the third quartile for percentage of students receiving free or reduced lunch had a range from 28.33 to 91.98 percentage of students scoring either a Level II, Level III, or Level IV on the third grade English/language arts portion of the GMAS with an average mean of 63.12 (*SD* = 11.73). Schools within the fourth quartile for percentage of students receiving free or reduced lunch had a range from 11.48 to 90.7 percentage of students scoring either a Level II, Level III, or Level IV on the third grade English/language arts portion of the GMAS with an average mean of 49.42 (*SD* = 14.46) (see Table 13). Descriptive Statistics for the interaction between PBIS recognition level

and percentage of students on free or reduced lunch on the percentage of students scoring either a Level II, Level III, or Level IV on the third grade English/language arts portion of the GMAS is described in Table 14.

Table 14

Descriptive Statistics for the Interaction between PBIS Recognition Level and Percentage of Students on Free Reduced Lunch on the Percentage of Students Scoring Either a Level II, Level III, or Level IV on the Third Grade English/Language Arts Portion of the GMAS

	PBIS Recognition Level											
	Non-PBIS Schools			Installing Schools			Emerging Schools			Operational Schools		
	n	*M*	*SD*	n	*M*	*SD*	n	*M*	*SD*	n	*M*	*SD*
Q[b] One	61	85.4	8.2	43	84.5	8.3	35	86.0	5.8	27	85.2	8.6
Q Two	45	73.9	7.7	46	73.6	10.1	38	73.2	8.4	36	74.3	9.9
Q Three	44	62.8	13.1	53	61.9	10.9	41	65.5	12.4	27	62.5	9.6
Q Four	49	49.2	16.6	57	50.9	15.3	49	47.8	11.9	10	50.6	9.1

Note. [a] Percentage of Students Receiving Free or Reduced Lunch by Quartiles; [b]Quartiles

A factorial analysis of variance (ANOVA) was computed to determine the effects PBIS recognition level and percentage of students receiving free or reduced lunch have on percentage of students scoring either a Level II, Level III, or Level IV on the third grade English/language arts portion of the GMAS. Statistical considerations and assumptions were checked prior to running the factorial ANOVA. There was no missing data for this question. The data was converted to z-scores to examine outliers. It was determined there was only one outlier greater than 3 found within the percentage of students scoring either a Level II, Level III, or Level IV on the third grade English/language arts portion of the GMAS (z-score = -3.27). The decision was made to include this value. Normality tests such as skewness and kurtosis and Shapiro-Wilk were

conducted to assure the data sets had a normal distribution. Both the skewness test for all groups and kurtosis test for all groups indicated normal distribution (See Table 13). The results of the Shapiro-Wilk test indicated evidence of non-normality within some of the groups: non-PBIS Schools ($W(199) = .96$, $p < .01$), installing PBIS Schools ($W(199) = .98$, $p = .01$), emerging PBIS Schools ($W(163) = .96$, $p < .001$), operational PBIS Schools ($W(100) = .97$, $p = .01$), free or reduced lunch quartile one ($W(166) = .96$, $p < .001$), free or reduced lunch quartile two ($W(165) = .99$, $p = .35$), free or reduced lunch quartile three . ($W(165) = .99$, $p = .82$), and free or reduced lunch quartile four ($W(165) = .99$, $p = .83$). The assumption of homogeneity of variance was violated, as assessed by Levene's test for equality of variance ($F(15, 645) = 5.14$, $p < .05$).

The Scheirer-Ray-Hare nonparametric 2-way analysis of variance (ANOVA) (Sokal & Rohlf, 1995) was used due to data being non-normal and as well the homogeneity of variance being violated. The Scheirer-Ray-Hare test showed a statistically significant main effect for a school's PBIS recognition level ($H(3, 645) = 8.08$, $p = .04$, $\omega^2 = .011$). A significant main effect on the levels of the percentage of student receiving free or reduced lunch was found ($H(3,645) = 394.09$, $p < .001$, $\omega^2 = .595$). The interaction between the two variables (school's PBIS recognition level and levels of the percentage of students receiving free or reduced lunch) was not significant ($H(3, 645) = 3.06$, $p = .96$, $\omega^2 = -.0003$). A Dunn's test of multiple comparisons was conducted to determine which of the four types of PBIS schools means differed significantly. The results revealed no significant difference ($p > .05$) between any of the four types of PBIS schools on the mean of the percentage of students reading at or above their grade level Lexile band on the third grade GMAS.

In addition, a Dunn's test of multiple comparisons was conducted to determine which of the levels of the percentage of students receiving free or reduced lunch means differed significantly. The results revealed the mean of the percentage of students scoring either a Level II, Level III, or Level IV on the third grade English/language arts portion of the GMAS differed significantly ($p < .001$) between all four levels of the percentage of students receiving free or reduced lunch (see Table 15).

Table 15

Dunn's Test of Multiple Comparisons on Percentage of Third Grade Students Scoring a Level II, Level III, or Level IV on the English/Language Arts Portion of the GMAS by Free or Reduced Quartiles

	Z			
Quartile	1	2	3	4
1	0.00			
2	7.12**	0.00		
3	13.26**	6.12**	0.00	
4	19.07**	11.93**	5.80**	0.00

** $p < .001$

3b. Is there a significant difference between a school's PBIS recognition level (installing, emerging, operational, or non-PBIS) and levels of the percentage of students receiving free or reduced lunch on the percentage of students scoring either a Level II, Level III, or Level IV on the fourth grade English/language arts portion of the Georgia Milestones Assessment System (GMAS)?

The two independent variables in this question are PBIS recognition level and percentage of students on free or reduced lunch. For the free or reduced lunch variable, schools were divided into four quartiles based on their percentage of students on free or

reduced lunch (Quartile 1: 4-48.27%, Quartile 2: 48.28-74.56%, Quartile 3: 74.57-94.52%, and Quartile 4: 94.53-95%). The dependent variable is the percentage of students scoring either a Level II, Level III, or Level IV on the fourth grade English/language arts portion of the GMAS. Descriptive statistics were computed on the two variables (see Table 16).

Table 16

Descriptive Statistics of Percentage of Students Scoring Either a Level II, Level III, or Level IV on the Fourth Grade English/Language Arts Portion of the GMAS by PBIS Recognition Level and Percentage of Students Receiving Free or Reduced Lunch

Group	n	*M*	*SD*	Min[a]	Max[b]	Skewness	Kurtosis
Non-PBIS	199	71.76	16.85	19.50	100	-.65	-.13
Installing	199	69.27	17.09	23.81	100	-.41	-.4
Emerging	163	69.35	16.90	20.83	97.32	-.49	-.5
Operational	100	75.61	12.64	37.50	96.91	-.58	-.04
Free/Reduced[c]	166	88.02	6.43	67.39	100	-.62	.08
Free/Reduced	165	76.37	8.71	48.72	97.62	-.3	.2
Free/Reduced	165	66.08	10.74	33.33	89.11	-.56	.05
Free/Reduced	165	53.42	14.27	19.15	93.90	.07	-.07

Note. [a]Minimum value; [b]Maximum value; [c]Free or Reduced Lunch

Descriptive statistics indicated the overall mean for all 661 schools on the percentage of students scoring either a Level II, Level III, or Level IV on the fourth grade English/language arts portion of the GMAS was $M = 71$ ($SD = 16.49$). Schools that were non-PBIS (n = 199) had a range from 19.15 to 100 percentage of students scoring either a Level II, Level III, or Level IV on fourth grade English/language arts portion of the GMAS with an average mean of 71.76 ($SD = 16.85$). Schools designated as installing PBIS schools (n = 199) had a range from 23.81 to 100 percentage of students scoring

either a Level II, Level III, or Level IV on the fourth grade English/language arts portion of the GMAS with an average mean of 69.27 (*SD* = 17.09). Schools designated as emerging PBIS schools (n = 163) had a range from 20.83 to 97.32 percentage of students scoring either a Level II, Level III, or Level IV on the fourth grade English/language arts portion of the GMAS with an average mean of 69.35 (*SD* = 16.9). Schools designated as operational PBIS schools (n = 100) had a range from 37.5 to 96.91 percentage of students scoring either a Level II, Level III, or Level IV on the fourth grade English/language arts portion of the GMAS with an average mean of 75.61 (*SD* = 12.64).

Schools within the first quartile for percentage of students receiving free or reduced lunch had a range from 67.39 to 100 percentage of students scoring either a Level II, Level III, or Level IV on the fourth grade English/language arts portion of the GMAS with an average mean of 88.02 (*SD* = 6.43). Schools within the second quartile for percentage of students receiving free or reduced lunch had a range from 48.72 to 97.62 percentage of students scoring either a Level II, Level III, or Level IV on the fourth grade English/language arts portion of the GMAS with an average mean of 76.37 (*SD* = 8.71). Schools with the third quartile for percentage of students receiving free or reduced lunch had a range from 33.33 to 89.11 percentage of students scoring either a Level II, Level III, or Level IV on the fourth grade English/language arts portion of the GMAS with an average mean of 66.08 (*SD* = 10.74). Schools within the fourth quartile for percentage of students receiving free or reduced lunch had a range from 19.15 to 93.9 percentage of students scoring either a Level II, Level III, or Level IV on the fourth grade English/language arts portion of the GMAS with an average mean of 53.42 (*SD* = 14.27) (see Table 16). Descriptive Statistics for the Interaction between PBIS recognition level

and percentage of students on free or reduced lunch on the percentage of students scoring either a Level II, Level III, or Level IV on the fourth grade English/language arts portion of the GMAS is described in Table 17.

Table 17

Descriptive Statistics for the Interaction between PBIS Recognition Level and Percentage of Students on Free Reduced Lunch on the Percentage of Students Scoring Either a Level II, Level III, or Level IV on the Fourth Grade English/Language Arts Portion of the GMAS

	PBIS Recognition Level											
	Non-PBIS Schools			Installing Schools			Emerging Schools			Operational Schools		
	n	*M*	*SD*	n	*M*	*SD*	n	*M*	*SD*	n	*M*	*SD*
Q[b] One	61	87.8	6.6	43	88.0	7.1	35	88.6	5.6	27	87.8	6.3
Q Two	45	75.4	9.1	46	76.1	10.6	38	76.4	7.3	36	77.9	6.7
Q Three	44	66.1	9.7	53	64.6	11.4	41	64.7	11.8	27	66.7	9.7
Q Four	49	53.5	15.7	57	88.6	5.6	49	51.6	12.4	10	58.6	12.9

Note. [a] Percentage of Students Receiving Free or Reduced Lunch by Quartiles; [b]Quartiles

A factorial analysis of variance (ANOVA) was computed to determine the effects PBIS recognition level and percentage of students receiving free or reduced lunch have on percentage of students scoring either a Level II, Level III, or Level IV on the fourth grade English/language arts portion of the GMAS. Statistical considerations and assumptions were checked prior to running the factorial ANOVA. There was no missing data for this question. The data was converted to z-scores to examine outliers. It was determined there was only two outliers greater than 3 found within the percentage of students scoring either a Level II, Level III, or Level IV on the fourth grade English/language arts portion of the GMAS (z-score = -3.06 and -3.15). The decision was made to include these values. Normality tests such as skewness and kurtosis and

Shapiro-Wilk were conducted to assure the data sets had a normal distribution. The skewness test for all groups and the kurtosis test for all groups indicated a normal distribution (See Table 16). The results of the Shapiro-Wilk test indicated evidence of non-normality within some of the groups: non-PBIS schools ($W(199) = .96$, $p < .001$), installing PBIS schools ($W(199) = .98$, $p < .005$), emerging PBIS schools ($W(163) = .96$, $p < .001$), operational PBIS schools ($W(100) = .97$, $p = .01$), free or reduced lunch quartile one ($W(166) = .97$, $p < .001$), free or reduced lunch quartile two ($W(165) = .99$, $p = .22$), free or reduced lunch quartile three ($W(165) = .97$, $p < .005$), and free or reduced lunch quartile four ($W(165) = .99$, $p = .84$). The assumption of homogeneity of variance was violated, as assessed by Levene's test for equality of variance ($F(15, 645) = 5.66$, $p < .001$).

The Scheirer-Ray-Hare nonparametric 2-way analysis of variance (ANOVA) (Sokal & Rohlf, 1995) was used due to data being non-normal and as well as homogeneity of variance being violated. The Scheirer-Ray-Hare test showed a statistically significant main effect for a school's PBIS recognition level ($H(3, 645) = 10.72$, $p = .01$, $\omega^2 = .015$). A significant main effect on the levels of the percentage of students receiving free or reduced lunch was found ($H(3,645) = 412.64$, $p < .001$, $\omega^2 = .623$). The interaction between the two variables (school's PBIS recognition level and levels of the percentage of students receiving free or reduced lunch) was not significant ($H(3, 645) = 2.44$, $p = .98$, $\omega^2 = -.001$). A Dunn's test of multiple comparisons was conducted to determine which of the four types of PBIS schools means differed significantly. The results revealed the mean percentage of students scoring either a Level II, Level III, or Level IV on the fourth grade English/language arts portion of the GMAS

differed significantly (Z = -2.92, p < .05) between the installing PBIS schools and operational PBIS schools. The mean percentage of students scoring either a Level II, Level III, or Level IV on the fourth grade English/language arts portion of the GMAS differed significantly (Z = -2.72, p < .05) between the emerging PBIS schools and operational PBIS schools.

In addition, a Dunn's test of multiple comparisons was conducted to determine which of the levels of the percentage of students receiving free or reduced lunch means differed significantly. The results revealed the mean of the percentage of students scoring either a Level II, Level III, or Level IV on the fourth grade English/language arts portion of the GMAS differed significantly (p < .001) between all four levels of the percentage of students receiving free or reduced lunch (see Table 18).

Table 18

Dunn's Test of Multiple Comparisons on Percentage of Fourth Grade Students Scoring a Level II, Level III, or Level IV on the English/Language Arts Portion of the GMAS by Free or Reduced Quartiles

	Z			
Quartile	1	2	3	4
1	0.00			
2	7.78**	0.00		
3	14.08**	6.28**	0.00	
4	19.50**	11.70**	5.41**	0.00

** p < .001

3c. Is there a significant difference between a school's PBIS recognition level (installing, emerging, operational, or non-PBIS) and levels of the percentage of students receiving free or reduced lunch on the percentage of students scoring either a Level II, Level III, or Level IV on the fifth grade English/language arts portion of the Georgia?

