

An Examination of Positive Behavior Supports in Alabama

by

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Abstract

This dissertation examined the effects of Positive Behavior Supports (PBS) on academic achievement in the state of Alabama as measured by the scores of the Alabama Reading and Math Test (ARMT) for fourth graders. In this study, four districts that implemented PBS prior to 2005–2006 school year were matched with four like districts that had not implemented PBS. The researcher for this study used the National Center for Education Statistics website to examine the demographic data at the school district level for all 131 districts in the state of Alabama, then systemically paired each of the four PBS districts with a similar non-PBS district based on seven indicators. Districts were matched based on geographic category (i.e. rural, large urban city, etc.), number of schools, number of students, number of positions that are full-time or part-time positions (i.e. two half-time positions equal one full-time position) [Full-time Equivalent] (FTE), student/teacher ratio, number of English language learners (ELL), and the racial make-up of the total population under age 18. The racial categories included White, Black, Hispanic or Latino, American Indian or Alaska native, Asian, and Hawaiian or other Pacific Islander. ARMT scores of these eight school districts were reviewed to identify relationships. The null hypothesis of no difference between PBS and non-PBS ARMT scores for Reading 2010, 2011 and 2012 was rejected. The null hypothesis of no difference between PBS and non-PBS ARMT scores for Math 2010 and 2011 was rejected. Even though PBS districts fared better on the ARMT than the matching non-PBS counterparts, the data did not yield a statistically significant difference under analysis of chi-square.

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Table of Contents

Abstract.....	ii
Acknowledgements.....	iii
List of Tables	viii
List of Figures.....	x
Chapter 1: Introduction.....	1
Statement of the Problem.....	8
Purpose of Study.....	9
Research Questions.....	10
Significance of Study.....	10
Limitations	11
Definition of Terms.....	11
Chapter 2: Literature Review.....	14
Purpose of Study.....	14
Research Questions.....	15
Origins of Discipline Practices in Public Education.....	15
History of Positive Behavior Supports	17
Context and Need for School-Wide Positive Behavior Supports.....	20
Components of Positive Behavior Supports	25
Four Philosophical Ideas of Positive Behavior Supports.....	30

Three-tiered Approach to Prevention/Continuum of Support	30
Instructional Emphasis.....	38
Functional Perspective	38
Sustainability Priority	41
Successful Implementation Assumptions and Solutions	43
Systems Approach	44
Implementation Levels.....	46
Individual Students	46
Classrooms	46
School-wide	47
Districts	48
States	48
Academics, Behavior and PBS	53
Behavioral Effects of Positive Behavior Supports.....	54
Academic Effects of Positive Behavior Supports	56
Positive Behavior Supports and Instructional Time	57
Chapter 3: Method and Procedures.....	59
Purpose of Study.....	59
Research Questions.....	60
Researcher’s Role	61
Participants.....	61
Research Design.....	62
Instrumentation	63

Reading Portion of the ARMT	64
Mathematics Portion of the ARMT	65
Validity	67
Reliability.....	70
Inter-rater Agreement Measures	70
Standard Error of Measurement.....	71
Data Collection	74
Data Analysis	75
Summary.....	76
Chapter 4: Results	77
Quantitative Descriptive Statistics	77
Research Question 1	78
Data Analysis	81
Research Question 2	82
Research Question 3	85
Research Question 4	89
Research Question 5	89
Chapter 5: Discussion	91
Findings Related to the Literature.....	91
Implications.....	94
Limitations	94
Recommendations for Future Studies.....	95
Concluding Remarks.....	97

References.....98

List of Tables

Table 1: Reading: Intercorrelations of Domains, Standards, and Total Scores.....	68
Table 2: Mathematics: Intercorrelations of Domains, Sub-Domains, and Total Scores	69
Table 3: Inter-Rater Agreement Coefficients for ARMT	71
Table 4: Means, Standard Deviations, Number of Items, Reliability Coefficients, and Standard Error of Measure (SEM) for Reading and Mathematics.....	72
Table 5: Reliability Coefficients for Gender and Ethnicity.....	72
Table 6: Reliability Coefficients for Limited English Proficient (LEP) and Special Education.	73
Table 7: Number of Schools, Means, Standard Deviations, and Reliability Coefficients for Schools	74
Table 8: Cohort Identification for Alabama School Districts Included in the Study	75
Table 9: PBS 1 and Non-PBS 2 Demographics	78
Table 10: PBS 3 and Non-PBS 4 Demographics	79
Table 11: PBS 5 and Non-PBS 6 Demographics	80
Table 12: PBS 7 and Non-PBS 8 Demographics	80
Table 13: ARMT Reading Scores for year 2010.....	83
Table 14: ARMT Reading Scores for year 2011	84
Table 15: ARMT Reading Scores for year 2012.....	85
Table 16: ARMT Math Scores for year 2010.....	86
Table 17: ARMT Math Scores for year 2011.....	87

Table 18: ARMT Math Scores for year 2012.....	88
Table 19: ARMT Reading Scores for year 2010, 2011, 2012	89
Table 20: ARMT Math Scores for year 2010, 2011, 2012	90

List of Figures

Figure 1. The Four Elements of Positive Behavior Supports.....	25
Figure 2. Behavioral and Biomedical Sciences/Major Assumptions	29
Figure 3. Integration of Academics and Social Behavior Three-Tiered Continuum of Behavior Support.....	31
Figure 4. Individualized Behavior Support Elements	39
Figure 5. 2 Basic Functions of Positive and Negative Reinforcers.....	41
Figure 6. Social Competence and Academic Achievement in Evidence-based Practice	45
Figure 7. Positive Behavior Support Implementation Levels	46
Figure 8. Positive Behavior Support Organizational Logic Model.....	49

CHAPTER 1: INTRODUCTION

In the late 1990s, all schools in the United States received a document from the U. S. Secretary of Education entitled *Early Warning, Timely Response: A Guide to Safe Schools*. The compelling message of the document acknowledged that collaborative efforts must be made to respond to increasing violent and disruptive behaviors of students in schools (Dwyer, Osher, & Warger, 1998).

With a lot of legislative involvement regarding discipline and the immense amount of funds geared to reform and strengthen education, school administrators and teachers across the country have been charged with ensuring that students attend schools that have safe and orderly environments where they can receive a meaningful education (Council for Exceptional Children, 2008; Sugai, Sprague, Horner, & Walker, 2000; Yell & Rozalski, 2008). In 2001, the Elementary and Secondary Education Act, better known as *No Child Left Behind Act (NCLB)* brought education services into the accountability equation, designed to improve student achievement and change the culture of America's schools (U S Department of Education, 2005). In 2004, Congress added a provision to the *Missing, Runaway, and Exploited Children's Act*, which allowed the United States Department of Education to award a grant to the National Academy of Science to study rampage shooting (Newman, 2004). In 2009, Congress passed the *Gun Free School Zones Act* (Kopel, 2009) to combat violence in our schools. Additionally, in 2009, the *American Recovery and Reinvestment Act (ARRA)* invested billions of dollars into the

NCLB accountability equation to: (1) support early learning/early childhood education programs; (2) reform K–12 education, and close the achievement gap, by investing in innovative strategies to improve student outcomes; and (3) increase access to higher education in the form of college affordability, and expanding college financial aid (White House, n.d.). Most significantly, amendments to the 1997 *Individuals with Disabilities Act* (IDEA) defined positive behavioral interventions and supports (PBIS), functional behavioral assessments (FBA), and positive behavior supports (PBS) into policy and practice and inserted them in the business of discipline and classroom and behavior management in every school in America (Sugai & Horner, 2002a; U S Department of Education, 2005). Goodwin (2009), Meece and McColskey (1997), Cohen, McCabe, Michelli, and Pickeral (2009), and Cohen and Pickeral (2007) agreed that a positive school climate is associated with academic achievement, effective risk prevention efforts, increased student graduation rates, teacher retention, and healthy youth development.

Due to the increased attention regarding acts of school violence, bullying, student victimization, antisocial and dangerous behaviors in schools, many school systems have resorted to zero tolerance and other punitive practices, hoping to gain control of the problems. However, the American Psychological Association (2008) agrees that these reactive and get tough approaches to challenging student behaviors have been criticized as a short-term solution that leaves out an important function of schools – teaching and learning (Noam, Warner, & Van Dyken, 2001; Sugai & Horner, 2002a). An alternative response to challenging behaviors, which is proactive, preventative, and able to facilitate effective change in schools and individual students, is the use of Positive Behavior Interventions and Supports (PBIS) (Sugai & Horner, 2002a).

Curtin and Litke (1999) discussed the concept of misuse of power in schools. These authors explained that violence does not have to be overt or physical but can include covert and psychologically damaging actions. Inconsistent and emotionally charged punishments can lead to persistent and increased behavioral problems. In an effort to control behaviors some educators use inappropriate actions, such as shame tactics, name-calling, drawing everyone's attention to an embarrassing situation, or removal of the student from the classroom setting. To exclude students from instruction is deemed a form of institutional violence, because it keeps students from learning information they would otherwise learn if allowed access to the curriculum. This form of psychological violence damages a child's self-respect; children believe they are bad because they are told they are bad, but what should be taking place is instruction on what behaviors are appropriate (Curtin & Litke, 1999).

A review of research was conducted by the Southern Poverty Law Center (SPLC; 2008) on the effects of school discipline in correlation to student dropout rates to teacher retention. The Center specifically examined student dropout rates and teacher retention in the State of Alabama. They reported that in Alabama 29 students dropped out of high school every school day, and that the state of Alabama adds 4,000 teachers a year to schools – only to see 50 percent of the teachers leave the profession within the first five years of teaching. The SPLC stated:

A great number of our teachers and students are dropping out for the same reason: school discipline. Left with few alternatives for handling problems in the classroom, many schools employ discipline methods that research tells us are counterproductive and lead to dropping out: suspensions, expulsions, placements in alternative schools, and referrals to the criminal justice system. (Southern Poverty Law Center, 2008) (p. 3)

The Southern Education Foundation (SEF; 2008) revealed that the rationale related to student dropout is complex and can differ from district to district around the state of Alabama:

To resolve the problem of school dropouts, Alabama needs to tackle a set of issues that define the needs of the entire education system: academic preparation for achievement, positive school environments, targeting effective programs, successful recovery and prevention measures, and adequate financing. (p 1).

The Southern Education Foundation reviewed each contributing factor of dropouts in detail, but the following discussion focuses on one factor – lack of positive school environments.

The Southern Education Foundation (2008) found that all Alabama schools suspended an average of one out of every 10 students in the 2004–2005 school year, resulting in Alabama suspending 1.5 of every 10 students and 1.7 of every 10 Black students in high schools. Some Alabama high schools suspended one out of every two or three students; many times the same few students were suspended repeatedly. Removing students out of general population of school and away from highly qualified instruction only extends the academic failure of the student and contributes to the difficulty for the student to achieve (Southern Education Foundation, 2008).

Dinkes, Cataldi, Lin-Kelly and Snyder (2007) reported that the problem of exclusionary discipline is not exclusive to Alabama. The School Survey on Crime and Safety reported that 48 percent of public schools in the United States took serious disciplinary action against students.

Of these actions, 74 percent were suspensions that lasted five days or more, 5 percent were expulsions, and 20 percent were transfers to specialized schools (Dinkes et. al., & Snyder, 2007).

The Office of Civil Rights' Data Collection Report revealed 3,328,754 out of school student suspensions and 102,077 expulsions were reported in 2004–2005 (U.S. Department of Education, 2006).

Wallace, Goodkind, Wallace, and Bachman (2008) warned that suspensions and expulsions have serious implications for students' short-term academic performance and their longer-term social and economic well-being. When students are removed from school, they potentially increase the amount of time spent without supervision and with other youth who are not in school (Wallace et al., 2008). Removal from school has a significant correlation with serious negative outcomes, including poor academic achievement, grade retention, delinquency, and substance use (Raffaele-Mendez & Knoff, 2003).

The use of exclusionary school discipline practices “does not appear to work as a deterrent to future misbehavior” (Raffaele-Mendez & Knoff, 2003, p. 31). On the contrary, suspensions typically lead to additional suspensions and eventually expulsion or dropping out (Brown, 2007; Civil Rights Project/Advancement Project, 2000; Raffaele Mendez, 2003; Suh & Suh, 2007). Exclusionary discipline policies fail to improve school-wide safety, are associated with lower academic achievement and higher rates of dropout, prolonged graduation time, increased academic disengagement, and a failure to change future behavioral problems (Achilles, McLaughlin, & Croninger, 2007; American Psychological Association Zero Tolerance Task Force, 2008; Arcia, 2006; Christle, Jolivette, & Nelson, 2005).

Clearly, inappropriate and pervasive behavioral issues are a major problem in education and have been linked to acute and chronic school failure (Algozzine, Wang, & Violette, 2011; Crews, Bender, Cook, Gresham, & Vanderwood, 2007; Lassen, Steele, & Sailor, 2006; McIntosh, Horner, Chard, Boland, & Good, 2006; Stewart, Benner, Martella, & Marchand-Martella, 2007; Vanderstaay, 2006; Vaughn, Wanzek, Murry, Sammacca, Linan-Thompson & Woodruff, 2009). Yeo (1997) discussed the importance of an educator's formal preparation in the science and practice of educating students and how teacher preparation influences what

students learn. Many teachers enter at-risk environments unprepared to teach at-risk students. Yeo (1997) and French, Seifman, Allen and Aber (2000) agreed that even teachers who are well prepared to teach students academically often do not have the knowledge or training to deal with severe behavioral issues; therefore, they require an expanded view of their role to meet the current challenges of an at-risk environment. Also, French et al., (2000) expressed that teacher attitudes and behaviors can significantly influence minority and at-risk student achievement.

To address behavioral needs in schools, the Office of Special Education Programs (OSEP), a division of the United States Department of Education, created the OSEP Center on Positive Behavioral Interventions and Supports (PBIS) to guide educators in selecting scientifically-based behavioral interventions. Positive Behavior Supports is described as a system approach used to teach behaviors to school-aged students. PBS emphasizes the use of systems, data and practices to produce desirable outcomes, and is defined by the U. S. Office of Special Education Programs (OSEP), Technical Assistance Center on Positive Behavioral Interventions and Supports (2010) as:

- a. an operational, decision-making framework that guides selection and implementation of evidence-based academic and behavioral practices for improving academic and behavioral outcomes for all students;
- b. a broad range of systemic and individualized strategies for achieving important social and learning outcomes while preventing problem behavior with all students; and
- c. an effective, proactive procedural process that structures school-wide discipline, for improved social competence and academic achievement for all students.

Sugai and Simonsen (2012) described PBIS as an operational framework or a broad approach for enhancing the adoption and implementation of a continuum of evidence-based

interventions to achieve academic and behavioral outcomes for all students. PBIS has been used in schools to teach behavioral expectations, positively reinforce the behavioral expectations that were taught, and collect and use data in educational decision-making. Schools that establish systems to implement positive behavior supports with fidelity and sustainability develop teaching and learning environments that a) are more engaging, responsive, preventive, and productive; b) are less reactive, aversive, dangerous, and exclusionary; and c) maximize academic engagement and achievement for ALL students (Alabama Positive Behavior Support Center, 2010).

School-wide Positive Behavior Intervention and Support (SWPBIS) is directed at multiple levels of support – universal, secondary, and tertiary. This three-tiered prevention logic requires that all students, in all settings, receive supports at the universal interventions or primary tier. The next level of support, secondary interventions, addresses specialized group settings such as the classroom or selected groups of students who require behavior supports beyond those provided at the universal level. The final levels of support, tertiary interventions, are targeted interventions for students that display chronic maladaptive behavior and require intense, specialized intervention planning (Irvin, Horner, Ingram, Todd, Sugai, & Sampson, 2006; Irvin, Tobin, Sprague, Sugai & Vincent, 2004; Putman, Luiselli, Handler & Jefferson, 2003; Safran & Oswald, 2003; Sugai et al., 2000).

Lewis, Powers, Kely, and Newcomer (2002) outlined previously conducted studies that have implemented SWPBIS and have shown successful results in a one-year period. Taylor-Greene (1997) demonstrated a 42% reduction in behavior offenses that resulted in a discipline report by clearly defining school-wide expectations and teaching students how to meet each expectation; Nakasato (2000) demonstrated a reduction in daily office referrals across six

elementary schools through the development of universal PBS strategies; and Scott (2001) demonstrated 65% to 75% reductions in out-of-school suspensions and in-school detentions, which subsequently allowed students to be more successful in class to the point of increased standardized test scores (p. 182). These studies reflect the use of defining school-wide behaviors and subsequently teaching expected behavior to students. Public Citizens for Children and Youth (2009) also showed positive outcomes and results in the reduction of problem behaviors exhibited school-wide.

Statement of the Problem

Sugai, Horner, and McIntosh (2007) reported that many educators request assistance in the area of behavior management and classroom management. In an attempt to regain behavioral control, educators have reviewed and implemented a number of social and behavioral programs and interventions in schools, such as the *Gang Resistance Education and Training (GREAT) Program*, the *Stop & Think Social Skills Program*, and the *First Step to Success Program* (Esbensen, Peterson, Taylor, Freng, Osgood, Carson, & Matsuda, 2011; Knoff, 2001; Sprague & Perkins, 2009). Another program example is the Assessment of Inclusivity and Multiculturalism (AIM) program, created by the National Association of Independent Schools (NAIS, 2011). AIM is a tool used to evaluate a school's culture to determine whether or not it possesses inclusivity and multiculturalism (NAIS, 2011). Cohen and Pickeral (2007) stated, "Positive school climate is associated with and/or predictive of academic achievement, effective risk prevention efforts, and healthy youth development" (p. 14).

