The Relationships among School-wide Positive Behavioral Support, School Size and Math Achievement

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"Fellow citizens, why do you turn and scrape every stone to gather wealth, and take so little care of our children, to whom one day you must relinquish it all?"

Socrates

Abstract

The school-wide positive behavioral support (SWPBS) framework is a behaviorally-based, systems approach to addressing the problem behaviors of youth in our schools. This study examined the relationships among SWPBS implementation, SWPBS effectiveness, school size, and math achievement utilizing a secondary analysis of records and a principal opinion survey in 26 elementary schools in one large, diverse, mid-Atlantic school district. While results are inconclusive and should be interpreted with caution, six key findings (three related to SWPBS implementation and three to SWPBS effectiveness) were indicated:

1. No statistical relationship was found between school size and SWPBS implementation, although 64% of principals agreed that additional resources and 48% of principals agreed that additional years might be needed to implement SWPBS.
2. All but one principal (96%) agreed that their schools were implementing SWPBS with a high degree of fidelity, with 100% of principals agreeing that universal interventions such as students knowing school rules, rewards and consequences were in place in their schools. However only 50% of principals agreed that tertiary level interventions involving mental health, community collaborations were being implemented.
3. No statistical relationship was found between SWPBS implementation and math achievement and only 46% principals agreed that additional math interventions were included in their school programs.
4. No statistical relationship was found between school size and SWPBS effectiveness although 100% of principals in large schools and 75% of principals of small schools agreed that school size influenced SWPBS effectiveness.

5. All principals agreed that SWPBS has had a positive impact on student behavior, and students with disabilities, and results in less teacher time spent on student behavior. Ninety-size percent of principals agreed that SWPBS has had a positive impact on teachers' behavior management.
6. A statistically significant relationship was found between SWPBS effectiveness and improved math achievement in medium size schools, supported by 69% of principals agreeing that SWPBS resulted in increased student engagement in math and increased time for math instruction.

A thorough description of research design, conceptual framework, study conclusions, and recommendations for future research are included in the study.

Table of Contents

Acknowledgements....iii
Abstract....iv
Table of Contents.... vi
List of Figures.... x
List of Tables.... xi
Abbreviations.... xiii

Chapter 1: Introduction…… 1
Introduction…….... 1
Statement of the Problem…….. 4
Purpose and Research Questions…….. 5
Statement of Potential Significance……. 7
Conceptual Framework Overview…… 8
Summary of Methodology……12
Assumptions……. 14
Delimitations and Limitations…….. 14
Delimitations……14
Limitations……...15
Definitions of Key Terms……..16
Problem Behavior…….16
School-wide Positive Behavior Support……...16
Positive Behavior Support……... 17
School Climate…… 17
Math Achievement…….. 17
School Size……. 18

Chapter 2: Review of the Literature…… 19
Introduction and Literature Review Methods……. 19
Societal, Historical, and Legislative Contexts…… 20
Society's Need for Improved Systems to Address Challenging Behaviors…..... 20
Historical Advances in Addressing Problem Behavior……. 23
Addressing problem behavior in schools……. 27
Recent Legislation and Policies Affecting School Responses to Problem Behavior…… 29
Summary of Societal, Historical, Legislative Contexts……. 36
Conceptual Framework Literature Review……. 36
Overview…… 36
Behavioral, Ecological, Sociological, and Organizational Concepts in School-wide Positive Behavioral Support……. 36
Evolution of the behavioral analysis model…….. 36

Ecological theory related to SWPBS…… 41
Sociological models related to SWPBS…… 42
Organizational behavior management and change…… 43
School-wide Positive Behavioral Support Features and Principles……... 45
Summary of Conceptual Framework……. 61
Summary of Research on School-wide Positive Behavior Support…… 63
Overview and Prevalence of SWPBS…… 63
School-wide Positive Behavior Support Implementation……... 64
Degree of SWPBS implementation…….. 64
Teaching and supporting prosocial behavior…… 66
Staff training and district support……. 67
Studies on School-wide Positive Behavioral Support Effectiveness……. 68
Out-of-school suspensions and increased instructional time…… 68
SWPBS and teacher behaviors and attitudes…… 70
Secondary and tertiary interventions outcomes…… 71
SWPBS and evidence-based practice studies in progress…… 72
SWPBS Implementation and Effectiveness Studies Summary……. 73
SWPBS and School Demographic Characteristics Studies…… 74
SWPBS Socioeconomic Status…….. 74
SWPBS and Students with Disabilities……. 75
SWPBS and School Size…… 75
SWPBS and English Language Learners……... 78
SWPBS and Academic Achievement Status…… 78
Overview…… 78
Importance of School Climate to Academic Achievement in Schools…….. 78
Importance of Instructional Time and Student Engagement to Academic Achievement……. 80
SWPBS and Math Achievement as Measured by Standardized Tests…….. 81
SWPBS and Academic Interventions…… 84
Summary of Studies on SWPBS and Academic Achievement……. 86
Critique of SWPBS Early Research and Instruments……. 87
Limitations of Early SWPBS Studies and Instruments……. 87
Summary of the Chapter and Implications of Literature Review Findings…… 89

Chapter 3: Methodology……. 94
Overview of Study Goals…… 94
Research Questions……. 94
Epistemology…….. 95
Research Designs…… 96
Sampling Designs and Procedures……. 97
Selection of District and SWPBS Initiative within the Study Setting…….. 97
Selection of Schools…….. 98
Measurement of Research Variables…….. 99
School-wide Positive Behavior Support Implementation……. 99
Team Implementation Checklist (TIC)…… 99
School-wide Evaluation Tool (SET)…… 101

School-wide Positive Behavior Support Effectiveness……. 103
School discipline data…….. 103
School Size…… 105
Math achievement……. 106
Virginia Standards of Learning fifth-grade math achievement test……. 106
Technical characteristics of SOL tests……. 107
Math instructional program……. 109
Principals' Perceptions…….. 110
Principal opinion survey…….. 110
Pretesting and piloting of survey……. 111
Data Collection Protocol…….. 111
Data Analysis…… 112
Preliminary Data Handling…… 112
Secondary analysis of school records…….. 112
Principal opinion survey…….. 112
Data Analysis Techniques……. 113
Research questions 1-4: simple regression…….. 113
Checking regression assumptions…… 114
Research questions 5a-f: descriptive and qualitative analysis……. 116
Human Participants and Ethics Precautions…….. 117
Summary of Chapter…….. 118

Chapter 4: Results…….. 120
Demographic Characteristics……. 120
Review of Data Collection Strategy…….. 123
Survey Response Rate……124
Reliability of Data……...125
Research Questions……134
Research Question 1…….. 134
Research Question 2…….. 134
Research Question 3…….. 135
Research Question 4…….. 138
Checking Regression Assumptions for Research Questions 1-4……...140
Research Question 5…….. 141
5a. What are school principals' perceptions overall regarding the implementation of SWPBS in their schools? ……..142
5b. What are school principals' perceptions overall regarding SWPBS effectiveness in their schools? …… ……. 145
5c. What are school principals' perceptions of the relationship between SWPBS implementation and the size of their schools? ……146
5d. What are school principals' perceptions of the relationship between SWPBS effectiveness and the size of their schools……148
5e. What are school principals' perceptions of the relationship between SWPBS implementation and math achievement in their schools?..... 150
5f. What are school principals' perceptions of the relationship between SWPBS effectiveness and math achievement in their schools?..... 151

Summary……153

Chapter 5: Conclusions and Recommendations…… 155
Summary of Findings…… 157
School Size and SWPBS Implementation…… 160
School Size and SWPBS Effectiveness……... 161
SWPBS Implementation, Math Achievement, and School Size……. 162
SWPBS Effectiveness, Math Achievement, and School Size…….. 163
Interpretation of Findings…….. 164
The Relationship between School Size and SWPBS Implementation…….. 164
The Relationship between School Size and SWPBS Effectiveness……. 167
The Relationship between SWPBS Implementation, Math Achievement, and School Size…….170
The Relationship between SWPBS Effectiveness Math Achievement, and School Size…….172
Study Limitations and Recommendations for Future Research……. 173
Scope of the Study……. 174
Instrumentation…….. 175
Theoretical Implications……. 177
Practical Implications……. 179
Recommendations for Future Research……. 182
Conclusions…… 184

References…….. 187

Appendix A: SWPBS Effectiveness Studies Summary……..……..……...231
Appendix B: SWPBS and Academic Achievement Studies……234
Appendix C: Team Implementation Checklist……... 236
Appendix D: SWPBS Principal Survey Content Review Questions…….. 239
Appendix E: Principal Survey Pre-test Questions…….. 241
Appendix F: Principal Opinion Survey…….. 242
Appendix G: SWPBS Data Collection Protocol……..... 248
Appendix H: Letters for Web-based Survey……..… 249

List of Figures

Figure 1: SWPBS Three-Tier Approach…… 52

List of Tables

Table 3-1: Principal Survey Data Analysis …….117

Table 4-1: Demographic Profile of Sample Schools …….. 121

Table 4-2: Descriptive Statistics for Selected School Variables……. 123

Table 4-3: Psychometric Characteristics of TIC, Math SOL, OSS……. 126

Table 4-4: Psychometric Characteristics of Survey Scales……. 127

Table 4-5: Psychometric Characteristics of Survey Scale Items……. 129

Table 4-6: Principal Statements on Demographic or Program Changes……. 133

Table 4-7: Predicting SWPBS Implementation from School Size……...134

Table 4-8: Predicting SWPBS Effectiveness from School Size…….. 135

Table 4-9: Predicting Math Achievement/SOL from SWPBS Implementation/TIC….. 136

Table 4-10: Predicting Math Achievement from SWPBS Implementation
in Small Schools…… 136

Table 4-11: Predicting Math Achievement from SWPBS Implementation
in Medium Schools…… 137

Table 4-12: Predicting Math Achievement from SWPBS Implementation
in Large Schools…… 137

Table 4-13: Predicting Math Achievement from SWPBS Effectiveness…… 138

Table 4-14: Predicting Math Achievement from SWPBS
Effectiveness/Out-of-School Suspensions in Small Schools…… 139

Table 4-15: Predicting Math Achievement from SWPBS Effectiveness/
Out-of-School Suspensions in Medium-Size Schools……... 139

Table 4-16: Predicting Math Achievement from SWPBS Effectiveness/

Out-of-School Suspensions in Large-Size Schools…….. 140

Table 4-17: Principal Perceptions of SWPBS Implementation…….. 144

Table 4-18: Principal Perceptions of SWPBS Effectiveness…….. 146

Table 4-19: Principals' Perceptions of SWPBS Implementation and School Size……. 148

Table 4-20: Principals' Perceptions of SWPBS Effectiveness and School Size……. 149

Table 4-21: Principals' Perceptions of SWPBS Implementation and Math Interventions…… 151

Table 4-22: Principals' Perceptions of SWPBS Effectiveness and Math Achievement. 153

Table 5-1: Summary of Research Results…….. 157

Abbreviations

ABA	Applied behavioral analysis
BIP	Behavioral intervention plan
CBM	Curriculum Based Measurement
CISS	Checklist for Individual Student Systems
CSMHA	Center for School Mental Health Assistance (U. Of Maryland)
DIBEL	Dynamic Indicators of Basic Early Literacy Skills
EBD	Emotional and behavioral disabilities
EBS	Effective behavior support
EBSSAS	Effective Behavior Support Self-Assessment Survey
ERIC	Education Research Information Center
ESOL	English for Speakers of Other Languages
FBA	Functional behavioral assessment
FTE	Full-time employee
HUG	Hello, Update, Goodbye
IDEA	Individuals with Disabilities Education Act
IEP	Individualized Education Plan
ISS	In-school suspensions
I-SSET	Individual Student Systems Evaluation Tool
NASDSE	National Association of State Directors of Special Education, Inc.
NCES	National Center for Education Statistics
ODR	Office discipline referrals
OJJDP	Office of Juvenile Justice and Delinquency Prevention (U.S. Department of Justice)
OSEP	Office of Special Education Programs (U.S. Department of Education)
OSS	Out-of-school suspensions
PBIS	Positive behavioral and interventions support
PBIS Center	Center of Positive Behavior Interventions and Supports (U. of Oregon)
PBS	Positive behavior support
Project PREPARE	Proactive, Responsive, Empirical, and Proactive Alternatives in Regular Education
RTI	Response to Intervention
SBI	Statewide behavior initiative
SD	Standard deviation
SEA	State education agency
SET	Schoolwide Evaluation Tool
SOL	Standards of Learning (Virginia)
SPSS	Statistical Package for the Social Sciences
TIC	Team Implementation Checklist
SWIS	School-wide Information System
SWPBS	School-wide Positive Behavior Support
USDOE	U.S. Department of Education
VDOE	Virginia Department of Education

Chapter 1: Introduction

Introduction

Antisocial behavior and the academic underachievement of students attending our nation's public schools remain major concerns for educators, parents, and the general public (Luiselli, Putnam, Handler, & Feinberg, 2005). The U.S. Department of Health and Human Services (2002) reported that there has been an increase in student behavior considered disruptive and insubordinate, despite the fact that major crimes committed by youth have declined. The National Center of Educational Statistics (2003) indicated that there has been an increase of in- and out-of-school suspensions and school referrals to the juvenile justice system.

In 2001, the U.S. Surgeon General reported that approximately 21% of youth 9–17 have diagnosable emotional and behavioral disorders, yet only one-third of these students receive any direct services through schools or other agencies. The reasons for the underdiagnosis of students with problem behaviors are numerous. First, there are conflicting definitions of problem behavior in mental health services, special education laws, and the U.S. Department of Health and Human Services, making it more difficult to identify students eligible for emotional-disturbance services in school districts. Second, there is serious fragmentation and limited funding of mental health services and special education programs in schools and districts (Bazelon, 2006; Weist et al., 2001). The reality is that large numbers of students with problem behaviors are undiagnosed and not receiving needed services in our schools today. This situation results in the growing necessity for training, resources, and effective programs to address the problem behaviors of students in our schools (U.S. Department of Health and Human Services, 2002).

Research in recent years has contributed new information about effective ways to address the problem behavior of students in our schools (Lewis & Sugai, 1999; Nelson, 1996; Taylor-Green et al., 1997; Todd, Haugen, Anderson, & Spriggs 2002; Turnbull et al., 2002). The school-wide positive behavioral support (SWPBS) intervention framework has been developed and implemented to provide a comprehensive, systems approach to improving school climate and student behavior, and as an alternative to the more punitive and ineffective discipline interventions such as student suspensions from school. Indeed initial studies on the effectiveness of SWPBS indicated significantly reduced office discipline referrals and suspensions for students (Greenfield, 2003; Horner, Sugai, & Todd, 2001; Lewis-Palmer, Sugai, & Larson, 1999; Lohrmann-O'Rourke, 2000; Luiselli, Polack, & Laweda, 2006; Luiselli, Putman, & Handler, 2001; McCurdy, Mannella, & Eldridge; Nelson, 1996; Netzel & Eber, 2003; Sadler, 2000; Scott, 2001; Scott, 2002; Todd et al. 2002), as well as improved staff attitudes and behaviors (Lewis-Palmer et al. 2002; Nelson, Colvin, & Smith, 1996; Schneider, Walker, & Sprague, 2000; Todd et al. 2002).

Research studies conducted on the implementation of SWPBS indicate correlations between the degree of SWPBS implementation, teaching of prosocial behavior, teacher-training, and district support to the overall effectiveness of SWPBS implementation (Colvin et al., 1997; Florida PBS, 2005; Greenfield, 2004; Horner et al., 2004; Illinois PBIS Network, 2006; Lewis & Sugai, 1999; Luiselli, Putnam, & Sunderland, 2002; McCart, 2003; Muscott, Mann, & Gately, 2004: Nakasato, 2000; Nersesain et al., 2000; New Hampshire EBS, 2005; Sprick, Sprick, & Garrison, 1992; Stormont, Lewis, & Covington-Smith, 2005; Lewis, Sugai, & Colvin, 1998; Lewis,

Palmer, & Larson, 1999). Studies indicated significant reductions in office discipline referrals (ODR) and out-of-school suspensions (OSS) when SWPBS was implemented for at least one year (Greenfield, 2004); and research validated the use of systematic techniques for teaching, precorrection, direct supervision, and support for appropriate behavior (Colvin, Sugai, Good, & Lee, 1997; Stormant, Lewis, & Covington-Smith, 2005). In addition, research indicates that after SWPBS implementation there is an increased use of comprehensive strategies and individual interventions in schools, as well as improved attitude, enthusiasm, and staff satisfaction in SWPBS schools (Fox, Jack, & Broyles, 2005; Lewis-Palmer et al., 2002; May Institute, 07; Nelson, Colvin, & Smith, 1996; Safran & Oswald, 2003; Todd et al., 2002)

Early studies on the relationships among SWPBS and demographic variables reveal positive correlations between SWPBS and low-socioeconomic schools and students with disabilities. No research studies were located specifically isolating the variables of school size and percentage of students in English for Speakers of Other Languages (ESOL) programs. Nineteen studies indicated positive correlations between school climate, instructional time, academic engagement, and improved academic achievement as measured by standardized test scores and school climate surveys (Brophy, 1988; DiStefano et al., 2007; Fisher et al., 1980; Frederick, 1977; Gottfredson & Gottfredson, 1989; Horner, Sugai, Todd, & Lewis-Palmer, 2005; Larson, Steele, & Sailor, in press; Luiselli, Putnam, Handler, & Feinberg, 2005; McIntosh et al., 2006a,b; Oregon District, 2004; Parr, Kidder, & Barrett, 2007; Putnam, Handler, & O'Leary-Zonarich, 2002; Putnam, Handler, & O'Leary-Zonarich, 2003; Scott & Barrett, 2004; Wu et al., 1982) . In addition, there has been recent research on an integrated model

incorporating both three-tier reading and behavior interventions that has shown positive effects for both reading achievement and improved behavior (Stewart et al., 2007).

As a result of the need for improved school-based behavior management systems and the promising results of early studies, the implementation of SWPBS is rapidly and consistently expanding across the country, with the model currently implemented in 4,000 schools in 30 states as of September 2004 (US Department of Education (USDOE) 2005).

Statement of the Problem

The research on SWPBS has focused almost entirely on the general implementation and effectiveness of SWPBS at the school, district, and state level as measured by the School-wide Evaluation Tool (Horner et al., 2004) and discipline data including office discipline referrals (ODR), out of school suspensions (OSS), in-school suspensions (ISS), and school climate surveys. Within the context of an increased emphasis on academic achievement in schools there is a body of research that establishes the link between school climate and academic achievement (DiStefano et al., 2007; Pallas, 1988; Gottfredson & Gottfredson, 1989; Wu et al., 1982). There also is a body of research that explores the relationship of academic achievement to instructional time, and academic engagement (Brophy, 1988; Fisher, Berliner, Filby, Marliave, Cahen, & Dishaw, 1980; Scott & Barrett, 2004). However, few studies to date have investigated the relationship between SWPBS and academic achievement (Horner, Sugai, Todd, & Lewis-Palmer, 2005; Larsen, Steele, & Sailer, 2007; Putnam, Handler, & O'Leary-Zonarich, 2003; Lusilli, Putnam, Handler, & Feinberg, 2005; McIntosh et al., 2006). Indeed, researchers have indicated the need for additional studies: "It is clear that

additional research on the impact of SWPBS on academic achievement is needed" (Putnam, Horner, & Algozzine, 2006, p. 4). Additional research questions have surfaced regarding the types of school demographics that might have the greatest influence or prediction on SWPBS and academic achievement. This study explores the relationships among math achievement, school size, SWPBS implementation, and SWPBS effectiveness.

The review of the literature on the relationships among school demographics and SWPBS indicated that only two school demographic variables have been investigated by researchers. The first variable involves studies on the implementation of SWPBS in urban schools or schools with low socioeconomic status (Arter, 2005; McCart, 2003; Netzel & Eber, 2003; McCurdy, Mannella, & Eldridge, 2003; Powers, 2003). Two studies were located that explored the relationship between SWPBS and the second variable, individuals with disabilities (Doolittle et al., 2004; Greenfield, 2004). No studies were located that examined the relationships of school size and percentage of students with English Language Learners and SWPBS.

This study expands the research base to include information on the relationships among SWPBS implementation, effectiveness of SWPBS, math achievement, and school size.

Purpose and Research Questions

The purpose of this study was to investigate the relationships among SWPBS implementation, effectiveness of SWPBS, math achievement, and school size. The study was conducted in a large, diverse school district in a mid-Atlantic state. The following research questions focused the study.

1. Is school size an effective predictor of the degree of implementation of SWPBS?
2. Is school size an effective predictor of SWPBS effectiveness as measured by out of school suspensions (OSS)?
3. Is SWPBS implementation an effective predictor of math achievement as measured by standardized test scores in schools overall or when school size is grouped into small, medium, large?
4. Is SWPBS effectiveness an effective predictor of math achievement as measured by standardized math test scores, in schools overall, or when school size is grouped into small, medium, large?
5. What are the selected schools' principals' perceptions regarding SWPBS in their schools as measured by a principal opinion survey?
    a. What are school principals' perceptions regarding the implementation of SWPBS in their schools overall?
    b. What are school principals' perceptions regarding SWPBS effectiveness in their schools overall?
    c. What are school principals' perceptions of the relationship between SWPBS implementation and the size of their schools?
    d. What are school principals' perceptions of the relationship between SWPBS effectiveness and the size of their schools?
    e. What are school principals' perceptions of the relationship between SWPBS implementation and math achievement in their schools?
    f. What are school principals' perceptions of the relationship between SWPBS effectiveness and math achievement in their schools?

Statement of Potential Significance

A research study on the relationships among SWPBS implementation, the effectiveness of SWPBS, students' math achievement, and school size is important for several reasons. First, understanding the relationships between school size and SWPBS can assist school, district, and state educators and policymakers in their decisions regarding the advancement of SWPBS in various settings. This additional research can assist school practitioners, administrators, researchers, and policymakers in making informed and accurate policy decisions regarding the future implementation and expansion of the SWPBS framework singularly and in conjunction with expanded school mental health services, and three-tier academic interventions in schools. Knowing which schools respond more readily to SWPBS implementation can contribute to decisions regarding the use of resources in both individual schools, and large-scale district and state SWPBS implementation.

Second, while the purpose of education is often debated among educators in our democratic society, particularly today in our high-stakes environment, the importance of students' math achievement is undisputed. The accountability of No Child Left Behind forces schools to look at all programs in relation to students' learning and performance on state-mandated testing (Congress, 2002). Response-to-intervention researchers and practitioners have developed a three-tier academic and behavior model to improve both behavior and academics (Stewart, Benner, Martella, & Marchand-Martella, 2007). Additional data on the relationships among SWPBS implementation, effectiveness, and math achievement can help inform, if not support, future SWPBS implementation and funding.

Lastly, the Individuals with Disabilities Education Act (IDEA) Amendments of 1997 and 2004 codified the term *positive behavioral support* and raised expectations for the use of positive behavioral supports (PBS) in schools for individuals with disabilities. Very recent legislation (Bazelon Reporter, 2007a,b; Drasgow & Yell, 2002; Sugai & Horner, 2002) has also included recommendations for the use of positive behavioral supports and SWPBS to address the problem behavior of students in our schools. Clearly, given the recent legislative recommendations and the limited research beyond general SWPBS implementation and effectiveness, more research is needed on the relationships among SWPBS implementation and effectiveness, and school size and math achievement.

Conceptual Framework Overview

The theoretical framework for school-wide positive behavioral support (SWPBS) is rooted in the early behavioral analysis model founded by B. F. Skinner (Skinner, 1953, 1968) and integrated with principles from the ecological, sociological, and organizational theories of human behavior and development. Behavioral theory is based on the assumption that human behavior is a subject in its own right rather than a manifestation of something happening in the mind, brain, psyche (Skinner, 1968). Some of the key elements and characteristics of the behavioral analysis, applied behavioral analysis, and positive behavioral support approaches evident in SWPBS are: careful definition of behaviors, functional behavioral assessment, systematic and precise data collection and analysis, and examination of outcomes associated with interventions such as positive reinforcers, direct instruction, and contingency contracting (Bambara & Kern, 2005).

The ecological theory focuses on the interactions between individuals and their environments (Rosenberg et al., 2004). Ecological theory is based on the assumptions that children's behavior is part of many different social systems and that problem behavior does not arise from within the child, but rather is a mismatch between behaviors and expectations—thus any improvement in any part of the systems benefits the entire system. Brofenbrenner (1979) developed a conceptual framework that includes four interlocking systems that shape and influence individual development. These interlocking systems are the following: micro, or how a child experiences immediate interactions with other people; meso, the interrelationships among settings; exo, the quality of interrelationships; and macro, the broad ideological and organizational patterns that affect the other systems. Some of the principles in the ecological model evidenced in the SWPBS model are the importance of addressing behavior in natural environments, coordinating all systems, and data collection and analysis.

The SWPBS conceptual framework also includes principles from sociological models such as Dreikurs' social discipline model (1968), which identifies four goals for misbehavior: attention, control and power, revenge, and helplessness. Sociological theory is based on the assumption that all behavior, including misbehavior, is orderly, purposeful, and directed toward achieving social recognition. Each action is goal-directed, with the inner goal resulting in the outward behavior. Students are social beings and desire to belong. However, they frequently do not see reality as it is, but only as they perceive it to be, which may be mistaken or biased. Thus a student's misbehavior is often the result of faulty reasoning on how to gain social recognition (Dreikurs, 1964). Similar to the behavioral and ecological approaches, the sociological model includes collecting

data and determining the goals or motives for misbehavior, which can lead to more effective interventions. Bandura's social learning theory (Bandura, Ross, & Ross, 1963) is an expansion of traditional learning theory that incorporates modeling or observational learning that can account for behavior change. Lastly, sociological models highlight the socially defined nature of disordered behavior, and thus are particularly critical of labeling theory (Rosenberg et al., 2004).

Organizational behavior management and change have also contributed conceptually and pragmatically to the systems approach of SWPBS (Sugai & Horner, 2002). Organizational behavior management refers, specifically, to the application of behavioral principles in schools or business. The underlying assumption of organizational theory is that organizational structures, leadership, decision making, communication, and thus culture, can positively or negatively impact program implementation and effectiveness. In organizational behavior management, careful and systematic analysis of the aforementioned organizational areas is necessary before developing and implementing plans for improvement and change. Carr (2007) identified six organizational management models that have begun to influence PBS implementation: (a) effective service delivery models, (b) training models, (c) team building models, (d) models to build staff motivation, (e) models of accountability, and (f) data management systems.

The SWPBS logic draws from the theories above and begins with the concept of developing host environments that provide the processes and supports that increase a school's capacity to adopt and sustain the use of evidence-based practices (Luiselli & Diamont, 2002, p. 38). Successful individual student behavior support is linked to host

environments or school climates that are positive and with a clear and consistent articulation of expectations for student and staff behavior (Zins & Ponte, 1990). Underlying the theory are the assumptions that if systems and plans for teaching appropriate behavior, with appropriate reinforcement and consequences, are consistently implemented throughout the school community, by all stakeholders (first tier), the majority (85%) of all students will be actively and positively engaged in learning and other school activities. These students then act as positive role models for other students and allow time for teachers and staff to implement more intensive interventions for students with more serious behavioral and emotional needs. A second tier of interventions is then provided for the approximately 10–12% of students who need small group counseling or strategies. Examples of secondary interventions include mentoring, small-group social skills lessons, anger management/self-control training, parent training, behavior contracts, specialized tutoring, before- and after-school check-in/check-out systems, and Big Brother/Sister programs (Crone, Horner, & Hawken, 2004; Davies & McLaughin, 1989; Dougherty & Dougherty, 1977; Hawken & Horen, 2003; Leach & Byrne, 1986; Lewis, Colvin, & Sugai, 2000; March & Horner, 2002; Nelson, Martella, & Garland, 1998).

Lastly, for the approximately 3–5% of students in a school who do not respond to the primary and secondary interventions and who exhibit severe problem behavior, tertiary support through collaboration and wraparound services with special education and social service agencies is provided. For students requiring this tertiary support, teachers and staff are trained in how to conduct functional behavioral assessments, write

behavioral support plans, modify instruction, and make connections and work with mental health professionals in the schools.

Several models of school-wide behavior management systems have emerged since the seminal article by Walker et al. (1996) first described a fully integrated approach to preventing and addressing problem behavior analogous to the U.S. Public Health Services three-tier model. Walker et al. (1996) also presented convincing arguments as to why schools should take a lead role in addressing the increase in problem behavior. The Effective Behavioral Support model developed by Sugai et al. (2000), and then renamed School-wide Positive Behavioral Support after the terms *positive behavioral support and interventions* and *functional behavioral analysis* were codified in the 1997 reauthorization of PL. 94-142, has emerged as the most sophisticated and widely used school-wide behavior management system in schools today.

Summary of Methodology

This cross-sectional, correlational study investigates the relationships among SWPBS implementation, SWPBS effectiveness, math achievement, and school size. This study was conducted in one large, diverse and well-provisioned district in a Mid-Atlantic state. The variables for this study are identified as inherent in the purpose of public education as defined by Jackson and Panyan (2002). Jackson and Panyan (2002) argue that public education has the dual role of offering opportunities for enculturation, and equitably providing student access to a society's valued knowledge. For the purposes of this study, knowledge is defined as math achievement and is measured by a standardized state assessment. One variable, school size, is not directly related to the purpose of education definition but was included because of the lack of research regarding the

relationship of school size to SWPBS and the recent research suggesting a link between school size and student outcomes. This study investigates the relationships of school size to the implementation and effectiveness of SWPBS and to math achievement.

The study utilized a purposeful sample of 26 elementary schools that have implemented SWPBS for two or more years. A purposeful sample was utilized for several reasons. First, the literature indicates that SWPBS implementation takes a minimum of one to two years before effectiveness can be evaluated. And second, the number of schools meeting the criteria was small enough to include all schools and not require a sample.

Two research designs, a secondary analysis of school records and a principal opinion survey, were conducted. School-wide data measuring SWPBS implementation, effectiveness, students' math achievement, and school size was accessed from the district databases and the district PBS specialist. The Web-based principal survey was distributed using a commercial survey program to the 26 principals in the purposefully selected sample schools. Names and e-mail addresses of included principals were provided to the researcher by the district PBS specialist. Simple regression/correlation analyses plus qualitative analysis of survey questions was conducted to determine the significance of the various study variable relationships.

For purposes of this study, SWPBS implementation was measured by school Team Implementation Checklist scores and principal opinion surveys. SWPBS effectiveness was measured by the comparison of the number of out-of-school suspensions (OSS) between baseline and year two of SWPBS implementation. Since the primary goals of SWPBS are to improve school climate and student behavior, and OSS is

a consistent means of dealing with problem behavior in the schools, this measure seemed appropriate for measuring SWPBS effectiveness. Principal opinion surveys also provided additional perspective regarding SWPBS effectiveness.

Assumptions

This study rests on five basic assumptions: (1) There are growing numbers of students experiencing emotional distress, resulting in a greater need for school-wide positive behavioral supports in schools today (U.S. Department of Health and Human Services, 2002); (2) schools can implement the three-tier SWPBS approach with training and support; (3) although guiding SWPBS principles and features direct the development of SWPBS models in schools, schools follow a school-based team approach in implementing SWPBS, resulting in differences in school-based implementation; (4) staff training and central office support are provided to all teachers and administrators implementing SWPBS in the selected schools; and (5) the demographic, academic, and discipline data retrieved from the district technology data bases was accurate for all selected schools in the study.

Delimitations and Limitations

Delimitations

Two variables (school size and math achievement) were chosen for the study based on their relevance and prominence in education literature, relevance to the study purpose, and the availability of accurate databases. Additional variables were considered but eliminated for the aforementioned reasons. In addition, while distributing the survey only to school principals restricted the SWPBS perceptions to only one actor, this was decided for the following three reasons. First, research has indicated the importance of

school leadership in any systems change or program implementation (Deal & Petersen, 1990). Second, elementary school principals are expected to analyze, monitor, and interpret the academic, discipline, and demographic data of their schools. And third, it is a requirement of the selected school district that all principals participate in the training and be active members of their school's SWPBS steering committee.

Limitations

This study was conducted in only one large, diverse, and well-provisioned district in a Mid-Atlantic state, which reduces the ability to generalize study findings to other districts. In addition, the purposeful sample was small, only 26 schools overall, with very few large (4) and small schools (4) in the sample. Replication studies across districts are needed to support study findings.

Kern and Manz (2004) speak to the importance of "partnership driven methodologies" in the development and evaluation of SWPBS, and to the difficulty of developing experimental designs that are internally valid (i.e., difficulty in identifying comparison schools, and the random assignment of schools to either condition). While there is a need for more empirical research on SWPBS implementation, effectiveness, and school variables, for the aforementioned reasons an experimental design was not chosen for this study.

Lastly, criticism by some researchers has been directed at the extensive use of office discipline referrals (ODR) and student suspensions (OSS, ISS) to measure the effectiveness of SWPBS (Lane, Wehby, Roberson, & Roger, 2007; Putnam, Horner, & Algozzine, 2006). Critics note the variation among school administrators and teachers for the reasons students are sent to the office and subsequently how they are disciplined

for various incidents of misbehavior. Also, critics have observed that ODR and OSS are typically distributed to students with externalizing behavior, and that students with internalizing behaviors may be underrepresented in these calculations. While these claims could be true, it is important to note that in the selected district clear directives are given each year from the central administration to all school administrators and teachers regarding students' rights and responsibilities which results in some degree of consistency among schools and school years.