The two independent variables in this question are PBIS recognition level and percentage of students on free or reduced lunch. For the free or reduced lunch variable, schools were divided into four quartiles based on their percentage of students on free or reduced lunch (Quartile 1: 4-48.27%, Quartile 2: 48.28-74.56%, Quartile 3: 74.57-94.52%, and Quartile 4: 94.53-95%). The dependent variable is the percentage of students scoring either a Level II, Level III, or Level IV on the fifth grade English/language arts portion of the GMAS. Descriptive statistics were computed on the two variables (see Table 19).

Table 19

Descriptive Statistics of Percentage of Students Scoring Either a Level II, Level III, or Level IV on the Fifth Grade English/Language Arts Portion of the GMAS by PBIS Recognition Level and Percentage of Students Receiving Free or Reduced Lunch

Group	n	*M*	*SD*	Min[a]	Max[b]	Skewness	Kurtosis
Non-PBIS	199	72.66	16.16	27.91	98.88	-.68	-.31
Installing	199	70.63	16.34	23.73	98.44	-.5	-.34
Emerging	163	69.74	16.28	27.27	97.65	-.38	-.6
Operational	100	75.60	13	36.73	98.72	-.58	-.04
Free/Reduced[c] Q[d] 1	166	88.24	6.92	48.78	98.88	-1.47	5.18
Free/Reduced Q 2	165	76.91	7.15	59.48	91.67	-.27	-.41
Free/Reduced Q 3	165	66.91	10.93	27.27	90.32	-.59	.59
Free/Reduced Q 4	165	54.95	13.71	23.73	88.71	-.18	-.57

Note. [a]Minimum value; [b]Maximum value; [c]Free or Reduced Lunch; [d]Quartile

Descriptive statistics indicated the overall mean for all 661 schools on the percentage of students scoring either a Level II, Level III, or Level IV on the fifth grade English/language arts portion of the GMAS was *M* = 72.66 (*SD* = 15.9). Schools that were non-PBIS (n = 199) had a range from 27.91 to 98.88% of students scoring either a Level II, Level III, or Level IV on fifth grade English/language arts portion of the GMAS with an average mean of 72.66 (*SD* = 16.16). Schools designated as installing PBIS schools (n = 199) had a range from 23.73 to 98.44% of students scoring either a Level II, Level III, or Level IV on the fifth grade English/language arts portion of the GMAS with an average mean of 70.63 (*SD* = 16.34). Schools designated as emerging PBIS schools (n = 163) had a range from 27.27 to 97.65% of students scoring either a Level II, Level III, or Level IV on the fifth grade English/language arts portion of the GMAS with an average mean of 69.74 (*SD* = 16.28). Schools designated as operational PBIS schools (n = 100) had a range from 36.73 to 98.72% of students scoring either a Level II, Level III, or Level IV on the fifth grade English/language arts portion of the GMAS with an average mean of 75.6 (*SD* = 13).

Schools within the first quartile for percentage of students receiving free or reduced lunch had a range from 48.78 to 98.88 percentage of students scoring either a Level II, Level III, or Level IV on the fifth grade English/language arts portion of the GMAS with an average mean of 88.24 (*SD* = 6.92). Schools within the second quartile for percentage of students receiving free or reduced lunch had a range from 59.48 to 91.67% of students scoring either a Level II, Level III, or Level IV on the fifth grade English/language arts portion of the GMAS with an average mean of 76.91 (*SD* = 7.15).

Schools with the third quartile for percentage of students receiving free or reduced lunch had a range from 27.27 to 90.32 percentage of students scoring either a Level II, Level III, or Level IV on the fifth grade English/language arts portion of the GMAS with an average mean of 66.91 (*SD* = 10.96). Schools within the fourth quartile for percentage of students receiving free or reduced lunch had a range from 23.73 to 88.71 percentage of students scoring either a Level II, Level III, or Level IV on the fifth grade English/language arts portion of the GMAS with an average mean of 54.95 (*SD* = 13.71) (see Table 19). Descriptive Statistics for the Interaction between PBIS recognition level and percentage of students on free reduced lunch on the percentage of students scoring either a Level II, Level III, or Level IV on the fifth grade English/language arts portion of the GMAS is described in Table 20.

Table 20

Descriptive Statistics for the Interaction between PBIS Recognition Level and Percentage of Students on Free or Reduced Lunch on the Percentage of Students Scoring Either a Level II, Level III, or Level IV on the Fifth Grade English/Language Arts Portion of the GMAS

	PBIS Recognition Level											
	Non-PBIS Schools			Installing Schools			Emerging Schools			Operational Schools		
	n	*M*	*SD*	n	*M*	*SD*	n	*M*	*SD*	n	*M*	*SD*
Q[b] One	61	87.8	6.4	43	88.1	6.9	35	89.2	5.7	27	87.7	9.3
Q Two	45	78.1	6.0	46	76.5	7.8	38	75.1	7.1	36	78.0	7.4
Q Three	44	65.6	11.8	53	66.9	11.1	41	67.8	11.7	27	67.8	8.0
Q Four	49	55.2	13.9	57	56	15.5	49	53.3	11.9	10	55.4	10.8

Note. [a] Percentage of Students Receiving Free or Reduced Lunch by Quartiles; [b]Quartiles

A factorial analysis of variance (ANOVA) was computed to determine the effects PBIS recognition level and percentage of students receiving free or reduced lunch have

on percentage of students scoring either a Level II, Level III, or Level IV on the fifth grade English/language arts portion of the GMAS. Statistical considerations and assumptions were checked prior to running the factorial ANOVA. There was no missing data for this question. The data was converted to z-scores to examine outliers. It was determined there was only one outlier greater than 3 found within the percentage of students scoring either a Level II, Level III, or Level IV on the fifth grade English/language arts portion of the GMAS (z-score = -3.02). The decision was made to include these values. Normality tests such as skewness and kurtosis and Shapiro-Wilk were conducted to assure the data sets had a normal distribution. The skewness test revealed a normal distribution for groups; however, the kurtosis test did reveal a normal distribution for all groups except the free or reduced lunch quartile one group (See Table 19). The results of the Shapiro-Wilk test indicated evidence of non-normality within some of the groups: non-PBIS Schools ($W(199) = .95, p < .05$), installing PBIS Schools ($W(199) = .97, p < .001$), emerging PBIS Schools ($W(163) = .97, p = .001$), operational PBIS Schools ($W(100) = .97, p = .03$), free or reduced lunch quartile one ($W(166) = .91, p < .001$), free or reduced lunch quartile two ($W(165) = .98, p = .06$), free or reduced lunch quartile three ($W(165) = .97, p < .005$), and free or reduced lunch quartile four ($W(165) = .99, p = .2$). The assumption of homogeneity of variance was violated, as assessed by Levene's test for equality of variance ($F(15, 645) = 7.71, p < .001$).

The Scheirer-Ray-Hare nonparametric 2-way analysis of variance (ANOVA) (Sokal & Rohlf, 1995) was used due to data being non-normal and as well homogeneity of variance being violated. The Scheirer-Ray-Hare test showed a statistically significant main effect for a school's PBIS recognition level ($H(3, 645) = 9.56, p = .02, \omega^2 = .013$).

A significant main effect on the levels of the percentage of student receiving free or reduced lunch was found ($H(3,645) = 413.83$, $p < .001$, $\omega^2 = .625$). The interaction between the two variables (school's PBIS recognition level and levels of the percentage of student receiving free or reduced lunch) was not significant ($H(3, 645) = 3$, $p = .96$, $\omega^2 = 1.28$). A Dunn's test of multiple comparisons was conducted to determine which of the four types of PBIS schools means differed significantly. The results revealed the mean percentage of students scoring either a Level II, Level III, or Level IV on the fifth grade English/language arts portion of the GMAS differed significantly ($Z = -2.74$, $p < .05$) between the emerging PBIS schools and operational PBIS schools.

In addition, a Dunn's test of multiple comparisons was conducted to determine which of the levels of the percentage of students receiving free or reduced lunch means differed significantly. The results revealed the mean of the percentage of students scoring either a Level II, Level III, or Level IV on the fifth grade English/language arts portion of the GMAS differed significantly ($p < .001$) between all four levels of the percentage of students receiving free or reduced lunch (see Table 21).

Table 21

Dunn's Test of Multiple Comparisons on Percentage of Fifth Grade Students Scoring a Level II, Level III, or Level IV on the English/Language Arts Portion of the GMAS by Free or Reduced Quartiles

	Z			
Quartile	1.	2	3	4
1	0.00			
2	7.99**	0.00		
3	14.25**	6.25**	0.00	
4	19.49**	11.49**	5.23**	0.00

** $p < .001$

Qualitative Results

The second part of this study consist of principal interviews to obtain their perceptions between PBIS and discipline referrals, Lexile levels, and GMAS ELA proficiency. It is important to note the sequential explanatory design used in this study was to focus on combining both quantitative and qualitative data which would allow for a better understanding of research problems than either approach alone (Creswell & Plano Clark, 2011). Combining the data from the quantitative and qualitative portion was important to completely understand the relationship between PBIS and discipline referrals, Lexile levels, and GMAS ELA proficiency.

Participants

Principals were randomly selected to participate in interviews involving five questions designed to provide a comprehensive understanding to the quantitative findings. In addition, the questions were also intended to understand why schools would or would not choose to implement the PBIS framework. Prior to the selection of

participants, a validation study of the interview questions was conducted. According to Maxwell (2005), validation can prevent threats to the research by removing bias and reactivity. Prior belief systems or leading questions can threaten the interpretation of the responses from the participants. The validation study occurred prior to the interviews as well as after the interviews were conducted (Maxwell, 2005).

Demographic Characteristics

Data collection for the principal interviews took place during the 2018-2019 school. Principals were randomly selected and received an email regarding the study and requested assistance with answering several questions to provide insight regarding PBIS. Participants received a copy of the interview questions beforehand. Twelve interviews were conducted with three current principals from non-PBIS schools, installing PBIS schools, emerging PBIS schools, and operational PBIS schools. All of the demographic data reported in the next four tables were reported by the principal prior to conducting the interview.

The three principals from non-PBIS schools had an average of 19 years total of educational experience and an average of 7 years as a principal. All three principals had earned a specialist degree. Two principals were White, and one was Black. Two principals were males, and one was a female (see Table 22).

Table 22

Descriptive Statistics of Principals Interviewed from Non-PBIS Schools

	Smith	Jones	Alexander
Gender	Male	Female	Male
Race	White	White	Black
Experience[a]	18	25	14
Tenure[b]	5	10	6
Setting	Rural	Rural	Urban
Degree[c]	Specialist	Specialist	Specialist

Note. Pseudonym names used in place of principals' real name; [a]Total years of educational experience; [b]Years as a principal; [c]Highest degree earned

The three principals from installing PBIS schools had an average of 19.3 years total of educational experience and an average of 3.7 years as a principal. Two out of three principals had earned a master's degree with one having earned a doctorate. Two principals were White, and one was Black. Two principals were females, and one was a male (see Table 23).

Table 23

Descriptive Statistics of Principals Interviewed from Installing PBIS Elementary Schools

	Haynes	Gaddy	Scott
Gender	F	M	F
Race	White	White	Black
Experience[a]	13	19	26
Tenure[b]	6	1	4
Setting	Urban	Urban	Urban
Degree[c]	Masters	Masters	Doctorate

Note. Pseudonym names used in place of principals' real name; [a]Total years of educational experience; [b]Years as a principal; [c]Highest degree earned

The three principals from emerging PBIS schools had an average of 20.6 years total of educational experience and an average of 4.7 years as a principal. Two out of three principals had earned a specialist degree with one having earned a doctorate. Two principals were Black, and one was White. Two principals were females, and one was a male (see Table 24).

Table 24

Descriptive Statistics of Principals Interviewed from Emerging PBIS Elementary Schools

	Bruce	Chastain	Long
Gender	F	F	M
Race	White	Black	Black
Experience[a]	22	25	15
Tenure[b]	5	5	4
Setting	Suburban	Urban	Urban
Degree[c]	Specialist	Doctorate	Specialist

Note. Pseudonym names used in place of principals' real name; [a]Total years of educational experience; [b]Years as a principal; [c]Highest degree earned

The three principals from operational PBIS schools had an average of 23 years total of educational experience and an average of 8.3 years as a principal. One principal had earned a master's degree, one principal had earned a specialist degree, and one having earned a doctorate. Two principals were White, and one was Black. Two principals were females, and one was a male (see Table 25).

Table 25

Descriptive Statistics of Principals Interviewed from Operational PBIS Elementary Schools

	Johnson	Pate	Little
Gender	Female	Male	Female
Race	White	Black	White
Experience[a]	23	16	30
Tenure[b]	5	3	17
Setting	Urban	Suburban	Suburban
Degree[c]	Masters	Doctorate	Specialist

Note. Pseudonym names used in place of principals' real name; [a]Total years of educational experience; [b]Years as a principal; [c]Highest degree earned

Results by Question

The following overarching research question is research question 4 which is the qualitative question of this study.

4. How do selected principals explain the similarities or differences among schools by PBIS recognition level on the number of office referrals per 1,000 students, percentage of students reading at or above their grade level Lexile band, and scores on the English/language arts GMAS?

Data from the principal interviews were arranged by five sub-questions that were created to answer research Question 4. Responses to interview questions were arranged by non-PBIS status to PBIS status. To ensure the correctness and precision of the presentation of the data, the results were reported by each of the five interview questions used in the principal interviews. The interview questions and their responses were reported by themes. The themes were: driving forces that determine to or not to implement PBIS and advantages and disadvantages that come with using or not using the

PBIS framework. In addition, the final three interview questions gathered responses from principals after they were shown the quantitative findings of this study.

Interview Questions.

1. What are the reason(s) that your school has not implemented the PBIS framework (Non-PBIS School)? What were the driving forces that led your school to implement the PBIS framework (PBIS Schools)?

Two principals from non-PBIS schools indicated there was not a need for the PBIS framework. Both principals, Smith and Alexander mentioned discipline issues were not a problem within their school. Principal Jones stated in the past they conducted a book study on PBIS as part of their Professional Learning Communities (PLC's); however, they felt their teachers were already doing parts of the framework and felt the climate of their school was already positive. Principal Alexander said their school already rewards students for academic purposes as well as provide quarterly incentives to students that exhibit good behavior but felt implementing the PBIS framework would result in additional work for teachers. Jones indicated teachers already feel a great deal of pressure due to state accountability.

