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The effects of discipline interventions of the multi-tier system of support
on discipline referrals and grades

By

Aaron Toliver Lee

A Dissertation
Submitted to the Faculty of
Mississippi State University
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy
in Educational Leadership
in the Department of Educational Leadership

Mississippi State, Mississippi

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2020

The effects of discipline interventions of the multi-tier system of support
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The purpose of this study was to determine if the implementation of the Multi-Tier System of Support (MTSS) interventions influenced the number of office discipline referrals and student achievement as measured by students' Grade Point Averages (GPAs). The MTSS program included three interventions: Tier 1 (a new discipline ladder), Tier 2 (a new discipline ladder and mentor teachers) and Tier 3 (a new discipline ladder, mentor teachers, and group counseling).

The study employed a quantitative research design and used an existing data set. The first three research questions sought to determine if there were statistically significant differences between the total number of office discipline referrals for students during the 2017-2018 school year and the 2018-2019 school year after implementation of the MSTT Tier 1, Tier 2, and Tier 3 interventions. The last three questions ascertained if there were statistically significant differences in the GPAs of the three Tier groups after implementation of the MTSS interventions.

The analysis of the data and findings showed mixed results. The Tier 1 student group demonstrated a statistically significant change in the number of discipline referrals. There was

not a positive effect in the number of discipline referrals after implementation of the MTSS Tier 1 intervention of a new discipline Ladder. The students in the Tier 1 student group actually had more office discipline referrals after the implementation of the MTSS interventions. There was a slight decline for the number of discipline referrals for the students in Tier 2. However, this change was not statistically significant. There was statistically significant decline in the number of discipline referrals for the students in Tier 3.

The study showed very little changes in GPAs for any of the Tiers. There were no statistically significant differences in students' GPAs before and after implementation of MTSS for interventions with Tiers 1, 2, and 3.

The study revealed that the subgroups among the Tier 1, 2 and 3 groups with the largest change in the mean for number of discipline referrals occurred with 11th and 12th grade students. Among the 12th grade students, female students demonstrated the most significant reduction in the mean of discipline referrals.

DEDICATION

I dedicate my dissertation to my family and friends who supported me wholeheartedly throughout this process. I could not have begun this without your encouragement, and I would not have completed it without your help.

I would especially like to thank Charla, my wife, who encourages me daily to be a Christ-like leader and example both at home and at school; and Matthew and Sofia, who gave up hours of play so Daddy could work. I am glad this is finished so that more playtime can begin again.

Tim, my mentor, you see potential in me and encourage me to reach for the top.

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CHAPTER I

INTRODUCTION

General Background of the Study

Student discipline is considered important at every level of the educational process (Danforth & Smith, 2005; Duke & Jones, 1984; Gottfredson, Gottfredson & Hybl, 1993; Kadel & Follma, 1993; Skiba, Peterson, & Williams, 1997). In particular, teachers listed student discipline in the classroom as the largest distractor from student achievement (Canter, 2001). Likewise, school administrators also reported that student discipline can be one of the most time-intensive tasks that they face week-to-week (Curran, 2017; Horng, Klasik, & Lobe, 2010). The school administrator spends considerable time dealing with discipline issues and must serve as the instructional leader as well as the chief disciplinarian of the school (Horng et al., 2010).

Research studies have shown that there is a direct correlation between student behavior or discipline and student achievement (Kauffman, 1997; Scott, 2001; Skiba et al., 1997). Findings from several studies showed the number of office discipline referrals can serve as an accurate predictor of the level of success a student may have on state end-of-course tests, (Kauffman, 1997; Scott, Nelson, & Liaupsin, 2001; Skiba et al., 1997). Skiba et al. (1997) found that the higher the number of office discipline referrals, the lower the probability of passing the end-of-course tests.

Because the realm of school discipline is extremely complex, school administrators continue to seek effective interventions to decrease discipline infractions and promote student

achievement (Scott et al., 2001). The Multi-Tier System of Supports (MTSS) is one such intervention and is now used for both academic and behavioral interventions. The MTSS is a system which in recent years combined the tenants of Positive Behavior Incentive Support (PBIS) with levels of instruction of Response to Intervention (RTI); (Scott & Cooper, 2013). The MTSS is a 3-tiered pyramid program that provides three different levels of intervention with increased intensity at each level (Eagle, 2015). Scott and Cooper (2013) described the first level as the universal level where everyone receives the same level of intervention. Eagle (2015) identified the second level of the pyramid as the “at risk” level. Students at the second level need focused intervention and extra attention to get them on the right track (Eagle, 2015). Tier 2 generally constitutes 7-10% of the general student population (Scott et al., 2001; Scott et al., 2013). According to Eagle (2015), the smallest part of the pyramid is the “high risk” level referred to as Tier 3. Tier 3 is usually 3-5% of the student population (Eagle, 2015). The Tier 3 group requires the largest amount of time and energy from the school administration and the MTSS team even though Tier 3 typically represents the smallest percentage of the student population (Scott et al., 2001; Scott et al., 2013).

After the implementation of MTSS in a rural school district, this study investigated the effects of the Tier 1, Tier 2, and Tier 3 interventions on the number of discipline referrals and academic grades. The researcher examined the effects of the specific interventions associated with each tier.

Statement of the Problem

The problem this study sought to address was the high number of office discipline referrals in high schools along with low academic achievement and school drop-out. For years,

researchers confirmed the existence of low academic achievement, particularly resulting from consequences of disciplinary infractions (Skiba et al., 1997; Zeile, Stone, & Lehr, 1980).

According to the United States Department of Education (2014), over 3.5 million students of the 59 million students enrolled in schools were suspended in the 2011-2012 school year because of their behavior. This statistic represents 7% of all students in the United States (U.S. Department of Education, 2018). Further, some researchers claimed that exclusionary discipline practices such as detention, suspension, and expulsion are detrimental to the student and cause greater achievement gaps (Zeile et al., 1980). Moreover, high suspension rates were linked to low academic achievement and high dropout rates (Skiba et al., 1997).

In terms of low academic achievement and high dropout rates, national data showed students who had more than one suspension were 32% more likely to drop out of school and only had a 39% chance of enrolling in a post-secondary school (Jones, 2018). Similarly, those students who were suspended more than four times were 52% more likely to drop out of school and only had a 23% chance of enrolling in a post-secondary school (Jones, 2018).

Notably, during the 2014-15 school year in the state of Mississippi, there were over 85,000 discipline incidents reported to the Mississippi Department of Education from Mississippi's 165 school districts which included over 77,000 incidents that were labeled as violent incidents (United States Department of Education, 2017). Alarming, approximately 65% of publicly funded schools reported at least one or more physically violent attacks or fights in the school year 2013-2014 (United States Department of Education, 2018). This represented a 14% drop from the 1999-2000 school year but was still a large number of the nation's schools.

The present study focused on a local school district in the state of Mississippi. During the 2016-17 school year, there were over 2,500 office discipline referrals issued that resulted in the suspensions of students for a total of 1,675 school days (Information Now, 2018). The 2017-18 school year was not much of an improvement. The total student population for the 2017-2018 school year was 1050 students. Of the 1050 students, there were 518 unique students who accumulated over 2,300 office discipline referrals that resulted in the students being suspended for almost 1,800 school days (Information Now, 2018). The types of infractions that were reported ranged from students walking out of class, cursing teachers, fighting, gang activities, and drugs, to less severe disruptive and defiant behaviors (Information Now, 2018).

Purpose of the Study

The purpose of this research study was to determine if the implementation of the MTSS interventions had effects on the number of office discipline referrals and student achievement as measured by students' GPAs. The MTSS program included Tier 1 (a new discipline ladder), Tier 2 (a new discipline ladder plus mentor teachers) and Tier 3 (a new discipline ladder, mentor teachers, and group counseling) interventions.

Research Questions

The research questions for the study focused on the investigation of effects related to the implementation of the MTSS program. The following research questions guided the study.

1. Were there statistically significant differences between the number of office discipline referrals for students during the 2017-2018 school year (no Tier 1 intervention) and the 2018-2019 school year after implementation of the Tier 1 Intervention (new discipline ladder)?

2. Were there statistically significant differences between the number of office discipline referrals for students during the 2017-2018 school year (no Tier 2 intervention) and during the 2018-2019 school year after implementation of the Tier 2 Intervention (new discipline ladder and mentor teacher)?
3. Were there statistically significant differences between the number of office discipline referrals for students during the 2017-2018 school year who received no Tier 3 intervention and during the 2018-19 school year after implementation of the new Tier 3 Intervention (new discipline ladder, mentor teacher, counseling program)?
4. Were there statistically significant differences between the GPAs of students during the 2017-2018 school year (no Tier 1 intervention) and the 2018-2019 school year after implementation of the Tier 1 Intervention (new discipline ladder)?
5. Were there statistically significant differences between the GPAs of students who received no Tier 2 intervention during the 2017-2018 school year and during the 2018-19 school year after the implementation of the Tier 2 Intervention (new discipline ladder and mentor teacher)?
6. Were there statistically significant differences between the GPAs of students who received no Tier 3 intervention during the 2017-2018 school year and during the 2018-19 school year after implementation of the of Tier 3 Intervention (new discipline ladder, mentor teacher, counseling program)?

Conceptual Framework of the Study

The conceptual framework of the study provides an illustration of the variables used in the study. Figure 1 includes the conceptual framework of the study.

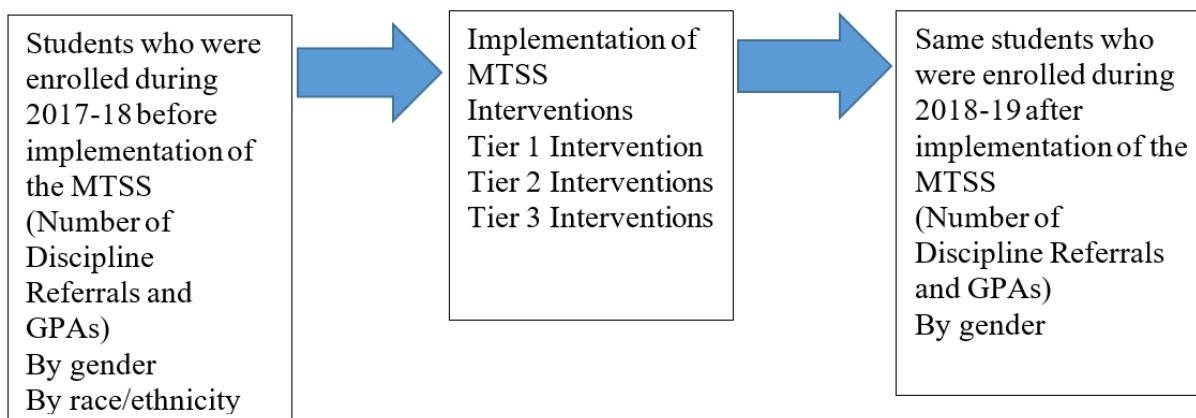


Figure 1. Conceptual framework.

The research questions were designed to determine if there were positive effects on students' discipline referrals and GPAs after the implementation of the MTSS interventions. Students were placed into one of the tiers of the 3-tiered MTSS based upon the number of referrals they received during the 2017-2018 school year.

Theoretical Framework

Deterrence theory as conceptualized by Cesare Beccaria in 1764 was selected to help explain the theoretical framework for the study (Hostelleter, 2011). Overwhelmingly, research studies suggested the call for stricter enforcement of school rules with a desire to see a decrease in student misbehavior (Skiba, 2000). Deterrence theory states that if the penalty for breaking the

norms of a group are swift, certain and severe, it will help deter the unwanted behavior (Paternoster, 2010). The majority of parents, teachers, and administrators have supported the strict enforcement of schools' codes of conduct in regard to school discipline (Way, 2011). Both schools and the U.S Justice System use deterrence as the primary approach for maintaining social compliance (Apel, Pogarsky, & Bates, 2008; Way, 2011).

Deterrence theory suggests that the more severe the penalty for breaking a rule, the less likely a person will be to violate the said rule (Apel et al., 2008; Way, 2011). Despite the calls for safer schools, researchers beckoned for disciplinary approaches that were more in line with restorative justice (approaches that were not only punitive, but would help the student learn to replace the unwanted behavior) (Zeile et al., 1980). Alternative disciplinary approaches helped students replace deviant behaviors with behaviors that were more in line with the social norms of schools (Gregory et al., 1997; Scott & Cooper, 2013; Scott et al., 2010; Sprague et al., 1999).

Definitions of Key Terms

The following definitions of key terms are provided for meaning and clarity. The terms are used throughout the study.

1. Alternate In-School Detention (ALT ISD) refers to the student being relocated to a district's Alternative School (Columbus Municipal School District, 2018).
2. Alternative School refers to an alternate educational environment where students who have committed highly egregious acts such as fighting, possession of weapons or drugs or committing multiple lesser offenses are sent to receive their education in an effort to make the general educational environment a safe place (Tobin & Sprague, 2000).
3. Discipline Ladder refers to a systematic increase of punishment for repeat offences (Morrison & Skiba, 2001). The discipline ladder is sequential. The more office discipline

referrals a particular student has, the higher on the ladder they are and therefore the more severe the punishment. For example, the 1st step of the ladder is often a warning and parent contact while the 5th step could be 3-5 days of out of school suspension (Columbus Municipal School District, 2018).

4. In-School Detention (ISD) means that a student is at school but has been secluded from the general population as a consequence for a disciplinary infraction. Teachers send assignments to their students, and the students must complete the work while in a strictly controlled and secluded environment (Columbus Municipal School District, 2018).
5. Multi-Tier System of Supports (MTSS) is a 3-tiered behavior intervention system that narrows in focus to help provide both academic and behavior supports to struggling students (Sprague et al., 1999). These groups are identified by either low or failing academics and/or a high number of office discipline referrals.
6. Office Discipline Referral refers to a form that a teacher fills out to document errant or unwanted behavior in the classroom, hallway, cafeteria, or other location in the school (Morrison & Skiba, 2001). The office discipline referral may be sent to the office at any point in the day. However, if a student's behavior is so egregious that it merits removing the student from the classroom immediately, the office discipline referral must accompany the student (Columbus Municipal School District, 2018).
7. Out of School Suspension (OSS) is when administration sends a student home from school and the student is not allowed to return for a certain number of days (Columbus Municipal School District, 2018). A student who returns to the school while suspended is considered trespassing which could result in the student being removed by local law enforcement (Columbus Municipal School District, 2018).