Definitions of Key Terms

Problem Behavior

Problem behavior describes students with "behavior that is extreme, chronic, and or unacceptable because of social or cultural expectations" (Hallahan & Kauffman, 2006, p. 250). This includes students who meet the federal definition of emotional disturbance, or the definition of conduct disorder, as well as students with less severe problem behaviors that interrupt classroom instruction and/or school climate, as defined by school administrators or classroom teachers.

School-wide Positive Behavioral Support

School-wide behavioral support is a behaviorally based systems approach to enhancing the capacity of schools, families, and communities to design effective environments that improve the fit or link between research-validated practices and environments in which teaching and learning occur (Office of Special Education Programs, OSEP, 2002).

Positive Behavior Support

Positive behavior support (PBS) involves the assessment and reengineering of environments so that individuals with problem behaviors experience reduction in their problem behaviors and increase the social, personal, and professional quality of their lives. PBS is the application of behavior analysis and systems-change perspectives within the context of person-centered values to the social problems created by behaviors such as self-injury, aggression, property destruction, defiance, and disruption. It is an approach that focuses on positivity rather than punishment, and provides a practical science regarding how learning and behavior change occur. The overriding goal of PBS is to enhance the quality of life for individuals and their supporters in home, school, and community settings. The interest in positive behavioral support lies in the promise it holds for addressing the difficult challenges posed by problem behaviors in our schools (Horner, 1999).

School Climate

Organizational climate is defined by Deal and Peterson (1990) as the collective personality of the school, based upon an atmosphere distinguished by the personal, social, and professional interactions of those individuals within a school. Factors that impact climate include leadership, classroom instruction, classroom management, physical surroundings, and the nature and tone of the relationships therein.

Math Achievement

The academic curriculum in the targeted district is the Standards of Learning developed by the Commonwealth of Virginia and measured by the Virginia Standards of Learning tests. As defined by the targeted district, “The standards of learning (SOL) is

an outline of the basic knowledge and skills that Virginia children will be taught in grades K–12 in the four essential academic subjects of English, math, science, and social studies." Extensive information regarding the development and evaluation of these tests is included in Chapter 3. For the purposes of this study, only the fifth-grade SOL math test will be utilized (Study School District, 2007).

School Size

According to district-published statistics, as of June 2007, student enrollment in the 137 district elementary schools ranged from 290 to 1,258 students, including special education and English for Speakers of Other Language students. For purposes of this study, schools with fewer than 500 students are labeled small, schools with 500–900 students are labeled medium, and schools with more than 900 students are labeled large (Study District, Statistics, 2007).

Chapter 2: Review of the Literature

Introduction and Literature Review Methods

A vast amount of literature exists regarding the history and development of various behavior management approaches and programs throughout the generations. Due to the increasing numbers of youth experiencing emotional distress today, there is an increased sense of urgency to find improved systems to address the problem behavior of youth in our schools. The school-wide positive behavioral support (SWPBS) approach is receiving considerable national attention, by educators, mental health professionals, and legislators who seek to implement proactive, effective, efficient, and integrated systems to address the problem behavior of students in our schools and society (Bazelon, 2006).

The literature review is divided into four broad areas: (a) introduction and literature review methods; (b) societal, historical, and legislative context review; (c) conceptual framework literature review; and (c) summary of prior research on school-wide positive behavioral support as related to school demographic and academic variables

Several systematic searches were conducted using the following databases: ERIC, Psych Info, Dissertation Abstracts, Pro Quest Digital Dissertations, individual State Department of Education Web sites, the U.S. Department of Education Office of Special Education Programs (OSEP) Technical Assistance Center on Positive Behavioral Interventions and Supports Web site, the U.S. Department of Education Web site, and technical reports by various nonprofit organizations such as the Bazelon Mental Health Law and May Institutes. In certain cases, inquiry e-mails were sent requesting more

specific and detailed demographic or academic achievement information in published or presented outcome studies and/or evaluation reports.

Over 250 journal articles, studies, technical reports, books, and abstracts were read on SWPBS implementation, effectiveness, school demographics, and academic achievement. In addition, the researcher attended three PBS conferences in 2006–2008 and participated in numerous conversations with PBS practitioners and researchers, that resulted in the identification and subsequent review of relevant, yet unpublished, studies and reports. Four dissertations completed from 1998 to 2005 that related to SWPBS research question variables were reviewed. Literature and studies were chosen based on their relevancy to the research questions, quality of research and methodology, and availability. In addition, literature and references were included from two previous searches by the researcher on national, state, and district policies and on school discipline.

Societal, Historical, and Legislative Contexts

Society's Need for Improved Systems to Address Challenging Behaviors

There are increasing numbers of students experiencing emotional distress in our schools today. The U.S. Surgeon General (2001) reported that approximately 21% of youth ages 9–17 have diagnosable emotional disturbance, yet only an estimated one-third of these students receive the services they need. Numerous explanations for the increased emotional stress of our youth have been examined by psychologists, social workers, educators, and other professionals. These investigations reveal that children are increasingly confronted daily with poverty, abuse and neglect, inconsistent parenting practices, divorce, substance abuse, community disorganization, and high-stakes

testing—with the increased prevalence of gangs, guns, drugs, and overall violence in our society in general seeping through the school door (Berliner & Biddle, 1995; Colvin, Kameenui, & Sugai, 1993; Lewis, Sugai, & Colvin, 1998; Petit, Baker, & Dodge, 1993). The relationships between violence exposure, other stressors, family support, and self-concept on self-reported problem behaviors were examined by Youngstrom, Weist, and Albus (2003), who found that all forms of violence exposure (e.g., witnessing, being a victim, knowing victims) were correlated with internalizing and eternalizing behavioral problems for both males and females. The ability of demographic variables and risk factors (e.g., parental substance use, number of people in the home, out-of-home placements, grades repeated, arrest history, and total life stress) to predict exposure to community violence were examined by Weist, Acost, and Youngstrom (2001) and it was found that risk variables were more powerful regression predictors of violence exposure than demographic characteristics. Even after controlling for demographic differences in violence exposure, risk factors as a group accounted for another 10–15% of variance. Life stress was the most consistent predictor of violence exposure for their sample of 342 high school students from inner-city Baltimore.

In addition, educators have noted the increased pressures on teachers and schools as a result of rising societal expectations to educate a greater diversity of students utilizing a test-based accountability model mandated by the No Child Left Behind law (Gotbaum, 2003). Increased academic pressures and the increased emotional stress of students have led to intense discussions by educators regarding the purpose of education and how best to support students with both academic and behavior problems. Arguments have been made that public education is charged with the dual roles of offering

opportunities for enculturation and equitably providing student access to a society's valued knowledge; and that, within a democratic society, both of these responsibilities are optimally realized when all educators can accept and teach a broader range of behavioral diversity within their classrooms (Jackson & Panyan, 2002). Therefore it becomes increasingly important that systems and structures are developed in schools to assist teachers and administration in providing appropriate school-wide, classroom, and individual behavioral interventions.

Criticism also is leveled at the way educators have handled deviance in our schools in the past. Skrtic (1995) noted that for most of the 20th century public education relied on a "decoupling" process, whenever mandated, to serve students who are perceived as not fitting traditional modes of service. That is, when faced with pressure to serve students' whose needs could not be accommodated with the standard practice; public education's prevailing paradigm was to generate separate educational tracks for these students. Skrtic presents the example of the growing use of self-contained special education classes in the early part of the 20th century. Gathercoal agrees with Skrtic and writes, "Educators who want to create a democratic environment must approach rules and consequences as a way of building community and keeping students in school, rather than using them as a means for pushing students out" (1998, p. 203). These criticisms again support the need for schools to implement systems and interventions that address the problem behavior of youth so that the largest number of students possible can remain in general education classrooms and schools.

Professionals and parents also must overcome innumerable barriers in accessing the necessary support and resources for youths with problem behaviors. Barriers can be

divided into two categories: policy and services. Policy barriers include the conflicting definitions for "emotional and behavioral disturbance" among special education laws and the Department of Health and Human Services, the lack of parity for mental health insurance, lack of funding for programs, and bureaucratic paperwork, and other. Service barriers include the fragmentation of services, lack of qualified professionals, and lack of training and education for teachers and administrators, and other. All result in the scarcity of quality services, and contribute to the under identification and lack of resources for students in need. 2

Historical Advances in Addressing Problem Behavior

Significant changes have occurred during the past century in our knowledge regarding the origins and causes of behavior, and the ethical standards that govern our treatment of individuals with problem behaviors both in and out of formal education. "It is uncontested, that in early Western society there was a broad intolerance for behaviors that fell outside of very narrow standards of social conduct, and the methods of discipline and treatment utilized within and outside of schools clearly communicated this intolerance" (Jackson & Panyan, 2002, p. 36).

Coleman (1992) offers a historical chronology of practices and views for youth and adults with problem behavior that consists of a number of overlapping phases. The first "segregation" phase extended from the early Middle Ages to the 1600s and emphasized ridding society of individuals whose behaviors were deviant and not understood. Mental hospitals and asylums were established to segregate and punish people with mental disorders.

In the second "transition" phase, during the 18th and 19th centuries, institutions were charged with the dual purpose of providing care and treatment to people with mental illness, mental retardation, and other disabilities. The prevailing view during this phase was that perhaps mental disorders were curable; however, in reality institutions were employing neglectful and harsh treatments.

The third "service" phase extended from about 1900 to the early 1990s and focused on how to help individuals become contributing members of society. Psychodynamic theories surfaced during this phase and Freud (1949) established the groundwork for the psychodynamic approach. Freud proposed that there are psychic inner causes that directly regulate the way a person behaves, appropriately or otherwise, and that the uncovering of these causes requires an introspective exploration of the associated conflicting conscious and unconscious forces, motives, and fears (Freud, 1949).

These advances in knowledge, however, were not always beneficial to those afflicted. The eugenics movement, within the scientific community of the early 20th century, viewed human differences through a lens that is today considered unsound and unethical. Influenced by Darwin's theory of evolution, Mendel's theory of genes and inherited traits, and Goddard's perceptions of the hereditability of intellectual capacity, eugenics theorists viewed human differences within a dichotomy that allowed only for "fitness" and "unfitness" (Smith, 1999). Differences were treated as cancers that must be removed for the greater health of society. Hence, people who were labeled mentally ill were forced into extended isolation or sterilization, with aversive techniques of management or worse. The eugenics movement reached a pinnacle in Nazi Germany,

where the view of the hereditability of "unfitness" was expanded to cover ethnic groups, religions, and classes of people, and extermination became a tool of the state. Although eugenics appears to be a thing of the past, it is argued that its influences today are simply more difficult to trace, and that expulsion, out-of-school placement, and confinement are vestiges of the eugenics movement in schools and other institutions today (Smith, 1999).

Although the term positive behavioral support (PBS) originated in the 20th century, the more humane practices associated with it emerged earlier in history (labeled moral therapy) and typically represented a departure from prevailing standards and practices. An early example of the humane treatment of PBS was the bold move in the 1880s by Pinel, a French physician who removed the chains from some of the patients at a mental hospital in Paris to test his theory that the patients would respond well when treated with kindness and respect rather than with cruelty and imprisonment. Some individuals showed remarkable improvement. This account of Pinel's activities may be the first documented case of large-scale treatment practice that expressed values similar to those of positive behavioral support (Jackson & Panyan, 2002).

Erickson (1963) offered a reconceptualization of the origins of psychological conflict, suggesting that decisive and potentially enduring conflicts could emerge in any number of significant stages of ego-identity development, and that these stages were dispersed throughout life. Of special significance for understanding mental health was that if a conflict was unresolved while in the state of origination, it could persist and affect a person's essential happiness and well-being.

During the service phase of the 20th century, in addition to the psychodynamic theories, professionals again advanced their thinking to view challenging behavior as

more of an environmental systems issue than the indication of individual pathology, enabling problem behaviors to best be handled by ensuring access to educational opportunity and developing effective teaching and discipline practices (Blatt, 1999). During this service phase many of the ecological and sociological theories were founded. Theorists such as Bronfenbrenner (1979), Driekurs (1968), and Bandura (1963) focused on the environmental and social systems influencing human development, identifying four primary purposes for problem behavior, and validating the importance of social learning through modeling and imitation. Yet, it is noted that a behaviorist, Bijou (1968), was one of the earliest thinkers to advocate a shift in focus from blaming the child to examining the other factors such as environment, the actions of adults and fellow students, and the contingencies of reinforcement that can promote and maintain challenging behaviors.

Coleman's chronology (Coleman, 1992) ends with the third phase, but additional phases—such as the "legislative" or "litigation" phase, or "model programs and research" phase—have been coined by experts to reflect the efforts of families and advocates to secure appropriate educational opportunities for their children in public schools. It has been argued that the inclusive education movement, a significant reform movement among others, originated in the 1990s, and represents the next generation's effort by families and advocates to secure social and education inclusion through political action directed at public and residential school systems (Ryndak, Jackson, & Billingsley, 1999, 2000).

Addressing problem behavior in the schools.

Jackson and Panyon (2002) write that "history clearly illustrates that harsh and punitive measures were characteristic of most formal schooling in the past." These practices were grounded in two perspectives on behavior as well as the opinion that it is society's basic responsibility to control. The first perspective was that school discipline was often seen less specifically in terms of training for society and more generally as a form of character training. Discipline practices in early times were guided by the belief that consensual morality should control the behavior of citizens and that schools were responsible for imposing these moral standards in accordance with a particular social class. The second perspective was Kant's retribution theory, or that pain or loss is due to those who have done wrong, and the punishment is not inflicted to achieve another good, but simply because a person has committed a wrongdoing (Rich, 1982). Moreover, dispersing punishment to wrongdoers was perceived as the absolute duty of society if a system of justice was to be preserved. This historical context may explain why corporal punishment has long been endorsed as a primary means for reinforcing strict behavior standards in schools. However, the use of corporal punishment has been also questioned. Efforts in the United States to limit corporal punishment date back to the 1820s, but to date only 27 states have enacted statewide legislation to abolish corporal punishment (Evans & Richardson, 1995). Society continues to have difficulty in differentiating between students whose behavior is willful and criminal and those whose behavior is based in psychiatric disorders, and then providing the appropriate interventions.

Today, despite the introduction of numerous positive behavioral interventions such as service learning, dialogue journals, peer mediation, and other, many conventional

behavior management strategies are still based on interventions developed in the 1960s and 1970s, which are characteristically reactive, consequence based, and have a short-term focus. Such features of outdated methods as ridicule and out-of-school suspension limit their long-term effectiveness and ability to promote meaningful lifestyle outcomes. According to Horner et al. (1995) there are two particularly disturbing reasons why the current popular knowledge base about working with problem behavior is incomplete. The first reason is that the majority of students in schools are not likely to present significant behavioral problems at all during a particular school year. For these students experts call for basic prevention and early intervention measures, but it is difficult to judge the impact of implementing certain discipline practices on these students who pose few problems.

The second reason is that the typical response of teachers and administrators to students who have chronic or acute problem behavior is to try and remove them from their areas of responsibility. Suspension or exclusion, placement in special education, or placement in some other alternative program are common responses to problem behavior in schools today. Horner and colleagues (1995) reviewed research indicating that the most likely reaction of schools to problem behavior is some combination of punishment and removal.

In addition, it is important to note that the already limited district and school resources have traditionally been allocated to the identification, assessment, and consequent development of individualized behavior-support efforts to contain or remediate the problem behavior of a very limited number of students (Horner et al., 2004). Clearly, among the more important changes that have occurred over the past 15 years are the shifts in emphasis toward prevention for all students, positive remediation of

problem behaviors, and the investment in school-wide practice, in addition to individualized interventions (Horner et al., 2004).

Recent Legislation and Policies Affecting School Responses to Problem Behavior

Even before the Columbine massacre of 1999 and other school shootings (Richland H.S., 1995; Frontier H.S., 1996; Pearl H.S., 1997; Thurston, H.S., 1998; Heritage H.S., 1999; Santana H.S., 2001, etc.), the U.S. Congress passed the Gun-Free Schools Act in 1994, which required states to develop zero-tolerance initiatives or face losing federal money. Zero-tolerance policies most frequently used some form of exclusion from school, typically suspension and/or expulsion. Since the initiation of this law, additional research has indicated that suspension and expulsion do not lead to positive outcomes for students and do not result in safe school climates (Casella, 2003; Essex, 2001; Skiba, 2001). Indeed, researchers have found that the suspension of students results in decreased access to school curriculum and educational environment and opportunities, and has shown to be a moderate to strong predictor of whether a student will, or will not, drop out of school (Townsend, 2000; Skiba, 2002; Skiba & Peterson, 1999). In addition, Mayer and Sulzer-Azaroff (1990) further explain that punishing behavior problems often leads to a higher incident of aggression, truancy, vandalism, and dropouts. The impact of suspension on African-American students is even more damaging in that exclusionary disciplinary practices have been found to be disproportionately applied to minorities and males (Mendez & Knoff, 2003; Townsend, 2000).

As stated above, schools and districts responded to the Gun-Free Act of 1994 with the implementation of local zero-tolerance policies and increased use of in- and out-of-

school detention, suspensions, expulsions, and alternative school placement programs; but school districts also added other reactive interventions such as hiring security personnel, adding surveillance camera, metal detectors, and school uniforms (U.S. Department of Health and Human Services, 2001). However, the evaluations and monitoring of these interventions indicate that by themselves they also are insufficient to meet the challenges of creating safe schools, positive school climates, and increased teaching time and learning opportunities. Numerous sources, including the Center for the Study and Prevention and School Violence, the Institute on Violence and Destructive Behavior, the American Psychological Association, the Center on Effective Collaboration and Practice, the Office of Safe and Drug-Free Schools, the Office of Special Education Programs, and the Center for Positive Behavioral Interventions and Supports, have advocated for the adoption of more proactive, positive, and preventive approaches to individual and school-wide discipline (Sugai & Horner, 2002).

In 1998, at the request of President Clinton, the U.S. Department of Education and the Department of Justice produced *Early Warning, Timely Response: A Guide to Safe Schools* (Dwyer et al., 1998) as an official mandate to create schools free from violence. In April 2000, the Department of Education and the Department of Justice published a follow-up publication, *Safeguarding Our Children: An Action Guide* (Dwyer & Osher, 2000), which provided practical steps schools can take to design and implement school safety plans to reduce violence in our schools and help children gain access to the services they need. The guide was sent to every district and school and stressed the importance of a three-tier, integrated, and comprehensive model that includes prevention, early intervention, and intensive services to address schools safety issues.

Congress recognized the impact that students with problem behavior have on a child's academic, social, and family functions. With the 1997 reauthorization of IDEA, Congress expanded the authority of school officials to protect the safety of all children by maintaining orderly, drug-free, and disciplined school environments, while ensuring that the essential rights of students with disabilities were protected. Congress sought help for school officials and Individualized Education Plan (IEP) teams by requiring that if a student with disabilities exhibits problem behaviors that impede his or her learning, or the learning of other students, that the IEP team must consider other strategies, including positive behavioral interventions. While neither the bill nor final regulations detail the components of a functional behavioral assessment (FBA) and/or subsequent behavioral intervention plan (BIP), leaving wide discretion to states, school districts, and IEP teams, the 1997 amendments "codified" positive behavioral interventions and supports, functional behavior assessment, and positive behavior supports into policy and practice, and thereby into the discipline and behavior management in every school in America (Drasgow & Yell, 2002; Sugai & Horner, 2002).

Due to the increased attention to problem behaviors in the schools, states have taken a more active role in addressing behavior through the development of statewide behavior initiatives (SBIs) (Muller, 2002). An SBI is defined as any formal policy or plan describing the specific components and strategies of a long-term effort intended to build the capacity of a state or jurisdiction to provide behavioral support to schools. The National Association of State Directors of Special Education, Incorporated (NASDSE) conducted a survey in 2000 as part of its Cooperative Agreement with the Office of Special Education Programs (OSEP). Of the 43 state education agencies (SEAs) that

responded to the survey, 26 reported having a statewide initiative in place. In 2002, the Center of Positive Behavior Interventions and Supports (PBIS Center) at the University of Oregon conducted a more in-depth, follow-up study and literature review examining the extent to which SBIs have been developed and implemented, and obtained additional survey data from 19 of the 26 states with SBIs currently in place (Muller, 2002).

Key points in that literature review stated that SBI has emerged as a policy-driven strategy intended to expand schools' roles in the delivery of student support services. Interest in developing SBI originated from three independent trends within education and social science reform. First, the magnitude of students' emotional and behavioral challenges has made it clear that schools can no longer ignore the personal and interpersonal domain of students' lives. Second, the development of SBIs is supported by a growing literature base demonstrating the effectiveness of school-wide systems of positive behavior supports (PBS). Third, there is increasing awareness that traditional social service delivery models are no longer able to meet the needs of youth and families.

Major findings from the follow-up state survey indicated that of the 19 states responding, 16 have SBIs that address all students, not just students with disabilities. One third reported that SBIs have been implemented on a state-wide basis, while the remaining two thirds are currently testing behavioral initiatives in selected regions, districts, or particular schools. Planning for and the development of SBIs usually involved representatives from a wide range of stakeholder groups but most commonly the state department of education, special educators, general educators, outside consultant and building principals. Fewer than 10 states reported that they also included school psychologists or counselors, behavior specialists, college or university staff, district

superintendents, agency representatives, parents, mental health practitioners, or juvenile justice personnel and law enforcement officials. Allocation of human resources for implementation of SBIs varies significantly from state to state. For instance, the full-time equivalent of personnel assigned to work directly with behavioral initiative ranges from eight or nine full time employees (FTE) to less that one FTE.

Several of the policy recommendations from the NASDSE Project Forum report include direct references to SWPBS. “Base SBIs on the tenets of PBS (e.g. the teaching and reinforcing of pro-social behavior), as well other recognized obstacles in the field”; “Encourage schools and agencies to adopt consistent eligibility criteria for service and comparable diagnostic and disability terminology”; “Implement policies and strategies that reduce or eliminate categorical intervention models” (Muller, 2002, p. 6).

The 2004 reauthorization of IDEA again resulted in conscientious debate on how best to address school discipline for students with disabilities. The final 2004 IDEA bill maintains the rights of individuals with disabilities, clarifies discipline procedures, and increases funding for improving positive behavioral support systems and staff training in schools. IDEA 2004 established a new grant program dedicating $50 million for state and local grants aimed at improving behavioral support programs, alternative educational settings, and professional development.

In addition, legislation and reports have been prolific in recent years regarding the need for increased services in schools for students with mild to severe problem behaviors, not just students with identified disabilities. Recognizing the important role that schools play in the delivery of mental health services, bipartisan Senators Ted Kennedy (D-MA), Pete Domenici (D-NM), and Mike Enzi (R-WY) recently introduced the Mental Health in

Schools Act, 2007 (S. 1332). This bill would increase funding for the Safe Schools–Healthy Students program to enable states to expand school-based mental health services for children in K–12. It allows for a flexible, state-based approach to creating a comprehensive mental health school program and promotes formal collaboration between families, schools, welfare agencies, and substance abuse and mental health systems. Significantly, this bipartisan legislation takes an important step beyond addressing only students with, or at risk for, a mental illness by seeking to promote a school-wide positive environment for all students. The Mental Health in Schools Act encourages schools to implement positive behavioral interventions and supports (PBIS) into their school curriculum (Bazelon Reporter, 2007b).

Also, another recently introduced bill, the Child Adolescent Mental Health Resiliency Act of 2007, which states that "only one in five adolescents who suffer from severe mental illnesses receive needed specialty mental health services," authorizes $205 million in grant opportunities and encourages the integration of early intervening and prevention services for adolescents with, or at risk for, psychiatric disorders within the states school systems, educational institutions, juvenile justice systems, substance abuse programs, child welfare systems, and other support organizations (Bazelon Reporter, 2007a).

On a wider scale, and in response to the growing national concerns surrounding the mental health needs of both youth and adults, President George Bush announced the *New Freedom Initiative*, of which the President's New Freedom Commission on Mental Health (2003) was a key component. A commission of mental health experts identified three major obstacles to effective mental health practices in America, both in and out of

schools: (1) the stigma that still surrounds mental illnesses; (2) unfair treatment limitations and financial requirements placed on mental health benefits in private health insurance; and (3) the fragmented mental health service delivery system (President's New Freedom Commission on Mental Health, 2003). The final report lists six goals that must be met to transform our current mental health system: (1) Americans must understand that mental health is essential to overall health; (2) mental health care is consumer and family driven; (3) disparities in mental health services must be eliminated; (4) early mental health screening, assessment, and referral to services must become common practice; (5) excellent mental health care needs to be delivered, and research accelerated; and (6) technology should be used to access mental health care and information. This report lends recognition and support to the need for integrated, comprehensive, and efficient discipline and mental health models in our schools.

In the context of the above legislation and reports, Doolittle et al. (2006) examined state department of education mission statements to determine the extent to which the mission statements included (a) goals for students' social behavior, (b) evidence of criteria for student, classroom, and school-wide behavior-support skills in certification standards for general education teachers, special education teachers, and principals; and (c) initiatives focused on improving students' social behavior. Results indicated that only 16 of the 50 states and the District of Columbia included a focus statement on student social behavior in their mission statements. Individual student behavior support practices were identified in the curriculum for general educators in 30 states, and for special educators in 39 states. Classroom behavior-support practices were required for general education teachers in 39 states, and for special education teachers in

40 states. School-wide behavior-support practices were most likely to be required for principal certification, and were formally identified in only 20 states surveyed. Character education was the most common state initiative cited for improving behavior in schools.

Summary of Societal, Historical, Legislative Contexts

It is important to understand the societal, historical, and legislative contexts that have contributed to and influenced the advancement of the SWPBS framework. There are increasing numbers of underserved students with problem behaviors in our schools. Schools are experiencing increased pressures as a result of high-stakes testing and the increased violence of society in general. While U.S. discipline practices have remained stagnant for several decades, recent research on the ineffectiveness of suspension, dual programming, and exclusion are resulting in a movement toward proactive prevention, early intervention, and positive behavioral supports. Recent government reports have documented the crisis in our country regarding problem behavior in our schools and society, and the recent legislation described above calls for increased mental health services in schools and implementation of school-wide positive behavioral support systems.

Conceptual Framework Literature Review

Overview

While the roots of SWPBS are primarily grounded in the evolution of the behavioral analysis model, major concepts from the ecological, social, and organizational management theories also are strongly evident in the SWPBS conceptual framework. The literature review for the conceptual framework of this study is divided into two broad sections. The first section describes the various theories and their contributions to the

SWPBS approach. The second section includes a detailed description of the guiding principles and features of SWPBS.

Behavioral, Ecological, Sociological, and Organizational Concepts in School-wide Positive Behavioral Support

Evolution of the behavioral-analysis model.

B. F. Skinner (1953, 1968) coined the term *behavioral analysis* to distinguish the focus on behavior as a subject it its own right, rather than as a manifestation of something happening in the mind or psyche. A central principle of Skinner's experimental analysis of behavior was the inductive, data-driven examination of functional relations, as opposed to the kinds of hypothetic-deductive learning theory that had grown up in the comparative psychology of the 1920s through 1950s. Skinner's approach was characterized by empirical observation of measurable behavior that could be predicted and controlled.

Applied behavior analysis (ABA) is the applied side of the experimental analysis of behavior and probably the most widely used process for addressing a variety of learning and behavioral problems (Baer, Wolf, & Risley, 1968). Its origin can be traced to Teordor Ayllon and Jack Michaels' 1959 article "The Psychiatric Nurse as a Behavioral Engineer" as well as initial efforts to implement teaching machines. The basic assumption of ABA is that behavior is a function of its consequences and that behaviors that are followed by reinforcers tend to occur more often in the future, and behaviors that are followed by punishment will occur less often in the future. Within ABA, problem behaviors are viewed as learned behaviors, and because they have been

learned they can be unlearned, with new responses learned in their place (Baier, Wolf, & Risley, 1968).

An innovation in ABA and cornerstone of SWPBS is functional behavior assessment (FBA). Functional or motivational assessment seeks to identify the purpose that a behavior serves for the individuals engaged in it. Through observations, interviews, and other data-gathering processes, educators and other professionals use FBA to generate hypotheses about the underlying reasons for a behavior. "Once the function of a behavior has been established, the appropriate behaviors that lead to the same function can be taught, thus reducing the student's need for the unacceptable pattern of behavior" (Jackson & Panyan, 2002, p. 32).

Miller, Tansey, and Hughes (1998) report in their review of functional behavioral assessment as a link between problem behavior and effective intervention in schools that, "while currently there is no legislated definition of functional behavioral assessment (FBA), consensus is emerging towards a school-based assessment definition by some researchers" (p. 3). Quinn and her colleagues (1998) define functional behavioral assessment as "a variety of techniques and strategies to diagnose the causes and to identify likely interventions intended to address problem behaviors" (p. 3). They go on to say FBA includes consideration of biological, social, affective, and environmental factors as potential functions of problem behavior (Quinn et al., 1998). Skiba and his colleagues (1998) do not directly define functional behavioral assessment, but argue that "functional assessment moves...toward gathering information that increases our understanding of student behavior in the classroom, and identifying and teaching needed replacement behaviors" (p. 24). Skiba (1998) cites seminal research by Carr (1977) and Iwata and

colleagues (1982) on functional analysis as providing the foundation for functional behavioral assessment.

ABA is credited for making at least three major contributions to positive behavioral support (PBS). First, ABA provided PBS a conceptual framework for understanding human behavior and learning. Second, numerous effective teaching and behavior management interventions, such as direct instruction and systematic instruction, curriculum modification, contingency contracting, social problem-solving, and self-management strategies utilized in PBS, evolved from ABA. And third, ABA introduced the principles and methods of functional analysis and the concept of behavior function into the framework of PBS (Carr et al., 2002).

A pivotal point in ABA, which contributed to PBS, was the discovery that problem behavior can be socially motivated (Carr, 1977). That is, problem behaviors are shaped by people's social responses to them, and thus they serve a communicative function in their intent to change or influence the action of others (Carr & Durand, 1985). Beginning in the mid-1980s this understanding led to an expansion of functional assessment procedures designed to identify the communicative function of behavior and to indicate effective interventions not aimed at punishment, but at teaching new communicative alternatives. Furthermore, functional assessment expanded to include an analysis of antecedent events, not just consequences of behavior. This ultimately led to broader, more comprehensive interventions focused on changing the problem environment that provokes problem behaviors in individuals. Functional assessment, teaching alternative skills, and changing the problem environment are now the cornerstones of PBS (Carr & Durand, 1985).

A critical goal for PBS is not just to reduce problem behaviors in the short term but also to create long-lasting change that will have an impact on the individual's overall quality of life. PBS has two interrelated assumptions about problem behaviors: the first is that the way a person behaves in a given situation is a function of the interaction between the person and the conditions of the environment; the second assumption is that the problem behavior serves a useful purpose or function for a person (Bambara & Kern, 2005).

Unlike conventional approaches, PBS involves no expectation that the same intervention will work or be appropriate for other students, unless their needs and preferences are similar (Bambara & Kern, 2005). Once problem behaviors are understood in terms of their purposes and the environmental conditions that support them, the primary goals of PBS are not to punish, but to prevent and teach. Prevention is achieved by changing the environmental conditions that contribute to challenging behaviors. The purpose for teaching is to give students alternative ways of achieving desired outcomes during problem situations, and the skills needed to change problem situations in the future.

With emphasis on prevention, teaching alternative skills, and improving lifestyle, PBS plans are characteristically comprehensive. PBS interventions require time and effort involving parents, teachers, school administrators, behavior support specialists or school psychologists, and the student with disabilities, plus other interested parties. Team members collaborate or work together to conduct assessments, design the PBS plans, and carry out and evaluate the interventions (Bambara & Kern, 2005).

Ecological theory related to SWPBS.

Ecological theory focuses on the interactions between individuals and their environments (Rosenberg et al., 2004). There are five major assumptions of the ecological view (Apter, 1977) evidenced in the SWPBS approach: (1) children are part of many different social systems; (2) disturbed behavior does not arise solely from children, but rather (also) from a mismatch between behaviors and expectations; (3) interventions are designed to make systems work; (4) improvement in any part of the system benefits the entire system; and (5) intervention must involve the child, the environment, and the attitudes and expectations of all those in the ecosystem. Of particular significance to the SWPBS conceptual framework is the ecological emphasis on solving problem behaviors in their normal environmental contexts versus more restrictive settings. The ecological perspective prefers not to separate the individual in need of treatment from his or her natural surrounding ecosystems and encourages community-based intervention, which according to the SWPBS perspective greatly facilitates maintenance and generalization of behavior changes. The ecological model also emphasizes the use of antecedent analysis and data collection. Indeed, one limitation noted by researchers of the ecological model is the effort and time required to gather data from all parties in all relevant settings (Oliva & Brown, 1994). Also importantly, the ecological model emphasizes the coordination of efforts among all professionals involved in the various systems surrounding the students (Hobbs, 1966; Harding, Bellew, & Penwell, 1980).

