

*Who's Getting Targeted for Behavioral Interventions? Exploring the Connections between School Culture, Positive Behavior Support, and Elementary Student Achievement*

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# ***Who's Getting Targeted for Behavioral Interventions? Exploring the Connections between School Culture, Positive Behavior Support, and Elementary Student Achievement***

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*This correlational research study examined the effect of behavioral interventions through School-wide Positive Behavior Interventions and Supports (SW-PBIS) on elementary student reading and math achievement. Additionally, teacher perceptions of positive behavior interventions and supports (PBIS) implementation were explored. No statistically significant relationship was found between student participation in PBIS Tier II behavior interventions and academic achievement. However, there were significant differences in the percentages of male students, students of color, and students from high poverty backgrounds who were identified as needing Tier II behavioral interventions by the predominantly White, female, middle class teachers. Findings are discussed in terms of the importance of inclusive school cultures that support academic and personal achievement for all students which must consider the cultural norms and behaviors that students bring to school.*

**Keywords:** *student behavior, discipline, intervention, correlation, racial differences, gender differences, elementary schools, school culture*

## **INTRODUCTION**

Each day across the United States, students arrive at school ready to learn, socialize with peers, and find a sense of belonging in the confines of a caring, safe environment. Within the walls of our schools, administrators and teachers alike deal with instructional pressures, behavioral issues, and the evolving world of learning. As a result of the increased accountability for student academic achievement and positive behavior resulting from legislation such as the *No Child Left Behind (NCLB) Act* (NCLB, 2002), many school districts and administrators are implementing school-wide prevention behavioral models in an effort to promote a positive school culture and to reduce discipline problems. Yet despite legislation and student behavior management models, when students of color and students from poverty backgrounds enter school, they are confronted with cultural discontinuity; a lack of congruency between their home cultures and the school culture, including values, behaviors, and expectations which contribute to underachievement (Gay, 2010; Ladson-Billings, 2014; Mandara, 2006; Thompson, 2004).

This study explored the relationships between school culture, elementary student achievement on the Renaissance Star Reading and Star Math assessments, and participation in behavioral interventions conducted through the School-wide Positive Behavior Interventions and Supports (SW-PBIS) model. The SW-PBIS framework is one of a number of programs that systematically manage student behavior and seek to influence students' self-efficacy by creating school-wide plans that clearly communicate positive behavioral expectations, provide incentives to students who meet those behavioral expectations, and establish a consistent strategy for student intervention and support when behavioral concerns arise (Horner et al., 2005; Sugai & Horner, 2006). The program's origin lies in positive behavioral supports (PBS) used in the 1980s that included students with severe disabilities in order to avoid harm to self or others (Meyer & Evans, 1989). After the reauthorization of the *Individuals with Disabilities Education Act* (IDEA) in 1997, PBS was adapted for use with all

students across diverse school contexts to “improve the quality of behavioral interventions and behavioral support planning” (Sugai et al., 1999, p. 3). Sugai and Horner reported in 2009 that this three-tiered behavior intervention model had been implemented in more than 9,000 schools in at least 44 states across the United States. The three tiers within PBIS are (a) primary prevention (often referred to as universal supports or Tier I), (b) secondary prevention (targeted interventions or Tier II), and (c) tertiary prevention (intensive supports or Tier III). Each tier consists of specific practices and systems features used to guide implementation (Sailor et al., 2006).

The State Department of Education in the Midwestern state in which this study was conducted has supported implementation of the SW-PBIS program for the past decade through funding full-time PBIS consultants available to work with school- and district-based teams in every region. Over a two-year period from 2007 to 2009, the number of schools in the state identified as implementing SW-PBIS increased from about 300 to over 500 schools, with current participation at about 800 schools. A conference held annually within the state offers training to over 1,300 educators and recognizes school excellence in implementing the SW-PBIS framework (State PBIS, 2016). Furthermore, PBIS is viewed not as a formal curriculum but a two to three year process of leadership team training intended to establish school capacity for adopting and sustaining effective and preventive behavioral interventions; high implementation integrity; continuous use of data for decision making; established professional development and coaching to establish predictably safe, consistent, and positive social interactions at the school-wide level (Horner, Sugai, & Anderson, 2010). For schools, promoting positive behaviors is a grave concern as educators struggle with the stressors of legislative requirements.

John Dewey (1916) believed the public school system was developed to replicate the “needs of existing community life . . . improving the life we have in common so that the future shall be better than the past” (p. 225). While it could be argued that this is still the purpose of the educational system, it could also be discussed that the opposite is occurring and all students are not receiving the support that they deserve or need (Noguera, 2012). Many school conduct codes and discipline handbooks detail consequence processes designed to “teach” students that they have violated a school rule, and that their choice of behaviors will not be tolerated by administering punishments. Students who receive the most severe punishments are commonly students with learning disabilities, students living outside of the care of their primary home or parents, male students, students of color, and students eligible for free or reduced-priced lunch (Perez, 2010; Skiba, 2001).