Principal Smith indicated their school was a PBIS school several years ago. Recently during a meeting with the superintendent, Smith brought up the idea of reimplementing the PBIS framework within the school; however, district staff felt there were already too many initiatives within the district at the current time. The district felt reimplementing the PBIS framework at this time would not be feasible since the system was focusing on other projects. The district stated they would entertain implementing the PBIS framework within the district in the near future.

Eight of the nine principals from schools using the PBIS framework indicated student discipline/behavior was the primary reason for implementing the PBIS framework within their school/district. Majority of the principals indicated a need for decreasing the number of discipline referrals, ISS days, and OSS days within the school. Principal Pate indicated the framework teaches students the way to positively conduct themselves in school, which ultimately carries over into their everyday life. Both principal Scott and Little stated the framework provides consistency within the school. Principal Little stated, "I think we all need to be on the same page and everybody needs to understand expectations, and the children need to understand the expectations. Every child knows the rules, but also the teachers understand the rules. They understand consequences. They understand what the process is and the protocols. It is just very consistent."

Principal Gaddy and Johnson also stated accountability was another reason for implementation. Gaddy indicated schools get an extra five points on the Georgia Department of Education School Climate Rating for implementing the framework and believed that was also a valid reason for implementation. Johnson and Pate indicated the CCPRI rating played a role as well for implementation. Both principals stated a positive climate can improve academics, which ultimately improves a school's CCRPI score.

Principal Haynes was the only principal that indicated the implementation of the PBIS framework was a mandate from central office. Haynes indicated they were not told why they were implementing the framework. Haynes felt the mandate did prevent teachers from buying into the initiative. Additionally, Haynes felt the redelivery of the framework to the faculty was ineffective. Due to the framework not being implemented

effectively, Haynes noticed teachers using terminology incorrectly and not reminding students of the expectations. Ultimately, Haynes stated teachers were not following the framework and the school would be revisiting training next year.

2. What are the advantages and disadvantages that you believe come along with not having a PBIS framework (Non-PBIS School)? What are the advantages and disadvantages that you believe come along with using the PBIS framework (PBIS Schools?)

All three principals of non-PBIS schools indicated one of the advantages of implementing PBIS is that the framework offers schools a procedural way to recognize appropriate behaviors. Principal Jones stated, "A lot of times, students who are doing what we need them to do with their behavior really never get any recognition or feedback or 'a thank you for doing so.'" Both principals, Jones and Alexander, mentioned the PBIS framework assists schools with stating rules and expectations in a positive light. Principal Smith indicated the framework allows for adults to interact with the students in a more positive manner.

Principal Jones believed a disadvantage to the PBIS framework was that it is considered a Tier I intervention meaning it is meant for the entire school. However, the framework does not provide interventions or assistance with students that are not successful with PBIS and need additional support. Principal Smith did not indicate any disadvantages that come with implementing PBIS. Lastly, Smith stated a disadvantage that comes with implementing the PBIS framework is buy-in from staff. As with any initiative, especially with one that forces people to change their beliefs, buy-in can be a real struggle. Principal Smith believed that is why the state created a three-step process

to fully implement PBIS because it takes time to change the way adults think and behavior.

Seven of the nine principals from schools using the PBIS framework indicated an advantage for implementing PBIS was a reduction of discipline referrals. In addition, majority of the principals indicated again the framework provides a clear and consistent set of rules across the school. Principal Long specified, "For my school, it's been nothing but an advantage. First, the framework provided schoolwide expectations, so the expectations the teachers have translate from the teachers' classrooms to the hallway, to the cafeteria, all the way to the bus, so everyone has the same expectations." In addition, principal Chastain indicated the framework has a positive impact on their mobility rate due to the fact many kids transfer between schools within their district. Chastain stated, "When they go from school to school, even though the pillars are different, the same structure and expectations are the same within our system."

Principal Pate noticed the framework brought uniformity to the school. Students knew the consequences were consistent, and that one student would not receive a different consequence than another student for the same behavior. Principal Johnson noted the framework builds teacher morale due to the fact that students behave better. Johnson stated, "teachers feel like they can actually accomplish something in the classroom and teach."

Principal Haynes believed that a disadvantage to the PBIS framework was teacher buy-in. Overall, the framework should start in major areas and not immediately in the classrooms; however, when teachers do not buy into the initiative they tend to do what they want. Principal Haynes referred again to the fact that mandates do not result in

teacher buy in. Haynes indicated teacher buy-in is crucial in order for programs to work within schools. Principal Gaddy noted a disadvantage was funding. Gaddy stated coming up with rewards and finding a way to fund those rewards can be a challenge. Lastly, principal Johnson indicated there are really no disadvantages that come along with implementing the framework besides conducting the mandatory teacher surveys, walk-throughs, and paperwork.

3. How do you explain the similarities or differences among schools by PBIS recognition level on the number of office referrals per 1,000 students?

All three principals of non-PBIS schools indicated they believe the main reason there was no significant difference between the non-PBIS group and PBIS groups was due to the schools within the non-PBIS group did not have a need for PBIS. All three principals, Jones, Smith, and Alexander noted the mean average of discipline referrals per 1,000 students was close to the mean average of the operational group. Principal Jones also believed the schools within the non-PBIS group may not be accurately reporting discipline referrals correctly. With the PBIS framework comes consistency as well as a clear definition of what is an office referral and what should be handled within the classroom. Jones believes these schools within the non-PBIS group most likely do not have established these procedures and expectations for submitting an office referral. Principal Alexander noted it was interesting to see discipline referrals decrease as schools progress to an operational status. He noted this shows the PBIS tiered model works as you progress from installing to operational.

Four of the nine principals from schools that have implemented PBIS, mentioned the schools within the non-PBIS group were likely schools that did not need to implement

the PBIS within their school. Principal Long, Gaddy, Bruce, and Little stated the non-PBIS group had a mean very close to the operational PBIS group which indicated either they already had low discipline referrals or a positive climate within their school. Gaddy stated, "Maybe they don't see the need to implement PBIS, to go through the framework, because maybe there is such a low incidence of behavior referrals anyway." In addition, principal Long noted, "Some schools already have a great culture and climate, where their students know the expectations, and then there are other schools that have to put structures in place for those students, so they will understand the expectations." Principal Johnson and Chastain noted those schools within the non-PBIS group did not need the framework and teachers most likely would not buy-in due the fact the framework is not needed.

Principal Haynes, Pate, and Bruce mentioned the reason the non-PBIS group did not report a significant difference between any of the PBIS groups was due to the framework focusing on behavior as well as schools not having protocols in place for entering referrals. Principal Bruce discussed how depending on the time of the day, some referrals may be inputted while others may not. Some non-PBIS schools may handle it one way, while others handle it a different way. However, PBIS schools have procedures and protocols in place for identifying minor/major referrals as well as what must be entered into the student information system. Principal Haynes noted teachers of PBIS schools may have become hypervigilant to writing students.

Principal Gaddy and Pate noted the decrease in discipline referrals as PBIS schools moved from installing to operational. In addition, they noted the increase in discipline referrals per 1,000 students in the installing group. They mentioned this was

consistent with what they have been taught. First year of PBIS implementation results in an increase in student office referrals; however, as you move toward operational you should see a decrease in student office referrals. Principal Pate believed, "As you move up, there is a greater correlation because as you move up, you are adding more pieces. You are getting more defined. You are using a framework in different areas."

4. How do you explain the similarities or differences among schools by PBIS recognition level on the percentage of students reading at or above their grade level Lexile band?

Two of the principals from schools not implementing PBIS indicated they believe the main reason there was not significant difference found between any groups on the percentage of students reading at or above their grade level Lexile band on the third grade GMAS was due to the fact third grade students are first time test takers. GMAS testing begins in third grade and majority of these schools take the GMAS online. Principal Alexander also noted in third grade students across the state of Georgia are required to become independent readers due to the Georgia Department of Education's curriculum. As students transition from second to third grade, they go from dependent readers to independent readers.

Principal Jones commented the reason the third grade data showed no significant difference was majority of schools across the state of Georgia use a self-contained model in third grade. In fourth and fifth grade, students transition to a team of teachers where one teacher teaches math/science and another teacher teaches English/language art/social studies. This model allows for teachers to specialize in two content areas instead of four.

All three principals stated the data in fourth grade and fifth grade overall supports the Georgia PBIS model and shows it works. Principal Alexander noted, "as you progress through the tiers (installing, emerging, and operational) you will see an improvement in Lexile levels because those schools experience less discipline issues and have a positive climate, which ultimately impacts student achievement."

Five principals (Chastain, Scott, Haynes, Gaddy, and Johnson) from schools that have implemented the PBIS framework noted a possibility none of the four groups having any significant difference between them on the percentage of students reading at or above their grade level Lexile band on the third grade GMAS was due to the fact third grade students are first time test takers. Principal Gaddy stated, "It is a student's first year taking the GMAS in third grade. So maybe across the board, it is difficult for students and maybe there are not many differences there because it is their first time taking it." Principal Scott discussed how third graders have never taken a state assessment until third grade. In addition, Scott discussed Lexile levels are not monitored until third grade, so it may take the entire year for students to really understand the meaning of a Lexile level.

Four principals (Chastain, Pate, Long, and Bruce) noted the change within the curriculum from second grade to third grade was probably the reason none of the groups showed any significant difference on the percentage of students reading at or above their grade level Lexile band on the third grade GMAS. Principal Bruce spoke about how the standards change between the two grade levels and third grade students have to transition from independent readers to dependent readers, which is difficult for third graders. Principal Long discussed how third graders really are not required to become dependent

readers until the middle of the school year and they have to take the GMAS within a few weeks of transitioning to a dependent reader, which is not enough time. Principal Pate stated, "It is a big jump from learning to read to reading to learn."

Lastly, Principal Little noted a possibility for no groups showing any significant difference on the percentage of students reading at or above their grade level Lexile band on the third grade GMAS was due to the fact third grade is self-contained. Little mentioned, "We teach in teams in fourth and fifth grade, and one teacher does ELA and reading, so we have a little more concerted emphasis there." Principal Little stated is was simply a programmatic difference as well as the maturity of the students. Third grade is mainly self-contained throughout the state while fourth and fifth grade engage in team teaching.

Five of the principals (Haynes, Gaddy, Johnson, Scott, and Long) discussed how overall the results within the PBIS groups in fourth and fifth grade shows as schools progress toward an operational status Lexile levels increase. Principal Gaddy noted it could be a climate issue. Schools that are operational have fully implemented PBIS with fidelity, which Principal Gaddy emphasized impacts climate.

5. How do you explain the similarities or differences among schools by PBIS recognition level on the scores of the English/language arts GMAS?

All three of the principals from non-PBIS schools indicated they believe the results for the percentage of students scoring either a Level II, Level III, or Level IV on the English/language arts portion of the third, fourth, and fifth grade GMAS were due to the same reasons they mentioned in the previous question. In third grade, principal Alexander and Smith reiterated that no significant difference was found between any

groups on the percentage of students scoring either a Level II, Level III, or Level IV on the English/language arts portion of the third GMAS was due to the fact third grade students are first time test takers. Principal Jones reiterated again the reason was majority of schools across the state of Georgia use a self-contained model in third grade. Lastly, again all three principals stated the overall data in fourth grade and fifth grade supports that the Georgia PBIS model works.

All nine principals from schools that have implemented the PBIS framework reiterated their responses from the previous question since the results were very similar. Principals Chastain, Scott, Haynes, Gaddy, and Johnson re-emphasized the reason no significant difference was found between any groups on the percentage of students scoring either a Level II, Level III, or Level IV on the English/language arts portion of the third GMAS was due to the fact third grade students are first time test takers. Principals Chastain, Pate, Long, and Bruce noted again the change within the curriculum from second grade to third grade was probably the reason no significant differences was found between any groups on the percentage of students scoring either a Level II, Level III, or Level IV on the English/language arts portion of the third GMAS.

Lastly, Principal Little reiterated a possibility for no significant differences between any groups on the percentage of students scoring either a Level II, Level III, or Level IV on the English/language arts portion of the third GMAS was due to the fact third grade is self-contained. In addition, principals Haynes, Gaddy, Johnson, Scott, and Long again discussed how the results within the PBIS groups in fourth and fifth grade showed as schools progress toward operational status the percentage of students scoring a Level II, Level III, or Level IV increase.

When examining the results from research questions 1, 2, and 3 and all of its subparts, several interesting results provide for an explanation to research question 4. The report of this question centered more on the lack of quantitative differences found in sub-question a of both research question 2 and 3. Several principals pointed that a significant difference between PBIS groups was found in almost all research questions, and one cannot discount the fact schools using the PBIS framework decrease referrals and increase percentage of students scoring within their Lexile band and percentage of students scoring within a Level II, Level III, and Level IV on the GMAS as schools progressive from an installing PBIS school to an operational PBIS school. The responses principals provided during the interviews favored the use of the PBIS framework. These responses also served as evidence the Georgia PBIS framework impacts student discipline and student achievement.

The first section focused on how principals explain the similarities or differences among schools by PBIS recognition level on the number of office referrals per 1,000 students. Principals in non-PBIS schools were quick to point out the non-PBIS school group did not show a significant difference in the number of office referrals per 1,000 students compared to the three PBIS groups. In addition, principals from schools using the PBIS framework noted the very same conclusion. In summary, majority of the principals noted the mean average of discipline referrals per 1,000 students of both the non-PBIS group and operational PBIS were very comparable. Several topics were found to explain the differences found in the quantitative portion of research question 1. The topics are positive climate, and protocols and procedures for entering referrals.

There was an overwhelming response from principals regarding positive climate as a reason the non-PBIS group did not show any significant difference between any of the PBIS groups in terms of office referrals per 1,000 students. Principals indicated the majority of schools across the state of Georgia that had issues with student discipline most likely have already implemented the PBIS framework; hence, the reason the non-PBIS group had a similar mean of discipline referrals per 1,000 students to the operational PBIS group. Principals indicated schools within the non-PBIS group were most likely schools that had a lower number of students on free or reduced lunch and/or already had noted a positive climate within their buildings. The responses from the principals seemed to indicate schools with behavior issues have already implemented the framework within their school. In addition, principals revealed schools that have already implemented the PBIS framework should see a decrease in the number of office referrals per 1,000 students as the school moves from installing to operational.

Another factor that appears to explain the lack of quantitative difference between the non-PBIS group and PBIS groups on the number of office referrals per 1,000 students were protocol and procedures for entering student discipline referrals. Principals said the PBIS framework requires that discipline referrals are logged with an identification of an incident being categorized as a minor incident and major incident. Typically, minor incidents are handled within the classroom while major incidents result in an office referral. As principal Bruce discussed, the data may not be accurate for non-PBIS schools because it is unknown if every single referral is being inputting into the student information system. It was evident the principals believed that PBIS schools have

protocols in place for entering discipline referrals as well as procedures for writing a discipline referral, while non-PBIS school may not.