Ecological theorist Bronfenbrenner (1979) saw the individual's experience "as a set of nested structures, each inside the next, like a set of Russian dolls" (p. 22). Bronfenbrenner's conceptual framework includes four interlocking systems that shape

individual development. The microsystem is how a child experiences immediate interactions with other people. The mesosystem is the interrelationships among settings such as home, daycare center, and school. The stronger the links are among settings, the more powerful an influence the resulting systems will be on the child's development. The exosystem is the quality of interrelationships among settings, and is influenced by forces in which the child does not participate but which impact parents and other adults who interact with the child, such as parental workplace and school boards. The macrosystems provide the broad ideological and organizational patterns that affect the other systems, such as war or technological advancements.

Sociological models related to SWPBS.

Dreikurs' (1968) social discipline model was based on the work of Adler, a social psychologist who believed that the central motivation of all people is to belong and to be accepted by others. Dreikurs (1968) identified four goals that motivate students who misbehave: (1) attention, (2) power and control, (3) revenge, and (4) helplessness or inadequacy. Similar to function in behaviorism, in Dreikurs' theory the determination of the students' goals or motives for misbehavior through data collection and generating hypothesis can lead to effective interventions. However, regarding interventions, it is important to note that Dreikurs focused more on logical or natural consequences (Dreikurs, 1968), and SWPBS on positive reinforcement and rewards.

Bandura's social learning theory is an expansion of traditional learning theory that incorporated modeling or observational learning as an operating principle to account for behavior change (Rosenberg et al., 2004). Learning theorists before Bandura focused primarily on behavioral principles, which theorized that obvious contiguous

environmental events affect behavior according to well-defined rules. Bandura's research demonstrated that children who merely observed aggressive acts committed by live or filmed persons would later be more likely to exhibit aggressive behaviors than peers who had not observed aggressive behavior (Bandura, Ross, & Ross, 1963). Because there were no contiguous environmental events either immediately before or after the children's aggression to account for the behavior change, social learning theorists maintained that the children had learned to act aggressively through observation, imitation, and modeling of another's behavior.

Sociological models also highlight the socially defined nature of problem behavior by proposing that problem behaviors are deviations from arbitrarily determined social rules. The sociological model has been particularly critical of the labeling theory, sensitizing participants in the referral and placement process to the dangers of labeling and classification systems (Rosenberg et al., 2004). In identifying inappropriate behaviors and teaching prosocial behaviors, educators often overlook the distinction between appropriate and inappropriate behavior as rooted in an ever-changing social context. This model has contributed to the urgency in finding general education methods and systems, such as SWPBS, to address problem behavior in our schools rather than labeling and placing students in special education or alternative education.

Organizational behavior management and change.

Sugai and Horner (2002) write that "the school-wide PBS approach has combined its behavior-analytic roots with the adoption of practices and principles of organizational behavior management to improve a school's capacity to respond. Through organizational

and staff development efforts, schools provide the processes and supports that increase a school's capacity to adopt and sustain the use of evidence based practices" (p. 38).

Although behaviorists have contributed to addressing management issues in the workplace through the *Journal of Organizational Behavior Management*, the broader literature on organization management deals with multiple venues that are not restricted only to the workplace (Carr, 2007). According to Carr (2007) the organizational management literature has generated six models that have begun to influence the way in which PBS is implemented. These models are (1) effective service delivery models to address the needs of students with emotional and behavioral disabilities through interagency collaboration, wraparound services, and flexible funding initiative (Eber & Nelson, 1997; Turnbull & Turnbull, 2001); (2) effective training models in the disabilities field that now emphasize the use of trainers of trainer approach (Anderson, Russo, Dunlap, & Albin, 1996); (3) team-building models (Sailor & Roger, 2005); (4) models of how to build staff motivation, to produce sustainability of best practices over periods of time sufficient to impact behavior change (Crone & Horner, 2003); (5) models of accountability (Crone & Horner, 2003); and (6) data management systems to facilitate and promote the process of decision making based on evidence, rather than opinion or emotion (Horner, Todd, Lewis-Palmer, Irvin, Sugai, & Boland, 2004). "Principles of organizational management have demonstrated great potential to create systems that are conducive to supporting PBS best practices" (Carr, 2007, p. 9).

Sugai and Horner (2002) identify five basic steps that characterize the establishment of "host" environments and implementation of a school-wide PBS approach: (1) establish a leadership team, (2) secure school-wide agreements and

supports, (3) develop data-based action plan, (4) arrange for high fidelity of implementation, (5) conduct formative data-based monitoring.

McLaughlin et al. (1997) found that modifying characteristics of the organization can be important steps for a successful innovation. Systematically changing specific features of a school's organizational structure is one way that schools can make it possible to adopt and sustain a positive behavioral support initiative. Some examples of organizational changes include hiring specially trained personnel, differentially allocating resources to maintain the initiative or launching a new professional development approach, student behavior policies, and other. Carr, Horner, and colleagues (1999) found that a broad environmental reorganization or restructuring of resources was associated with a success rate of 65% as compared with a rate of 50.9% when no such reorganization occurred.

School-wide Positive Behavioral Support Features and Principles

SWPBS is the application of positive behavioral support (PBS) principles and features, plus ecological, sociological, and organizational theories, to the whole school context in an effort to prevent, as well as change, patterns of student misbehavior. The concept of SWPBS first appeared in the literature when Walker and his colleagues (Walker et al., 1996; Walker & Shinn, 2002) utilized the U.S. Public Health Services conceptual model of prevention (involving primary, secondary, and tertiary-level interventions) as an organizing framework to illustrate how schools can deliver interventions more effectively and improve outcomes. Walker et al. (1996) proposed this fully integrated approach to preventing and addressing student misbehavior and also presented convincing arguments as to why schools have a key role in addressing the

rising number of at-risk students who bring antisocial, aggressive behavior patterns with them to the schooling experience which has been reinforced by many educators including Muller and Jackson (2004). Walker et al. (1996) argued that schools have the relatively unique ability to access the vast majority of at-risk children early in their school careers and also to marshal the resources and expertise necessary to address problem behaviors in a coordinated fashion. Schools, however, the authors note, can only play this role effectively if they are supported by our society and act as partners with families and community agencies in implementing community-wide initiatives. Schools can then appropriately serve as the lead agency within an interagency approach to address these problems (Dryfoos, 1990).

To date, the effective role of schools in developing solutions to the problem of antisocial behavior, interpersonal conflict, and violence has been largely unrealized. At the NASDSE Project Forum (2004), Dr. Tim Lewis of the University of Missouri discussed the challenges that schools/educators face today and the typical school responses to student behavior such as increasing surveillance, introducing guards, metal detectors, and other. Dr. Lewis emphasized the important role that schools play in providing a consistent environment that can address students' problem behaviors, and believes that the answer is not to invent new solutions, but to enhance our schools' capacity to accurately adopt and efficiently sustain their use of research-based practice, provide a full continuum of behavior support for all students, and be included in a district-wide and comprehensive system of behavior support.

The overall design of the model that Walker and colleagues (1996) proposed involves a three-tiered approach. In Walker's (1996) conceptual model there are three

types of students in any school: (a) typical students not at risk for problems, (b) students with an elevated risk status for developing antisocial behavior, and (c) students who show signs of "life-course persistent" antisocial behavioral patterns and involvement in delinquent acts (Larson, 1994; Moffitt, 1994; Walker, 1994). These three student types are ordered along a severity-of-risk continuum upon which members of each student group are candidates for differing levels, or types, of interventions that correspond according to complexity, comprehensiveness, expense, and intensity (Reid, 1993). The aim is to actively teach appropriate behavior, and through this preventive instruction to build a coherent social culture that is predictable and reinforcing yet quickly responsive to problem behavior.

The primary prevention effort assumes that all children need behavior support (Evertson & Emmer, 1982; Sprick, Sprick, & Garrison, 1992; Weissberg, Caplan, & Sivo, 1989). Historically, behavior support in schools has been reserved for only those students who demonstrate problem behaviors (Sugai & Horner, 2002). But if schools are to meet current challenges, an expanded focus on preventive as well as reactive behavior support is needed. Every child entering school should receive clear instruction on what is acceptable and unacceptable, and ongoing recognition when he or she engages in appropriate behavior. The technology of preventive, school-wide behavior support emerged from early work by Roy Mayer and his colleagues (Mayer, 1995; Mayer, Butterworth, Nafpaktitis, & Sulzar-Azaroff, 1983) and has emphasized the teaching of prosocial behavior to all children entering elementary and middle (junior high) schools (Lewis & Sugai, 1999: Luselli et al., 2002; Nelson, 1996; Nelson et al., 1996; Sprick, Sprick, & Garrison, 1992). Primary prevention strategies focus on enhancing protective

factors on a school-wide basis by teaching all students and staff the rules and expectations and other disciplinary policies and procedures that are designed to enhance the smooth operation of a school environment. Additional examples of primary intervention strategies include school-wide discipline plans, instruction in conflict resolution, peer mediation, parent education, and character education.

Effective classroom management is a critical component of the universal level of SWPBS. Emmer and Stough (2001) write that while sound behavior management does not guarantee effective instruction, it does establish the environmental context that makes good instruction possible; and likewise, highly effective instruction reduces, but does not eliminate, classroom behavior problems. In reviewing the importance of classroom management and the need for improved inclusion and focus of classroom and behavior management in teacher preparation programs, the National Comprehensive Center for Teacher Quality (Oliver & Reschly, NCCTQ, 2007) make three primary recommendations for changes to teacher preparation programs. Recommendation one includes providing teacher candidates with instructional approaches for classroom management though coursework and guided practice and feedback. Teachers must focus on effective instructional strategies to prevent academic and behavior difficulties and thereby facilitate increased student achievement. Instruction that is effective in encouraging high rates of academic engagement and on-task behavior is characterized by several key features: 1) instructional material that students find educationally relevant; 2) a planned, sequential order that is logically related to skill development at students' instructional level; 3) frequent opportunities for students to respond to academic tasks

such as response cards, choral responding, and peer tutoring; 4) guided practice; and 5) immediate feedback and error correction (Carnine, 1976).

The second recommendation entails addressing the challenges facing teacher candidates and new teachers in creating a positive classroom context. Structuring a classroom so that it supports positive student behavior requires forethought and planning (Pain, Radicci, Rosellin, Deutchman, & Darch, 1983). Effective classroom structuring requires attention to the following features: 1) creating a physical arrangement that eases traffic flow, minimizes distractions, and provides teachers and with good access to students in order to respond to their questions and better control behavior; 2) making efficient use of classroom time, including transitions between various classroom activities; 3) ensuring that the nature and quality of student interactions is positive; and 4) clearly communicating appropriate behaviors for particular classroom activities. The use of rules is a powerful, preventive component of classroom organization and management plans. Rules establish the behavior context of the classroom by specifying what behaviors are expected of students, what behaviors will be reinforced, and the consequences for inappropriate behavior (e.g., reteaching the behavioral expectations).

The third recommendation is that of providing professional development on classroom management linked to schoolwide behavioral support. Without the resources and support linked with schoolwide systems, professional development will probably fail (Center on Positive Behavioral Interventions ad Supports, 2004; Sugai & Horner, 2006). School-wide behavior support provides the framework for prevention and the foundation for effective classroom organization and management.

Oliver and Reschly (NCCTQ, 2007) write, “School systems can no longer operate with a reactive paradigm of school discipline if the mandates of NCLB and IDEA are to be realized. Prevention requires schools to plan actively to meet the early behavioral needs of students before more intensive kinds of intervention and support are required and to avoid negative outcomes such as suspension. Proactive planning to address the emotional-behavioral needs of at-risk students or students with disabilities must begin with a schoolwide effort that systematically addresses the behavioral competence of all students” (p. 10).

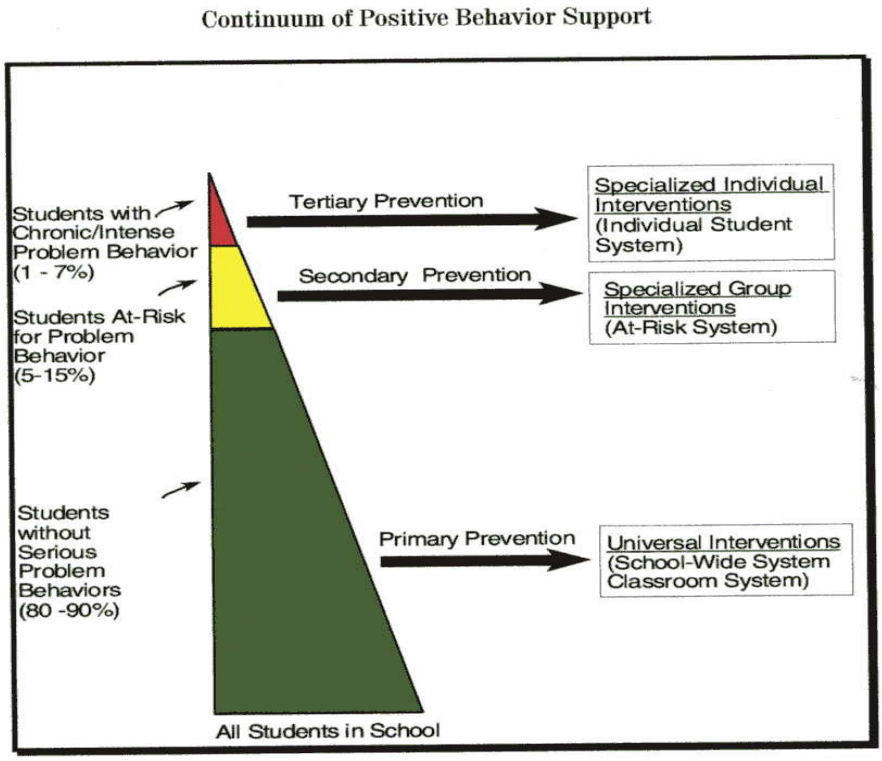
The secondary prevention tier in the prevention model focuses on children who are at risk for problem behavior, but for whom intensive, individualized intervention is not necessary. Children with high-risk factors, such as poverty and divorce, are less likely to respond to primary prevention efforts and remain at risk for developing lasting patterns of problem behavior unless they receive additional assistance. Examples of secondary interventions include mentoring, small-group social skills lessons, anger management/self-control training, parent training, behavior contracts, specialized tutoring, check-in/check-out, and Big Brother/Sister programs (Crone, Horner, & Hawken, 2004; Davies & McLaughin, 1989; Dougherty & Dougherty, 1977; Hawken & Horner, 2003; Leach & Byrne, 1986; Lewis, Colvin, & Sugai, 2000; March & Horner, 2002; Nelson, Martella, & Garland, 1998).

The tertiary prevention tier is reserved for children with the most intense behavior-support needs. Collaborative, wraparound interagency cooperation is at the core of tertiary interventions. Interventions at this level are comprehensive in that a team of individuals is typically involved, including parents, community agency personnel,

educators, administrators, and support staff, school psychologist, counselors, and other.; and interventions are based on a comprehensive assessment of the problem and the organization of strategies that incorporate information obtained from these assessments. Research results are encouraging and suggest that when individualized planning is blended with functional assessment, comprehensive support plan design, adequate personnel and resources, and active use of data for decision making, impressive changes can be observed in the behavior of children with significant problem behaviors (Carr et al., 1999; Didden, Duker, & Korzilius, 1997; Eber et al., 2002; Ingram, 2002; O'Neill et al., 1997; Todd, Horner, Sugai, & Spargue, 1999).

The commonly used pyramid in Figure 1 illustrates the SWPBS three-tier approach and the percentages of students that research has demonstrated typically are impacted at each level.

Figure 1: SWPBS Three-Tier Approach



The goal of SWPBS is to develop host environments that provide the processes and supports and that increase a school's capacity to adopt and sustain the use of evidence-based practices (Luiselli & Diamont, 2002, p. 38). SWPBS logic is that successful individual student behavior support is linked to host environments or school climates that are effective and efficient (Zins & Ponte, 1990). Underlying the theory are the assumptions that if systems and plans for teaching appropriate behavior, with appropriate reinforcement and consequences, are consistently implemented throughout the school community by all stakeholders, the majority (85%) of all students will be actively and positively engaged in learning and other school activities. These students then act as positive role models for other students and allow time for teachers and staff to implement more intensive interventions for students with more serious behavioral and emotional needs. Teachers and staff are trained in small group interventions, conducting

functional behavioral assessments, and writing behavioral plans for more severe students. Collaboration with other social service agencies is also fostered for students requiring tertiary-level support. The results are improved school classroom climate and student behavior. Two key messages from this model are: (a) Schools need multiple behavior-support systems to create safe and encouraging environments, and (b) the most efficient approach to decreasing problem behaviors in schools is though investment in prevention. The need for high-intensity, individualized interventions will remain, but schools also need primary and secondary-level sets of procedures.

A number of models and programs operationalizing the three-tiered approach have appeared in the literature (Rosenberg et al., 2004). Project PREPARE (Proactive, Responsive, Empirical, and Proactive Alternatives in Regular Education) (Colvin, Kameenui, & Sugai, 1993) was an early school-wide behavior management model that employed an empirically derived model of staff development that focused on the prevention of behavior management problems. As part of training, the staff were guided to develop a consistent, consensual approach to managing problem behaviors. The system was viewed as an instrument for assisting students to achieve success, and problem behaviors were approached with positive prevention strategies rather than punitive responses.

Building on the success of Project PREPARE, Sugai and colleagues created Effective Behavioral Support (EBS) a systems approach to enhancing the capacity of schools to adopt and sustain the use of effective behavioral practices for all students (Lewis & Sugai, 1999; Sugai et al., 2000). School-based teams were provided training in systems change and management principles. The focus of EBS is to enhance a school's

capability to initiate and maintain the system through team-based problem-solving and planning, administrator and staff support, systematic assessment of disciplinary practices and process, ongoing staff development, and database action planning and decision making. EBS was gradually renamed SWPBS to align with and reflect the IDEA 1997 positive behavioral and interventions and support (PBIS) language and newly created OSEP PBIS Technical Assistance Center.

The program Prevention, Action, and Resolution (PAR) is another example of a school-wide behavior management process customized to the unique needs of a school (Rosenberg & Jackman, 2000). Applying the three-tiered conceptual framework, PAR employs a process-based approach in which collaborative teams of teachers, school administrators, parents, and related service personnel work in a prescriptive workshop to build consensus on plans and strategies to prevent the occurrence of problem behaviors in their schools (Rosenberg et al. 2004).

Earlier in 1995, the Office of Juvenile Justice and Delinquency Prevention (OJJDP) recommended the three-tier approach for addressing the problems of youth offenders. A list of risk and correlated protective factors across the domains of community, family, school, and individual/peer group was developed. Researchers emphasized that in the context of interventions, addressing risk and protective factors simultaneously will produce better positive outcomes than addressing either one alone (Hawkins, 1996; Hawkins & Catalano, 1992; OJJDP, 1995).

As stated earlier, in April 2000, the Department of Education and Department of Justice published *Safeguarding Our Children: An Action Guide,* which recommended the three-tier model of prevention, early intervention, and intensive services as a way to

provide a safe learning environment and address the challenging behaviors of youth with emotional and behavioral difficulties (Dwyer & Osher, 2000).

According to Bambara and Kern (2005), SWPBS blends four key elements: outcomes, practices, systems, and data use. The first feature and the foundation of SWPBS is a focus on student outcomes. Schools are expected to be safe environments where students learn the academic and social skills needed for life in our society. The basic goals of any system for SWPBS must be to provide the behavioral assistance needed to achieve these outcomes. Schools should be able to define measurable standards for student achievement, social behavior, and safety. In schools that are behaviorally successful, the environment is predictable, positive, and consistent. Children know the behavioral expectations of the school, receive instruction on how to be behaviorally successful, and are acknowledged and supported in their efforts to apply that instruction.

The second feature of SWPBS is the use of research-validated practices. These include the curriculum, classroom management, instructional procedures, rewards, and contingencies that are used on a daily basis to build and sustain student competencies. Practices are what teachers use to build and influence student behavior, and are the basis of classroom and behavior management efforts. According to Bambara and Kern (2005) there are five specific practices used to achieve primary prevention within the SWPBS model: define expectations, teach expectations, monitor and encourage expected behavioral, prevent and discourage problem behaviors, and collect and use data for decision making.

The third feature of SWPBS is an emphasis on the systems needed to support implementation and sustained use of effective practices. Too often, effective practices are introduced without the systems-level support needed to carry them forward. Bambara and Kern (2005) identify the school-wide systems needed for effective SWPBS implementation and sustainability as the following: team-based implementation, administrative leadership, documented commitment, adequate personnel and time, budgeted support, information systems, policies, staffing patterns, staff training, and action plans. The fourth and final defining feature of SWPBS is the active collection and use of data for decision making.

According to the recently prepared document *Talking Points on School-wide Positive Behavior Support & School-Based Mental Health*, by the Office of Special Education Programs Technical Assistance Center on Positive Behavioral Interventions and Supports (2006), the following principles or tenets are needed to guide the adoption and implementation of SWPBS:

> (a) Prevention must be a priority in all intervention efforts for emotional and behavioral problems, that is, preventing their development, future occurrences, and worsening; (b) priority must be directed toward research-based interventions and practices; (c) a full continuum of effective, efficient, and relevant academic and behavior interventions and supports is needed to support all students and their families; (d) a comprehensive system of school-based mental health must unify and integrate education, public health, child and family welfare, juvenile justice, and mental health; (e) research-to-practice must consider the

> adaptation of research-based interventions and practices to real living, teaching, and learning environments; (f) self-assessment, continuous progress monitoring, and systematic data-based decisions must guide selection, adoption, adaptation, implementation, and evaluation of intervention decisions; and (g) research-based practices must be supported directly and formally by establishing local behavioral capacity for leadership, coordination, training, evaluation, and political support (p. 2).

The following features are typically ascribed to SWPBS (OSEP, 2006):

> (a) SWPBS is not an intervention, curriculum, or program, but instead a systems approach for the efficient adoption and implementation of effective and relevant behavioral interventions in schools; (b) SWPBS is not just for students in special education or with disabilities, but for ALL students for whom academic achievement, social behavior success, and self-management are important; (c) SWPBS involves a formal investment in the establishment of local behavioral competence, capacity, and priority; and (d) SWPBS emphasizes the achievement of valued outcomes that are defined by systematic self-assessment, achieved through the use of effective and individualized interventions, and supported through systems of continuous regeneration for implementation fidelity, durability, and controlled expansion (p. 3).

While SWPBS implementation plans and procedures are determined by individual school-based teams, and therefore vary among schools, most schools implementing SWPBS have the following common components: (a) an agreed upon and common

approach to discipline, developed by school staff members, families, students, and community representatives, that is proactive, positive, efficient, and applied consistently across all school settings; (b) school-wide disciplinary policies with a purpose statement, code of conduct, specific rules, procedures for teaching expectations to students, and consequences that can accommodate student differences; (c) a continuum of procedures for supporting positive behavior and addressing negative behavior, including Functional Behavioral Assessments (FBA) and Behavioral Intervention Plans (BIP); and (d) a behavior-support team consisting of at least some members with expertise in behavior management, school teams made up of general and special education teachers, clinical staff, and administrators who meet regularly throughout the year to review discipline data and intervention resources (Heineman et al., 1999; OSEP, 2002; Nelson et al., 2002).

In recent years there has been increasing advocacy for the integration of school mental health services within the SWPBS framework. National Association of State Directors of Special Education (NASDSE) convened a policy forum in 2004 for the purposes of clarifying the intersection between school mental health and positive behavioral support initiatives and what their intersection means to the field; describing collaborative state and local initiatives in the area of school mental health and PBS, including those that emphasize interdisciplinary approaches; and examining factors that facilitate the development of these collaborations and support their success (Muller & Jackson, 2004). The Executive Director of NASDSE, Bill East, stated at this forum that "NASDSE has an interest in promoting both positive behavioral support and mental health initiatives…When school-wide behavioral support and mental health services work together, students and families benefit and learning can occur in a positive

environment. Sometimes, when working with students and families, the roles and services of education and mental health professionals will overlap. The challenge is to provide a system of services that is not confusing for students and families." (Muller & Jackson, 2004, pp. 2-3). One conclusion from the policy forum was that it is very likely that mental health services will be needed for the top 3–5% of students in the SWPBS framework. Mental health workers need to be aware of the schoolwide systems and whatever they develop needs to link to that system. Mental health should not be treated as a separate set of services, but rather as a part of the PBS continuum (Muller & Jackson, 2004).

Dr. Mark Weist who works at the University of Maryland's Center for School Mental Health Assistance (CSMHA) states, "that the purpose of expanded school mental health is to develop a full array of effective programs and services that improve the school environment, reduce barriers to learning, and provide prevention, early intervention and treatment for all children and youth, not just children and youth receiving special education services. A truly shared agenda between schools and mental health reduces the burden on the education system, acknowledges that together systems will function better through their connection to the schools, and moves a community toward a system of care perspective for all children, not just those diagnosed with emotional disturbance" Dr. Weist goes on to say, "there is a complementarity between PBS and expanded school mental health. Each emphasizes a different part of the triangle, but combined can mutually reinforce one another. PBS schools are doing wonders, but often do not attend adequately to students with mental health issues. PBS can help mental

health folks be more environmentally focused, as PBS creates a readiness for a more intensive focus on mental health in the schools" (Muller & Jackson, 2004, pp. 12-14).

Another example of SWPBS and more intensive behavioral interventions includes the advocacy by some researchers for the inclusion of the wraparound process. The wraparound process is a family-centered, strength-based philosophy of care used to guide service planning for students with emotional and behavioral disabilities (EBD) and their families that can serve as a tool for building constructive relationships and support networks among youth with EBD and their families, teachers, and other caregivers. Careful and systematic application of the wraparound process can increase the likelihood that appropriate supports and intervention are adopted, implemented, and sustained. Together, the wraparound process and the SWPBS approach can offer a potentially important and efficient means of improving the educational and behavioral programming of students with, or at risk of, developing severe problem behaviors (Eber, Sugai, Smith, & Scott, 2002).

There also is increasing collaboration and comparison by researchers on the commonalities of SWPBS and Response to Intervention (RTI) models. RTI is defined as "the practice of providing high-quality instruction and interventions matched to student need, monitoring progress frequently to make decisions about changes in instruction or goals, and applying child response data to important educational decisions" (Batsche et al., 2005, p. 5). RTI and SWPBS share many common characteristics including: a three-tier continuum of evidence based interventions, screening to identify students at risk, progress monitoring, problem solving and effective team decision making, and a need for implementation fidelity (Sugai & Horner, 2007). However, like SWPBS, the

implementation of RTI can be difficult and has various implications: (a) how do special and general education teachers function in this new framework; (b) what curricular and instructional decisions are necessary for full implementation; and (c) how are students fairly and accurately screened and identified for interventions (Sugai & Horner, 2007).

Summary of Conceptual Framework

School-wide positive behavioral support (SWPBS) has advanced from the early behavioral analysis model founded by B. F. Skinner and important principles of the ecological, sociological, and organizational theories of human behavior and development. Some of the key elements and characteristics of the behavioral analysis, applied behavioral analysis, and positive behavioral support approaches evident in SWPBS are these: careful definition of behaviors, functional behavioral assessment, systematic and precise data collection and analysis, examination of outcomes associated with interventions, use of positive reinforcers, direct instruction, and contingency contracting.

Brofenbrenner developed a conceptual framework that includes four interlocking systems that shape and influence individual development. Some of the principles in the ecological model are addressing behavior in natural environment, coordinating all systems, data collection, and analysis.

The SWPBS conceptual framework also includes sociological models such as Dreikurs' social discipline model, which identifies four goals for misbehavior: attention, control and power, revenge, and helplessness. Similar to the behavioral and ecological approaches, this model includes collecting data and determining the goals or motives for misbehavior, which can lead to more effective interventions. Bandura's social learning theory is an expansion of traditional learning theory that incorporates modeling or

observational learning that can account for behavior change. And, sociological models highlight the socially defined nature of disordered behavior and are particularly critical of labeling theory.

Organizational behavior management and change also have contributed to the systems approach of SWPBS (Sugai & Horner, 2002). Carr (2007) identified six organizational management models that have begun to influence PBS implementation: (1) effective service delivery models; (2) training models; (3) team-building models; (4) models to build staff motivation; (5) models of accountability; and (6) data management systems. All of the above models have contributed to the urgency in finding general education systems, such as SWPBS, that can address problem behaviors within our schools rather than label and or push students into special education or alternative education.

Several models of school-wide behavior management systems have emerged since the seminal article by Walker et al. in 1996 first described a fully integrated approach to preventing and addressing student misbehavior utilizing the three tier-model used by the U.S. Public Health Services. Walker et al. (1996) and Muller and Jackson (2004) have presented convincing arguments as to why schools should take a lead role in addressing the rising degree of at-risk behavior of students. The Effective Behavioral Support model was developed by Sugai et al. (2000), and then renamed School-wide Positive Behavioral Support (SWPBS) when the terms *positive behavioral support and interventions* and *functional behavioral analysis* were codified in the 1997 reauthorization of PL. 94-142. SWPBS has emerged as the most sophisticated and widely used school-wide behavior management system in schools today. SWPBS is described as

follows: a systems approach for the efficient adoption and implementation of effective and relevant behavioral interventions in schools; not just for students in special education or with disabilities, but for ALL students; involves a formal investment in the establishment of local behavioral competence, capacity, and priority; emphasizes the achievement of valued outcomes that are defined by systematic self-assessment, achieved through the use of effective and individualized interventions, and supported through systems of continuous regeneration for implementation fidelity, durability, and controlled expansion (OSEP Technical Assistance Center on Positive Behavioral Interventions and Supports, 2006).

In recent years there has been an increased emphasis and advocacy for the integration of school mental health services within the SWPBS framework to address the needs of Tier III students. In addition, there has been increased collaboration and communication by researchers on the commonalities of the SWPBS and Response to Intervention (RTI) models and the advantages of integrated models to meet both the behavioral and academic needs of all students.

Summary of Research on School-wide Positive Behavior Support

Overview and Prevalence of SWPBS

The need for efficient, effective, and comprehensive systems to address the growing number of students with problem behavior, and the results of early research on the effectiveness of SWPBS in reducing office discipline referrals (ODR) and suspensions, has resulted in the rapid expansion of SWPBS across the United States. The SWPBS approach is currently being implemented in more than 4,000 schools in 30 states and that number is expected to double in the next few years (U.S. Department of

Education, 2005). At present, 22 states (Alabama, Colorado, Delaware, Georgia, Iowa, Kentucky, Maryland, Illinois, Florida, Louisiana, Michigan, Minnesota, Missouri, Montana, Nevada, New Mexico, New York, North Carolina, Ohio, Oregon, South Carolina, West Virginia) and 12 districts have PBIS-implementation networks in place (Doolittle, Sugai, & Horner, 2004; Sugai & Horner, 2007).

In addition, a five-year grant from the Department of Education, Office of Special Education Programs, established a Positive Behavioral Support Technical Assistance Web site; and the Association for Positive Behavioral Support now conducts annually both regional and international conferences. Numerous materials and guides have been developed by universities, research institutes, and the Office of Special Education Programs Center on Positive Behavioral Interventions and Supports, to assist districts and schools in the strategic and system-wide implementation of SWPBS (Eber, 2003; Freeman et al., 2005; Heineman & Nolan, 1999; Knoff, 2002; Lewis, 2001; Sawka, 2002).

School-wide Positive Behavioral Support Implementation

Degree of SWPBS implementation.

A number of studies have shown a positive relationship between degree of SWPBS implementation (full or partial) and the rate of success in reducing student misbehavior and improving student achievement (Florida PBS Project, 2005; Horner et al., 2004; McCart, 2003; Nakasato, 2000; Nersesain et al., 2000). Nersesain et al. (2000) examined data from 20 schools in one district and found that schools which were implementing more features of SWPBS indeed had higher scores on the on the Schoolwide Evaluation Tool (SET), (Horner et al., 2004). The average SET scores for

schools were: post-Year One, 65%; post-Year Two, 79%; and post-Year Three, 88%. These results demonstrated that schools beginning SWPBS implementation had lower SET scores that schools implementing for a year or more. Researchers also found that schools which had participated in the district training produced more substantive changes in their behavior support systems, and that as school teams completed training they were successful in maintaining changes.

The Illinois PBIS Evaluation Center, assisted by Loyola University, collects data and conducts statewide program evaluation every year for schools and districts implementing SWPBS. The state School-wide Information System (SWIS) data showed that in fiscal year 2005, PBIS schools that had reached full implementation (e.g., SET scores of at least 80/80) had significantly fewer discipline problems than those that had not yet reached 80/80 as measured by the SET (Bazelon, 2006). Fully implementing elementary schools experienced a 46% lower rate of ODR than schools that had only partially implemented. Middle schools fully implemented recorded a 38% lower rate of ODR than partially implementing ones (Horner, Sugai, Eber, & Lewandowsi, 2004).

The Illinois PBIS Fiscal Year 2006 End of the Year Report states that 91 schools in one Illinois district that were fully implementing SWPBS, as measured by the SET, were compared to 61 schools for which the SET indicated had obtained partial implementation of SWPBS, and they found the difference in improved student behavior between fully and partially implementing schools was statistically significant. And in another Illinois district, 112 Schools, with full SWPBS implementation as measured by SET, were compared to 84 partially implementing schools. Results indicated higher mean

scores on reading (mean=64) for fully implementing schools, than for partially implementing schools (mean=58) (t= -2.476, Df=194, p<.014).