Although PBS is strongly supported as an evidence-based practice in the literature, many schools in Alabama continue to rely on traditional methods (suspension and expulsion) when responding to the challenging behaviors of most students. The district-wide approach of

implementing PBS in Alabama was addressed beginning in 1999 by training ten (10) Alabama school districts. The impact of the initial training and subsequent trainings on the rates of office discipline referrals (ODRs), out-of-school suspensions, and academic achievement has not been explored.

Purpose of Study

The purpose of this study was to investigate the relationship of school-wide positive behavior supports to academic achievement in Alabama schools. This study compared the 2009–2010, 2010–2011 and 2011–2012 fourth grade Alabama Reading and Math Test (ARMT) scores of four school districts in Alabama that have implemented Positive Behavior Support (PBS) to four non-PBS school districts in Alabama. Demographic data were examined at the local district level for eight schools in the State of Alabama. Districts that have fully implemented PBS included all schools within the district that were trained in Tier I PBS and implemented PBS. Then, based on seven indicators, each school district was paired with a similar non-PBS school district. The total number of Alabama school districts totaled 131; the non-PBS schools totaled 115 schools that had not implemented PBS prior to the 2009–2010 school year. The districts were matched based on geographic category (i.e. rural, large urban city, etc.), number of schools, number of students, amount spent per student on instruction, student/teacher ratio, number of English language learners (ELL), and the racial make-up of the total population under 18. The racial categories were White, Black, Hispanic or Latino, American Indian or Alaska native, Asian, and Hawaiian or other Pacific Islander.

Research Questions

The study was guided by the following research questions:

1. What are the demographic characteristics of the four PBS and four non-PBS school districts in Alabama?
2. What are the differences between reading achievement scores among the PBS and non-PBS school districts in Alabama?
3. What are the differences between math achievement scores among the PBS and non-PBS school districts in Alabama?
4. What are the differences in reading achievement scores among the PBS and non-PBS school districts in relation to the number of years of implementation of positive behavior supports?
5. What are the differences in math achievement scores among the PBS and non-PBS school districts in relation to the number of years of implementation of positive behavior supports?

Significance of the Study

The study has practical significance for Alabama educators at state and local levels, and other states implementing any form of Positive Behavior Supports or other system-wide behavioral programs. Research could link academic success to effective reduction in nonacademic barriers, including behavior. Policymakers and practitioners may be able to use the information to acquire a snapshot of the current status of PBS in Alabama.

This study will explore implementing effective discipline practices and the shift toward proactive discipline. It is imperative that the field of education gain insight regarding educational outcomes as measured by state indicators. Alabama universities involved in teacher

or leadership preparation programs could apply research findings to evolve best practices used in their preparation programs.

Results of this study are intended to contribute to the depth and breadth of knowledge on best practices in public school systems. This study could add to the limited research available regarding PBS in Alabama. This study could support improvements in problem disciplinary behavior, school climate, organizational health and academic achievement within school districts and school systems (Sugai & Simonsen, 2012).

Limitations

The limitations associated with the study include:

1. Essential to a district-wide approach, each PBS school team receives the same training and information; however, the team is responsible for training the school staff, and the interventions implemented at each site are unique to the school/district;
2. Each PBS school in every school district does not implement the same academic programs; and
3. Every PBS school will have teachers/instructors with different degrees of education and years of experience.

Definition of Terms

The terminology used in this study is defined as follows:

Discipline: the use of appropriate, logical consequences for behavior resulting in long term and positive behavioral changes (Sprague, Sugai, Horner & Walker, 1999).

Dropout rate: percentage of students who voluntarily withdraw from school prior to graduation (Christle, Nelson & Jolivette, 2004).

Exclusionary practice: suppression of student misbehavior through removal from an educational setting, such as time-out, suspension, expulsion (Cartledge & Lo, 2006).

Expulsion: to remove, isolate or separate pupils who create disciplinary problems in the classroom or other school activity and whose presence in the classroom may be detrimental to the best interest and welfare of the class as a whole; expulsions are removal from the school setting for a time period of more than ten school days (Code of Alabama [2001 Replacement]).

Functional Behavior Assessment (FBA): an investigative process that results in an understanding of why behaviors occur (Steege & Watson, 2009).

Individualized Education Plan (IEP): an IEP is an education plan based on the child's unique needs and not on the child's disability (Alabama Disabilities Advocacy Program, 2007).

Office discipline referrals (ODRs): an event in which (a) a student engaged in a behavior problem that violated a rule/social norm in the school, (b) a problem was observed by a member of the school staff, or (c) the event resulted in a consequence delivered by administrative staff who produced a permanent (written) product defining the whole event (Sugai et al., 2000).

Out of school suspension (OSS): a disciplinary sanction that requires the student to be excluded from the school building for a specified period of time (Christle et al., 2004).

Positive Behavior Support (PBS): a three-tiered system approach aimed at increasing prosocial/positive behaviors among students, while preventing problem behavior (Glover, 2007).

Risk factors: individual and environmental influences that predict negative outcomes for children (Morrison, Furlong, D'Incau & Morrison, 2004).

Safety: freedom from danger, harm or loss (Morrison et al., 2004).

School-wide positive behavior support (SWPBS): system change to minimize or prevent behavior problems (Sugai et al., 2007).

Suspension: disciplinary sanction that requires a student to be excluded from school
(Skiba & Peterson, 2000).

Zero tolerance: policy mandating predetermined consequences for specified behaviors
(Stader, 2004).

CHAPTER 2: REVIEW OF LITERATURE

The purpose of this review of literature is to examine the history of student discipline, origins and characteristics of PBS, particularly in relation to Applied Behavior Analysis (ABA), discuss briefly the limitations of traditional discipline approaches and to examine various system-based components of PBS. The review will conclude with a summation of current research related to the implementation of school-wide and statewide PBS in Alabama. Sources used for this review include relevant studies, theoretical articles, books, professional journals and several reports related to positive behavior supports.

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PBS prior to the 2009–2010 school year. The districts were matched based on geographic category rural, large urban city, number of schools, number of students, amount spent per student on instruction, student/teacher ratio, number of English language learners (ELL), and the racial make-up of the total population under 18. The racial categories were White, Black, Hispanic or Latino, American Indian or Alaska native, Asian, and Hawaiian or other Pacific Islander.

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Origins of Discipline Practices in Public Education

Cremin (1970, 1988) reported that disrespectful and rowdy behavior of students has been tracked as far back as the colonial days, proving that educators have always had to deal with

troubling students. The dramatic difference of behavior now and behavior then is the severity of behaviors, the social problems facing children, families, and schools, and more importantly, the ways that schools and professionals have viewed the problems (Danforth & Smith, 2005).

Prior to the 1900s, American schools applied Protestant morality in forging the immigrant child into a civilized citizen – work ethic, religion and civility. Early public schools were founded by political leaders for the purpose of educating young children with values and beliefs of democracy. Nelson, Palonsky and McCarthy (2004) described that with the birth of the Industrial Revolution, parents and children spent more time away from each other and their homes. As a result, the family was unable to carry out all of its functions (i.e., basic social skills training for school success, appropriate peer interaction, complying with authority figures and staying on task). Therefore, schools supported families that were viewed as incapable of correctly raising children and provided needed moral correction and behavioral skills in an educational environment (Danforth & Smith, 2005; Nelson et al., 2004).

Danforth and Smith (2005) noted that by 1900:

the United States changed from a primarily agricultural country into a world industrial power. The American population was transforming into a modern form that united industrial production and urban living, including eastern and southern European immigrants, as well as, Americans, from farming communities. These areas in New York and Chicago became known as the urban ghettos. These urban ghettos became the reservoir of the industrial workforce, and the public schools faced enormous challenges educating the children of the immigrants. (p. 15)

Realizing the delinquent youth were primarily immigrants coping with the social prejudices, unjust laws, and economic inequalities, government officials and the public became concerned.

Industrialization brought about these new series of social concerns, including disease, crime, and poverty, and the birth of juvenile delinquency (Danforth & Smith, 2005). With the view of the child as deficient, helping professions flourished and the initial intervention efforts for delinquency was geared to social reform, but after 1915 that effort drastically shifted from social and political inequalities toward viewing the child as evidencing a defective character (Provasnik, 2006).

History of Positive Behavior Support

Positive Behavior Supports is rooted in the field of behaviorism, a term coined by John Watson (Kendler, 1987). However, research on the manipulation of behavior began much earlier, with the work of classical conditioning by Ivan Pavlov. Additionally, the research work of B. F. Skinner (1938) on behavior reinforcement gave rise to the field of behaviorism. According to Skinner, the most critical factor in controlling behavior lies in arranging appropriate reinforcement contingencies in the environment. Skinner's work concerning reinforcement and related factors has been evident even in behavior management (Slavin, 2003). The early work of Pavlov, Skinner, Thorndike and Watson in behaviorism was critical to the development of the field of Applied Behavior Analysis (ABA) (Sugai & Horner, 2002a). ABA is grounded in the understanding and improvement of socially significant human behavior, and uses direct intervention practices that are mirrored in PBS: positive reinforcement, stimulus control, antecedent manipulations and contingency management (Dunlap, 2006).

Dunlap and Horner (2006) reported that Applied Behavior Analysis (ABA) was established in the 1960s as a science to produce socially important changes in behavior. Positive Behavior Supports (PBS) emerged in the 1980s as a strategy for intervention and support, borrowing concepts and methods from ABA and other disciplines. PBS became an approach for

understanding and addressing problem behavior, to enhance quality of life (QOL) and minimize challenging behavior for individuals of all ages and abilities (Berkman & Meyer, 1988; Donnellan, LaVigna, Negri-Shoultz & Fassbender, 1988; Donnellan, LaVigna, Zambito & Thvedt 1985; Dunlap, Carr, Horner, Zarcone & Schwartz, 2008; Evans & Meyer, 1987; Horner, Dunlap & Koegel, 1988; LaVigna & Donnellan, 1986). This practical approach for decreasing problem behaviors materialized from the controversy surrounding the use of aversive consequences with people identified with developmental disabilities (LaVigna & Donnellan, 1986; Lee, Sugai, & Horner, 1999); and concerns about problem behaviors in schools, such as, fighting, violence, vandalism, truancy, lack of discipline, and drug use and efforts to improve educational services and opportunities for students with disabilities (Sugai & Horner, 2002b).

The on-going debate about positive behavior support and its relation to applied behavior analysis suggested that PBS was a new science, evolved from, and yet different than, ABA (Carr, Dunlap, Horner, Koegel, Turnbull, & Sailor, 2002). It is commonly accepted that the origins of PBS were clearly grounded in Applied Behavior Analysis (ABA). Baer, Wolf, and Risley (1968) defined the systemic extension of the principles of operant psychology to problems and issues of social importance. Brown, Michaels, Oliva and Woolf (2008) indicated the design, implementation, and evaluation of environmental modifications produced socially significant improvement in human behavior. The Normalization/Inclusion Movement suggested that people with disabilities should live in the same settings as others and have access to the same types of opportunities. Person-centered values embraced that humanistic values should be informed by, not replaced by empiricism; which enhanced opportunities for choice and avoided the use of strategies that dehumanized and degraded.

Dunlap and Horner (2006) and Risley (2003) viewed PBS as an opportunity to build upon the ABA tradition by incorporating concepts and strategies from a variety of sources to address issues and problems. Two major contributions from ABA to PBS include: (1) a conceptual framework relevant to behavior change, and (2) a number of assessment and intervention strategies. Chance (1998) and Miltenberger (1997, 2008) reported that with respect to concepts, (setting event, establishing operations, stimulus control, generalization, and maintenance) ABA served as a critical catalyst for the development of PBS. With respect to assessment strategies, Carr (1977) and Iwata, Dorsey, Slifer, Bauman, and Richmond (1994) reported that ABA originated functional analysis – an experimental method for determining motivation of a variety of socially significant behavior – thus facilitating intervention planning, designed to change behavior in a desirable direction. Regarding intervention strategies, ABA developed educational methods for reducing problem behavior (Sulzer-Azaroff & Mayer, 1991). Although, PBS has incorporated the elements of ABA, it has also developed beyond this parent discipline to assume its own identity; its identity has been strongly influenced by conducting research and interventions in natural community settings (Carr, 1977; Weiss, DelPizzo-Cheng, LaRue & Sloman, 2009).

PBS interventions tend to focus on sustained behavior change within natural settings, including the natural social systems in which individuals behave (Tincani, 2007). Although advocates acknowledge the influence of ABA in the heritage of PBS, they argue that the combined elements of PBS embrace a new science to reduce challenging behavior (Dunlap, 2006; Weiss et al., 2009).

Context and Need for School-wide Positive Behavior Support

Educators and schools across the nation face many difficult challenges: to provide safe environments, which create safe school climates that support learning (Skiba, 2000), and allow students to receive academic instruction and assessments. Academic instruction and assessment are often overshadowed by the need to meet the behavioral and emotional needs of many students. Searching for a solution to school disruptions and violence, many public schools have adopted zero tolerance policies (Dinkes, Kemp, Baum, & Snyder, 2009) that mandate the application of predetermined consequences for specific offenses, regardless of the circumstances, discipline history, and age of the person involved (Stader, 2004).

The term ‘zero tolerance’ first received national attention in the 1980s, and referred to the impounding of seagoing vessels for carrying any amount of drugs. In the 1990s, the language of zero tolerance became widely adopted by many organizations, ranging from the environmental pollution arena to education. Zero Tolerance language even became part of national policy with the *Gun-Free Schools Act* of 1994 during President Clinton’s administration and again in the 1997 revision of the *Individuals with Disabilities Act*. Such policies assumed that by removing the disruptive students from the school environment, school would be safer and more effective for those remaining (Skiba, Rausch & Ritter, 2005). The use of suspension and expulsion, which removes the student from academic instruction, continues to be the cornerstone of zero tolerance policy (Skiba, 2000). This climate of fear has prevailed and has generated support for the more punitive methods of school discipline.

Skiba and Peterson (2000) suggested that zero tolerance policies in schools have not met the preliminary goals of maintaining school safety or improving student behavior, but instead has been associated with a number of unintended consequences for students. The evidence of some

negative school outcomes associated with zero tolerance include lower achievement (Raffaele Mendez, 2003; Rausch, Skiba & Simmons, 2005), higher rates of dropout (Bowditch, 1993; Skiba et al., 2005), high rates of recidivism (Tobin, Sugai & Covin, 1996), and finally students of color are disproportionately affected by zero tolerance without any evidence of higher rates of misbehavior within the population (Skiba, Michael, Nardo, & Peterson, 2002)

The traditional discipline approaches (e.g. get tough, zero-tolerance policy, suspension or expulsion) in schools still consist of reactive, exclusionary practices that often affect disadvantaged and minority youth in much greater proportions than their counterparts (Cartledge & Johnson, 2004; Gilliam, 2005; Jones, 2010; Kaufman, Jaser, Vaughan, Reynolds, Donato, Bernard, & Hernandez-Brereton, 2010; Monroe, 2005; Skiba, Horner, Chung, Rausch, May, & Tobin, 2011).

The overrepresentation of African American students in disciplinary exclusions has been a persistent concern for many years. As early as the 1970s, more Black than White students have received some sort of school disciplinary action (Civil Rights Project/Advancement Project, 2000; Cartledge & Johnson, 2004; Raffaele-Mendez & Knoff, 2003; Skiba et al., 2002; Stader, 2004; Zhang, Katsiyannis & Herbst, 2004). Some research studies provided evidence that Black males were disciplined with greater frequency and severity than their White peers (Cartledge & Johnson, 2004; Gregory, Skiba & Noguera, 2010; Gregory & Weinstein, 2008; Monroe, 2005). Raffaele-Mendez and Knoff (2003) reported that Black students accounted for only a small portion (17%) of the nation's public school population, but also accounted for a higher percentage (32%) of school suspensions.

Zhang et al., (2004) agreed that if African American students were being denied access to learning opportunities due to disciplinary exclusions, they were at a greater risk of exclusion-

related consequences, such as retention, delinquency and drop-out. Unfortunately, the idea that zero tolerance policies have contributed to improved student behavior or school safety remains unsupported by any evidence (Noam et al., 2001; Skiba & Knesting 2001; Skiba & Peterson, 2000; Zhang et al., 2004). Although student behavior may result in suspension, it is more affected by school-controlled factors, including administrative structure, teacher beliefs, and biases (Christle et al., 2004).

Discipline policies for schools are usually set at the district level within the framework of state and federal policy. However, the characteristics of a school are important factors in how discipline policies are interpreted and implemented. Christle et al., (2004) studied suspension rates in Kentucky middle schools and found that schools with low suspension rates used a variety of successful incentive programs to promote positive academic and social behavior. The aesthetics of the said schools were cleaner, brighter and had a more relaxed décor as opposed to the schools that had high suspension rates. Teacher behavior in the low suspension rate schools was more consistent on several variables; challenging students academically, setting high expectations, and facilitating success. The schools with low suspension rates demonstrated greater consistency than did schools with high suspension rates in their focus on positive, proactive disciplinary measures rather than reactive, punitive strategies.