The following section will discuss how principals describe the similarities or differences among schools by PBIS recognition level on the percentage of students reading at or above their grade level Lexile band, and scores on the English/language arts GMAS. Results will be presented combined since all principals reiterated their responses for the latter part of this question.

Principals from non-PBIS schools were quick to point out that no significant difference was found between any groups in sub question a for both research question 2 and 3. In addition, principals from schools using the PBIS framework came to the same conclusion. Several topics were found to explain the differences found in the quantitative portion of sub question a for research question 2 and 3. The topics are first time test takers, change in curriculum, and structure of classes.

An overwhelming number of principals indicated the reason no significant difference was found between any of the groups with the percentage of third grade students scoring within or above their Lexile Level and percentage of third grade students scoring a Level II, Level III, or Level IV on the English/language arts portion of the GMAS was due to third grade students being first time test takers. Principal Smith, Alexander Chastain, Scott, Haynes, Gaddy and Johnson all noted that GMAS testing begins in third grade and majority of these schools take the GMAS online. Gaddy reiterated it is difficult for students taking a state-mandated assessment for the first time, and Principal Scott also acknowledged this fact and discussed how students are not exposed to this type of test until third grade. Principal Alexander discussed how it is hard

to mimic the GMAS in the lower grades due to the fact educators cannot preview the types of questions asked as well as students in grades kindergarten through second grade are considered to be dependent readers. Principal Alexander indicated the results are consistent among all groups because this is an issue that impacts every single student across the state of Georgia.

Several principals indicated the reason no significant difference was found between any of the groups within the percentage of third grade students scoring within or above their Lexile Level and percentage of third grade students scoring a Level II, Level III, or Level IV on the English/language arts portion of the GMAS was due to the change in curriculum requirements from second grade to third grade. Principals Alexander, Chastain, Pate, Long, and Bruce noted the change within the curriculum from second grade to third grade was drastic because there is a shift from students learning to read to reading to learn. Principal Bruce discussed how third grade students must transition from independent readers to dependent readers, which is difficult for third graders. Principal Long discussed how third graders are not truly required to become dependent readers until the middle of the school year just shy of taking the GMAS. Principal Pate and Alexander mentioned the GMAS is very difficult for third grade students since they have to read independently as well as have the stamina to read long passages.

Lastly, several principals indicated the reason no significant difference was found between any of the groups with the percentage of third grade students scoring within or above their Lexile Level and percentage of third grade students scoring a Level II, Level III, or Level IV on the English/language arts portion of the GMAS was due to third grade students being in a self-contained classroom where the teacher must focus on

four content areas instead of two. Principal Little and Jones noted in fourth and fifth grade majority of schools team teach in these grade levels, which allow for the teacher to teach two content areas instead of four. Principal Little stated is was simply a programmatic difference, meaning fourth and fifth grade teachers have the opportunity to specialize more in their content areas since there is less requirements and less to plan for whereas a third-grade teacher has to plan for four content areas. Principal Little believes fourth and fifth grade students get a more rigorous education due to these teachers having the opportunity to focus more on their content.

All principals stated the results in fourth and fifth grade for the percentage of students scoring within or above their Lexile level and percentage of students scoring Level II, Level III, or Level IV on the English/language arts portion of the GMAS indicates the Georgia PBIS model does improve Lexile levels and student achievement as you move up within the tiers. A majority of the principals indicated as you progress toward an operational level, schools tend to improve in their climate as well as reduce their discipline referrals, which both directly impact student achievement. As mentioned above, fourth and fifth grade students do not face the same barriers as first-time test takers, having to transition from dependent readers to independent readers and being in a self-contained classroom. Majority of these principals believed the significance difference found within the PBIS groups in both fourth and fifth grade were due to the overall PBIS framework. Lastly, it was noted by several principals that schools within the non-PBIS group are schools that already have a low number of discipline referrals and have a positive climate; hence, the reason they are not PBIS schools, and the reason

why there was no significant difference found between the non-PBIS group and the operational group across each question with the exception of one sub question.

Summary

The results reported in this chapter were presented in regard to a sequential explanatory design. Quantitative results were reported first followed by the qualitative results. The major findings of this study revealed overall the Georgia Department of Education's tiered PBIS framework does work as schools progress from installing status to operational status. In fact, a significant difference existed in the number of office referrals per 1,000 students between all three levels of the PBIS groups. As schools progressed from installing to operational, the mean number of office referrals per 1,000 students decreased. Furthermore, a significant difference existed in the percentage of students reading at or above their grade level Lexile band by PBIS recognition level in fourth grade as a school progresses from a non-PBIS status to an operational status, and in fifth grade as a school progresses from an installing status to an operational status, but no significant difference existed in third grade. Lastly, a significant difference existed in the percentage of students scoring either a Level II, Level III, or Level IV on the ELA portion of the GMAS by PBIS recognition level in fourth grade as a school progresses from a non-PBIS status to an operational status, and in fifth grade as a school progresses from an emerging status to an operational status. No significant difference existed in third grade.

Findings from the qualitative aspect of this study were the fact that third grade students are first time test takers across the state of Georgia. A large number of third grade students are required to take the GMAS for the first time via computer. In addition,

third grade students are transitioning due to the curriculum from being a dependent reader to an independent reader in third grade. Students transition from learning to read to reading to learn in third grade. Principals noted schools that are PBIS schools have a strategic process for identifying what is considered a minor incident versus a major incident. Minor incidents are issues that should be handled within the classroom, while major incidents are issues that should result in an office referral. This may contribute to why no overall significance was found between the number of office referrals per 1,000 students in non-PBIS schools and PBIS schools. The majority of findings from principals indicated PBIS assist schools with reducing disciplinary issues while improving school climate; hence, which results in an increase in student achievement.

Chapter V

DISCUSSION

The purpose of this study was twofold. One purpose of this study was to investigate the impact PBIS has on reading achievement and student discipline. Another purpose was to investigate whether the Georgia Department of Education PBIS model impacted reading achievement and student discipline as schools' progress toward operational status. Three quantitative research questions were investigated to assist with this study. The first question examined if there was a significant difference between a school's PBIS recognition level (installing, emerging, operational, and non-PBIS) on the number of office referrals per 1,000 students in grades kindergarten through fifth grade. The second question examined if there was a significant difference between a school's PBIS recognition level (installing, emerging, operational, and non-PBIS) and levels of the percentage of students receiving free or reduced lunch on the percentage of students reading at or above their grade level Lexile band on the Georgia Milestones Assessment System (GMAS). The third question examined if there was a significant difference between a school's PBIS recognition level (installing, emerging, operational, and non-PBIS) and levels of the percentage of students receiving free or reduced lunch on the percentage of students scoring either a Level II, Level III, or Level IV on the English/language arts portion of the GMAS. The qualitative question of this study examined how selected principals explained the similarities or differences among schools by PBIS recognition level on the number of office referrals per 1,000 students, percentage of students

reading at or above their grade level Lexile band, and scores on the English/language arts portion of the GMAS.

The study began with a population of 1,058 K-5 elementary schools in Georgia. Through the Georgia Department of Education, 199 of those schools were installing PBIS elementary schools, 163 were emerging PBIS schools, 100 were operational PBIS elementary schools, and 596 elementary schools did not participate in the state recognized PBIS framework. Total student enrollment, minority enrollment, and each school's College & Career Readiness Performance Index scores (CCRPI) were used to ensure non-PBIS schools were comparable to PBIS schools. Through random sampling procedures, 199 of the eligible non-PBIS schools were selected for the study: non-PBIS schools (n = 199), installing PBIS schools (n = 199), emerging PBIS schools (n = 199), and operational PBIS schools (n = 100). All schools' achievement data used in this study were gathered from the 2016-2017 school year. The results were reported through both percentages and raw data. A one-way analysis of variance (ANOVA) and factorial analysis of variance (ANOVA) were conducted to answer the first three research questions. Through purposeful sampling, 12 principals were interviewed for the study to answer the fourth research question: three principals from each PBIS recognition level (installing, emerging, operational, and non-PBIS). Responses from the principals' interviews were reported to provide clarity, meaning, and accuracy of the data.

Literature Review

Taylor and Pearson (2002) communicated educators want to provide students with knowledge, skills, and dispositions needed to pursue infinite possibilities. However according to Campell, Hombo, and Mazzeo (1999), many students are not reading well enough to keep up with the demands of school, and their educational careers are in danger because they do not read

well enough to meet the demands of an increasingly competitive economy. Fleming et al. (2004) stated research supports the notion that preventive interventions can increase reading skills while reducing problem behaviors; however, little research has been conducted on seeing if preventive interventions can reduce problems behaviors while increasing reading skills.

The need for effective behavior interventions was acknowledged in the 1980's leading to the development of PBIS. During that timeframe, researchers acknowledged future research should focus on prevention, schoolwide systems, research-based practices, team-based implementation and professional development, and student outcomes. During that time period, the University of Oregon began conducting research studies on those latter focuses. The reauthorization of the Individuals with Disabilities Act of 1997 resulted in a grant to establish a national Center on Positive Behavioral Interventions and Supports. The purpose of this grant was to provide technical assistance to schools on evidence-based practices for improving supports for students that had behavioral disorders. Due to the work conducted by the University of Oregon, they competed and received the grant which resulted in the development of the PBIS Center (Sugai et al., 2000). The National Technical Assistance (TA) Center on PBIS created the PBIS framework, which currently provides over 16,000 schools with support and professional development (Sugai & Simonsen, 2012).

Childs, Kincaid, George, and Gage (2015) defined Schoolwide Positive Behavior Interventions and Support as a systems approach to establishing the social culture and behavior supports needed for all children in a school to reach academic and social success. Positive Behavior Interventions and Support provides a framework for schools to create social and behavior supports to improve academic achievement and decrease behavioral problems by using evidence-based practices (Sugai & Horner, 2006). The features of PBIS include the following:

focusing on the prevention of problem behavior, a multi-tiered approach to intervention that matches behavior support to student needs, using data-based problem solving, and having systems that support evidence-based practices (Sailor, Dunlap, Sugai, & Horner, 2011). George and Childs (2012) noted effective PBIS schools are schools that implement the framework with fidelity.

Irvin, Tobin, Sprague, Sugai, and Vincent (2004) reported office referrals are a valid measure of a strong schoolwide PBIS program. Office referrals can also serve as a strong predictor of school failure (Farrington, 1989). Larsen, Steele, and Sailor (2006) analyzed office referrals over a three-year study and found office referrals decreased significantly in year two and year three of implementing PBIS. Wright and Dusek (1998) discussed several advantages of using office referrals for monitoring PBIS such as: they offer a standard format for data collection, are generally completed within temporal proximity of the infraction, and contain teacher-generated information on student behavior that can be useful for preventative consultative purposes. Morrison and Skiba (2001) noted though there are limitations when using office referrals as a measure of success. These limitations are as follows: potential for teacher bias in the documentation of student behavior, variations in teacher tolerance, and a lack of independent or objective data related to the behavior.

McIntosh (2005) noted office referrals in first and second grade were strong predictors of office referrals in third grade. In addition, he noted reading competence in kindergarten (as measured by the Dynamic Indicators of Basic Early Literacy Skills [DIBELS]) was a statistical predictor of office referrals in third grade. McIntosh also found the most powerful overall predictors of two or more discipline contacts in fifth grade were fourth grade office referrals and low DIBELS Oral Reading Fluency scores obtained in the winter of fifth grade. His research

also predicted which students would have two or more office referrals in fifth grade based on the DIBELS Phoneme Segmentation Fluency assessment given in the spring of a student's kindergarten year. Lastly, McIntosh found that students with high levels of escape-maintained behavior in fifth grade were those most likely to have significantly lower literacy skills (low DIBELS scores) as compared to peers.

Larsen, Steele, and Sailor (2006) completed a three-year study in an inner-city urban school. Their study found a reduction in office referrals and out of school suspensions improved standardized mathematic test scores over a three-year period; however, standardized reading test scores did not increase over the three years. Putnam, Handler, & O'Leary-Zonarich (2003) noted reading and math scores improved on state standardized tests scores after an urban elementary school implemented a behavior support intervention. Tobin and Sugai (1999) reported a correlation between student academic failure in high school with three or more suspensions in ninth grade. They also found a correlation between grade point average and specific types of office referrals for boys in sixth grade. Putnam, Handler, and O'Leary-Zonarich (2003) found classwide behavior supports increased the time students received academic instruction, which plays a role in academic achievement.

Horner, Sugai, Todd, and Lewis-Palmer (2005) documented findings associated with standardized tests and PBIS in a school district with nineteen elementary schools. The study compared pre and post standardized test scores of these nineteen elementary schools over a five-year period. Thirteen of the schools had implemented PBIS while six schools did not. Horner et al. (2005) compared the percentage of third graders that met statewide reading standards in year one with the percentage that met in year five. Ten out of the thirteen schools that adopted PBIS had improved outcomes. The change in percentage of students meeting standards ranged up to

15 percent in these schools. Only one of the six schools that not did implement PBIS demonstrated improvement.

The Georgia Department of Education (GaDOE) recognizes both districts and schools for the implementation of the PBIS framework (Positive Behavioral Interventions and Supports, 2015). Several steps must occur for a district or school to be recognized as a PBIS district or school. First the Local Education Agency (LEA) must have an active District Leadership Team, District Coordinator, and a district action plan. In addition, the LEA must have active support from the GaDOE. Prior to this study, the GaDOE awarded LEA's with one of three titles: installing, emerging, and operational. Currently the GaDOE added an additional recognition level: distinguished. The Georgia DOE's PBIS Levels of School Recognition was developed by the Georgia Department of Education's PBIS Unit with input from the Regional Educational Service Agencies (RESA) throughout the state, School Climate Specialists, and Georgia's PBIS District Coordinators. The purpose of the recognition system is to identify schools that exemplify best practices in the implementation of PBIS. Certain requirements must be meet at each level in order for a school to progress to the next level.