8. Tier 1 is the largest group of MTSS and is categorized as receiving universal interventions. Interventions are given to all students in the school (Sprague et al., 1999). Interventions are not limited to a particular subgroup of students but encompass all students. The Tier 1 intervention included the addition of a new discipline ladder.
9. Tier 2 is the second group of the MTSS. Tier 2 is smaller in size and should only represent 5-8% of the student population (Sprague et al., 1999). Tier 2 included students with five to eight referrals, and the interventions for this group included a new discipline ladder and the assignment of a mentor teacher. Tier 2 intervention refers to any intervention that is given to a subsection of the student population (Sprague et al., 1999). Tier 2 interventions can be both academic and or behavioral in nature. Students who meet certain parameters, such as low grades or a high number of office discipline referrals, are placed in Tier 2 and receive Tier 2 interventions. (Sprague et al., 1999). The Tier 2 interventions include the new discipline ladder with the addition of a mentor teacher.
10. Tier 3 is the smallest of the MTSS groups and typically represents 3-5% of the student body (Sprague et al., 1999). Tier 3 intervention can be both academic and behavioral in nature (Sprague et al., 1999). The Tier 3 interventions included the new discipline ladder, a mentor teacher, and the addition of group counseling.

Overview of the Research Design and Methodology

A quasi-experimental research design was selected for the study and included an existing data set on all students in a local school setting. Students were placed into Tier groups based upon the number of referrals they received during the 2017-2018 school year. Tier 1 included students with less than five referrals, and the intervention for this group was the implementation of a new discipline ladder. Tier 2 included students with five to eight discipline referrals, and the

interventions for this group included a new discipline ladder and the assignment of a mentor teacher. The Tier 3 group included all students with more than eight referrals. Tier 3 students received the new discipline ladder, the assignment of a mentor teacher, and weekly group counseling sessions.

The MTSS program was implemented during the 2018-2019 school year. The data analysis included statistical tests to determine if there were statistically significant differences in the number of office discipline referrals and the GPAs of the students after the implementation of the MTSS interventions.

Delimitations

The study included data for 9th through 12th grade students enrolled at a public high school located in a mid-sized town in Mississippi. The school's demographics included 95% African American students with a very high percentage of students with a low socioeconomic status (Information Now, 2017). The majority of the students enrolled at the school received either free or reduced lunches (Information Now, 2017). Existing discipline and GPA data were used for students enrolled during both the 2017-2018 school year and the 2018-2019 school year.

Significance of the Study

This study is significant because it will provide valuable information related to the MTSS program and its impact on the number of office referrals and GPA. The findings from this study will help school leaders and policy makers make decisions regarding implementation of MTSS interventions as a means to address disciplinary infractions and students' academic achievement.

Organization of the Study

This study consists of five chapters. Chapter I contains the introduction to the study. This chapter includes the (a) statement of the problem, (b) purpose of the study, (c) research questions, (d) significance of the study, (e) delimitations of the study, (f) definition of terms, (g) conceptual framework for the study, (h) theoretical framework, and (i) research design.

Chapter II provides the review of related literature about the topic. The chapter presents a discussion of related literature on the (a) background of student discipline and legislation (b) approaches limiting exclusionary discipline practices, (c) research-based discipline interventions, (d) strategies for positive student behavior, (e) MTSS, (f) racial gaps related to student discipline, (g) discipline and student achievement, and (h) the role of school principal and discipline.

Chapter III contains a discussion of the methodology of the study. The chapter includes information about the (a) research design and methodology, (b) research setting, (c) data collection process, and (d) data analysis.

Chapter IV presents the findings from the data analysis. The findings are presented in terms of statistical significance.

Chapter V presents the summary discussion, and conclusions of the study. General recommendations for school leaders and recommendations for future studies are provided in the chapter.

CHAPTER II

REVIEW OF THE LITERATURE

The purpose of Chapter Two is to present a review of the literature related to the MTSS used to address student discipline infractions and improve academic achievement. The chapter begins with a summary of the background related to student discipline and legislation. Other topics include discussions associated with exclusionary approaches addressing student discipline and alternative approaches which include MTSS interventions. The literature review includes the nature of the overrepresentation of certain demographic groups in the national statistics on school discipline and the effects of discipline on academic achievement. The chapter concludes with a summary of the literature related to the study.

Background, Student Discipline, and Legislation

During early years, school discipline became associated most often with the use of punishment and school exclusion (Skiba & Peterson, 1999). Dominant approaches included exclusionary practices such as suspensions and expulsions. Research studies focused on school discipline consistently found that suspensions (in-school and out-of-school) represented the most widely used disciplinary approach (Rausch & Skiba, 2004; Skiba et al., 1997). The most pervasive forms of school disciplinary infractions found in the literature were listed as verbal threats or intimidation, cursing, pushing, grabbing, general disrespect, and disruptive behavior (Furlong et al., 1994; Imich, 1994; McFadden, Marsh, Price, & Hwang, 1992; Petersen, Beekley, Speaker, & Pietrzak, 1998; Petersen, & Speaker, 1998; Scott et al., 2001; Skiba et al., 1997).

Because of the rise in school violence involving gangs and drugs, student behavior and school discipline drew national attention in the 1980s (Cloud et al., 1999; Skiba, 2000; Vail, 1995). The rise in school violence led to the Gun-Free Schools Act of 1994 (Cloud et al., 1999). The Gun-Free Schools Act states that any school that receives federal funding shall expel a student for one calendar year if he/she is in possession of a firearm on school property (20 U.S. Code § 7961, 1994). Since the Gun-Free Schools Act, there has been a continued focus on lowering the amount of school violence and making sure that students feel safe while they are at school (Skiba, 2000).

Zero Tolerance Policies Related to School Discipline

The Gun-Free Schools Act called for swift and harsh disciplinary actions for students who were found with weapons on school grounds (Cloud et al., 1999). The immediate expulsion of students for guns and drugs was dubbed as *zero-tolerance* (Cloud et al., 1999). The term *zero-tolerance* may be tied to U.S. Attorney Peter Nunez who in 1986 began to impound ocean-going vessels and their cargo if any amount of drugs were found aboard (Skiba, 2000). By 1997, over 80% of school districts in the United States had some form of a *zero-tolerance* policy on the books (Vail, 1995). The number of students who were reported as expelled in the United States dropped from 5,724 in the 1996-1997 school year to 3,930 in the 1997-1998 school year representing a reduction of 32% in one year (Skiba, 2001).

On the other hand, researchers reported that zero-tolerance policies became counterproductive since implementation (Scott et al., 2001). In 2014, approximately 130,000 of the nation's 49 million students were expelled for one reason or another (US Department of Education, 2014). While schools increased security measures to include the presence of law enforcement officers and metal detectors, students continued to report that they felt unsafe

(Hyman & Perone, 1998; Mayer & Leone, 1999; Scott et al., 2001). Scott et al. (2001) stated that a continual feeling of being unsafe at school may still remain. Skiba (1997) reported police officers and metal detectors do not remove all behaviors that can contribute to school violence.

Approaches Limiting Exclusionary Discipline

As research related to school discipline continued, efforts focused more on methods of discipline that were non-exclusionary in nature (Skiba et al., 2002). Cameron and Sheppard (2006) discussed in detail the damage that exclusionary discipline can cause to a student both academically, socially, and emotionally. Cameron and Sheppard (2006) argued that traditional approaches to school discipline (corporal punishment, zero-tolerance policies, conduct codes, suspensions, expulsions, and classroom management strategies) relied on deterrence. Many school discipline tactics such as corporal punishment, suspension, and expulsion were regarded counterproductive or ineffective at the least (Zeile et al., 1980). Cameron and Sheppard (2006) concluded that with over 40 years of research, the findings disclosed that these traditional approaches and policies were associated with increased discipline infractions in schools as well as behavioral and academic problems among students. As a result, alternative approaches to exclusionary disciplinary methods emerged that aimed at teaching the student better self-control and self-discipline (McClung, 1975). The National Education Association listed mentoring and counseling among the alternative approaches that are termed as cognitive-behavioral interventions (Zeile et al., 1980).

Other approaches present in the literature included restorative justice (Gregory, Huang, Anyon & Greer, 2018) and alternative schools (Carpenter-Aeby & Aeby, 2012). There was a rise at one point in national discussions focused on restorative justice in the context of school discipline (Gregory et al., 2018). Gregory et al. (2018) explained that restorative justice

approaches to school discipline aimed to determine who was hurt or harmed by the inappropriate actions and what could be done to make amends by the perpetrator (Cameron & Sheppard, 2006). Gregory et al. (2018) listed interventions such as public service projects and social emotional learning opportunities.

Alternative educational settings or alternative schools were considered when school districts were seeking to limit exclusionary discipline actions (Carpenter-Aeby & Aeby, 2012). Alternative education settings provide an option for students to be placed in an educational environment secluded from the general student population offering more intensive social and emotional support and services (Carpenter-Aeby & Aeby, 2012). These schools tended to be much smaller, only housing a very small percentage of the student population (Tobin & Sprague, 2000). Tobin and Sprague (2000) noted that parents atypically used alternative education as a proactive measure. Because this type of seclusion is considered punitive in nature, this environment was reserved for those students who caused severe disruptions to the normal educational environment (Carpenter-Aeby & Aeby, 2012). Alternative schools were deemed as options to be used for repeat offenders or for students who might otherwise qualify for *zero-tolerance* policies for drugs and/or weapons infractions (Scott & Cooper, 2013; Scott et al., 2010). Tobin and Sprague (2000) claimed that well-designed alternative education environments showed that they could produce favorable outcomes for students that were placed there.

Research-Based Discipline Interventions

The Individuals with Disabilities Education Act required states to track and document students' RTI (Zirkel, 2018). In the efforts to lower school violence and increase student achievement, movements such as PBIS and RTI were formulated in the late 1990s and early 2000s (Zirkel, 2018). RTI includes four basic components. First, the United States Department

of Education Office of Special Education requires that schools provide students with high-quality education that is built upon research-based instructional techniques and models (Preston, Wood, & Stecker, 2016). Second, school districts must provide continuous progress monitoring of its special education population (Zirkel, 2018). Progress monitoring must be conducted in order to have data points that help demonstrate whether the student is showing signs of academic growth or not (Preston et al., 2016). The third requirement of RTI is that the students are screened for academic as well as behavioral problems (Preston et al., 2016). Finally, RTI spells out the necessity for multiple levels of intense instruction and tutoring which are termed as interventions (Zirkel, 2018).

Strategies for Positive Student Behavior

PBIS programs primarily focused on providing students with positive incentives as a means to correct bad behavior (Canter & Canter, 2001; Zirkel, 2018). For example, Ennis and Gonsoulin (2015) provided an illustration of a student named Raheem who regularly threw a fit in class if the teacher corrected his behavior. The teacher told Raheem that if he could make it a whole week without throwing a tantrum, he would receive a prize. An example of RTI when applied to behavior would be to teach Raheem coping strategies to learn to deal with the teacher's correction with an appropriate social and emotional reaction because he has a better understanding of what is acceptable (Ennis & Gonsoulin, 2015). Multiple levels of instruction are not only conducted for academics but are also translated into interventions for behavioral problems (Eagle et al., 2015). There were some schools that used PBIS programs in one way or another, while other schools opted to use RTI programs; the two programs most often operated in dichotomy (Eagle et al., 2015). In recent years, PBIS and RTI merged into what is now

known as the MTSS (Eagle et al., 2015; Mississippi Department of Education, 2016; Zirkel, 2018).

MTSS

The MTSS is used for both academic interventions and behavioral interventions. The Mississippi Code Ann. § 37-177-1 was revised in 2016 and requires that all schools under the Mississippi Department of Education utilize the 3-tiered system of interventions for both academically and behaviorally challenged students (Mississippi Department of Education, 2018).

The MTSS is often illustrated as a 3-level pyramid (Scott & Cooper, 2013; Scott et al., 2010; Sprague et al., 1999; Zirkel, 2018). The first level is often referred to as the universal level and is the largest level (Sprague et al., 1999). A clear understanding of the school's rules and expectations is often enough to prevent students from any disciplinary actions (Sprague et al., 1999). Consistency on the part of adults in the building, especially regarding the enforcement of the school's rules and policies, is extremely important at this level in establishing expectations of student behavior (Scott et al., 2001).

Eagle (2015) identified the second level of the pyramid as the "at risk" level and asserted that for these students a good explanation of the school's rules and classroom expectations are not enough (Eagle, 2015). According to Scott (2010), these students are in the office most often for disciplinary actions (Scott, 2010). Tier 2 generally constitutes 7-10% of the general student population (Scott et al., 2010; Scott et al., 2001). The Tier 2 group of students requires more attention and tends to require behavioral interventions (Scott et al., 2010; Scott et al., 2001). For the purpose of this study, students identified as Tier 2 will receive an intervention of having a mentor teacher assigned to them.

According to Eagle (2015), the smallest part of the pyramid is the “high-risk” level (Eagle, 2015). Tier 3 usually is 3-5% of the student population (Eagle, 2015). The Tier 3 group, although the smallest, requires the largest amount of time and energy from the school administration and the MTSS team (Scott et al., 2001; Scott et al., 2010). Tier 3 students need intense behavioral interventions (Scott et al., 2001). The students identified as Tier 3 not only receive the intervention of mentor teachers but also receive an additional intervention of group counseling. Scott (2010) asserted that at the Tier 3 level the student will require a Functional Behavioral Assessment (Scott, 2010). A Functional Behavioral Assessment includes a series of observations by trained professionals, often school counselors or behavior specialists, to attempt to discover the motivation behind a student’s behavior (Scott, 2010).

MTSS and Mentor Groups

Slavin and Madden (2004) defined at-risk students as students who struggle with one or more of the following issues: having poor attendance, having failed a grade level, having behavioral problems, having substance abuse problems, or being a pregnant teen. Slavin and Madden (2004) noted that high poverty coupled with low achievement are risk factors for many at-risk students (Slavin & Madden, 2004). Mentoring programs have become widely used to reach students labeled as at-risk (Lampley & Johnson, 2010). The mentor programs may be community-based or school-based (Gordon, Downey & Bangert, 2013). Programs where students receive mentoring at their respective schools are known as school-based mentor programs (Gordon et al., 2013). Gordon et al. (2013) stated that school-based mentor programs have certain advantages such as lower budget costs, increased supervision, safety, and higher academic focus than community-based programs (Gordon et al., 2013).