Concerns about discipline and problem behavior in schools are not new. Over the past 20 years, fighting, violence, vandalism, truancy, lack of discipline, and drug use have been among the top concerns of the general public and teachers (Sugai & Horner, 2002). Research shows that disciplinary practices in schools often resemble the strategies used to punish adults in our society, as Noguera (2003) stated,

Not surprisingly, those most frequently targeted for punishment in school often look—in terms of race, gender, and socioeconomic status—a lot like smaller versions of the adults who are most likely to be targeted for incarceration in society. (p. 343)

Along with punishment-based strategies, there is consistent over-representation of students of color and male students being assigned detention, suspension, and expulsion (Leone et al., 2003). In her book, *The New Jim Crow*, Alexander (2010) explained that:

The United States has almost always had a racial undercaste – a group defined wholly or largely by race that is permanently locked out of mainstream, white society by law, custom, and practice. The reasons and justifications change over time, as each new caste system reflects and adapts to changes in the social, political, and economic context. (p. 185)

A recent policy statement released by the U.S. Department of Education (2014) described, “stark racial and gender disparities” in disciplinary statistics found even in early childhood settings, “with young boys of color being suspended and expelled much more frequently than other children” (p. 1).

As to be expected, our social institutions provided with the task of preparing and socializing

young people for adult roles commonly reflect many of the characteristics of the society in which they are located. Because of this, African American and Latino students are disproportionately identified as eligible for special education services and underrepresented in programs for the gifted and talented (National Research Council, 2002). Holzman (2006) reported that nationwide 7.47% of White, non-Hispanic students, 9.9% of Asian, 3.04% of African American, non-Hispanic students, 3.57% of Hispanic students are placed by school districts in gifted/talented programs. There are also differences in student performance on large-scale standardized assessments such as the National Assessment of Educational Progress (NAEP). Boykin (2014) contends while such achievement gaps narrowed among groups for a period of time in the 1980s, they widened in the 1990s in reading and math and have been pretty consistent “between White students and their Latino and African American peers that otherwise have not changed to the most recent test administration” (p. 504); the disparities continue to remain at the fourth, eighth, and twelfth grade levels. Consequently, dropout rates, low levels of academic skills, and school failure are higher on average for students of color than other students. Furthermore, African American students are two to three times as likely to be suspended or expelled as other students (Skiba et al., 2002).

## **THEORETICAL FRAMEWORK**

### ***Cultural Norms and Student Discipline Models***

There have been numerous efforts in our schools designed to control the behavior of students with limited attention given to the cultural norms that undergird such efforts. Monroe (2005) maintains “because prevailing beliefs and practices often proceed unchallenged, the culturally based nature of school discipline has remained an unquestioned component of school life” (p. 47). Utley and colleagues (2002) point out that PBS programs must consider procedures that are “socially and culturally appropriate”; yet, most of these programs do not consider the cultural context of families and communities. “Critics point to the underlying tensions of who is deciding what behaviors are appropriate, for whom, and under what conditions” (Utley et al., p. 197). In public schools in the United States where students are likely to be taught by White, middle class teachers, the dominant cultural norms of these teachers are pervasive. Discipline models are likely to be constructed based on these dominant cultural norms, placing blame and punitive consequences on students whose behaviors differ from these expectations.

Several researchers and practitioners brought attention to the cultural mismatch that exists between the school and the lives of students of color, often resulting in miscommunication about actions of the students, especially those who may lack the cultural capital to read the expectations of teachers and negotiate the school environments (Delpit, 1995; Gay, 2010; Irvine, 1990, 1999; Thompson, 2004; Tyler, et al., 2008). Accordingly, Weinstein, Tomlinson-Clarke and Curran (2004) noted several differences in culturally specific behaviors that teachers may misconstrue or view as disruptive. Many teachers accustomed to “a ‘passive-receptive’ discourse pattern” may view the more active call and response behaviors of African American children that demonstrate their engagement through reactions and comments as disorderly (Hale-Benson, 1986). The smiles of Southeast Asian students when they are scolded may be seen as indicators of disrespect instead of the intended “admissions of guilt” and messages of no hard feelings of students.

Weinstein, Curran, and Tomlinson-Clarke (2003) contend that when teachers lack the knowledge of how culture influence behaviors, they unknowingly create inequality in their interactions with students from diverse cultures. They outline a number of tasks that must be considered in order to implement culturally relevant practices in classroom management. These tasks include:

- creating a physical setting that supports academic and social goals,
- establishing expectations for behavior,
- communicating with students in culturally consistent ways,
- developing a caring classroom environment,
- working with families, and
- using appropriate interventions to assist students with behavior problems.