Methodology

The study used a mixed methods approach with a sequential explanatory design. A sequential explanatory design was conducted to investigate the association between PBIS and discipline referrals, Lexile levels and GMAS ELA proficiency, and perception of principals on these findings. A mixed-methods design focuses on combining both quantitative and qualitative data in either a single study or series of studies (Creswell & Plano Clark, 2011). Creswell and Plano Clark (2011) emphasized this approach enables a greater degree of understanding to be formulated verses a single approach used in a study. With this design, the quantitative data

informs the qualitative data selection process. Lastly, this method can help clarify and explain relationships found between variables while also allowing for the exploration of relationship between variables in-depth. There were two purposes in this mixed methods study. The primary purpose was to determine if there were significantly different outcomes between PBIS status and discipline referrals, Lexile levels, and GMAS ELA proficiency. The secondary purpose was for selected principals to explain the similarities or differences among schools by PBIS recognition level on the number of office referrals per 1,000 students, percentage of students reading at or above their grade level Lexile band, and scores on the English/language arts portion of the GMAS.

For the quantitative methods of data collection, archival data for the 2016-2017 school year was obtained from the Georgia Department of Education (GaDOE). Archival data used for the study were Georgia Milestones Assessment System (GMAS) results for each school, number of discipline referrals per 1,000 students per school, percentage of students on free or reduced lunch in each school, and schools participating in PBIS. The qualitative methods of data collection in this study used interviews of 12 principals through purposeful sampling. This process assisted with supporting or refuting quantitative findings. Creswell (2009) noted qualitative data collection can occur either by conducting observations or interviews. The interview process used open-ended questions in order to fully understand the rational for implementing PBIS as well as the advantages and disadvantages. This qualitative data was used to support quantitative findings or explain inconsistencies. A one-way analysis of variance was used to answer research question 1, and a factorial analysis of variance was used to answer research questions 2 and 3. The qualitative portion of the study consisted of principal interviews

across different levels of PBIS schools. The qualitative information was used to address research question 4.

The demographic data from the four groups of schools revealed schools not using PBIS had an enrollment that ranged from 222 to 1,375 students with a mean enrollment of 645.90 students, and a CCRPI score range of 45.3 to 100 with a mean CCRPI score of 74.14. Schools classified as installing PBIS schools had an enrollment that ranged from 162 to 1,308 students with a mean enrollment of 645.96 students, and a CCRPI score range from 47.3 to 104.5 with a mean CCRPI score of 72.20. Schools classified as emerging PBIS had an enrollment that ranged from 269 to 1,630 students with a mean enrollment of 672.71 students, and a CCRPI score range from 46.9 to 97.4 with a mean CCRPI score of 72.80. The operational PBIS schools group had an enrollment that ranged from 206 to 1,480 students with a mean enrollment of 665.75 students, and a CCRPI range from 49.4 to 97.5 with a mean CCRPI score of 77.42.

Results

Quantitative Findings

The purpose of research question 1 was to investigate whether the PBIS framework contributes to improvement of student behaviors. A one-way analysis of variance (ANOVA) was computed to determine whether there was a significant difference between the four PBIS recognition levels and number of office referrals per 1,000 students. The overall mean for all 661 schools on the number of office referrals per 1,000 students was $M = 157.60$ referrals. It is interesting to note schools that did not participate in PBIS had an average mean of 155.05 office referrals per 1,000 students. Schools designated as installing PBIS schools had average mean of 184.52 office referrals per 1,000 students. Schools designated as emerging PBIS schools had an

average mean of 162.62 office referrals per 1,000 students. Schools designated as operational PBIS schools had an average mean of 100.94 office referrals per 1,000 students.

The one-way ANOVA revealed a significant difference among office referrals per 1,000 students and schools PBIS recognition level in two different groups. The mean decrease from installing to operational was statistically significant ($t(257) = 3.53$, $p = .01$). In addition, the mean decrease from emerging to operational was also statistically significant ($t(227) = 3.55$, $p < .01$).

The purpose of research question 2 was to investigate whether there was a significant difference between a school's PBIS recognition level and levels of the percentage of students receiving free or reduced lunch in a school on the percentage of students reading at or above their grade level Lexile band on the GMAS. A factorial analysis of variance (ANOVA) was computed to determine whether there was a significant difference. This was a three-part question separated by third grade, fourth grade, and fifth grade.

Sub-question 2a focused on whether there was a significant difference between a school's PBIS recognition level and levels of the percentage of students receiving free or reduced lunch in a school on the percentage of students reading at or above their grade level Lexile band on the third grade GMAS. Descriptive statistics indicated the overall mean for all 661 schools on the percentage of students reading at or above their grade level Lexile band on the third grade GMAS was $M = 69.04$. Schools that did not participate in PBIS had a mean of 70.04 percent of students reading at or above their grade level Lexile band on the third grade GMAS. Schools designated as installing PBIS schools has a mean of 67.74 percent of students reading within their grad level Lexile band on the third grade GMAS. Schools designated as emerging PBIS schools had a mean of 67.19 percent of students reading at or above their grade level Lexile band

on the third grade GMAS. Schools designated as operational PBIS schools had a mean of 72.65 percent of students reading at or above their grade level Lexile band on the third grade GMAS.

Schools within the first quartile for percentage of students receiving free or reduced lunch had a mean of 85.39 percent of students reading at or above their grade level Lexile band on the third grade GMAS. Schools within the second quartile for percentage of students receiving free or reduced lunch had a mean of 74.69 percent of students reading at or above their grade level Lexile band on the third grade GMAS. Schools within the third quartile for percentage of students receiving free or reduced lunch had a mean of 64.67 percent of students reading at or above their grade level Lexile band on the third grade GMAS. Schools within the fourth quartile for percentage of students receiving free or reduced lunch had a mean of 51.31 percent of students reading at or above their grade level Lexile band on the third grade GMAS.

The Scheirer-Ray-Hare test resulted in a statistically significant main effect for a school's PBIS recognition level ($H(3, 645) = 9.27$, $p = .026$, $\omega^2 = .012$). A significant main effect for the levels of the percentage of students receiving free or reduced lunch was found ($H(3, 645) = 402.33$, $p < .001$, $\omega^2 = .608$). The interaction between the two variables (school's PBIS recognition level and levels of the percentage of students receiving free or reduced lunch) was not significant ($H(3, 645) = 2.51$, $p = .98$, $\omega^2 = -.001$). Further analysis revealed no significant difference between any of the four types of schools (non-PBIS, installing, emerging, and operational) on the mean of the percentage of students reading at or above their grade level Lexile band on the third grade GMAS. Lastly, the mean of the percentage of students reading at or above their grade level Lexile band on the third grade GMAS differed significantly between all four levels of the percentage of students receiving free or reduced lunch.

Sub-question 2b focused on whether there was a significant difference between a school's PBIS recognition level and levels of the percentage of students receiving free or reduced lunch in a school on the percentage of students reading at or above their grade level Lexile band on the fourth grade GMAS. Descriptive statistics indicated the overall mean for all 661 schools on the percentage of students reading at or above their grade level Lexile band on the fourth grade GMAS was $M = 57.69$. Schools that did not participate in PBIS had a mean of 58.24 percent of students reading at or above their grade level Lexile band on the fourth grade GMAS. Schools designated as installing PBIS schools had a mean of 56.08 percent of students reading at or above their grade level Lexile band on the fourth grade GMAS. Schools designated as emerging PBIS schools had a mean of 55.39 percent of students reading at or above their grade level Lexile band on the fourth grade GMAS. Schools designated as operational PBIS schools had a mean of 63.54 percent of students reading at or above their grade level Lexile band on the fourth grade GMAS.

Schools within the first quartile for percentage of students receiving free or reduced lunch had a mean of 78.03 percent of students reading at or above their grade level Lexile band on the fourth grade GMAS. Schools within the second quartile for percentage of students receiving free or reduced lunch had mean of 63.14 percent of students reading at or above their grade level Lexile band on the fourth grade GMAS. Schools with the third quartile for percentage of students receiving free or reduced lunch had a mean of 50.55 percent of students reading at or above their grade level Lexile band on the fourth grade GMAS. Schools within the fourth quartile for percentage of students receiving free or reduced lunch had a mean of 38.91 percent of students reading at or above their grade level Lexile band on the fourth grade GMAS.

The Scheirer-Ray-Hare test resulted in a statistically significant main effect for a school's PBIS recognition level ($H(3, 645) = 14.89$, $p < .001$, $\omega^2 = .021$). A significant main effect on the levels of the percentage of students receiving free or reduced lunch was found ($H(3,645) = 428.40$, $p < .001$, $\omega^2 = .647$). The interaction between the two variables (school's PBIS recognition level and levels of the percentage of students receiving free or reduced lunch) was not significant ($H(3, 645) = 2.18$, $p = .99$, $\omega^2 = -.001$). Further analysis revealed the mean percentage of students reading at or above their grade level Lexile band on the fourth grade GMAS differed significantly between the non-PBIS schools and operational PBIS schools' group. The mean percentage of students reading at or above their grade level Lexile band on the fourth grade GMAS differed significantly between the installing PBIS schools and operational PBIS schools' group. The mean percentage of students reading at or above their grade level Lexile band on the fourth grade GMAS differed significantly between the emerging PBIS schools and operational PBIS schools' group. Lastly, the results revealed the mean of the percentage of students reading at or above their grade level Lexile band on the fourth grade GMAS differed significantly between all four levels of the percentage of students receiving free or reduced lunch.

Sub-question 2c focused on whether there was significant difference between a school's PBIS recognition level and levels of the percentage of students receiving free or reduced lunch in a school on the percentage of students reading at or above their grade level Lexile band on the fifth grade GMAS. Descriptive statistics indicated the overall mean for all 661 schools on the percentage of students reading at or above their grade level Lexile band on the fifth grade GMAS was $M = 68.34$. Schools that did not participate in PBIS had a mean of 69.38 percent of students reading at or above their grade level Lexile band on the fifth grade GMAS. Schools designated

as installing PBIS schools had a mean of 66.81 percent of students reading at or above their grade level Lexile band on the fifth grade GMAS. Schools designated as emerging PBIS schools had a mean of 66.58 percent of students reading at or above their grade level Lexile band on the fifth grade GMAS. Schools designated as operational PBIS schools had a mean of 72.18 percent of students reading at or above their grade level Lexile band on the fifth grade GMAS.

Schools within the first quartile for percentage of students receiving free or reduced lunch had a mean of 85.6 percent of students reading at or above their grade level Lexile band on the fifth grade GMAS. Schools within the second quartile for percentage of students receiving free or reduced lunch had a mean of 73.11 percent of students reading at or above their grade level Lexile band on the fifth grade GMAS. Schools within the third quartile for percentage of students receiving free or reduced lunch had a mean of 63.2 percent of students reading at or above their grade level Lexile band on the fifth grade GMAS. Schools within the fourth quartile for percentage of students receiving free or reduced lunch had a mean of 51.59 percent of students reading at or above their grade level Lexile band on the fifth grade GMAS.

The Scheirer-Ray-Hare test resulted in a statistically significant main effect for a school's PBIS recognition level ($H(3, 645) = 9.73$, $p = .02$, $\omega^2 = .013$). A significant main effect on the levels of the percentage of students receiving free or reduced lunch was found ($H(3,645) = 414.59$, $p < .05$, $\omega^2 = .626$). The interaction between the two variables (school's PBIS recognition level and levels of the percentage of students receiving free or reduced lunch) was not significant ($H(3, 645) = 2.25$, $p = .99$, $\omega^2 = -.001$). Further analysis revealed the mean percentage of students reading at or above their grade level Lexile band on the fifth grade GMAS differed significantly between the installing PBIS schools and operational PBIS schools' group. The mean percentage of students reading at or above their grade level Lexile band on the fifth

grade GMAS differed significantly between the emerging PBIS schools and operational PBIS schools' group. Lastly, the results revealed the mean of the percentage of students reading at or above their grade level Lexile band on the fifth grade GMAS differed significantly between all four levels of the percentage of students receiving free or reduced lunch.

The purpose of research question 3 was to investigate whether there is a significant difference between a schools' PBIS recognition level and levels of the percentage of students receiving free or reduced lunch in a school on the percentage of students scoring either a Level II, Level III, or Level IV on the third grade English/language arts portion of the GMAS. A factorial analysis of variance (ANOVA) was computed to determine whether there was a significant difference. This was a three-part question separated by third grade, fourth grade, and fifth grade.

Sub question 3a focused on whether there was a significant difference between a schools' PBIS recognition level and levels of the percentage of students receiving free or reduced lunch on the percentage of students scoring either a Level II, Level III, or Level IV on the English/language arts portion on the third grade GMAS. Descriptive statistics indicated the overall mean for all 661 schools on the percentage of students scoring either a Level II, Level III, or Level IV on the third grade English/language arts portion of the GMAS was $M = 67.93$. Schools that did not participate in PBIS had a mean of 68.91 percentage of students scoring either a Level II, Level III, or Level IV on the third grade English/language arts portion of the GMAS. Schools designated as installing PBIS schools had a mean of 66.32 percentage of students scoring either a Level II, Level III, or Level IV on the third grade English/language arts portion of the GMAS. Schools designated as emerging PBIS schools had a mean of 66.37 percentage of students scoring either a Level II, Level III, or Level IV on the third grade

English/language arts portion of the GMAS. Schools designated as operational PBIS schools had a mean of 71.7 percentage of students scoring either a Level II, Level III, or Level IV on the third grade English/language arts portion of the GMAS.

Schools within the first quartile for percentage of students receiving free or reduced lunch had a mean of 85.26 percentage of students scoring either a Level II, Level III, or Level IV on the third grade English/language arts portion of the GMAS. Schools within the second quartile for percentage of students receiving free or reduced lunch had a mean of 73.79 percentage of students scoring either a Level II, Level III, or Level IV on the third grade English/language arts portion of the GMAS. Schools within the third quartile for percentage of students receiving free or reduced lunch had a mean of 63.12 percentage of students scoring either a Level II, Level III, or Level IV on the third grade English/language arts portion of the GMAS. Schools within the fourth quartile for percentage of students receiving free or reduced lunch had mean of 49.42 percentage of students scoring either a Level II, Level III, or Level IV on the third grade English/language arts portion of the GMAS.

The Scheirer-Ray-Hare test resulted in a statistically significant main effect for a school's PBIS recognition level ($H(3, 645) = 8.08$, $p = .04$, $\omega^2 = .011$). A significant main effect on the levels of the percentage of student receiving free or reduced lunch was found ($H(3,645) = 394.09$, $p < .001$, $\omega^2 = .595$). The interaction between the two variables (school's PBIS recognition level and levels of the percentage of students receiving free or reduced lunch) was not significant ($H(3, 645) = 3.06$, $p = .96$, $\omega^2 = -.0003$). Further analysis revealed no significant difference between any of the four types of schools (non-PBIS, installing, emerging, and operational) on the mean of the percentage of students reading at or above their grade level Lexile band on the third grade GMAS. Lastly, results revealed the mean of the percentage of

students scoring either a Level II, Level III, or Level IV on the third grade English/language arts portion of the GMAS differed significantly between all four levels of the percentage of students receiving free or reduced lunch.