The Florida PBS Project at the University of South Florida (2005) utilized the *PBS Benchmarks of Quality* with 91 schools in 2004–2005 and 184 schools in 2005–2006 that demonstrated that ODR rates were consistently 25–30% lower in schools with higher SWPBS implementation. Eighteen schools with higher level of implementation realized a nearly 25% greater reduction of ODR than the 14 schools that did not implement as highly. In addition, overall, schools of all types that were trained in the PBS demonstrated a 60% reduction in number of ODR rates after their first year of implementation. Middle schools in this evaluation demonstrated no reductions in ODRs until the second year of implementation.

Lastly, McCart (2003) found that schools with a high fidelity of SWPBS implementation as measured by SET resulted in decreased student misbehavior with more students recognized and rewarded more often, less exclusionary disciplinary practices, increased instructional hours, and increased academic enrichment.

Teaching and supporting prosocial behaviors.

Another body of literature validates the use of systematic techniques for teaching, precorrection, direct supervision, and supporting appropriate behavior in children. Lewis and Sugai (1999); Luiselli, Putnam, and Sunderland, (2002); and Sprick, Sprick, and Garrison (1992) demonstrated the benefits of teaching prosocial skills and appropriate behaviors at the universal level of SWPBS implementation. The results of a study by Colvin, Sugai, Good, and Lee (1997) indicated a significant reduction in student misbehavior during transitions after the implementation of precorrection and active

supervision; and a study by Stormont, Lewis, and Covington-Smith (2005) revealed the advantages of direct teaching of behaviors to students in Headstart classes. Lewis and Garrison-Harrell (1999) found decreases in problem behavior after implementation of the whole school system, and found that there was no improvement in student behaviors when social skills training was implemented alone without the support of the SWPBS.

Staff training and district support.

Several implementation studies discuss the importance of staff training and the correlation of staff training and district support to program success. The New Hampshire Center for Effective Behavioral Interventions and Supports investigated whether training and technical assistance led to increased fidelity of SWPBS implementation. At time of publication, New Hampshire was implementing SWPBS in three cohorts of 105 public and private PreK-12 schools and had results for the first two cohorts. Eighty-one percent of Cohort I schools and 73% of Cohort II schools had reached the 80% criteria on the SET which demonstrates full implementation. New Hampshire researchers also found that 70% of Cohort I schools were successful in creating a universal level where the percentage of students receiving zero or one ODR was above the national average for each respective instructional level. An earlier New Hampshire evaluation report (Muscott et al., 2004, p. 455) states that "PBIS can be implemented with fidelity within one to two years and result in durable deceases in problem behaviors and increases in prosocial skills and ultimately academic achievement in individual schools."

Greenfield's (2004) study of three urban elementary schools indicated a strong correlation of SWPBS implementation to training and emphasized the importance of training for all staff in the SWPBS framework. At Columbus Elementary in Trenton,

New Jersey, Luiselli et al. (2006) found that after teacher training of classroom PBS practices and implementation of both school-wide and classroom PBS, classroom observations revealed higher student on-task behaviors that improved from a baseline of 71% to 80%, and the 1:1 ratio of teacher praise statements to behavior corrections improved from a baseline of 6%-17% to 11%-10% after implementation.

Studies on School-wide Positive Behavioral Support Effectiveness

Out-of-school suspensions and increased instructional time.

The vast majority of evaluation studies have measured the effectiveness of SWPBS by the reductions in the number of office discipline referrals (ODR) and numbers or days of in-school (ISS) and out-of-school suspensions (OSS), with the consequent increased amount of instructional time. Studies have consistently reported reductions of ODR from 80% to 22% in the first year of SWPBS implementation and 76% to 22% during the second year. In addition, researchers report reductions between 62% and 19% OSS and, in general, significant decreases in the use of exclusionary and punitive discipline practices. SWPBS effectiveness studies are summarized in Appendix A.

Greenfield (2004) conducted a case study on the impact of SWPBS in three elementary schools and found consistent reductions in student behavioral indicators from the baseline year to year three of PBS implementation. All three sites reported reductions in ODR and OSS between the baseline (1999–2000) and Year 3 (2002–2003): office discipline referrals, School A reported a 80.3% reduction; School B, 32.3%; and School C, 59.3%; OSS reductions: School A, 19.0%; School B, 29.7%; and School C, 34.3%; and expulsion reductions: School A, 100%; School B, 100%; and School C, 0%.

The first cohort of New Hampshire SWPBS schools, in 2004–2005, saw a 28% drop in ODR. There also were 568 fewer in-school-suspension (ISS) days and 352 fewer OSS days. The hours regained totaled 15,647—10,496 hours for student learning and 2,958 hours for administrative leadership. At the elementary school level in 2003–2004, physical aggression was reduced by 46% and defiance, disrespect, and noncompliance were reduced by 73% (New Hampshire Center for EBIS, 2005).

In 2001, the Center for the Prevention of Youth Violence at Johns Hopkins University joined the Maryland State PBIS collaboration, agreeing to serve on the leadership team and conduct a systematic evaluation of the initiative (Maryland PBIS, 2007). Twenty-one PBIS schools and 16 comparison schools across five counties were randomly selected for the *Project Target* study (Maryland Project Target, 2006–2007). The purpose of the study was to determine (a) if schools that implement the PBIS model have fewer discipline referrals than schools that do not implement the model; (b) if students in schools implementing PBIS have higher academic achievement than students in other schools; (c) if students in PBIS schools are less likely to exhibit problem behaviors; and (d) if teachers in PBIS schools have higher rates of attendance and greater retention than teachers in non-PBIS schools (Maryland Project Target, 2006–2007). Academic data results from Baltimore County are described in a later section.

In addition, the Maryland PBIS leadership team reviews SWPBS data submitted by schools (Maryland PBIS, 2007) to determine SWPBS effectiveness at the school level. For the 2003–2004 school year, the team found, when comparing mean scores of ODRs per day per 100 students to the national average, that the elementary and middle schools scored better than their national counterparts, with .38 ODR per day per 100 students for

pre-K and K–5 versus a national average of .043; and .89 ODR for grades 6–8 versus a national average of .95. Twelve Maryland schools took their annual reductions in lost administrative and instructional time and calculated the savings using a cost-benefit analysis worksheet provided by the State Leadership team. When these numbers were combined, they found that together these schools had recovered 233 days of administrators' time and 700 days of instruction for students (Maryland PBIS, 2007).

A chart illustrating the results or pending results of 30 SWPBS program evaluations and/or research studies is located in Appendix A.

SWPBS and teacher behaviors and attitudes.

Additional studies utilized teacher attitude and school safety surveys in addition to discipline data to determine changes in teacher behaviors and attitudes. Fox et al. (2005) and Safran and Oswald (2003) reported that in schools implementing SWPBS with high levels of fidelity, data indicated that school staff made reduced numbers of referrals to outside experts, increased their use of comprehensive strategies, including greater changes in individual interventions, and decreased timeout practices. In addition, Fox et al. (2005) reported a 50% reduction in staff turnover and improved staff satisfaction. Luiselli, Polack, and Laweda (2006), and Nelson, Colvin, and Smith (1996) reported that study results found improvement in staff attitudes, enthusiasm, and satisfaction, which resulted in both a reduction in staff turnover and higher expectations for all students. Regarding school safety, Bradshaw et al. (2007) and Schneider et al. (2000) reported improved staff attitudes toward school safety, while the Sprague et al. study (2001) found no measurable change in school safety.

Secondary and tertiary interventions outcomes.

Numerous studies also have been conducted on the implementation and effectiveness of specific secondary and/or tertiary interventions within the SWPBS framework. Studies conducted on the secondary interventions of check-in/check-out (Anderson et al., 2004; Cheney et al., in progress; Filter et al., 2007; Lyst et al., 2005; Todd et al., in press), the Behavior Education Program (Hawken, 2006; Hawken, MacLeod, & Rawlings, 2007; McCurdy, Kunsch, & Reibstein, 2007), and the daily behavior report cards (Chafouleas et al., in press; Chafouleas et al., 2007) have consistently indicated improved academic engagement and behavior. Studies on the effectiveness of social skills training (Gresham et al., 2001; Lane, et al., 2003; Moote, Smyth, & Wodarski, 1999) have had mixed results. Lewis and Garrison-Harrell (1999) found that social skill training alone did not reduce problem behavior within schools, finding that when the intervention was provided in schools implementing SWPBS, results were seen in the reduction of problem behavior as measured by ODR and OSS. Lewis, Sugai, and Colvin (1998) studied two targeted interventions, social skills training and points systems for group motivation, and found significant decreases in ODR, OSS and in-school suspensions (ISS).

Studies on tertiary interventions such as behavior support teams (Benazzi et al, 2006), and use of functional behavioral assessments (Brooks et al., 2003; Ingram, Lewis-Palmer, & Sugai, 2005; Scott et al., 2005) also have demonstrated positive results in increasing the academic engagement and reducing the problem behavior of students with severe problem behavior in schools.

A new assessment tool, the Checklist for Individual Student Systems (CISS) (Anderson, Lewis-Palmer, Todd, Horner, Sugai, & Sampson, 2008), has been recently developed for school teams to self-assess the implementation status of secondary and tertiary behavior support systems within their schools. The CISS is based on factors drawn from the Individual Student Systems Evaluation Tool (I-SSET), and is designed to answer three basic questions: 1) Are the foundational (organizational) elements in place for implementing secondary and tertiary behavior support practices? 2) Is a target behavior support system in place? and 3) Is a function-based, intensive, individual behavior support system in place? School teams can use the CISS solely for building an action plan or to delineate next steps in the implementation process, or schools can use the CISS to assess progress over time. Since the measure is scored and scores for each area and the overall measure can be tracked on a year-to-year basis, the instrument will most likely also be used for future research.

SWPBS evidence-based practice studies in progress.

Recently, SWPBS advocates responded to questions regarding whether SWPBS is an "evidence-based practice" as mandated in No Child Left Behind. Four studies were located which have been either proposed, conducted, or are under review that are utilizing randomized control trials for assessing SWPBS. Two studies, Bradshaw, Leaf, and Debnam, (2007) and Horner et al. (under review), are conducting research in elementary schools in either Maryland, Illinois, or Hawaii. Preliminary findings in Maryland (Bradshaw et al., 2007) indicate the following: (a) a significant change in the Schoolwide Evaluation Tool and the Effective Behavior Survey by year four of SWPBS implementation; (b) a significant effect of PBIS on organization health as measured by

the Organizational Health Survey; (c) significant reductions in ODR and truancies; (d) nonsignificant reductions in suspensions; and (e) academics as measured by the Maryland Standardized Achievement showed improvement over time or a positive trend.

The Horner study in Illinois and Hawaii had three general findings: (a) significant improvement in SET scores after staff training; (b) significant improvement in the perception of school as a safe place; and (c) preliminary data showing improved reading achievement. Sprague and Biglan (in progress) have initiated a middle schools study with 36 schools, 16 treatment and 16 receiving information only, utilizing direct observation (e.g., increased time on task, improved behavior) data. Bradshaw and Leaf (in progress) also have recently initiated a randomized control trial of secondary and tertiary interventions added to schools already using primary prevention efforts, and it is scheduled for completion in 2011.

SWPBS Implementation and Effectiveness Studies Summary

Recent research on SWPBS suggests that when SWPBS is implemented with a high degree of fidelity, and staff are trained, outcomes are positive for the reduction of problem behaviors at all levels (universal, secondary, individual) in all elementary and middle school settings (Lewis-Palmer & Larson, 1999; Lewis, Sugai, & Colvin, 1998; Lohrmann-O'Rourke et al., 2000; Luiselli, Putman, & Sunderland, 2002; Metzler, Biglan, & Rubsy, 2001; Nakasato, 2000; Nelson, 1996; Sadler, 2000; Scott, 2001; Todd, Haugen, Anderson, & Springgs, 2002).

SWPBS implementation studies reviewed indicated the correlation between the degree of SWPBS implementation, the teaching of prosocial behaviors, staff training, and district support to the success of SWPBS implementation and overall effectiveness of the

program. SWPBS effectiveness studies reviewed indicated that when SWPBS was implemented with a high level of fidelity for at least one year, there were significant reductions in student ODRs and student suspensions. Research also validated the use of systematic techniques for teaching, precorrection, direct supervision, and support for appropriate behavior. Data from SWPBS schools indicated the increased use of comprehension strategies and individual interventions in schools, and improved attitude, enthusiasm, and staff satisfaction in SWPBS schools. These initial studies of SWPBS have primarily focused on implementation and overall outcomes, and not on the relationship among SWPBS and various school demographic variables including students' academic achievement. However, studies are emerging on the relationship between SWPBS and academic achievement and on the effectiveness of specific secondary and tertiary interventions such as check-in/check-out, daily behavior report cards, and functional behavioral assessments. A chart summarizing 30 SWPBS program evaluation and research studies on SWPBS effectiveness is located in Appendix A.

SWPBS and School Demographic Characteristics Studies

SWPBS Socioeconomic Status

The literature on school demographic variables and SWPBS indicated that the greatest amount of research to date is on SWPBS and school socioeconomic status. These studies indicated significant reductions in ODR and overall suspensions, and improved teacher attitudes and skills in working with students with problem behavior (Arter, 2005; McCart, 2003; McCurdy, Mannella, & Eldridge, 2003; Nelson, 1996; Netzel & Eber, 2003; Powers, 2003).

SWPBS and Students with Disabilities

Two research studies (Doolittle et al., 2004; Greenfield, 2004) were found on the relationship between SWPBS and students with disabilities that also indicated significant reductions in ODR and suspensions for students with disabilities in SWPBS schools. In addition, in one study teachers reported that students with emotional disturbance were more successful in the general education classroom in SWPBS schools, and that when schools were fully implementing SWPBS at the universal level more secondary and tertiary interventions were utilized for students with more severe emotional and behavioral problems (Greenfield, 2004).

SWPBS and School Size

No research was located that studied the relationship between SWPBS and school size. However, school size has been studied extensively by educators and researchers to determine whether positive outcomes for students and teachers can be attributed to school size, particularly small schools, or to other variables, such as rural or urban setting or socio- economic status.

In reviewing the literature for her study, Overbay (2003) found a lack of consensus in recent research. Overbay reports that some research suggests that smaller schools are linked to improved attendance, participation in school activities, and higher achievement, while other studies indicate that school size does not have a significant impact on student performance, and cite other variables such as district and school affluence as more reliable predictors of achievement. In fact, some studies suggest that students in more-affluent districts may benefit from larger schools. Indeed, the three studies that Overbay (2003) specifically reviewed involving elementary schools all found

that small schools had little positive impact on student performance. These studies included (a) Andrews et al. (2002), a meta-analysis of cost and production function studies, which found that moderately sized elementary schools (300–500) may optimally balance costs and benefits; (b) Eberts, Kehoe, and Stone (1984), who studied 286 elementary schools and found school size in small (under 200) and medium (400–600) elementary schools had little impact on student performance, although performance declined significantly as enrollment topped 800; and (c) Wendling and Cohen (1981), studied 1,021 New York State elementary schools, and found that high-achieving schools had a mean size of 447 students and low-achieving schools had a mean size of 776 students and when controlling for SES, school size had a negative effect on achievement. A body of research however does exist on the benefits to students and teachers with smaller numbers of students than in larger schools.

Roeder (2002) also analyzed the effects of school size on four measures of school performance in the two largest school districts in Kentucky. This researcher found that size and size interacting with poverty has no effect on school performance; rather, that poverty is the major determinant of performance, and that smaller school size does not reduce the negative effects of poverty on performance. Roeder (2002) concludes that (a) poverty remains the substantial determinant of performance,(b) performance varies significantly by school type (elementary, middle, or high school), and (c) the interaction of poverty with elementary schools is significant for several measures of performance.

However, three studies were located whose results reported the positive effects of small school size on school variables such as rural/urban schools, low socioeconomic schools, and academic achievement. La Sage and Ye (2000) designed research to

determine whether positive effects are a result of the rural environment or school size, since many rural schools tend to be small. Data collected on 251,049 students in grades K–12 in 291 elementary, middle, and high schools in an urban Texas district indicated that favorable results can be attributed to school size. Howley and Bickel (2000) found that smaller schools helped to mitigate the negative effects of poverty in student performance. These effects were consistent in school systems as diverse as those in Georgia, Ohio, and Texas. When controls for race were introduced, results did not change significantly. In Montana, which has primarily smaller schools, small school results were stronger for all socioeconomic levels (AASA Leadership News, 2000). And the relationship between elementary school enrollment and fifth-grade achievement was explored using data from a large urban Missouri school district (Alspaugh & Gao, 2003). The district's 39 elementary schools received uniform allocations of resources from the district and used the same instructional materials but varied considerably in K–5 enrollment, socioeconomic status, and student achievement. Stanford 9 NCE reading, math, language, science, and social science achievement scores were compared for schools of less 200, 200–299, 300–399, 400–499, and 500 or more. Controlling for socio-economic status, as indicated by percentage of students receiving free or reduced-price lunch, statistically significant differences were found among the mean levels of achievement of students in the five school enrollment groups. Smaller schools tended to be in the older inner-city part of the district, while larger schools were found in the newer suburban parts of the district. There was a general decline in achievement as school enrollments increased, for both the inner-city and suburban schools.

SWPBS and English Language Learners

No research was located regarding the relationships among SWPBS and English-language learners.

SWPBS and Academic Achievement Studies

Overview

Research is rapidly emerging on the relationship between SWPBS and students' academic achievement at the school, district, and state levels. This is particularly evident as SWPBS has "gone to scale" and is increasingly being implemented at the district and state levels. Studies examining the relationships among SWPBS and school climate, instructional time, standardized academic test scores, and academic interventions are reviewed below.

Importance of School Climate to Academic Achievement in Schools

According to Pallas (1988), "School climate has long been thought to be linked to educational outcomes, especially achievement."(p. 541). Early studies by Gottfredson and Gottfredson (1989), and Wu et al. (1982) found that although students' attitudes and behavior were related to suspension rates, school climate variables were more significantly related to student suspension, and that a relationship between school climate and student achievement can be demonstrated.

DiStefano et al. (2007) conducted a study at the South Carolina Educational Policy Center to examine the factors underlying school climate surveys administered to students and teachers across the state of South Carolina. The purpose was to identify a factor structure that could be used to cluster schools within the state on identified dimensions of school climate. School achievement on state-mandated assessments from

the school clusters was then correlated to school climate factors. Data in 500 South Carolina schools was analyzed and aggregated and four clusters were identified based on teacher-and-student-factor scores from questionnaires: Cluster 1 indicated better than average school climate; Cluster 2, average climate; Cluster 3, below average climate, and Cluster 4, poor climate. A significant correlation was found regarding the percentage of schools meeting 2005 Adequate Yearly Progress (AYP) and school clusters: In Cluster 1, 84% of the schools made AYP; in Cluster 2, 71%; in Cluster 3, 53%; and in Cluster 4, 31%. Researchers concluded that school climate is important, and provides the context to improving student achievement.

A recent study conducted at the Johns Hopkins Bloomberg School of Public Health and the Johns Hopkins Center for the Prevention of Youth Violence (Koth, Bradshaw, & Leaf, 2008) examined the variation in perceptions of climate based on individual, classroom, and school-level factors to determine the influence of predictors at multiple levels. Data came from 2,468 fifth-grade students in 37 public elementary schools. Two aspects of students' perception of school climate, order and discipline, and achievement motivation were examined. Multilevel analyses indicated that individual level factors such as race and sex accounted for the largest proportion of variance in perceptions of schools climate. School-level factors such as school size and faculty turnover, and several classroom-level factors including characteristics of the teacher, class size, and the concentration of students with behavior problems also were significant predictors of students' perceptions of school climate.

Importance of Instructional Time and Student Engagement to Academic Achievement

Putnam, Horner, and Algozzine (2006, p. 2) wrote in their literature review that "research has consistently shown that the amount of time that instruction is provided is highly correlated with student achievement (p. 2). Putnam, Horner, and Algozzine describe Scott and Barrett's (2004) study which implemented SWPBS in an urban elementary school, where the annual rate of ODR decreased by 562 referrals and 55 suspensions over a two-year time period. Scott and Barrett (2004) estimated that when a student receives an ODR, he/she loses 20 minutes of instructional time, and when a student is given an OSS, he/she loses one day of instructional time. The average instructional days gained per year through the reduction in ODRs were 29.5 days and through the reduction in OSS were 50 days, for a total of 79.5 days. Putnam, Handler, and O'Leary-Zonarich (2003) and Larsen, Steele, and Sailor, (2007) also reported similar results with gains of 169 instructional days in a low-performing elementary school, and 238.75 hours saved or 40 days of administrator time in a middle school. In addition, Putnam, Horner, and Algozzine (2006), Putnam, Handler, and O'Leary-Zonarich (2003), and Putnam, Handler, Rey, and O'Leary-Zonarich (2002) found in their study that teachers who were implementing that class-wide behavior support increased the time students received in academic instruction by 57% increase over pre-intervention levels.

Putnam and colleagues (2006) reported that student academic engagement has been found to be correlated with improved academic achievement. For example Frederick (1977) found that high-achieving students in high schools were academically engaged 75% of the time, compared to 51% for low-achieving students. In another study of six classrooms that implemented behavior support plans, on task behavior increased by

24% over the baseline levels" (p. 2). Also, in their literature review, Putnam, Horner, and Algozzine (2006) state that, in general, "Recent research indicates that school-wide positive behavior is associated with decreased exclusionary, reactive and punitive discipline practices (Horner, Sugai, Todd, & Lewis-Palmer, 2005; Luiselli, Putnam, & Sunderland, 2002), increased student satisfaction (Lewis-Palmer, Horner, Sugai, Eber, & Phillips, 2002), and improved perceptions of school safety (Schneider, Walker, & Sprague, 2000)" (Putnam, Horner, & Algozzine, p. 1).

SWPBS and Math Achievement as Measured by Standardized Tests

Eight SWPBS program evaluations or research studies were located that specifically investigated the relationship of SWPBS and math and/or reading achievement. Putnam, Handler, and O'Leary-Zonarich (2003) found that math and reading scores improved on standardized testing following behavior-support intervention in an urban elementary school. Luiselli, Putnam, Handler, and Feinberg (2005) studied the effects of a whole-school positive behavior support on discipline problems and academic outcomes of students enrolled in an elementary school. The latter study spanned three consecutive school years and included improving instructional methods, formulating behavior expectations, increasing classroom active engagement, reinforcing positive performance, and monitoring efficacy through data-based evaluation. Student academic performance as measured by a standardized test improved in math by 25 percentage points, and in reading 18 percentage points.

Putnam, Horner, and Alzozzine (2006) report that "an Oregon comparative district-wide study (www.4j.lane.edu/ess/data/ districtdata.html) of four middle and thirteen elementary schools that implemented SWPBS demonstrated increased

achievement on the Oregon State Achievement tests as compared with four middle and six elementary schools that did not implement SWPBS. The schools that implemented SWPBS tended to be schools that began with lower scores meaning the degree of improvement was even much higher" (p. 3). The above researchers also reported that Horner, Sugai, Todd, and Lewis-Palmer (2005) demonstrated similar findings with another school district of 19 elementary schools. Between the 1997–1998 and 2001–2002 academic years, 13 of the schools implemented SWPBS and 6 schools did not. They compared the percentage of third-graders who met statewide reading standards in the 1998–1998 academic year with the percentage in the 2001–2002 academic year. Seventy-seven percent of the schools that adopted SWPBS support practices had improved outcomes. The change in percentage of students meeting standards ranged from 2% to over 15% in these schools. Only one of the six schools (16%) that not did implement SWPBS showed improvement (Putnam, Horner, & Algozzine, 2006).

Larsen, Steele, and Sailer (APBS Conference presentation, 2007) completed a three-year study in an inner-city school, finding reductions in ODRs and suspensions and corresponding increases in mathematics test scores from the baseline year to year three. While reading scores did not increase from baseline, positive changes in student performance were documented from year one to year three.

The Illinois PBIS Evaluation Center's analysis of academic performance of schools implementing school-wide positive behavior support compared with schools not implementing programs during the 2002–2003 school year showed that the schools (n = 52) in which SWPBS were implemented had 62% of their third-grade students meeting the Illinois State Achievement Test Reading Standard. By contrast, only 47% of the

students met the Illinois State Achievement Reading Test Standard in schools (n = 69) that had not fully implemented positive behavior support (Horner, Sugai, Eber, & Lewandowski, 2004). In fiscal years 2002 through 2006, the Illinois PBIS Network participated in a multistate, national PBIS study that assessed the impact of PBIS training on the percentage of students' grade-level performance on standardized reading assessment at the third-grade level. Grade-level performance on standardized reading assessments was 12% higher than the control group in year two, and 10% higher at year three. The authors noted that the results provide only a preliminary indication that schools implementing PBIS were associated with increased third-grade reading performance, and that the finding needs "elaboration and replication" (Horner et al., 2004).

Baltimore County Public Schools, in Maryland, has combined a three-tier model for both behavioral and academic interventions. In general, academic interventions include consistent implementation of core curriculum, ongoing curriculum-based assessment, differentiated instruction, and intensive special education services; behavioral interventions included universal, targeted, and individual student systems. The Maryland State Assessments (MSA) 2003–2006 results indicated that third-grade scores increased 27% in math and 37% in reading; fifth-grade scores increased 41% in math and 17% in reading (Parr, Kidder, & Barrett, 2007).

McIntosh et al. (2006) have completed two studies investigating the relationship between reading achievement and behavior. The Pathway to Behavior Study (McIntosh et al., 2006) was a six-year (1998–2004) longitudinal study conducted in one small district exploring the relationship between reading and behavior through the prediction of

problem behavior in fifth grade. The primary research question was, "To what extent do the ODR and Dynamic Indicators of Basic Early Literacy Skills (DIBEL) scores in kindergarten predict multiple discipline referrals in fifth grade?" Results indicated that DIBELS was a significant predictor, and that deficits in either behavior or academics were independent risk factors, providing support for both pathways. The study supported the conclusions that problems in academics precede problems in behavior and that durable-skill deficits accounted for more variance than skills at school entry.

A second study, Reading and Function Study (McIntosh et al., 2006), included 47 students in grades 4–6, with two or more ODRs, from two different school districts. Results showed evidence of quantitative differences in student reading skill levels based on function of primary problem behavior with escape/avoidance behaviors resulting in a greater misbehavior than peer-seeking behaviors. Implications included continued support for integrating reading and behavior support systems, and consideration of academic skills in determining function of problem behavior.

SWPBS and Academic Interventions

Recently the three-tier reading model has been developed to improve the reading skills of students who are poor readers (Vaughn & Linan-Thompson, 2003). While there is no universal definition of the model, the conceptual framework is designed to be implemented in a school-wide setting using research-based programs. As incorporated in SWPBS and response to intervention (RTI) models, three progressively more intensive tiers of intervention are matched to students reading needs. Tier I is typically the core reading program and is designed for all students in the school. According to Kame'enui and Simmons (1998), the core program should result in approximately 70–80% of the

student meeting the benchmarks of the Dynamic Indicators of Basic Early Literacy Skills (DIBELS). In Tier II, supplemental reading instruction is provided to students who are not making progress in the core reading program. These students account for 20% to 30% of the school population (Coyne, Kame'enui, & Simmons, 2004; University of Texas at Austin, 2005). Tier III consists of focused intervention programs and is for those students (5–10%) who did not make progress during the Tier II instruction.

Stewart et al. (2007) analyzed current research on three-tier models of reading and behavior. The researchers conducted an in-depth review of five three-tier reading models, seven three-tier behavior models, and five combined reading and behavior three-tier models. Three primary findings of the meta-analysis are interesting to this study. First, the magnitude of the effect size for the integrated model on reading outcomes was large; yet by comparison, the magnitude of the effect sizes of the reading and behavior models on reading outcomes were moderate and small, respectively. Although the difference between models on reading outcomes was not statistically significant, the integrated model appeared to produce larger improvement in reading skills than the reading only or behavior only approaches. A possible explanation for the effectiveness of an integrated approach on reading may be that reducing problem behavior makes responding to reading instruction and developing reading skills more likely (Bower, 1995; Nelson, Benner, & Gonzalex, 2002). Indeed, a moderate to strong inverse relationship has been demonstrated between problem behaviors and responsiveness to reading intervention (Nelson et al., 2003).

In addition, a moderate effect size was found for the integrated model on behavioral outcomes, whereas the magnitude of the behavior-only model on behavior was

slightly lower. It appears that the integrated model produces not only large gains on reading outcomes but moderate effects on behavior outcomes. Yet the impact of integrated models on behavioral outcomes appears to be not much greater than that of behavior-only models. Although researchers were unable to determine impact of reading only approaches on behavior outcomes, they found that improving reading skills using scientifically based reading interventions improves social adjustment (Benner, Kinder, Beaudoin, Stein, & Hirschmann, 2005: National Reading Panel, 2000; Simons & Kameeenui, 1998). Researchers recommend that reading and behavior experts combine their expertise to form an integrated three-tier model to reach students who are having significant difficulties in both areas.

One of the integrated studies Stewart et al. (2007) analyzed was a study conducted by Lane and Menzies (2003) that implemented and evaluated a multilevel intervention with primary and secondary levels of support with 210 students in an "at risk" elementary school in Southern California. Student outcomes were assessed with curriculum-based measures, state achievement tests, behavior-rating scales and school record reviews. Results indicated that all risk groups (high, medium, low) showed improvement on the Curriculum Based Measurement (CBM) and Stanford Achievement test.

Summary of Studies on SWPBS and Academic Achievement

Nineteen studies, located in Appendix B, indicated positive correlations between school climate, instructional time, academic engagement, and improved academic achievement as measured by standardized test scores and school climate surveys. Five studies specifically addressed the relationship between SWPBS and math achievement.

Several studies—Larson, Steele & Sailor, In press; Putnam, Handler & O'Leary-Zonarich (2003; 2007) and Scott & Barrett (2004)—calculated the instructional days gained per year through the reduction of student ODR and student suspensions. Research also documents the effectiveness of systematic techniques for teaching precorrection, and of secondary and tertiary interventions. The Pathway to Behavior Study and Reading and Function conducted by McIntosh et al. (2006) results indicated that problems in academics precede problems in behavior, that durable-skill deficits accounted for more variance than skills at school entry, and quantitative differences were found in student reading-skill levels based on function of primary problem behavior. Implications included continued support for integrating reading and behavior support systems and the consideration of academic skills in determining function of problem behavior.

Also, in recent years there have been studies attempted on the effectiveness and outcomes of integrated (reading and behavior) three-tier models. Stewart et al. (2007) conducted an in-depth review of five reading models, seven behavior models, and five integrated reading and behavior models and found that the integrated model had the greatest effect size than either the reading-only model or behavior- only model on reading. Also, the integrated model had a slightly better effect size on behavior than the behavior-only model.

Critique of SWPBS Early Research and Instruments

Limitations of Early SWPBS Studies and Instruments

In a recent article, Lane, Wehby, Robertson, and Rogers (2007) discuss some of the difficulties they observed when reviewing early studies of SWPBS. According to the authors, the descriptions of the school populations were often not precise enough in early

studies to allow for replication or accurate conclusions regarding generalizability of outcome; and in other studies the descriptions of intervention and comparison conditions lacked sufficient detail. In addition, outcome measures used in SWPBS prevention studies have been criticized for being too "narrow in scope," with too great a use of office referral and suspension data. And criticism also is leveled at the typically descriptive versus empirical nature of the studies: "A number of initial studies have illustrated that school-wide behavior supports decrease problem behavior, increase time spent in academic instruction, and are associated with improved academic outcomes. These studies are encouraging but remain descriptive in nature and do not have the experimental control needed to confirm a relationship between school-wide PBS and improved academic performance" (Putnam, Horner, & Algozzine, 2006, p. 3).

Kern and Manz (2004) also discussed the common use of ODR in SWPBS research and outcome studies. These researchers state that while the effectiveness of school-wide behavior programs can be easily monitored and evaluated with ODR, issues of construct and social validity exist with this instrument, and the use of ODR has been based on an untested assumption that a connection exists between student behavior and the use of this disciplinary intervention, whereas, in reality, ODR most likely reflects the varying conditions under which school systems and individual staff members conduct formal disciplinary procedure. The unique climates of individual schools are likely to result in differing criteria, procedures, and use of ODR across individual schools. They encourage additional research focusing on various student and school characteristics that could provide important information about the generalizability of ODR.

In addition, several other researchers have raised concerns that while ODRs identify students with high rates of externalizing behaviors, they do not sufficiently identify all students in need of secondary or tertiary supports. Students who have internalizing behaviors, and students with less severe externalizing behaviors are often not reflected in school-wide ODR information (Clonin, McDougal, Clark, & Davison, 2007; Nelson, Bennen, Reid, & Epstien, 2002; Sandomierski, Kincaid, & Algozzine, 2007; Severson, Walker, Hope-Doolittle, Kratochwill, & Gresham, 2007).

Kern and Manz (2004) also discussed the applied, "partnership-driven methodologies" that are central to the development and evaluation of school-wide support programs and the advantages of the partnership process such as culturally responsive interventions that can be implemented with integrity; but they state that conducting experimental research in collaborative and applied contests poses challenges. Key elements of internally valid experimental research, such as comparison groups, randomization, and replication are frequently difficult to attain in partnership-directed research. The authors write that advancing the empirical evidence for SWPBS will require well-controlled experimental replication of specific programs. However, in contrast, the fundamental SWPBS research emphasizes the collaborative development of programs that are suitable to meet the unique needs of each school.