Raffaella-Mendez, Knoff, and Ferron (2002) examined the relationship between school demographic variables and out-of-school suspension rates and observed a number of trends. First at the elementary level, schools with low suspension rates were more likely to use positive reinforcement for desired behaviors as a formal component of a school-wide discipline plan than were schools with high suspension rates. Next, schools with high suspension rates focused more heavily on punishment for inappropriate behavior than did schools with low suspension rates.

Additionally, low suspension rate schools used school-wide social skills training to communicate acceptable behavior. Finally, parental involvement was much more evident at low suspension rate schools than high suspension rate schools. The variable at the middle school and high school levels that characterized the major difference between schools with low suspension rates and high suspension rates were staff training, parental involvement, and administrator's beliefs about how students should be treated to reduce problem behavior. Higher rates of training and parental involvement were more evident in schools with low suspension rates than schools with high suspension rates.

While it is imperative to analyze current school discipline practices and how many students are suspended, Raffaele-Mendez and Knoff (2003) discussed other demographic characteristics of schools, and the types of infractions that perpetuate the use of suspensions. By understanding the data and the implications of the data, schools could attempt to address the increase of disciplinary exclusions (Zhang et al., 2004) with a comprehensive, systemic and sustained use of research validated practices found in school-wide systems of PBS (Safran & Oswald, 2003; Sugai et al., 2000)

Newman (2004) and Yeo (1997) discussed the importance of formal education preparation and how teacher preparation influences what teachers learn. Further they listed that many teachers enter at-risk environments unprepared to teach at-risk students and most teachers lacked the knowledge or training regarding severe behavioral issues. French et al., (2000) concluded that the attitudes and behaviors of teachers significantly influence minority and at-risk student achievement. Research suggests that student achievement is related to a complex interaction of several factors: teacher quality is positively related to student achievement (Lasley, Siedentop, & Yinger, 2006); teaching style is related to student achievement (Opendakken &

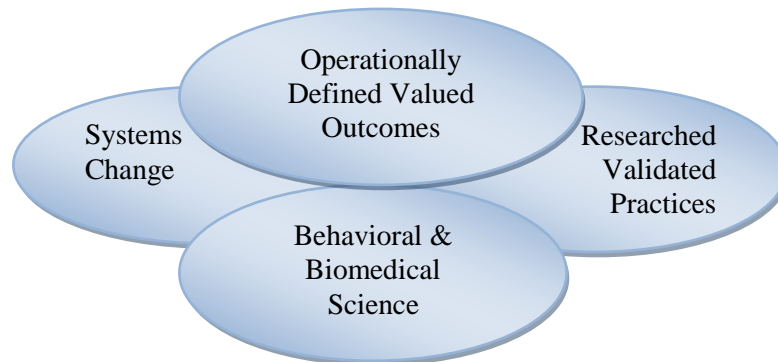
Van Damme, 2006); and using research-based best practice teaching strategies has also been shown to increase student achievement (Kaplan & Owings, 2002). Additionally, school factors also interact with teacher factors to make complex relationships affecting student achievement; class size has continued to be a controversial topic in the research regarding its impact on student achievement (Hattie, 2005); and the educational leadership of the school also indirectly impacts student achievement (Heck, Lassen, & Marcoulides, 1990; Wahlstrom, Louis, Leithwood, & Anderson, 2010). These studies also provided evidence and analyses to substantiate classroom climate variables to support student achievement. Understanding classroom climate variables will allow for professional development for teachers to focus on areas to increase student achievement. Furthermore, understanding the importance of teachers and their impact on student performance will help individuals at universities examine teacher preparation programs. Teachers must come to the profession not only highly qualified but feeling prepared for what they need to do in the classroom.

School discipline research suggested effective strategies for creating a safe school and used discipline as a tool to teach acceptable behavior (Hamilton, 2008; Skiba & Peterson, 2000), established procedures to ensure that disciplinary processes were fair and consistent (Kajs, 2006) and involved restorative justice strategies that focused on restoring the harm caused by wrongdoing (Amstutz & Mullett, 2005; Morrison, Blood & Thorsborne, 2005). This reconceptualized approach to school discipline requires that schools change from an authoritarian model to an inclusive model with youth and relationships as the focal point of the school community (Varnham, 2005). Utilizing restorative justice in school disciplinary matters may also allow school administrators to develop a problem solving approach to student behavior and may serve as an alternative to zero tolerance policies (Morrison et al., 2004). Ultimately,

teaching appropriate behavior may be a powerful strategy for improving student behavior, creating a safe school environment, and attending to the developmental needs of youth.

Components of Positive Behavior Supports

The Implementation Blueprint and Self-Assessment Guide (Sugai, Horner, Sailor, Dunlap, Eber, Lewis, Kincaid, Scott, Barrett, Algozzine, Putnam, Massanari, & Nelson, 2010) defines the four elements of PBS. This guide allows educators and behavioral experts access to the knowledge and foundation of PBS. The four elements of PBS include: 1) operationally defined valued outcomes, 2) behavioral and biomedical science, 3) research-validated practices, and 4) systems change (see Figure 1). PBS researchers applied something from each element when designing interventions and systems for behavior (Sugai et al., 2010).



Source: Lewis, Barrett, Sugai, & Horner. (2010)

Figure 1. The Four Elements of Positive Behavior Supports

The operationally defined and valued outcomes allow educators, students and parents to have clear expectations to facilitate appropriate, goal-driven behaviors. These specific academic and behavioral expectations should link with individual student goals, with school improvement objectives, and with both local and state initiatives. Schools then collect and review goal-driven

data for evaluation and modifications to the existing PBS system, when needed (Cohen, Kincaid, & Childs, 2007; Horner, Sugai, Eber, & Lewandowski, 2004b; Irvin et al., 2004; Irvin et al., 2006; Safran, 2006). An example: a high school PBS team reviews the school disciplinary data and discovers an incidence of office referrals related to tardiness between class changes. The goal of the team is to reduce tardiness between classes by a certain percentage by a designated time period. With the goal in mind, educators should allow time for students to have a demonstration of appropriate behavior during class change time, and then allow students the opportunity to practice the appropriate behavior, and the opportunity to display the appropriate behavior during a trial time period. The demonstrations could include such behaviors as practicing opening combination lockers, having a quick conversation with a friend, and moving with a purpose. Behavioral expectations would be posted in the halls. Also, teachers are present in the halls between classes to reward and remind students, and discourage behavior that would keep students from being on time (i.e. standing around talking with peers for extended time, horse play, etc.). At the midpoint timeline, the school administrators along with the PBS team examine the same data points as before regarding office referrals and tardiness. The data check indicates if the intervention is being effective regarding the office referrals and tardiness issue. The data discovery should be shared with the entire faculty and staff, either to reward staff or to have input regarding modifications to the intervention.

The second PBS element addresses research in the fields of behavioral and biomedical science. From this research, the designers of PBS systems learned the following major relevant factors of behavior (see Figure 2):

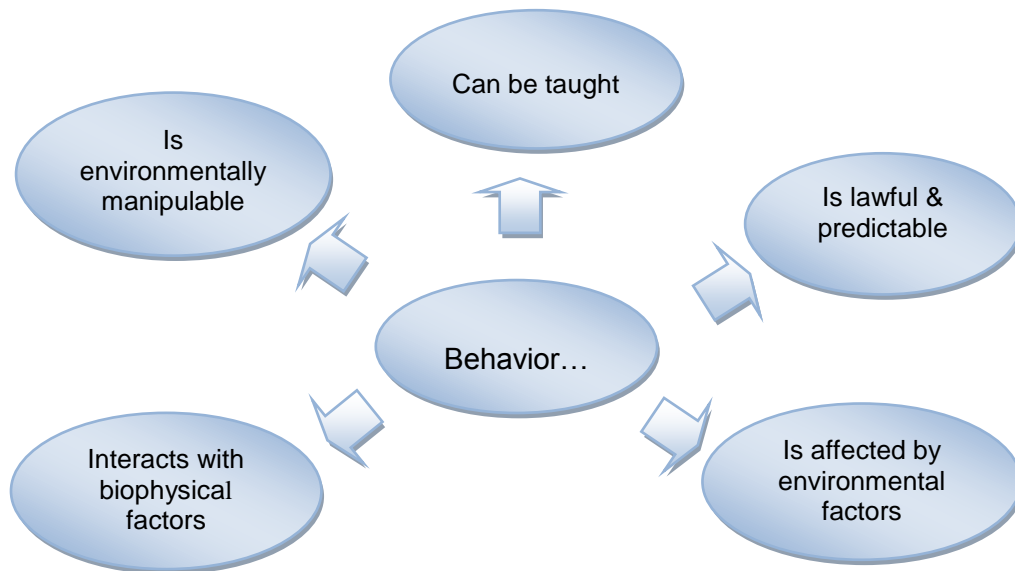
1. Humans learn behaviors. Therefore, behaviors can be taught and reshaped (Lane, Wehby, Menzies, Doukas, Munton, & Gregg, 2003; Lee, 2010; Sailor & Paul, 2004).

- People learn behaviors from the environment that assist them in getting what they want or to get them out of situations they do not like. The approach for teaching behavior is the same as teaching math or reading.
2. Behavior follows laws, which makes it predictable. Therefore, it can be anticipated with reasonable accuracy (Chandler & Dahlquist, 2002; McLaren & Nelson, 2009; Scott & Caron, 2006). Educators have the ability to anticipate the behaviors of students if they recognize the patterns. For example, if they have observed a student balling up their paper and throwing it to the ground whenever they receive a math worksheet, they can anticipate that this behavior will continue unless a different action is taken (i.e., student receives one-on-one instruction when a math assignment is given).
 3. The biophysical characteristics of an individual influence how that person reacts to environmental events (Carr et al., 2002; Chandler & Dahlquist, 2002; Turnbull, Stowe, & Huerta, 2007). Someone with Attention Deficit Hyperactivity Disorder (ADHD) will most likely react differently to a stimulus than someone without this disorder. Therefore, creating an appropriate classroom environment, or working with a student to cope with environments they cannot change would constitute an appropriate accommodation and service intervention.
 4. Understandably then, school environmental variables play a vast role in supporting all students, especially those with mental health issues (Carter & Horner, 2009; McLaren & Nelson, 2009; Turnbull et al., 2007). The key to this statement is drilling down to understand how the environment affects students. For example, a common behavioral technique that teachers use is to move the class clown to the front of the

room to be closer. The idea is that the teacher will be able to keep an eye on that student to correct undesirable behavior. This intervention does not take into account the motivation for the disruptive behavior. If the student is using his behavior to gain attention from his classmates, then moving him from the back to the front gives him the entire class as an audience. However, if a student is misbehaving because she is easily distracted, then sitting her in the back of the class gives her an entire room of classmates to draw her attention away from the task at hand. Again, the key is to know the student's motivation.

5. Therefore, evaluating and shaping environments can affect behavioral reactions (Carr & Sailor, 1994; Sailor, Stowe, Turnbull, & Kleinhammer-Tramill, 2007). School administrators should break-up their office referral data by area, they should examine data to discover if specific physical locations were more susceptible to inappropriate behavior. If so, the PBS team should gather information to see what might be done to make a positive change. For example, if a school faces a park and the data show that there are more office referrals from the classrooms that face that park, the teachers in those classrooms might want to try window coverings. After a predetermined time period all data should be examined again for effectiveness of the intervention.
6. Gathering and using behavioral data for decision making is crucial to continuous improvement in the PBS interventions, programs and systems abilities (Chandler & Dahlquist, 2002; Hirsch, Lewis-Palmer, Sugai, & Schnacker, 2004; Winkel, Saegert, & Evans, 2009). Based on the examples already given, this statement goes without saying. However, in the example above, the situation called for analysis of area office referrals, but many schools chose to go farther. They looked at referrals by

grade, time of the day, day of the week, month, year, type of behavior, individual student, and individual teacher. Decisions and changes to an intervention should be made with the information provided by the data gathered.



Source: Lewis et al. (2010).

Figure 2. Behavioral and Biomedical Sciences Major Assumptions

The third PBS element, research-validated practices, further emphasizes the importance of attention towards research. Researchers use data from different PBS implementation practices to determine which should be promoted, adapted, and discontinued. A significant amount of practical applications have occurred to establish what works and what does not work in different circumstances (Cohen et al., 2007; Horner et al., 2004; Irvin et al., 2004; Irvin, et al., 2006; Safran, 2006). As in any field, state implementers of PBS are expected to stay abreast with current research by reading professional journals and information disseminated by the National

Center of PBIS, attending professional conferences and interacting with their assigned PBIS Center Resource Agent to discuss current practices within their state.

The fourth PBS element deals with systems change. Successful large-scale implementation of PBS creates major change within the classroom, the school, the school district and at the state level. Additionally, PBS allows administrators and internal personnel to shape their behavioral interventions to address their specific needs; this reduces the amount of professional resistance that can occur. After all, the PBS system in an inner-city high school of 3,000 students will look different than the system working at a rural elementary school of 300 students (Edmonson & Sailor, 2000; Lassen et al., 2006; Lawson & Sailor, 2000; Sailor et al., 2007; Sugai et al., 2010; Utley & Sailor, 2002). Sugai et al. (2010) agreed that behavioral interventions are chosen by a specialist to fit individual school environments and students (i.e., math instruction looks different at an elementary school than a high school).

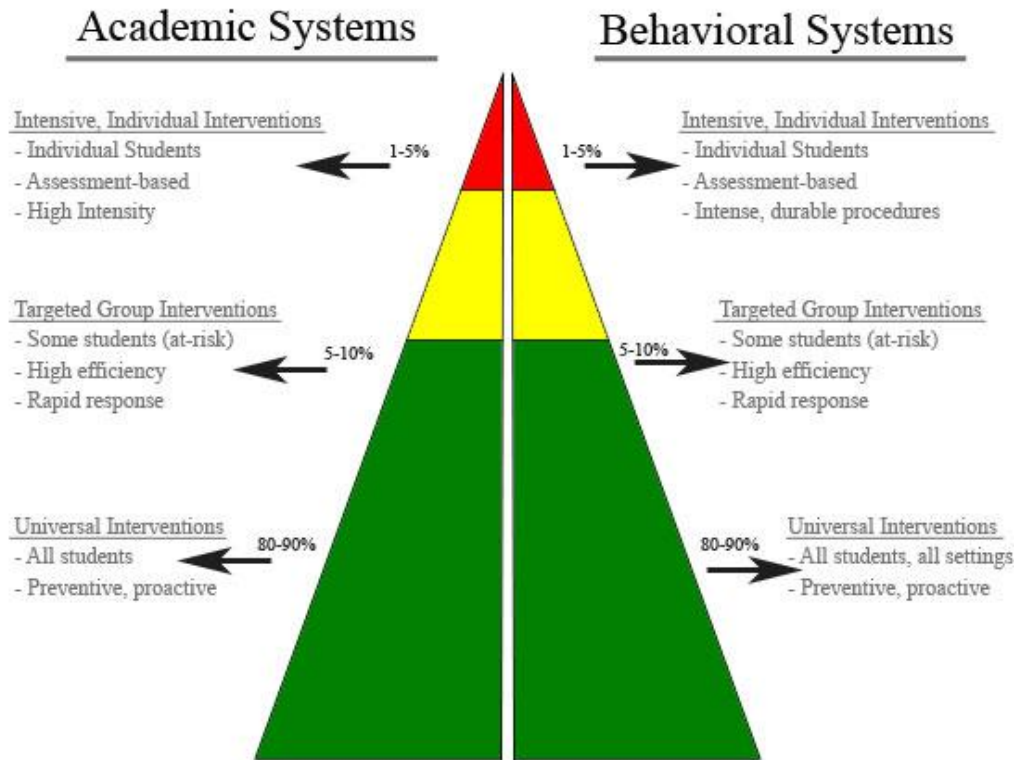
Four Philosophical Ideals of Positive Behavior Supports

The National Center on PBIS (Sugai et al., 2010), indicated that there are four philosophical ideals that influence the formation of PBS implementation practices. These ideals include the Three-Tiered Approach to Prevention/Continuum of Support, Instructional Emphasis, Functional Perspective, and Sustainability Priority (Sugai et al., 2010).

Three-Tiered Approach to Prevention/Continuum of Support

The three-tiered approach to prevention, most commonly known as the triangle, is the most recognizable figure linked with Positive Behavior Supports. Figure 3, the triangle, represents the relationship of behavior and academics. A comprehensive amount of research contributed to the formation of this three-tiered approach (Sugai et al., 2000; Walker, Horner, Sugai, Bullis, Sprague, Bricker, & Kaufman, 1996). Each tier represents a level of services

available to students; many educators have discovered that a student will likely receive a range of services from each tier and the student would not likely remain in the same tier for the duration of all services.



Source: Lewis et al. (2010).

Figure 3. Integration of Academic and Social Behavior Three-Tiered Continuum of Behavior Support.

Tier One or the Primary Tier, focuses on universal interventions. The universal behavior support system of services focuses on the prevention of problem behaviors for all students. Schools focus on prevention by creating an environment that promotes desirable behavior, teaching social skills, rewarding positive behavior and responding to undesirable behavior (Horner, 2007; Simonsen, Myers, & Briere, 2011). During this stage of support, students gain

knowledge of the behavioral expectations of the school, the reward system for appropriate behavior and the continuum of consequences for problem behavior. Additionally during the universal stage, data collection occurs for decision-making (Lewis et al., 2010). The three-tiered triangle shows that 80 to 90 percent of all students respond to the universal interventions of supports.