Sub question 3b focused on whether there was a significant difference between a schools' PBIS recognition level and levels of the percentage of students receiving free or reduced lunch on the percentage of students scoring either a Level II, Level III, or Level IV on the English/language arts portion on the fourth grade GMAS.

Descriptive statistics indicated the overall mean for all 661 schools on the percentage of students scoring either a Level II, Level III, or Level IV on the fourth grade English/language arts portion of the GMAS was $M = 71$. Schools that did not participate in PBIS had a mean of 71.76 percentage of students scoring either a Level II, Level III, or Level IV on fourth grade English/language arts portion of the GMAS. Schools designated as installing PBIS schools had a mean of 69.27 percentage of students scoring either a Level II, Level III, or Level IV on the fourth grade English/language arts portion of the GMAS with an average mean of 69.27. Schools designated as emerging PBIS schools had a mean of 69.35 percentage of students scoring either a Level II, Level III, or Level IV on the fourth grade English/language arts portion of the GMAS. Schools designated as operational PBIS schools had a percent of 75.61 percentage of students scoring either a Level II, Level III, or Level IV on the fourth grade English/language arts portion of the GMAS.

Schools within the first quartile for percentage of students receiving free or reduced lunch had a mean of 88.02 percentage of students scoring either a Level II, Level III, or Level IV on the fourth grade English/language arts portion of the GMAS. Schools within the second quartile for percentage of students receiving free or reduced lunch had a mean of 76.37 percentage of

students scoring either a Level II, Level III, or Level IV on the fourth grade English/language arts portion of the GMAS. Schools with the third quartile for percentage of students receiving free or reduced lunch had mean of 66.08 percentage of students scoring either a Level II, Level III, or Level IV on the fourth grade English/language arts portion of the GMAS. Schools within the fourth quartile for percentage of students receiving free or reduced lunch had a mean of 53.42 percentage of students scoring either a Level II, Level III, or Level IV on the fourth grade English/language arts portion of the GMAS.

The Scheirer-Ray-Hare test resulted in a statistically significant main effect for a school's PBIS recognition level ($H(3, 645) = 10.72$, $p = .01$, $\omega^2 = .015$). A significant main effect on the levels of the percentage of students receiving free or reduced lunch was found ($H(3,645) = 412.64$, $p < .001$, $\omega^2 = .623$). The interaction between the two variables (school's PBIS recognition level and levels of the percentage of students receiving free or reduced lunch) was not significant ($H(3, 645) = 2.44$, $p = .98$, $\omega^2 = -.001$). Further analysis revealed the mean percentage of students scoring either a Level II, Level III, or Level IV on the fourth grade English/language arts portion of the GMAS differed significantly between the installing PBIS schools and operational PBIS schools. The mean percentage of students scoring either a Level II, Level III, or Level IV on the fourth grade English/language arts portion of the GMAS differed significantly between the emerging PBIS schools and operational PBIS schools. Lastly, the results revealed the mean of the percentage of students scoring either a Level II, Level III, or Level IV on the fourth grade English/language arts portion of the GMAS differed significantly between all four levels of the percentage of students receiving free or reduced lunch.

Sub question 3c focused on whether there was a significant difference between a schools' PBIS recognition level and levels of the percentage of students receiving free or reduced

lunch on the percentage of students scoring either a Level II, Level III, or Level IV on the English/language arts portion on the fifth grade GMAS. Descriptive statistics indicated the overall mean for all 661 schools on the percentage of students scoring either a Level II, Level III, or Level IV on the fifth grade English/language arts portion of the GMAS was $M = 72.66$. Schools that did not participate in PBIS has a mean of 72.66 percentage of students scoring either a Level II, Level III, or Level IV on fifth grade English/language arts portion of the GMAS. Schools designated as installing PBIS schools had a mean of 70.63 percentage of students scoring either a Level II, Level III, or Level IV on the fifth grade English/language arts portion of the GMAS. Schools designated as emerging PBIS schools had a mean of 69.74 percentage of students scoring either a Level II, Level III, or Level IV on the fifth grade English/language arts portion of the GMAS. Schools designated as operational PBIS schools had a mean of 75.6 percentage of students scoring either a Level II, Level III, or Level IV on the fifth grade English/language arts portion of the GMAS.

Schools within the first quartile for percentage of students receiving free or reduced lunch had a mean of 88.24 percentage of students scoring either a Level II, Level III, or Level IV on the fifth grade English/language arts portion of the GMAS. Schools within the second quartile for percentage of students receiving free or reduced lunch had a mean of 76.91 percentage of students scoring either a Level II, Level III, or Level IV on the fifth grade English/language arts portion of the GMAS. Schools with the third quartile for percentage of students receiving free or reduced lunch had a mean of 66.91 percentage of students scoring either a Level II, Level III, or Level IV on the fifth grade English/language arts portion of the GMAS. Schools within the fourth quartile for percentage of students receiving free or reduced lunch had a mean of 54.95

percentage of students scoring either a Level II, Level III, or Level IV on the fifth grade English/language arts portion of the GMAS.

The Scheirer-Ray-Hare test resulted in a statistically significant main effect for a school's PBIS recognition level ($H(3, 645) = 9.56$, $p = .02$, $\omega^2 = .013$). A significant main effect on the levels of the percentage of student receiving free or reduced lunch was found ($H(3,645) = 413.83$, $p < .001$, $\omega^2 = .625$). The interaction between the two variables (school's PBIS recognition level and levels of the percentage of student receiving free or reduced lunch) was not significant ($H(3, 645) = 3$, $p = .96$, $\omega^2 = 1.28$). The results revealed the mean percentage of students scoring either a Level II, Level III, or Level IV on the fifth grade English/language arts portion of the GMAS differed significantly between the emerging PBIS schools and operational PBIS schools. In addition, the results revealed the mean of the percentage of students scoring either a Level II, Level III, or Level IV on the fifth grade English/language arts portion of the GMAS differed significantly between all four levels of the percentage of students receiving free or reduced lunch.

Qualitative Findings

Principals were selected through purposeful sampling to participate in interviews involving five questions designed to provide a comprehensive understanding of the quantitative findings. The interviews captured responses of three principals from the four different types of schools examined in this study: non-PBIS schools, installing PBIS schools, emerging PBIS schools, and operational PBIS schools. The interview questions and responses revealed several themes. The themes were: driving forces that determine to implement PBIS and advantages and disadvantages that come with using or not using the PBIS framework. In addition, the final three

interview questions gathered responses from principals after they were provided the quantitative findings of this study.

Principals for non-PBIS schools indicated there was not a need to implement the PBIS framework with their school. Discipline issues were not considered to be a major issue within non-PBIS schools. Principal Jones stated professional learning conducted in the past provided teachers with tips and tools to reduce discipline issues. Principal Alexander discussed there was already a heavy focus on recognizing academic achievement as well as providing quarterly incentives for student behavior. It was evident the principals within non-PBIS schools already felt a great deal of pressure due to state accountability and noted implementing the PBIS framework would add additional responsibilities on the entire faculty. Based on current data (behavioral and academic) and current climate scores, there was not a need to implement the PBIS framework. Principal Smith mentioned implementing the PBIS framework would give the school an additional five points on their school climate rating but stated it was not worth the extra five points due to all of the work that would be required to implement the program.

The three principals for non-PBIS schools discussed advantages and disadvantages that come along with not having a PBIS framework. The main advantage to implementing the PBIS framework is the framework allows for consistency with addressing behavior schoolwide. In addition, Principal Jones and Alexander, mentioned the PBIS framework would assist their schools with stating rules and expectations in a positive light. Principal Smith indicated the framework would also allow for adults to interact with the students in a more positive manner. All three principals believed the PBIS framework would assist a school with improving the climate whether that school already had a good climate or not. Principal Alexander stated,

"There is always room to grow. Regardless if the discipline numbers are low, the framework would help a school get discipline numbers even lower, so it is a win-win situation."

A disadvantage discussed by the principals of non-PBIS schools was the PBIS framework is considered a Tier I intervention, meaning it is geared toward all students within the school. The framework does not provide interventions or assistance for students that are not successful with PBIS and need additional support. In addition, Principal Smith stated a disadvantage that comes with implementing the PBIS framework is staff buy-in. As with any initiative, especially with one that forces individuals to change his or her beliefs, buy-in can be a significant struggle. Principal Smith believed this is why the state created a three-step process to fully implement PBIS because it takes time to change the way adults think.

Principals from PBIS schools noted student discipline was the primary reason for implementation of the PBIS framework within their school/district. Principals indicated a need for decreasing the overall number of discipline referrals, ISS days, and OSS days within the school. Principal Pate indicated the framework teaches students how to positively conduct themselves in school, which ultimately carries over into everyday life. Principal Johnson and Pate emphasized a positive climate can improve academics, which ultimately improves a school's CCRPI score. Of the eight principals from PBIS schools interviewed, only one noted the implementation of PBIS was a district mandate. Principal Haynes indicated her school was not told why they were having to implement the PBIS framework. Haynes stated the school staff were upset about having to implement another initiative since they were not given the opportunity to provide feedback or ask questions regarding the program. Ultimately, Principal Haynes stated this resulted in teachers not following the framework and the school would have to start again with training next year.

The remaining eight principals from PBIS schools discussed advantages and disadvantages that come along with not having a PBIS framework. The majority of principals from schools using the PBIS framework agreed with non-PBIS principals an advantage for implementing PBIS was a reduction in discipline referrals. The majority of principals indicated the framework provides a clear and consistent set of rules across the school setting. Principal Long specified, "The framework provides schoolwide expectations, so the expectations the teachers have translate from the teachers' classrooms to the hallway, to the cafeteria, all the way to the bus." Principal Pate noticed the framework brought consistency to the school. Students knew the consequences were consistent, and that one student would not receive a different consequence than another student for the same behavior. Principals discussed how this was beneficial especially with student mobility. Expectations remain the same within the district so students are not relearning new expectations if they transfer from one school to another within the district.

The only disadvantages mentioned from principals from PBIS schools was teacher buy-in and cost of implementation. Principal Haynes referred again to the fact that mandates do not result in teacher buy-in. When a school is required to implement the PBIS framework without input from the teachers, it creates issues with teacher buy-in. Principal Haynes indicated teacher buy-in is crucial for programs to work effectively within schools. Principal Chastain noted some teachers believe in "old school" punishment, meaning teachers focus on what the student is doing wrong versus what the student is doing right. Principal Chastain stated it can be hard to change these specific teachers' mindset, and these teachers usually do not buy-in to PBIS. Principal Gaddy noted a disadvantage for her school was funding. Principal Gaddy stated that developing rewards and finding a way to finance such rewards can be challenging. Principal

Gaddy mentioned not all rewards have to be tangible but some need to be and this can present a challenge to schools that lack financial funds for PBIS programs.

Principals were asked to explain the similarities or differences among schools by PBIS recognition level on the number of office referrals per 1,000 students. All three principals of the schools not implementing PBIS on their campus indicated they believe the main reason there was no significant difference between the non-PBIS group and PBIS groups was due to the schools within the non-PBIS group not having a need for PBIS. In addition, all three principals mentioned these non-PBIS schools may not be accurately reporting discipline referrals correctly. Wright and Dusek (1998) reported while utilizing office referrals as a primary way schools can gauge the effects of their PBIS framework, they offered caution when doing this due to reporting and recording issues and teacher's interpretation of what actually constitutes a valid referral. These three principals' thoughts were the Georgia PBIS framework has been around for several years and schools that have severe discipline issues may have already implemented the PBIS framework within their school, leaving only schools with little discipline issues left in the non-PBIS group.

Lastly, with the PBIS framework comes consistency as well as a clear definition of an office referral as well as classroom managed behavior. The three principals discussed throughout their career, they have noted that districts have different expectations for entering discipline referrals into the student information system and this process is not consistent across schools within the state of Georgia. They believe this could contribute to why there was no significant difference between the non-PBIS group and PBIS groups. However, all three principals discussed how there was a significant difference between the PBIS groups. Each principal agreed the Georgia's three tier PBIS process works. Principal Smith stated, "It is

evident based on these findings that the number of referrals decrease as schools move from an installing school to an operational school. This model is building capacity within the school over a three-year process."

The majority of responses from the principals for PBIS schools matched the responses from the principals from non-PBIS schools. Several principals from schools that have implemented PBIS mentioned the schools within the non-PBIS group were likely schools that did not need to implement PBIS within their school. Principals Long, Gaddy, Bruce, and Little stated the non-PBIS group had a mean very close to the operational PBIS group which indicated either they already had low discipline referrals or a positive climate within their school. Principals Johnson and Chastain noted those schools within the non-PBIS group did not need the framework and that teachers most likely would not buy-in due to the fact that the framework was not needed. Principal Chastain discussed in detail that teachers would need to see a reason for implementing an initiative and that maybe these non-PBIS schools do not have a need for the framework.

Principals Haynes, Pate, and Bruce mentioned the reason the non-PBIS group did not have a significant difference between any of the PBIS groups was due schools not having protocols in place for entering referrals. Principal Bruce discussed how depending on the time of the day, some referrals may be entered while others may not. Principal Bruce stated some non-PBIS schools may handle it one way, while others handle it a different way. However, PBIS schools have procedures and protocols in place for identifying minor/major referrals as well as what must be entered into the student information system.

Several principals noted the significant difference in discipline referrals as PBIS schools moved from installing to operational. Principals mentioned this was consistent with what they

have seen with PBIS. Principal Chastain discussed how research typically supports first year of PBIS implementation results in an increase in student office referrals; however, as you move toward operational status you should see a decrease in overall student office referrals. Principal Pate also emphasized the results were promising and provided evidence the Georgia PBIS model works as schools progress from installing to operational.