Summary of the Chapter and Implications of Literature Review Findings

Chapter 2 was divided into four broad areas: (1) introduction and literature review methods; (2) societal, historical, and legislative context review; (3) SWPBS conceptual framework literature review; and (4) a summary of prior research on school-wide positive behavioral support as related to school demographic and academic variables.

Literature indicates that responding to concerns about school violence, problem behavior, and ineffective discipline has a long and troubled history. As schools have moved beyond simply excluding children with problem behaviors to policies of proactive development of social behavior and programming, the manner in which educators address the problem behaviors of students has changed (Sugai & Horner, 2002). Experts are now advocating for integrated and comprehensive three-tier systems to addressing the behavior of all students in each school.

SWPBS advanced from the early behavioral model founded by B. F. Skinner as well as from various ecological, sociological, and organizational theories. Some of the key elements and characteristics of the behavioral analysis approach evident in SWPBS are the following: careful definition of behaviors, functional behavioral assessment, systematic and precise data collection and analysis, examination of outcomes associated with interventions, use of positive reinforcers, direct instruction, and contingency contracting. Ecological concepts include Brofenbrenner's four interlocking environmental systems that influence human development, the importance of effective coordination and communication among actors within, the emphasis on addressing behavior in natural environments, and data collection. Sociological concepts include the Dreikurs social discipline model, Bandura's social learning theory, the awareness that appropriate and inappropriate behavior are socially defined, and the dangers of labeling.

The organizational management literature has generated (Carr, 2007) six models that have begun to influence the way in which PBS is implemented: (1) effective service delivery models to address the needs of students with emotional disturbance through interagency collaboration, wraparound services, and flexible funding initiative (Eber &

Nelson, 1997; Turnbull & Turnbull, 2001); (2) effective training models in the disabilities field that now emphasize the use of trainer of trainers approach (Anderson, Russo, Dunlap, & Albin, 1996); (3) team-building models (Sailor & Roger, 2005); (4) models of how to build staff motivation to produce sustainability of best practices over periods of time sufficient to impact behavior change (Crone & Horner, 2003); (5) models of accountability (Crone & Horner, 2003); and (6) data management systems to facilitate and promote the process of decision making based on evidence rather than opinion or emotion (Horner, Todd, Lewis-Palmer, Irvin, Sugai, & Boland, 2004). Carr (2007, p. 9) writes, "Principles of organizational management have demonstrated great potential to create systems that are conducive to supporting PBS best practices."

Several models of school-wide behavior management systems have emerged since the seminal article by Walker et al. (1996) first described a fully integrated approach to preventing and addressing student misbehavior utilizing the three-tier model used by the U.S. Public Health Services. Walker et al. (1996) also presented convincing arguments as to why schools should take a lead role in addressing the rising degree of at-risk behavior of students. The Effective Behavioral Support model developed by Sugai et al. (2000), and then renamed School-wide Positive Behavioral Support after the terms *positive behavioral support and interventions* and *functional behavioral analysis* were codified in the 1997 reauthorization of PL. 94-142, has emerged as the most sophisticated and widely used school-wide behavior management system in schools today.

Research is just emerging on the relationships among school demographic variables, academic achievement, and SWPBS. Early studies indicate that there are positive results for urban schools (Arter, 2005; McCart, 2003; McCurdy, Mannella, &

Eldridge, 2003; Nelson, 1996; Netzel & Eber, 2003; Powers, 2003) and for students with disabilities (Doolittle et al., 2004; Greenfield, 2004) in schools that implement SWPBS. No research was located regarding SWPBS and students identified as English for Speakers of Other Languages and school size. Research on the relationships among school climate, instructional time, academic engagement, and improved academic achievement, as measured by state test score results and school climate surveys, consistently showed positive correlations.

The implications from this literature review for the current study are great. First, there is a well-documented need for more proactive, effective, and comprehensive behavior management systems in our schools, and a growing awareness of the important role schools have in addressing the escalating problem behaviors of youth in our country. Second, it can be anticipated that SWPBS will continue to spread rapidly as a result of PL 94-142 amendments 1997 and 2004, and recently introduced legislation that recommends SWPBS implementation (Bazelon Reporter, 2007). Third, research is just emerging regarding the relationships among SWPBS implementation, effectiveness, school demographic variables, and academic achievement. While early research is promising regarding the relationship between SWPBS and academic achievement, much more research is needed. Also more research is needed on the influence and interactions of school demographics on SWPBS implementation and effectiveness. No research was located regarding the relationship between school size and SWPBS. As the model expands into a larger number of districts, schools and states, more information on how schools of different sizes relate to SWPBS implementation and effectiveness and how

this relates to students' academic achievement can greatly benefit the decision making of practitioners, researchers, mental health professionals, and policymakers.

Chapter 3: Methodology

Overview of Study Goals

This correlational study investigates the relationships among school-wide positive behavioral support (SWPBS) implementation, effectiveness, math achievement, and school size in elementary schools implementing SWPBS for more than two years in a large diverse district in a mid-Atlantic state. The research questions in the current study were addressed by analyzing two sources of data: data from school records, and data collected via a survey.

Research Questions

The following research questions focused the study.

1. Is school size an effective predictor of the degree of implementation of SWPBS?
2. Is school size an effective predictor of SWPBS effectiveness as measured by out of school suspensions (OSS)?
3. Is SWPBS implementation an effective predictor of math achievement as measured by standardized test scores in schools overall or when schools are grouped by size- small, medium, large?
4. Is SWPBS effectiveness an effective predictor of math achievement as measured by standardized math test scores in schools overall, or when school size is grouped into small, medium, large?
5. What are the selected schools' principals' perceptions regarding SWPBS in their schools as measured by a principal opinion survey?

a. What are school principals' perceptions regarding the implementation of SWPBS in their schools overall?
b. What are school principals' perceptions regarding SWPBS effectiveness in their schools overall?
c. What are school principals' perceptions of the relationship between SWPBS implementation and the size of their schools?
d. What are school principals' perceptions of the relationship between SWPBS effectiveness and the size of their schools?
e. What are school principals' perceptions of the relationship between SWPBS implementation and math achievement in their schools?
f. What are school principals' perceptions of the relationship between SWPBS effectiveness and math achievement in their schools?

Epistemology

The postpositivism paradigm was the epistemology that influenced the design and strategy of inquiry for this study. Postpositivism utilizes multiple methods to capture as much of reality as possible, while at the same time, placing emphasis on the discovery and verification of existing theories. The main tenets of postpositivism, and where it differs from positivism, are that the knower and known cannot be separated, and that there is an absence of a shared, single reality. Where the positivist believes that the goal of science is to uncover the truth, the postpositivist believes that the goal of science is to hold steadfastly to the goal of "getting it right" about reality, even though that goal can never be achieved. Because all measurement is fallible, the postpositivist emphasizes the

importance of multiple measures and observations, each of which may possess different types of error (Zammito, 2004).

Positivists believe that scientists must be responsible for putting aside their biases and beliefs and seeing the world as it "really" is. Postpositivists reject the idea that any individual can see the world perfectly as it really is. All persons are biased and all observations are theory-laden. The best way to achieve objectivity is to triangulate across multiple fallible perspectives. Objectivity is never achieved perfectly, but can be approached. The best way to improve the objectivity of what is done is to do it within the context of a broader contentious community of truth-seekers, including other scientists, who criticize each other's work (Trochim, 2006).

The current study begins with a quantitative analysis of school record data measuring the study variables and their relationships for the purpose of obtaining as objective analysis, as possible, of study variable relationships based on concrete data. Next, in the attempt to gain a broader observation and interpretation of study variables and relationships, principal survey responses are analyzed both quantitatively and qualitatively to learn principal perceptions and observations of study variables and their relationships. This study design reflects a postpositivist epistemology as it uses multiple methods, rejects total certainty, and seeks a deeper understanding of truth in answering research questions.

Research Designs

This correlational study of the relationships among SWPBS, school size, and math achievement utilized two data sources: data from school records, and data collected via a survey of principals. A correlation study is classified as a nonexperimental,

descriptive method and is used when variables are not directly manipulated, as they are in the experimental method.

Sampling Designs and Procedures

Selection of District and SWPBS Initiative within the Study Setting

The identified school district was chosen for this study because it met the criteria necessary for a school district for this study: (a) large number of elementary schools; (b) sophisticated technology systems for school demographic data collection and storage; (c) a funded PBS specialist position to monitor SWPBS implementation and data collection, and provide training and support to schools; and (d) proximity to George Washington University.

The positive behavioral support initiative began in the selected district five years ago (2002–2003) with two elementary schools who self-selected to implement the Prevent Act Respond (PAR) model developed by Dr. Michael Rosenberg at Johns Hopkins University. In 2003–2004 the PAR model was advanced to four district schools and program evaluation was conducted that indicated decreased office discipline referrals and improved scores on school climate surveys. In 2004–2005, the district proceeded with the initiative by adopting the more comprehensive SW2PBS model from the University of Oregon and initiated information sessions for schools and clusters after which principals could survey their staffs and request school participation in the district training. It is important to note that 80% of the staff must agree by vote to support the initiative at their school for the district to approve a school's participation. In 2004–2005 the model was advanced to 19 more schools; in 2005–2006, to 16 more schools; and in 2006–2007, to 20 more schools.

The district currently funds a full-time district-wide PBS specialist who is responsible for school and coach training, as well as program monitoring. The district school board has fully supported the program and, in addition to funding a PBIS specialist, also has included additional monies in the fiscal year 2008 district budget to support the expansion of the program to additional schools (School Board Advertised Budget, FY2008, 2007).

The district PBS specialist acted as the required district sponsor for this research study and provided access to the SWPBS implementation and effectiveness data for each school. The PBS specialist also provided the identified school names and principal e-mail addresses, and introduced the research study and survey to selected school principals through an initial letter and e-mail.

Selection of Schools

The following criteria were established for the purposeful sample of schools for this study. First, only elementary schools are included to narrow the confounding variable of the differences between organizational structures in elementary and secondary schools. Also, the majority of schools that have implemented SWBPS in the target school district are elementary schools. Second, schools were identified that had been implementing SWPBS for two or more years. Literature on SWPBS implementation indicates that it takes a minimum of one to two years for school teams and communities to implement core elements of the SWPBS model (Muscott et al., 2004).

Measurements of Research Variables

School-wide Positive Behavioral Support Implementation

Team Implementation Checklist (TIC).

The Team Implementation Checklist (TIC) (Sugai, Horner, & Lewis-Palmer, 2001) covers the features of both the school-wide and individual student systems and is designed for use by school PBS teams as a formative evaluation activity. Checklist #1 is a "Start-Up activity" that facilitates action plans and establishes the essential elements of PBS. Checklist #2 is an "Ongoing Activity Monitoring" activity that guides and measures school sustainability efforts. At the school-wide level, the TIC is similar to the more commonly used School-wide Evaluation Tool. At the individual level it is less detailed than the other tools for assessing capacity to provide individualized PBS systematically but does enable school leaders to track key processes. The individual system (Todd, Horner, Sugai, & Colvin, 1999) within SWPBS is essential for secondary and tertiary level prevention and can be used within a response to intervention framework after school- wide PBS is in place (Walker & Shinn 2002).

For this study the percentage of items marked as Completed on Checklist #1 was used to measure the degree of SWPBS implementation. Checklist #1 contains 21 items which are grouped into nine categories: (a) administrator, faculty commitment; (b) establish, maintain school teams; (c) self-assess school implementation, school discipline data; (d) establish school-wide expectations, (e) establish ongoing systems for recognizing behavioral expectations; (f) establish systems for responding to behavioral violations; (g) building capacity for function-based support, (h) district level support. School PBS teams rate each

item as either Not Yet Started, In Progress, or Completed. The school's TIC score is the percentage of items that the school team rates as Completed—i.e., if the school team rates themselves as having completed 15 of 21 items, their school TIC score is 71%. A copy of the TIC is found in Appendix C.

No extensive research has been done on the use of the TIC as a measure for research; however, one study (Tobin, 2007) looked at whether SWPBS implementation in high schools is facilitated by using Team Implementation Checklists. This study concluded that the TIC appears to be a valuable tool for studying ongoing SWPBS implementation efforts. The study used data from the 2003–2004 school years for 42 high schools that provided ODR information electronically, over the Internet, using the SWIS. About half of the schools also reported their use of the TIC. Descriptive statistics and correlations were used to study patterns within and across the TIC and ODRs. Results indicated that (a) high schools are using the tools and technology related to school-wide PBS, (b) alternative high schools are serving students with very high rates of serious problem behaviors yet are striving to implement PBS, and (c) the TIC appears to be a valuable tool for studying ongoing implementation efforts. Researchers found that the features of the TIC correlated positively, with one exception (Commitment), usually in the moderate-to-high range, and that these generally moderate to high correlations among the items indicate that the TIC is a coherent measure. In addition, compared to other SWPBS measures, the TIC's user-friendly Web-based format appears to be very practical for repeated use in applied settings and for going to scale. The fact that many schools were using the TIC also often appears to indicate that high school educators find the tool helpful. In addition, when looking at relationships among TIC features and OSS/ODR

patterns, researchers in this study found that it appears that having a high number of OSS/ODRs may be a motivating factor in deciding to form a PBS team and to begin using the TIC. Researchers state that future efforts to study the impact of using the TIC would benefit from observing changes over several years and combining a study of the current database with interviews or questionnaires to obtain information about implementation factors and school climate issues that are not recorded electronically.

School-wide Evaluation Tool (SET).

The School-wide Evaluation Tool (SET) (Sugai, Lewis-Palmer, Todd & Horner, 1999) is the most commonly used measure of SWPBS implementation in program evaluation and research, but was not consistently available for all schools in this study. The SET is conducted by a trained external evaluator every year in which the school participates in the program. The SET includes administrator, staff, and student interviews; school observations; and review of permanent school products such as the school improvement plan, student referral forms, etc. The SET consists of 28 items organized into seven subscales that represent the seven key features of SWPBS: (a) school-wide behavioral expectations are defined, (b) expectations are taught to all children in the school, (c) rewards are provided for following the expectations, (d) a consistently implemented continuum of consequences for problem behavior is put in place, (e) problem behavior patterns are monitored and information is used for ongoing decision making, (f) an administrator actively supports and is involved in the effort, and (g) the school district provides support to the school in the form of functional policies, staff training opportunities, and data collection options. The percentage points for each of the seven subscales is computed first, added, and then divided by seven to get the overall

mean score for the SET (Horner et al., 2004). Research has indicated that an overall mean percentage score of 80 indicates full implementation of SWPBS at the primary level (Horner et al., 2004). This score will be used as a continuous variable measuring SWPBS implementation for each selected school.

The reliability of the SET was assessed through a variety of correlational analyses involving test-retest and internal consistency of items, subscales, and the total SET score, and calculations of interobserver agreement percentages. The researchers used Pearson product-moment correlations to analyze all item/subscale score correlations, all item/SET total score correlations, and all subscale/SET total score correlations. Researchers also calculated Cronbach's coefficient alpha internal consistency index for all SET subscales and the SET total score. Results documented an overall alpha level of .96, and demonstrated that the correlational structure of the SET meets and exceeds standard psychometric criteria for discriminability, internal consistency, and test-retest reliability in instrumentation used primarily for research purposes. Additional psychometric information and statistics on test-retest reliability field testing and interobserver agreement can be found in Horner et al. (2004).

The validity of the SET was evaluated within the Messick's unified construct validity framework. To assess the construct validity or extent to which SET scores can be interpreted as indices of implementation of SWPBS, researchers correlated SET total scores with scores from the Effective Behavior Support Self-Assessment Survey (EBSSAS) in 31 schools using a Pearson's $r = .75$ (p. 01). Researchers also examined the intercorrelations across SET subscales in order to obtain indices of cohesiveness of internal structure of the content domain sampled by the SET. SET subscale

intercorrelations were moderate to moderately high, ranging from r = .44 to r = .81, with the median r = .65, indicating that the SET subscales demonstrate sufficient empirical association to be interpreted as components of the SET total score (Horner et al., 2003).

A major limitation noted by the authors (Horner et al., 2004) is that the SET is intended only for assessing the primary prevention features of SWPBS and does not offer information about secondary and tertiary prevention efforts in school.

School-wide Positive Behavioral Support Effectiveness

School discipline data.

In this study SWPBS effectiveness, or improved student behavior, was measured by the change in number of out-of-school suspensions (OSS) from the baseline year to after two years of SWPBS implementation. School principals are required to report OSS data to the district central office for district and state reports on school safety.

Out-of-school suspensions (OSS) and office discipline referrals (ODR) are used throughout the nation as a method for monitoring disruptive behavior in schools (Sugai et al., 2000). Each school district provides guidelines and requirements for OSS while ensuring students' rights. An ODR or OSS represents an event in which (a) a student is engaged in a behavior that violated a rule or social norm in the school, (b) the problem behavior was observed or identified by a member of the school staff, and (c) the event resulted in a consequence delivered by administrative staff, who produced a permanent product defining the whole event (Sugai et al., 2000). ODR and OSS can be utilized both as an index of student behavior and as an index of the discipline systems within a school.

The major advantage of utilizing OSS for research is that schools are required to record and document the number of and reasons for OSS in their schools, whereas schools may differ in how they do this for ODR. However, while school districts give very clear guidelines to schools for delivering OSS, differences in how each school defines and applies OSS procedures can still exist, i.e., the same student behavior may evoke different responses from teachers in different schools, or differences in the relationship between teachers and the school's administration may alter the use of OSS across schools. Because of this, the value of OSS and ODR as measures of school-wide discipline is often questioned and frequently embraced with caution (Wright & Dusek, 1998).

Existing research, however, suggests that OSS and ODR may prove useful metrics when used as a within school systems metric (Skiba, Peterson, & William, 1997; Tobin & Sugai 1999a; Tobin, Sugai, & Colvin, 1996). And other researchers have reported that OSS and ODR data have been useful in identifying improvement in school-wide systems (Biglan, Metzler, Rusby, & Sprague, 1998; Taylor-Greene et al., 1997). For example, Sugai et al. (2000) monitored OSSs and ODRs in elementary and middle schools for five years and found that blending information from ODR, suspension and expulsion was useful. Also, authors encourage researchers to triangulate school-wide indicators of behavioral climate with additional measures such as staff perception surveys or school safety measures. Authors do state that although the weight of the evidence clearly supports using OSS and ODR measures in assessing school-wide behavior climate, the effectiveness of school wide behavior interventions programs, and the different needs across schools result is some issues remaining. Nelson et al. (2003)

identified a number of variables and factors that influence the reliability and validity of administrative discipline contacts. One relevant finding from their literature review was that secondary and larger schools were more likely to use administrative discipline contacts than elementary and smaller schools.

The U.S. Department of Education National Center for Statistics (USDOE, 2002) recommends the use of OSS and ODR, and provides clear directions on how schools can ensure accuracy and improve reliability and validity, in their manual *Safety in Numbers: Collecting and Using Crime, Violence, and Discipline Incident Data to Make a Difference in Schools*. The manual states that by designing database systems, providing staff training, and clearly articulating definitions, schools can ensure that the reporting of OSS and ODR is consistent and that variables measure what they are intended to.

The selected district for this study annually updates a regulation titled "Student Rights and Responsibilities" which clearly states guidelines for expected student behaviors and responsibilities. Schools are required to report specific categories of misconduct incidents and all out-of-school suspensions (OSS) to the central office.

School Size

Data on school size were obtained from the district's central office database, cross-checked with published information on each school's Web site, and then entered on the data collection protocol. School size was measured by the number of students in each of the selected schools in each as of June 2007. The National Center for Education Statistics (2003) identified the average student enrollment in elementary schools in the

United States to be 441 students. This report also indicated that the average elementary school size in Virginia is slightly larger, with 484 students.

A review of the 137 elementary schools in the selected district indicated a wide range of school size. Public information on the district Web site stated that two elementary schools had between 1200 and 1300 students and two schools have between 200 and 299 students, with the largest number of schools, 24, having 700–799 students. Consequently, schools were identified in the following three groups: (a) small, less than 500 students; (b) medium, between 500 and 900 students; and (c) large, over 900 students. Lee and Loeb (2000) utilized this procedure after determining that the typical school size in the Chicago elementary schools had a positively skewed distribution, with very few large elementary schools (over 1,500) and several very small schools (less than 350 students), with the medium school size around 500 students.

Math Achievement

Virginia Standards of Learning fifth-grade math achievement test.

Math achievement for this study was measured by the percentage of students, at each selected school, who passed (proficient and advanced) the fifth-grade Virginia Standards of Learning (SOL). The SOL math test is administered annually in the spring to every student attending public school in the Commonwealth of Virginia. The SOL math test was developed by the Virginia Department of Education (VDOE) in collaboration with educators across the Commonwealth, and Harcourt Assessment. The test consists of 50 multiple-choice operational items: 8 items on number and number sense, 12 items utilizing computation and estimation, 12 items on measurement and geometry, 8 items on probability and statistics, and 10 items on patterns, functions, and

algebra. All items included on the test address the knowledge and skills specified in the 2001 Virginia Standards of Learning for grade 5. The test is untimed with no penalty for guessing. Students are permitted to use a protractor, angle ruler, scratch paper, and standard metric rulers during the entire test, and four-function calculators during the second section of the test. Items are grade-appropriate for fifth-grade students in terms of difficulty, interest, and reading level (Virginia Department of Education (VDOE, 2005).

Technical characteristics of SOL tests.

Reliabilities and scale score descriptive statistics for the SOL tests include the following: number of items, numbers of students, means and standard deviations of the students' scale scores, Kuder-Richardson Formula 20 (KR20) internal consistency reliability estimate, standard error of measurement, mean raw score as a proportion of the maximum obtainable score, and conditional standard errors of measurement (VDOE, 2005).

Validity for the Virginia Math SOL concerns the extent to which these scores are useful for their intended purpose. There is ample evidence in the Technical Manual that the procedures used to investigate the content validity of the SOL assessments were adequate. Also, evidence is available in the Technical Manual suggesting that methods for identifying potentially biased items are in place. One assumption that is made when linking forms of the assessments across years and in score reporting is that each SOL assessment is mainly measuring a dominant trait or main factor. Evidence for the validity of the "unifactor" or "unidimensionality" assumption is determined by reviewing the "eigenvalue plot" that is obtained from the analysis of the correlation

matrix formed from the correlations of all pairs of items in each assessment. The evidence for test unidimensionality among the Virginia SOL assessment is strong (VDOE, 2005).

Reliability for the Virginia Math SOL concerns the internal consistency of scores and the consistency and accuracy of assigning students to performance categories. The Kuder-Richardson Formula 20 (KR-20) was used to estimate the internal consistency reliability of each grade and form of the multiple-choice SOL assessments. Standard errors of measurements were also reported for each grade and form of the assessments. The KR-20 coefficients have changed little over the years and reveal a reasonably high reliability of the SOL multiple-choice forms. Decision accuracy and consistency indices were reviewed for 1998, 1999, and 2000 assessments (statistics ranged from .00 to 1.00), with very positive results as they are directly related to the stability of student performance category classifications resulting from the assessment scores. Coefficients were sufficiently high to justify the use of assessment scores in performance category classifications .87 to .93, and the index of the consistency of the decision made between Passing and Not Passing at each grade and form was also acceptable (.80 to .90) and was sufficiently high to justify the use of the assessment scores in performance category classification. Taken collectively, the reliability evidence for the SOL assessments is solid and typical of high-quality assessments (VDOE, 2005).

Each year the Virginia Department of Education publishes a Virginia Standards of Learning Assessment Technical Report (2005) to inform users and other interested parties about the development, contents, and technical characteristics of the Virginia

SOL Assessments. Detailed information for all the above analyses can be found in the appendices of the 2003–2004 technical report, as can additional information on item bank construction, scale score derivation for content areas, and reporting categories.

Math instructional program.

The district math program reflects the national goals and incorporates the Virginia Standards of Learning. "These standards and goals provide students with the opportunity to develop the mathematical understandings needed to pursue higher education and to compete in a global, technology intensive society. These goals include: becoming mathematical problem solvers, communicating mathematically, reasoning mathematically, and making mathematical connections" (District website, 11/08). Fifth grade students extend their understanding of number to billions, including the use of exponential notation; relate number theory concepts to operations on rational numbers; compare, contrast, and define the intent and characteristics of the four operations, including properties; and become proficient in using multiplication and division procedures. They estimate and measure length, volume, and capacity; use measuring tools; investigate circle measures; continue transformational geometry; and identify attributes of solids. Fifth graders also collect, display, and analyze data and make predictions. They organize, record, and interpret results of simple probability experiments; identify and extend growth patterns; and solve equations with one variable.

The instructional materials utilized include school board approved commercial textbook series (Houghton Mifflin Math, Everyday Math) and district approved supplementary materials such as additional manipulatives, trade books, practice

workbooks, and various commercial math software programs. The district Office of Instructional Services provides information and guidance regarding the placement and heterogeneous grouping in mathematics classes. Regulation 3250.2 (2004) states that "teachers may employ flexible grouping for specific math topics; however, students within a class will not be permanently assigned to ability level groups" (pg.1-2). Also, every school has either an identified math lead teacher or math coach who is trained by the central instructional service department to provide follow-up training and support to teachers at the school level. In addition to the district approved instructional materials and student grouping regulations, these lead math teachers provide monitoring and consistency in school math programs across the district.

Principals' Perceptions

Principal opinion survey.

The principal opinion survey measured school principal perceptions regarding SWPBS implementation, SWPBS effectiveness, school size, and math achievement and their relationships in each of the selected schools. The principal survey consists of 40 items on a linear, numeric scale, with interval levels of measurement 1–6 (strongly disagree to strongly agree), five multiple choice items, and one open-ended question at the conclusion of the survey. The survey is divided into three sections, each measuring one of three constructs: SWPBS implementation, SWPBS effectiveness, and SWPBS demographics.

This type of scale was chosen for the survey because of the scale's "simplicity, clarity, and economy…the format is clean and straightforward; respondents have little or no difficulty understanding the task they're to perform" (Alreck & Settle, 2004, p. 132).

A review of existing surveys found several customer satisfaction surveys and other typically short surveys related to SWPBS effectiveness, but none that were specifically related to the research questions of school demographics and student achievement, and none specifically intended for the elementary school principal population. Consequently, survey items were created by the researcher following three established survey design guidelines (Alreck & Settle, 2004): (a) survey questions are directly related to the identified research questions; (b) a minimum number of items were developed for each research question to reduce responder fatigue; and (c) items were developed not to be too wordy, loaded, double-barrel, vague, or threatening.

Pretesting and piloting of survey.

Two content experts reviewed and critiqued the survey by responding to the content review questions located in Appendix D. After changes were made to the survey based on the feedback from the content experts, a small pilot of five elementary school principals and assistant principals from the targeted district, who had either retired or were not working in study schools, took the survey and responded to the survey content and format questions found in Appendix E and the final Principal Opinion Survey is in Appendix F.

Data Collection Protocol

A school records data collection spreadsheet was used to collect continuous data from each school recording: (a) the number of students in school, (b) the percentage of students passing the grade 5 SOL math test in both baseline and year two of SWPBS implementation, (c) school TIC scores, and (d) the number of OSS in baseline year and year two of implementation. The data collection protocol is in Appendix G.

Data Analysis

Preliminary Data Handling

Secondary analysis of school records.

The continuous demographic, achievement, discipline, and TIC data were collected on the data collection protocol spreadsheet and imported directly into the statistical program Statistical Package for the Social Sciences (SPSS). Before entry, the data were cross-checked by a second person to ensure accuracy. The reason that the TIC differential data, (baseline and year two) were used rather than the SET differential data was that SET data were not available for some sample schools. This is the same reason why the OSS differential data were used rather than ODR differential data.

Principal opinion survey.

A commercial survey program was utilized to collect participant survey responses. The program automatically controlled for duplication of respondent surveys and comuted percentages for each item. The researcher pretested the Web survey system before distribution to the pretest pilot of school administrators to ensure that no technical problems existed and responses corresponded with commercial program responses (Dannels, 2007).

The survey program automatically reviewed completed surveys for any missing or invalid responses immediately upon receipt. Only one survey of the 25 had one missing item. It was determined prior to administration that one missing item per scale will be permitted without follow-up.

Nine principals responded to the one open-ended question on the survey. These responses were copied with school code by question, onto a separate Microsoft Word

program document. After responses were copied, a second person cross-checked surveys and Word documents for accuracy of the copied respondent comments. Although statistics documented the number of principals who responded to the written question, these responses were not included in any quantitative analysis and therefore were of minimum consequence to the data analysis.

Data Analysis Techniques

Research questions 1–4: simple regression.

Regression analysis was conducted for research questions 1–4 of this study to examine the predictive utility of each predictor variable (school size, SWPBS implementation, SWPBS effectiveness) for each of the three outcome variables, respectively (SWPBS implementation, SWPBS effectiveness, math achievement). Simple regression is a statistical tool designed to determine the degree and direction of the relationship between an outcome variable and a single predictor variable. Cohen, Cohen, West, and Aiken (2003) write, "Basic regression may be used whenever a quantitative variable, the outcome variable (Y), is to be studied as a function of, or in relationship to, any factors of interest, the predictor variables (Xs)" (p. 1). Prediction does not equal explanation or causality, Cohen et al. (2003) continue, "Correlation does not prove causation: however, the absence of correlation implies the absence of the existence of a causal relationship" (p. 7).

For research questions 1-4 of this study, the simple regression technique is appropriate because these research questions are associational and the researcher's goal was to examine the relationships between the only predictor and the outcome variables. The predictive utility of each regression model was determined through the F test of R2

change. The F test is based upon the ratio of improvement (the reduction in prediction errors) resulting from the model, and the difference between the model and the observed data. If the model is good then the improvement prediction due to the model will be large; or a good model with strong prediction of the outcome variable should have a large F ratio. The exact magnitude of the F ratio can be assessed using the critical values of the corresponding degrees of freedom (Field, 2005).

Checking regression assumptions.

The assumptions linearity, homoscedasticity, and normality in regression were evaluated in the current study as defined in Cohen et al. (2003) and Field (2005) and described below.

The linearity assumption is that the relationship between the predictor variable and the outcome variable is linear. In this assumption, the predicted change in the outcome variable, Y, associated with per unit change in the predictor variable, X, is assumed to be constant. The slope (regression coefficient) is constant across different X values. In nonlinear relationships, the slope, which indexes the relationship between X and Y, will change across different X values. The effects of the violation of the linearity assumption include a bias in the estimations of the intercept and slope, and this reduces the R2 due to the failure in the regression model to reflect the nonlinear relationship between X and Y. In this study, the assumption of linearity was checked by plotting standardized residual scores against X. When this assumption is violated, there is a curve in the plot.

The homoscedasticity assumption implies that at each level of the predictor variables, the variance of the residual terms should be constant, i.e., the residuals at each

level of the predictor should have the same variance. When the variances are very unequal there is said to be heteroscedasticty. In the current study, the homoscedasticity assumption was checked by plotting standardized residual scores against X. If this assumption is met, the residual scores are randomly scattered around the horizontal line through zero; if not, a funnel shape of data points is seen. A violation of the homoscedasticity assumption results in a larger standard of error of estimate for the regression coefficient.

The normality assumption is that the residuals in the model are random normally distributed variables with a mean of 0—i.e., the differences between the model and the observed data are most frequently zero or very close to zero—and that differences much greater than zero occur only occasionally. Once residual scores are determined, a histogram of these residual scores is created and roughly checked with the normality of the distribution. The Kolmogorov-Smirnov and Shapiro-Wilk tests were also conducted. When the normality assumption is violated, the estimation of the intercept, slope, and R2 is less precise. When the nonnormality results from a couple of extreme outliers, the whole regression line is pulled toward the outliers and does not represent the majority of the data adequately.

The software program Statistical Package for the Social Sciences (SPSS) was used to compute statistics for these analyses. In this study all research variables are continuous, thus eliminating the need for dummy coding.

Research questions 5a–f: descriptive and qualitative analysis.

Both quantitative and qualitative analyses were conducted on data obtained from the principal survey items and scales. Initially, descriptive statistics including percentages at each numeric value for each survey item were computed. Then the percentage of Strongly Agree, Agree, Somewhat Agree were added for reporting and interpretation of results. Second, item scores were added and the mean determined for each construct scale to ascertain principal perceptions of the degree of implementation of SWPBS (scale one), the effectiveness of SWPBS (scale two), and demographics (scale three) at each school.

Qualitative analysis of the responses to the one open-ended question was conducted in four phases. First, key terms were identified in the research questions and participants' written responses were read to locate frequency of terms. Second, written responses were read to identify any other noteworthy perceptions and terms. Third, responses were reread and checked for the accuracy of coded identified terms and new or unusual perceptions. And last, coded data was summarized into major themes and conclusions, including significant respondent quotations, for each research question.

Below is a brief description of the data analysis for research questions 5 a–f:

Table 3-1

Principal Survey Data Analysis

Research Question – Principal perceptions regarding…	Data Analysis Survey Questions
5a: Implementation of SWPBS in their schools?	Scale One Items 1A through1 O…Item frequencies and scale mean
5b: Effectiveness of SWPBS in their schools?	Scale Two Items 2A through 2M…Item frequencies and scale mean
5c: Relationship between SWPBS implementation and the size of their schools?	Scale One Items 3A and 3B…Item frequencies
5d: Relationship between SWPBS effectiveness and the size of their schools?	Scale Two Items 3C…Item frequencies
5e: Relationship between SWPBS implementation and math achievement in their schools?	Scale One Items 3G…Item frequencies
5 f: Relationship between SWPBS effectiveness and math achievement in their schools?	Scale Two Items 3I and 3K…Item frequencies

Human Participants and Ethics Precautions

The risks to the adult human subjects was minimized in both the design and execution of this study by making survey participation voluntary, ensuring confidentiality of the participants' responses, and clearly stating the potential benefits of the research to the field. Confidentiality means that the responses will never be shared with others. Because of the need to track returning surveys, and to link school survey data to existing demographic data, it was not possible to provide participant anonymity.