Students who had mentor teachers showed increases in academic achievement as well as higher self-esteem (Flaxman, 1998). Schools with effective mentoring programs were able to help students make better progress towards achieving positive behavior goals (Riley, 1998). Researchers who conducted a study with a group of African American adolescents in Youngstown, Ohio, reported a drop in truancy and discipline problems and increased GPAs among the overwhelming majority of the participants in an after-school mentoring program (Lampley & Johnson, 2010). Gordon et al. (2013) reported a drop in the number of unexcused absences and the number of office discipline referrals while there was no statistically significant change in the academic performance of 121 participants of a mentoring program.

MTSS and Group Counseling

Mental health of school aged children can play an important role in school discipline when inappropriate actions or behaviors are habitually exhibited (Larkin & Thyer, 1999). School office discipline referrals may serve as an early warning sign and a cry for help by students with low self-esteem and/or low social-emotional learning (Larkin & Thyer, 1999). While school counselors may try a variety of methods to reach at-risk students, such as one-on-one counseling, character education, career guidance curriculum and group counseling, not all methods have been empirically tested (Whiston & Quinby, 2009). Kayler and Sherman (2009) reported that while some group counseling programs may not have quantitative data such as higher-GPAs to support their success, they do have qualitative data from students who reported they improved in academic skills (Kayler & Sherman, 2009). Several researchers reported that the students improved in skills such as note-taking and study habits resulting from group interventions which addressed barriers and opportunities that affected academic performance. Other programs, such as the Achieving Success Everyday group counseling, showed efficacy as

a group counseling model (Sprague et al., 1999; Steen, Henfield & Booker, 2014). In more than one trial, students showed positive growth in both their GPAs and self-esteem (Steen et al., 2014).

School-based group counseling focuses on academic and personal-social growth (Whiston & Quinby, 2009). School counselors must pre-screen and select students who will be involved in group counseling (Whiston & Quinby, 2009). There are usually students who are receiving the intervention and students who are on a waiting list because they did not fit into the particular grouping (Steen et al., 2014). Group counseling may also be used to try and help students in the area of behavior modification with regards to social-emotional learning, self-control, and self-correction (Gregory et al., 1997).

Racial Gaps Related to Student Discipline

Research studies showed that there is a racial gap not only in the realm of academic achievement, but also in the area of student discipline (McFadden et al., 1992). Studies consistently showed that minority students were suspended up to 60% more often than their Caucasian counterparts (Children's Defense Fund, 2007; McFadden et al., 1992). Research studies revealed several documented instances where a student of color and a Caucasian student committed the same violation of school rules and received far different consequences (Anyon et al., 2014; Gregory & Weinstein, 2008; Schollenberger, 2015; United States Department of Education, 2008). Studies focused on the use of school suspensions have repeatedly reported that students who are from a lower socioeconomic subgroup were over-represented in the terms of consequences for discipline behaviors (Brantlinger, 1991; Skiba et al., 1997). Students from all socioeconomic groups reported they, too, believed that students from the minority subgroups and lower socioeconomic subgroups received stiffer penalties for behavior infractions

(Brantlinger, 1991). Notably, there were some claims that these statistics focused on low-performing urban schools where the student populations were primarily African American (Losen, 2011; Mendez & Knoff, 2003; Skiba, Michael, Nardo, & Peterson, 2002; Wilson, 2014).

Gender Gaps Related to Student Discipline

Disparities in student discipline is not only evident along racial lines but can also be seen among gender. Studies have shown that male students are 65% more likely than female students to receive out-of-school suspension (McCarter, 2017). Fabelo et al. (2011) reported that males were 79% more likely to be expelled from school than their female counterparts (Fabelo et al., 2011). Kocsci et al. (2012) found that non-gender compliant students from the Lesbian Gay Bisexual, And Transgender community were also overrepresented in disciplinary data.

Age or Grade Level Gaps Related to Student Discipline

Within the body of research on student discipline as related to grade level, there is evidence that shows it is not uncommon for freshmen students to be overrepresented in high school discipline data (Scott, Hirn, & Barber, 2012). Freshmen students are 25% more likely to be held back with three contributing factors that include attendance, grades, and discipline (DeLamar & Brown, 2016). DeLamar and Brown (2016) stated that approximately 80% of high school dropouts begin to show warning signs during their freshman year. These data contributed to the rise of Freshman Academies, whose aim is to help students transition from middle to high school (DeLamar & Brown, 2016). Sprague and Walker (2000) reported that the number of office discipline referrals received in 10th grade was a prominent predictor for future arrest.

Discipline and Student Achievement

School discipline is not only a logistical trouble spot for school leadership, taking up much time, but it also causes problems for the students, many of whom are already struggling learners (Blank & Shavit, 2016; Dinkes, Cataldi, & Lin-Kelly, 2007; Gottfredson et al., 2000; Larkin & Thyer, 1999; Skiba et al., 1997). Studies identified school discipline as one of the key markers for academic success (Dinkes et al., 2007; Gottfredson et al., 2000; Larkin & Thyer, 1999; Whisman & Hammer, 2014). Students with high numbers of office discipline referrals are often low performing (Whisman & Hammer, 2014). Student achievement can be defined as either a student's GPA or the proficiency level on state assessments or end-of-course tests or exit exams (Whisman & Hammer, 2014). Students who have high numbers of discipline referrals statistically do not have positive learning outcomes (Ma, Jong, & Yuan, 2013; Ma & Klinger, 2000; Shin, Lee, & Kim, 2009; Whisman & Hammer, 2014). Many authors suggested that these students who struggle academically use their disruptive behaviors as means to cope with or cover up their academic shortcomings (Scott, 2001; Skiba et al., 1997).

Role of School Principal and Discipline

School administrators face many tough challenges in the course of a school day (Curran, 2017). The school district calls upon the school principal to be the instructional leader, the school manager, the disciplinarian, and the spokesperson to community stakeholders (Horng et al., 2010). Unfortunately, the role of school disciplinarian can often consume the majority of an administrator's time (Danforth & Smith, 2005; Duke & Jones, 1984; Gottfredson et al., 1993; Kadel & Follma, 1993; Nelson & Colvin, 1996; Skiba et al., 1997). Skiba et al. (1997) stated that school administrators spend more time on a daily basis on minor discipline offenses that were far from anything that would require zero-tolerance measures (Skiba et al., 1997).

While the school administrator may spend considerable time with less serious discipline infractions, the more serious discipline issues such as school shootings, gang activity, and drugs, often grab the news headlines across the nation (Scott et al., 2001). The National Center on Educational Statistics (NCES) refutes the notion that those headline grabbing activities happen on a regular basis (United States Department of Education, 2018). Further, NCES postulated that there are more mundane issues that absorb the majority of an administrator's time including tardiness (40%), absenteeism (25%), and student conflicts (12%); (Morrison & Skiba, 2001).

Chapter Summary

Exclusionary forms of discipline such as suspensions, expulsions, and zero tolerance policies have taken more and more criticism over the years (Morrison & Skiba, 2001; Scott et al., 2001; Skiba 1998). Other alternatives to exclusionary discipline have become much more commonplace (Canter & Canter, 2001, Zirkel, 2018). PBIS, RTI, and MTSS programs have been devised in order to not only reward students for good behavior, but also helped students learn appropriate replacement behaviors (Ennis & Gonsoulin, 2015). These programs have become state mandated in many states including Mississippi (Eagle et al., 2015; Mississippi Department of Education, 2016; Zirkel, 2018).

The MTSS programs incorporate the use of mentor teachers and group counseling interventions to help students learn strategies of self-control and self-monitoring (Gordon et al., 2013; Gregory et al., 1997; Scott & Cooper, 2013; Scott et al., 2010; Sprague et al., 1999; Steen et al. 2014; Whiston & Quinby, 2009).

Disparities in studies focused on student discipline were found to be evident along racial lines as well as among gender. Studies identified the number of school disciplinary infractions as a key variable for predicting academic success (Dinkes et al., 2007; Gottfredson et al., 2000;

Larkin & Thyer, 1999; Whisman & Hammer, 2014). In general, students with high numbers of disciplinary infractions were found to demonstrate low academic performance (Whisman & Hammer, 2014).

CHAPTER III

METHODOLOGY OF THE STUDY

Chapter III of this study discusses the methods and procedures that were used to conduct the study. The chapter includes a detailed description of the research design, research questions, research site, data collection procedures, and data analysis procedures. The main purpose of this research study was to investigate the effects of the implementation of MTSS interventions on students' GPAs and the number of discipline referrals/infractions.

Research Design

This quantitative research study used a quasi-experimental design. A quasi-experimental research design is defined as research that only uses two observations or data points, one before treatment and after the treatment, and the researcher is not able to choose a random sample (Cooper, 2020). This is not an uncommon practice in the application of educational interventions (Cooper, 2020). The study included an existing database consisting of students enrolled during the 2017-18 and 2018-19 school years. All discipline and GPA data were reported from the student information system used by the school district, Information Now. Discipline reports were run at the end of the 2017-2018 school year and again at the end of the 2018-2019 school year.

Research Questions

The following research questions guided the study. The research questions addressed the effects of the implementation of the MTSS during the 2018-2019 school year at a school located in the state of Mississippi.

1. Were there statistically significant differences between the number of office discipline referrals for students during the 2017-2018 school year (no Tier 1 intervention) and the 2018-2019 school year after implementation of the Tier 1 Intervention (a new discipline ladder)?
2. Were there statistically significant differences between the number of office discipline referrals for students during the 2017-2018 school year (no Tier 2 intervention) and during the 2018-2019 school year after implementation of the Tier 2 Intervention (a new discipline ladder and a mentor teacher)?
3. Were there statistically significant differences between the number of office discipline referrals for students during the 2017-2018 school year who received no Tier 3 intervention and during the 2018-19 school year after implementation of the new Tier 3 Intervention (a new discipline ladder, a mentor teacher, and group counseling)?
4. Were there statistically significant differences between the GPAs of students during the 2017-2018 school year (no Tier 1 intervention) and the 2018-2019 school year after implementation of the Tier 1 Intervention (a new discipline ladder)?
5. Were there statistically significant differences between the GPAs of students who received no Tier 2 intervention during the 2017-2018 school year and during the

2018-19 school year after the implementation of the Tier 2 Intervention (a new discipline ladder and a mentor teacher)?

6. Were there statistically significant differences between the GPAs of students who received no Tier 3 intervention during the 2017-2018 school year and during the 2018-19 school year after implementation of the of Tier 3 Intervention (a new discipline ladder, a mentor teacher, and group counseling)?

Institutional Review Board Approval

Permission to conduct this study was requested and obtained from the Mississippi State University Institutional Review Board for the protection of human subjects in research (Appendix A). Permission was obtained from the superintendent of the school district that provided access to collect data from the students' records.

Research Site

The site of this study was a local high school. The school had a negative reputation in the state for having extreme discipline issues during the past ten years. During the 2016-17 school year in the selected site, there were over 2,500 office discipline referrals issued that resulted in students being suspended for a total of 1,675 school days (Information Now retrieved July 2018). The 2017-18 school year was not much better. There were over 2,300 office discipline referrals that resulted in students being suspended for almost 1,800 school days (Information Now, 2018). Walking out of class, cursing teachers, fighting, gang activity, along with less severe disruptive and defiant behaviors were the types of behaviors most often reported (Information Now, 2018). The high school is located in a city of approximately 70,000 people.

An existing database was used for the study and included data on all male and female students who attended the selected school in the 2017-2018 school year and did not graduate in May of 2018. Data were included for 700 students, 10th through 12th grade. The demographic breakdown for the school was 95% African American, 3% Caucasian, less than 1% Hispanic, and less than 1% Asian. The school was characterized as a Title One School, and 98% of the students qualified for either free or reduced lunches.

The Treatment-MTSS

The implementation of the MTSS took place during the 2018-2019 school year. Three tier groups were organized based upon the number of office discipline referrals from the 2017-2018 school year. All students received a new discipline ladder. This is the only intervention that was implemented for students with fewer than five office referrals. This group is referred to as the Tier 1 intervention group.

Students with five to seven office discipline referrals during the 2017-2018 academic year were placed in the Tier 2 intervention group. These students received the same discipline ladder along with a secondary treatment of mentor teachers. The students were to meet with the mentor teachers on a daily basis for brief conversations.

Likewise, the students placed in the Tier 3 intervention group were placed based on the number of office discipline referrals from the 2017-2018 school year. The Tier 3 intervention group had eight or more discipline referrals during the 2017-18 school year. The Tier 3 intervention group received the same interventions as both the Tier 1 and Tier 2 students along with yet another intervention of weekly group counseling from the school counselor.

Tables 1 and 2 show the discipline ladders for 2017-2018 before the implementation of MTSS and 2018-2019 after the implementation of MTSS. The consequences for infractions are included in the discipline ladders.

Table 1

Discipline Ladder 2017-2018 School Year Before Implementation of MTSS

2017-2018 Discipline Ladder	
Step 1	Warning and parent contact
Step 2	1-3 days in In-School Detention (ISD)
Step 3	3-5 days in In-School Detention (ISD)
Step 4	1-3 days Out of School Suspension (OSS)
Step 5	3-5 days Out of School Suspension (OSS)
Step 6	5-10 days Out of School Suspension (OSS)

Table 1 shows that the first step in student discipline ladder was parent contact and a student would receive a warning. During the second and third steps, a student would receive a varied amount of days to serve in ISD. While in ISD, students were required to sit quietly in cubicles and work on assignments sent to them by their teachers. The rules in ISD were very strict. No talking was allowed. Students could not get out of their cubicles without permission. The fourth, fifth, and sixth steps of the 2017-2018 Discipline Ladder call for students to be sent home where they would receive no academic instruction.

Table 2 provides a display of the Discipline Ladder after implementation of MTSS. Six steps are included in the Discipline Ladder.

