

Achievement & Behavioral Impact of PBIS (Positive Behavior Intervention and Support) on African American Students



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Abstract

Positive Behavior Intervention and Support (PBIS), also known as Positive Behavior Support (PBS), is a multi-tier approach to behavior modification designed to assist school teachers and leaders in reducing and preventing antisocial behaviors from manifesting within the educational environment. To determine the impact of PBIS this investigation focused on five recognized PBIS Exemplar schools in North Carolina and its influence on short-term suspensions and end-of-grade (EOG) exams over a six-year period for African American students in the middle grades. The findings of this research study are consistent with current research, which shows that Positive Behavior Intervention and Support has had a positive effect on the behavioral and academic outcomes of students [1-5]. However, this research moved beyond a surface analysis of PBIS to determine if the successes of the framework implemented with high fidelity for all students had similar effects on African American students.

Introduction

According to the 2018 Phi Delta Kappa/Gallup public opinion poll by PDK International, acts of school violence and the frequency of disruptive behaviors such as fighting, bullying, cyberbullying, weapon use, gang tensions, and racial threats have only reinforced the negative public sentiment regarding safe and quality public schooling in the United States. For the last 50 years the annual poll has consistently ranked school discipline as one of the top three educational issues facing public schools in general and middle schools.

For example, during the 2015-2016 school year, middle school students experienced more instances requiring disciplinary action as compared to elementary and high school students in five of eight areas. These areas included racial and ethnic tensions, bullying, sexual harassment, verbal abuse, disrespect, widespread disorder, gang activity, and cult activities [6,7]. Educational leaders in today's public schools are faced with eliminating such behaviors that hinder the educational mission of the organization and that jeopardize its ability to maintain an environment free of aggression, drugs, weapons, disruptions, and disorder [8]. Therefore, the growing need to address the behavioral and developmental complexities of middle school

students is of dire need and has become the educational setting of this investigation.

The pressures placed on policy makers to provide a solution to the perceived failing of schools have led to the passing of national legislation, such as the No Child Left Behind Act of 2001, Race to the Top in 2009, and Every Student Succeeds Act of 2015, mandating improvements in the academic achievement of all students [9]. Such legislation, coupled with legislation that addresses the need to have safe and orderly schools, has led to a new wave of contemporary disciplinary practices. These systems claim to proactively address the behaviors of students, thereby increasing their academic achievement.

Positive Behavior Intervention and Support (PBIS)

Positive behavior intervention and support (PBIS) originated in the late 1990s and obtained political support that resulted in the inclusion of PBIS verbiage in the Individuals with Disabilities Education Act Amendments of 1997. PBIS targets individuals who have severe behavioral problems or those in jeopardy of developing problem behaviors [10]. The emergence of PBIS resulted from the need to alleviate a reliance on punitive consequences for students with disabilities [11,12].

PBIS began as an individualistic approach that involved the identification of behaviors, analysis of environmental-or context-specific variables, development of positive interventions, and an emphasis on data collection, monitoring, and evaluation processes to aid in the reduction and elimination of problem behaviors [10,13,14]. The success of PBIS as a means of altering an individual's behavior, coupled with the charge of educational organizations to produce productive and well-educated members of society, has resulted in the birth of school-wide positive behavior intervention and support (SW-PBIS).

Horner, Sugai & Lewis [13] describe SW-PBIS as a three-tier approach. The primary tier provides universal supports for approximately 80% of all students. The secondary tier targets approximately 15% of the student body; interventions are provided in clusters of small groups comprising students who have been identified as exhibiting the same or very similar behaviors. The tertiary tier serves approximately 5% of the student body. Students who are unresponsive to the behavioral interventions in the first two tiers are provided individual supports to assist in the prevention and elimination of their antisocial behaviors. See <https://www.pbis.org/school> and <https://www.pbis.org/research> for more fuller descriptions and detailed research on PBIS.

SW-PBIS is currently deployed in over 45 states and in more than 10,000 schools. Researchers [1,3,13-16] agree that SW-PBIS is a feasible means of improving the behaviors of students and ultimately improving their academic achievement. For example, in a state-wide analysis of Maryland's PBIS initiative, [14] found a 43% reduction in office disciplinary referrals (ODRs) and an increase in the academic performance of students attending schools which had implemented PBIS. Similar findings in subsequent studies have contributed to the willingness of school leaders to implement PBIS in their organizations [17-19]. As a result, this multi-tier approach is now used by school leaders to change school culture while providing behavioral supports that will assist in producing safe, orderly, and effective learning organizations [20].

Research Study Context

Within middle schools, African American students have been disproportionately represented in the number of office disciplinary referrals (ODRs), out-of-school suspensions (OSS), in-school suspensions (ISS), and expulsions [21,22]. These reactive consequences have been a cornerstone of American public schools, but the *Brown v. Board of Education of Topeka* [23] decision has also contributed to the disciplinary injustices faced by African Americans as the rulings have not done enough to address the realities of African American children and shift societal beliefs [24].

The loss of instructional time, academic failure and the disengagement of African Americans because of disciplinary

consequences have led to high retention rates and large numbers of dropouts in the African American community [21,25]. Therefore, a deviation from the current use of reactive processes must be made. Positive Behavior Intervention and Support (PBIS) has had a proven record of success, both academically and behaviorally, when explored across all students [5,15,26]; however, the use of proactive methods to address discipline must be examined to determine its impact on African Americans in middle schools. To fulfil this need, the positive and proactive interventions incorporated into the Positive Behavior Intervention and Support (PBIS) framework have been utilized to determine the impact that non-traditional disciplinary methods have had on the behavioral problems and academic achievement of African American middle school students.