Irvine (1990) identified the cultural discontinuity that occurs in schools as “lack of cultural synchronization.” The continuing cycle of miscommunication and confrontation “among the student, the teacher, and the home; hostility; alienation; diminished self-esteem; and eventual school failure” (Irvine, 1999, p. 247) which compromises the hopes and dreams of a successful future for these students (see also Rios, 2011). While we emphasize culture within this context as personal aspects of individuals that consist of their histories, background experiences, language, religion, norms, and beliefs carried from generation to generation as learned behavior, culture is not static and can be unlearned. Weinstein and associates (2003) explained the importance of teaching students mainstream behaviors so they can use them in multicultural settings, if they desire; keeping intact their personal cultures and not communicating that mainstream norms are better. Irvine (1999) provides a powerful analysis of this phenomenon in her own life:

I am amazed how well I mastered this fine art of cultural switching as a child, and I am reminded that children and adults can retain and celebrate the culture of their ancestors, yet be at ease in multicultural settings. An individual’s ethnic identity and cultural solidarity do not erode, because we are all capable of “multiple ways of perceiving, believing, doing, and evaluating” the world (Bennett, 1995, p. 88). These are not conundrums to fret over. (p. 248)

The school’s response to the individual cultures of students is negotiated through the environment of the school. In an age of accountability, educators must not, as Irvine (1999) suggests, fret over these conundrums but must establish a positive school culture that considers the role of culture in the learning process.

### ***School Culture and Student Achievement***

School culture is a complex and important concept in education. A school’s environment is led by norms, values, beliefs, rituals, symbols, ceremonies, and stories that in turn all collectively define and contribute to the school’s culture (Meier, 2012). Each school has a culture of its own; when a school has established a positive culture, students are less likely to drop out or experience behavior problems (Roby, 2011). A critical definition of culture suggests how the values and norms of the school may be shaped by hegemonic narratives of race, class, gender, and sexual orientation by individuals inside the school. Nieto (2010) defines culture as

the ever-changing values, traditions, social and political relationships, and worldview created, shared, and transformed by a group of people bound together by a combination of factors that can include a common history, geographic location, language, social class, and religion. (p. 136)

From an educational standpoint, Gay (2010) defined culture as all that we do in education, including curriculum, instruction, administration, and assessment. “Even without our being consciously aware of it, culture determines how we teach and learn” (p. 9).

Many schools across the country struggle with meeting accountability measures for student performance, such as reaching proficient levels in reading and math as measured by performance on state assessments (NCLB, 2002). Bhattacharyya, Junot, and Clark (2013) note the most widely criticism of standardized tests, “is that teachers find themselves ‘teaching to the test’ instead of teaching the various content and skill areas of the curriculum” (p. 634). At a practical level, Delgado (2014) expressed a number of concerns about standardized testing; they reward only one type of intelligence, generally a narrow range of skills; skillful test-takers may be good for the individual but society requires individuals with different skills such as critical thinking. Understanding the nature of school culture and academic achievement is a key factor for establishing a positive culture of teaching and learning that benefits both teachers and students.

Further analysis of school culture is critical when examining the PBIS framework due to the fact that school culture influences student behavior and student academic success (Lewis & Sugai, 1999). McKown and Weinstein (2008) found significant correlations between lower student achievement and teacher biases based on student ethnicity, particularly African American and Latino/a students. Rousso and Wehmeyer (2001) suggest that teachers hold gender biases and expectations based on differential socialization patterns and sex role stereotyping. Additionally, teachers respond more

positively to students from the same or similar backgrounds as themselves (Carl, 2012). Another influence on academic success and a building's culture are the perceptions revolving around a student's social class. Schools attempt to offer opportunities for students, however often within the same setting, reproduce existing social classes (Anyon, 1997; Bowen & Bok, 1998). It is critical to realize the behaviors demonstrated by educational staff make a difference in not only the lives of the students, but also the school's culture as examined through the lenses of race, gender, and social class.

## **PURPOSE AND RESEARCH QUESTIONS**

This study examined the impact of SW-PBIS for students identified for Tier II interventions on reading and mathematics achievement, and teachers' perceptions of the program in one Midwestern suburban elementary school. For this research, data were collected and analyzed in order to answer the following questions:

- What are the demographic characteristics, including race, gender, socioeconomic status (SES), individualized education program (IEP) status, and limited English proficiency (LEP) status, of the students participating in the PBIS Tier II behavioral intervention program in a Midwestern suburban metropolitan public elementary school?
- What is the relationship between student participation in PBIS Tier II behavioral interventions and reading academic achievement?
- What is the relationship between student participation in PBIS Tier II behavioral interventions and mathematical academic achievement?
- What are teachers' perceptions of the implementation of PBIS Tier II interventions on the academic achievement of elementary students?

While schools strive to create a setting that is consistent to Dewey's (1916) beliefs, there is a struggle with consistent discipline that is equitable in nature for all students. In many current disciplinary programs, the goal is to correct or reform negative behavior through re-teaching of the expected behavior (Gutting, 2012). A number of studies discuss the establishment and implementation of the School-wide PBIS framework (Colvin & Fernandez, 2000; Horner et al., 2005; Irvin et al., 2004, 2006; McIntosh et al., 2009; Safran, 2006), however few studies examine the relationship between the school-wide behavior plan, specifically Tier II interventions, and academic achievement. By focusing on the essential life-skills of reading and math, behavioral education, and exploring teachers' perceptions of the SW-PBIS model, this study contributes to understanding of the relationship between Tier II interventions and elementary student achievement.