Next, principals were asked to explain the similarities or differences among schools by PBIS recognition level on the percentage of students reading at or above their grade level Lexile band. Principals from non-PBIS schools indicated they believe the main reason there was no significant difference found between any groups on the percentage of students reading at or above their grade level Lexile band on the third grade GMAS was due to the fact third grade students are first time test takers. GMAS testing begins in third grade and the majority of these schools take the GMAS online. Principal Alexander believed many schools do not start preparing students for the GMAS until third grade. Furthermore, Principal Alexander noted the curriculum changes, in terms of learning, from second grade to third grade. The curriculum within the state of Georgia requires students to move from dependent readers to independent readers as they progress from second grade to third grade. However, all three principals stated the significant difference within the PBIS groups within fourth grade and fifth grade overall supports the Georgia PBIS model and provides evidence it is effective. Principal Alexander noted, "As you progress through the tiers (installing, emerging, and operational) you will see an improvement in Lexile levels because those schools experience less discipline issues and have a positive climate which ultimately impacts student achievement."

The majority of the principals from schools that have implemented the PBIS framework noted no significant difference was found between any group on the percentage of students

reading at or above their grade level Lexile band on the third grade GMAS was due to the fact third grade students are first time test takers. Principal Chastain stated, "Students are not prepared to take the GMAS until third grade. It is kind of like a shock for them when they take it for the first time because it is a difficult test. These same students know what to expect when they take it in fourth and fifth grade."

Several principals also noted the change within the curriculum from second grade to third grade was likely the reason none of the groups showed any significant difference on the percentage of students reading at or above their grade level Lexile band on the third grade GMAS. Principal Bruce spoke about how the standards change between the two grade levels and third grade students have to transition from independent readers to dependent readers which is difficult for third graders. Principal Long discussed how third graders really are not required to become dependent readers until the middle of the school year, and they have to take the GMAS within a few weeks of transitioning to a dependent reader which is not enough preparation.

The majority of the principals from PBIS schools discussed how he results within the PBIS groups in fourth and fifth grade shows as schools progress toward an operational status, Lexile levels increase. Principal Gaddy noted this change could be due to school climate. Schools that are operational have fully implemented PBIS with fidelity, which Principal Gaddy emphasized impacts climate. Principal Long stated as a school progresses toward operational, discipline referrals decrease which is evident in research question 1. Long stated these schools have less referrals so they are able to focus more on teaching academics and less on teaching behavior.

Finally, principals were asked to explain the similarities or differences among schools by PBIS recognition level on the scores of the English/language arts GMAS. All three of the principals from schools not implementing PBIS indicated they believe the results for the percentage of students scoring either a Level II, Level III, or Level IV on the English/language arts portion of the third, fourth, and fifth grade GMAS were due to the same reasons mentioned in the previous question. In third grade, Principals Alexander and Smith reiterated no significant difference was found between any groups on the percentage of students scoring either a Level II, Level III, or Level IV on the English/language arts portion of the third GMAS due to the fact third grade students are first time test takers. Principal Jones reiterated again the reason was the majority of schools across the state of Georgia use a self-contained model in third grade. Lastly, all three principals indicated the overall data in fourth grade and fifth grade supports the Georgia PBIS model works.

All nine principals from schools that have implemented the PBIS framework also reiterated their responses from the previous question since the results were very similar. Several principals re-emphasized the reason no significant difference was found between any groups on the percentage of students scoring either a Level II, Level III, or Level IV on the English/language arts portion of the third GMAS was due to the fact third grade students are first time test takers. Several principals noted again the change within the curriculum from second grade to third grade was likely the reason no significant differences were found between any groups on the percentage of students scoring either a Level II, Level III, or Level IV on the English/language arts portion of the third GMAS. However, the majority of principals noted again the significant differences found between the PBIS groups on the percentage of students scoring either a Level II, Level III, or Level IV on the English/language arts portion of the fourth

grade and fifth grade GMAS validates the Georgia PBIS three-step process works to improve academics and build capacity to sustain the PBIS framework over time.

Overall, the majority of principals pointed out a significant difference between PBIS groups were found in almost all research questions. One cannot discount the fact schools using the PBIS framework have a decrease in discipline referrals and an increase in the percentage of students scoring within their Lexile band and percentage of students scoring within a Level II, Level III, and Level IV on the GMAS as schools' progressive from an installing PBIS school to an operational PBIS school. The responses principals provided during the interviews favored the use of the PBIS framework. These responses also served as evidence the Georgia PBIS framework impacts student discipline and student achievement.

Limitations and Assumptions

The researcher in this study has worked in a non-PBIS school, installing PBIS school, and emerging PBIS school. The researcher also implemented the PBIS framework within his school while serving as a principal. The researcher acknowledges a certain amount of bias could exist, especially during the qualitative portion of this study. The researcher acknowledges schools in this study may have spent more than one year in their current PBIS status. Certain requirements must be meet at the end of the year for a school to progress to the next level. A school's duration within its current PBIS level was not factored into the findings of this study. Additionally, teacher quality and experience are not examined in this study as well.

The study used archival data from spring 2017 GMAS administration. Data results from the spring 2018 GMAS administration were not available during the initiation of this study. Another limitation to the study was the timing of the data collection. GMAS results used in this study were collected from the spring 2018 administration, and the qualitative interviews were

collected in the spring of 2019. It is typical for the quantitative portion to be conducting prior to the qualitative portion in a sequential explanatory design; however, the gap in the amount of time between the two could be reduced to take place during the same school year.

Lastly, schools that participated in the PBIS framework may impact the study due to these groups being considered pre-existing groups. Pre-existing groups may differ in important ways that may account for some of the differences in the outcomes after the intervention; hence, providing weaker evidence of the intervention's effects (Fraenkel & Wallen, 2009). It is difficult to rule out if any of the schools within the PBIS groups or non-PBIS groups use additional interventions that may impact the findings of the study.

Suggestions for Future Research

Since questions arose regarding the non-PBIS groups in the interviews, future research efforts could examine more closely why non-PBIS schools choose or chose not to implement the PBIS framework as well as those schools' demographics and geography. Several participants in the interview mentioned it appeared these non-PBIS school did not have a need for the PBIS framework within their school. Therefore, it is suggested this study could be replicated using disciplinary procedures as an indicator for statistical difference. In addition, this study could be used as a framework for qualitative research, specifically a case study which would allow for a deeper understanding of why a school chooses not to implement the PBIS framework.

In addition, future research could replicate this study to examine if there is a statistically significant difference in the performance of kindergarten, first, and second grade students. This study focused on student achievement data that was derived from the GMAS. No significant difference was found between any groups in third grade in regards to Lexile score and ELA/language arts Level II, Level III, and Level IV proficiency. Many of the principals

interviewed believed third graders being first time test takers was a possible reason. Principals felt the GMAS may be too rigorous for third graders since students are not exposed to this type of assessment until the end of the third grade. Principals noted there is a big shift in the state standards from second grade to third grade. Students are learning how to read up until second grade. Once students begin third grade, they are required to use their independent reading skills in order to learn new content. Students basically move from being very dependent on the teacher to having to be very independent by the end of third grade. Future research could focus on different assessments used in schools across the state of Georgia in grades kindergarten, first, and second grade. All kindergarten students across the state of Georgia participate in the Georgia Kindergarten Inventory of Developing Skills (GKIDS). GKIDS is a year-long, performance-based assessment aligned to the state-mandated content standards. At the end of the year, summary reports and individual student reports are generated based on the data the teacher has entered throughout the school year. This assessment could be used as an alternative to the GMAS. Many schools also participate in the Dynamic Indicators of Basic Early Literacy Skills test (DIBELS) in grades kindergarten through third grade. DIBELS measures how students are performing on important reading skills. DIBELS is another assessment that could be used as an alternative to GMAS. This would allow for a broader range since this study solely focused on a standardized test given to third, fourth, and fifth graders.

Conclusion

This study serves as one of the very few types of research conducted on the Georgia's DOE framework for PBIS. Four dependent variables were used to measure significant differences in kindergarten through fifth grade discipline incidents by a school's PBIS status and overall schools' accountability indicators in grades third through fifth grade. Additionally,

twelve interviews were conducted to help make sense of the quantitative findings. One thousand and fifty-eight schools were examined at the onset of this study and via random sampling, 661 schools were chosen to participant.

Research question 1 provided an understanding as to whether a school's PBIS status (non-PBIS installing, emerging, or operational) could decrease or increase the number of office referrals within the school. Research question 2 provided an understanding as to whether a school's PBIS status (non-PBIS installing, emerging, or operational) and percentage of students receiving free or reduced lunch could decrease or increase the percentage of students reading at or above their grade level Lexile band on the GMAS in grades third through fifth. Research question 3 provided an understanding as to whether a school's PBIS status (non-PBIS installing, emerging, or operational) and percentage of students receiving free or reduced lunch could decrease or increase the percentage of students score either a Level II, Level III, or Level IV on the English/language arts portion of the GMAS in grades third through fifth.

As noted in the research, PBIS can improve climate and student outcomes and increase student achievement data over a one-year period (Reynolds, 2012). The findings of this study have tremendous implications for schools, especially those whose discipline data and GMAS achievement data illustrate a need for improvement. While discussing whether to implemented PBIS, heavy emphasis should be given to implementing the framework with fidelity. Whatever the case may be, local decisions drive what best meets the needs of a school and its community; however, all stakeholders involved in this decision must understand there is a minimum of a four-year commitment to be recognized as a distinguished PBIS school. Requirements must be meet yearly in order for a school to progress toward a distinguished status.

Throughout the interview process, it was evident why close to half of elementary schools across the state of Georgia have implemented the PBIS framework. First, the Georgia Department of Education awards schools with an additional five points on yearly climate ratings as an incentive to implement PBIS. Climate ratings for individual schools are published yearly and take into consideration parent, teacher, and student survey results, school attendance, out of school suspensions, and major disciplinary referrals stemming from fighting, drugs, weapons, bullying, and any type of harassment. Schools can receive up to five stars. Regardless if a school has little to no discipline issues, schools can always make improvements with climate. The PBIS framework offers schools a way to achieve this, while the Georgia Department of Education rewards schools for implementing the framework.

Accountability with Georgia schools is measured through the Georgia College and Career Readiness Index (CCRPI). CCRPI uses an array of data to calculate a school's score. Two data points that CCRPI incorporates is percentage of third and fifth graders reading within their Lexile Band, and percentage of students scoring either a Level II, Level III, or Level IV on the English/language arts portion of the GMAS. Schools are constantly seeking interventions and/or strategies for improving student reading levels as measured by Lexile. While no significant difference was found between a school's PBIS status and the percentage of students reading within their Lexile band on the third grade GMAS, a significant difference was found between all four types of schools on the fourth grade GMAS and between the three types of PBIS schools on the fifth grade GMAS. Principal Long noted during the interview process the PBIS framework makes school more fun. Long stated this improves student attendance and student engagement. In the ever-changing blueprint of accountability, Principal Pate stated her school is looking for any advantage to improve school CCRPI scores and implementing the PBIS

framework was a win-win situation, especially now after reviewing the findings regarding Lexile levels.

While no significant difference was found between a school's PBIS status and the percentage of students scoring a Level II, Level III, or Level IV on the English/language arts portion of the GMAS in third grade, a significant difference was found between all three types of PBIS schools on the fourth grade GMAS and between the emerging and operational PBIS schools on the fifth grade GMAS. The results regarding GMAS proficiency is promising as this is another way for schools to improve their overall CCPRI score. Overall, the results show a school must reach the operational status to receive the best results. Principal Nunn stated while it does take a while to see results, the results are evident and obviously a reflection of the PBIS framework. Principal Nunn continued to discuss that any new initiative usually results in an implementation dip; however, if you continue to implement the program with fidelity, schools will reap the benefits.

Although this study failed to show any significant differences between PBIS status and percentage of students reading within their Lexile level and PBIS status and percentage of students scoring either a Level II, Level III, or Level IV on the GMAS in third grade, it did support the overall Georgia PBIS framework builds capacity as schools' progress toward the operational status. As schools continue to attempt the transition to the PBIS framework or transition within the PBIS levels, decisions as to whether to implement PBIS or to progress through the PBIS tiers will continue to be researched, especially since Georgia added an additional recognition level this past school year. The findings of this study can certainly help schools with future decisions regarding implementation. However, most importantly, schools must have a clear understanding of their specific needs as well a good understanding of climate

within the school and community. As history has shown, educational fads, prior and current research trends, funding opportunities, accountability, and perception will continue to factor into the decisions of district leaders and elected boards of education. Regardless of the driving force of a decision, the end result should always be what is educationally best for students. PBIS allows educators to develop positive and safe environments that promote strong relationships with their students. Through PBIS, educators have the ability to maximize academic instruction resulting in an increase in student achievement while supporting social and emotional development. It is evident that the PBIS framework provides a continuum of supports that allow educators to address a full range of student needs.

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APPENDIX A:

Letter to Expert Panel

Expert Panel Review

Positive Behavior Interventions & Supports Influence on Elementary Student Discipline and Reading Achievement Interview Results & Interview Questions

Dear Expert Panel Reviewer:

Your knowledge and expertise will provide verification of questions asked regarding the results for the following dissertation: *Positive Behavior Interventions & Supports Influence on Elementary Student Discipline and Reading Achievement.* Your feedback will allow for the improvement of results presented and future interview questions by rewording or including additional information or questions. Your help is essential, and I appreciate the time that you are taking to examine the questions.

The Positive Behavior Interventions & Supports Influence on Elementary Student Discipline and Reading Achievement Summary of Results contains the results of the three research questions followed by interview questions that will be asked. The purpose of the interview questions is to investigate how principals explain the similarities or differences among schools by PBIS recognition level on the number of office referrals, percentage of students reading at or above their grade level Lexile band, and scores on the ELA portion of the Georgia Milestones Assessment System (GMAS). This form will be provided to four specialists in the area of education prior to asking four interview questions. Please review the results and provide any feedback that will assist the interviewee in understanding the results. In addition, please review the questions and provide necessary feedback to ensure the interviewee understands what is being asked. If no feedback is needed, please let me know.

Thank you for your time and support!

Sincerely,

Cisco Diaz

APPENDIX B:

Expert Panel Review Results and Interview Questions

Positive Behavior Interventions & Supports Influence on Elementary Student Discipline and Reading Achievement Summary of Results

Below is a summary of each research question along with findings. A total of 661 Georgia elementary schools were used for the study. Data was taken from the 2016-2017 school year. For the free or reduced variable, schools were divided into four quartiles based on their percentage of students on free or reduced lunch (Quartile 1: 0-48.27%, Quartile 2: 48.28-74.56%, Quartile 3: 74.57-94.52%, and Quartile 4: 94.53-100%).

Question One

Is there a significant difference between schools recognized as a non-PBIS schools, installing PBIS schools, emerging PBIS schools, or operational PBIS schools on the number of office referrals per 1,000 students in grades kindergarten through fifth grade?