Reactive processes as a means of combating behavioral issues has not successfully eliminated antisocial behaviors and thus have had little positive impact on the academic achievement of African American students over the last five decades. School discipline continues to be at the forefront of the public's concern PDK International [27], Rose et al. [28], with pressures to increase the educational outcomes of students as noted in legislation passed over the last 15 years. The purpose of our study was to investigate what impact does the implementation of the Positive Behavior Intervention and Support (PBIS) framework, implemented with high fidelity, have on the practices, perceptions, and roles of middle school principals as related to the discipline and achievement of African American middle school students.

Methodology

We employed a mixed methods approach, beginning with a quantitative design (as reported here). A pre- versus post- design was utilized initially to aid in determining the effectiveness of PBIS for all students. We then dug deeper to determine the effectiveness of PBIS specifically for African American students. The effectiveness of PBIS was defined as proficiency rates on the math and language arts End-of-Grade tests. We also looked within the school environment at such things as suspensions, expulsions, and office disciplinary referrals. Five research questions guided our investigation. Beginning with: Has the implementation of the Positive Behavior Intervention and Support framework produced...

- i. A decrease in the number of discipline referrals associated with African American students?
- ii. A decrease in the rate of students receiving short-term suspensions?
- iii. An increase in African American middle school students' proficiency in both.
 - a) Math end-of-grade.
 - b) Language arts end-of-grade exams?

- iv. Reduced the Black-White Achievement gap in select North Carolina schools?
- v. What are the perceptions of principals in Positive Behavior Intervention and Support Exemplar schools on the attributes that contribute to improvements in.?
 - a. Academic achievement.
 - b. Student behavior? (Note: Findings to this question are not reported in this article)

- ii. Faculty commitment.
- iii. Effective procedures for dealing with discipline.
- iv. Data entry and analysis.
- v. Expectations and rule development.
- vi. Reward /recognition program establishment.
- vii. The teaching of expectations and rules.
- viii. Implementation plan.
- ix. Classroom procedures and processes.
- x. Evaluation of PBIS as shown in appendix C [31].

Population and Sample Size

In North Carolina, 936 schools are currently using the Positive Behavior Intervention and Support framework. During the 2007-2008 academic school year, the Positive Behavior Support and Intervention Department within the Exceptional Children Division at the North Carolina Department of Instruction began a campaign to recognize North Carolina PBIS schools for their successful implementation and progress with the framework. The criteria for recognition as a PBIS Exemplar school are: a school leader’s participation in PBIS efforts, having an active school-based PBIS team, having a school PBIS coach, and showing evidence of implementation progress. Based on the criteria and the associated levels, a school can be declared a PBIS Green Ribbon school, PBIS Banner school, or a PBIS Exemplar school.

We focused on North Carolina middle schools that received a 95% or greater on the School-wide Evaluation Tool (SET) or a 90% or greater on Benchmarks of Quality (BoQ). The intended purpose of the School-wide Evaluation Tool (SET) is to evaluate the essential components of Positive Behavior Intervention and Support each year. This tool is most commonly used to

- i. Assess features that are in place,
- ii. Determine annual goals,
- iii. Evaluate on-going efforts toward school-wide behavior support,
- iv. Design and revise procedures as needed, and
- v. Compare efforts toward school-wide effective behavior support from year to year [29].

An outside evaluator would administer and complete the instrument by conducting interviews with school administrators, faculty, and students, completing observations, and collecting and analyzing documents such as the discipline handbook, school improvement plan, behavioral data, and office discipline referral form North Carolina Department of Public Instruction [30]. The score derived from the instrument represents how well the school has implemented PBIS into their school.

The BoQ tool consist of 53 items that address critical elements of PBIS which include

- i. The PBIS team.

The percentage derived from the tool is also a representation of the school’s fidelity in implementing PBIS. Focusing on the 2008-2009 academic year, we accessed the North Carolina Department of Instruction database and found 12 schools had been recognized as PBIS Exemplar schools. Only five of the 12 had completed the required data fields. These became the sample of this study see (Table1).

Table 1: Site Demographics.

Study Sites	2005-06 School Year	2010-11 School Year	Change in enrollment over 5 years
School 1	708 students	837 students	18%
School 2	892 students	743 students	-14%
School 3	1145 students	1392 students	22%
School 5	557 students	605 students	8%
School 6	735 students	698 students	-5%

Quantitative Data Collection and Analysis

Variables

Creswell & Creswell [32] found that within any quantitative study, the use of independent and dependent variables is essential. In this study, the independent variable was Positive Behavior Intervention and Support under two types of conditions:

- i. Prior to the implementation of Positive Behavior Intervention and Support within select North Carolina middle schools and
- ii. After the implementation of Positive Behavior Intervention and Support within select North Carolina middle schools.

Factors that have influenced the outcomes, the dependent variables in this study, were office disciplinary referrals, out-of-school suspension, math achievement, and language arts achievement.

Data collection

As mentioned earlier, data were available through the North Carolina Department of Instruction. Specifically, we collected the following:

- i. PBIS school rating.
- ii. Average aggregated long-term, short-term, and expulsion discipline data.
- iii. Percentage of African American students proficient on both reading and math end-of-grade (EOG) exams.
- iv. School enrollment of African American students.
- v. Number of ODRs associated with African American students.
- vi. Number of ODRs per school day per 100 days.
- vii. Total school enrollment.

Three years of data both before and after the implementation of PBIS in Exemplar Schools were collected; specifically, the 2005-2011 school years.

Data Analysis

We focused on the analysis of social controls and achievement indicators. Using a logistic regression with a pre and post design, determined if Positive Behavior Intervention and Support worked for all students using aggregated discipline, long-term, short-term, and expulsion, data from 2005 through the 2011 school years. An analysis of aggregated achievement data, composite reading and math proficiency rates, were used to assist in determining the impact that Positive Behavior Intervention and Support has had on all students academically.