## **METHODOLOGY**

The purpose of this correlational study was to analyze the relationship between elementary students participating in Tier II behavioral interventions in a School-wide PBIS site and their growth in reading and math achievement on the STAR Reading and Math assessments. The PBIS Tier II intervention of Check-In/Check-Out (CICO) was implemented by the school for students who were identified by teachers as unable to consistently meet school-wide behavior expectations. In the sample of 71 first-through fifth-grade students, significantly more male students and students of color were identified by teachers as needing PBIS Tier II interventions. A Pearson correlation and two-sample t-test were used to analyze the possible relationship between the student participation in the PBIS Tier II behavior interventions and their reading and math academic achievement according to the students' scaled score gains on the STAR reading and math assessments. Additionally, a survey was distributed to 40 teachers to understand their perceptions of the impact of PBIS Tier II interventions. It is important to consider the teachers' perceptions because they are responsible for recommending students for the PBIS Tier II interventions and implementing the classroom-based interventions.

### Site and Participant Selection

This study was conducted in a Midwestern suburban metropolitan public elementary school serving grades kindergarten through 5 that implemented the school-wide PBIS framework. The district served about 10,450 students in two high schools, two 7th-8th grade middle schools, one 6th grade center, ten elementary schools and one alternative school. Approximately 4,700 students attended schools at the elementary level in grades K-5, with elementary school populations ranging from 362 to 513. Compared to other districts in the metropolitan area, this district is 6<sup>th</sup> largest in student enrollment. The district experienced shifting student demographics during the previous decade, growing by about 1,000 students and increasing in the percentages of students of color from 16% to 28.5%, and students eligible for free or reduced-priced lunch from 16.7% to 28.6% (State Department of Education, 2013).

This school district and specific elementary site were selected because of the fidelity and duration of PBIS implementation. The school site began implementation of PBIS six years prior to the study and had received statewide recognition for its practices and success with implementing the school-wide PBIS model. The elementary school had the smallest student population in the district, with racial demographic percentages in the school site that included 38% of the student enrollment considered students of color and 40% of the students eligible to receive free or reduced-priced lunch (see Table 1). The overall attendance rate for the elementary school was 95.4% (State Department of Education, 2013). This study used criterion sampling to identify 71 first through fifth grade students within the school site who participated in Tier II behavior interventions through PBIS during the school years of 2011-2012 and 2012-2013. Criterion sampling involves selecting cases that meet some predetermined criterion of importance (Patton, 2002). Academically, due to the format and requirements of the STAR reading and math assessment, kindergarten students do not complete this assessment and as a result were not included in the statistical analyses for this study.

Table 1 reports the PBIS Tier II intervention participants as compared to those students not participating in Tier II interventions, revealing a higher percentage of males (63.4%) when compared to the school's student population (48.1%). Other demographic characteristics inconsistent with the overall student population were the percentages of African Americans (32.5% in Tier II sample and 11% in the overall school) and percentages of students eligible for free/reduced lunch (47.9% in Tier II sample and 40.0% in the overall school). More consistent with the building population were the students participating in the ELL program (7% in Tier II sample and 8.6% in the overall school) and students with IEPs (23.9% in Tier II sample and 19% in the overall school).

**Table 1**

*Numbers and Percentages of Students in Tier II Sample, Elementary School Site, and District*

	Tier II Sample		School		District	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Male	45	63.4%	174	48.1%	5,348	51.2%
Female	26	36.6%	188	51.9%	5,098	48.8%
White	38	53.5%	225	62.2%	7,469	71.5%
Black	23	32.5%	40	11.0%	1,086	10.4%
Asian/Pacific Islander	2	2.8%	18	5.0%	460	4.4%
Hispanic	4	5.6%	47	13.0%	439	4.2%
Other/Mixed Race	4	5.6%	32	8.8%	992	9.5%
Free and Reduced Lunch Eligibility (SES)	34	47.9%	145	40.0%	2,943	28.2%
Total Number of Students	71		362		10,446	

In terms of achievement data for the elementary school site, state assessments in Language Arts and Mathematics were administered each year in grades 3, 4, and 5 that rated student results in four categories: Below Basic, Basic, Proficient, and Advanced. In the area of Language Arts,

approximately one-half of all third-grade students (52.5%) scored at Proficient or Advanced levels, with higher scores in grades four (63.1%) and five (61.2%). The mathematics assessment results demonstrated similar trends in the percentages of students scoring at Proficient or Advanced levels in third-grade (50.9%), with higher percentages of students scoring at higher levels in grades four (55.4%) and five (68.7%) (State Department of Education, 2013).

In order to understand the possible relationship between PBIS Tier II interventions and academic achievement, this study also used randomized sampling to determine a comparison group who did not participate in the Tier II interventions. A random sample requires that each individual of the population have an equal opportunity of being selected (Gravetter & Wallnau, 2013). For this sample, the researcher identified the same number of students in each grade level during each school year. In order to randomly select the comparison group, the researcher used the grade level class lists for each year and the number of students in the Tier II interventions during that year, then counted by that number to determine the students who would serve as the comparison group. This process produced a number of 71 students in the comparison group.