Table 2

Table 2 Discipline Ladder 2018-2019 School Year After Implementation of MTSS

2018-2019 Discipline Ladder	
Step 1	Warning and parent contact
Step 2	1-3 days in In-School Detention (ISD)
Step 3	3-5 days in In-School Detention (ISD)
Step 4	1-3 days In-school Detention at the Alternative School (ALT ISD)
Step 5	3-5 days In-school Detention at the Alternative School (ALT ISD)
Step 6	1-3 days Out of School Suspension (OSS)

There are two changes that were made to the 2018-2019 Discipline Ladder. Step 4 includes ALT ISD, designed to be served at the district’s Alternative School. Much like the regular ISD, students spent their days in a highly restrictive environment. However, students were bused to the alternative school at the beginning of the school day and returned to their home school before the busses ran to return students to their respective homes. MTSS was implemented as a school-wide program to help decrease the number of discipline infractions and improve student achievement.

Data Collection

Permission to use the existing database was granted by the superintendent of the school district. At the close of the 2018-2019 school year, the researcher reviewed the data for the entire student population. The extant data included the number of office discipline referrals, GPAs, gender, and race for each student in the form of an Excel spreadsheet generated by Information Now. Data were collected on the students for the 2017-2018 and 2018-2019 school years. The tier groups were formed based on the number of discipline referrals during the 2017-18 year. Table 3 shows the frequencies and percentages for each Tier group.

Table 3

Percentage and Frequency of Students in Tier 1, Tier 2 and Tier 3

Tier	Percentage	Frequency
Tier 1 Intervention	83%	587
Tier 2 Intervention	7%	49
Tier 3 Intervention	9%	64

Overall, there were 700 students included in the database used for the study. There were 587 students in Tier 1, 49 students in Tier 2, and 64 students in Tier 3

Data Analysis

The existing data were placed in an Excel spreadsheet to compute descriptive statistics for each group by grade level, gender, and race. After computing descriptive statistics, Statistical Package for Social Sciences (SPSS), Version 26 was used to conduct t-tests to determine if there

were statistically significant differences in the number of discipline referrals and GPAs before the implementation of MTSS in the 2017-2018 school year and after the implementation of MTSS in the 2018-2019 school year. SPSS was used to conduct Multivariate Analysis of Variance (MANOVA) of each tier to take a closer look at the discipline referrals and GPA data by gender and grade level.

Given that the majority of the student population was African American (95%), the population size of the non-African American group was so small that if included in the study, one could possibly identify the students in the data set. For this reason, the researcher did not perform statistical computations for race. Computations were performed by gender and grade levels to determine differences before and after implementation of the MTSS interventions.

Summary

A quasi-experimental research design was selected for the study. The researcher used an existing database to determine the effects of MTSS interventions on the number of student office discipline referrals and GPAs. The implementation of the MTSS interventions included the addition of a new discipline ladder, mentor teachers, and group counseling for the different tier groups. The research site was a rural high school in Mississippi with a student population of approximately 950 students. Of the 950 students, there were 700 students who met the study requirements of being enrolled before the implementation of MTSS in the 2017-2018 school year and after the implementation of MTSS during the 2018-2019 school year. Discipline and GPA data were collected at the end of the 2018-2019 school year. The data were analyzed using both t-tests and MANOVAs using the SPSS software.

CHAPTER IV

RESEARCH FINDINGS

Introduction

The purpose of this quantitative research study was to use an existing data set to determine if implementation of the MTSS interventions produced a significant statistical effect on the GPAs and the number of office discipline referrals of students at a high school. The MTSS interventions were implemented with three different groups within the student body. The first intervention was aimed at a Tier 1 group which included all members of the student body with less than five discipline referrals during the 2017-2018 school year. The Tier 1 intervention was the introduction of a new discipline ladder which added the use of ALT ISD as a step before the use of OSS. The second intervention was geared towards the Tier 2 group of the student body. The Tier 2 group included students who had between five and seven office discipline referrals from the 2017-2018 school year. The Tier 2 intervention included the new discipline ladder and the assignment of mentor teachers. The third intervention was focused on the Tier 3 students. The Tier 3 group was identified by having received eight or more office discipline referrals from the 2017-2018 school year. The Tier 3 intervention included the use of the new discipline ladder, mentor teachers, and small group counseling sessions.

Demographics of Students

At the end of the 2018-2019 school year, data were available for 700 students. These students were in attendance in both the 2017-2018 school year and the 2018-2019 school year.

There were 34 students who were enrolled in the 2017-2018 school year and did not complete the 2018-2019 school year. These students either withdrew, were expelled, or were incarcerated or passed away.

Table 4 provides a display of the students' data included in the study. The display shows the grade levels of students enrolled during the 2017-2018 academic year and the grade levels for the 2018-2019 academic year. Each student was assigned to a Tier group at the end of the 2017-2018 school year with implementation of the MTSS interventions taking place during the 2018-2019 school year.

Table 4

Frequencies and Percentages of Students by Tier Groups and by Grade Levels

2017-2018			2018 -2019			Tier 1		Tier 2		Tier 3	
Grade level	<i>f</i>	%	Grade level	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
9th	264	35%	10th	257	36%	217	37%	16	33%	24	38%
10th	231	31%	11th	215	31%	183	31%	14	28%	18	28%
11th	239	32%	12th	228	33%	187	32%	19	39%	22	34%
Total	734	100%		700	100%	587	84%	49	7%	64	9%

In general, grade levels had similar numbers of enrolled students placed in each tier group. Overall, there were 700 students assigned to tier groups and enrolled in 10th grade ($n=257$, 36%), 11th grade ($n=215$, 31%), or 12th grade ($n=228$, 33%) at the beginning of the year (2018-19). By far, the majority of the 700 students included in the study received the intervention for Tier 1 ($n=587$, 84%). Of the 587 students, the Tier 1 group was comprised of 217 (37%) 10th graders, 183 (31%) 11th graders, and 187 (32%) 12th graders. Tier 2 had a total of 49 (7%) students out of the 587 students, and of the 49 students, Tier 2 contained 16 (33%) 10th graders, 14 (28%) 11th graders, and 19 (39%) 12th graders. Tier 3 was the second largest group ($n=64$, 9.1%) of the 587 total students. Tier 3 contained 24 (38%) 10th graders, 18 (28%) 11th graders, and 22 (34%) 12th graders.

Table 5 contains the gender demographics for the 2018-2019 school year for the three Tier groups. The percentages of males and females for all Tier groups are included in these data.

Table 5

Frequencies and Percentages of Students by Tier Groups and by Gender

2018-2019	Tier 1		Tier 2		Tier 3		Total	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Female	308	53%	21	43%	27	42%	356	51%
Male	279	48%	28	57%	37	58%	344	49%
Total	587	100%	49	100%	64	100%	700	100%

In general, Table 5 shows the entire student body had slightly more females ($n=356$, 51%) than males ($n=344$, 49%) during the implementation year. For the Tier 1 group, there were also slightly more females ($n=308$, 53%) than males ($n=279$, 48%). However, for the Tier 2 and Tier 3 groups, the findings were different. The Tier 2 group had 57% ($n=28$) males and 43% ($n=21$) females. Tier 3 had 58% ($n=37$) males and 42% ($n=27$) females.

Table 6 includes the racial demographics for each Tier group. The frequencies and percentages are provided for each group.

Table 6

Frequencies and Percentages of Students by Tier Groups and by Race

2018-2019	Tier 1		Tier 2		Tier 3		Total	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
African-American	555	95%	48	98%	62	97%	665	95%
Caucasian	15	3%	1	3%	2	3%	18	3%
Hispanic	11	2%	0	>1%	0	>1%	11	2%
Asian	6	1%	0	>1%	0	>1%	6	1%
Total	587	100%	49	100%	64	100%	700	100%

Table 6 shows that of the 700 students in the three Tier groups, the majority ($n=665$, 95%) were African American, 18 (2.5%) were Caucasian, 11 (1.5%) were Hispanic, and 6 (.85%) were Asian. The racial composition of Tier 1 included 94.5% ($n=555$) African American, 2.5% ($n=15$) Caucasian, 1.8% ($n=11$) Hispanic, and 1% ($n=6$) Asians. Tier 2 included 98%

($n=48$) African American and 2% ($n=1$) Caucasian. There were no Hispanic or Asian students in Tier 2. Tier 3 was comprised of 96 % ($n=62$) African American students and 3% ($n=2$) Caucasian students. There were no Hispanic or Asian students in Tier 3.

Summary

The majority of the students were in Tier 1. There were slightly more females than males in all groups combined as well as in Tier 1. However, there were more males than females in Tier 2 and Tier 3 groups. In terms of race, the overwhelming majority of the students were African American (95%). No statistical tests were run based on race.

Findings

Research Question One

Research Question 1: Were there statistically significant differences between the number of office discipline referrals for students during the 2017-2018 school year (no Tier 1 intervention) and the 2018-2019 school year after implementation of the Tier 1 Intervention (new discipline ladder)?

There were 587 students enrolled in 2017-18 and placed in the Tier 1 group during the 2018-19 year of the Tier 1 intervention. All of the students in Tier 1 had received less than five referrals during the course of the 2017-2018 school year. The intervention for Tier 1 included the addition of a new discipline ladder. Table 7 provides a display of the means, standard deviations, and the frequencies for the number of office discipline referrals using the student data for the 2017-2018 school year (before implementation of the Tier 1 intervention) and the 2018-2019 school year (after implementation of the Tier 1 intervention).

Table 7

Descriptive Statistics of Tier 1 Students for Number of Discipline Referrals Before and After Implementation of the MTSS Intervention of the New Discipline Ladder

	N	M	SD
2017-2018 Tier 1	587	.88	1.195
2018-2019 Tier 1	587	1.41	2.804

Table 7 shows the mean score of .88 ($SD=1.195$) for the number of discipline referrals before the implementation and 1.41($SD =2.804$) for the number of discipline referrals after the implementation of the Tier 1 intervention. The mean score for the number of discipline referrals after the implementation of the Tier 1 intervention was higher ($M=1.41$) than the mean score ($M=.88$) before implementation.

Descriptive statistics were computed using the students' data by grade level. Table 8 provides a display of the means and standard deviations for the number of discipline referrals before and after the implementation of the Tier 1 intervention.

Table 8

Descriptive Statistics of Tier 1 Students for Number of Discipline Referrals by Grade Levels

Before and After Implementation of the MTSS Intervention of the New Discipline Ladder

Grade Level	Before Tier 1 Intervention 2017-2018			After Tier 1 Intervention 2018-2019		
	N	M	SD	N	M	SD
10 th Grade	217	.88	1.213	217	1.89	3.024
11 th Grade	183	.75	1.134	183	1.49	3.335
12 th Grade	187	1.02	1.194	187	.78	1.611
Total	587	.88	1.195	587	1.41	2.804

Table 8 illustrates there were higher mean scores for the number of discipline referrals for 10th graders ($M=1.89$, $SD=3.024$) and 11th graders ($M=1.49$, $SD=3.335$) after implementation of the Tier 1 intervention. However, the mean score for the number of discipline referrals for 12th graders was lower ($M= .78$, $SD=1.661$) after the Tier 1 intervention than before the Tier 1 intervention ($M=1.02$, $SD=1.194$).

Table 9 provides a display of the descriptive statistics using the students' data by grade level and gender. Table 9 shows the means and standard deviations for the number of discipline referrals before and after the implementation of the Tier 1 intervention.

Table 9

Descriptive Statistics of Tier 1 Students for Number of Discipline Referrals by Grade Level and Gender Before and After Implementation of the MTSS Intervention of the New Discipline Ladder

Gender	Grade Level	Before Tier 1 Intervention 2017-2018			After Tier 1 Intervention 2018-2019		
		N	M	SD	N	M	SD
Male	10 th Grade	114	.93	1.180	114	2.26	3.353
	11 th Grade	83	.75	1.157	83	2.27	4.596
	12 th Grade	83	.91	1.167	83	.98	2.131
Total		279	.87	1.168	279	1.89	3.531
Female	10 th Grade	102	.83	1.302	102	1.48	2.566
	11 th Grade	100	.76	1.102	100	.84	1.419
	12 th Grade	105	1.10	1.213	105	.62	1.023
Total		308	.9	1.220	308	.98	1.824

Table 9 shows there were higher mean scores for the number of discipline referrals after the Tier 1 intervention for all groups except 12th grade female students. The 12th grade female students had a mean score of 1.10 ($SD=1.213$) before the implementation of the MTSS Tier 1 intervention and a mean score of .62 ($SD=1.023$) for the number of discipline referrals after implementation of the Tier 1 intervention. The highest mean score ($M= 2.27$, $SD=4.596$) for number of discipline referrals was for 11th grade male students after the Tier 1 intervention.

Table 10 provides a display of the t-test statistics for the Tier 1 students. The t-test was conducted to determine if there was a difference in the number of office discipline referrals

before the implementation of MTSS in the 2017-2018 school year and after the implementation of the MTSS intervention of the new discipline ladder during the 2018-2019 school year.

Table 10

Paired Samples t-test of Tier 1 Students for Number of Office Discipline Referrals Before and After Implementation of the MTSS Intervention of a New Discipline Ladder

	Mean	SD	Std. Error Mean	95% Confidence Interval of Difference		T	df	Sig(2-tailed)
				Lower	Upper			
17-18 D 18-19 D	-.525	2.712	.112	-.745	-.305	-4.68	558	.000*

* $p \leq .05$

As shown in Table 10, the p value ($p < .05$) indicated a statistically significant difference in the number of discipline referrals before and after the implementation of the MTSS Tier 1 intervention ($t(587) = -4.687, p = .000$). Cohen's $d = -.19$ which means there is a small effect size.

A MANOVA was run to determine if there were differences by grade levels and gender within the groups (before and after implementation of the MTSS Tier 1 intervention). Table 11 contains a display of the information provided by the MANOVA.