Confidentiality was guaranteed to all survey participants in a cover letter stating that the surveys would be coded and that the researcher was the only one receiving and analyzing coded surveys. The commercial survey software program ensures confidentiality of principal survey responses and analysis. School codes were saved in a locked cabinet and will be discarded once the dissertation is approved. The final report required by the school district after the study is complete will not include any identifiable characteristics of the schools, with all results will be reported in an aggregated manner.

Summary of the Chapter

The methodology for this study was cross-sectional and correlational, utilizing two data sources: data from school records and data collected via a principal survey. This methodology was chosen to answer the five descriptive and associational research questions.

The district selected for the study is a large diverse school district in a mid-Atlantic state. A purposeful sample of 26 elementary schools that have implemented SWPBS for at least two years were selected for the study

Data collection and procedures followed a careful timeline beginning in winter 2008 and conducted in two phases. The first phase consisted of gaining district approval for access to school data needed to complete the secondary analysis of school records for the selected schools. Concurrent with this phase, pretesting was conducted on the principal opinion survey. The principal opinion survey was distributed in June 2008. SWPBS, demographic, academic, and discipline data were collected and stored on a data collection protocol. Data collected for each school included: Team Implementation

Checklist scores, number of OSS, school enrollment, and fifth grade math SOL scores. Psychometric data are available and positive for the math SOL; and researchers support the use of OSS and TIC for the evaluation of SWPBS implementation and effectiveness.

Input from content experts and a small pretest pilot was conducted on the principal opinion survey to ensure the content validity and reliability of the survey instrument. The Web-based commercial program distributed the survey and collected survey responses. One letter and one e-mail were sent by the PBS specialist and three follow-up e-mail requests sent by the researcher to obtain the high survey response rate of 96%.

After all data were collected, simple regression analysis was conducted for research questions 1–4, and descriptive and qualitative analysis for research questions 5 a–f. The Statistical Package for the Social Sciences (SPSS) was used to compute the statistics. The risks to the adult human subjects were minimized both in the design and in the execution of this study.

Chapter 4

Results

The purpose of this study was to examine the relationships among school-wide positive behavior (SWPBS) implementation, SWPBS effectiveness, school size, and math achievement. The research design described in Chapter 3 used two data sources: a secondary analysis of school records and a principal opinion survey. The survey instrument, a three-part Web-based questionnaire, was distributed to the study population of elementary school principals (N = 26) in the selected district. The researcher collected baseline and year-two data for each school on SWPBS implementation, SWPBS effectiveness and math achievement with assistance from the SWPBS specialist and other central office personnel; and accessed school data on school size from the public district database.

This chapter reports the results of the data collection and then presents the data analysis in the context of the research questions and subquestions posed by the study. The chapter ends with a summary of the findings and provides the fundamental support for the interpretations, conclusions, and recommendations presented in Chapter 5.

Demographic Characteristics

The purposeful sample for this study included 26 elementary schools which have implemented SWPBS for two or more years. Table 4-1 displays the number and percentage of schools in the sample for four different school demographic variables. The demographic profile of the sample schools shown in Table 4-1 indicates variance among schools in all categories, with the majority of the schools being in the middle size range (500–900), with less than 24% students on free and reduced lunch, and with moderate

percentages of students in English as Second Language classes (11–20 %) and special education (13–18%).

Table 4-1

Demographic Profile of Sample Schools (N = 26)

	No. of Schools	% of Sample
School Size		
300–500 students	4	15%
500–900 students	18	70%
900–1300 students	4	15%
Total	26	100%
English Second Language		
Less than 10 %	5	19%
11–20 %	13	50%
21–40 %	6	23%
41–50%	2	7%
Total	26	100%
Free and Reduced		
Less than 24%	13	50%
25–49%	5	19%
50–74%	6	23%
75–99%	2	7%
Total	26	100%

Table 4-1 (continued)

Demographic Profile of Sample Schools (N = 26)

	No. of Schools	% of Sample
Special Education		
Less than 12%	8	30%
13–18%	12	46%
19–24%	5	19%
25–30%	1	3%
Total	26	100%

Table 4-2 displays descriptive statistics, including the mean, standard deviation, and range for nine school variables, and again indicates the wide variance among schools in all categories. For example, the student population in study schools includes a range of 2% to 78% of students on free and reduced lunch 1–46% of students in ESOL programs, and 7–28% of students in special education.

Table 4-2

Descriptive Statistics for Selected School Variables (N = 22, 26)

School Variables	Number	Mean	Standard Deviation	Low	High
Total Number of Students	26	670.2	218.2	343	1,248
Percentage Free, Reduced Lunch	26	33.4%	22.7%	2%	78%
Percentage English Second Language	26	19.6%	12%	1%	46%
Percentage Special Education	26	14.5%	4.3%	7%	28%
Team Implementation Checklist	22	78.14	18.52	32%	100%
Out-of-school suspensions	26	.11	16.95	-44	55
Differential between Base & Year 2 Fifth-Grade SOL Math Scores					
Differential between Base &Year 2	26	3.65	9.15	-12	+19

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Review of Data Collection Strategy

After obtaining formal approval from the district Research Screening Committee, data for the study were collected simultaneously. First, the Web-based survey was distributed to the 26 principals of the elementary schools in the purposeful sample. The district PBS specialist wrote and sent a notification letter via both email and district mail containing the survey link and requesting principal participation (Appendix H). Four workdays later, the researcher, utilizing a commercial software program, sent a second

email requesting principal participation. Two additional reminder emails were sent by the researcher, each four days apart. All letters and emails stated that principal participation was voluntary and that responses would be kept confidential. The commercial software program had the capacity to track the status of principal responses while ensuring confidentiality of participant names and schools.

At the same time that the survey was distributed the researcher began working with the district PBS specialist and other appropriate district personnel to obtain the school record data on SWPBS implementation (Team Implementation Checklist (TIC) scores), SWPBS effectiveness (out-of-school suspension (OSS)), and fifth-grade math SOL scores for each school in the study. Data on school size were retrieved by the researcher from the official district Web site. A data collection protocol spreadsheet was utilized to store data for later data analysis. A copy of the data collection spreadsheet is located in Appendix G.

Survey Response Rate

The survey protocol involved one advance letter and email notification from the district PBS specialist that included the initial distribution of the survey link. This was followed by three reminder emails sent by the researcher approximately four days apart. All emails were sent early in the morning, as research reports that this results in a greater response rate then (Sheehan 2001). Twenty-five of the 26 principals responded to the survey, yielding a 96% response rate. All responding principals completed the full three-part questionnaire and nine principals also completed the last open-ended question.

The overall response rate of 96% achieved in this study greatly surpasses the typically expected rate of 30% to 50% for Web-based surveys and the required minimum

response of 70% for the analysis and release of survey data by the National Center for Education Statistics (NCES) (McMillan et al., 2001). Gainen (2008) and Sheehan (2001) write that a good response rate often depends on the relationship between the researcher and the group and that employees in tight-knit organizations typically respond very high (80%) unless confidentiality is a concern. Salience of the issue to the sampled population also has been found to have a strong positive correlation with response rate for postal, email, and Web-based surveys (Sheehan & McMillan, 1999; Watt, 1999)

In addition, for both mail and email surveys, prenotification has been seen to increase response speed (Murphy, Daley, & Dalenber, 1991; Sheehan & McMillan, 1999; Taylor & Lynn, 1998). Mehta and Sivadas (1995) suggested that prenotification for email surveys is imperative, and the practice of sending unsolicited email surveys is unacceptable. Researchers also have assessed how many follow-up contacts are optimal and what content should be provided in the follow-up. Multiple follow-ups have been seen to yield higher response rates than one-time reminders (Hebelein & Baumgartner, 1978). It is clear that this study benefited from the notification letter and email sent to school principals by the district PBS specialist.

Since the number of principals who responded to the one open ended question was small, their responses may not be representative of the population of 26 principals and therefore should be interpreted with caution.

Reliability of Data

As was described in Chapter 3, the TIC and OSS have limited psychometric data supporting their use in research. However, due to the inconsistency in school reporting procedures and consequent varied and sometimes unavailable school data for the School-

wide Evaluation Tool and office discipline referral, it was decided that greater consistency and accuracy for this study would be gained by using the TIC and OSS data. Since the district did not begin assessing degree of implementation until the third year of district implementation, implementation data (TIC scores) were not available for the three early schools, and also one later school, that chose not to follow district requirements. Therefore, implementation data (TIC scores) was obtained for 22 of the 26 sample schools. A fuller explanation regarding this is provided in Chapter 3. Table 4-3 illustrates the psychometric characteristics of the data collected for this study utilizing the instruments mentioned above. School data for all of the 26 sample schools were available and collected for school size, number of student out-of-school suspensions, and math achievement (math SOL scores).

Table 4-3

Psychometric Characteristics of TIC, Math SOL, OSS (N = 22, 26)

Instrument	No.	Mean	SD	Range
T I C	22	78.14%	8.52	32–100 %
Math SOL Diff	26	3.65	9.15	-12–19
OSS Diff	26	.11	16.95	-44–55

Also as described in Chapter 3, the SWPBS survey instrument consisted of 40 scale items divided into three scales: SWPBS implementation, SWPBS effectiveness, and SWPBS demographics. For each of the 40 items, respondents were asked to rate SWPBS in their school using a 6-point scale (Strongly Disagree to Strongly Agree). To assess the internal consistency of the three SWPBS survey scales, Cronbach's alphas were

calculated on each scale. The alphas for the three scales in the study survey were these: Implementation Scale, .943; Effectiveness Scale, .715; and Demographics Scale, .835. Research literature indicates that a value of .7–.8 is an acceptable value for Cronbach's alpha and that values substantially lower indicate an unreliable scale (Field, 2005). Kline (1999) notes that while .8 is generally accepted for cognitive tests, when dealing with psychological constructs, values below even .7 can be expected because of the diversity of the constructs being measured. The alphas attained for all scales of the principal survey indicated excellent internal consistency. Table 4-4 states the mean, standard deviation, range, and Cronbach alphas for each scale and total survey. The demographics scale resulted in the lowest mean score, 3.38, and largest standard deviation, indicating the greatest variance among survey items, although the alpha at .835 indicates strong reliability. The SWPBS effectiveness scale resulted in the highest mean score, and lowest standard deviation, indicating strong consensus among items; yet the alpha .715 was lower, although adequate for scale reliability.

Table 4-4

Psychometric Characteristics of Survey Scales (N= 25)

Scale	No. of Items	Mean	SD	Range	Alpha
SWPBS Implementation	15	4.74	1.17	1–6	.943
SWPBS Effectiveness	13	4.80	0.90	1–6	.715
SWPBS Demographics	12	3.38	1.49	1–6	.835
Total SWPBS Survey Scale Items	40	4.36	0.92	1–6	.948

To further examine principal responses to individual items, Table 4-5 shows the mean, standard deviation, and range for each survey item in all three scales. Survey items 1-a through 1-o include the 15 items in the first scale on SWPBS implementation. This scale had three items with a narrow .5–.6 standard deviation, and only one item with a wide 1.5 standard deviation, indicating little variance among principal responses. In addition, only three of the 15 items had lower than a 4.0 mean rating, 1-l (3.8), 1-n (3.9), and 1-0 (3.2), indicating that all other 12 items had at least minimal principal agreement.

The second survey scale on SWPBS effectiveness included items 2-a through 2-m. The highest standard deviation was 1.2 for only one item. All remaining items fell between the .7 to 1.0 standard deviation range, indicating a less extreme range in principal responses. In addition, on the SWPBS effectiveness scale, all item means fell between 4.3 and 5.1, indicating that all principals agreed, but not as strongly in either the Agree or Disagree categories as in the implementation scale.

The last survey scale on demographics, including items 3-a though 3-l had by far the highest and greatest number of standard deviation (SD) scores, the SD for all items being over 1.0 and ranging from 1.0 to 1.6. The mean scores also were much lower for the demographics scale, ranging from 3.0 to 4.1, with three items at 2.6–2.8, indicating much lower agreement with demographic survey item questions and greater range among principal responses. All survey items can be found in Appendix F.

Table 4-5

Psychometric Characteristics of Survey Scale Items (N = 25)

Survey Q	Mean (1–6)	SD	Low	High
Q1a	5.0	0.8	3	6
Q1b	5.2	0.8	4	6
Q1c	5.6	0.5	5	6
Q1d	4.5	1.1	2	6
Q1e	4.4	1.2	2	6
Q1f	5.6	0.5	5	6
Q1g	5.2	0.6	4	6
Q1h	4.9	0.8	3	6
Q1i	5.1	0.9	3	6
Q1j	4.9	1.0	3	6
Q1k	5.2	0.9	3	6
Q1l	3.8	1.3	1	6
Q1m	4.6	0.8	3	6
Q1n	3.9	1.2	1	6
Q1o	3.2	1.5	1	5
Scale Mean	4.74			
Q2a	4.9	1.0	3	6
Q2b	5.1	0.8	3	6
Q2c	4.6	1.0	3	6
Q2d	4.7	0.9	3	6

Table 4-5 (continued)

Psychometric Characteristics of Survey Scale Items (N = 25)

Survey Q	Mean (1–6)	SD	Low	High
Q2e	5.0	07	4	6
Q2f	4.8	0.7	3	6
Q2g	4.9	1.0	2	6
Q2h	5.0	0.6	4	6
Q2i	5.0	0.8	3	6
Q2j	4.8	0.7	4	6
Q2k	4.3	1.0	2	6
Q2l	4.7	0.8	3	6
Q2m	4.5	1.2	1	6
Scale Mean	5.19			
Q3a	3.7	1.5	1	6
Q3b	3.4	1.6	1	6
Q3c	3.4	1.5	1	6
Q3d	2.8	1.5	1	6
Q3e	2.6	1.4	1	6
Q3f	2.6	1.3	1	6
Q3g	3.0	1.5	1	6
Q3h	3.2	1.5	1	6
Q3i	4.0	1.0	2	6
Q3j	4.0	1.1	1	6

Table 4-5 (continued)

Psychometric Characteristics of Survey Scale Items (N = 25)

Survey Q	Mean (1–6)	SD	Low	High
Q3k	4.0	1.2	1	6
Q3l	4.1	1.2	1	6

The principal survey also contained five demographic principal opinion questions in a multiple-choice format, and one open-ended question asking principals to share any school population and/or school program changes that might have influenced the implementation and effectiveness of SWPBS in their schools. Results from the multiple-choice questions indicate almost equal distribution among schools which have been implementing SWPBS for three years and schools which have been implementing for four or more years. Only one school indicated that it had been implementing SWPBS for two years or less. Principal responses corre2lated with district databases, indicating that the majority of schools (72%) were in the middle size range for this district, or between 500 and 900 students. Two questions regarding principal opinions of math and reading improvement in their schools indicated that the great majority of principals (96% for math, 92% for reading) believed that their school had either improved or stayed the same on standardized math and reading test scores since implementing SWPBS. The last survey multiple-choice question on principal longevity indicated that over half (52%) of the SWPBS survey principals had worked in their present school for five or more years, 36 % for two to four years, and only 12% for one to two years.

As stated earlier, only nine of the 26 principals responded to the one open-ended question on school changes that might have influenced SWPBS implementation and effectiveness. Responses to the questions are summarized in three categories: demographic changes, program changes, and other are shown below in Table 4-6. Five themes emerged regarding school demographic changes that principals believed influenced SWPBS implementation and effectiveness: (1) increase in number of ESOL students, (2) increase in students on free and reduced lunch and homeless students, (3) increase in special programs, (4) turnover in staff resulting in increased need for staff training, and (5) high student mobility.

Regarding changes in school programs, three principals believed that already existing character education and behavior management programs such as Hello, Update, Goodbye (HUG) and Responsive Classroom in their schools before SWPBS was implemented, both complemented and facilitated the implementation and effectiveness of SWPBS in their schools. Lastly, one principal indicated a lack of perspective for the survey questions by noting that the program was already in the school when he/she arrived.

Table 4-6

Principal Statements on Demographic or Program Changes (N = 9)

Category	Principal Statements
Demographic	>Increasing ESOL and free/reduced lunch.
	> Turnover of staff; special program increase.
	> High student mobility has a tremendous impact on the PBS program. Training of new staff is critical and does not receive the same level of focus it did when the program was officially started three years ago. As a result, the program does not maintain the consistency that it should.
	>Our population has increased by 90 students. We also have more families that are homeless.
	>There has been a rise in free/reduced lunch and ESOL students.
Programmatic	>We had a strong character education program in place before implementing SWPBS. PBS has provided another level of support and has given us strategies for our yellow and red zone children.
	> HUG (Hello, Update and Goodbye), a yellow one intervention, has helped. Kagan Cooperative learning strategies have helped increase explicit teaching of social behaviors and expected outcomes.
	> Implementation of Responsive Classroom to complement PBS has had a significant impact on school environment and student learning.
Other	> It is difficult to compare the behaviors of the school at this point to what it was prior to PBS, as when I came on board here, PBS was already in place.

Research Questions

Research Question 1

Research question 1 asked, *Is school size an effective predictor of the degree of implementation of SWPBS?* Table 4-7 displays the overall model of the prediction of SWPBS implementation, as measured by Team Implementation Checklists, and school size, as measured by the actual enrollment of students in the school. In Model Summary table 4-7, given an *a* is equal to .05, the results of the F test for the R^2 change due to school size are not statistically significant, F (1 , 20) = .293, p = .594, and do not lend support to a statistically significant relationship between school size and SWPBS implementation.

Table 4-7

Predicting SWPBS Implementation from School Size

				Change Statistics				
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change
.120	.014	-0.35	18.84483	0.14	.293	1	20	.594

Research Question 2

Research question 2 asked, *Is school size an effective predictor of SWPBS effectiveness as measured by out-of-school suspensions (OSS)?* Table 4-8 displays a Model Summary table for the prediction of SWPBS effectiveness, as measured by out-of-school suspensions, and by school size, as measured by the actual enrollment of students in the school. In Model Summary table 4-8, given an *a* is equal to .05, the results of the F

test for the R^2 change are not statistically significant, F (1, 24) = .494, p = .489, and do not lend support to a statistically significant relationship between school size and SWPBS implementation.

Table 4-8

Predicting SWPBS Effectiveness from School Size

				Change Statistics				
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change
.142	.020	-0.21	17.12904	0.20	.494	1	24	.489

Research Question 3

Research question 3 asked, *Is SWPBS implementation an effective predictor of math achievement in schools overall and when school size is grouped into small, medium, large?*

Table 4-9 displays the overall model summary of school size as measured by actual student enrollment, SWPBS implementation as measured by school scores on the Team Implementation Checklist, and math achievement as measured by the increase/decrease of math SOL test scores. In the Model Summary Table 4-9, given that an *a* is equal to .05, the results of the F test for the R^2 change are not statistically significant, F (1, 20) = 1.901, p = .183, and do not lend support to SWPBS implementation predicting math achievement in schools when schools of all sizes are grouped together.

Table 4-9

Predicting Math Achievement/SOL from SWPBS Implementation/TIC

				Change Statistics				
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change
.295	.087	0.41	8.96164	0.87	1.901	1	20	.183

Table 4-10 displays the Model Summary table for small-size schools. The results indicate that there is not a statistically significant relationship between SWPBS implementation and math achievement in small-size schools, F (1, 2) = F change .101, p = .781.

Table 4-10

Predicting Math Achievement from SWPBS Implementation in Small Schools

				Change Statistics				
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change
.219	.048	-0.428	9.07377	0.48	.101	1	2	.781

Table 4-11 displays the Model Summary table for medium-size schools, and again indicates that SWPBS implementation is not an effective indicator of math achievement in medium-size schools, F (1, 12) = .433, p = .523.

Table 4-11

Predicting Math Achievement from SWPBS Implementation in Medium Schools

				Change Statistics				
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change
.187	.035[2]	-.046	9.07377	.035	.433	1	12	.523

Table 4-12 displays the Model Summary table for large-size schools and indicates that there is not a statistically significant relationship between SWPBS implementation and math achievement in large-size schools, F (1, 2) = 3.703, p = .194.

Table 4-12

Predicting Math Achievement from SWPBS Implementation in Large Schools

				Change Statistics				
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change
.806	.649	-.474	9.88261	0.649	3.703	1	2	.194

Research Question 4

Research question 4 asked, *Is SWPBS effectiveness an effective predictor of math achievement in schools overall and when school size is grouped into small, medium, large?*

Table 4-13 displays the model summary of school size as measured by actual student enrollment, SWPBS effectiveness as measured by the decrease/increase of out-of-school suspension, and math achievement as measured by the increase/decrease of math SOL test scores. Table 4-13 displays the Model Summary table which indicates that when schools of all sizes are grouped together, SWPBS effectiveness does not predict math achievement, $F(1, 24) = 1.701$, $p = .204$.

Table 4-13

Predicting Math Achievement from SWPBS Effectiveness

				Change Statistics				
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change
.257	.066	0.27	9.02608	0.66	1.701	1	24	.204

When schools are grouped by size, Table 4-14 indicates that there is not a significant relationship between SWPBS effectiveness and math achievement in small-size schools, $F(1, 2) = .90$, $p = .443$.

Table 4-14

Predicting Math Achievement from SWPBS Effectiveness/Out-of-School Suspensions in Small Schools

				Change Statistics				
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change
.557	.310	-.035	7.72396	0.310	.900	1	2	.443

However, and importantly, Table 4-15 indicates that in medium-size schools SWPBS effectiveness is a statistically significant predictor of math achievement, F (1, 16) = .446, p = .002. Indeed, the statistics indicate that close to 45% of the variance in math achievement can be explained by SWPBS effectiveness.

Table 4-15

Predicting Math Achievement from SWPBS Effectiveness/Out-of-School Suspensions in Medium-Size Schools

				Change Statistics				
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change
.668	.446	.412	6.77037	.446	12.905	1	162	.002

And lastly, Table 4-16 displays the Model Summary for large-size schools and does not indicate a statistically significant relationship between SWPBS effectiveness and large-size schools, F (1, 2) = .666, p = .500.

Table 4-16

Predicting Math Achievement from SWPBS Effectiveness/Out-of-School Suspensions in Large-Size Schools

				Change Statistics				
R	R Square	Adjusted R Square	Std Error of the Estimate	R Square Change	F Change	df1	df2	Sig F Change
.500	.250	-.125	14.45371	.250	.666	1	2	.500

Checking Regression Assumptions for Research Questions 1–4

The regression assumptions of linearity, normality, and homoscedasticity for research questions 1–4 were checked by visual analysis of the histograms, Normal P-P plots, and scatterplots for each research question. Results indicated that none of the regression assumptions were met for research questions 1 and 2 on school size and SWPBS implementation and effectiveness. It appears that this is caused primarily by the extreme variance in scores for the variables of implementation (TIC scores) and effectiveness (OSS) in schools. However, it is important to note that small sample distributions can look non-normal even when they are normal (Field, 2005). Also, it is important to note that it was not the purpose of this study to generalize to the larger population due to the several sampling limitations; therefore, interpretations and

conclusions can still be drawn from the regression/correlation analysis conducted for the school district from which the purposeful sample was drawn.

However, for research questions 3 and 4 most of the regression assumptions were met or more closely met than for research questions 1 and 2. For research question 3, the normality and linearity assumptions were met. However, the scatterplot showed data skewed to the right, thus violating the homoscedasticity assumption.

For research question 4, all regression assumptions—normality, linearity, and homoscedasticity—were met. This is particularly relevant as the only statistically significant finding in the study analysis was for research question 4b, SWPBS effectiveness as measured by out-of-school suspensions predicts improved math achievement as measured by fifth-grade math SOL tests in medium-sized schools. However, when plots and assumption analysis were conducted specifically for research subquestion 4b, regression assumptions appeared to be violated. It is important to note that where assumption violations are suspected, the statistically significant results should be interpreted cautiously due to the possible inflation of type I error rate (Berry & Feldman, 1985).

Research Question 5

Research question 5 asked, *What are the selected school principals' perceptions regarding SWPBS in their schools as measured by a principal opinion survey?* This question consists of six subquestions, 5-a–5-f.

5a. What are school principals' perceptions overall regarding the implementation of SWPBS in their schools?

The SWPBS survey implementation scale consists of 15 items with questions regarding students, teachers, administrators, bus drivers, behavior support teams, secondary interventions, support for students with more severe behavior, and parent and community involvement. Table 4-17 provides the results of this section of the survey. Four items on the implementation scale, 1-b, 1-c, 1-f, and 1-g, achieved 100% principal agreement. A closer analysis of these four items indicated that the two questions which related directly to students, namely, *1-c—Is the program available to all students in my school;* and *1-f—Students are aware of school rules, rewards and consequences in my school*, had over 60% (1-c 64%, 1-f 60%) of the principals who Strongly Agree with the statements. On item 1-f, 40% of principals Agree, and for item 1-c, 36% of principals Agree, resulting in no principal ratings below Agree.

The other two questions: *1b—All teachers participate in the SWPBS program;* and *1g—School administrators attend training and staff development on student behavior and interventions*, indicated a lesser percentage (42.7% and 32%) of principals who Strongly Agree, a similar percentage of principals who Agree (37.5% and 56%), and some principals who only Somewhat Agree (20.8%, 12%). However, one item also related to teachers and staff, *1-e—Teachers and staff implement SWPBS systems consistently across grade levels and common school areas*, achieved a lower overall total principal agreement of 76% (16% Strongly Agree, 36% Agree, 24% Somewhat Agree, 16% Somewhat Disagree, and 8% Disagree).

The items that obtained the lowest percentage of principal agreement were related to SWPBS and community, access to mental health services, and parental involvement. Question *1-o—Community members/organizations contribute to the SWPBS program by providing token reinforcements, mentors, and/or other services* received the lowest overall agreement percentage at 44%, (16% of principals Strongly Disagree, and 28% Disagree). The second lowest, *1-l—Since implementing SWPBS there has been an increase in the number of administrator, teacher, and/or staff contacts with mental health and social agencies to access more intensive interventions for students* received 50% overall agreement, with 4.2% of principals who Strongly Disagree. And *1-n—Parents actively participate in the SWPBS program at my school* received 64% overall agreement (0% Agree, 36% Somewhat Agree, and 28% Strongly Disagree).

All other implementation items achieved between 80% and 90% principal agreement.

Table 4-17

Principal Perceptions of SWPBS Implementation (N = 25)

Q	% Strongly Disagree	% Disagree	% Somewhat Disagree	% Somewhat Agree	% Agree	% Strongly Agree	Total % Agree	Rating Mean
1a	0	0	4	16.0	52.0	28.0	96	5.04
1b	0	0	0	20.8	37.5	41.7	100	5.21
1c	0	0	0	0.0	36.0	64.0	100	5.64
1d	0	12	0	28.0	44.0	16.0	88	4.52
1e	0	8	16	24.0	36.0	16.0	76	4.36
1f	0	0	0	0.0	40.0	60.0	100	5.60
1g	0	0	0	12.0	56.0	32.0	100	5.20
1h	0	0	8	16.0	56.0	20.0	92	4.88
1i	0	0	8	12.0	40.0	40.0	92	5.12
1j	0	0	12	20.0	32.0	36.0	88	4.92
1k	0	0	8	8	40	44	92	5.20
1l	4.2	8.3	37.5	12.5	29.2	8.3	50	3.79
1m	0	0	8	36	44	12	92	4.60
1n	4	8	24	24	36	4	64	3.92
1o	16	28	12	8	36	0	44	3.20

5b. What are school principals' perceptions overall regarding SWPBS effectiveness in their schools?

The SWPBS survey Effectiveness Scale consists of 12 items regarding school climate, school-wide discipline, and reduction in problem behaviors, impact on student and teacher behavior, and time involved to implement. As shown in Table 4-18, all items in the SWPBS survey effectiveness scale achieved 80% or more total agreement. Three items: *2-e—SWPBS has made a positive impact on student behavior; 2-h—Students with disabilities benefit from SWPBS at my school;* and *2-j—Teachers spend less time during, before, or after school on student behavior*, achieved 100% agreement, but none of these items had the same high Strongly Agree percentage (effectiveness items only 20–24%) as previously discussed for implementation items. Despite the higher number of overall items with total Agree percentage, several effectiveness items included Disagree ratings. One item, *2-m—School administrators spend less time on discipline related paperwork and/or record keeping,* had 4% Strongly Disagree, 4% Disagree, 8% Somewhat Disagree, 48% Agree, 16% Strongly Agree with 84% Agree overall. Item *2-k—Teachers spend less time on discipline related paperwork and/or record keeping* had 8.3% Disagree, and 8.3% Strongly Agree, 33.3% Somewhat Agree, and 41.7% Agree with 83% Agree overall. The item with the highest single disagree rating was item *2-c—Fewer minor (inappropriate language, disobeying teacher) student misbehavior incidents are reported since implementing SWPBS*, with 20% Somewhat Disagree, yet the item also received a 20% Strongly Agree, and a total of 80% agreement overall.

Table 4-18

Principal Perceptions of SWPBS Effectiveness (N = 25)

Q	% Strongly Disagree	% Disagree	% Somewhat Disagree	% Somewhat Agree	% Agree	% Strongly Agree	Total % Agree	Rating Avg
2a	0	0	8	28	2	2	2	4.88
2b	0	0	4	16	44	36	96	5.12
2c	0	0	20	16	44	20	80	4.64
2d	0	0	8	36	36	20	92	4.68
2e	0	0	0	20	56	24	100	5.04
2f	0	0	4	20	64	12	96	4.84
2g	0	4	4	16	52	24	92	4.88
2h	0	0	0	20	60	20	100	5.00
2i	0	0	4	16	52	28	96	5.04
2j	0	0	0	40	40	20	100	4.80
2k	0	8	8	33	42	8	83	4.33
2l	0	0	8	28	48	16	92	4.72
2m	4	4	8	20	48	16	84	4.52

5c. What are school principals' perceptions of the relationship between SWPBS implementation and the size of their schools?

Two items in the SWPBS survey demographic scale addressed the research subquestion on the relationship between school size and SWPBS implementation: *3-a—The size of my school has impacted the amount of resources needed to fully implement SWPBS;* and *3-b—The size of my school has impacted the number of years needed to*

fully implement SWPBS. Notable in these responses is the narrow divide between the total percent of agree and disagree responses: 64% Agree, 36% Disagree overall. Of the 64% of the principals who Agree that school size influences the amount of resources needed for SWPBS, 36% of these responses were at the Somewhat Agree level, and 20% of the 36% of the principals who disagreed overall, disagreed that their school size influenced the amount of resources needed to implement SWPBS. With regard to the relationship between school size and the number of years needed to implement SWPBS, the percentage of agreement is even lower, with only 48% of principals agreeing (20% Agree, 16% Somewhat Agree, and 12% Strongly Agree). Of the 52% of principals who disagree that school size influences the number of years to implement SWPBS, 16% Strongly Disagree, 20% Disagree, and 16% Somewhat Disagree.

A closer examination of individual survey responses (Table 4-19) indicates that the three principals of large schools who responded to the survey all responded in agreement that school size impacts the amount of resources and number of years that it takes to implement SWPBS. However, principals responded at different degrees, from Strongly Agree to Somewhat Agree. Three of the four principals of small schools responded at varying degrees to the impact of SWPBS on school implementation, but one principal disagreed that school size impacted either resources or number of years to implement SWPBS.

Table 4-19

Principals' Perceptions of SWPBS Implementation and School Size

(N = 25 all, 3 large, 4 small)

Size	% Strongly Disagree	% Disagree	% Somewhat Disagree	% Somewhat Agree	% Agree	% Strongly Agree	Total % Agree
Item 3a: The size of my school has impacted the amount of resources needed to implement SWPBS							
All	8%	20%	8%	36%	16%	12%	64%
Large				33%	33%	33%	100%
Small		25%		50%		25%	75%
Item 3b: The size of my school has impacted the number of years needed to fully implement SWPBS							
All	16%	20%	16%	16%	20%	12%	48%
Large				33%		66%	100%
Small		25%		25%	50%		75%

5d. What are school principals' perceptions of the relationship between SWPBS effectiveness and the size of their schools?

One item in the SWPBS survey demographic scale, *3-c—The size of my school has impacted SWPBS effectiveness as measured by reduced out-of-school suspensions,* pertains to the relationship of school size and SWPBS effectiveness. Similar to responses on school size and implementation, about half (52%) responded in agreement and half

(48%) responded in disagreement. Only 8% of the school principals responded that they Strongly Agree that school size influences SWPBS effectiveness, 20% Agree, and 24% Somewhat Agree, an even 16% responded that they either Strongly Disagree, Disagree, or Somewhat Disagree that school size impacts SWPBS effectiveness.

A closer examination of individual school surveys indicated that the three principals of large schools agreed that school size impacts SWPBS effectiveness; two Strongly Agree, and one Somewhat Agree. However, again with the small schools, while three of the four principals agree (two Agree, one Somewhat Agree), one principal disagreed that school size influenced SWPBS effectiveness at his or her school.