With PBIS found to be beneficial for all students, both behaviorally and academically, the researcher assumed that this should hold true when analyzed specifically for the impact of PBIS on African American students. Using disaggregated discipline data, office disciplinary referrals from 2008-2011, the

researchers investigated this premise. Academically, an analysis of disaggregated pre and post reading and math proficiency data were used in investigating the academic impact of PBIS on African American students. To conclude the analysis of the study, the researchers determined if a correlation existed between the behavioral and academic indicators that were specific to

- i. All students.
- ii. African American students.

Findings

Five of the twelve schools labeled as PBIS Exemplar schools during the 2008-2009 academic school year were the basis of this research study. All five schools maintained their status for the following two years of the study.

Research Question #1

Has the implementation of the Positive Behavior Intervention and Support framework produced a decrease in the number of discipline referrals associated with African American students? Data on office disciplinary referrals was collected over a three-year period, 2008-2011, after the school was recognized as a PBIS Exemplar school. During these years, each school experienced a reduction in the submission of office disciplinary referrals for all students as shown in Figure 1 & Table 2. On average, these five schools experienced a 24.77% reduction in the submission of office disciplinary referrals after the implementation of PBIS with high fidelity. The reduction of office disciplinary referrals ranged from a 4.81% to 67.03%. It is evident that fewer behaviors were being referred to the office in each of these schools, but did the reduction in ODRs translate to reductions in ODRs for African American students or assist in the reduction of consequences because of the submission of ODRs?

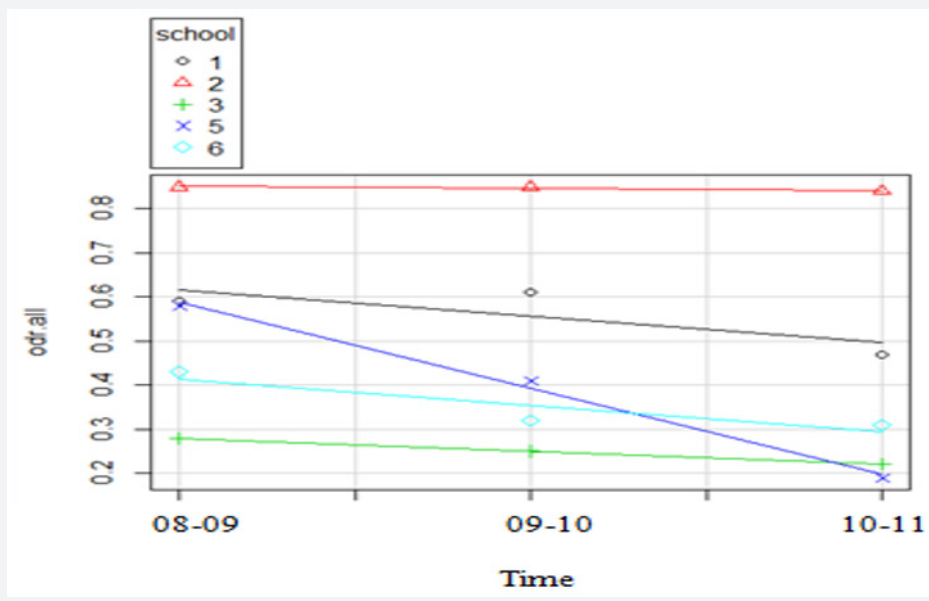


Figure1: ODRs Post Implementation of PBIS for All Students.

Table 2: Change in ODRs over time for ALL students.

School Site	Change in ODRs from 2008-09 to 2010-11 for ALL students
School 1	-20.06%
School 2	-4.81%
School 3	-14.92%
School 5	-67.03%
School 6	-17.02%
Average	-24.77%

The reduction in ODRs that is common to all schools also held true for African American students. Each of the schools in the study experienced a reduction in the submission of ODRs for African American students as shown in Figures 2 & 3, Table 3. The rates of reduction amongst each school varied from 8.42% to 50.83% over a three-year period that preceded the school’s recognition as a PBIS Exemplar middle school. However, African American students on averaged experienced a reduction of 29.09% in ODRs, higher than the rates experienced by all students at the schools, 24.77%.

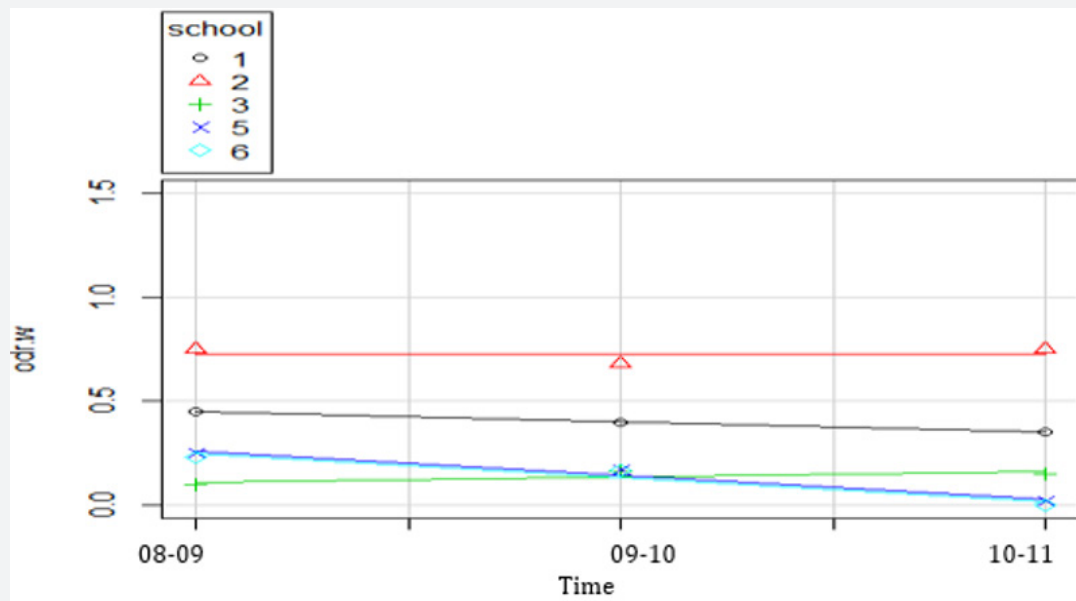


Figure2: ODRs Post Implementation of PBIS for White Students.