Table 11

MANOVA Test of Tier 1 Students for the Number of Discipline Referrals Before and After the Implementation of the MTSS Intervention of a New Discipline Ladder

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Wilks's Lambda	.613	182.783	2.000	589.000	.000*	.387
Grade level	Wilks's Lambda	.958	6.334	4.000	1160.000	.000*	.021
Gender	Wilks's Lambda	.972	8.239	2.000	580.000	.000*	.028
Grade* Gender	Wilks's Lambda	.992	1.188	4.000	1160	.314	.004

* $p \leq .05$

Table 11 shows there was a significant statistical difference effect of the Tier 1 intervention based on the MANOVA Test at the intercept where $p = .000$ ($p < .05$) with an observed power of 1.000 and an effect size of .387. There was also a significant statistical difference between males and females as a result of the Tier 1 intervention in the Multivariate Test for gender where $p = .000$ ($p < .05$) with an observed power of .990. The Multivariate Test also showed a statistically significant difference among grade levels where $p = .000$ ($p < .05$) with an observed power of .961. This indicates that there was a significant statistical difference in the means before implementation and after implementation of the MTSS Tier 1 intervention of a new discipline ladder. There was not a positive effect in the number of discipline referrals after implementation of the MTSS Tier 1 intervention of a new discipline Ladder.

Conclusion One: The statistical information provided by the t-test showed that there was a statistically significant difference between the total number of office discipline referrals for Tier 1 students during the 2017-2018 school year (no Tier 1 intervention) and the 2018-2019 school year after implementation of the Tier 1 intervention of the new discipline ladder. The students had a higher number of discipline referrals after the implementation of the Tier 1 intervention. The implementation of the Tier 1 MTSS intervention did not have a positive effect on decreasing the number of office discipline referrals.

Research Question Two

Research Question 2: Were there statistically significant differences between the number of office discipline referrals for students during the 2017-2018 school year (no Tier 2 intervention) and during the 2018-2019 school year after implementation of the Tier 2 Intervention (new discipline ladder and mentor teacher)?

There were 49 students in the Tier 2 group. Students were included in this group if they had between five and eight office discipline referrals for the 2017-2018 school year. Table 12 below provides the descriptive statistics for the students enrolled in the Tier 2 group during the 2017-2018 school year and the 2018-2019 school year.

Table 12

Descriptive Statistics of Tier 2 Students for Number of Discipline Referrals Before and After Implementation of the MTSS Intervention of the New Discipline Ladder and Mentor Teachers

	N	M	SD
2017-2018 Tier 2	49	5.65	.751
2018-2019 Tier 2	49	4.82	4.969

Table 12 shows the mean score of 4.82 ($SD = 4.969$) for the number of discipline referrals after the implementation of the Tier 2 intervention of the new discipline ladder and mentor teachers. The mean score before the implementation was 5.65 ($SD = 7.51$) for the number of discipline referrals before the MTSS implementation. The mean score after the implementation was lower ($M = 4.82$).

Table 13 provides the descriptive statistics for the Tier 2 students by gender. Descriptive statistics for the Tier 2 students are provided for both before the Tier 2 implementation in the 2017-2018 school year and after the Tier 2 implementation of mentor teachers during the 2018-2019 school year.

Table 13

Descriptive Statistics of Tier 2 Students for the Number of Discipline Referrals by Grade Levels Before and After Implementation of the MTSS Intervention of the New Discipline Ladder and Mentor Teachers

Grade Level	Before Tier 2 Intervention 2017-2018			After Tier 2 Intervention 2018-2019		
	N	M	SD	N	M	SD
10 th Grade	16	5.63	.806	16	8.19	6.156
11 th Grade	14	5.71	.726	14	5.14	3.718
12 th Grade	19	5.63	.761	19	1.74	2.023
Total	49	5.65	.751	49	4.82	4.969

Table 13 provides the means and standard deviations for each grade level. The highest mean score was for 10th grade Tier 2 students ($M=8.19$, $SD= 6.156$) after the implementation of the MTSS intervention. The lowest mean score was for 12th grade Tier 2 students in 2018-2019 ($M=1.74$, $SD=2.023$) after implementation of the Tier 2 intervention.

Table 14 provides a display of the descriptive statistics by grade level and gender. The descriptive statistics are shown for the 2017-2018 school year before the implementation of the MTSS Tier 2 intervention and for the 2018-2019 school year after the implementation of the MTSS intervention.

Table 14

Descriptive Statistics of Tier 2 Students for the Number of Discipline Referrals by Grade Levels and Gender Before and After Implementation of the MTSS Intervention of the New Discipline Ladder and Mentor Teachers

Gender	Grade Level	Before Tier 2 Intervention 2017-2018			After Tier 2 Intervention 2018-2019		
		N	M	SD	N	M	SD
Male	10 th Grade	11	5.64	.809	11	8.27	6.695
	11 th Grade	9	5.56	.726	9	6.67	3.640
	12 th Grade	8	5.38	.744	8	2.13	2.295
Total		28	5.54	.744	28	6.0	5.347
Female	10 th Grade	5	5.6	.894	5	8.0	5.477
	11 th Grade	5	6.0	.707	5	2.4	1.949
	12 th Grade	11	5.82	.751	11	1.45	1.864
Total		21	5.81	.750	21	3.24	4.011

Table 14 indicates the highest mean score was for 10th grade male students ($M=8.27$, $SD= 6.695$) after implementation of the MTSS Tier 2 intervention of the new discipline ladder and mentor teachers. The lowest mean score was for 12th grade female students ($M=1.45$, $SD=1.864$) after the implementation of the MTSS Tier 2 interventions.

Table 15 contains information on the statistical analysis to determine if there was a difference in the number of discipline referrals for Tier 2 students before and after implementation of the MTSS Tier 2 interventions of the new discipline ladder and mentor teachers. The statistical analysis performed was a paired samples t-test.

Table 15

Paired Samples t-test of Tier 2 Students for the Number of Discipline Referrals Before and After Implementation of the MTSS Interventions of the New Discipline Ladder and Mentor Teachers

	M	SD	Std. Error Mean	95% Confidence Interval of Difference		T	df	Sig(2-tailed)
				Lower	Upper			
17-18 D	.837	5.100	.729	-.628	2.302	1.148	48	.257
18-19 D								

* $p \leq .05$

The results from the t-test as reported in Table 15 illustrated $t(49) = 1.148$, $p = .257$. There was not a statistically significant difference between the mean scores of the students' number of discipline referrals before implementation of the Tier 2 interventions and after the implementation. Cohen's $d = .16$ which represents a small effect size.

A MANOVA was run to determine if there were differences by grade levels and gender within the two groups (before and after implementation of the MTSS Tier 2 interventions). Table 16 contains the display from the MANOVA Test.

Table 16

MANOVA Test of Tier 2 Students for the Number of Discipline Referrals Before and After the Implementation of the MTSS Interventions of the New Discipline Ladder and Mentor Teachers

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Wilks's Lambda	.017	1227.197	2.000	42.000	.000*	.983
Grade level	Wilks's Lambda	.696	4.173	4.000	84.000	.006*	.154
Gender	Wilks's Lambda	.932	1.529	2.000	42.000	.229	.068
Grade* Gender	Wilks's Lambda	.940	.657	4.000	82.000	.633	.030

* $p \leq .05$

Table 16 contains the results of the MANOVA Test, which revealed that there were statistically significant differences at both the intercept where $p=.000$ ($p \leq .05$) with an observed power of 1.000 and at Grade Level with a $p = .006$ ($p \leq .05$) and an observed power of .908. There was not a statistically significant difference for gender where $p=.229$ ($p \leq .05$) with an observed power of .307.

Conclusion Two: There was not a statistically significant difference in the number of office discipline referrals for Tier 2 students before and after the implementation of the MTSS interventions of the new discipline ladder and mentor teachers. The implementation of the MTSS interventions of the new discipline ladder and the mentor teachers did not have a positive effect on the number of discipline referrals for Tier 2 students. However, there was a statistically significant difference between grade levels in the number of office discipline referrals for Tier 2

students before and after the MTSS interventions of the new discipline ladder and mentor teachers. The highest mean score representing the highest number of discipline referrals was for 10th grade male students ($M=8.27$, $SD= 6.695$) after implementation of the MTSS Tier 2 interventions. The lowest mean score was for 12th grade female students ($M=1.45$, $SD=1.864$), representing a positive effect of the interventions and the lowest number of discipline referrals after implementation of the Tier 2 interventions.

Research Question Three

Research Question 3: Were there statistically significant differences between the number of office discipline referrals for students during the 2017-2018 school year (no Tier 3 intervention) and the 2018-19 school year after implementation of the new Tier 3 Interventions (a new discipline ladder, a mentor teacher, group counseling)?

There were 64 students placed in Tier 3 for the MTSS interventions of the new discipline ladder, mentor teachers, and group counseling. The students were placed in this Tier because they had more than eight office discipline referrals in the 2017-2018 school year before the implementation of the MTSS interventions. Table 17 below provides the descriptive statistics for the number of referrals for the 2017-2018 school year before the MTSS implementation and the 2018-2019 school year after implementation.

Table 17

Descriptive Statistics of Tier 3 Students for the Number of Discipline Referrals Before and After Implementation of the MTSS Interventions of the New Discipline Ladder, Mentor Teachers, and Group Counseling

	N	M	SD
2017-2018 Tier 3	64	12.45	4.683
2018-2019 Tier 3	64	9.3	7.873

Table 17 shows that Tier 3 students had a mean score of 12.45 ($SD=4.863$) for the number of office discipline referrals before implementation of the MTSS interventions during the 2017-2018 school year. The mean score for the number of office discipline referrals after the implementation of the MTSS interventions was 9.3 ($SD=7.873$). The mean score after the implementation of MTSS was less than the mean score before implementation indicating a lower number of discipline referrals.

Table 18 contains the descriptive statistics for Tier 3 students by grade level. This table displays the descriptive statistics for Tier 3 before the implementation of the MTSS Tier 3 interventions in the 2017-2018 school year and after the implementation of the Tier 3 intervention of group counseling session during the 2018-2019 school year.

Table 18

Descriptive Statistics of Tier 3 Students for the Number of Discipline Referrals by Grade Levels Before and After Implementation of the MTSS Interventions of the New Discipline Ladder, Mentor Teachers, and Group Counseling

Grade Level	Before Tier 3 Intervention 2017-2018			After Tier 3 Intervention 2018-2019		
	N	M	SD	N	M	SD
10 th Grade	24	12.46	5.200	24	12.58	8.845
11 th Grade	18	12.72	4.268	18	11.11	7.506
12 th Grade	22	12.23	4.618	22	4.23	4.331
Total	64	12.45	4.683	64	9.30	7.873

Table 18 illustrates the lowest mean score of 4.23 ($SD=4.332$) for students who were in 12th grade during the 2018-2019 school year after the implementation of the MTSS Tier 3 interventions. The highest mean score for the number of discipline referrals by grade level was for the students in 11th grade before implementation of the MTSS.

Table 19 provides a display of the descriptive statistics for the Tier 3 students by grade level and by gender. Means and standard deviations are provided for the students before and after implementation of the MTSS Tier 3 interventions.

Table 19

Descriptive Statistics of Tier 3 Students for the Number of Discipline Referrals by Grade Levels and Gender Before and After Implementation of the MTSS Interventions of the New Discipline Ladder, Mentor Teachers, and Group Counseling

Gender	Grade Level	Before Tier 3 Intervention 2017-2018			After Tier 3 Intervention 2018-2019		
		N	M	SD	N	M	SD
Male	10 th Grade	11	12.55	6.654	11	12.82	9.272
	11 th Grade	9	13.89	4.781	9	12.67	7.106
	12 th Grade	17	12.94	4.968	17	5.41	4.244
Total		37	13.05	5.349	37	9.38	4.244
Female	10 th Grade	13	12.38	3.863	13	12.38	8.211
	11 th Grade	9	11.56	3.575	9	9.56	7.986
	12 th Grade	5	9.80	1.924	5	.20	.447
Total		27	11.63	3.510	27	9.30	8.521

Table 19 shows the lowest mean score of .20 ($SD=.447$) for 12th grade females for number of discipline referrals after the implementation of the MTSS Tier 3 interventions. The highest mean score was for 11th grade males ($M=13.89$, $SD =4.781$) for the number of discipline referrals before implementation of MTSS Tier 3 interventions. There was no change in the mean scores for 10th grade females before and after implementation of the Tier 3 interventions.

Table 20 contains the results of the t-test analysis of Tier 3 student data. The t-test was used to determine if there were a statistical difference between the number of discipline referrals

for the Tier 3 students before the Tier 3 MTSS interventions and after the MTSS Tier 3 interventions.

Table 20

Paired Samples t-test of Tier 3 Students for the Number of Discipline Referrals Before and After Implementation of the MTSS Interventions of the New Discipline Ladder, Mentor Teachers, and Group Counseling

	M	SD	Std. Error Mean	95% Confidence Interval of Difference		t	df	Sig(2-tailed)
				Lower	Upper			
17-18 D	3.156	7.742	.968	1.222	5.090	3.261	63	.002*
18-19 D								

* $p \leq .05$

The results from the t-test as reported in Table 20 illustrated that $t(63) = 3.261, p = .002$. This p value for the number of discipline referrals for Tier 3 students regarding the number of discipline referrals is lower than an alpha of .05 meaning that there was a statistically significant difference between the mean scores of the Tier 3 students regarding the number of discipline referrals before and after implementation of the Tier 3 interventions. Cohen's $d = .40$ which represents a small effect size.

Further, a MANOVA test was conducted to determine if there were differences between groups based on grade levels and gender. Table 21 contains the information provided by the MANOVA test.

Table 21

MANOVA Test for Tier 3 Students for the Number of Discipline Referrals Before and After the Implementation of the MTSS Interventions of a New Discipline Ladder, a Mentor Teachers, and Group Counseling

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Wilks's Lambda	.134	184.074	2.000	57.000	.000*	.866
Grade level	Wilks's Lambda	.743	4.573	4.000	114.000	.002*	.138
Gender	Wilks's Lambda	.944	1.690	2.000	57.000	.194	.056
Grade* Gender	Wilks's Lambda	.972	.405	4.000	114.000	.805	.014

* $p \leq .05$

Table 21 illustrates that the MANOVA Test revealed that there was a statistically significant difference at both the intercept where $p=.000$ ($p \leq .05$) with an observed power of 1.000 and at Grade Level with a $p = .002$ ($p \leq .05$) and an observed power of .937. There was not a statistically significant difference for gender where $p=.194$ ($p \leq .05$) with an observed power of .342.