Beyond the academic achievement analysis, this study evaluated teacher perceptions of student academic success of students involved in PBIS Tier II behavior interventions. Within this school site, the overall teaching staff consisted of 40 individuals with 37 females and 3 males. The male teachers taught third and fifth grade, and physical education. Furthermore, this building had a primarily White teaching staff with one Hispanic teacher who taught English as a Second Language (ESL). There were four teachers assigned to sections of classes at each grade level in kindergarten through fourth grade, with three class sections at the fifth-grade level and four teachers assigned to the specials classes (PE, music, art, and library). The survey data were collected in a faculty meeting during which the primary investigator explained the background and purpose of the study. All 40 teachers were invited to complete the survey, and surveys were anonymously collected without demographic indicators such as gender and teaching assignment, in order to protect the anonymity of the teacher population. The study had 30 teachers respond to the perception survey; therefore the participation rate for teachers was 75%.

### ***Instrumentation***

Three measures were used in this study. One is the Renaissance Learning (2014) STAR reading and math assessment. This assessment is a computerized adaptive tool where students answer 25 multiple-choice questions beginning with grade-level material, and then the program adjusts to the answers provided by the student. It either inputs a more- or less-challenging question depending on a correct or incorrect answer. Renaissance Learning provided three reliability tests for the STAR reading assessment with high reliability ranging from 0.82 to 0.91. The tests included were a test of internal consistency, the split-half reliability test, and the alternate form test. For the validity of the STAR reading assessment, Renaissance Learning provided the within-grade average concurrent validity coefficients for grades 1-6 with an overall average of 0.74. The predictive coefficients ranged from 0.69 to 0.74 in grades 1-6. Overall, these correlation coefficients reflect very well on the validity of the STAR Reading test as a tool for placement in reading (Renaissance Learning, 2014).

For the STAR math assessment, research completed during the development of assessment confirmed that the test is reliable, valid, and correlates highly with state standardized math tests. The STAR math assessment was normed using a nationally representative sample of students in 42 states across the U.S. The reliability was established with two reliability studies: (a) test-retest and (b) an internal consistency reliability test. The grade-level reliability estimates from both studies are exceedingly high, ranging from 0.78 to 0.88 with most estimates greater than 0.84 (Renaissance Learning, 2014). To determine validity, an additional study compared students' scores on STAR Math to their scores on other standardized tests such as the California Achievement Test and the Iowa Test of Basic Skills. This comparison produced a high correlation between STAR math scores and scores on other tests with most above 0.70. This demonstrates the validity of STAR math for measuring student math achievement and the assessment's prediction ability for student performance on other such tests (Renaissance Learning, 2014).

The second measure used was the collection of the behavior data for the PBIS Tier II CICO data sheets. On the sheets, the student's day is divided into hourly increments and an expectation is placed on the classroom teacher and student to discuss the student's overall behavior each hour. The behavior classifications are determined through the school wide expectations and school's focus for desired behavior. Goals are set on an individual basis to meet the needs of each student. When considering the validity and reliability of PBIS Tier II CICO data collection, it is critical to understand that the school site mandates PBIS expectation training for all staff members which increases the validity and reliability of PBIS as it becomes less subjective with fewer opportunities for teachers to act on biases toward students (Sugai & Horner, 2009).

The third measure was a five-point Likert-type scale survey completed by teachers at the school site to analyze their perceptions of student involvement in PBIS Tier II behavior interventions and their academic achievement. This survey was developed by the researchers, consisting of 24 questions, of which 21 were placed on a five-point scale with a range including strongly agree, agree, not sure, disagree, and strongly disagree. Some of the Likert-type survey items included:

- Overall, I feel that PBIS has had a positive impact on student behavior.
- I am satisfied with the PBIS expectations (classroom, hallway, cafeteria, and restroom).
- I am satisfied with the PBIS consequences (verbal/written warnings, loss of privileges, parental contact, office referrals, etc.).
- I am satisfied with our school's short-term PBIS incentives (rewards, prizes, etc.).

Additionally, the survey included 3 open-ended questions allowing the teachers to share thoughts regarding interaction with PBIS Tier II support. These questions included:

- What are some ways that you think PBIS Tier II support (Check In/Check Out) have impacted students' reading and mathematical achievement?
- What barriers or obstacles do you feel hinder the implementation of PBIS Tier II support for students?
- What additional thoughts or concerns do you have about PBIS Tier II support for students?

A pilot study of this survey instrument was conducted in order to determine validity and reliability. The PBIS Leadership Team members from this school were used to pilot the survey. The team was composed of four grade-level teachers, the physical education teacher, the school counselor, and the school principal. Answering the survey items in the pilot study assisted in determining if participants had adequate understanding to express opinions about the topic. The PBIS Leadership Team assisted in determining the content validity of the instrument to make sure the survey measured the content it claims. The questions used in this study aligned with the PBIS School-wide Evaluation Tool (SET) used to assess and evaluate the important features of school-wide effective behavior support across each academic school year (Horner et al., 2005).