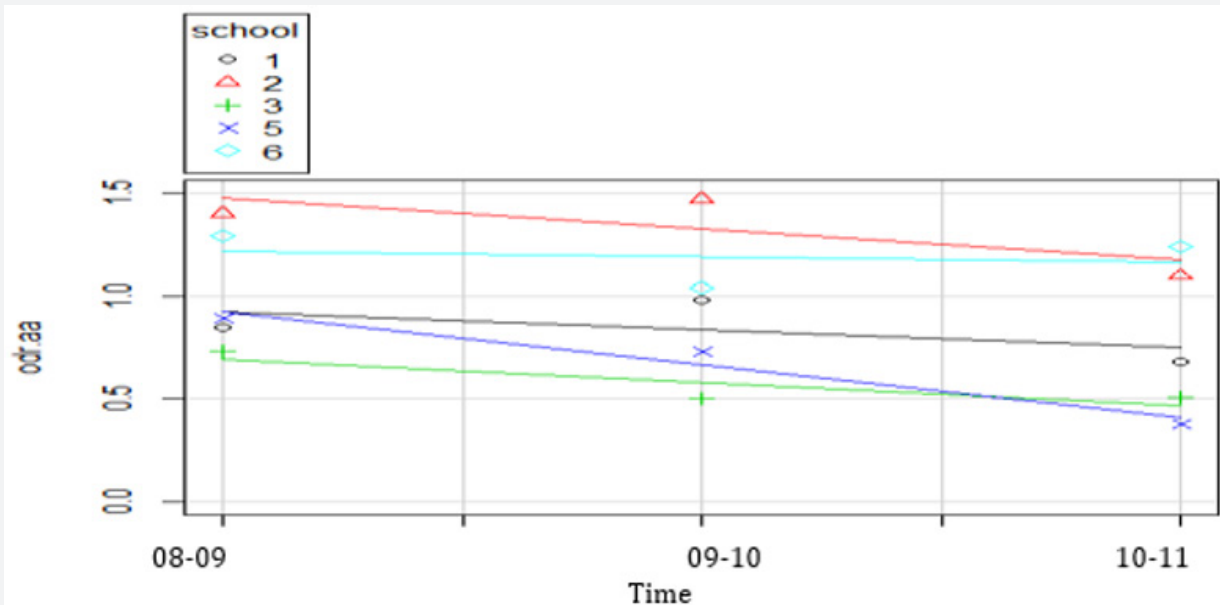


Figure3: ODRs Post Implementation of PBIS for African American Students.

Table 3: Change in ODRs over time for African American students.

School Site	Change in ODRs from 2008-09 to 2010-11 for AA students
School 1	-13.45%
School 2	-31.12%
School 3	-41.65%
School 5	-50.83%
School 6	-8.42%
Average	-29.09%

It is apparent that PBIS has assisted in reducing the number of ODRs that African American students are subjected to, but does the reduction in ODRs for African American students result in reductions in the consequences associated with ODRS (i.e. short-term suspension) for African American students?

Research Question #2

Has the implementation of the Positive Behavior Intervention and Support framework produced a decrease in the rate of students receiving short-term suspensions? Thus far this study has only reinforced the work of [1-5] that suggest that PBIS is an effective means of behavior modification when determined by a reduction in office disciplinary referrals (ODRs). Further support for these claims was found when examining the short-term suspension data at each organization.

One means of gauging the behavioral effectiveness of PBIS is by examining the short-term suspension rates at each school utilizing a one-tailed t-test and the short-term suspensions means pre versus post implementation. A one-tailed t-test was conducted to determine if the number of short-term suspensions for all students in PBIS Exemplar schools showed a substantial difference after the implementation of PBIS. However, it was determined that there was not a significant difference as the p-value was 0.5 and can only be considered significant if the p-value is less than .05.

A comparison of the means, pre- versus post implementation, shows that after the implementation of PBIS with high fidelity fewer incidents of short-term suspensions per 100 students occurred amongst schools as shown in Table 4. However, the short-term suspension patterns at School 3 and School 6 run contrary to this claim, as they each experienced a slight increase in the number of short-term suspensions for their students. A reduction in the submission of ODRs for all students was found among each school; however, the reduction in office disciplinary referrals did not translate to reduction in the administration of consequences, specifically short-term suspension in School 3 and School 6.

Table 4: Percentage Change in Short-Term Suspensions per 100 Students Pre versus Post Implementation of PBIS.

School	Pre	Post	% Change	Increase/Decrease
School 1	24.33	23.1	-5.10%	Decrease
School 2	29.33	27.32	-6.90%	Decrease
School 3	9.67	10.67	10.30%	Increase
School 5	17	11.71	-31.10%	Decrease
School 6	2.33	2.66	14.20%	Increase
		Average	-18.60%	Decrease

In School 3 and School 6 fewer students were being referred to the office for policy violations, but the use of short-term suspension as a viable consequence to deter student behavior was being utilized at greater rates post implementation of PBIS with high fidelity than prior to. Figure 4 provides a pictorial representation of the best-fit lines when utilizing short-term suspension data at each of the five schools involved in the study over a six-year period. The graphical depiction suggests that the increase use of short-term suspensions in School 3 and School 6 will be short lived and over-time a reduction in the use short-term suspensions will occur.