Conclusion Three: There was a statistically significant difference in the number of discipline referrals for Tier 3 students before and after the implementation of the MTSS Tier 3 interventions of the new discipline ladder, mentor teachers, and group counseling, indicating a positive effect. Further, the findings showed a statistically significant difference in the number of discipline referrals for Tier 3 students before and after implementation of the MTSS Tier 3

interventions between grade levels. The lowest mean score for the number of discipline referrals was for 12th grade female students after the implementation of the MTSS Tier 3 interventions. The highest mean score for the number of discipline referrals was for 11th grade male students before implementation of the MTSS Tier 3 interventions.

Research Question Four

Research Question 4: Were there statistically significant differences between the GPAs of students during the 2017-2018 school year (no Tier 1 intervention) and the 2018-2019 school year after implementation of the Tier 1 Intervention of a new discipline ladder?

Table 22 provides a display of the descriptive statistics for the Tier 1 students’ GPAs before and after the MTSS intervention of the new discipline ladder. Mean scores and standard deviations are provided in the display. There were 587 students included in Tier 1. These students were included in Tier 1 because they had less than five referrals in the 2017-2018 school year. The GPAs were based on the overall cumulative scores using a 4.0 scale.

Table 22

Descriptive Statistics of Tier 1 Students for GPAs Before and After Implementation of the MTSS Intervention of a New Discipline Ladder.

	N	M	SD
2017-2018 Tier 1	587	2.681	.790
2018-2019 Tier 1	587	2.698	.779

Table 22 reveals a mean score of ($M=2.698$, $SD=.779$) for students' GPAs after the MTSS Tier 1 intervention during the 2018-2019 school year. The mean score of 2.68 ($SD=.790$) for students' GPA before the implementation of the MTSS Tier 1 intervention was slightly lower than the mean score after the implementation of the Tier 1 MTSS intervention.

Table 23 provides a display of the descriptive statistics for Tier 1 students' GPAs by grade level. The data include means and standard deviations for each grade level before and after implementation of the MTSS Tier 1 intervention.

Table 23

Descriptive Statistics of Tier 1 Students for GPAs by Grade Level Before and After

Implementation of MTSS Intervention of the New Discipline Ladder

Grade Level	Before Tier 1 Intervention 2017-2018			After Tier 1 Intervention 2018-2019		
	N	M	SD	N	M	SD
10 th Grade	217	2.484	.846	217	2.489	.835
11 th Grade	183	2.797	.736	183	2.810	.705
12 th Grade	187	2.796	.733	187	2.831	.732
Total	587	2.681	.790	587	2.698	.779

Table 23 shows there were slight increases in students' GPAs after the implementation of the Tier 1 intervention for all grade levels. The Table shows that 10th grade students had the lowest mean score for GPA ($M=2.489$, $SD=.835$) after the implementation and 12th grade students had the highest mean score ($M=2.831$, $SD=.732$) after the implementation of the Tier1 intervention.

Table 24 presents the descriptive statistics for student’s GPAs by both grade level and gender. Mean scores and standard deviations are provided for each grade level by gender.

Table 24

Descriptive Statistics of Tier 1 Students for GPAs by Grade Levels and Gender Before and After Implementation of the MTSS Intervention of the New Discipline Ladder

Gender	Grade Level	Before Tier 1 Intervention 2017-2018			After Tier 1 intervention 2018-2019		
		N	M	SD	N	M	SD
Male	10 th Grade	114	2.33	.829	114	2.37	.860
	11 th Grade	83	2.51	.771	83	2.58	.722
	12 th Grade	82	2.75	.737	82	2.76	.741
Total		297	2.51	.802	297	2.55	.800
Female	10 th Grade	103	2.64	.839	103	2.61	.704
	11 th Grade	100	3.02	.619	100	2.99	.725
	12 th Grade	105	2.82	.732	105	2.87	.725
Total		308	2.68	.790	308	2.82	.737

Table 24 shows there were slight changes in Tier 1 students’ GPAs after the implementation of the MTSS Tier 1 intervention for all grade levels. The highest mean score of 3.02 ($SD=.619$) was for 11th grade females before implementation of the MTSS Tier 1 intervention. Likewise, the highest mean score of 2.99 ($SD=.725$) was for 11th grade females after implementation of the Tier 1 intervention. The lowest mean score was for 11th grade males.

Mean scores increased for all groups except 10th grade females and 11th grade females after implementation of the MTSS Tier 1 interventions.

Table 25 provides a display of the data analysis for a *t*-test. A *t*-test was performed to determine if there was a statistically significant differences between the students' GPAs before and after implementation of the MTSS Tier 1 intervention.

Table 25

Paired Samples t-Test of Tier 1 Students for GPAs Before and After Implementation of the MTSS Intervention of the New Discipline Ladder

	M	SD	Std. Error Mean	95% Confidence Interval of Difference		t	df	Sig(2-tailed)
				Lower	Upper			
GPA17-18 GPA18-19	.170	.389	.016	-.014	.048	1.061	586	.280

* $p \leq .05$

The results from the *t*-test illustrated that there was not a statistically significant difference in the students' GPAs before and after the MTSS Tier 1 implementation, $t(586) = 1.061, p = .280$. The *p* value was higher than an alpha of .05 meaning there was no statistical significance.

A MANOVA test was run to determine if there were differences between the Tier 1 groups based on grade levels and gender. Table 26 contains the information provided by the MANOVA test.

Table 26

MANOVA Test of Tier 1 Students for GPAs Before and After the Implementation of the MTSS

Intervention of the New Discipline Ladder

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Wilks's Lambda	.069	3918.3 16	2.000	580.000	.000 *	.931
Grade level	Wilks's Lambda	.960	5.913	4.000	1160.00 0	.000 *	.020
Gender	Wilks's Lambda	.964	10.889	2.000	580.000	.000 *	.036
Grade* Gender	Wilks's Lambda	.985	2.228	4.000	1158.00 0	.064	.008

* $p \leq .05$

Table 26 shows there was a statistically significant difference for the Tier 1 students regarding GPAs before and after the Tier 1 intervention at the intercept where $p = .000$ ($p \leq .05$) with an observed power of 1.000 and an effect size of .931. There was also a statistically significant difference for the Tier 1 students regarding GPAs before and after the Tier 1 intervention for gender where $p = .000$ ($p \leq .05$) with an observed power of .984 and an effect size of .020. The MANOVA test also showed a statistically significant difference for the Tier 1 students regarding GPA for grade level where $p = .000$ ($p \leq .05$) with an observed power of .991 and an effect size of .036.

Conclusion Four: The findings indicated there was not a statistically significant difference in the Tier 1 students' GPAs before and after implementation of the MTSS Tier 1 intervention of the new discipline ladder. However, there were statistically significant

differences in the Tier 1 students' GPAs for the grade levels and gender. There were slight increases in students' GPAs after the implementation of the MTSS Tier 1 intervention for all grade levels except 10th grade females and 11th grade females after implementation of the MTSS Tier 1 interventions.

Research Question Five

Research Question 5: Were there statistically significant differences between the GPAs of students who received no Tier 2 intervention during the 2017-2018 school year (no Tier 2 intervention) and the 2018-19 school year after the implementation of the Tier 2 Intervention (a new discipline ladder and a mentor teacher)?

Table 27 provides a display of the descriptive statistics for the students' GPAs before the MTSS Tier 2 interventions in the 2017-2018 school year and after the MTSS Tier 2 interventions of a new discipline ladder and mentor teachers in the 2018-2019 school year. Mean scores and standard deviations are provided in the display. There were 49 students included in Tier 2. These students were considered Tier 2 because they had between five and eight referrals in the 2017-2018 school year.

Table 27

Descriptive Statistics of Tier 2 Students for GPAs Before and After Implementation of the MTSS Interventions of the New Discipline Ladder and Mentor Teachers

	N	M	SD
2017-2018 Tier 2	49	2.06	.799
2018-2019 Tier 2	49	2.02	.744

Table 27 reveals a mean score of 2.02 ($SD = .744$) for students' GPAs after the MTSS Tier 2 interventions during the 2018-2019 school year. The mean score of 2.06 ($SD=.799$) was computed for students' GPAs before the implementation of the MTSS Tier 2 interventions and is slightly higher than the mean score after the implementation of the Tier 2 MTSS interventions.

Table 28 provides a display of the descriptive statistics for Tier 2 students' GPAs by grade levels. This information includes data from the 2017-2018 school year without the Tier 2 MTSS interventions and after the addition of the Tier 2 MTSS interventions of a new discipline ladder and mentor teachers during the 2018-2019 school year.

Table 28

Descriptive Statistics of Tier 2 Student for GPAs by Grade Level Before and After

Implementation of the MTSS Interventions of New Discipline Ladder and Mentor Teachers

Grade Level	Before Tier 2 intervention 2017-2018			After Tier 2 Intervention 2018-2019		
	N	M	SD	N	M	SD
10 th Grade	16	1.56	.710	16	1.50	.695
11 th Grade	14	2.13	.50	14	2.03	.643
12 th Grade	19	2.43	.587	19	2.43	.595
Total	49	2.06	.703	49	2.01	.744

Table 28 shows there were slight decreases in students' GPAs after the implementation of the Tier 2 interventions for all grade levels except 12th grade. The table shows that the 10th grade students had the lowest mean score for GPA (M=1.50, SD=.695) after the implementation and 12th grade students had the same mean score (M=2.43, SD=.595) before and after the implementation of the Tier 2 interventions.

Table 29 contains the descriptive statistics by grade levels and by gender for Tier 2 students' GPAs before and after the Tier 2 interventions of the new discipline ladder and mentor teachers. Means and standard deviations are provided.

Table 29

Descriptive Statistics of Tier 2 Students for GPAs by Grade Level and Gender Before and After Implementation of the MTSS Interventions of the New Discipline Ladder and Mentor Teachers

Gender	Grade Level	Before Implementation 2017-2018			After Implementation 2018-2019		
		N	M	SD	N	M	SD
Male	10th Grade	11	1.54	.538	11	1.44	.505
	11th Grade	9	2.24	.434	9	2.05	.660
	12th Grade	8	2.27	.717	8	2.27	.735
Total		28	1.97	.647	28	1.87	.794
Female	10th Grade	5	1.59	1.079	5	1.61	1.073
	11th Grade	5	1.94	.616	5	1.99	.684
	12th Grade	11	2.55	.473	11	2.55	.473
Total		21	2.19	.775	21	2.19	.775

Table 29 shows that there were very few changes in the students' GPAs after the implementation of the MTSS Tier 2 interventions. The mean score of 2.05 ($SD=.660$) for 11th grade males after the MTSS intervention was the greatest drop from a mean score of 2.24 ($SD=.434$) before the MTSS Tier 2 interventions. The highest mean score ($M=2.55$, $SD=.473$) was for 12th grade females which was the same before and after implementation of the Tier 2 interventions. The 12th grade females had no change in the mean score before and after implementation of the MTSS Tier 2 interventions.

Table 30 provides a display of the paired samples t-test. A paired samples t-test was performed to determine if there was a statistically significant difference in the students' GPAs before and after the MTSS Tier 2 interventions of a new discipline ladder and mentor teachers.

Table 30

Paired Samples t-Test of Tier 2 Students for GPAs Before and After Implementation of the MTSS Interventions of New Discipline Ladder and Mentor Teachers

	M	SD	Std. Error Mean	95% Confidence Interval of Difference		t	df	Sig(2-tailed)
				Lower	Upper			
GPA17-18 GPA18-19	.04977	.25381	.03625	-.0231	.12267	1.373	48	.176

$p \leq .05$

Table 30 shows there was not a statistically significant difference in the students' GPAs for Tier 2 before and after implementation of the MTSS Tier 2 interventions. Table 29 shows $t(48) = 1.373, p = .176$. The p value as indicated in the paired samples t-test of students' GPAs for Tier 2 before and after the MTSS interventions in the 2017-2018 school year and the 2018-2019 school year was .176. This p value is higher than an alpha of .05 meaning that there was not a statistically significant difference between the two groups.

A MANOVA test was computed to determine if there were differences among the Tier 2 groups based on grade levels and gender before and after implementation of the MTSS Tier 2 interventions. Table 30 provides a display of the MANOVA Test.

Table 31

MANOVA Test of Tier 2 Students for GPAs Before and After the Implementation of the MTSS

Interventions of New Discipline Ladder and Mentor Teachers

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Wilks's Lambda	.083	230.854	2.000	42.000	.000*	.917
Grade level	Wilks's Lambda	.733	3.522	4.000	84.000	.010*	.144
Gender	Wilks's Lambda	.951	1.088	2.000	42.000	.346	.049
Grade* Gender	Wilks's Lambda	.931	.763	4.000	84.000	.552	.035

* $p \leq .05$

Table 31 shows a statistically significant difference at the intercept where $p=.000$ ($p \leq .05$) with an observed power of 1.000 and a large effect size of .917. There is also a statistically significant difference for grade level where $p=.010$ ($p \leq .05$) with an observed power of .847 and a small effect size of .144.

Conclusion Five: There was not a statistically significant difference in the students' GPAs for Tier 2 before and after implementation of the MTSS Tier 2 interventions of a new discipline ladder and mentor teachers. While there was no statistically significant change before or after the implementation of the MTSS interventions, there was a statistically significant difference in students' GPAs for the different grade levels. The highest mean score ($M = 2.55$, $SD=.473$) was for 12th grade females. The 12th grade females had no change in the mean score

before and after implementation of the MTSS Tier 2 interventions. The lowest mean score was for 10 grade males ($M = 1.44$, $SD = .505$).

Research Question Six

Research Question 6: Were there statistically significant differences between the GPAs of students who received no Tier 3 intervention during the 2017-2018 school year (no Tier 3 interventions) and the 2018-2019 school year after implementation of the of Tier 3 Interventions (new discipline ladder, mentor teachers, group counseling)?

Table 32 contains the descriptive statistics for the students' GPAs before and after the MTSS Tier 3 interventions of the new discipline ladder, teacher mentors, and group counseling. There were 64 students who met the group criteria of having more than eight office referrals.