### ***Data Collection***

Data collection took place in three steps. First, the school's PBIS coordinator was contacted to gather the number and names of students who participated in the PBIS Tier II behavior interventions during the school years of 2011-2012 and 2012-2013. With this information, the researcher was allowed access by the district's Director of Research, Evaluation and Assessment to the student demographic data and STAR assessment results of each student from Fall 2011 through Spring 2013. All students in grades one through five attending the school site were required to complete the STAR assessments two times over the course of the academic year, in the Fall (August 2011 and 2012) and Spring (April 2012 and 2013). The PBIS Tier II CICO data from the 2011-2012 and 2012-2013 school years were gathered from the school's PBIS coordinator who was responsible for compiling the daily student data and inputting the information into Microsoft Office Word and Excel documents to create spreadsheets for further school analysis. Additionally, the student data provided the participants' gender, race, SES, IEP, and LEP to address the first research question. All of the behavior data

collection was completed through data mining as compared to using human participants. Additionally, the school district used an online data (Matrix) collection program for behavior incidents. Having access to this program provided additional statistical information for the students attending the school. By employing a teacher perception survey, quantitative and qualitative data were collected in terms of PBIS Tier II behavior intervention implementations and student academic achievement growth. The survey data were collected during a staff meeting in February 2014 where a researcher explained the background and purpose of the study. All surveys were anonymously collected so as to protect the teacher identities.

### **Data Analysis**

The purpose of the statistical analysis was to analyze the presence and significance of a correlation between a student's participation in PBIS Tier II interventions and the student's academic achievement. The dependent variable in this study is the student reading and mathematics achievement scores over the course of the student's participation within the Tier II intervention supports. The independent variable is the student's participation within the PBIS Tier II intervention supports within the elementary school. This design analyzed the nature of the relationship between the independent and dependent variables through the use of student reading and mathematics achievement among elementary students on an adaptive assessment when receiving PBIS Tier II intervention behavior support. Finally, a sample of students was used to compare students who did not participate in Tier II behavior interventions and their academic achievement. In order to analyze the qualitative open-ended questions on the teacher perception survey, this study used the qualitative content analysis approach. According to Zhang and Wildemuth (2009), qualitative content analysis uses an inductive approach by examining topics and themes from the data and drawing inferences to generate theories behind the responses. For the purpose of this study, the sample data were examined to determine if themes emerged around the teacher perceptions towards the PBIS Tier II intervention implementation.

### **RESULTS**

The sample size included 142 ( $N = 142$ ) students in grades first through fifth during the school years of 2011-2012 and 2012-2013. Of these students, half of them ( $n = 71$ ) participated in the PBIS Tier II intervention of CICO at some point during the two school years. The other half of the sample ( $n = 71$ ) was made up of a random sample of students who did not participate in the Tier II behavior interventions to serve as a comparison group. Of the 142 students, 58 were female and 84 were male. While the sample has a much larger male representation, this number aligns with the overrepresentation of males participating in behavior interventions at the school. Additionally, the number of students of color for the sample and building population would be considered statistically high (see Table 1).

Results of the statistical analyses showed no statistically significant connection between student participation in PBIS Tier II behavior interventions and student academic achievement in reading and math. According to mean scores for the STAR reading assessment, those that participated in Tier II behavior interventions scored lower in the STAR assessments administered in the fall with a scaled score mean of 239.67 as compared to non-participants at 304.22. With the STAR math assessment, the difference is not quite as significant when thinking about the difference in scaled score points, however the Tier II participants had lower scores ( $M = 537.13$ ) as compared to their peers ( $M = 563.42$ ; see Table 2).

Two independent sample t-tests were conducted demonstrating that there was not a significant difference in the reading or math gain scores for students participating and students not participating (see Tables 3 and 4). With a  $p$  value of greater than 0.05, the conclusion can be made that there is no statistically significant difference between the two conditions. These results suggest that the PBIS Tier II behavior interventions did not have an effect on the reading or math gains of first through fifth grade students within this study.

**Table 2***T-Test Group Statistics – STAR Reading and Math Assessment Fall Scale Scores (SS)*

	<b>Tier II</b>	<b>N</b>	<b>M</b>	<b>SD</b>	<b>SE</b>
Reading Fall SS	No	71	304.23	258.99	30.74
	Yes	71	239.68	161.96	19.22
Math Fall SS	No	71	458.41	191.08	22.68
	Yes	71	425.63	173.08	20.54

*Note.* *M* = Mean; *SD* = Standard Deviation; *SE* = Standard Error.**Table 3***Results of T-Test and Descriptive Statistics for Reading Gains by PBIS Tier II Participation (N = 142)*

	<b>PBIS Tier II</b>						<b>95% CI for Mean Difference</b>	<b>t</b>	<b>df</b>
	<b>Participant</b>			<b>Non-Participant</b>					
	<b>M</b>	<b>SD</b>	<b>n</b>	<b>M</b>	<b>SD</b>	<b>n</b>			
Reading Gains	91.45	93.92	71	105.70	101.27	71	-18.13, 46.63	.870*	140