Tier Two, or the Secondary Tier, focuses on targeted levels of support for students at risk of succeeding without additional support (Horner, 2007; Simonsen et al., 2011). Tier Two services aid school personnel in reducing existing problem behaviors with immediate and effective responses with at-risk students and/or group interventions. Tier Two components include universal screening, collecting and using data for decision-making and progress monitoring for at risk students. This second level of interventions serves to increase structure and predictability by increasing contingent adult feedback, linking academic and behavioral performance and increasing home/school communication (Lewis et al., 2010).

One commonly used Tier Two intervention is check-in/checkout (CICO) (Simonsen et al., 2011). Todd, Campbell, Meyer, and Horner (2008) detailed that using CICO the student typically checks-in with a school faculty or staff member in the morning. The faculty or staff member would be someone trustworthy to the student. The faculty or staff member and student would then discuss personal goals for the day; then, as the student ventures through the day, the student would receive written feedback from each of his/her teachers. At the end of the day, the student would check-out with his designated person by reviewing and discussing the feedback received from other faculty/staff. The benefits of this program are that:

...it can provide (a) structure and prompts that a student needs through the day, (b) adult written feedback through the day, (c) visual reminders of personal goals for the day, (d)

data collection, and (e) communication between adults at school and home. (Todd et al., 2008, p. 47)

Single-subject experiments revealed decreases in the frequency of problem behaviors with students who participated in CICO (Fairbanks, Sugai, Guardino, & Lathrop, 2007; Hawken, 2006; Hawken, MacLeod, & Rawlings, 2007; Todd et al., 2008), especially students whose behavior functioned to gain positive attention (McIntosh, Campbell, Carter, & Dickey, 2009). The triangle shows that five to ten percent of at-risk students redirect with Tier Two interventions.

Tier Three, or the Tertiary Tier, focuses on individualized intensive wraparound interventions that integrate school, family and community resources (Simonsen et al., 2011) for one to five percent of students. Tier Three interventions focus on individual students with behavior that may be intense, such as acts of violence or aggression towards other students or teachers (Chen & Astor, 2009; Henry, 2009; Jones, Bradshaw, Haynie, Simons-Morton, Gielen & Cheng, 2009). The National PBIS Center developed a list of Tier Three components, which include:

1. Functional Behavioral Assessments;
2. Team based comprehensive assessments;
3. Linking of academic and behavior supports, individualized intervention based on assessment information focusing on (a) prevention of problem contexts; (b) instruction on functionally equivalent skills, and instruction on desired performance skills; (c) strategies for placing problem behavior on extinction; (d) strategies for enhancing contingency reward of desired behavior; and (e) use of negative or safety consequences if needed; and

4. Collection and use of data for decision-making. (Lewis et al., (2010), p. 25)

Further explanation of functional behavioral assessments, team based comprehensive assessments and the collection and use of data for decision-making follows below. B. F. Skinner (1938) examined the need to functionally assess behaviors, he wrote the following:

Once in possession of a set of terms we may proceed to a kind of description of behavior by giving a running account of a sample of behaviors as it unfolds itself in some frame of reference. This is a typical method in natural history.... It may be classified as a narration.... From data obtained in this way it is possible to classify different kinds of behavior and to determine relative frequencies of occurrence. But although this is, properly speaking, a description of behavior, it is not a science in the accepted sense. We need to go beyond mere observation to a study of functional relationships. We need to establish laws by virtue of which we may predict behavior, and we may do this only by finding variables of which behavior is a function. (p. 8)

Skinner discussed the inadequacy of simply describing and classifying a behavior. To effect positive and significant change, one must understand the functional relationship between the environment and behavior.

Steege and Watson (2009) defined a Functional Behavioral Assessment (FBA) as:
...an investigative process that results in an understanding of why behaviors occur. More formally, FBA is a set of assessment procedures that result in the identification and description of the relationships between the unique characteristics of the individual and the contextual variables that trigger, motivate, and reinforce behavior. The FBA is used as the basis for designing individually tailored interventions. (p. 7)

The above definition states that conducting an FBA is an investigative process; therefore, school personnel would not be expected to conduct an FBA without proper training and/or guidance. FBAs contain data collection of an individual student's behavior that may include when the behavior occurred, where it occurred, the duration of behavior, what precipitated the behavior, the staff's response, and the student's response to the staff's response. The decision of when to conduct an FBA, based on the severity or frequency of a behavior, is up to the team in charge of FBAs. This team may be the IEP team, PBS Team or the Problem Solving Team. The team should have criteria in place to prompt an FBA (i.e., a certain number of incidents of the same behavior or a behavior that has been categorized as severe). The person conducting an FBA should be a person involved in the behavior (i.e., the classroom teacher, school counselor) (Steege & Watson, 2009).

Team based comprehensive assessments and the collection and use of data for decision-making refers to the evaluation of a student using multiple sources of relevant information (Steege & Watson, 2009). Lane, Kalberg, Parks, and Carter (2008) pointed out that the team, as in the case of a PBS team, is made up of members that the principal has assembled. These usually include the principal, assistant principal in charge of discipline, a counselor, a general education teacher, a special education teacher and a staff member. The team decides what data is relevant, depending on the issue; the team may choose to look at a student's grades, IQ scores, an observation log of a certain behavior, medical records, results of certain tests conducted, an interview of the student, or teacher or parent. They use the reviewed information to get a comprehensive depiction of the needs of the student (Lane et al., 2008).

Some educators may feel overwhelmed with all that is involved in providing services at Tier Two and Three. However, 50 percent of a school's office discipline referrals are six to nine

percent of the same students (Barrett, Katsiyannis, & Zhang, 2009; Sprague, Golly, Bernstein, Munrkes, & March, 1999; Sugai, et al., 2000). Therefore, providing services to these students not only benefits the student, but also reduces the amount of time teachers and administrators spend on disciplinary actions.

Generally, the preventive approach of the three-tiered model requires specific actions to be effective. Schools must remove and add certain practices, change their environment and teach social skills. Schools must remove factors, such as certain teacher behaviors, that provoke problem behaviors and undesirable intervention practices. An example is a teacher who sits at her desk, while students work on an assignment, and only pays attention to those misbehaving. Though difficult to believe, some children prefer negative attention as opposed to no attention at all (Hendley, 2007).

Subsequently, schools must add factors, again such as certain teacher behaviors, that provoke appropriate behaviors and desirable intervention practices (Glasser, 1998; Sutherland, Lewis-Palmer, Stichter, & Morgan, 2008). In a similar example, a teacher walks among rows and verbally praises students who are on-task. This example demonstrates a practice which encourages the continuation of a desired behavior – being on-task – with the positive reinforcer of verbal praise.

Removing consequences that maintain and strengthen the frequency of inappropriate behaviors and undesirable intervention practices can be difficult. Many teachers fall into the trap of a verbal back-and-forth with a student after a disruptive behavior, which continues to disrupt the class. A better solution, if possible, is to address the student after class when he has no audience (Hendley, 2007; Kerr & Nelson, 2002).

Adding positive consequences that maintain and strengthen the frequency of appropriate behaviors and desirable intervention practices is ideal. If a student is helpful to a classmate without being asked, public verbal praise and extra computer time increase the likelihood she, and others, will demonstrate similar behaviors (Hendley, 2007; Kerr & Nelson 2002; Sailor & Roger, 2005; Utley & Sailor, 2002).

Positive Behavior Support clearly promotes positive interactions between school personnel and students. However, that does not mean that there are no consequences when an inappropriate behavior occurs. Hendley (2007) cautions that educators must set consequences; in addition to clearly understanding what behaviors are expected of them, students must also be completely aware of the consequences when an infraction does occur. Unfortunately, the inappropriate use of consequences can result in negative outcomes. Consequences must be consistent; students should not earn a timeout for talking out of turn, and the next month receive an office discipline referral for the same infraction. Consequences should also promote emotional safety (Glasser, 1998). Teachers should avoid the use of sarcasm or humiliation tactics when imposing consequences; these actions do not promote emotional safety (Hendley, 2007).

The ideal PBS school strives to create an environment that maximizes opportunities to teach and practice appropriate behaviors and desirable intervention practices which include clear displays of expected behaviors throughout the school (e.g., written rules, reward/acknowledgement systems, the system some call Caught Being Good). In this system school personnel give rewards randomly when they see a student demonstrating a desirable behavior (Hendley, 2007; Sailor et al., 2007).

Teaching social skills and behavioral expectations that lead to desired behaviors is also a preventive approach. Just as educators teach academic skills, they must also teach some students appropriate behavioral skills, such as social skills. If children misbehave they are sometimes seen as bad, instead of lacking a skill that must be taught. For that reason, educators must reexamine their notions about behaviors, and then teach what they want to see from their students (Dunlap, Iovannone, Wilson, Kincaid & Strain, 2010; Knoff, 2001).

Instructional Emphasis

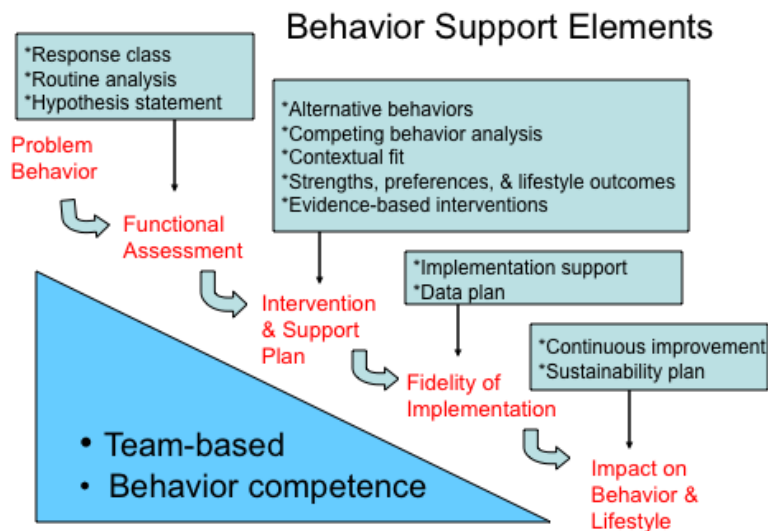
The second philosophical ideal that influences the formation of PBS implementation practices is Instructional Emphasis, which is teaching social skills and functional replacement behaviors; this practice will reduce problematic behaviors (Dunlap et al., 2010; Kame'enui & Darch, 2004; Kerr & Nelson, 2002; Knoff, 2001). Part of this Instructional Emphasis relies on schools defining, teaching and encouraging behavioral expectations. At-risk students are targeted for active, often pre-defined curricula of core skills, whereas high-risk students receive specific individualized social skill instruction based on their functional behavioral assessment.

Functional Perspective

The third philosophical ideal that influences the formation of PBS implementation practices is Functional Perspective (Dunlap et al., 2010; Ruble & Akshoomoff, 2010). The Alabama Positive Behavior Support Center (n.d) warned that while function-based behavior support planning may seem simple, the intensity and complexity of a behavior by a student may call for complex planning on the part of experts who know the child and desire to serve in the best interest of the child. The National PBIS Center listed examples of these type of behaviors:

1. Behaviors that are low frequency but high intensity (e.g., vandalism, fighting, running away).

2. Behaviors that have multiple functions (e.g., profanity is used in one situation for accessing attention and in another situation to avoid attention).
3. Large and multiple response classes of problem behaviors (e.g., profanity, hitting, stealing, crying, and biting are used to access peer attention).
4. Behaviors that are covert and difficult to observe (e.g., drug/tobacco use, stealing, cheating, and lying).
5. Behaviors that are situation-specific (e.g., profanity is observed when a particular teacher corrects the student, but not with other teachers, or in other situations).
6. Behaviors that have a long history (e.g., early antisocial behaviors). (Sugai & Horner, 2002b)



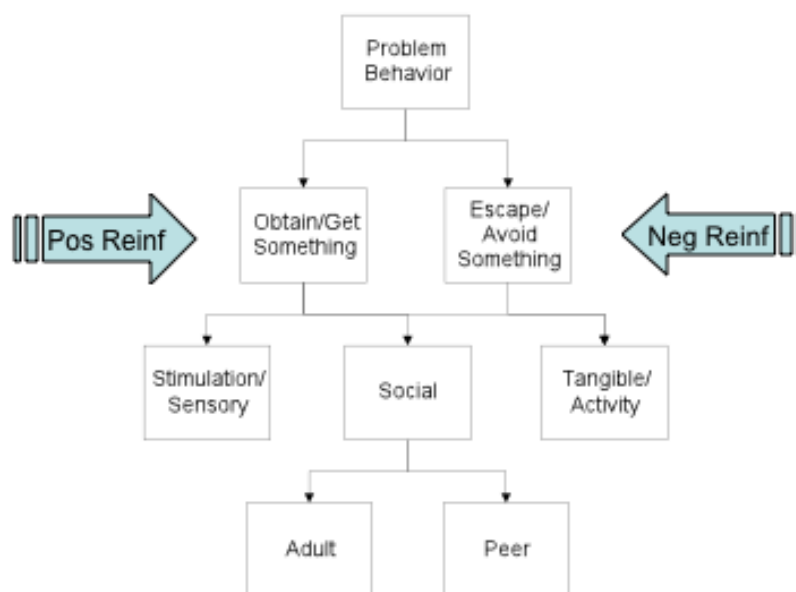
Source: Lewis et al. (2010).

Figure 4. Individualized Behavior Support Elements

The Functional Perspective approach uses positive and negative reinforcers to promote changes in both behavior and individual student behavioral intervention plans. Crone and

Horner (2003) discussed the principles behind positive and negative reinforcers (see Figure 5). Positive reinforcers increase the likelihood of a certain behavior by adding a stimulus (Chiu, & Deldin, 2007; Hayward & Low, 2007). Walker, Shea, and Bauer (2007) define positive reinforcement as the “presentation of a desirable reinforcer after the behavior has been exhibited” (p. 342). It is the “process of reinforcing a target behavior in order to increase the probability that the behavior will recur” (p. 342). The token system is a great example; a child demonstrates a desirable behavior and he receives some type of token that can be exchanged for something the child wants. Negative reinforcers increase the likelihood of a certain behavior by subtracting a stimulus (Fisher, Adelinis, Volkert, Keeney, Neidert & Hovanetz, 2005; Kobayashi, Nomoto, Watanabe, Hikosaka, Schultz, & Sakagami, 2006; Sitaraman, Zars, & Zars, 2007). Walker et al. (2007) defined negative reinforcement as “the strengthening of a behavior as a consequence of the removal of an already operating aversive stimulus” (p. 342). An example would be decreasing the number of math problems in a homework assignment for staying on-task through the math lesson.

2 Basic Functions



Source: Lewis et al. (2010).

Figure 5. Two Basic Functions of Positive and Negative Reinforcers

Sustainability Priority

The fourth and final philosophical ideal that influences the formation of PBS implementation practices is Sustainability Priority (McIntosh et al., 2010; Stormont et al., 2010; Sugai et al., 2000). The Sustainability Priority emphasizes small change, multiple approaches, and use of data.

Sustainability of any new intervention greatly increases when a school enacts the smallest amount of change possible to still obtain maximum effects. As some people are resistant to change, this will most likely lead to cooperation in implementation (Sugai et al., 2007). Sustainability also increases when multiple approaches are considered to solving a specific

problem. Taylor (2003) discussed the need to examine certain factors when considering different interventions to solve a problem like maladaptive behaviors. School administrators should (a) conduct a formal assessment to ensure a new intervention will not overlap or interfere with current initiatives, (b) gain evidence that an intervention is relevant and effective, (c) insure that an intervention is well defined and the outcome indicators are relevant, and (d) implement mechanisms that will assess and evaluate the fidelity of an intervention (Taylor, 2003).

New programs can lack sustainability, because conditions in education constantly change due to alterations in priorities and resources (Coburn, 2003). Latham (1988) reported that any school reform has two to three years before any new initiative is added or will replace the existing school reform plan. Therefore, collecting and using data to make informed decisions increase the likelihood that a successful program will last (McIntosh et al., 2010). Additionally, PBS must be implemented with fidelity to ensure successful sustainability (Sugai et al., 2010).

To further the discussion on sustainability, Datnow (2005) discussed the sustainability of school-level comprehensive school reform (CSR) models. Like PBS, CSR models target whole-school change, focus on student achievement, require a new understanding about the expectations educators have of their students and emphasize prevention as opposed to remediation. CSR models are particularly vulnerable due to the involvement of the state in educational policy connected to standards and accountability, and the high turnover rate among district-level superintendents. Therefore, Datnow conducted a study to examine 13 schools that were implementing CSR models. Several indicators were found which assisted or hindered the sustainability of their initiatives. They included:

1. Initiatives were sustained if they “helped educators meet new local district and state demands, or at least did not conflict with them.” (p. 146)

2. Initiatives were sustained if they had the “ability to adapt to local circumstances.” (p. 146)
3. Initiatives were not sustained if they “require substantial funding to initiate, implement, and sustain over time.” (p. 147)
4. Initiatives were sustained if they established “a stable resource base that could last through leadership and political changes...” (p. 147)
5. Initiatives were not sustained when low performing schools faced high state accountability demands. In these cases the schools abandoned the reform “in favor of test preparation.” (p. 147)

Datnow (2005) also stressed the need for policy makers to be aware of how their decisions affect CSR models before implementation.