Table 32

Descriptive Statistics of Tier 3 Students' GPAs Before and After Implementation of the MTSS Interventions of the New Discipline Ladder, Mentor Teachers, and Group Counseling

	N	M	SD
2017-2018 Tier 3	64	1.58	.636
2018-2019 Tier 3	64	1.54	.667

Table 32 shows a mean score of 1.58 ($SD = .6363$) for Tier 3 students' GPAs for the 2017-2018 school year before the implementation of the MTSS Tier 3 interventions. The mean score of 1.54 ($SD = .6373$) for Tier 3 students' GPAs for the 2018-2019 school year after the MTSS Tier 3 interventions was lower than the mean score before the intervention.

Table 33 contains the descriptive statistical data for Tier 3 students' GPAs before and after the interventions of the MTSS Tier 3 interventions by grade level. Means and standard deviations are provided.

Table 33

Descriptive Statistics of Tier 3 Students for GPAs by Grade Level Before and After Implementation of the MTSS Interventions of New Discipline Ladder, Mentor Teachers, and Group Counseling

Grade Level	Before Tier 3 Intervention			After Tier 3 Intervention		
	N	M	SD	N	M	SD
10 th Grade	24	1.29	.589	24	1.26	.664
11 th Grade	18	1.77	.667	18	1.67	.669
12 th Grade	18	1.74	.564	22	1.75	.581
Total	64	1.58	.636	64	1.54	.667

Table 33 shows very little changes in the students' GPAs by grade levels before and after the implementation of the Tier 3 interventions. Both 10th and 11th grade students had slight decreases in their GPAs after implementation of the MTSS Tier 3 interventions. The 12th grade students had a mean score GPA of 1.74 (SD = .564) before implementation and a mean score GPA of 1.75 (SD = .581) after implementation of the Tier 3 MTSS interventions.

Table 34 displays the descriptive statistics for the Tier 3 students' GPAs by both grade level and gender. Means and standard deviations are provided.

Table 34

Descriptive Statistics of Tier 3 Students for GPAs by Grade Level and Gender Before and After Implementation of the MTSS Interventions of New Discipline Ladder, Mentor Teachers, and Group Counseling

Gender	Grade Level	Before Tier 3 Intervention 2017-2018			After Tier 3 Intervention 2018-2019		
		N	M	SD	N	M	SD
Male	10 th Grade	11	1.17	.425	11	1.21	.521
	11 th Grade	9	1.49	.446	9	1.52	.430
	12 th Grade	17	1.70	.569	17	1.72	.591
Total		37	1.49	.539	37	1.52	.567
Female	10 th Grade	13	1.39	.700	13	1.31	.784
	11 th Grade	9	2.05	.753	9	1.83	.844
	12 th Grade	5	1.89	.583	5	1.82	.606
Total		27	1.70	.741	27	1.58	.794

Table 34 shows that all mean scores for GPAs of male students in 10th, 11th, and 12th grades slightly increased after the implementation of MTSS Tier 3 interventions. Mean scores for GPAs of female students in 10th, 11th, and 12th grades showed slight decreases after the implementation of MTSS Tier 3 interventions.

Table 35 provides the results from the t-test of the student's GPAs before the MTSS Tier 3 interventions and the students' GPAs after the MTSS Tier 3 interventions. The t-test was computed to determine if there was a difference between the mean scores after the implementation of the MTSS Tier 3 interventions.

Table 35

Paired Samples t-Test of Tier 3 Students for GPAs Before and After Implementation of the MTSS Interventions of the New Discipline Ladder, Mentor Teachers, and Group Counseling

	M	SD	Std. Error Mean	95% Confidence Interval of Difference		t	df	Sig(2-tailed)
				Lower	Upper			
GPA17-18 GPA18-19	.3572	.29310	.03663	-.0374	.10894	.975	63	.333

$p = .05$

Table 35 shows $t = .975 (63), p=.333$. The p value as indicated in the paired samples t-test of GPAs for Tier 3 students in the 2017-2018 school year and the 2018-2019 school year is .333. This p value is higher than an alpha of .05 meaning that the result is not statistically significant.

A MANOVA was computed to determine if there were differences among the Tier 3 students based on grade levels and gender before and after implementation of the MTSS Tier 3 interventions. Table 36 provides a display of the results of the MANOVA test.

Table 36

MANOVA Test of Tier 3 Students for GPAs Before and After the Implementation of the MTSS

Interventions of New Discipline Ladder, Mentor Teachers, and Group Counseling

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Wilks's Lambda	.123	203.387	2.000	57.000	.000*	.877
Grade level	Wilks's Lambda	.845	2.510	4.000	114.000	.046*	.081
Gender	Wilks's Lambda	.881	3.866	2.000	57.000	.027*	.119
Grade* Gender	Wilks's Lambda	.971	.427	4.000	114.00	.789	.015

* $p \leq .05$

Table 36 shows a statistically significant difference at the intercept where $p = .000$ ($p \leq .05$) with an observed power of 1.000 and a large effect size of .877. There is also a statistically significant difference in the mean scores at the grade level where $p = .046$ ($p \leq .05$) with an observed power of .697 and a small effect size of .081. There was also a statistically significant difference found between gender where $p = .027$ ($p \leq .05$) with an observed power of .677 and a small effect size of .119.

Conclusion Six: There was not a statistically significant difference in the Tier 3 students' GPAs before and after the MTSS Tier 3 interventions of the new discipline ladder, mentor teachers, and group counseling. There was, however, a statistically significant difference in the students' GPAs at the different grade levels and gender. Mean scores for GPAs of male students in 10th, 11th, and 12th grades slightly increased after the implementation of MTSS Tier 3

interventions. Mean scores for GPAs of female students in 10th, 11th, and 12th grades showed slight decreases after the implementation of MTSS Tier 3 interventions.

Summary

The study included an analysis of the data for 700 students in three Tier groups. The majority ($n=665$, 95%) were African American, 18 (2.5%) were Caucasian, 11 (1.5%) were Hispanic, and 6 (.85%) were Asian. The racial composition of Tier 1 students included 94.5% ($n=555$) African American, 2.5% ($n=15$) Caucasian, 1.8% ($n=11$) Hispanic, and 1% ($n=6$) Asians. Findings for the demographics from the existing database for the study did not include analysis by race because the small numbers of non-African American students could possibly be identified in the Tier group populations.

The entire student body had slightly more females than males during the implementation year. For the Tier 1 group, there were also slightly more females than males. However, for the Tier 2 and Tier 3 groups the findings were different. Both Tier 2 and Tier 3 groups had more males than females.

The statistical information provided by the t-test showed that there was a statistically significant difference between the total number of office discipline referrals for Tier 1 students during the 2017-2018 school year (no Tier 1 intervention) and the 2018-2019 school year after implementation of the Tier 1 intervention of the new discipline ladder. The students had a higher number of discipline referrals after the implementation of the Tier 1 intervention. The implementation of the Tier 1 MTSS intervention did not have a positive effect on decreasing the number of office discipline referrals.

There was not a statistically significant difference in the number of office discipline referrals for Tier 2 students before and after the implementation of the MTSS interventions of the

new discipline ladder and mentor teachers. The implementation of the MTSS interventions of the new discipline ladder and the mentor teachers did not have a positive effect on the number of discipline referrals for Tier 2 students. However, there was a statistically significant difference between grade levels in the number of office discipline referrals for Tier 2 students before and after the MTSS interventions of the new discipline ladder and mentor teachers. The highest mean score representing the highest number of discipline referrals was for 10th grade male students ($M=8.27$, $SD= 6.695$) after implementation of the MTSS Tier 2 interventions. The lowest mean score was for 12th grade female students ($M=1.45$, $SD=1.864$), representing a positive effect of the interventions and the lowest number of discipline referrals after implementation of the Tier 2 interventions.

There was a statistically significant difference in the number of discipline referrals for Tier 3 students before and after the implementation of the MTSS Tier 3 interventions of the new discipline ladder, mentor teachers, and group counseling, indicating a positive effect. Further, the findings showed a statistically significant difference in the number of discipline referrals for Tier 3 students before and after implementation of the MTSS Tier 3 interventions between grade levels. The lowest mean score for the number of discipline referrals was for 12th grade female students after the implementation of the MTSS Tier 3 interventions. The highest mean score for the number of discipline referrals was for 11th grade male students before implementation of the MTSS Tier 3 interventions.

The findings indicated there was not a statistically significant difference in the Tier 1 students' GPAs before and after implementation of the MTSS Tier 1 intervention of the new discipline ladder. However, there were statistically significant differences in the Tier 1 students' GPAs for the grade levels and gender. There were slight increases in students' GPAs after the

implementation of the MTSS Tier 1 intervention for all grade levels except 10th grade females and 11th grade females after implementation of the MTSS Tier 1 interventions.

There was not a statistically significant difference in the students' GPAs for Tier 2 before and after implementation of the MTSS Tier 2 interventions of a new discipline ladder and mentor teachers. While there was no statistically significant change before or after the implementation of the MTSS interventions, there was a statistically significant difference in students' GPAs for the different grade levels. The highest mean score ($M = 2.55, SD = .473$) was for 12th grade females. The 12th grade females had no change in the mean score before and after implementation of the MTSS Tier 2 interventions. The lowest mean score was for 10 grade males ($M = 1.44, SD = .505$).

There was not a statistically significant difference in the Tier 3 students' GPAs before and after the MTSS Tier 3 interventions of the new discipline ladder, mentor teachers, and group counseling. There was, however, a statistically significant difference in the students' GPAs at the different grade levels and gender. Mean scores for GPAs of male students in 10th, 11th, and 12th grades slightly increased after the implementation of MTSS Tier 3 interventions. Mean scores for GPAs of female students in 10th, 11th, and 12th grades showed slight decreases after the implementation of MTSS Tier 3 interventions.

Figure 2 below provides a visual representation of the mean scores for the number of office discipline referrals in the 2017-2018 school year and the 2018-2019 school year after the implementation of the MTSS interventions. The interventions included the new discipline ladder for all Tiers, mentor teachers for students in Tier 2 and Tier 3, and group counseling sessions for the students in Tier 3.

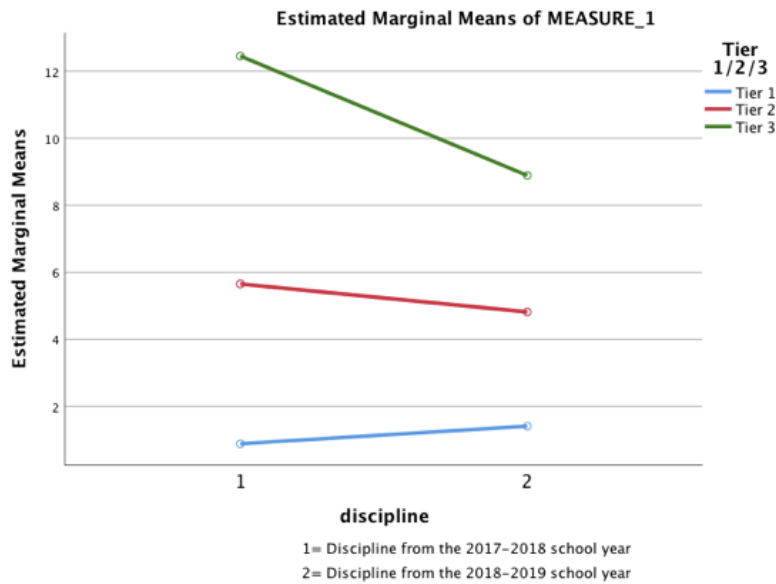


Figure 2. Plot profile of tier groups means for office discipline referrals before and after the implementation of MTSS interventions.

The graph shows a sharp decline for the number of discipline referrals for the students in Tier 3. It also shows a slight decline for the number of discipline referrals for the students in Tier 2. However, this change was not statistically significant. The graph demonstrates that the students in Tier 1 actually had more office discipline referrals after the implementation of the MTSS interventions.

Figure 3 provides a visual representation of the mean scores for the students GPAs in the 2017-2018 school year and the 2018-2019 school year after the implementation of the MTSS interventions. The MTSS interventions were the new discipline ladder for all Tiers, mentor teachers for students in Tier 2 and Tier 3, and group counseling sessions for the students in Tier 3.

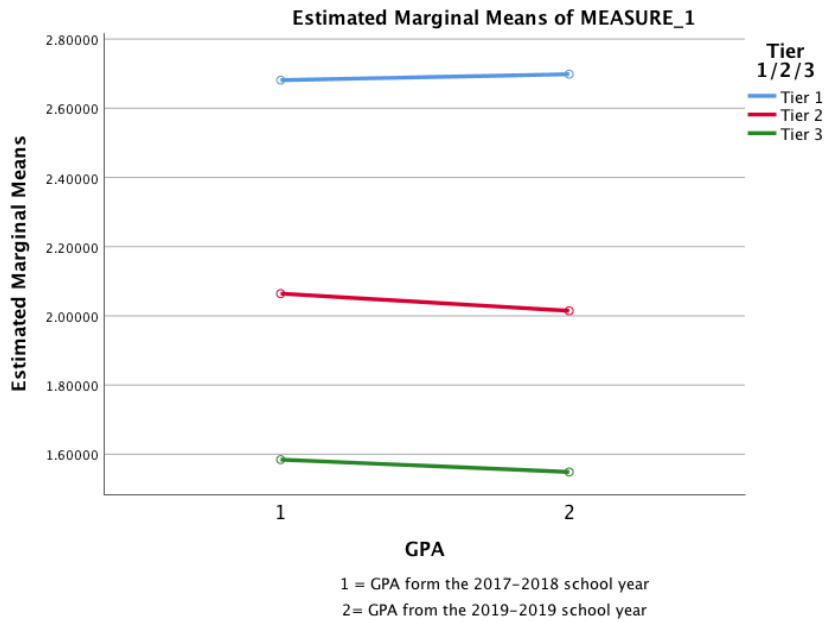


Figure 3. Plot profile of tier groups mean for students' GPA before and after the implementation of MTSS interventions.

Figure 3 shows very little change in GPAs for any of the Tiers. This is a reflection of the data that showed there were no statistically significant differences in students' GPAs before and after implementation of the MTSS Tiers 1, 2, and 3 interventions.

CHAPTER V

SUMMARY, DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

This chapter provides a summary of the research study, discussions, conclusions and recommendations. General recommendations are provided for school administrators along with recommendations for future research. The purpose of the study was to determine if the implementation of the Multi-Tier System of Support (MTSS) interventions influenced the number of office discipline referrals and student achievement as measured by students' Grade Point Ratios (GPAs).