*Note.* \*  $p < 0.05$ ; *M* = Mean; *SD* = Standard Deviation; CI = confidence interval; *t* = t-test; *df* = degrees of freedom.**Table 4***Results of T-Test and Descriptive Statistics for Math Gains by PBIS Tier II Participation*

	<b>PBIS Tier II</b>						<b>95% CI for Mean Difference</b>	<b>t</b>	<b>df</b>
	<b>Participant</b>			<b>Non-Participant</b>					
	<b>M</b>	<b>SD</b>	<b>n</b>	<b>M</b>	<b>SD</b>	<b>n</b>			
Math Gains	111.49	91.44	71	105.01	90.43	71	-36.65, 23.70	-.424*	140

*Note.* \*  $p < 0.05$ ; *M* = Mean; *SD* = Standard Deviation; CI = confidence interval; *t* = t-test; *df* = degrees of freedom.

As described in the characteristics of the PBIS Tier II sample, there was overrepresentation of males and students of color identified for participation in Tier II interventions within the behavioral program, particularly African American students. Furthermore the teacher survey results included 44% of respondents who were “Not Sure” whether there were academic benefits in reading and math from Tier II interventions, 20–24% who “Disagreed,” 28–32% who “Agreed,” and 4% who “Strongly Agreed” that there were academic benefits (see Table 5). Open-ended survey responses included a desire for more “punishment” for inappropriate behaviors rather than positive interventions and supports. In terms of the shifting student demographics and school boundaries, one teacher stated, “We lost the apartment kids, so we lost some behaviors,” reflecting a mental model that students from higher-poverty backgrounds were associated with behavioral concerns.

**Table 5**

*PBIS Teacher Satisfaction Survey Results—Tier II Academic Questions*

Item #20: Overall, students in my classroom participating in Tier II interventions (Check In/Check Out) have shown academic gains in reading.

<b>Strongly Disagree %</b>	<b>Disagree %</b>	<b>Not Sure %</b>	<b>Agree %</b>	<b>Strongly Agree %</b>	<b>Mean (Index)</b>
0%	20.0%	44.0%	32.0	4.0	3.20

Item #21: Overall, students in my classroom participating in Tier II interventions (Check In/Check Out) have shown academic gains in math.

<b>Strongly Disagree %</b>	<b>Disagree %</b>	<b>Not Sure %</b>	<b>Agree %</b>	<b>Strongly Agree %</b>	<b>Mean (Index)</b>
0%	24.0%	44.0%	28.0	4.0	3.12

**DISCUSSION**

The ways in which schools support students both behaviorally and academically is an important area of focus. The findings from this study contribute to the limited body of research on SW-PBIS through demonstrating no correlation between PBIS Tier II interventions and improved academic achievement, and recommendations to facilitate learning opportunities for staff members around issues of equity associated with behaviorist approaches to school-wide student discipline such as SW-PBIS. Educators must examine the process for teacher referral of students to Tier II and Tier III relative to these issues.

***Academic Concerns***

When considering the importance of the findings of this study, it is critical to note that interventions which empirically demonstrate positive effects on achievement scores are highly valued in U.S. education. The statistical analyses in this study demonstrated no statistically significant relationship between the PBIS Tier II behavioral interventions and student performance on the STAR reading and mathematics assessments, which suggests a closer investigation is needed regarding the effectiveness of the statewide expenditures to support the implementation of the SW-PBIS program. Unlike the findings in this study, some past studies have demonstrated a high correlation between PBIS and student achievement scores in reading and math (Horner et al., 2004; McIntosh, 2005; Parr, Kidder, & Barrett, 2007; Putnam, Horner, & Algozzine, 2006). Nevertheless, it could also be said that the increased student achievement may be attributed to a number of other factors, such as changes to curriculum or faculty and administration or individualized assessment issues.

When evaluating the results, it was discovered that while the PBIS recommendation process for students needing additional behavior support did not include academic screening for the students, the students who participated in the Tier II interventions during the 2011-2012 and 2012-2013 school years had relatively lower STAR assessment scores (see Table 2). This information is critical when considering the implementation of PBIS, as it could be suggested that an academic screening process might be necessary to assist in identifying whether the function of perceived problem behaviors is related to a need for academic support. Additionally, school administrators may find a learning opportunity for teacher expectations for effective instructional methods such as providing differentiated instruction and culturally relevant pedagogy. These findings are aligned with Jamison (2010) and Postles (2011) conclusions that PBIS alone does not cause students to achieve higher academic achievement.

***PBIS Referral Process***

To align with the inclusion of the academic evaluation for students participating in the Tier II interventions, it is recommended to create a consistent referral process for identifying students for

Tier II. While a process may be in place, teachers expressed concern over lack of support in the identifying process and a lack of support in assisting students who were not finding success in the Tier II intervention. By having a clear, checklist component for identifying students, there may be the opportunity for higher teacher implementation fidelity and the opportunity to improve the cultural attitude around the Tier II interventions. Furthermore, improved referral procedures could assist teachers to examine the overrepresentation of males, students of color, and students with IEPs participating in the Tier II interventions.