Table 4-20

Principals' Perceptions of SWPBS Effectiveness and School Size

(N = 25 all, 3 large, 4 small)

Size	% Strongly Disagree	% Disagree	% Somewhat Disagree	% Somewhat Agree	% Agree	% Strongly Agree	Total % Agree
Item 3c: The size of my school has impacted the SWPBS effectiveness as measured by reduced OSS							
All	6%	16%	16%	24%	20%	8%	52%
Large				33%		66%	100%
Small		25%		25%	50%		75%

5e. What are school principals' perceptions of the relationship between SWPBS implementation and math achievement in their schools?

One item in the SWPBS survey demographic scale, *3-g—Additional math interventions are incorporated into the SWPBS framework at my school*, is related to the research subquestion on the relationship between SWPBS implementation and math achievement. Data indicates that less than half (44%) of the school principals believed that SWPBS implementation included additional math interventions (4% Strongly Agree, 16% Agree, and 24% Somewhat Agree). Of the 64% who Disagree, 20% Strongly Disagree, 24% Disagree, and 12% Somewhat Disagree.

The examination of individual principal responses of large schools revealed that one principal of a large school Strongly Agree, one Agree, and one Strongly Disagree. Three principals of small schools Somewhat Agree and one Strongly Disagree that SWPBS implementation influenced math achievement.

Table 4-21

Principals' Perceptions of SWPBS Implementation and Math Interventions

(N = 25 all, 3 large, 4 small)

Size	% Strongly Disagree	% Disagree	% Somewhat Disagree	% Somewhat Agree	% Agree	% Strongly Agree	Total % Agree
Item 3g: Additional math interventions are incorporated into the SWPBS framework at my school							
All	20%	24%	12%	24%	16%	4%	44%
Large	33%				33%	33%	67%
Small	25%			75%			75%

5f. What are school principals' perceptions of the relationship between SWPBS effectiveness and math achievement in their schools?

Two items in the SWPBS survey demographic scale, *3-i—The implementation of SWPBS has resulted in increased student engagement in math instruction*, and *3-k—The implementation of SWPBS has resulted in increased time for math instruction,* asked principals' opinions regarding the relationship between SWPBS effectiveness and math achievement in their schools. Unlike the principal responses on the SWPBS implementation questions, over half of the principals, 69.5%, agree that the implementation of SWPBS resulted in increased student engagement in math instruction, with no principals who Strongly Disagree, only 4.3% who Disagree, and 26.1% who Somewhat Disagree. Of the 69.5% principals in agreement, only 4.3% Strongly Agree,

but 30.4% Agree, and 34.8% Somewhat Agree. The principal responses are similar for the second SWPBS effectiveness and math achievement item regarding increased time for math instruction, with only two notable differences. For this item there was a slightly higher Strongly Agree rating, but there was also a small Strongly Disagree percentage, 4.3%.

The examination of individual survey responses found that responses by principals in large schools were either Strongly Agree (two principals) or Strongly Disagree (one principal), while responses of small school principals were more centered on the scale: Somewhat Agree (three principals) and Disagree (one principal).

Table 4-22

Principals' Perceptions of SWPBS Effectiveness and Math Achievement

(N = 25 all, 3 large, 4 small)

Size	% Strongly Disagree	% Disagree	% Somewhat Disagree	% Somewhat Agree	% Agree	% Strongly Agree	Total % Agree
Item 3i: The implementation of SWPBS has resulted in increased student engagement in math instruction							
All		4%	26%	35%	30%	4%	69%
Large	33%					67%	67%
Small		25%		75%			75%
Item 3k: The implementation of SWPBS has resulted in increased time for math instruction							
All	4%	4%	22%	30%	30%	9%	69%
Large	33%					67%	67%
Small		25%		75%			75%

Summary

This study used a multimethod design to gather quantitative and qualitative data on the implementation, effectiveness, math achievement, and school size in elementary schools which have implemented SWPBS for two or more years. Descriptive, comparative, and regression statistics were used to analyze data generated by a secondary analysis of school records and a three-part Web-based questionnaire. This chapter has reported the results of the data analysis within the context of the five research questions

and corresponding subquestions posed by the study. The implications of the findings as well as recommendations for future research are discussed in the next chapter.

Chapter 5

Conclusions and Recommendations

The problem behavior and academic underachievement of students in our schools today are major concerns for educators, parents, and the general public (Luiseli, Putnam, Handler, & Feinberg, 2005). The link between student behavior, school climate, and academic achievement has been investigated and confirmed in research (Brophy, 1988; DiStefano et al., 2007; Fisher et al., 1980; Putnam, Handler, & O'Leary-Zonarich, 2002; Wu et al., 1982). The reasons for the underdiagnosis and lack of interventions for students with problem behaviors are numerous. First, there are conflicting definitions of problem behavior in mental health services, special education laws, and the U.S. Department of Health and Human Services, making it more difficult to identify students eligible for emotional-disturbance services in a school district. And second, there is serious fragmentation and limited funding of mental health services and special education programs in schools and districts (Bazelon, 2006; Weist et al., 2001). The unfortunate result of these barriers is that large numbers of students with problem behaviors are not receiving the support and services they need, and therefore the academic, as well as social and emotional, growth of these students suffers.

Research in recent years has contributed new information about effective ways to address the problem behavior of students in our schools (Lewis & Sugai, 1999; Nelson, 1996; Taylor-Green et al., 1997; Todd, Haugen, Anderson, & Spriggs 2002; Turnbull et al., 2002). The school-wide positive behavioral support (SWPBS) framework has been developed and advanced to provide a comprehensive, systems approach to improving

school climate and student behavior, and as an alternative to the more punitive and ineffective discipline interventions such as student suspensions from school. Initial studies on the effectiveness of SWPBS have indicated significantly reduced office discipline referrals (ODR) and suspensions for students (Greenfield, 2003; Horner, Sugai, & Todd, 2001; Lewis-Palmer, Sugai, & Larson, 1999; Lohrmann-O'Rourke, 2000; Luiselli, Polack, & Laweda, 2006; Luiselli, Putman, & Handler, 2001; McCurdy, Mannella, & Eldridge, 2003; Nelson, 1996; Netzel & Eber, 2003; Sadler, 2000; Scott, 2001; Scott, 2002; Todd et al., 2002) as well as improved staff attitudes and behaviors (Lewis-Palmer et al., 2002; Nelson, Colvin, & Smith, 1996; Schneider, Walker, & Sprague, 2000; Todd et al., 2002).

However, research is just emerging regarding the relationships among SWPBS and various demographic variables, such as school size, and students' academic achievement. The purpose of this study was to explore the relationships among SWPBS implementation, effectiveness of SWPBS, school size, and math achievement. The findings from this study expand the research base on SWPBS and provide valuable information and guidance to practitioners, researchers, and policymakers interested in improving services for students with mild to severe problem behaviors.

This chapter contains a summary and interpretation of the research findings, a critique of the study, theoretical and practical implications of the study, recommendations for further research, and conclusions.

Summary of Findings

While a full presentation of results is found in Chapter 4, Table 5-1 summarizes the findings as they relate to each of the study's research questions.

Table 5-1: Summary of Research Results (N = 26)

RESEARCH QUESTION 1 Is school size an effective predictor of the degree of implementation of schoolwide positive behavioral support (SWPBS)?
ANSWER No, regression analysis of school records data indicates that school size does not predict the degree of SWPBS implementation in schools who have implemented SWPBS for two or greater years in the selected district.
RESEARCH QUESTION 2 Is school size an effective predictor of SWPBS effectiveness as measured by out of school suspensions (OSS)?
ANSWER No, regression analysis of school records data indicates that school size does not predict SWPBS effectiveness in schools.
RESEARCH QUESTION 3 Is SWPBS implementation an effective predictor of math achievement as measured by standardized test scores in schools overall or when school size is grouped into small, medium, large?
ANSWER No, regression analysis of school records data indicates that SWPBS implementation does not predict math achievement when sample schools are grouped together; or when schools are grouped by size, small, medium, or large.
RESEARCH QUESTION 4 Is SWPBS effectiveness an effective predictor of math achievement as measured by standardized math test scores, in schools overall, or when school size is grouped into small, medium, large?
ANSWER No, regression analysis of data indicates that SWPBS effectiveness does not predict math achievement when schools are grouped together, nor in small or large schools. However, analysis did indicate that SWPBS effectiveness, as measured by reduced OSS, does predict improved math achievement as measured by standardized math achievement scores in medium size schools. All schools: 16 (62%) of the 26 increased their math scores by an average of 9.3 points; 11 (42%) of schools reduced their OSS by 11.45 days. Medium size schools: 10 (55%)of the 18 schools increased math scores by average of 9.4 pts; 9 (50%) of schools reduced OSS by 12 days

Table 5-1: Summary of Research Results N=26) (continued)

RESEARCH QUESTION 5a What are selected principals' perceptions overall regarding the implementation of SWPBS in their schools?
ANSWER 96 % of principals believe their schools implement with high degree of integrity; 100% of principals agreed that in their schools: the SWPBS program is available to all students, students are aware of school rules, rewards, and consequences, all teachers participate, and school administrators attend training. Less agreement was found regarding the consistency of SWPBS implementation across grade levels and common school areas, and parent, community and mental health agencies involvement.
RESEARCH QUESTION 5b What are school principals' perceptions overall regarding SWPBS effectiveness in their schools?
ANSWER 100% of principals surveyed agreed that in their schools: SWPBS has made a positive impact on student behavior, students with disabilities benefit, and teachers spend less time on student behavior. Less agreement was found regarding school administrators spending less time on discipline, teachers spending less time on discipline related paperwork, and that fewer minor student misbehavior incidents were reported,
RESEARCH QUESTION 5c What are school principals' perceptions of the relationship between SWPBS implementation and school size?
ANSWER Over half (64%) of the principals agreed that school size impacted the amount of resources needed to implement SWPBPS, and slightly less than half (48%) of the principals agreed that school size impacted the number of years needed to implement. All principals of large schools and three of the four principals of small schools agreed, at different levels, that school size impacts the amount of resources and number of years that it takes to implement SWPBS.
RESEARCH QUESTION 5d What are school principals' perceptions of the relationship between SWPBS effectiveness and school size?
ANSWER Slightly over half (52%) of the principals overall agreed that the size of their school impacted SWPBS effectiveness. All of the principals of large schools and three of the four principals of small schools agreed, to some degree, that school size influenced SWPBS in their schools.

Table 5-1: Summary of Research Results N=26) (continued)

RESEARCH QUESTION 5e What are principals' perceptions of the relationship between SWPBS implementation and math achievement?
ANSWER Less than half of the principals (44%) believed that additional math interventions are incorporated into the SWPBS framework at their school. However, two of the three principals of large schools, and three of the four principals of small schools did agree that additional math interventions are incorporated; in each group, one principal strongly disagreed.
RESEARCH QUESTION 5f What are principals' perceptions of the relationship between SWPBS effectiveness and math achievement?
ANSWER 69.5% of the principals agreed that SWPBS resulted in increased student engagement in math instruction and increased time for math instruction. 96% principals reported that math test scores had improved or stayed the same (46% improved, 50% same)

This study utilized both a secondary analysis of school records and a principal opinion survey to examine the relationships among SWPBS implementation, effectiveness of SWPBS, school size, and math achievement. School records data collected included school enrollment as measured by the number of students in the school, number of student out-of-school suspensions (OSS), school SWPBS Team Implementation Checklists, and standardized math test scores for fifth-grade students. The principal opinion survey consisted of 40 rated items, five multiple choice items, and one open-ended question on principals' perceptions regarding SWPBS implementation, effectiveness, and school size and math achievement in their schools. Twenty- five of the 26 principals (96%) completed the survey; however, only nine principals responded to the open-ended question regarding other programmatic or demographic variables that may have influenced the implementation or effectiveness of SWPBS in their schools.

School Size and SWPBS Implementation

The research questions and subquestions addressed the prediction and influence of school size on the implementation of SWPBS in sample schools through a secondary analysis of school records and principal opinion survey. The regression analysis of school enrollment and Team Implementation Checklist scores indicated that there was not a statistically significant relationship between school size and SWPBS implementation, with school enrollment ranging from 343 students to 1,248 students and TIC scores from 32% to 100%.

On the principal survey implementation scale consisting of 15 items, 96% of principals agreed that their schools are implementing SWPBS with a high degree of integrity, and 100% of principals agreed with the following: the SWPBS program is available to all students; students are aware of school rules, rewards, and consequences; all teachers participate, and school administrators attend training. Less agreement was found on four items, those being consistency of SWPBS implementation across grade levels and common school areas (76%), parent involvement (64%), additional contacts with mental health agencies to access more intensive interventions for students (50%), and community involvement (44%). However, over half (64%) of the principals believed that school size impacted the amount of resources necessary to implement SWPBS, and almost half (48%) felt that school size influenced the number of years that it takes to implement SWPBS. All principals of large schools and three of the four principals of small schools agreed that school size impacts the amount of resources and number of years that it takes to implement SWPBS.

In summary, findings from the statistical analysis of school data and principal survey responses appear to differ on the influence of school size on SWPBS implementation. Interpretation and analysis of these findings are discussed in the next section of this chapter.

School Size and SWPBS Effectiveness

The research questions and subquestions also addressed the prediction and influence of school size, as measured by school enrollment, on the effectiveness of SWPBS, as measured by the reduction in the number of student out-of-school suspensions. The regression analysis of school data indicated that there was not a statistically significant relationship between school size and SWPBS effectiveness. Data indicate that 11 schools (42%) reduced their suspension rates by -1 to -44 with an average of 11.4 days, 10 schools (38%) increased their suspension rates by +3 to +55 with an average of 13 days, and five schools (19%) stayed the same with 0 suspensions each time. In the 10 schools that increased suspension rates, one school stood out with +55 days, resulting in 89 suspensions in year two of SWPBS implementation.

Principal perceptions of SWPBS effectiveness on the Principal Survey Effectiveness scale indicated that 100% of the principals agree that in their schools (1) SWPBS has made a positive impact on student behavior, (2) students with disabilities benefit from SWPBS, and (3) teachers spend less time on student behavior. Less agreement was found regarding school administrators spending less time on discipline, teachers spending less time on discipline-related paperwork, and there being fewer minor student misbehavior incidents reported. On the survey effectiveness scale, consisting of 13 items, four items had a mean of 5+ and the remaining nine had means of 4+, with no

items receiving any mean below these highest two ratings of 5 or 4+. However, slightly over half (52%) of the principals overall agreed that the size of their schools impacted SWPBS effectiveness. All of the principals of large schools and three of the four principals of small schools agreed, at some level, that school size influenced SWPBS in their schools.

In summary, findings from the statistical analysis of school data and principal surveys appear to differ on the influence of school size on SWPBS effectiveness. Interpretation and analysis of these findings are discussed in the next section of this chapter.

SWPBS Implementation, Math Achievement, and School Size

In addition to looking at the relationship of school size and SWPBS implementation and effectiveness, this study examined the extent to which SWPBS implementation predicted improved math achievement in schools overall and when schools are grouped by size. The regression analysis of school data indicated that SWPBS implementation does not predict math achievement, as measured by the change in standardized math test scores baseline to year two in schools grouped together and then by size, small, medium, or large. Also, less than half of the principals overall (44%) believed that additional math interventions were incorporated into the SWPBS framework in their schools. However, two of the three (66%) principals of large schools, and three of the four (75%) principals of small schools agreed that additional math interventions are incorporated; note that in each group, one principal strongly disagreed.

In summary, findings from the analysis of school data and principal survey responses appear to be consistent regarding the influence of SWPBS implementation on

math achievement in various-size schools, with one exception, that there were higher percentages of principals in large and small schools, than principals overall, who agreed that math interventions were incorporated into their SWPBS framework. Interpretation and analysis of these findings are discussed in the next section of this chapter.

SWPBS Effectiveness, Math Achievement, and School Size

This study also examined the extent to which SWPBS effectiveness predicted math achievement in schools overall and then when grouped by size. The regression analysis of school data indicates that SWPBS effectiveness, as measured by the change in out-of-school suspensions (OSS) from baseline to year two, does not predict math achievement, as measured by the change in standardized math test schools, overall or in small or large schools. However, and importantly, statistical analysis does indicate that SWPBS effectiveness predicts improved math achievement in medium-size schools which have implemented SWPBS for two or more years in the selected district. Sixteen, or 61%, of the 26 sample schools increased their math scores by an average of 9.3 points. Eleven, or 42%, of the 26 sample schools reduced their OSS by 11.45 days.

In addition, close to 70% (69.5%) of the principals agreed that SWPBS resulted in increased student engagement in math instruction and increased time for math instruction. Two of the principals of large schools strongly agreed and one strongly disagreed; three principals of small schools somewhat agreed, and one principal disagreed. Approximately half (46%) of principals reported that math test scores had improved at their school.

In summary, findings from the statistical analysis of school data and principal survey responses appear to be consistent regarding the influence of SWPBS effectiveness

on math achievement in various-size schools. Interpretation and analysis of these findings are discussed in the next section of this chapter.

Interpretation of the Findings

This study contributed insights into the relationships among SWPBS implementation, SWPBS effectiveness, school size, and math achievement. The following sections discuss the findings with an emphasis on relating the study results to existing research.

The Relationship between School Size and SWPBS Implementation

Sugai and Horner (2002) identified five basic steps that characterize the establishment of "host" environments and implementation of a school-wide PBS approach: (1) establish a school leadership team, (2) secure school-wide agreements and supports, (3) develop a schoolwide data-based action plan, (4) arrange for high fidelity of implementation, and (5) conduct formative data-based monitoring (pp. 39–44). Unlike in the past, when behavior support in schools was reserved for only those students who demonstrated problem behaviors (Sugai & Horner, 2002), the primary prevention efforts in SWPBS assume that all children need behavior support (Evertson & Emmer, 1982; Sprick, Sprick, & Garrison, 1992; Weissberg, Caplan, & Sivo, 1989). Primary prevention strategies focus on enhancing protective factors on a school-wide basis by teaching all students and staff the rules and expectations and other disciplinary polices and procedures that are designed to enhance the smooth operation of a school environment. Additional important primary interventions include strong classroom management, effective and research-based instruction, and parental involvement and education. Examples of secondary interventions include mentoring, small-group social

skills lessons, anger management/self-control training, parent training, behavior contracts, specialized tutoring, check-in/check-out, and Big Brother/Sister programs (Crone, Horner, & Hawken, 2004; Davies & McLaughin, 1989; Dougherty & Dougherty, 1977; Hawken & Horner, 2003; Leach & Byrne, 1986; Lewis, Colvin, & Sugai, 2000; March & Horner, 2002; Nelson, Martella, & Garland, 1998). And lastly, collaborative, wraparound interagency cooperation is at the core of tertiary interventions (Carr et al., 1999; Didden, Duker, & Korzilius, 1997; Eber et al., 2002; Ingram 2002; O'Neill et al., 1997; Todd, Horner, Sugai, & Spargue, 1999).

The study findings suggest that the comprehensive and school-based approach to SWPBS implementation ameliorates the impact of school size on implementation efforts. Through initial staff consensus, school-based SWPBS leadership teams, and shared decision making, it appears that school efforts can be tailored to the distinct characteristics, culture, and size of each school.

The principal survey responses indicated that 96% of principals agreed that their schools were implementing SWPBS with a high degree of integrity, and 100% of principals agreed that, in their schools, the SWPBS program is available to all students; students are aware of school rules, rewards, and consequences; and all teachers participate, and school administrators attend training. Less agreement was found regarding the consistency of SWPBS implementation across grade levels and common school areas, and the involvement of parent, community, and mental health agencies.

A closer examination of principal responses to survey items related to the relationship between school size and SWPBS found that, while 64% of principals agreed that school size impacted the amount of resources needed to implement SWPBS, only

12% strongly agree, 16% agree, and 36% somewhat agree. Of the 48% of principals who agree that school size impacted the number of years to implement SWPBS, only 12% strongly agree, 20% agree, and 16% somewhat agree; and, 16% strongly disagree, 20% disagreed, and 16% somewhat disagree. It appears that while the majority of principals strongly agree that their schools implement key components of SWPBS with integrity, a lesser percentage of principals somewhat agree that school size does require additional resources and time for implementation.

Several prior SWPBS implementation studies discussed the importance of staff training and the correlation of staff training and district support to program success (Greenfield, 2004; Luiselli et al., 2006; Muscott et al., 2004). Bambara and Kern (2005) identified numerous school-wide systems needed for effective SWPBS implementation and sustainability: team-based implementation, administrative leadership, documented commitment, adequate personnel and time, budgeted support, information systems, policies, staffing patterns, staff training, and action plans. In considering the importance of school-wide systems to SWPBS implementation and effectiveness, perhaps another explanation for the apparent discrepancy in principal perceptions is principals' strong sense of responsibility regarding their leadership role in coordinating and accessing the additional resources and training needed to implement SWPBS in their schools. Perhaps while principals overall strongly agree that the basic principles of SWPBS are implemented in their schools, they also feel increased pressures due to the additional staff time, and needed district resources in order to implement SWPBS well, particularly in large schools.

The Relationship between School Size and SWPBS Effectiveness

As reviewed in Chapter 2, researchers have consistently reported reductions in office discipline referrals (ODR) and out-of-school suspensions (OSS) during the initial years of SWPBS implementation (Colvin & Fernandez, 2002; Florida PBS Project, 2005; Horner, Sugai, & Todd, 2001; Horner et al., 2005; Lohrmann-O'Rourke et al, 2000; Luiselli, Putnam, Handler, 2001; McCurdy, Mannella, & Eldridge, 2003; Nelson, 1996; Netzel & Eber, 2003; Sadler, 2000; Scott, 2002; Todd, Haugen, Andereson, & Springgs, 2002). In addition, several studies—Larson, Steele and Sailor (in press); Putnam, Handler, and O'Leary-Zonarich (2003, 2007); and Scott and Barrett (2004)—calculated the instructional days and thus academic time gained per year through the reduction of ODR and OSS.

The descriptive analysis in this study found that 11 schools (42%) reduced their suspension rates by -1 to -44 days with an average of 11.4 days, 10 schools (38%) increased their suspension rates by +3 to +55 days with an average of 13 days, and 5 schools (19%) stayed the same with 0 suspensions each time. The results in this area of the study are not as positive as in prior studies. In the schools that increased suspension rates, one school stood out with +55 days, resulting in 89 suspensions in year two of SWPBS implementation. Further examination of any other changes at this school, such as administration or demographics, during this period is needed.

It is also unfortunate that ODR data could not be consistently obtained for schools as was originally planned for the study. In elementary schools particularly, the effectiveness data collected (OSS) is typically reserved for students with more severe or chronic problem behavior. An additional explanation for the low number of schools

reducing OSS over the first two years of SWPBS implementation also may be the low principal agreement (50%) on the question regarding implementation of tertiary interventions. This can be interpreted that, while schools have primary and some secondary interventions that are in place, there is less of a focus on tertiary interventions, such as mental health agency collaborations and wraparound, in their SWPBS framework to address the needs of students with more serious and chronic problem behavior.

While no research studies were located that studied the relationship between SWPBS effectiveness and school size, school size has been studied extensively by educators and researchers to determine whether positive outcomes for students and teachers can be attributed to school size, particularly small schools, or to other variables, such as rural or urban setting or socio-economic status. Overbay (2003) reported that some research suggests that smaller schools are linked to improved attendance, participation in school activities, and higher achievement, while other studies indicated that school size does not have a significant impact on student performance. Roeder (2002) concluded that poverty remains the only substantial determinant of performance; that performance varies significantly by school type (elementary, middle, or high school); and that the interaction of poverty with elementary schools is significant for several measures of performance.

The findings of this study indicate that there is no statistical relationship between school size and SWPBS effectiveness when measured by out-of-school suspensions. This would appear to support the aforementioned school-size research which indicates that school size does not typically impact student performance, except perhaps in low-socioeconomic schools.

Again, principal responses were positive on the Principal Survey Effectiveness Scale, on which100% of principals agreed that SWPBS has made a positive impact on student behavior, students with disabilities benefit, and teachers spend less time on student behavior. Less agreement was found regarding reduction in time that school administrators spend on discipline, reduction in time teachers spend on discipline-related paperwork, and a reduction in minor student misbehavior incidents reported. However, when principals were specifically asked their perceptions regarding the impact of school size to SWPBS effectiveness, slightly over half (52%) of the principals agree that the size of their school impacted SWPBS effectiveness. A closer examination of principal responses reveals that only 8% of the school principals strongly agree that school size influenced SWPBS, with 20% who agree and 24% who somewhat agree. The principals who disagree that school size influenced SWPBS effectiveness were evenly divided—16% Strongly Disagree, 16% Disagree, and 16% Somewhat Disagree. All of the principals of large schools and three of the four principals of small schools agree, to some extent, that school size influences SWPBS effectiveness in their schools. Perhaps again, as stated in the above section, while the majority of principals strongly agree that SWPBS has a positive impact on student and teacher behavior, a smaller group somewhat agree that school size influences SWPBS effectiveness. And again perhaps the latter can be explained by the additional responsibilities, administrative time, and district resources needed to monitor and evaluate the SPWBS program, particularly in large schools with increased numbers of students and staff, or small schools often with less school-based administrative staff.

The Relationship between SWPBS Implementation, Math Achievement, and School Size

Prior SWPBS implementation studies indicated a positive relationship between degree of SWPBS implementation and the rate of success in reducing student misbehavior and improving student achievement (Florida PBS Project, 2005; Horner et al., 2004; McCart, 2003; Nakasato, 2000; Nersesain et al., 2000). Luiselli, Putnam, and Sunderland (2002), and Sprick, Sprick, and Garrison (1992) demonstrated the benefits of teaching prosocial skills and appropriate behaviors at the universal level of SWPBS implementation. The results of a study by Colvin, Sugai, Good, and Lee (1997) indicated a significant reduction in student misbehavior during transitions after the implementation of precorrection and active supervision; and a study by Stormont, Lewis, and Covington-Smith (2005) revealed the advantages of direct teaching of behaviors to students in Headstart classes.

Additionally, some prior implementation studies discuss the importance of staff training, and the correlation of staff training and district support to program success. The New Hampshire Center for Effective Behavioral Interventions and Supports investigated whether training and technical assistance led to increased fidelity of SWPBS implementation. Greenfield's (2004) study of three urban elementary schools indicated a strong correlation of SWPBS implementation to training, and emphasized the importance of training for all staff in the SWPBS framework.

In this study the regression analysis of school records data, including the Team Implementation Checklist, school enrollment, and math standardized test scores, did not find any statistically significant relationship between SWPBS implementation and math achievement when schools were grouped together, or by school size, small, medium, or

large. However, descriptive analysis of school math differentials from baseline to year two of SWPBS implementation was +19 to -12 with a mean of +3.65 points. A school-by-school analysis showed that 16 (62%) schools improved their math scores by an average of 9.3 points, and 9 (34%) schools decreased their math scores by an average of six points.

As indicated in the section above on SWPBS Implementation and School Size, 96% of principals agreed that the basic components of SWPBS were implemented with a high degree of integrity in their schools. However, less than half of the principals (44%) believed that additional math interventions were incorporated into the SWPBS framework at their school. Although, two of the three principals of large schools and three of the four principals of small schools did agree that additional math interventions are incorporated (note that in each group, one principal strongly disagreed). However, this is not surprising, as existing literature contains a large amount of discussion regarding three-tier reading programs (Vaughn & Linan-Thompson, 2003; Kame'enui & Simmons, 1998) and the integration of reading and behavior frameworks (Stewart et al., 2007), but little has been written or studied regarding additional math interventions within the SWPBS framework, indicating little implementation or research efforts in this area at this time.

School size groups were determined from the literature and even distribution among the schools in the purposeful sample. The finding that there is no statistical relationship between SWPBS implementation and math achievement even when schools are grouped by size should be interpreted with caution because of the small number (4 each) of large and small schools in each of these two groups.

The Relationship between SWPBS Effectiveness, Math Achievement, and School Size

As stated earlier in this chapter, prior research has reported large reductions in ODR and OSS rates after SWPBS implementation; however, in this study, only 11 (42%) of the 26 schools reduced their OSS, by an average of 11.4 days. Two possible interpretations for these results are: (1) SWPBS effectiveness was measured using OSS data rather than the more typical and preferred ODR data, and (2) there was relatively low principal agreement (50%) that tertiary interventions for students with more severe and chronic problem behaviors were initiated and implemented in their schools.

Nineteen studies described in Chapter 2 indicated positive correlations between school climate, instructional time, academic engagement, and improved academic achievement as measured by standardized test scores and school climate surveys. Five studies specifically addressed the relationship between SWPBS and math achievement and reported significant improvement in standardized math test scores (Larson, Steele, & Sailor, in press; Lusilli, Putnam, Handler, & Feinberg, 2005; Oregon District Study, 2004; Parr, Kidder, & Barrett, 2007; Putnam, Handler, & O'Leary-Zonarich, 2003). The results for this study, while not as significant as prior research, found that 16 (62%) schools improved their math scores by an average of 9.3 points; in 9 schools (34%) math scores went down by an average of 6 points, and in one school math scores stayed the same.

Regression analysis of school records found no statistical relationship between SWPBS effectiveness and math achievement as measured by standardized math test schools in schools when grouped together, or in small or large schools that have implemented SWPBS of two or more years in the selected district. However, regression

analysis of school data did find that **SWPBS effectiveness, as measured by reduced OSS, does predict improved math achievement as measured by standardized math achievement scores in medium-size schools who** have implemented SWPBS for two or more years in the selected district. It can be interpreted that math achievement improved in medium-size schools because of the greater number of schools, reduced OSS, increased student engagement, and increased time for math instruction. In addition, the findings for small and large school size groups should be interpreted with caution due to the very small (4 each) number of schools in each group.

In support of the above finding, close to 70% (69.5%) of the principals agreed that SWPBS resulted in increased student engagement in math instruction and increased time for math instruction. Also, approximately half (46%) of principals reported that math test scores had improved in their schools. The complementary results of the school data analysis and principal survey responses lend strong support to a positive relationship between SWPBS effectiveness and improved math achievement in medium-size schools in the selected district.

Study Limitations and Recommendations for Future Research

Several limitations of the study were noted in Chapter 1. Others became apparent as the study was executed and will be discussed here along with suggestions for improvements for future studies. This section includes a discussion of the limitations of the scope, instrumentation, and generalizability of this study, as well as recommendations for future research.

Scope of the Study

The first set of recommendations relates to the scope of the study. This study examined the relationships among four variables—SWPBS implementation, effectiveness of SWPBS, school size, and math achievement. It is recommended in future studies that the variable of school socioeconomic status also be examined. Much research, including research on school size, discusses the impact of poverty on school programs, student behavior, and student learning. In addition, three of the nine limited responses given by principals to the open-ended question on what other factors or programs may have influenced SWPBS implementation and effectiveness in their schools, related directly to socioeconomic changes in their schools. Other demographic written comments included turnover of school staff, high student mobility, and increase in special programs, all of which are frequently characteristic of low-socioeconomic schools.

A review of the literature in Chapter 2 found that the greatest amount of SWPBS demographic research to date has been on SWPBS and school socioeconomic status. These studies indicated significant reductions in ODR and overall suspensions, and improved teacher attitudes and skills in working with students with problem behavior (Arter, 2005; McCart, 2003; McCurdy, Mannella, & Eldridge, 2003; Nelson, 1996; Netzel & Eber, 2003; Powers, 2003). Since information on the socioeconomic status of each school is publicly available and was collected, it is possible in the near future to conduct, with district approval, additional analysis of the influence of socioeconomic status on study variables and findings.

A second recommendation relates to the distribution of surveys only to school principals, which was decided for three reasons: (1) research has indicated the

importance of school leadership in any systems change or program implementation (Deal & Petersen, 1990); (2) elementary school principals are expected to analyze, monitor, and be able to articulate the academic, discipline, and demographic data of their schools; and (3) principals are required to participate in all training and be active members of their school's SWPBS steering committee. However, it is recommended that future researchers place emphasis on crafting a rating scale that can reduce the potential bias or subjectivity of the respondents and elicit the most objective responses from principals regarding the status of SWPBS implementation and effectiveness in their own schools. While survey responses were anonymous, there is the possibility that principals' responses could be biased by their desire to present a positive and successful image of their schools. This strong sense of responsibility and sensitivity to outside evaluation also might explain principal responses to the need for additional resources and time to implement SWPBS. In future studies, the administration of the survey to classroom teachers in addition to principals might provide a more objective picture of SWPBS in the schools.

Instrumentation

A second set of recommendations relates to instrumentation. In the review of literature and research design, the original intent was to measure SWPBS by the research-based School-wide Evaluation Tool and the effectiveness of SWPBS using office discipline referrals (ODR). Due to the unavailability of these scores from some study schools, it was necessary to change measures to the Team Implementation Checklist (TIC) and OSS. No extensive research has been done on the use of the TIC as an instrument for research; although, one study (Tobin, 2007) looked at whether SWPBS

implementation in high schools could be facilitated by using Team Implementation Checklists and concluded that the TIC appears to be a valuable tool for studying ongoing SWPBS implementation efforts.