Summary

Numerous studies revealed that disciplinary issues were problematic for many reasons (Danforth & Smith, 2005; Duke & Jones, 1984; Gottfredson et al. 1993; Kadel & Follma, 1993; Skiba et al., 1997). Students who committed disciplinary infractions that ended with office discipline referrals were often given consequences that kept them out of class (Skiba, 1999). Studies showed there is a direct correlation between decreased discipline referrals and student achievement (Kauffman, 1997; Scott, 2001; Skiba et al., 1997).

The PBIS model was developed along with RTI. These programs sought to reward positive behavior and to teach students more appropriate or replacement behaviors when given negative consequences for discipline infractions. These programs were merged into what is now known as MTSS.

The MTSS interventions that were added at the research site during the 2018-2019 school year included a new discipline ladder, mentor teachers, and group counseling. Tier groupings were based on the number of office discipline referrals a student accumulated during the 2017-2018 school year.

All students in the Tier 1 group received the new discipline ladder. This would be the only intervention for students with less than five office referrals during the 2017-2018 school year. Students with five to eight office discipline referrals were placed in Tier 2 and not only received the new discipline ladder but were also given the added intervention of mentor teachers. The final group, Tier 3, received both of the aforementioned interventions with the added intervention of group counseling.

A quasi-experimental quantitative research design was employed to determine if there were effects on the number of office discipline referrals and an improvement of the students' GPAs before and after the MTSS implementation. Discipline and GPA data were gathered at the end of the 2018-2019 school year. T-tests and MANOVA tests were employed for statistical analysis to determine if there was a significant statistical difference between the number of office discipline referrals in the 2017-2018 school year before the MTSS implementation and the number of office discipline referrals and students' GPAs after the implementation of the MTSS in the 2018-2019 school year.

The deterrence theory was selected to help explain the theoretical framework for the study (Paternoster, 2010). Paternoster (2010) explained that there were three main parts certain punishment, swift punishment, and severe punishment. In order to deter students from breaking the rules, punishment should be certain, swift, and severe.

Conclusions

The following conclusions are provided after the analysis of data to determine if there were statistically significant differences in the number of students' discipline referrals and GPAs before and after the MTSS interventions. The statistical information provided by the t-test showed that there was a statistically significant difference between the total number of office discipline referrals for Tier 1 students during the 2017-2018 school year (no Tier 1 intervention) and the 2018-2019 school year after implementation of the Tier 1 intervention of the new discipline ladder. The students had a higher number of discipline referrals after the implementation of the Tier 1 intervention. The implementation of the Tier 1 MTSS intervention did not have a positive effect on decreasing the number of office discipline referrals.

There was not a statistically significant difference in the number of office discipline referrals for Tier 2 students before and after the implementation of the MTSS interventions of the new discipline ladder and mentor teachers. The implementation of the MTSS interventions of the new discipline ladder and the mentor teachers did not have a positive effect on the number of discipline referrals for Tier 2 students. However, there was a statistically significant difference between grade levels in the number of office discipline referrals for Tier 2 students before and after the MTSS interventions of the new discipline ladder and mentor teachers. The highest mean score representing the highest number of discipline referrals was for 10th grade male students ($M=8.27$, $SD= 6.695$) after implementation of the MTSS Tier 2 interventions. The lowest mean score was for 12th grade female students ($M=1.45$, $SD=1.864$), representing a positive effect of the interventions and the lowest number of discipline referrals after implementation of the Tier 2 interventions.

There was a statistically significant difference in the number of discipline referrals for Tier 3 students before and after the implementation of the MTSS Tier 3 interventions of the new discipline ladder, mentor teachers, and group counseling, indicating a positive effect. Further, the findings showed a statistically significant difference in the number of discipline referrals for Tier 3 students before and after implementation of the MTSS Tier 3 interventions between grade levels. The lowest mean score for the number of discipline referrals was for 12th grade female students after the implementation of the MTSS Tier 3 interventions. The highest mean score for the number of discipline referrals was for 11th grade male students before implementation of the MTSS Tier 3 interventions.

The findings indicated there was not a statistically significant difference in the Tier 1 students' GPAs before and after implementation of the MTSS Tier 1 intervention of the new discipline ladder. However, there were statistically significant differences in the Tier 1 students' GPAs for the grade levels and gender. There were slight increases in students' GPAs after the implementation of the MTSS Tier 1 intervention for all grade levels except 10th grade females and 11th grade females after implementation of the MTSS Tier 1 interventions.

There was not a statistically significant difference in the students' GPAs for Tier 2 before and after implementation of the MTSS Tier 2 interventions of a new discipline ladder and mentor teachers. While there was no statistically significant change before or after the implementation of the MTSS interventions, there was a statistically significant difference in students' GPAs for the different grade levels. The highest mean score ($M = 2.55, SD = .473$) was for 12th grade females. The 12th grade females had no change in the mean score before and after implementation of the MTSS Tier 2 interventions. The lowest mean score was for 10th grade males ($M = 1.44, SD = .505$).

There was not a statistically significant difference in the Tier 3 students' GPAs before and after the MTSS Tier 3 interventions of the new discipline ladder, mentor teachers, and group counseling. There was, however, a statistically significant difference in the students' GPAs at the different grade levels and gender. Mean scores for GPAs of male students in 10th, 11th, and 12th grades slightly increased after the implementation of MTSS Tier 3 interventions. Mean scores for GPAs of female students in 10th, 11th, and 12th grades showed slight decreases after the implementation of MTSS Tier 3 interventions.

The first three research questions attempted to discover if there were statistical differences in the number of office discipline referrals received by students who were divided into three groups according to the number of referrals they received in the 2017-2018 school year. The Tier 1 group contained students who had less than five referrals, the Tier 2 group contained students who had between five and eight referrals, and the Tier 3 group contained students who had more than eight referrals during the 2017-2018 school year.

The statistical information provided by the *t*-test showed that there was a statistically significant difference between the total number of office discipline referrals for students during the 2017-2018 school year (no Tier 1 intervention) and the 2018-2019 school year after implementation of the Tier 1 Intervention. The students had a higher number of discipline referrals after the implementation of Tier 1 intervention. The implementation of the Tier 1 MTSS intervention did not have a positive effect on decreasing the number of office discipline referrals. Further, the mean score for the 10th graders was significantly higher than the mean score for 10th graders in the Tier 1 group before and after the implementation of the Tier 1 MTSS Intervention. The MANOVAs did report a statistically significant difference for the grade and gender.

While the *t*-test did not show a statistically significant difference in the number of office discipline referrals before and after the MTSS interventions of the new discipline ladder and mentor teacher, the MANOVAs did report a statistically difference between grades. The highest mean score representing the highest number of discipline referrals was for 10th grade male students ($M=8.27$, $SD= 6.695$) after implementation of the MTSS Tier 2 intervention. The lowest mean score was for 12th grade female students ($M=1.45$, $SD=1.864$) representing the lowest number of discipline referrals.

The *t*-test showed a statistically significant difference in the number of discipline referrals for Tier 3 students before and after the implementation of the MTSS Tier 3 interventions. Further, the MANOVAs showed a statistically significant difference between grades. There was a difference in the mean scores before and after the implementation of the MTSS interventions. The lowest mean score for the number of discipline referrals was for 12th grade females after the implementation of the MTSS Tier 3 interventions. The highest mean score for the number of discipline referrals was for 11th grade males before implementation of the MTSS Tier 3 interventions.

The last three questions attempted to ascertain if there were differences in the students' GPAs based on the same three groups, Tier 1, Tier 2, and Tier 3 (according to the number of referrals, they received in the 2017-2018 school year). The findings indicated there was not a significant statistical difference in the students' GPAs before and after implementation of the MTSS Tier 1 intervention according to the *t*-test. However, according the MANOVA there were differences between the different grade levels and genders. There were slight increases in students' GPAs after the implementation of the MTSS Tier 1 intervention for all grade levels

except 10th grade females and 11th grade females after implementation of the MTSS Tier 1 interventions.

The *t*-test showed that there was not a significant statistical difference in the students' GPAs for Tier 2 in the 2017-2018 school year and the 2018-2019 school year after the MTSS Tier 2 interventions. The results showed there was a statistically significant difference in students' GPAs between the different grade levels. The highest mean score ($M=2.44$, $SD=.473$) for all Tier 2 students' GPAs was for 12th grade females. The 12th grade females had no change in the mean score before and after implementation of the MTSS Tier 2 interventions.

The *t*-test revealed that there was not a significant statistical difference in the students' GPAs for Tier 3 in the 2017-2018 school year and the 2018-2019 school year after the MTSS Tier 2 interventions. There was, however, a statistically significant difference between the students' GPAs at the different grade levels and genders. Mean scores for GPAs of male students in 10th, 11th, and 12th grades slightly increased after the implementation of MTSS Tier 3 interventions. Mean scores for GPAs of female students in 10th, 11th, and 12th grades showed slight decreases after the implementation of MTSS Tier 3 interventions.

Discussion

Data for the Tier 1 group for this study was comprised of 587 students. This represented 83% of the students' data in the study. This is consistent with the norms of a Tier 1 group (Scott et al., 2010; Scott et al., 2001). Further, the Tier 2 group included 7% of the group participants, which is within the national norms of 7-10% and consistent with the research findings of Scott et al. (2001, 2010). Tier 3 included 64 students who received eight or more referrals during the 2017-2018 school year and represented 9% of the students.

In regard to racial gaps in discipline, prior research studies suggested that in most schools there is a demographic gap in discipline. That is to say that students from minority groups receive more discipline referrals than Caucasian students (Costenbader & Markson, 1994; Massachusetts Advocacy Center, 1986; McFadden et al., 1992). This study showed that the demographic breakdown of the different discipline Tiers was within a point or two of the demographic percentages of the student body as a whole. However, this data may be skewed by the fact that 95% of the student population was African American.

Studies such as those conducted by McCarter and Fabelo stated that males were more likely to receive out of school suspension and expulsions (Fabelo, 2011; McCarter, 2017). While the study did not track the number of suspensions or expulsions per say, the participants in the study did follow national trends for gender and discipline. The student body as a whole was 51% female. The Tier 2 group, which was comprised of students with five to eight referrals, was 57% male. The Tier 3 group, which was comprised of students with more than eight referrals, was 58% male. The groups with greater discipline issues did have a higher ratio of male to female students.

According to the findings of this study the MTSS program had mixed results. There was a statistically significant effect on the number of office discipline referrals. It was not the desired effect. In fact, the number of referrals went up for the Tier 1 group. There was no effect on the students' GPAs. The Tier 1 implementation of the new discipline ladder was not effective in creating the desired change in students' behavior or academic performance.

There was not a statistically significant effect on the number of office discipline referrals for Tier 2. The Tier 2 intervention of the new discipline ladder and mentor teachers were not effective in changing the behavior patterns of the Tier 2 students. The Tier 2 interventions had no

effect on students' GPA. The Tier 2 implementation of the new discipline ladder and mentor teachers were not effective in creating the desired change in students' behavior or academic performance.

The findings for Tier 3 students showed a statistically significant difference in the number of office discipline referrals. The combination of the new discipline ladder, mentor teachers, and group counseling did have a positive effect in dropping the number of office discipline referrals after the implementation. However, the Tier 3 interventions had no effect on students' GPA. The Tier 3 implementations of the new discipline ladder, mentor teacher, and group counseling showed mixed results. The interventions were effective in creating the desired change in students' behavior, but not in students' academic performance.

Limitations

The following limitations were present in the study. These factors were unseen at the outset of the study and may have had an effect on the results of the study:

1. The majority of the students were African American. There was very little difference in the racial breakdown for each of the Tier subgroups in comparison to the whole. Because the student population was 95% African American, data analysis by race could not be completed without the risk of students' identities being discovered.
2. The group sizes were also a point of contention. While the Tier 2 group size was within the national average of 5-8% of the total student population, the Tier 3 group within the study was 9%, which is nearly double the national average or 3-5%. Once again because the total student population was 95% African American, there was not enough diversity at the group level to allow for racial analysis at the Tier group and grade level.

Implications for School Leaders

This study is an important addition to the current body of information on the implementation of MTSS interventions in a high school setting. The data produced will help school administrators make informed decisions on the types of interventions to implement with different Tier groups. The study showed that the applied interventions of a new discipline ladder, mentor teachers, and group counseling had mixed effects with the Tier groups at this research site. School administrators should consider all aspects (staff, time resources) in deciding whether to implement MTSS interventions.

Recommendations for Further Study

The findings from the study may be generalized only to the specific groups of students at the particular school selected. The following are recommendations for future research studies.

1. Studies of the MTSS interventions within different settings where there is a broader ethnic demographic within the student body should be conducted. A different setting would allow for data analysis by grade levels, gender and race. Having more analysis on the racial component would help school leaders make better data-driven decisions. A future study could be able to ascertain if certain segments of the student body would respond better to the MTSS interventions than other segments.
2. Additional studies of the MTSS intervention of mentor teachers in a high school setting would be useful. This study did not use fidelity of implementation of mentoring as a criterion of the study. Studies with measurable fidelity of implementation would help in making better data-driven decisions on the effectiveness of this intervention.

Studies of the MTSS interventions as a longitudinal study may have different results. If this system were allowed to continue and to build credibility among community stakeholders'

there would possibly be more buy in and better results. A mixed methods study of stakeholders' related to MTSS interventions would provide a more comprehensive picture.

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APPENDIX A
IRB APPROVAL EMAIL

Protocol ID: IRB-19-256

Principal Investigator: Frankie Williams

Protocol Title: The Effects of Discipline Interventions of the Multi-Tier System of Support on Discipline Referrals and Grades

Review Type: EXEMPT

Approval Date: August 02, 2019

Expiration Date: August 01, 2024

The above referenced study has been approved. To access your approval documents, log into myProtocol and click on the protocol number to open the approved study. Your official approval letter can be found under the Event History section. For non-Exempt approved studies, all stamped documents (e.g., consent, recruitment) can be found in the Attachment section and are labeled accordingly.

If you have any questions that the HRPP can assist you in answering, please do not hesitate to contact us at irb@research.msstate.edu or 662.325.399