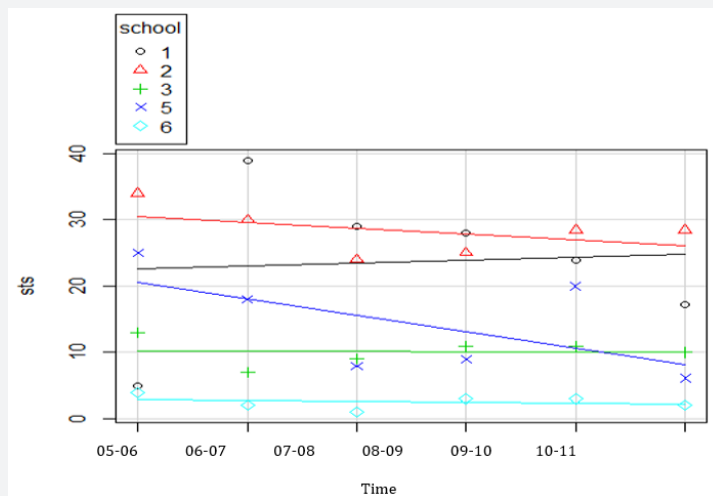


Figure4: Historical Depiction of Short-Term Suspensions.

A declining trend in terms of short-term suspensions was found amongst all schools except School 1. A negative slope suggests a continuous reduction in the short-term suspensions over time and supports the work of PBIS. Even though progress was made in reducing short-term suspensions, the application of the line of best fit suggests that School 1 will see a gradual increase in short-term suspension regardless of the implementation of PBIS with high fidelity over subsequent years.

The implementation of PBIS with high fidelity in select North Carolina middle schools has led to an average reduction in the number of short-term suspensions for all students. Most of the schools implementing PBIS with high fidelity are likely to experience a continuous reduction of short-term suspensions over time. The success of all students after the implementation of PBIS with high fidelity, when gauged by short-term suspensions, is consistent with the current body of research [1,33,34]. A stated limitation of the study is the inability to analyse disaggregated short-term suspension data.

As a result, the research study has assumed that due to a reduction in the submission of ODRs for African American students in all schools, there will be a reduction in the use of short-term suspension by school administrators to deter antisocial behaviors for African American students. This is plausible, as a 24.77% reduction in the submission of ODRs for all students translated, on average, to a 3.72 percentage point reduction in the use of short-term suspension as a behavioral consequence for all students.

The implementation of PBIS had slightly greater levels of reduction for ODRs, 29.09%, for African American students; therefore, the study has assumed, based on current behavior and consequence trends, that the use of short-term suspensions when administered to African American students will see slightly greater levels of reductions than all students. With fewer students being referred to the office for rule violations and less students subjected to consequences that remove students from the educational setting the question remains if the change in the school's behavioral culture has an impact on the achievement of all students and more specifically African American students.

Research Question #3

Has the implementation of the Positive Behavior Intervention and Support framework produced an increase in African American middle school students' proficiency in both

- i. Math end-of-grade and
- ii. Language arts end-of-grade exams?

Students in North Carolina middle schools are required to take a minimum of two summative exams at the end of each academic school year. These exams, the math and language arts end-of-grade exams, have become the basis for determining the academic impact that PBIS has had on African American students during the 2005-2011 academic school years. Figure 5 provides a graphical representation of the percentage of students proficient on both the math and language arts end-of-grade assessments during the 2005 through 2011 academic school years.

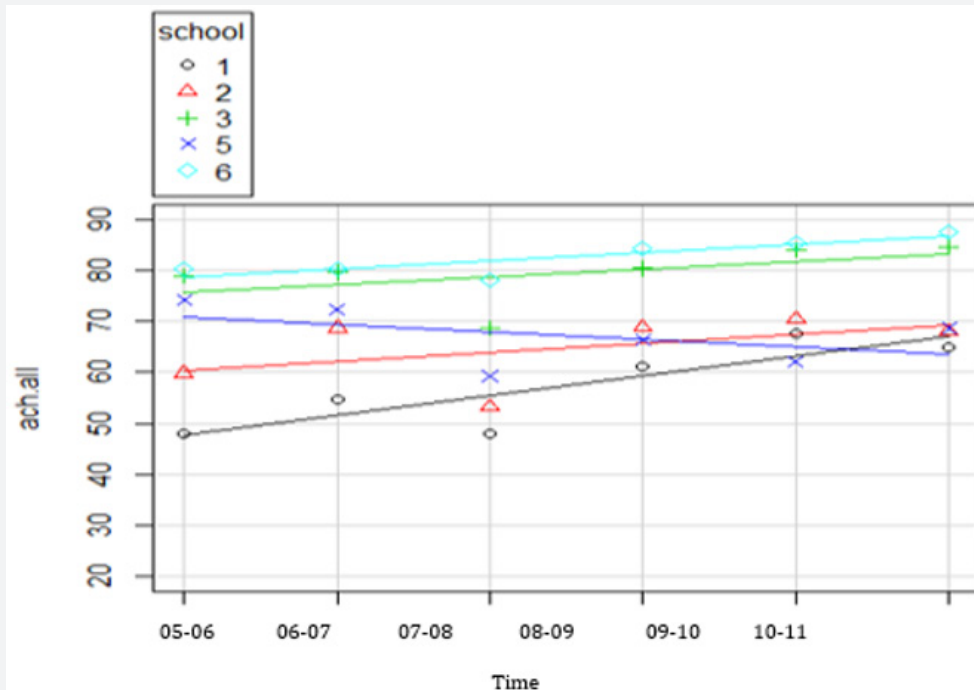


Figure5: All Student's Math and Language Arts Proficiency Levels-2005-2011.

The academic achievement trends of four schools, School 1, School 2, School 3, and School 5 have been represented by lines that reveal positive slopes which indicate growth in their achievement over time. While the growth in academic performance is unmistakable, a one-tailed binomial t- test was performed to determine the significance in progress amongst these schools. A p-value of 0.1875 was produced; however, the p-value was not significant.