Successful Implementation Assumptions and Solutions

Before sustainability can take place, successful implementations must occur. To achieve successful large-scale implementation of Positive Behavior Supports, the PBIS Center (Sugai et al., 2010) indicated that there are seven important assumptions and solutions that must be addressed. They include the following:

1. PBS must be implemented with high accuracy for maximum effectiveness. In other words, school personnel must be trained in the evidence-based practices of this behavioral framework and implement PBS with fidelity.
2. The PBS system put in place must be sustainable to affect meaningful change and improvement in behavior.
3. PBS must be in place at a school for five to ten years for maximum effectiveness to be observed.

4. Implementation must be delivered by trained personnel.
5. Outcome data must be used to make decisions, changes and continuation of PBS.
6. Implementation will require consideration and modification for individual school and community needs.
7. PBS systems must be created so that they are achievable and sustainable. (Sugai et al., 2010)

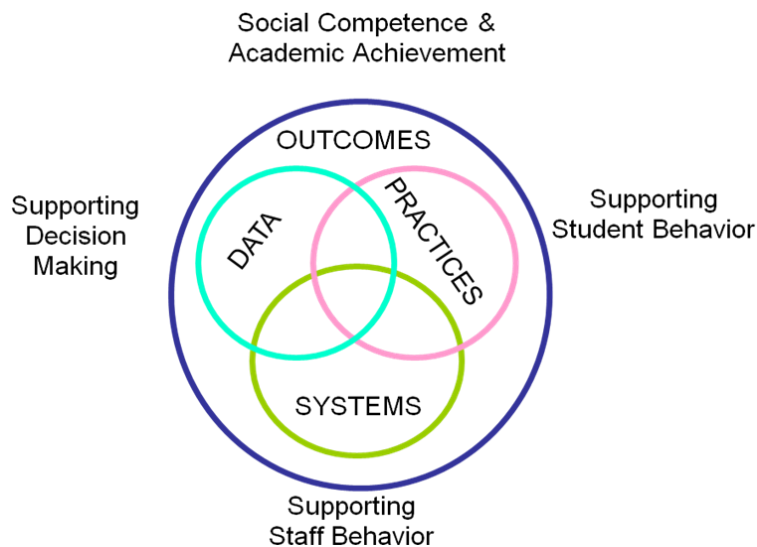
Systems Approach

Many school systems employ a train-and-hope approach, even though Stokes and Baer (1977) condemned this type of training over three decades ago. Stokes and Baer (1977) indicated that a school starts with a problem that is difficult to solve. Then they identify an expert in the area of the quandary. The expert comes to provide training to the administration and faculty and leaves with the hope that they will now have the expertise to solve their own problem. However, because the school personnel lack supports and capacity, the intervention is not implemented correctly. Additionally, no further training, resources or policies are put in place to support the change. The truly interesting aspect of this phenomenon is that when the next challenge arises that the school cannot solve on their own, they employ the same train-and-hope method as before (Horner, 2003; Stokes & Baer, 1977; Sugai et al., 2010).

Horner (2003) explained that the fundamental problem with the train-and-hope approach is that the individuals of the school are left to their own devices to implement the intervention in question. The systems approach, an essential aspect of PBS, considers the school as a unit. Horner believes the collective actions of each member of the school, characterize that institution. However, he does recognize that the institution does not engage in behaviors; individuals within

the organization produce behaviors. To achieve successful implementation, the individuals within a school must act together to achieve a common goal (Horner, 2003).

Sugai et al. (2010) reported that the PBS systems approach relies on four different elements. These elements encourage an interactive and self-monitoring process that leads to correction and improvement. These elements include outcomes, practices, data, and systems (see Figure 6). Outcomes consist of academic and behavioral targets sanctioned by students and their families and school personnel. The practices put into place are evidence-based strategies. Data provides information to identify progress, or lack thereof, needed for an alteration of the system and the overall effects of the intervention. Lastly, systems are the policies and procedures developed to support accurate and sustainable implementation of PBS (Sugai et al., 2010).

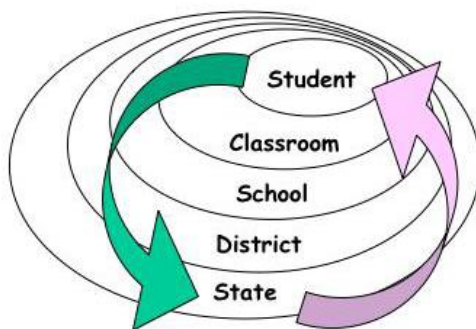


Source: Lewis et al. (2010).

Figure 6. Social Competence and Academic Achievement in Evidence-Based Practice

Implementation Levels

The systems approach of PBS (Sugai et al., 2010) relies on several implementation levels of support. These levels include individual student, classroom, school-wide, district, community and state (Sugai et al., 2010).



Source: Lewis et al. (2010).

Figure 7. Positive Behavior Support Implementation Levels

Individual Students

Individual students who do not respond to the primary and secondary school-wide positive behavior support (SWPBS) interventions receive individualized and intensive behavioral plans created from their functional-based behavior assessment results. These plans are based on individual students' behavioral data, which is most often observational data collected by their teachers (Chandler & Dahlquist, 2002).

Classrooms

Classrooms provide support by giving students clear expectations on routines, structures and appropriate behaviors. Routines, such as a repetitive daily schedule, allow students the comfort of knowing what subject to prepare for at the conclusion of an activity. Structures can address classroom management problems (Crone & Horner, 2003), such as leaving personal

items in inappropriate places around the room. For young children, each student may have their own cubby area so each student is conscious to where personal belongings should be contained when entering the classroom. PBS also provides clear expectations on appropriate behaviors; school administrators, faculty and staff are trained to create classroom rules and post them at the beginning of the year. These rules can even be created with students to stimulate student cooperation; then teachers should discuss each rule with the students to reassure clear understanding of classroom expectations (Crone & Horner, 2003).

School-wide

As in the classroom, students and staff are aware of school-wide behavioral expectations across all school settings through a proactive approach at the start of and throughout each school year, instead of being punished as behaviors occur. PBS suggests being proactive with students regarding expected behaviors initially and consistently. Many behavioral problems occur outside the classrooms, such as in the halls, playground, lunchroom or gymnasium. Students need to know what behaviors are expected of them in these settings, as well. Transition periods, moving from one class to another, produce a great deal of problem behaviors. These behaviors can be lessened with clear expectations (Edmonson & Sailor, 2000). Therefore, students should be taught behavioral expectations during transitions in the hall. Like hallway transitions, outdoor activities such as recess can promote many behavioral problems (Crone & Horner, 2003). Knoff (2005) promotes teaching social skills to support appropriate behaviors. One such skill is waiting for a turn. Children cannot be expected to just automatically know how to be patient. Students must be taught this skill (Knoff, 2005).

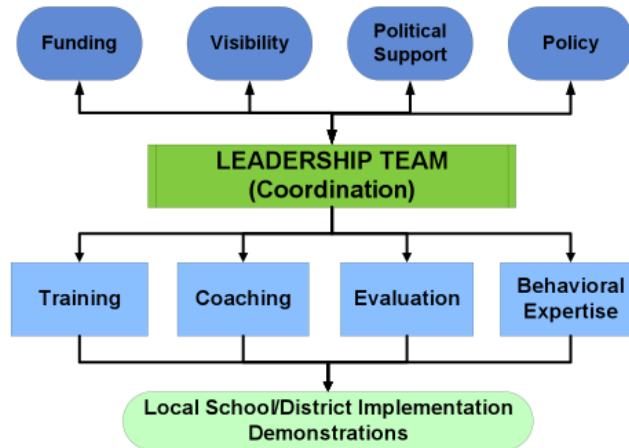
Districts

Districts support their individual schools with leadership and implementation resources. Leadership support is important to the success of a new intervention. The district superintendent serves as the leader at this level; consequently, PBS technical assistance providers greatly encourage superintendent support before trainers enter schools in a district (Handler, Rey, Connell, Thier, Feinberg, & Putnam, 2007).

Districts also support their individual schools with implementation resources. These resources are outlined in the *PBS Implementation Self-Assessment and Planning Tool* document, developed by the PBIS Center, Sugai et al. (2010), and used at the state level. The 36 features in this document are similar at the district and state level and will be discussed in the next section on state implementation.

States

The PBIS Center (Sugai et al., 2010) developed a checklist of items that educational leaders at the state and district level need to implement, support and sustain PBS. This checklist is called the *PBS Implementation Self-Assessment and Planning Tool*. This document is split into ten categories: leadership team, funding, visibility, political support, policy, training capacity, coaching capacity, evaluation capacity, behavioral expertise, and school/district demonstrations. These categories also make-up the PBS Organizational Logic Model (see Figure 8). The 36 features under ten categories outlined below provide a specific structure for educational administrators.



Source: Lewis et al. (2010).

Figure 8. Positive Behavior Support Organizational Logic Model.

A summary of the features of the *PBS Implementation Self-Assessment and Planning Tool* are listed below:

Leadership Team (Coordination)

1. Leadership Team is configured to address multi-school (district) and/or multi-district (region, state) leadership and coordination.
2. Leadership Team is established with representation from appropriate range of stakeholders (e.g., special education, general education, families, mental health, administration, higher education, professional development, evaluation and accountability).
3. Leadership Team completes PBS Implementation Blueprint self-assessment at least annually.
4. Leadership Team completes a 3-5 year prevention-based action plan that delineates actions linked to each feather of the Implementation Blueprint.

5. Leadership Team establishes regular meeting schedule (at least quarterly) and meeting process (agenda, minutes, dissemination).
6. Leadership Team has established individual(s) who have adequate and designated time to manage day-to-day operations.
7. Leadership Team has established individuals who put policy and action planning into practice.
8. Leadership Team has established individuals who inform leadership team on implementation outcomes.

Funding

9. Recurring/stable state funding sources are established to support operating structures and capacity activities for at least three years.
10. Funding and organizational resources across related initiatives are assessed and integrated.

Visibility

11. Dissemination strategies are identified and implemented to ensure that stakeholders are informed about activities and accomplishments (e.g., website, newsletter, conferences, TV).
12. Procedures are established for quarterly and public acknowledgement of implementation activities that meet criteria.

Political Support

13. Student social behavior is one of the top three to five goals for the political unit (state, district, region).

14. Leadership Team reports to the political unit at least annually on the activities and outcomes related to student behavior goal and SWPBS implementation.
15. Participation and support by administrator from state chief or equivalent administrator are agreed upon and secured.

Policy

16. SWPBS policy statement developed and endorsed.
17. Procedural guidelines and working agreements have been written and referenced for implementation decision making.
18. Implementation data and outcomes are reviewed semi-annually to refine policy.
19. Audit of effectiveness, relevance, and implementation integrity of existing related (similar outcomes) initiatives, programs, etc. is conducted annually to refine policy.

Training Capacity

20. Leadership Team gives priority to identification and adoption of evidence-based training curriculum and professional development practices.
21. Leadership Team has established local training capacity to build and sustain SWPBS practices.
22. Leadership Team has established plan for continuous regeneration and updating of training capacity.

Coaching Capacity

23. Leadership Team has developed a coaching network that establishes and sustains SWPBS.

24. Individuals are available to provide coaching and facilitation supports at least monthly with each emerging school team (in training and not at implementation criteria), and at least quarterly with established teams.
25. Coaching functions are identified and established for internal (school level) and external (district/regional level) coaching supports.

Evaluation Capacity

26. Leadership Team has developed an evaluation process and schedule for assessing (a) extent to which teams are using SWPBS, (b) impact of SWPBS on student outcomes, and (c) extent to which the leadership team's action plan is implemented.
27. School-based data information systems (e.g., data collection tools and evaluation processes) are in place.
28. District and/or state level procedures and supports are in place for system level evaluation.
29. Annual report of implementation integrity and outcomes is disseminated.
30. At least quarterly dissemination, celebration, and acknowledgement of outcomes and accomplishments.

Behavioral Expertise

31. At least two individuals on leadership team have behavioral expertise and experience to ensure implementation integrity of SWPBS practices and systems at three capacity levels: (a) training, (b) coaching, and (c) evaluation.
32. Individuals with behavioral expertise have SWPBS content competence.
33. The interaction and relationship between effective academic instruction and school-wide behavior support are visible and promoted.

34. SWPBS behavioral expertise includes fluency with the process and organizational strategies that support and enhance the use of evidence-based behavioral practices.

School/ District Demonstrations

35. At least 10 schools have adopted SWPBS, and can be used as local demonstrations of process and outcomes.

36. At least 2 districts/regions have established demonstrations of system-level leadership teams to coordinate SWPBS implementation in 25% (3 schools) or more of their schools.

(Sugai et al., 2010, p. 65)

Academics, Behavior and PBS

No Child Left Behind and a high stakes accountability climate are forcing school administrators to improve academic achievement indicators, thus affecting the sustainability of school-wide initiatives like PBS. Therefore, PBS researchers have conducted a great deal of research to see if a connection between PBS and academic improvement exists (Algozzine et al., 2011; Horner et al., 2004; Lassen et al., 2006; Luiselli, Putnam, Handler, & Feinberg, 2005; Putnam, Handler, & O’Leary-Zonarich, 2003; Putnam, Handler, Ray & O’Leary-Zonarich, 2002; Scott & Barrett, 2004; Sugai, Lewis-Palmer, & Hagan-Burke, 1999-2000). If educational leaders find a link between PBS and academic achievement, they will be more likely to implement the framework with fidelity and work toward sustainability.

The study by Lassen et al., (2006) examined the effectiveness of a school-wide PBS intervention in an inner city middle school over 3 years. The study revealed that reductions in student problem behavior and improvements in standardized test scores were visible.

Behavioral Effects of Positive Behavior Supports

A positive school culture is an important key that makes a difference for students (Goodwin, 2009). Students need both a rich learning experience and solid preparation to meet the required standards. A flexible and highly differentiated instructional program is the only variable approach to meeting the goal of success for all students (Rettig, McCullough, Santos, & Watson, 2003). In fact, schools implementing PBS have found when PBS is implemented with fidelity, students experience improved academic achievement and an increase in appropriate behavior (Ruiz, Ruiz, & Sherman, 2012).

Several studies found a link between behavioral problems and academic performance (Lassen et al., 2006; McIntosh et al., 2006; Scott & Barrett, 2004). Knowing that PBS decreases maladaptive behaviors (Irvin et al., 2004; Scott & Barrett, 2004), researchers began to examine the potential effects of behavioral interventions on academic improvement.

Algozzine, Putman and Horner (2007), Horner, Sugai and Anderson (2010), and Putman, Horner and Algozzine (2006) discussed the link between behavior and academic performance in terms of classic coercion, yet other educators and researchers found academics intrinsically linked to behavior (Colvin & Fernandez, 2000; Kern, Choutka, & Sokol, 2002; Perciado, Horner, & Baker, 2009; Witt, VanDerHeyden, & Gilbertson, 2004). Still other researchers further identified behavioral/academic predictors at the elementary, middle and high schools levels (Herman, Reinke, Lambert & Ialongo, 2008; Horner, Sugai, Smolkowski, Eber, Nakasato, & Todd 2009; Lassen et al., 2006; Morrison, Anthony, & Storino, & Dillon, 2001).

McIntosh et al. (2006) deduced that when students struggled academically they were more likely to develop problem behaviors maintained by escape/avoidance of academic demands. Additionally, Moore, Anderson and Kumar (2005) found curricular expectations

triggered undesirable behavior when the curricular expectations were not appropriately aligned with the current skill levels of the students.

Perciado et al. (2009) evaluated the effectiveness of a function-based intervention to improve behavior and reading outcomes for Latino English language learners (ELLs). The study included four Latino ELL students in an elementary school general education setting and directly observed them for fourteen weeks. The results documented a functional relationship between intervention and reduction of problem behavior (Perciado et al., 2009).

Lassen et al. (2006) examined the number of ODRs and suspensions and the test scores of a standardized reading and math test in an urban middle school. The number of ODRs and suspensions predicted scores on the standardized tests (Lassen et al., 2006).

Morrison et al. (2001) reviewed students' records who were referred to an in-school suspension program. They discovered that students who had never before received an office discipline referral earned higher grade point averages (GPA) than those with one or more ODRs (Morrison et al., 2001).

Horner et al. (2009) studied the link between the PBS training and technical assistance for elementary schools in Hawaii and Illinois. The three-year study performed in the third grade classes documented that PBS training and technical assistance were related to improved implementation of universal level PBS practices. The improved implementation of PBS was related to improvements in the perceived safety of the school settings and the third graders meeting or exceeding state reading assessment standards (Horner et al., 2009).

Herman et al. (2008) investigated the role of low academic competence, and sampled African American boys and girls. The results supported the path from academic competence in

first grade to depressive symptoms in seventh grade that correlated to conduct problems, inattention and social problems (Herman et al., 2008).

Academic Effects of Positive Behavior Supports

Academic achievement is one characteristic that exerts powerful influences on school engagement (Finn & Rock, 1997; Perdue, Manzeske, & Estell, 2009). Time spent away from the classroom due to office discipline referrals (ODRs), suspensions and expulsions equates to time away from the classroom, academic instruction and the learning processes, which highly correlates with poor academic achievement (Bodovski & Farkas, 2007; Canady & Rettig, 2008). Therefore, researchers began to examine the effects of PBS on instruction time and academic achievement.