## **LIMITATIONS**

For the purposes of this study design, correlational tests were used to determine significance. As with any correlational study, the research can suggest a relationship between two variables, however, they cannot prove one variable causes a change in another variable. A second limitation to this study relates to the small sample size within one school setting and the randomized sampling method used to select students for the comparison group. While the grade levels and genders of the comparison group closely matched the students in the PBIS Tier II group, other student characteristics such as racial backgrounds were not as well-aligned. Future research could use a stratified random sampling technique to strengthen the analyses conducted between the two groups of students. The generalizability of the study results is limited and caution should be taken when generalizing results to urban/suburban student populations. In future studies, increasing the sample size and including additional schools and years would greatly enhance the generalizability of study results. Through analysis of the survey data, it was discovered teacher consistency or fidelity in implementation of PBIS expectations could be a limitation to this design because these affect the operation and success rate of the intervention.

## **IMPLICATIONS AND FUTURE RESEARCH**

### ***Staff Development***

Although this study did not yield a statistically significant relationship between participation in PBIS Tier II behavior interventions and academic achievement in reading and math, the teacher survey results suggest implications for professional development for classroom management and discipline practice, as well as building positive relationships with students. In addition to teacher surveys, future research needs to seek the perspectives of other instructional staff members such as paraprofessionals and teacher assistants (TAs) whose important roles in classrooms include supporting academics and managing student behaviors. Professional development for staff members should be focused around issues of equity and social justice in terms of behaviorism. Findings from this study reinforced research that students most likely to be suspended, expelled, or removed from the classroom for punishment are students of color, especially African Americans and Latinos, males, and low achievers (Meier, Stewart, & England, 1989). Additionally, providing staff members with professional development focused on learning and implementing such practices as culturally responsive pedagogy could positively enrich a building's culture and the school's PBIS framework.

### ***Meeting the Needs of All Students***

This study suggests how critical it is to have strong, positive relationships with students. Marzano (2003) stated that students will resist rules and procedures along with the resulting disciplinary actions, if the foundation of a good relationship is absent. The overrepresentation of students of color and male students in Tier II behavioral interventions is troubling and should be considered as educators continue to evaluate academic and behavior programs that are implemented in schools. Hale (2004) explained the differences in students from diverse racial backgrounds as well as social classes, stating "it is hypocritical to talk about 'equal opportunity' when the [educational] system ensures never-ending advantages for upper-income [White] student" (p. 34). It is critical for educators to identify these differences and work to meet the needs of all students by paying attention to disaggregated data according to gender, race, SES or ability.

## CONCLUSION

This study aimed to identify the relationship between the Tier II interventions and student achievement. Determining if there was a significant connection between the Tier II behavior intervention and academic achievement provides the potential for helping building administrators and educators gain an understanding of the impact such a behavior framework has on student learning. Results of this study revealed no significant correlational finding. While there is need for further research, the results may inform actions taken by educational administrators when making programmatic and funding decisions intended to support students academically and behaviorally. While there are a number of studies that discuss the establishment and implementation of the school-wide PBIS framework (Colvin & Fernandez, 2000; Horner et al., 2005; Irvin et al., 2004, 2006; McIntosh et al., 2009; Safran, 2006), it was discovered that few studies examine the relationship between the school-wide behavior plan, particularly Tier II interventions, and student academic achievement. Again, this supports the impact of this study.

This study is only the beginning of the work that needs to be conducted to consider how behavior intervention programs such as SW-PBIS may have an impact on students' academic and socio-emotional development. Educators are working in an accountability age and as part of the school construct, behavior management may be perceived to go hand in hand with academic achievement. Behavior management has been shown in some studies to support academic achievement for students as a whole, or Tier I students within the PBIS framework (Gutierrez, Yeakly, & Ortega, 2000). However, when implementing more specific support for struggling students, there is a lack of empirical evidence in the literature.

A recent study on the sustainability of SW-PBIS surveyed staff at 860 schools and found that, "staff buy-in was the most frequently identified enabler as well as the most frequently identified barrier to the sustainability of SWPBIS" (Pinkelman et al., 2015, p. 179). As shown through the teacher survey in this study, the overall teacher satisfaction was very high when considering the culture created in the building and there was a belief that behaviors are greatly affected by the framework. What is missing is the academic achievement variable. Not only did the statistical data demonstrate this, but the teachers echoed it with their comments. Future research is needed to confirm the results of this study and to determine the possible condition in which Tier II interventions and academic achievement are connected. When considering the findings within this study and the culture of a school, it is critical to remember that establishing and maintaining a desired culture is an ongoing process. Educational administrators and teachers must make conscious efforts to support the development of an inclusive and effective school wide culture that supports academic and personal achievement for all students which must consider the cultural norms and behaviors that students bring to school and the "lack of cultural synchronization" (Irvine, 1990) that may exist between teachers and students.

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