Table 5: ALL Student's Proficiency Level Means -Pre Versus Post Implementation of PBIS

School	Pre	Post	Percentage Point Difference
School 1	50.23%	64.47%	14.24
School 2	60.60%	69.13%	8.53
School 3	75.73%	83.03%	7.3
School 5	68.60%	65.77%	-2.83
School 6	79.57%	85.70%	6.13
		Average	6.67

A comparison of the achievement means pre- versus post implementation, an alternative method of evaluating the impact of PBIS on the academic achievement of students, only emphasizes the growth in achievement of students as shown in

Table 5. Middle schools implementing PBIS with high fidelity have on average increased their proficiency scores by 6.67 percentage points pre versus post implementation of PBIS; however, the only school to experience a drop-in proficiency levels, School 5, had a 2.83 percentage point drop in the proficiency levels of students after the implementation of PBIS. The academic growth experienced by schools might insinuate a positive academic response to the implementation of Positive Behavior Interventions and Support for all students.

The favorable achievement outcomes of PBIS after its implementation for all students is commendable; however, it must be determined if the same positive results can be attributed specifically to African American students. African American achievement, as shown in Figure 6 & Table 6, rose in each of the five schools unlike it did for the achievement for all students. On average, these schools recorded an increase of 14.93 percentage points after the implementation of PBIS with high fidelity and the achievement levels of African American students are predicted to continue to increase over time. A one tailed binominal t-test reinforces the progress being made amongst members of the African American population as the test resulted in a p-value of 0.03125, which is considered statistically significant.

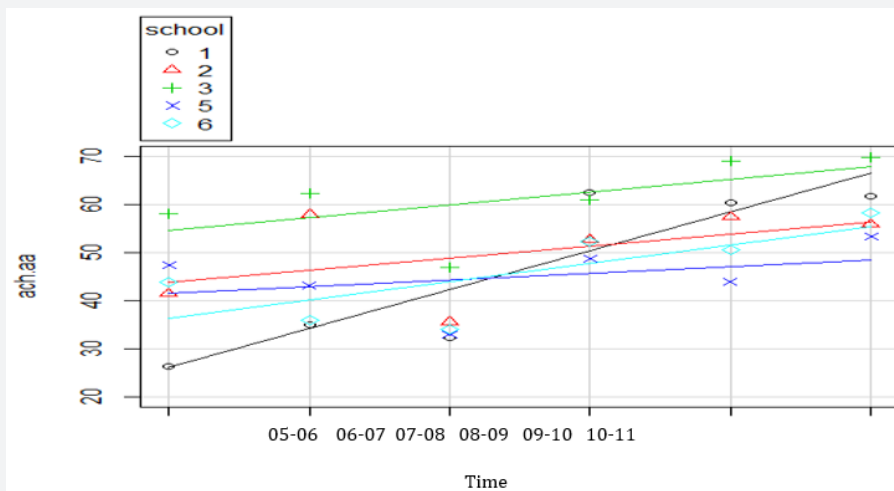


Figure 6: African American Math and Language Arts Proficiency Levels-2005-2011.

Table 6: African American Students' Math and Language Arts Proficiency Levels -Pre Versus Post Implementation of PBIS.

School	Pre	Post	Percentage Point Difference
School 1	31.27%	61.47%	30.2
School 2	44.97%	55.30%	10.33
School 3	55.73%	66.60%	10.87
School 5	41.20%	48.70%	7.5
School 6	37.97%	53.73%	15.76
		Average	14.93

While significant progress was made in increasing the levels of achievement of African American students, the levels

of proficiency in both reading and mathematics never reached the levels of proficiency of all students. Nor did the levels of African American achievement reach that of their White counterparts. However, White students did not see the level of growth experienced by African American students. On average, African American students in the five schools exhibited a 14.93 percentage point increase in their achievement while White students noted a 5.2 percentage point increase see Table 7. Even though the White students involved in the study experienced less growth in their efforts to increase proficiency levels, which could be attributed less room to improve their proficiency rates, they were able to maintain the highest levels of achievement amongst all subgroups.

Table 7: White Students' Math and Language Arts Proficiency Levels -Pre Versus Post Implementation of PBIS.

School	Pre	Post	Percentage Point Difference
School 1	64.23%	76.07%	11.84
School 2	65.73%	73.17%	7.44
School 3	84.67%	89.30%	4.63
School 5	86.63%	87.23%	0.6
School 6	93.53%	95.00%	1.47
		Average	5.2

The US Department of Education, State Departments of Education, local educational agencies, school boards, and educational administrators are charged and are in search of methods that will lead to improvements in academic indicators. For African American students, the implementation of PBIS with high fidelity into select North Carolina middle schools has led to an increased pre-versus post-implementation in these middle school students' proficiency in both math and language arts end-of-grade exams amongst all schools.

However, the progress made in the proficiency levels of African American students is not on par with the proficiency levels of all students and White students in the same schools. An increase in academic indicators for African American students is significant. However, will the increase in achievement result in a reduction in the achievement disparities that are prominent throughout the nation and North Carolina?

Research Question #4

Has the implementation of the Positive Behavior Intervention and Support framework reduced the Black-White Achievement gap in select North Carolina schools? The Black-White achievement gap continues to be a prevalent problem for K-12 organizations. However, the implementation of PBIS into select North Carolina middle schools appears to be, on average, associated with a 14.93 percentage point increase in the academic achievement of African American students. The large increase in the achievement levels of African American students coupled with the stagnant academic achievement of White students has led to a reduction in the Black-White achievement gap as shown in Figure 7.