Lassen et al. (2006) conducted a three-year study which looked at ODRs, suspensions and the standardized reading and math test scores of an inner city urban school pre- and post-PBS implementation. The study revealed that ODRs and suspensions decreased after the implementation of PBS. While reading test scores did not change, math scores increased from baseline to year three (Lassen et al., 2006).

Luiselli et al. (2005) completed a similar study to that of Lassen et al. (2006). They implemented PBS in an urban school and found decreases in ODRs and suspensions. They also found an increase in students' reading and mathematics achievement tests. Reading scores increased 18 percent, while math scores increased 25 percent (Luiselli et al., 2005).

Chen (2007) completed a study that confirmed student background is associated with student behavior and student learning. School disorder affects student achievement negatively both directly and indirectly, which was measured by student attendance. The study suggested

that policy initiatives could be implemented to improve school climate and therefore reduce school disorder and improve student achievement (Chen, 2007).

Lastly, Bradshaw, Mitchell and Leaf (2009) used data from a five-year longitudinal study conducted in 37 elementary schools to examine PBS intervention effects on behavioral and academic outcomes for students. The researchers reviewed the PBS training, PBS implementation and fidelity, office discipline referrals, and academic achievement. Observations revealed that improvements in the PBS schools tended to out pace the improvements in the non-trained schools on three of the four state assessments (Bradshaw et al., 2009).

Positive Behavior Supports and Instructional Time

Scott and Barrett (2004) implemented school-wide positive behavior support in an urban elementary school. During the next two years, ODRs decreased by 562 and suspensions by 55 annually. This is linked to instruction time, because the authors estimated that ODRs took the student away from 20 minutes of instruction and suspension removed them from school for an entire day. After the implementation of PBS, school-wide instruction increased an average of 29.5 days for ODRs and 50 days for suspensions (Scott & Barrett, 2004).

Putnam et al. (2002) conducted a similar pre- and post-PBS implementation study in a low-performing urban school. The researchers hypothesized the amount of instructional time gained, if any, would be due to less time out of the classroom with discipline consequences. Their results revealed a 169 day increase, school-wide, in instructional time over a semester verses a similar semester prior to PBS implementation which resulted in a 57 percent increase in instruction time over pre-intervention results (Putnam et al., 2002).

With a clear understanding of the impact ODRs have on instruction time, Scott and Barrett (2004) emphasized the importance of tracking the amount of time spent on ODRs. A

four-step system was created to record time spent on ODRs, with the intent that it be used to compare semesters or years to truly evaluate the impact of PBS. First, Scott and Barrett suggested that schools keep up with the time spent on each referral. Keeping up with the time spent on each referral can be easily accomplished by adding student time in and out to the referral form. Also, suggested was a place on the form for administrators to record time spent on dealing with the proper paperwork after the student returned to the classroom. Second, schools should track the total number of ODRs processed. Tracking the total number of ODRs processed allows school administrators to compare ODRs by semester from year to year to determine if improvement occurred. Third, schools should average the student time and administrator time spent on ODRs in minutes, hours and days. The amount of time spent on ODRs is valuable information to have when reporting to outside interests. Fourth, school administrators must share the information learned with key stakeholders, such as their faculty and staff, parents and district level administrators. The amount of time taken by processing ODRs is crucial information to have when evaluating if a PBS program should stay the course or potentially make changes (Scott & Barrett, 2004).

CHAPTER 3. METHODS AND PROCEDURES

Algozzine, Putnam, and Horner (2007) reviewed research related to the relationship between academic achievement and social behavior. These researchers found that most studies illustrated simple correlations, and that few researchers investigated functional relationships. Information presented in this chapter is intended to add to the limited amount of research regarding the potential effects of Positive Behavior Supports on the performance scores of fourth grade students on a standardized reading and math test in the State of Alabama. Data collection was in compliance with the research guidelines as set by the Auburn University Institutional Research Board. This chapter will discuss: (a) the researcher's role, (b) participants, (c) research design, (d) instrumentation (including validity and reliability), (e) data collection procedures, and (f) data analysis.

Purpose of Study

The purpose of this study was to investigate the relationship of school-wide positive behavior supports to academic achievement in Alabama schools. This study compared the 2009–2010, 2010–2011 and 2011–2012 fourth grade Alabama Reading and Math Test (ARMT) scores of four school districts in Alabama that have implemented Positive Behavior Support (PBS) to four non-PBS school districts ARMT scores. Demographic data were examined at the local district level for the 8 schools in the State of Alabama. Districts that have fully implemented PBS included all schools within the district that were trained in Tier I PBS and implemented PBS. Then, based on seven indicators each school district was paired with a similar non-PBS

school district. The total number of Alabama school districts totaled 131; the non-PBS schools totaled 115 schools that had not implemented PBS prior to the 2009–2010 school year. The districts were matched based on geographic category (i.e. rural, large urban city, etc.), number of schools, number of students, amount spent per student on instruction, student/teacher ratio, number of English language learners (ELL), and the racial make-up of the total population under 18. The racial categories were White, Black, Hispanic or Latino, American Indian or Alaska native, Asian, and Hawaiian or other Pacific Islander.

Research Questions

The study was guided by the following research questions:

1. What are the demographic characteristics of the four PBS and four non-PBS school districts in Alabama?
2. What are the differences between reading achievement scores among the PBS and non-PBS school districts in Alabama?
3. What are the differences between math achievement scores among the PBS and non-PBS school districts in Alabama?
4. What are the differences in reading achievement scores among the PBS and non-PBS school districts in relation to the number of years of implementation of positive behavior supports?
5. What are the differences in math achievement scores among the PBS and non-PBS school districts in relation to the number of years of implementation of positive behavior supports?

Researcher's Role

The role of the researcher for this study was to focus on the potential effects of Positive Behavior Supports on the academic performance scores of fourth grade students on a standardized reading and math test. The researcher examined each PBS school district with its matched non-PBS district to verify if either district obtained higher academic achievement scores on the ARMT.

During the period of this study, the researcher held the role of Positive Behavior Support Trainer at the Alabama Positive Behavior Support Center. This study provided the researcher with an opportunity to analyze data collected from the Alabama school districts for the purpose of determining if the implementation of PBS had any effects on academic achievement performance.

Participants

The participants were eight Alabama school districts: four PBS school districts (districts that had implemented PBS) and four matched non-PBS school districts (districts that had not implemented PBS). Demographic data was examined at the local district level for eight school districts in the State of Alabama (Alabama State Department of Education, 2010). Districts that had fully implemented PBS included all those in which all schools within the district were trained in Universal Tier I PBS and showed evidence of implementation of PBS. Then, systematically each school district was paired with a similar non-PBS school district based on seven indicators. Alabama has a total of 131 school districts, and as of 2009, 57 of the schools districts (44%) were trained in Universal Tier I PBS and show evidence of implementation of PBS; 74 of the schools districts (56%) are *not* trained in Universal Tier I PBS.

Since the demographic data gathered came from the National Center for Education Statistics, each school district pair was assigned a code, such as PBS 1 and Non-PBS 2, PBS 3 and Non-PBS 4, etc., in order to maintain anonymity of each district. The school districts were closely matched to ensure that academic test scores, for the PBS districts and non-PBS districts, be compared more accurately and conclusions could be determined. Note that in some cases the matched districts may differ greatly on one or two indicators, however, most of the indicators between matches were similar, and each district was matched as closely as possible.

The districts were matched based on seven indicators: (1) geographic category (i.e. rural, large urban city, etc.), (2) number of schools, (3) number of students, (4) student/teacher ratio, (5) number of teaching positions, (6) number of English language learners (ELL), and (7) the racial make-up of the total population under 18. The racial categories included White, Black, Hispanic or Latino, American Indian or Alaska native, Asian, and Hawaiian or other Pacific Islander.

Research Design

The four school districts in the State of Alabama that implemented PBS since the 2005–2006 school year were each matched with a similar non-PBS school district based on the above mentioned seven characteristics from the National Center for Education Statistics. The 2009–2010, 2010–2011 and 2011–2012 fourth grade reading and math ARMT results from each school district were examined. Student academic success was determined by a placement in Level III and IV on the ARMT, which indicates the percentage of students who met or exceeded the State’s standards in the perspective categories. Each level of achievement (i.e., I, II, III, IV) on the ARMT test was converted from a percentage to a number for each category (i.e., reading and

math), each district (i.e., PBS and Non-PBS), and each year of the test administration (i.e., 2009–2010, 2010–2011 and 2011–2012).

Instrumentation

The Alabama Reading and Mathematics Test (ARMT) was used to measure academic success of the four PBS and four Non-PBS school districts examined for comparison. The ARMT is a criterion-referenced test and is given during the spring of each year (since 2003–2004). It consists of selected items from the Stanford Achievement Test (Stanford 10) which mandates the Alabama state content standards in reading and mathematics. In assurance that all content standards are covered for the ARMT, additional test items were developed. The combination of these test items creates the ARMT; it has a 100% alignment to the Alabama state content standards in reading and mathematics. The primary purpose of the ARMT is:

- To assess students' mastery of state content standards in reading and mathematics,
- To report individual and group performance,
- To report relative strengths and weaknesses of individuals and groups, and
- To provide data to study changes in performance over time.

The following achievement levels are used in reporting ARMT performance:

- Level IV – Exceeds academic content standards,
- Level III - Meets academic content standards (proficient or grade-level performance),
- Level II – Partially meets academic content standards, or
- Level I – Does not meet academic content standards.

The performance results of the ARMT are used for accountability for grades three through eight as well as meeting one of the requirements of the *No Child Left Behind Act*. The fourth grade ARMT performance focus was chosen, because grade four is the level that the State Department

of Alabama concentrates on regarding risk to future academic achievement (Alabama State Department of Special Education, 2004, Fall).

Reading Portion of the ARMT

The Alabama Reading and Math Test: Specifications for Reading, Grade 4 or Bulletin 2005, No. 83 (Morton, 2005a) provided information about the reading portion of the ARMT. The content of the document focused on (a) two item types Reading Vocabulary – RV and Reading Comprehension – RC which together produce a Reading Total – RT and (b) five ARMT content standards for reading. The two item types included multiple-choice items with four-option multiple-choice responses worth one point, and the open-ended items that valued three points per response. The five ARMT content standards for the fourth grade reading portion are listed below:

1. Standard 1 (S1) - Demonstrate word recognition skills, including structural analysis. Examples of structural analysis are root words, prefixes, and suffixes.
2. Standard 2 (S2) - Demonstrate reading vocabulary knowledge, including recognition of a variety of synonyms and antonyms.
3. Standard 3 (S3) - Use a wide range of strategies, including distinguishing fiction from nonfiction, and making inferences to comprehend fourth-grade literary/recreational materials in a variety of genres. Examples include novels, short stories, poetry, and trade books.
4. Standard 4 (S4) - Identify literary elements and devices, including characters, important details, and similes in literary and recreational materials, and identify important details in textual and informational materials.

5. Standard 5 (S5) - Use a wide range of strategies and skills, including using sentence structure, locating information, and distinguishing fact from fiction, to comprehend fourth-grade functional, textual, and informational reading materials. (Morton, 2005a)

Mathematics Portion of the ARMT

The Alabama Reading and Math Test: Specifications for Mathematics, Grade 4 or Bulletin 2005, No. 84 (Morton, 2005b) provided information about the math section of the ARMT. The content of the document focused on (a) three item types Math total – MT which consists of Procedure - PR + Problem Solving - PS and (b) 17 math content standards. The three item types included multiple-choice items, gridded items and open-ended items. The four option multiple-choice items and gridded items valued as one point, and the open-ended items were worth three points. The 17 fourth grade ARMT math content standards are arranged in five categories: number sense and operations (NSO), algebra (PRA), geometry (GMY), measurement (MST) and data analysis and probability (DAP). The five categories and the 17 content standards for the fourth grade math portion of the ARMT are below:

Number Sense and Operations:

1. Standard 1 (S1) - Demonstrate number sense by comparing and ordering decimals to hundredths and whole numbers to 999,999.
2. Standard 2 (S2) - Write money amounts in words and dollar-and-cent notation.
3. Standard 3 (S3) - Rename improper fractions as mixed numbers and mixed numbers as improper fractions.
4. Standard 4 (S4) - Demonstrate addition and subtraction of fractions with common denominators.

5. Standard 5 (S5) - Round whole numbers to the nearest ten, hundred, or thousand, and decimals to the nearest tenth.
6. Standard 6 (S6) - Solve problems, including word problems that involve addition and subtraction of four-digit numbers with and without regrouping.
7. Standard 7 (S7) - Solve problems, including word problems, involving the basic operations of multiplication and division on whole numbers through two-digit multipliers and one-digit divisors.
8. Standard 8 (S8) - Recognize equivalent forms of commonly used fractions and decimals.

Algebra:

9. Standard 9 (S9) - Write number sentences for word problems that involve multiplication or division.
10. Standard 10 (S10) - Complete addition and subtraction number sentences with a missing addend or subtrahend.

Geometry:

11. Standard 11 (S11) - Identify triangles, quadrilaterals, pentagons, hexagons, or octagons based on the number of sides, angles, and vertices.
12. Standard 12 (S12) - Find locations on a map or a grid using ordered pairs.

Measurement:

13. Standard 13 (S13) - Calculate elapsed time in hours and minutes.
14. Standard 14 (S14) - Measure length, width, weight, and capacity using metric and customary units, and temperature in degrees Fahrenheit and degrees Celsius.

Data Analysis and Probability:

15. Standard 15 (S15) - Represent categorical data using tables and graphs, including bar graphs, line graphs, and line plots.
16. Standard 16 (S16) - Determine if outcomes of simple events are likely, unlikely, certain, equally likely, or impossible.
17. Standard 17 (S17) - Represent numerical data using tables and graphs including bar graphs and line graphs. (Morton, 2005b)

Validity

Ross and Shannon (2008) asserted that the extent to which our data collection instruments, or processes, measure what they are supposed to measure is an indication of validity. According to Aiken and Groth-Marnat (2005) validity can be established by using a panel of experts. The validity of an instrument refers to the extent to which the instrument measures what it is intended to measure. The validity of the ARMT was determined by a panel of experts, created by the Alabama State Board of Education. The panel of experts reviewing the instrument consisted of educators from each of the 131 Alabama school districts and each district board of education. In addition, the panel of experts reviewed the content of the tests, selected specific reading passages, reviewed specific test items, and determined achievement levels (Morton, 2005b). The State Board also established a panel of experts to form the Accountability Advisory Committee and, based on the recommendations of the State Board, the use of the ARMT was implemented on June 2003 (Morton, 2005b).

The validity of the ARMT was further tested with a correlation analysis. Table 1 and Table 2 show the inter-correlations of the Reading and Mathematics domains and sub-domains and the aggression of domain scores for the totals. Testing the ARMT's validity with a

correlational analysis examined the likelihood that the items in Table 1 and 2 were assessed as the test developers claimed.

There are a few items to be noted from Table 1. Reading Total (RT) consists of RV, RC, S1, S2, S3, S4, and S5. Reading Vocabulary (RV), and Reading Comprehension (RC) are Stanford 10 subtests. Whereas, Standard 1 (S1), Standard 2 (S2), Standard 3 (S3), Standard 4 (S4) and Standard 5 (S5) are ARMT content reading standards.

Table 1

Reading: Intercorrelations of Domains, Standards, and Total Scores

Reading 4	RT	RV	RC	S1	S2	S3	S4	S5
Reading Total (RT)	1.00							
Reading Vocabulary (RV)	0.78	1.00						
Reading Comprehension (RC)	1.00	0.71	1.00					
Standard 1 (S1)	0.70	0.53	0.70	1.00				
Standard 2 (S2)	0.85	0.87	0.82	0.57	1.00			
Standard 3 (S3)	0.89	0.65	0.89	0.55	0.72	1.00		
Standard 4 (S4)	0.92	0.70	0.92	0.55	0.73	0.75	1.00	
Standard 5 (S5)	0.89	0.63	0.90	0.57	0.70	0.73	0.77	1.00

In Table 1 the intercorrelation between RT and S4, which measures identification skills of literary elements and devices, was ≤ 0.92 . This was the highest correlation compared to other standards intercorrelations with RT. However, the intercorrelation between RT and S1, which measures word recognition skills, was ≤ 0.70 . This was the lowest correlation compared to other standards intercorrelations with RT.

There are a few items to be noted from Table 2. Math Total (MT) consists of Procedure (PR), Problem Solving (PS), Number Sense & Operations (NSO), Algebra (PRA), Geometry (GMY), Measurement (MST) and Data Analysis & Probability (DAP). Procedure (PR) and Problem Solving (PS) are Stanford 10 subtests. Whereas, Number Sense and Operations (NSO), Algebra (PRA), Geometry (GMY), Measurement (MST), and Data Analysis and Probability (DAP) are ARMT content standards.