Purpose:

The purpose of research question one was to investigate whether the PBIS framework contributes to improvement of student behaviors. In order to answer this research question, a one-way analysis of variance (ANOVA) was computed to determine whether there was a significant difference between the four PBIS recognition levels and number of office referrals per 1,000 students.

Findings:

Descriptive Statistics of Office Referrals per 1,000 Students by PBIS Recognition Levels

Group	N	*M*	SD	Significant Difference Between Groups	
Non-PBIS Group	199	115.05	187.59		
Installing PBIS Group	199	184.52	210.52	Operational PBIS Group	
Emerging PBIS Group	163	162.62	165.18	Operational PBIS Group	
Operational PBIS Group	100	100.94	97.97	Installing PBIS Group	Emerging PBIS Group

Question Two

Is there a significant difference between a school's PBIS recognition level (no recognition, installing, emerging, or operational) and levels of the percentage of students receiving free or reduced lunch on the percentage of students reading at or above their grade level Lexile band on the third grade, fourth grade, and fifth grade Georgia Milestones Assessment System (GMAS)?

Purpose:

The purpose of research question two was to investigate whether there was a significant difference between a school's PBIS recognition level and levels of the percentage of students receiving free or reduced lunch in a school on the percentage of students reading at or above their grade level Lexile band on the GMAS. A factorial analysis of variance (ANOVA) was computed to determine whether there was a significant difference. This is a three-part question separated by third grade, fourth grade, and fifth grade.

Findings:

Descriptive Statistics of Percentage of Students Reading at or above their 3rd Grade Level Lexile Band by PBIS Recognition Level and Free or Reduced Lunch Quartiles

		Third Grade At/Above Lexile		**Significant Difference Between Groups**		
Groups	**N**	***M***	**SD**			
Non-PBIS Group	199	70.04	17.16			
Installing PBIS Group	199	67.74	16.17			
Emerging PBIS Group	163	67.19	16.35			
Operational PBIS Group	100	72.65	13.82			
Free/Reduced Quartile 1	166	85.39	7.19	Free/Reduced Quartile 2	Free/Reduced Quartile 3	Free/Reduced Quartile 4
Free/Reduced Quartile 2	165	74.69	8.09	Free/Reduced Quartile 1	Free/Reduced Quartile 3	Free/Reduced Quartile 4
Free/Reduced Quartile 3	163	64.56	10.83	Free/Reduced Quartile 1	Free/Reduced Quartile 2	Free/Reduced Quartile 4
Free/Reduced Quartile 4	167	51.58	14.00	Free/Reduced Quartile 1	Free/Reduced Quartile2	Free/Reduced Quartile 3

Descriptive Statistics of Percentage of Students Reading at or above their 4th Grade Level Lexile Band by PBIS Recognition Level and Free or Reduced Lunch Quartiles

		Fourth Grade At/Above Lexile		Significant Difference Between Groups		
Groups	**N**	***M***	**SD**			
Non-PBIS Group	199	58.24	18.57	Operational PBIS Group		
Installing PBIS Group	199	56.09	18.82	Operational PBIS Group		
Emerging PBIS Group	163	55.39	18.21	Operational PBIS Group		
Operational PBIS Group	100	63.54	14.26	Non-PBIS Group	Installing PBIS Group	Emerging PBIS Group
Free/Reduced Quartile 1	166	78.03	9.07	Free/Reduced Quartile 2	Free/Reduced Quartile 3	Free/Reduced Quartile 4
Free/Reduced Quartile 2	165	63.14	9.62	Free/Reduced Quartile 1	Free/Reduced Quartile 3	Free/Reduced Quartile 4
Free/Reduced Quartile 3	163	50.61	11.10	Free/Reduced Quartile 1	Free/Reduced Quartile 2	Free/Reduced Quartile 4
Free/Reduced Quartile 4	167	40	13.04	Free/Reduced Quartile 1	Free/Reduced Quartile2	Free/Reduced Quartile 3

Descriptive Statistics of Percentage of Students Reading at or above their 5th Grade Level Lexile Band by PBIS Recognition Level and Free or Reduced Lunch Quartiles

		Fifth Grade At/Above Lexile		Significant Difference Between Groups		
Groups	**N**	***M***	**SD**			
Non-PBIS Group	199	69.38	15.70			
Installing PBIS Group	199	66.81	17.04	Operational PBIS Group		
Emerging PBIS Group	163	66.58	15.98	Operational PBIS Group		
Operational PBIS Group	100	72.18	13.16	Installing PBIS Group	Emerging PBIS Group	
Free/Reduced Quartile 1	166	85.36	7.68	Free/Reduced Quartile 2	Free/Reduced Quartile 3	Free/Reduced Quartile 4
Free/Reduced Quartile 2	165	73.11	7.92	Free/Reduced Quartile 1	Free/Reduced Quartile 3	Free/Reduced Quartile 4
Free/Reduced Quartile 3	163	63.17	10.28	Free/Reduced Quartile 1	Free/Reduced Quartile 2	Free/Reduced Quartile 4
Free/Reduced Quartile 4	167	51.76	13.04	Free/Reduced Quartile 1	Free/Reduced Quartile2	Free/Reduced Quartile 3

Question Three

Is there a significant difference between a schools' PBIS recognition level (installing, emerging, operational, or no recognition) and levels of the percentage of students receiving free or reduced lunch on the percentage of students scoring either a Level II, Level III, or Level IV on the English/language arts portion of the third, fourth, and fifth grade Georgia Milestones Assessment System (GMAS)?

Purpose:

The purpose of research question three was to investigate whether there is a significant difference between a schools' PBIS recognition level and levels of the percentage of students receiving free or reduced lunch in a school on the percentage of students scoring either a Level II, Level III, or Level IV on the third grade English/language arts portion of the Georgia Milestones Assessment System (GMAS). A factorial analysis of variance (ANOVA) was computed to determine whether there is a significant difference. This is a three-part question separated by third grade, fourth grade, and fifth grade.

Findings:

Descriptive Statistics of Percentage of Students Scoring a Level II or Above on the 3rd Grade ELA Portion of the GMAS by PBIS Recognition Levels and Free or Reduced Lunch Quartiles

		Third Grade Scoring Level II and Above		Significant Difference Between Groups		
Groups	**N**	***M***	**SD**			
Non-PBIS Group	199	69.38	15.70			
Installing PBIS Group	199	66.81	17.04			
Emerging PBIS Group	163	66.58	15.98			
Operational PBIS Group	100	72.18	13.16			
Free/Reduced Quartile 1	166	85.26	7.80	Free/Reduced Quartile 2	Free/Reduced Quartile 3	Free/Reduced Quartile 4
Free/Reduced Quartile 2	165	73.79	9.04	Free/Reduced Quartile 1	Free/Reduced Quartile 3	Free/Reduced Quartile 4
Free/Reduced Quartile 3	163	62.99	11.66	Free/Reduced Quartile 1	Free/Reduced Quartile 2	Free/Reduced Quartile 4
Free/Reduced Quartile 4	167	49.72	14.68	Free/Reduced Quartile 1	Free/Reduced Quartile2	Free/Reduced Quartile 3

Descriptive Statistics of Percentage of Students Scoring a Level II or Above on the 4th Grade ELA Portion of the GMAS by PBIS Recognition Levels and Free or Reduced Lunch Quartiles

		Fourth Grade Scoring Level II and Above		Significant Difference Between Groups		
Groups	**N**	***M***	**SD**			
Non-PBIS Group	199	71.76	16.85			
Installing PBIS Group	199	69.27	17.09	Operational PBIS Group		
Emerging PBIS Group	163	69.35	16.90	Operational PBIS Group		
Operational PBIS Group	100	75.61	12.64	Installing PBIS Group	Emerging PBIS Group	
Free/Reduced Quartile 1	166	88.02	6.43	Free/Reduced Quartile 2	Free/Reduced Quartile 3	Free/Reduced Quartile 4
Free/Reduced Quartile 2	165	76.37	8.71	Free/Reduced Quartile 1	Free/Reduced Quartile 3	Free/Reduced Quartile 4
Free/Reduced Quartile 3	163	66.00	10.78	Free/Reduced Quartile 1	Free/Reduced Quartile 2	Free/Reduced Quartile 4
Free/Reduced Quartile 4	167	53.65	14.33	Free/Reduced Quartile 1	Free/Reduced Quartile2	Free/Reduced Quartile 3

Descriptive Statistics of Percentage of Students Scoring a Level II or Above on the 5th Grade ELA Portion of the GMAS by PBIS Recognition Levels and Free or Reduced Lunch Quartiles

		Fifth Grade Scoring Level II and Above		**Significant Difference Between Groups**		
Groups	**N**	***M***	**SD**			
Non-PBIS Group	199	72.66	16.16			
Installing PBIS Group	199	70.63	16.34			
Emerging PBIS Group	163	69.74	16.28	Operational PBIS Group		
Operational PBIS Group	100	75.60	13.00	Emerging PBIS Group		
Free/Reduced Quartile 1	166	88.24	6.92	Free/Reduced Quartile 2	Free/Reduced Quartile 3	Free/Reduced Quartile 4
Free/Reduced Quartile 2	165	76.91	7.51	Free/Reduced Quartile 1	Free/Reduced Quartile 3	Free/Reduced Quartile 4
Free/Reduced Quartile 3	163	66.77	10.95	Free/Reduced Quartile 1	Free/Reduced Quartile 2	Free/Reduced Quartile 4
Free/Reduced Quartile 4	167	55.22	13.86	Free/Reduced Quartile 1	Free/Reduced Quartile2	Free/Reduced Quartile 3

Proposed Interview Questions

1. (PBIS Schools)- What were the driving forces that led your school to implement the PBIS framework?

(Non-PBIS School)- What are the reason(s) that your school has not implemented the PBIS framework?

2. (PBIS Schools)- What are the advantages and disadvantages that you believe come along with using the PBIS framework?

3. How do you explain the similarities or differences among schools by PBIS recognition level on the number of office referrals per 1,000 students?

4. How do you explain the similarities or differences among schools by PBIS recognition level on the percentage of students reading at or above their grade level Lexile band?

5. How do you explain the similarities or differences among schools by PBIS recognition level on the scores of the English/language arts GMAS?

APPENDIX C:

Email Inviting Principals to Participate in Research

Dear Principal,

I am conducting interviews as part of my dissertation investigating the impact Positive Behavior Interventions & Supports (PBIS) has on student reading achievement and student discipline. To increase my understanding of how PBIS impacts both reading achievement and discipline, I believe you are in an ideal position to give me valuable firsthand information from your own perspective. I am looking for insight from principals to answer the following question, "How do selected principals explain the similarities or differences among schools by PBIS recognition level on the number of office referrals per 1,000 students, percentage of students reading at or above their grade level Lexile band, and scores on the English/language arts GMAS?

The interview should take around 10 minutes. I am simply trying to capture your thoughts and perspectives regarding the results of my study. Your responses to the questions will be kept confidential. Each interview will be assigned a number code to help ensure that personal identifiers are not revealed during the analysis and write up of findings. Each interview will be recorded; however, all audio recordings will be destroyed immediately once a transcript has been created. There is no compensation for participating in this study. However, your participation will be a valuable addition to this field of research and findings could lead to greater public understanding of PBIS and its impact on reading achievement and discipline.

If you are willing to participate, please suggest a day and time that suits you. I will send you a consent form to complete, and summary of research findings along with a copy of the interview questions. If you have any questions, please do not hesitate to ask.

Thanks!

Cisco Diaz

APPENDIX D:

Informed Consent Form

Positive Behavior Interventions & Supports Influence on Elementary Student Discipline and Reading Achievement

Consent to take part in research

☐I_____ voluntarily agree to participate in this research study.

☐I have had the purpose and nature of the study explained to me in writing, and I have had the opportunity to ask questions about the study.

☐I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences of any kind.

☐I understand that I can withdraw permission to use data from my interview within two weeks after the interview, in which case the material will be deleted.

☐I understand that participation involves me reviewing quantitative finding from the study and providing my opinion on the reason for similarities or differences amongst schools.

☐I understand that I will not benefit directly from participating in this research.

☐I agree to my interview being audio-recorded.

☐I understand that all information I provide for this study will be treated confidentially.

☐I understand that my identity will remain anonymous and random numerical codes will be assignd to the interviewee.

☐I understand that disguised extracts from my interview may be quoted in the dissertation.

☐I understand that the signed consent form, original audio recording, and transcript will be retained in a locked file cabinet located at the researcher's home.

☐I understand that the signed consent form, original audio recording, and transcript will be destroyed once the dissertation has been approved.

☐I understand that I am free to contact any of the people involved in the research to seek further clarification and information.

Cisco Diaz, Ed.S.
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Jame L Pate, Ph.D.
Dissertation Chair
Professor of Curriculum, Leadership, and Technology
Valdosta State University
jlpate@valdosta.edu

_____ _____

Signature of Research Participant/Date Signature of Researcher/Date

APPENDIX E:

Institutional Review Board Protocol Exemption Report

Institutional Review Board (IRB)
For the Protection of Human Research Participants
PROTOCOL EXEMPTION REPORT

PROTOCOL NUMBER:	**03611-2018**	**INVESTIGATOR:**	**Francisco Diaz**
		SUPERVISING FACULTY:	**Dr. James Pate**
PROJECT TITLE:	***Positive Behavior Interventions & Supports Influence on Elementary Student Discipline and Reading Achievement.***		

INSTITUTIONAL REVIEW BOARD DETERMINATION:

This research protocol is **Exempt** from Institutional Review Board (IRB) oversight under Exemption **Categories 2 & 4**. You may begin your study immediately. If the nature of the research project changes such that exemption criteria may no longer apply, please consult with the IRB Administrator (irb@valdosta.edu) before continuing your research.

ADDITIONAL COMMENTS:

- ***The researcher (you) must read aloud the Research Statement of Consent to each participant. The researcher's voice must part of the recorded interview and included in the documented interview transcript.***
- ***Exempt protocol guidelines require that audio/video recorded interview sessions are to be deleted immediately upon completion of each interview transcript. Recordings are not to be shared, stored, or made publicly available.***

☒ ***If this box is checked, please submit any documents you revise to the IRB Administrator at irb@valdosta.edu to ensure an updated record of your exemption.***

Elizabeth W. Olphie 03.30.2018
Elizabeth W. Olphie, IRB Administrator Date

Thank you for submitting an IRB application.
Please direct questions to irb@valdosta.edu or 229-259-5045.

Revised: 06.02.16