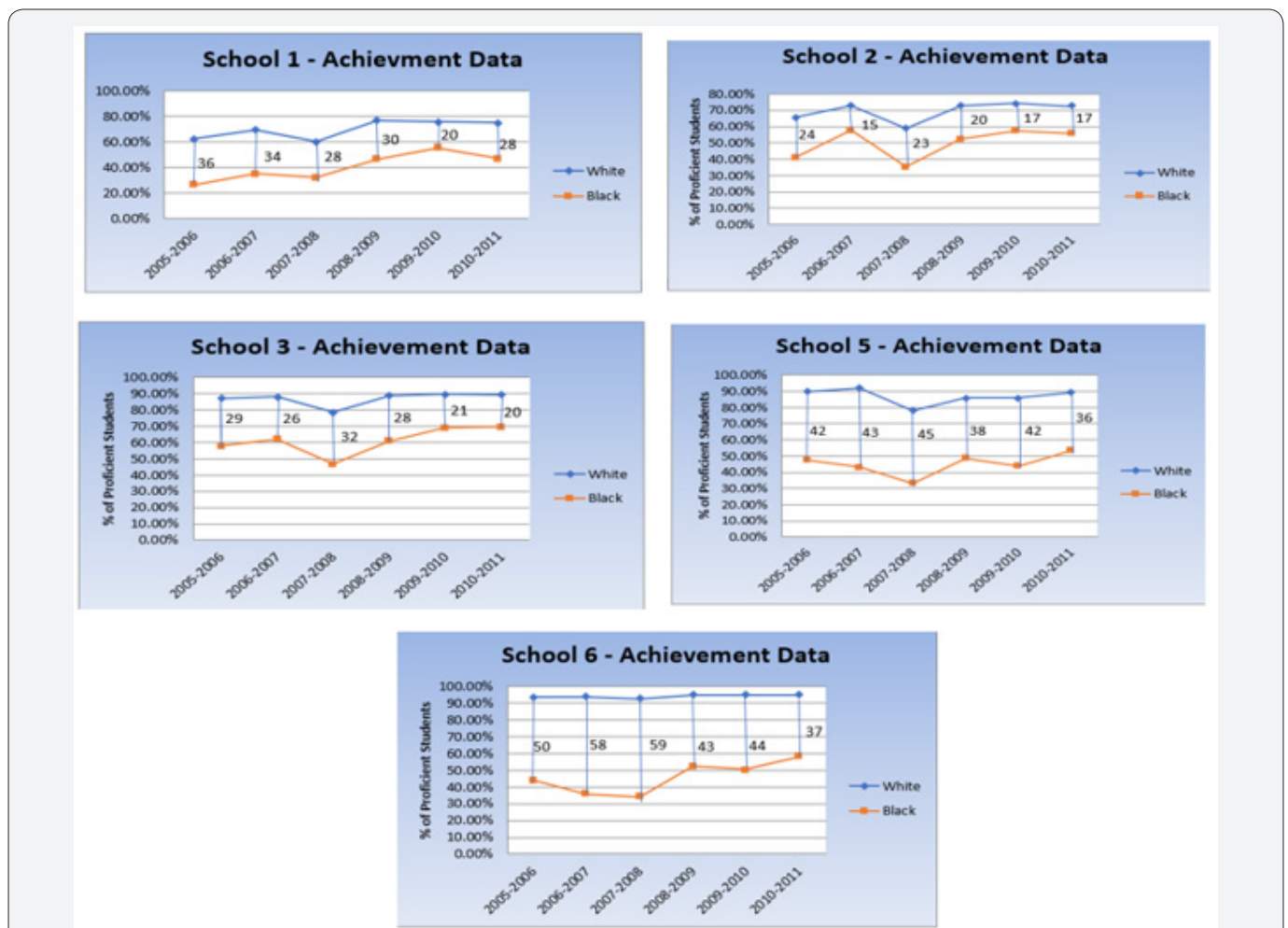


Figure 7: Black-White Academic Achievement Gap Analysis.

All five of the North Carolina PBIS Exemplar middle schools involved in the study saw an increase in the achievement of African American students that resulted in a 22% reduction in the Black-White achievement gap in School 1, a 29% reduction in School 2, a 31% reduction in School 3, a 14% reduction in

School 5, and a 26% reduction in School 6. However, post implementation of PBIS with high fidelity, 2008-2011, is associated with a substantial portion of the closure of the Black-White achievement gap in School 3, School 5, and School 6 as shown in Table 8.

Table 8: Achievement Gap Analysis: Pre versus Post Implementation of PBIS.

School	2005-2006-2007-2008 Pre-Implementation of PBIS with High Fidelity		2007-2008-2008-2009 Schools Transition Year-PBIS Exemplar Status		2008-2009-2010-2011 Post Implementation of PBIS with High Fidelity	
	Widening or Closing of the Achievement Gap	Percentage Point(s)	Widening or Closing of the Achievement Gap	Percentage Point(s)	Widening or Closing of the Achievement Gap	Percentage Point(s)
School 1	Closing	8	Widening	2	Closing	2
School 2	Closing	1	Closing	3	Closing	3
School 3	Widening	3	Closing	4	Closing	8
School 5	Widening	3	Closing	7	Closing	2
School 6	Widening	9	Closing	16	Closing	6

Prior to the implementation of PBIS with high fidelity, each of these schools experienced a widening of the Black-White achievement gap. It was not until the implementation of PBIS with high fidelity, 2008-09, that caused greater levels of equity regarding the achievement outcomes of Black and White students in School 3, School 5, and School 6. School 1 and School 2 were not void of the successes in closing the Black-White achievement gap that was common to School 3, School 5, and School 6. School 2 had already experienced a slight closure, 1 percentage point, of the Black-White achievement gap prior to the implementation of PBIS with high fidelity and like Schools 3, 5, and 6 they closed the achievement gap post implementation of PBIS by 3 percentage points from 2008 to 2011.

School 1 was the only school to experience a widening of the Black-White achievement gap by 2 percentage points the year immediately following implementation of PBIS with high fidelity. This school experienced a delayed closure in the Black-White achievement gap after the implementation of PBIS with high fidelity; however, the subsequent year's achievement patterns for Black and White students did result in an overall closure of 2 percentage points in the school's Black-White achievement gap. While School 2 followed the trend of all other schools in the study, a closure in the Black-White achievement gap post implementation of PBIS, most of the school's progress could not be attributed to the efforts of PBIS.