Table 2

Mathematics: Intercorrelations of Domains, Sub-Domains, and Total Scores

Mathematics 4	MT	PR	PS	NSO	PRA	GMY	MST	DAP
Math Total (MT)	1.00							
Procedure (PR)	0.80	1.00						
Problem Solving (PS)	0.99	0.73	1.00					
Number Sense & Operations (NSO)	0.95	0.84	0.93	1.00				
Algebra (PRA)	0.83	0.63	0.83	0.75	1.00			
Geometry (GMY)	0.69	0.48	0.70	0.54	0.48	1.00		
Measurement (MST)	0.78	0.55	0.79	0.66	0.60	0.57	1.00	
Data Analysis & Probability (DAP)	0.81	0.57	0.81	0.69	0.61	0.52	0.57	1.00

In Table 2 the intercorrelation between MT and NSO, which measures Standards 1 through 8, was ≤ 0.95 . This was the highest comparison with other cluster intercorrelations with MT; and the intercorrelation between MT and GMY, which measures Standards 11 and 12, was 0.69. This was the lowest comparison with other cluster intercorrelations with MT (Alabama State Department of Special Education, 2004, Fall).

Reliability

The most widely used method for estimating reliability is Cronbach's alpha. Kimberlin and Winterstein (2008) defined Cronbach's alpha as a function of the average inter-correlations of items and the number of items in the scale. Dimitrov (2010) explained that reliability of measurements indicates the degree to which they are accurate, consistent, and replicable when (a) different people conduct the measurement, (b) using different instruments that purport to measure the same trait, and (c) there is incidental variation in measurement conditions.

Cronbach's alpha reliability coefficient is one method used to compute the correlation values. The normal range for Cronbach's alpha is between 0 and 1; the higher the score (closer to 1), the more reliable the scale and the greater the internal consistency (Gliem & Gliem, 2003). The internal consistency using Cronbach's coefficient alpha to test reliability on the ARMT for grades four, six, and eight was measured by Harcourt. According to Fowler (1995), one way to ensure that scores on an instrument are reliable is to complete a field test. However, the item level data was not available, and therefore the researcher was unable to complete sample specific reliabilities. The reliability measures for the ARMT are depicted in Tables 3 through 6, which was reported from the Alabama Reading and Math Test, Grades 4, 6, and 8, Technical Manual (Alabama State Department of Education, 2004, Fall); however, for this study only grade 4 was reported.

Inter-rater Agreement Measures

Table 3 provides statistics on the reliability coefficient of the ARMT with the inter-rater agreement measures. The inter-rater agreement simply calculates the amount of agreement among readers of the open-ended items with a check score procedure. Examiners randomly

selected ten percent of tests, with valid scores on the prompts, for a second independent review. Table 3 demonstrates the inter-rater coefficients for the open-ended items of the ARMT.

Table 3

Inter-Rater Agreement Coefficients for ARMT

Subject and Grade	Inter-Rater Agreement	
	% Perfect	+/- Adjacent
Reading 4	73	94
Mathematics 4	91	99

Table 3 also shows the percent perfect agreement coefficient between fourth grade reading and fourth grade math. The reading rating is more subjective than math. However, when small amounts of disagreement were allowed, discrepancies between subjects decreased. When researchers apply the inter-rater agreement of ± 1 there is only a three percent difference between reading and math.

Standard Error of Measurement

Table 4 addresses the standard error of measurement (SEM), which is the standard deviation of errors of measurements of test scores from a particular group of examinees. SEM is also another index of reliability. A measurement error is the discrepancy between an observed score and the true score. An observed score of a student is an estimate of their true score, due to the fact that the SEM is inversely related to reliability, the lower the standard error, the higher the reliability. The measurement error is most commonly expressed as standard deviation units, because the standard error of measurement is the standard deviation of the measurement error

distribution. Tables 4 through 7 report the reliability coefficients, among other measures for subject, gender and ethnicity, limited English proficient and special education students, and schools. In Table 4, MC refers to the number of multiple-choice items, GR refers to the number of gridded-response items and OE refers to the number of open-ended items.

Table 4

Means, Standard Deviations, Number of Items, Reliability Coefficients, and Standard Error of Measure (SEM) for Reading and Mathematics

Subject and Grade	Mean	SD	MC	GR	OE	Item Number	Points	Reliability	SEM
Reading 4	44.12	14.06	60	.	4	64	72	0.93	3.72
Mathematics 4	41.11	14.33	56	4	4	64	72	0.93	3.79

In Table 5, the values in parentheses are raw score means of reliability coefficients for gender and ethnicity for subjects Reading and Math of the ARMT assessment.

Table 5

Reliability Coefficients for Gender and Ethnicity

Subject and Grade	Female		Male		
Reading 4	0.93 (46)		0.94 (42)		
Math 4	0.92 (41)		0.94 (41)		
	Black	Native American	Asian	White	Hispanic
	0.92 (38)	0.93 (46)	0.93 (50)	0.93 (48)	0.93 (38)
	0.92 (35)	0.93 (42)	0.93 (51)	0.93 (45)	0.93 (37)

Students in special education received services related to the disability categories identified in the *Individual with Disabilities in Education Act* (2004). These categories include specific learning disability, mental retardation, autism, emotional disturbance, deaf-blindness, hearing impairment, visual impairment, speech or language impairment, orthopedic impairment, traumatic brain injury, multiple disabilities, and other health impairment. Table 6 represents the reliability coefficients for limited English proficient and special education students.

Table 6

Reliability Coefficients for Limited English Proficient (LEP) and Special Education

	LEP				Special Education			
	N	Mean	SD	Reliability Coefficients	N	Mean	SD	Reliability Coefficients
Reading 4	837	32.93	12.89	0.91	5983	27.21	12.73	0.91
Math 4	900	33.11	12.99	0.92	6050	25.90	12.68	0.92

Note that some of the schools in Table 7 with less than 100 students were removed from the analysis, therefore, raw score means and SDs do not represent the total population of Alabama students (Alabama State Department of Special Education, 2004, Fall).

Table 7

Number of Schools, Means, Standard Deviations, and Reliability Coefficients for Schools

Subject and Grade	Number of Schools	Means	SD	Reliability of School Means
Reading 4	143	45.30	13.97	0.96
Mathematics 4	142	42.10	14.32	0.96

Data Collection

The Alabama school districts were identified and obtained from the Alabama State Department of Education Directory (2010), an annually updated list of all school districts, including personnel. This document lists all school districts in the state of Alabama alphabetically by district. The names of Alabama school districts that were trained in Universal Tier I PBS were provided by the Alabama Positive Behavior Support Center (2010). The Alabama school district demographic data was gathered from National Center for Education Statistics (NCES). All data collected from the Alabama Reading and Mathematics Test (ARMT) were collected from the Alabama Department of Education.

Each PBS system was systemically matched with a non-PBS system based on seven indicators from the NCES website. The researcher examined the fourth grade reading and math results from the 2009–2010, 2010–2011 and 2011–2012 ARMT for each of the school districts. Student academic success was determined by placement in Level III and IV on the ARMT, which indicates the percentage of students who met or exceeded the Alabama State standards.

Since the demographic data gathered came from the National Center for Education Statistics, each school district pair was assigned a code, such as PBS 1 and Non-PBS 2, PBS 3 and Non-PBS 4, etc., in order to maintain anonymity of each district. The school districts were

closely matched to ensure that academic test scores, for the PBS districts and non-PBS districts, be compared more accurately and conclusions could be determined. Note that in some cases the matched districts may differ greatly on one or two indicators, however, most of the indicators between matches were similar, and each district was matched as closely as possible.

Table 8

Cohort Identification for Alabama School Districts Included in the Study

Districts		Locale	Year 1	Year 2	Year 3
PBS	1	Rural	2009–2010	2010–2011	2011–2012
Non-PBS	2	City	2009–2010	2010–2011	2011–2012
PBS	3	Suburb	2009–2010	2010–2011	2011–2012
Non-PBS	4	Suburb	2009–2010	2010–2011	2011–2012
PBS	5	Rural	2009–2010	2010–2011	2011–2012
Non-PBS	6	Town	2009–2010	2010–2011	2011–2012
PBS	7	Town	2009–2010	2010–2011	2011–2012
Non-PBS	8	Rural	2009–2010	2010–2011	2011–2012

Data Analysis

The data were collected and coded for input into Statistical Package for the Social Sciences (SPSS) version 21.0. Demographic characteristics were described using descriptive data such as mean scores, maximum and minimum scores and frequency distributions were calculated for data obtained from the Demographic Profile, Section I of the questionnaire.

Tuckman (1988) stated that the purpose of a statistical test was to determine whether the data collected from two or more samples are equivalent and if the differences can be accounted. He further explained that chi-square tests were applicable to problems in data analysis in the behavioral sciences area, in both manipulative experiments and survey analysis. The chi-square test tells whether the independent samples have significantly different distributions across the categories, and whether the frequencies obtained in the cells of the table are different from the frequencies expected based on chance variation (Tuckman, 1988). Chi-square tests are appropriate with variables expressed as nominal scales or unordered categories such as religion, marital status and experimental conditions (Cohen, 1977).

Summary

This chapter discussed the researcher's role, participants of the study, research design, and instrumentation. The validity of the instrument was confirmed through the use of an independent panel of experts, and an internal consistency reliability test. Data collection was in compliance with the research guidelines as set by the Auburn University Institutional Research Board.

The purpose of this study was to examine the potential effects of Positive Behavior Supports on performance scores of fourth grade students on a standardized reading and math test specific to the State of Alabama. Chapter 4 will report the results of the study as described in Chapter 3 and present the results of the analysis of the data collected of the four PBS and four non-PBS school districts in this study.

CHAPTER 4. RESULTS

A quantitative design was used to determine if a relationship existed between Alabama Reading and Math achievement scores and school-wide positive behavior supports in 8 Alabama school districts. Four districts that were trained and had implemented Universal Tier I PBS were compared to four similar school districts that were not trained or had not implemented Universal Tier I PBS. In this chapter the researcher describes the results of the quantitative analyses.

Quantitative Descriptive Statistics

Each of the evaluated Alabama school districts were selected from the Alabama State Department of Education Directory (2010), an annually updated list of all school districts, including personnel. This document listed all school districts in the state of Alabama alphabetically by district. The names of Alabama school districts that were trained in Universal Tier I PBS were provided by the Alabama Positive Behavior Support Center 2010. The Alabama school district demographic data was gathered from National Center for Education Statistics (NCES) in 2009. All data collected from the Alabama Reading and Mathematics Test (ARMT) was collected from the Alabama Department of Education website that housed the Alabama ARMT results.

Each PBS school system was systemically matched with a non-PBS school system based on four of the seven indicators from the NCES website. The four indicators were 1) total schools in the district, 2) total number of students in the school district, 3) the number of full-time teaching equivalent positions in the school district and 4) student/teacher ratio for the school

district. The researcher examined the fourth grade ARMT reading and math results from school year 2009–2010, 2010–2011 and 2011–2012 for each of the school districts. Student academic success was determined by placement in Level III and IV on the ARMT, which indicates the percentage of students who met or exceeded the State of Alabama standards.

Research Question 1

What are the demographic characteristics of the four PBS and four non-PBS school districts in Alabama?

The following four PBS and four non-PBS school districts in Alabama were matched based on relative demographic information including the total number of schools in the districts and the total number of students in the school district. PBS 1 school district was initially trained in Positive Behavior Supports in 2002, received follow-up training in 2003 and 2004, and in 2011 the entire school district was re-trained. The non-PBS 2 school district was not PBS trained. The two school districts were similar based on the total number of schools, the total number of students in each of the districts, FTE, and student/teacher ratio. Table 9 shows demographic data for PBS 1 and Non-PBS 2.

Table 9

PBS 1 and Non-PBS 2 Demographics

Demographic Indicator	PBS 1	Non-PBS 2
Total Schools	47	53
Total Students	27,880	23,374
FTE	1,685.29	1,738.10
Student/Teacher Ratio	16.54	13.45

PBS 3 school district was matched with non-PBS 4 school district. PBS 3 school district was initially trained in Positive Behavior Supports in 2002, received follow-up training in 2003 and 2004, and the non-PBS 4 school district was not PBS trained. Demographic data were similar and student/teacher ratios were relatively similar. Table 10 shows PBS 3 school district and Non-PBS 4 school district demographic data.

Table 10

PBS 3 and Non-PBS 4 Demographics

Demographic Indicator	PBS 3	Non-PBS 4
Total Schools	10	19
Total Students	8,654	9,405
FTE	464.0	543.0
Student/Teacher Ratio	18.65	17.32

PBS 5 school district was matched with non-PBS 6 school district. PBS 5 school district was initially trained in Positive Behavior Supports in 2004 and received follow-up training in 2009, and the non-PBS 6 school district was not PBS trained. Demographic data were similar in total schools for each school district and Table 11 shows PBS 5 and Non-PBS 6 demographic data.

Table 11

PBS 5 and Non-PBS 6 Demographics

Demographic Indicator	PBS 5	Non-PBS 6
Total Schools	4	5
Total Students	1,104	1,637
FTE	79.50	96.0
Student/Teacher Ratio	13.89	17.05

PBS 7 school district demographics reported 14 total schools, and non-PBS 8 school district had 12 schools. PBS 7 school district was initially trained in Positive Behavior Supports in 2004 and received follow-up training in 2005, and the non-PBS 8 school district was not PBS trained. Total student data were very closely matched with 4,674 in district 7 and 4,104 in district 8. Table 12 shows the PBS 7 and Non-PBS 8 demographic data.

Table 12

PBS 7 and Non-PBS 8 Demographics

Demographic Indicator	PBS 7	Non-PBS 8
Total Schools	14	12
Total Students	4,674	4,104
FTE	276.5	291.0
Student/Teacher Ratio	16.90	14.10

Data Analysis

Data analyses were conducted to address each research question.

1. What are the demographic characteristics of the four PBS and four non-PBS school districts in Alabama?
2. What are the differences between reading achievement scores among the PBS and non-PBS school districts in Alabama?
3. What are the differences between math achievement scores among the PBS and non-PBS school districts in Alabama?
4. What are the differences in reading achievement scores among the PBS and non-PBS school districts in relation to the number of years of implementation of positive behavior supports?
5. What are the differences in math achievement scores among the PBS and non-PBS school districts in relation to the number of years of implementation of positive behavior supports?

The results of the chi-square tests were evaluated to determine significance of PBS implementation regarding academic scores of fourth graders in Reading and Math in the selected four districts that had implemented PBS and the four districts that had not implemented PBS.

A chi square (X^2) test of independence was used to determine a possible association or significance between schools that implemented PBS related to academic scores of reading and math in these selected Alabama school districts. The dependent variable of the study was identified as the archived ARMT reading and math achievement scores, and the categorical independent variables were years 2010, 2011, and 2012 for each of the school districts that were randomly selected.

A total of 18,420 ARMT reading scores for year 2010, 2011, and 2012 for the eight school districts (four PBS and four Non-PBS), and a total of 18,388 ARMT math scores for years 2010, 2011, and 2012 for the eight school districts were included in this study. Table 13 represents the chi square analysis for reading scores in association with the school districts that implemented PBS and the schools districts that did not implement PBS in 2010.

Research Question 2

What are the differences between reading achievement scores among the PBS and non-PBS school districts in Alabama?

Table 13 shows the ARMT reading scores for year 2010. A total of 6,344 fourth grade ARMT reading scores were reported in 2010. Chi Square analysis indicated that students who participated in PBS schools scored significantly higher on the ARMT reading for 2010 compared to students who attended non-PBS schools ($X^2(3) = 80.61, p < .001$). Therefore, the null hypothesis of no difference between PBS schools and non-PBS schools ARMT reading scores for 2010 was rejected. The primary difference was that 32.6% (2,070) of the PBS schools' reading achievement scores were in the high category vs. 26.1% (1,655) of the non-PBS schools' reading achievement scores. Thus there was a strong association that a greater number of students who attended PBS schools, scored higher on the ARMT reading than students who attended non-PBS schools.

Table 13

ARMT Reading Scores for year 2010

Ratings	PBS	Percent	Non-PBS	Percent	Total
Low	25	(0.4%)	18	(0.3%)	43
Below Average	328	(5.2%)	480	(7.6%)	808
Above Average	824	(13.0%)	944	(14.8%)	1768
High	2070	(32.6%)	1655	(26.1%)	3725
Total Count	3247	(51.2%)	3097	(48.8%)	6344

$X^2 (3) = 80.61, p < .001$

Table 14 shows the ARMT reading scores for year 2011. A total of 6,208 fourth grade ARMT reading scores were reported in 2011. Chi square analysis indicated that students who participated in PBS schools scored significantly higher on the ARMT Reading for 2011 compared to students who attended non-PBS schools ($X^2 (3) = 54.55, p < .001$). Therefore, the null hypothesis of no difference between PBS schools and non-PBS schools ARMT reading scores for 2011 was rejected. The primary difference was that 33.1% (2,054) of the PBS schools' reading achievement scores were in the high category vs. 25.2% (1,567) of the non-PBS schools' reading achievement scores. Thus there was a strong association that a greater number of students who attended PBS schools, scored higher on the ARMT reading than students who attended non-PBS schools.