Prior to the implementation of PBIS, 2005-2008, School 1 closed the Black-White achievement gap by 8 percentage points; whereas, the years following the implementation of PBIS with high fidelity only resulted in a 2-percentage point reduction in the achievement disparities between White and Black students. While a positive correlation exists between PBIS and reductions in the achievement gap for Black and White students, School 1 and School 2 had greater levels of inequity in the academic outcomes of Black and White students three years after the implementation of PBIS with high fidelity than they had prior

to the implementation of PBIS as shown in Figures 2 & 5. In School 1 a 28-point gap in the proficiency levels of Black and White students existed in 2010-11, the same level in 2007-08. A much smaller gap existed in School 2 in 2010-11, 17 percentage points, but a smaller gap exist in 2006-07, two years before the implementation of PBIS with high fidelity.

When examining the closure of the Black-White achievement gap utilizing the means, pre and post implementation of PBIS with high fidelity, it is noted that on average all schools involved in the study have made a positive impact on the closure of the achievement gap. Each school averaged a closure of the Black-White achievement gap by 6.86 percentage points from 2005-06 to 2010-11 academic school year (Table 9).

Table 9: Achievement Gap Means: Pre versus Post Implementation of PBIS.

School	Pre	Post	Difference
School 1	32.67	26	6.67
School 2	20.67	18	2.67
School 3	29	23	6
School 5	43.33	38.67	4.66
School 6	55.6	41.3	14.3
		Average	6.86

The achievement disparities that exist in the nation's schools were not eradicated with the implementation of PBIS with high fidelity. Although, PBIS implemented with high fidelity into select North Carolina middle schools has assisted in closing the Black-White achievement gap in all schools involved in the study. Overall, the growth in the achievement levels of African American students, the sluggish growth amongst their White counterparts and the implementation of PBIS with high fidelity should be noted as a feasible means of positively affecting the inequities faced in American educational organizations for African American students.

Summary

Positive Behavior Interventions and Support has assisted the general population of students in each of the schools to reduce the number of office disciplinary referrals that school personnel submit on students due to behavioral violations. A 24.77% reduction in the reported behavioral violations for all students has aided school administrators in reducing the consequences, specifically short-term suspensions, by 13.52%. With an increase in compliance with school policies, the student achievement levels of all students increased by 6.67% percentage points over achievement levels prior to being labeled a PBIS Exemplar school. However, for African American students, even greater levels of success were noted in regard to the reduction of ODRs. A 29.09% decrease in the submission of ODRs for African American students was noted. It is assumed, like that for all students, that a reduction of referable behaviors for African American students would result in a reduction in the behaviors requiring consequences such as short-term suspensions. With fewer antisocial behaviors being reported, African American students have increased their achievement proficiency levels by 14.93% post implementation of PBIS with high fidelity. The increased levels of proficiency assisted African American student in reducing the discrepancy in educational outcomes that exist between African American and White students in select North Carolina middle schools by 6.86 percentage points.

A review of the quantitative findings would suggest that PBIS implemented with high fidelity into North Carolina middle schools will assist in creating educational environments that result in the reduction of antisocial behavior and ultimately increased achievement levels amongst all students. However, the educational environments that lead to the greatest strides in improving the academic achievement amongst all students and African American students differ.

Providing equitable academic outcomes for all students, increases in the proficiency levels of students, and a reduction in antisocial behaviors exhibited by students are priorities of the U.S. Department of Education, North Carolina Department of Education, local educational organizations, and educational administrators. Providing equitable opportunities for all students has been overshadowed by the progress made in the proficiency levels of all students. However, PBIS implemented with high fidelity can be associated with a positive change in the behavior modification of students, achievement levels of students, and a closure in the achievement disparities faced by minority students.

Although, North Carolina politicians and educational administrators must specify the desired outcome to determine if PBIS will be the most effective intervention to utilize as they work to accomplish this goal (e.g., closing the achievement gap, increasing the number of African American middle school students considered proficient on state exams, or reducing the use of reactive disciplinary practices). Depending on the desired

outcome, the allocation of financial resources to implement PBIS into all North Carolina middle schools may be irresponsible at this time. Rather, funds should be allocated to assist in targeting schools that will produce the desired outcome and additional resources be utilized to assist in translating effective practices that will assist in the school systems and state agencies as they work to effectively implement PBIS into all middle schools to improve the behavioral and academic outcomes of all populations of students.

Going Forward

Glesne [33] suggests that part of demonstrating the trustworthiness of a researcher's study is accomplished by denoting the limitations associated with the study. All research studies have limitations due to the inability of any study to be perfectly designed Marshall & Rossman [34]. The limitations and delimitations associated with this study are as follows:

- i. The small sample size of this study (n=5) can be perceived as a weakness.
- ii. The exclusive focus on PBIS Exemplar schools.
- iii. The analysis of data only through a RTT lens.
- iv. The exclusive focus on schools located in North Carolina.
- v. The study's inability to translate across all school settings (i.e., rural, suburban, and urban) and geographical areas could negatively impact the generalization of the findings associated with this study.
- vi. The study's inability to provide insight into elementary and high school settings due to the exclusive focus on middle schools.
- vii. The lack of teacher and student voice.
- viii. The use of PBIS as the only behavioral framework.
- ix. The collection of achievement and discipline data.

Still, the findings produced from this investigation are of significant value to teachers, school administrators, district office personnel, superintendents, policy-making boards, and state-level PBIS offices as they work to impact the school outcomes of African American students [35]. These findings are useful at the site level to assist in restructuring the school climate and disciplinary processes, eliminate the reduction in access to the curriculum for African American students due to disciplinary consequences, and realize and utilize system approaches as a viable means of addressing underachievement.

At the macro level, the findings of this study have the potential to aid in creating new policies and programs that meet the behavioral and academic needs of African Americans in middle school and in their success as lifelong learners [36,37]. This investigation will assist in providing systematic, effective,

and lasting change in the public-school system and serve as the basis for additional changes for other minority groups.

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