Table 14

ARMT Reading Scores for year 2011

Ratings	PBS	Percent	Non-PBS	Percent	Total
Low	2	(0.0%)	0	(0.0%)	2
Below Average	301	(4.8%)	384	(6.2%)	685
Above Average	938	(15.1%)	962	(15.5%)	1900
High	2054	(33.1%)	1567	(25.2%)	3621
Total Count	3295	(53.1%)	2913	(46.9%)	6208

$X^2 (3) = 54.55, p < .001$

Table 15 shows the ARMT Reading scores for year 2012. A total of 5,868 fourth grade ARMT reading scores were reported in 2012. Chi square analysis indicated that students who participated in PBS schools scored significantly higher on the ARMT Reading for 2012 compared to students who attended non-PBS schools ($X^2 (3) = 23.66, p < .001$). Therefore, the null hypothesis of no difference between PBS schools and non-PBS schools ARMT reading scores was rejected. The primary difference was that 34.7% (2,035) of the PBS schools' reading achievement scores were in the high category vs. 27.7% (1,624) of the non-PBS schools' reading achievement scores. Thus there was not a strong association that a greater number of students who attended PBS schools, scored higher on the ARMT reading than students who attended non-PBS schools.

Table 15

ARMT Reading Scores for year 2012

Ratings	PBS	Percent	Non-PBS	Percent	Total
Low	0	(0.0%)	3	(0.1%)	3
Below Average	283	(4.8%)	187	(3.2%)	470
Above Average	874	(14.9%)	862	(14.7%)	1736
High	2035	(34.7%)	1624	(27.7%)	3659
Total Count	3192	(54.4%)	2676	(45.6%)	5868

$$X^2 (3) = 23.66, p < .001$$

Research Question 3

What are the differences between math achievement scores among the PBS and non-PBS school districts in Alabama?

Table 16 shows the ARMT Math scores for year 2010. A total of 6,312 fourth grade ARMT math scores were reported in 2010. Chi-square analysis indicated that students who participated in PBS schools scored significantly higher on the ARMT Math for 2010 compared to students who attended non-PBS schools ($X^2 (3) = 140.76, p < .001$). Therefore, the null hypothesis of no difference between PBS schools and non-PBS schools ARMT Math scores for 2010 was rejected. The primary difference was that 31.2% (1,967) of the PBS schools' math achievement scores were in the high category vs. 23.4% (1,476) of the non-PBS schools' math achievement scores. Thus there was a strong association that a greater number of students who attended PBS schools, scored higher on the ARMT math than students who attended non-PBS schools.

Table 16

ARMT Math Scores for year 2010

Ratings	PBS	Percent	Non-PBS	Percent	Total
Low	39	(0.6%)	102	(1.6%)	141
Below Average	416	(6.6%)	636	(10.1%)	1052
Above Average	818	(13.0%)	858	(13.6%)	1676
High	1967	(31.2%)	1476	(23.4%)	3443
Total Count	3240	(51.4%)	3072	(48.7%)	6312

$X^2 (3) = 140.76, p < .001$

Table 17 shows the ARMT Math scores for year 2011. A total of 6,208 fourth grade ARMT math scores were reported in 2011. Chi square analysis indicated that students who participated in PBS schools scored significantly higher on the ARMT Math for 2011 compared to students who attended non-PBS schools ($X^2 (3) = 106.92, p < .001$). Therefore, the null hypothesis of no difference between PBS schools and non-PBS schools ARMT Math scores for 2011 was rejected. The primary difference was that 34.7% (2,153) of the PBS schools' math achievement scores were in the high category vs. 25.0% (1,553) of the non-PBS schools' math achievement scores. Thus there was a strong association that a greater number of students who attended PBS schools, scored higher on the ARMT math than students who attended non-PBS schools.

Table 17

ARMT Math Scores for year 2011

Ratings	PBS	Percent	Non-PBS	Percent	Total
Low	25	(0.4%)	59	(1.0%)	84
Below Average	423	(6.8%)	535	(8.6%)	958
Above Average	689	(11.1%)	772	(12.4%)	1461
High	2153	(34.7%)	1553	(25.0%)	3706
Total Count	3290	(53.0%)	2919	(47.0%)	6209

$$X^2 (3) = 106.92, p < .001$$

Table 18 shows the ARMT Math scores for year 2012. A total of 5,867 fourth grade ARMT math scores were reported in 2012. Chi square analysis indicated that students who participated in PBS schools scored significantly higher on the ARMT Math for 2012 compared to students who attended non-PBS schools ($X^2 (3) = 6.88, p < .076$). Therefore, the null hypothesis of no difference between PBS schools and non-PBS schools ARMT math scores for 2012 was rejected. The primary difference was that 35.8% (2,100) of the PBS schools' math achievement scores were in the high category vs. 29.1% (1,707) of the non-PBS schools' math achievement scores. Thus there was not a strong association that a greater number of students who attended PBS schools and scored higher on the ARMT math than students who attended non-PBS schools.

Table 18

ARMT Math Scores for year 2012

Ratings	PBS	Percent	Non-PBS	Percent	Total
Low	38	(0.6%)	24	(0.4%)	62
Below Average	317	(5.4%)	304	(5.2%)	621
Above Average	722	(12.3%)	655	(11.2%)	1377
High	2100	(35.8%)	1707	(29.1%)	3807
Total Count	3177	(54.2%)	2690	(45.8%)	5867

$X^2 (3) = 6.88, p < .076$

Research Question 4

What are the differences in reading achievement scores among the PBS and non-PBS school districts in relation to the number of years of implementation of positive behavior supports?

Table 19 shows a summary of the data for ARMT Reading scores year 2010, 2011, and 2012. A total of 18,420 fourth grade ARMT reading scores were reported for 2010 - 2012. An evaluation of the data shows consistency of the students who participated in PBS schools scored higher in ARMT Reading year 2010, 2011, and 2012 compared to students who attended non-PBS schools.

Table 19

ARMT Reading Scores for year 2010, 2011, and 2012

Ratings	2010		2011		2012	
	PBS	Non-PBS	PBS	Non-PBS	PBS	Non-PBS
Low	25 (0.4%)	18 (0.3%)	2 (0.0%)	0 (0.0%)	0 (0.0%)	3 (0.1%)
Below Average	328 (5.2%)	480 (7.6%)	301 (4.8%)	384 (6.2%)	284 (4.8%)	187 (3.2%)
Above Average	824 (13.0%)	944 (14.8%)	938 (15.1%)	962 (15.5%)	874 (14.9%)	862 (14.7%)
High	2070 (32.6%)	1655 (26.1%)	2054 (33.1%)	1567 (25.2%)	2035 (34.7%)	1624 (27.7%)
Total	3247 (51.2%)	3097 (48.8%)	3295 (53.1%)	2913 (46.9%)	3182 (54.4%)	2676 (45.6%)

Research Question 5

What are the differences in math achievement scores among the PBS and non-PBS school districts in relation to the number of years of implementation of positive behavior supports?

Table 20 shows a summary of the data for ARMT Math scores year 2010, 2011, and 2012. A total of 18,388 fourth grade ARMT math scores were reported for 2010 - 2012. An evaluation of the data shows consistency of the students who participated in PBS schools scored higher in ARMT math year 2010, 2011, and 2012 compared to students who attended non-PBS schools.

Table 20

ARMT Math Scores for year 2010, 2011, and 2012

Ratings	2010		2011		2012	
	PBS	Non-PBS	PBS	Non-PBS	PBS	Non-PBS
Low	39 (0.6%)	102 (1.6%)	25 (0.4%)	59 (1.0%)	38 (0.6%)	24 (0.4%)
Below Average	416 (6.6%)	636 (10.1%)	423 (6.8%)	535 (8.6%)	317 (5.4%)	304 (5.2%)
Above Average	818 (13.0%)	858 (13.6%)	689 (11.1%)	772 (12.4%)	722 (12.3%)	655 (11.2%)
High	1967 (31.2%)	1467 (23.4%)	2153 (34.7%)	1533 (25.0%)	2100 (35.8%)	1707 (29.1%)
Total	3240 (51.4%)	3072 (48.7%)	3290 (53.0%)	2919 (47.0%)	3177 (54.2%)	2690 (45.8%)

CHAPTER 5. DISCUSSION

Major challenges face present day educators attempting to meet the academic and emotional needs of diverse learners in classrooms across the country. The single most common request for assistance from teachers is related to behavior and classroom management (Oliver, Wehby, & Reschly, 2011). Chapter one of this study presented the conceptual framework, the statement of the problem, purpose of the study, significance of the study, and definition of terms. Chapter two explored a review of related literature regarding the origin of discipline practices in public education, history of positive behavior supports (PBS), need for school-wide positive behavior supports (SWPBS), components of PBS, implementation assumptions and solutions, systems approach, and academic behavior and PBS. Chapter three described the research and data collection methods used in this study. Results of the hypothesis testing were discussed in Chapter four and Chapter five begins with a summary of the study, a discussion of the findings related to the literature, and concludes with implications, limitations and recommendations for future studies.

Findings Related to the Literature

The application of SWPBS has become an important intervention approach system for schools in the United States with over 9,000 U.S. schools implementing the evidence-based, data-driven framework proven to reduce disciplinary incidents, increase school safety, and support improved academic outcomes (Horner, et al., 2009). Schools implementing SWPBS aspire to establish a safe and orderly environment with a positive school climate in order to

maximize teaching and learning opportunities for all students (Campbell, 2009). According to Campbell, implementing SWPBS was one proactive approach to aid in reducing disciplinary problems in schools.

Findings from this study were similar to other studies reviewed in the literature. Studies reviewed had similar research goals and examined standardized test scores of students after schools implemented PBS. Lassen et al. (2006) conducted a three-year study which looked at ODRs, suspensions and the standardized reading and math test scores of an inner city urban school pre and post PBS implementation. The study revealed that ODRs and suspensions decreased after the implementation of PBS. While reading test scores did not change, math scores increased from baseline to year three (Lassen et al., 2006).

The study conducted by Lassen et al. (2006) was similar to the current study in that it examined the standardized reading and math test scores of a school that had implemented PBS. However, the major difference was the Lassen et al. (2006) study examined schools at pre and post PBS implementation and did not compare the experimental school to a matched non-PBS school. Results of that study reported no change in reading test scores, but reported math scores increased from baseline to year three. The current study revealed no significant difference between both reading and math scores for PBS verses non-PBS districts. The results found a strong association that a greater number of students who attended a PBS school, scored higher on the ARMT than students who attended non-PBS schools.

Luiselli et al. (2005) completed a similar study that examined the standardized reading and math test scores of a school that had implemented PBS; however, it too examined schools that conducted pre and post PBS implementation and did not compare the experimental school to a matched non-PBS school. Luiselli et al. (2005) implemented PBS in an urban school and

found decreases in ODRs and suspensions. They also found an increase in students' reading and mathematics achievement test scores. Reading scores increased 18 percent, while math scores increased 25 percent (Luiselli et al., 2005). The current study showed no significant difference between both reading and math scores for PBS versus non-PBS districts; but showed a strong association that a greater number of students who attended PBS schools scored higher on the ARMT than students who attended non-PBS schools.

The study more similar to the current study was conducted in Illinois by Horner et al. (2004). The Horner et al. (2004) study analyzed reading academic achievement scores in 19 elementary schools within the state of Illinois that implemented PBS versus those schools that had not implemented PBS. Of these schools, 13 implemented school-wide PBS between the 1997–1998 and 2001–2002 school years. The researchers qualified a PBS school to be any school that scored a minimum of 80 percent on the School Evaluation Tool (SET) (Horner et al., 2004) and if 80 percent of their students could state their school-wide expectations. The researchers compared 1997–1998 and 2001–2002 state reading tests for third graders in all 19 schools. Ten of the PBS schools, or 77 percent, showed an improvement in reading test scores from 1997–1998 and 2001–2002. Only one of the non-PBS schools, or 16 percent, showed improvement in their reading test scores over the same period of time. The Horner et al. (2004) study differed from the current study because it examined scores from an Illinois specific State Achievement Test which was different from the ARMT and the participants were third graders instead of fourth graders. The results of Horner et al. (2004) study and the current study showed a positive difference in achievement between schools that had implemented PBS versus those that had not implemented PBS.

Implications

Findings generated by this study provide implications for future action. A possible action for the Alabama State Department of Education is to continue to analyze data from the schools that have implemented PBS. Another possible action would be to analyze the changes in behavior, academic scores and school climate of the schools that were part of this study.

The results of this study provided practical applications for school districts and superintendents regarding PBS schools and academic achievement. Even though PBS districts fared better on the ARMT than the matching non-PBS counterparts, the data did not yield a statistically significant difference under an analysis of chi-square.

Limitations

Even though PBS districts fared better on the ARMT than the matching non-PBS counterparts, the data did not yield a statistically significant difference under an analysis of chi-square. This could be due to the low number of school districts that were part of the study. However, as of the 2005–2006 school year, only 16 districts in the State of Alabama had fully implemented PBS with fidelity. To yield more accurate results, more districts need to implement PBS with fidelity.

Another limitation of the study was that the data available was aggregate data. Specifically, ARMT scores are presented as percentage scores at the district level. Results may have reflected differently if the raw data, at the school level were available for analysis.

Another limitation of the study was the acknowledgement that other State of Alabama initiatives, if any, may have been implemented in the school districts that were participants of the study. Several Alabama statewide initiatives may be available to schools/districts that if they meet certain qualifications. Examples of statewide initiatives include: Alabama Reading

Initiative (ARI), Alabama Math and Science Technology Initiative (AMSTI), State Improvement Grants (SIG), and Alabama Schools in Motion (ASIM). All schools or school districts may have access to any of the a fore mentioned state initiatives and if selected to participate these programs and initiatives, once implemented may affect reading, math and science scores, regardless of the status of PBS status.

Additionally, the relationship of the school principal and successful implementation of SWPBS can be of further limitation for the present study. School administrators play a key role in the success of initiatives implemented within their schools. Without the support of school administration, initiatives such as PBS may be unsuccessful.

Recommendations for Future Studies

The results of this study presented evidence for the need to conduct further research to strengthen findings of a relationship between PBS and academic achievement. A possible action for the Alabama State Department of Education (ALSDE) is to continue to analyze data from schools in the study implementing PBS to analyze changes in behavior, academic learning, and school climate over a longer period of time (5–10 years). Another possible action would be to analyze the changes in behavior, academic scores, and school climate of additional schools in the district that are not implementing PBS. The development of questions or surveys that explicitly relate to PBS would be helpful to explore during staff meetings or professional learning development meetings, and would provide critical feedback on the success and challenges of the program. The ALSDE would continue to benefit from exploring other successful models of programs and current information provided by the U.S. Department of Education, U.S. Office of Special Education Programs, and the National Technical Assistance Center on Positive Behavioral Interventions and Supports.

Experts, trainers, and developers of PBS seem to be saying that further research needs to occur to explore the effects and benefits of PBS on academic achievement. One of the leading experts and researchers of PBS, and the co-founder of the OSEP Center for Positive Behavioral Interventions and Supports, George Sugai, spoke of this need in Boston at the 2006 International Conference of the Association of Positive Behavior Support. Sugai encouraged graduate students in the audience of his session to conduct theses and dissertations on three aspects of PBS; one of which was the effect of PBS on academic achievement.

Putnam et al. (2006) discussed several needs in the area of PBS research. Putnam et al. pointed out that most of the studies conducted were a pre-post comparison, with few, if any, experimental controls for outside factors. Therefore, the authors suggested that studies should be conducted with more rigorous controls. Secondly, PBS research historically focused on the behavioral impact of PBS. However, now that researchers have recently begun exploring the potential effects of PBS and academics, further study should be conducted on academic achievement. In addition, the authors suggested the studies that indicated a link between PBS and academic achievement should be replicated. Third, the authors suggested isolating aspects of PBS to discover which mechanisms had the greatest impact on academic improvement. For example, the following factors lead to greater academic achievement: increased instruction time, prompting and feedback for academic skill performance and less peer support for academic failure. The authors believed a greater analysis of the factors above, and other PBS aspects, would aid in creating stronger supports for academics. Fourth, research should be conducted to see if certain schools benefit more academically from PBS. Researchers should examine what characteristics make model PBS performer schools different from those that show lesser effects. Lastly, studies that find behavioral indicators that predict academic problems should be

replicated. Early PBS interventions are the key to lessening or preventing behavioral and academic problems, as students get older (Putnam et al., 2006).

Additional topics for future research include the relationship of the school principal and successful implementation of SWPBS and teacher job satisfaction. Armstrong (2012), investigated research from the Project on the Next Generation of Teachers at the Harvard Graduate School of Education which examined how working conditions predicted teachers' job satisfaction. According to Johnson, Kraft, and Papay (as cited in Armstrong, 2012), the Harvard project made a link between teacher satisfaction and growth in student achievement and found conditions most important for teacher satisfaction were ones that shaped the social context of teaching and learning. Johnston, Kraft, and Papay identified the "three most important elements for teacher satisfaction were collegial relationships, the principal's leadership, and school culture" (as cited in Armstrong, 2012).

Concluding Remarks

Attempts to control disruptive behaviors cost considerable teacher time at the expense of academic instruction. Educators face continuous challenges in efforts to establish and maintain safe and orderly classroom environments where teachers can teach and students can learn (Scott, White, Algozzine, & Algozzine, 2009). The research from this study strengthens the evidence that a positive relationship between SWPBS and academic learning exists, and thus contributes to the current literature. These supports foster a positive school climate offering a framework for the adoption and implementation of a continuum of evidence-based interventions to achieve academically and behaviorally important outcomes for all students (Sugai, 2013). It is imperative to continue the research using PBS to improve the effectiveness of the teaching and learning in our schools.

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