In addition, follow-up researchers need to attend to the literature that has been critical of the extensive use of both office discipline referrals (ODR) and student suspensions (OSS, ISS) to measure the effectiveness of SWPBS (Lane, Wehby, Roberson, & Roger, 2007; Putnam, Horner, & Algozzine, 2006). Critics note the variation among school administrators and teachers for the reasons students are sent to the office and subsequently how they are disciplined for various incidents of misbehavior. ODRs were originally selected for use in this study to increase frequency and measure the number of minor incidents rather than more serious incidents. This is particularly relevant to elementary schools, in which students typically exhibit less severe problem behaviors. However, it is important to note that in the selected district, clear directives are given each year from the central administration to all school administrators and teachers regarding students' rights and responsibilities and consequences, which could result in greater consistency for OSS. Despite this possible advantage, the resulting numbers on OSS are low and less able to show change from the baseline to year two, whether positive or negative. Also, five of the 26 study schools had zero OSS in both the baseline and year two data.

Lastly, while the response rate was high (96%) for the survey, only nine principals responded to the one open-ended question. This question was important in gathering other demographic or programmatic information that might have influenced the implementation or effectiveness in SWPBS schools. Future surveys need to include a

better means of acquiring information regarding demographic and programmatic changes in study schools.

Theoretical Implications

This study examined the relationships among SWPBS implementation, effectiveness of SWPBS, school size, and math achievement using the theoretical framework developed by Walker et al. (1996), which was modeled after the U.S. Public Health Service conceptual framework of prevention (involving primary, secondary, and tertiary intervention). The SWPBS framework provides a systems approach for schools to organize proactive, comprehensive, and efficient mental health programming for all students. The SWPBS model incorporates numerous principles from the behavioral, ecological, sociological, and organizational theories of human development and was operationally advanced by several educators and researchers, such as Colvin, Kameenui, and Sugai (1993), Lewis and Sugai (1999), and Rosenberg et al. (2004).

The goal of SWPBS is to develop host environments that provide the processes and supports and that increase a school's capacity to adopt and sustain the use of evidence-based practices (Luiselli & Diamont, 2002, p. 38). SWPBS logic is that successful individual student behavior support is linked to host environments or school climates that are effective and efficient (Zins & Ponte, 1990). Underlying the SWPBS theory developed by Walker et al. (1996) are the assumptions that if systems and plans for teaching appropriate behavior, with appropriate reinforcement and consequences, are consistently implemented throughout the school community by all stakeholders, the majority (85%) of all students will be actively and positively engaged in learning and other school activities. These students then act as positive role models for other students

and allow time for teachers and staff to implement more intensive interventions for students with more serious behavioral and emotional needs. The SWPBS theory described above was supported by principal survey responses which reported that principals agree that SWPBS resulted in improved student discipline (96%) and improved school climate (92%), and that teachers (100%) and administrators (92%) spent less time on student behavior.

The increase in standardized math scores by over half of the study schools also supports the hypothesis documented in previous research that improved student behavior and school climate will result in increased student engagement and time for academic instruction. This hypothesis was supported by principals' perceptions that SWPBS resulted in increased student engagement (69%) and increased time for math instruction (70%).

Study findings regarding the relationships among school size and SWPBS implementation and effectiveness appear to support the school-based implementation principles of SWPBS. As stated in the Office of Special Education Programs (OSEP) manual (2006), "SWPBS is not an intervention, curriculum, or program, but instead a systems approach for the efficient adoption and implementation of effective and relevant behavioral interventions in schools" (p. 3). The required staff consensus and school-based SWPBS leadership team efforts are critical to a school's success, and support the statistical findings that school size does not influence SWPBS implementation and effectiveness. The finding that the majority of principals (96%) agree that SWPBS is being implemented with integrity in their schools, although principals of large and small

schools believe that additional resources and time may be needed, supports the importance of SWPBS school-based implementation practices and theory.

Lastly, as described in an earlier section, the failure of the majority of study schools to reduce OSS after two years of implementation may be due to a variety of factors, including change in administrative leadership and/or lack of secondary and tertiary interventions. While principal perceptions tend to contradict this finding, it is still a noteworthy exception to the overall support of the findings of this study for the SWPBS theory that implementation of SWPBS will improve student behavior and reduce exclusionary discipline practices.

Practical Implications

This study has contributed new knowledge regarding the relationship of school size to SWPBS implementation and effectiveness, and the relationships of SWPBS implementation and effectiveness to math achievement in schools of various sizes in one large, diverse, and well-provisioned mid-Atlantic school district.

The school district is to be commended for their district-wide efforts in advancing SWPBS in district schools. The evolving position of full-time PBS specialist, the ongoing school PBS coach training, ongoing district-wide training for school teams, and recent increased school board funding all indicate strong support and commitment to the approach. This study indicated that SWPBS can be implemented with integrity in schools of any size and that, statistically, school size does not have a significant influence on SWPBS implementation or effectiveness. However, the perceptions of some principals that additional resources and time might be needed for SWPBS implementation warrants further investigation and suggests that the school district may

want to consider school size when allocating resources and support to schools implementing SWPBS.

The literature is consistent on the importance of mental health collaboration to serve the 3–5% of students in schools who have severe problem behaviors. Dr. Weist, of the University of Maryland (Muller & Jackson, 2004), states

> There is a complementarity between PBS and expanded school mental health. Each emphasizes a different part of the triangle, but combined can mutually reinforce one another. PBS schools are doing wonders, but often do not attend adequately to students with mental health issues. PBS can help mental health folks be more environmentally focused, as PBS creates a readiness for a more intensive focus on mental health in the schools (p. 12).

Other researchers and professionals are advocating for the inclusion of the wraparound process within the SWPBS framework and believe that together, the wraparound process and the SWPBS approach offer an important and efficient means of improving the educational and behavioral programming of students with, or at risk of, developing severe problem behaviors (Eber, Sugai, Smith, & Scott, 2002). Findings from this study appear to indicate that schools are implementing SWPBS well at the universal level (teaching expected behaviors, student recognitions, etc.); however, only 50% of the principals indicated any increased access to mental health organizations to obtain more intensive interventions for students with more severe problem behaviors. The school district may want to review current district training on the tertiary component and provide

additional training to school teams on how to advance the SWPBS approach to include tertiary interventions.

Math instruction and remediation often take a “back seat” to reading instruction in our elementary schools. However, the increased national focus on math competence, and the low principal agreement that additional math interventions were included within the SWPBS framework, elicit the question of what our elementary schools and teachers are doing to assist students who are having difficulty in math. While not directly related to the behavior-only SWPBS framework examined in this study, math intervention for at risk learners may be worthy of additional district investigation, particularly in light of the two-sided academic and behavior pyramid currently being published by the district.

Lastly, ongoing assessment and monitoring are key components of the SWPBS model. Approximately 88% of all principals indicated that they had behavioral support teams operating in their schools. These teams typically analyze school discipline data, including ODR and OSS and district training for school teams on how to collect and analyze ODR and OSS data to monitor program and student outcomes is provided each year. However, two of the preferred instruments for the study were changed due to the unavailability of school ODR and School-wide Evaluation Tool (SET) data. The School-wide Evaluation Tool requires an external evaluator and numerous hours to collect and score. It appears that when the district implementation of SWPBS expanded from a few schools to over 100, it became too difficult for district PBS specialist to administer and collect SET data and collect ODR data from schools. These circumstances suggest that while the district currently funds a full-time district-wide PBS specialist, they may want

to consider increasing funding or staffing allocations for additional PBS positions to assist with data collection and program monitoring.

Recommendations for Future Research

Both the questions that were raised in this study and the limitations identified suggest a number of avenues for future research. First, additional research is needed on the relationships among SWPBS and other demographic variables. A study on the relationships among socioeconomic status, SWPBS effectiveness, and school size would be interesting, particularly in light of the school size research which indicates that poverty is the only demographic variable that influences student and school outcomes. In addition, the absence of research that studied SWPBS implementation and effectiveness in schools with large percentages of students in ESOL programs or students with IEPs needs to be rectified. Lastly, it would be valuable to disaggregate and examine SWPBS discipline data to determine if the disproportion of minorities typically found in school discipline reports exists in SWPBS schools; and if so, how to implement SWPBS in a more "culturally responsive" manner (Skiba, 2008).

Second, further research is needed on how schools do and do not include tertiary interventions in their SWPBS framework. Many questions surface around this issue: How many schools are really implementing tertiary interventions? Do schools have a common understanding of what this means? What training is provided to school teams? How do schools organize and implement interventions at all three levels of the SWPBS continuum? Are there reductions in students with IEPs in schools that fully implement SWPBS? How is students' behavior progress monitored? How do schools who fully implement the SWPBS framework compare to "full service schools" or "community

schools" (Dryfoos, 1993). Contrasting earlier SWPBS implementation efforts, SWPBS practitioners and researchers are now encouraging staff training and full implementation of all three SWPBS tiers from year one. In the past school teams were taught to focus only on primary interventions for at least one year before advancing to secondary and tertiary interventions.

Third, the literature review and data analysis for this study found an absence of information regarding math interventions for struggling students. While many districts are advocating and implementing a two-sided academic and behavior pyramid as a result of the increased collaboration between SWPBS advocates and response to intervention advocates, it appears that most efforts are in the area of reading instruction, and not math instruction. The work of Vaughn and Linan-Thompson (2003) and Stewart et al. (2007) on three-tier reading models could be replicated for three-tier math intervention models.

Finally, in order to generalize study findings, the replication of this study across districts either using the TIC or OSS, or the SET and ODR, plus additional qualitative data, are necessary. Methods to obtain additional qualitative information could include principal and/or teacher interviews or focus groups. It is important to note that the school district sampled in this study has recently begun using the Benchmarks of Quality (BOQ) which consists of 53 items and completed by school SWPBS team members and coach during the latter part of the year (Mar/Apr/May). A quantitative measure, the BOQ items identify areas for improvement in developing, implementing, and advancing a system of SWPBS.

Conclusions

To date, the effective role of schools in developing solutions to the problem behaviors of students in our schools has been largely unrealized. The failed policies and practices of the past have resulted in the increasing numbers of youth with diagnosed and undiagnosed problem behaviors not receiving the support and services they need to be successful in our schools and society. However, the future appears brighter with recent legislation, and new school initiatives with mental health collaborations focused on providing a comprehensive, three-tier, school-wide positive behavioral support intervention framework in our schools.

This exploratory study provides an initial description of the relationships among SWPBS implementation, effectiveness of SWPBS, school size, and math achievement and provides many areas for future research. In this study, a number of analyses, using both school records data and principal opinion survey responses, were conducted, interpreted, and considered in relation to existing research and the SWPBS theoretical model. While results are inconclusive and should be interpreted with caution, seven key findings (three related to SWPBS implementation and four to SWPBS effectiveness) were indicated:

1. No statistical relationship was found between school size and SWPBS implementation, although 64% of principals agreed that additional resources and 48% of principals agreed that additional years might be needed to implement SWPBS.
2. All but one principal (96%) agreed that their schools were implementing SWPBS with a high degree of fidelity, with 100% of principals agreeing that universal

interventions such as students knowing school rules, rewards and consequences were in place in their schools. However only 50% of principals agreed that tertiary level interventions involving mental health, community collaborations were being implemented.

3. No statistical relationship was found between SWPBS implementation and math achievement and only 46% principals agreed that additional math interventions were included in their school programs.
4. No statistical relationship was found between school size and SWPBS effectiveness although 100% of principals in large schools and 75% of principals of small schools agreed that school size influenced SWPBS effectiveness.
5. All principals agreed that SWPBS has had a positive impact on student behavior, and students with disabilities, and results in less teacher time spent on student behavior. Ninety-size percent of principals agreed that SWPBS has had a positive impact on teachers' behavior management.
6. A statistically significant relationship was found between SWPBS effectiveness and improved math achievement in medium size schools, supported by 69% of principals agreeing that SWPBS resulted in increased student engagement in math and increased time for math instruction.
7. Only 42 % of the schools reduced the number of out-of- school suspensions over the two year period; although schools that did, averaged a reduction of 11.4 days.

The above findings are described and explained in detail in previous sections of this chapter.

This study has advanced our understanding of the influence of school size on SWPBS implementation and effectiveness, and the impact of SWPBS implementation and effectiveness on students' math achievement. The study also contributed significant information for further research on the relationships among SWPBS, school size, and other school and student demographic variables; the implementation of tertiary interventions; and the implementation and effectiveness of a combined math and behavior intervention model.

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Appendix A: SWPBS Effectiveness Studies Summary

Studies	Year	Findings
Bradshaw, Leaf & Debnam	2007	SWPBS implemented with fidelity improved perception of school safety, organizational health, academics, ODR reductions
Colvin & Fernandez	2002	Sig ODR reductions. More positive school environment, effective teaching, and increase in school's capacity to provide high quality instruction and behavior management for all students.
Greenfield (Three schools case study)	2004	80. 3 %,32.3 %59.3 % reductions in ODRs; 19.0 %,29.27 %,34.3 % reductions in OSS Expulsions reduced 100%, 100%, 0%
Horner, Sugai, Smolkowski, Todd, Nakasoto, Esperanza	Under Review	Randomized Control Trial of SWPBS in Elementary Schools
Horner, Sugai, & Todd	2001	50-60% reductions in ODRs
Horner, Sugai, Todd, Lewis-Palmer	2005	Decreased exclusionary, reactive and punitive discipline practices
Lewis-Palmer, Horner, Sugai, Eber, & Phillips,	2002	Increased staff and student satisfaction
Lewis-Palmer, Sugai, Larson,	1999	Significant reductions in ODRs
Lohrmann-O'Rourke, Knoster, Sabatine, Smith, Horvath, Llewellyn	2000	30-40 % reduction in ODRs
Luiselli, Polack & Laweda	2006	40% after two years; 29% after one year
Luiselli, Putnam, Handler	2001	69%reduction in ODR; 62% reduction in OSS;85% bus 76% increase in academic engagement
Maryland PBIS	2007	.38 a day per 100 students, compared to national ave of .4312 Maryland schools found together they recovered 700 days of instruction for students; and 233 days of administrators' time
Maryland Project Target:	2005	Sig ODR and OSS reductions PBIS schools have high program fidelity and

Studies	Year	Findings
(37 schools with 21 using PBIS and 16 using standard practices within the school)		increased org health.
McCurdy, Mannella, & Eldridge	2003	46 % after two years; 55% reduction in school fighting
Nelson, (2 sets matching schools)	1996	40% reduction in OSS Decreased in expulsions and emergency removals Improved academic performance and survival skills.
Nelson, Colvin& Smith, 1996	1996	Rates of positive behavior for both child and adult increased and rates of disruptive behavior decreased
Netzel & Eber, 2003 (Urban)	2003	22% in OSS, slower in ODR
New Hampshire Center for EBIS	2005	28% ODR 568 ISS days 352 OSS days 15, 647- 10, 496 hours regained for student learning 2,958 administrative hours
Sadler,14 schools	2000	35% reduction in ODR; 10% in cafeteria
Schneider, Walker, & Sprague	2000	Improved perceptions of school safety
Scott & Barrett (Urban, ES)	2004	Reduction in ODRs saved 29.5 instructional days Reduction in OSS saved 50 days
Scott	2001	Sig ODR reductions 65% less OSS days; 75% decrease in the total # of students 61 % decrease in the total # of hours spent in the referral room. Gained 775 classroom hours through prevention and with the decrease in referrals.
Scott (Urban, ES)	2002	61% reduction in ODRs 65% reduction in OSS 75% fewer minority students referred
Sprague & Biglan	In progress	Randomized Control Trail of SWPBS with Middle Schools
Sprague et al.	2001	Reduction in ODRs in both ES +MS Increase social skills; no measurable change in school safety

Studies	Year	Findings
Sugai et al. (11 ES + 9 MS)	2000	Significant ODR reduction Universal interventions should be the focus when # of referrals exceed 2.5 per student, or total referrals per day exceed 8, or when number of students with referrals is greater than 45%
Taylor- Green et al.	1997	Sig. reduction in ODRs over 5 year implementation
Todd, Haugen, Anderson, Spriggs	2002	80% reduction in ODRs in first year ; 76% in second year High staff satisfaction
Turnbull et al. (1 MS w/ 762 students and 1 student with autism)	2002	Signficant reductions in ODRs and OSS Develop and implement a PBS support plan were beneficial for student and middle school staff, but the student continued to exhibit problem behavior that did not meet the school's universal expectations
Wagner et al.	Under Consid.	Effectiveness Study of SWPBS

Appendix B: SWPBS and Academic Achievement Studies

Authors	Date	Major Findings
Brophy	1988	Amount of time in instruction correlated to student achievement.
DiStefano, et al	2007	Significant correlation regarding percentage of schools meeting 2005 AYP and school climate surveys.
Fisher, Berliner, Filby, Marliave, Cahen & Dishaw	1980	Amount of time in instruction correlated to student achievement.
Frederick	1977	High-achieving students in high schools engaged 75% of time, compared to 51% low-achieving
Gottfredson & Gottfredson	1989	Student attitudes and behavior related to number of suspensions and school climate variables.
Horner, Todd & Lewis-Palmer	2005	School district of 19 schools, 13 implemented SWPBS and 6 did not.. Compared % of 3rd graders who met statewide reading standards in 1998-1999 to 2001-2002 77% of schools that adopted SWPBS improved change ranged from 2% to over 15%. Only one of six schools that did not implement SWPBS showed improvement
Horner et al.	2006	FY02-FY06 Illinois/Hawaii/47 schools Performance on standardized testing was 12% higher than the control group at Time 2, 10% higher at Time 3.
Illinois PBIS Network	2007	3rd grade, Illinois Standards Achievement Test (ISAT) reading scores. Comparison between partially and fully implementing schools. Mean % across schools: 98 Fully- 72% students meets/exceeds 21 Partial- 63% meets/exceeds
Larson, Steele & Sailor	In Press, APBS Conf presentation	Three-year study inner city school, after SWPBS, 169 instructional days gained. Reductions in ODR, suspensions, corresponding increases in **math** scores, but not reading.
Lusilli, Putnam, Handler & Feinberg	2005	Academic performance of **math** and reading standardized tests (MAT) improved by 25 and 18 % points respectively. Reduced ODR 1.3 to .54 Reduced OSS .31 to .20
McIntosh, et al.	2006	Pathway to Behavior Study- relationship between reading and behavior. DIBELS scores were significant predictor of future problem behavior.

Authors	Date	Major Findings
		Support for both pathways. Problems in acad precede behavior, durable skill deficits account more variance than school entry skills
McIntosh et al.	2006	Reading and Function Study. Student in grades 4-6 in two districts showed improvement in reading skills based on function of primary problem behavior.
Oregon District Study	2004	Control 4 middle, 13 elem., implementing SWPBS **improved standardized test scores**, while compared schools did not.
Pallas	1988	Academic achievement related to school climate
Parr, Kidder & Barrett	2007	Baltimore Co. implemented 3-tier behavior and academic model; Significant gains on state **math** tests.
Putnam, Handler & O'Leary-Zonarich	2003	238.75 hours saved in an elementary school and 40 administrator days in middle school saved after SWPBS; Class-wide behavior support increased instructional time. Standardized **math** and reading scores improved.
Putnam, Handler & O'Leary-Zonarich	2002	Class-wide behavior support increased instructional time.
Scott & Barrett	2004	ODR reductions saved 29.5 instructional days; Suspension reductions saved 50 school days
Wu et al.	1982	Students' attitudes and behavior related to suspension, school climate variables.

Appendix C: Team Implementation Checklist

Form A School Yr 2005-06

Positive Behavior Support Team Implementation Checklist (FCPS)

Start-Up Activity (Sugai, 11/28/01, RH 10/13/01, SB 12/7/01)

This checklist is designed to be completed monthly by the PBS team to monitor activities for implementation of PBS in the school. Fax or email to Cathy.shwaery@fcps.edu; 703-246-8392 (fax)

School _____ Date of report _____
PBS team members _____
Person(s) completing report _____

Complete & submit BY THE FIRST OF EACH MONTH.

Status: **N**ot Yet Started; **I**n Process; **C**ompleted

		The months below indicate the time period work was completed, not necessarily the month this form was completed.									
	Date	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Establish Commitment											
1. Administrator support & active involvement • Admin attends meetings 90% of the time • Admin provides funding for PBS activities • Admin puts time on staff agenda for PBS updates • Admin actively promotes PBS as priority, integrates with other initiatives/improvement activities	Status										
2. Faculty/Staff support (One of top 3 goals, 80% of faculty document support, 3 year timeline) • Climate/Discipline one of top 3 school improvement goals • Faculty feedback is obtained throughout year • Faculty involved in some decision making/establishing goals • Admin/faculty commits to PBS for at least 3 years	Status										
Establish & Maintain Team											
3. Team established (representative) • Team includes: grade level teachers, special area, paraprofessionals, parents, special ed, school counselor, non classroom monitors, • Team has established a clear mission/purpose	Status										
4. Team has regular meeting schedule, effective operating procedures • Agenda is used, coach is notified of meeting time, admin present to approve activities/decisions	Status										
Self-Assessment											
5. Team/faculty complete PBS survey (completed annually) • Self Assessment is used to write annual action plan • Results are shared with staff	Status										
6. Team summarizes existing school discipline data. • Looks at Office Referral data	Status										

Form A School Yr 2005-06

Positive Behavior Support Team Implementation Checklist (FCPS)

7. Strengths, areas of immediate focus & action plan are identified. *Implementation Plan developed:* • Schedule/plans for teaching staff the discipline & data system are developed • Team makes it easy for staff to implement and responds to feedback • Schedule for rewards/incentives for the year is planned • Plans for orienting incoming staff and students are developed • Plans for involving families and community are developed	Status										
Establish School-wide Expectations											
8. 3-5 school-wide behavior expectations are defined and posted in all areas of building. • Expectations apply to both staff and students • Posters are similar, paired with icon and highly visible	Status										
9. School-wide teaching matrix developed. • Rules developed for specific settings • Rules are linked to expectations	Status										
10. Teaching plans for school-wide expectations are developed. • A behavioral curriculum includes concept and skill level instruction • Lessons include examples and non-examples • Strategies for use by families/community are developed • Faculty/staff and students are involved in development	Status										
11. School-wide behavioral expectations taught directly & formally. • Lessons are embedded into subject area curriculum • Schedule/plans for teaching staff the lesson plans for students are developed • Booster sessions for students and staff are scheduled/planned	Status										
Establish On-Going System for Recognizing Behavioral Expectations											
12. System for recognizing student behavior is established. • Reinforcers are linked to expectations • Reinforcers are varied to maintain student interest • System includes opportunities for naturally occurring reinforcement • Ratios of reinforcement to corrections are high • Students are involved in identifying/developing incentives • The system includes incentives for staff/faculty.	Status										
Establish System for Responding to Behavioral Violations											
13. Staff and Administration agree on what problems are office managed and what problems are staff managed. • Behaviors defined • Clearly identified major/minor behaviors • Suggested array of appropriate responses to minor (classroom managed behaviors) • Suggested array of appropriate responses to major (office managed) behaviors	Status										
14. Clearly defined & consistent consequences and procedures for undesirable behaviors are developed. • Process includes documentation procedures	Status										

Form A School Yr 2005-06

Positive Behavior Support Team Implementation Checklist (FCPS)

Establish Information System											
15. Discipline data are gathered, summarized, reported to staff, and used to make decisions. • Data collection is easy, efficient, relevant • Additional data collected(attendance, grades, faculty attendance, surveys) • Data entered weekly (minimum) • Data analyzed monthly (minimum) • Data shared with team and faculty monthly (minimum)	Status										
16. Office referral form lists: (a) student/grade, **(b) date/time,** (c) referring staff, (d) problem behavior, (e) location, (f) persons (b) date/time involved, (g) probable motivation, and (h) consequences	Status										
Build Capacity for Function-based Support											
17. Personnel with behavioral expertise are identified & involved. • At least one individual on the PBS team who has training or experience in behavior support (i.e. school psych, behavior specialist, counselor with skills including practical foundations of behavior support, experience with data collection and data analysis, capacity to design and implement comprehensive plans)	Status										
18. Plan developed to identify and establish systems for teacher support, functional assessment & support plan development & implementation • Students identified through multiple data sources, teacher/parent request • Teachers feel supported by Schoolwide team-response time to request within 24 hours • Focus of support is preventative, educative, functional, data based, empirically valid, collaborative and tied to SW, classroom and individual support programs	Status										
Build District Level Support											
19. Allocate money for building and maintaining school-wide behavioral support. • PBS is high on list of priorities and activities, printing costs	Status										
20. Identify a facilitator (coach) who connects the school with district-wide PBS efforts, attends team meetings and provides technical assistance.	Status										
21. Write a professional development plan for increasing technical skills in the area of effective behavioral support and team-work. • School data drives professional development plan, training topics and schedule is embedded with annual action plan • Other initiatives are integrated with PBS	Status										
22. Office Referrals (Number per month)	Status										
23. Out-of-School Suspensions (Number per month)	Status										

Appendix D: SWPBS Principal Survey Content Review Questions

D1: Email to Survey Content Reviewers

Thank you for your assistance in my efforts. The attached survey is designed for elementary school principals in schools who have implemented SWPBS for two or greater years. Your feedback will help in the revision of the survey before it is piloted with a small group of elementary school principals and/or assistant principals. The survey is being developed for a dissertation study on the relationships among SWPBS implementation, effectiveness, school size, and math achievement.

Instructions:

1. Please read over the questions on this feedback form prior to looking at the survey to familiarize yourself with the types of questions you will be answering.
2. Please note that there are two main sections to the survey, with five demographic multiple choice questions. The feedback form is organized the same way, by asking the same questions for each section. Please also note that the number of questions on this form was kept to a minimum with respect of reviewer's time.
3. Once you have read the feedback form, please move through the survey instrument providing feedback on each section and each item. You may either write your responses on the feedback form below or type your responses onto the attached survey.
4. As soon as you have completed the feedback form and/or survey, please return your responses to me at ed.jane@verizon.net
5. If you have any questions, please do not hesitate to email or call me at 202-337-4350.

Thank you so much for providing feedback on the attached survey!
Sincerely,
Jane Stephenson, Doctoral Candidate
The George Washington University

Reviewer Information

Name:
Date:
Current job title:

Feedback on Survey Instrument

Introduction

What changes, If any, would you recommend be made in the statement of purpose for the survey?

What changes, if any would you recommend be made in the instructions for the survey?

How easy are the directions to understand: Not at all easy, somewhat easy, very easy?

Survey Questions- SWPBS Implementation
Do you find the questions confusing? Which questions? Why?

Would you recommend changing the wording on any of the questions?

Did you find any questions redundant in this section?

Approximately, how long did it take you to complete this section of the survey?

Survey Questions- SWPBS Effectiveness Scale

Did you find any of the questions confusing? Which questions? Why?

Would you recommend changing the wording of any the questions ?

Did you find any of the questions redundant in this section?

Approximately, how long did it take you to complete this section of the survey?

Survey Questions- SWPBS Demographics Multiple Choice Questions

Did you find any of the questions confusing? Which questions? Why?

Would you recommend changing the wording of any the questions ?

Did you find any of the questions redundant in this section?

Approximately, how long did it take you to complete this section of the survey?

Overall Feedback
How appropriate is the survey for elementary principals?

What changes in formatting/appearance, etc. would improve the survey?

Please note any additional suggestions you have.

As soon as you complete the feedback form and/or survey, please return you response to me at ed.jane@verizon.net.

Thank you very much!

Appendix E: Principal Survey Pre-test Questions

E1: Email to Principals and Assistant Principals in Survey Pre-test

Dear Colleagues,

Hello! I hope that this message finds each of you well and successful in your current school positions! I know that this is an incredibly busy time of the school year, but I have a huge but short favor to ask. I need four or five school administrators to pretest the survey that I want to use in my dissertation research. I will utilize your input to make revisions on the survey before me distributing to the approximately 29 elementary principals of the schools in the study. These principals are in schools who have implemented school-wide positive behavioral support for at least two years or longer.

The survey is very short and should only take approximately 15- 20 minutes to answer. After you complete the survey please take a few minutes to respond to the four questions below. I realize that some of you may not have implemented SWPBS in your schools, but the purpose of this pretest is not to critique the content but rather the accessibility, format, readability, and appropriateness for school principals. All responses will be kept strictly confidential.

The survey link is _____

The four brief survey review questions are:

The survey was easy to access?
The survey format and questions are easy to understand?
Survey questions seem appropriate for elementary school principals?
My suggestions or comments to improve the survey are…..

Again, I know how busy you are and cannot thank you enough for your consideration of my request. If you have any questions, please do not hesitate to contact me at ed.jane@verizon.net or jmsteph@gwu.edu.

Thank you!

Jane Stephenson
Doctoral Candidate
The George Washington University

Appendix F: Principal Opinion Survey

School Code

SWPBS
PRINCIPAL OPINION SURVEY
Spring 2008

The purpose of this survey is to learn your opinions and perceptions regarding the implementation and effectiveness of school-wide positive behavioral support (SWPBS) and the relationship of SWPBS to students' reading achievement and the size of your school as measured by student population. It is anticipated that the survey will take only 10-15 minutes to complete. All responses will remain strictly confidential. Please answer as honestly as possible.

Instructions

If it is your opinion that the statement is extremely true for your school, pick the number on the far right side of the scale (6) and type it in the space beside the item. If it is your opinion that the statement is extremely untrue for your school, pick the number on the far left (1) and type it in the space beside the item. If it is your opinion that the statement is somewhere in between the two extremes, pick a number in the middle of the scale (3, 4), and type it in the space. At the end of each section, space is provided for additional comments about your school as it relates to the items in that section. Please enter additional thoughts or opinions on the spaces provided following the last item in each section.

Schoolwide Positive Behavioral Support SurveyR

1. SWPBS Implementation

	Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
1a. My school implements SWPBS with a high degree of fidelity.	○	○	○	○	○	○
1b. All teachers participate in the SWPBS program.	○	○	○	○	○	○
1c. The SWPBS program is available to all students in my school.	○	○	○	○	○	○
1d. School bus drivers participate in the school's SWPBS rules and reinforcement programs.	○	○	○	○	○	○
1e. Teachers and staff implement SWPBS systems consistently across grade levels and common school areas.	○	○	○	○	○	○
1f. Students are aware of school rules, rewards and consequences in my school.	○	○	○	○	○	○
1g. School administrators attend training and staff development on student behavior and interventions.	○	○	○	○	○	○
1h. Teachers attend staff development and training on behavior interventions for students with problem behaviors.	○	○	○	○	○	○
1i. Teachers and staff regularly monitor and evaluate student behavior incidents.	○	○	○	○	○	○
1j. A behavior support team screens students and assists teachers with students who have problem behaviors.	○	○	○	○	○	○
1k. Teachers and staff implement small-group, targeted interventions for students who do not respond to the schoolwide discipline plan.	○	○	○	○	○	○
1l. Since implementing SWPBS there has been an increase in the number of administrator, teacher, and/or staff contacts with mental health and social agencies to access more intensive interventions for	○	○	○	○	○	○

Schoolwide Positive Behavioral Support SurveyR

students.

1m. Parents are regularly informed about the SWPBS program at my school.	○	○	○	○	○	○
1n. Parents actively participate in the SWPBS program at my school.	○	○	○	○	○	○
1o. Community members/organizations contribute to the SWPBS program by providing token reinforcements, mentors, and /or other services.	○	○	○	○	○	○

2. SWPBS Effectiveness

	Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
2a. School climate has improved overall in my school since implementing SWPBS.	○	○	○	○	○	○
2b. Schoolwide discipline has improved at my school since implementing SWPBS.	○	○	○	○	○	○
2c. Fewer minor (inappropriate language, disobeying teacher) student misbehavior incidents are reported since implementing SWPBS.	○	○	○	○	○	○
2d. The number of negative consequences, such as time out or removal from recess, has reduced for students in my school since implementing SWPBS.	○	○	○	○	○	○
2e. SWPBS has made a positive impact on student behavior.	○	○	○	○	○	○
2f. SWPBS has a positive impact on teachers' behavior management skills.	○	○	○	○	○	○
2g. SWPBS has provided a system for organizing interventions for students with mild to severe problem behaviors.	○	○	○	○	○	○
2h. Students with disabilities benefit from SWPBS at my school.	○	○	○	○	○	○
2i. School staff are utilizing a greater number of positive behavioral supports for students (exp. behavioral support	○	○	○	○	○	○

Schoolwide Positive Behavioral Support SurveyR

plans).

2j. Teachers spend less time during, before, or after school on student misbehavior.	○	○	○	○	○	○
2k. Teachers spend less time on discipline related paperwork and/or record keeping.	○	○	○	○	○	○
2l. School administrators spend less time on student misbehavior.	○	○	○	○	○	○
2m. School administrators spend less time on discipline related paperwork and/or record keeping.	○	○	○	○	○	○

3. SWPBS, Demographics, Academic Achievement

	Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
3a. The size of my school has impacted the amount of RESOURCES needed to fully implement SWPBS.	○	○	○	○	○	○
3b. The size of my school has impacted the number of YEARS needed to fully implement SWPBS.	○	○	○	○	○	○
3c. The size of my school has impacted SWPBS EFFECTIVENESS as measured by reduced office discipline referrals (ODR).	○	○	○	○	○	○
3d. The number of students on free/reduced lunch has impacted the amount of RESOURCES needed to fully implement SWPBS.	○	○	○	○	○	○
3e. The number of students on free/reduced lunch has impacted the number of YEARS needed to fully implement SWPBS.	○	○	○	○	○	○
3f. The number of students on free/reduced lunch has impacted SWPBS EFFECTIVENESS as measured by reduced ODRs.	○	○	○	○	○	○
3g. Additional MATH interventions are incorporated into the SWPBS framework at my school.	○	○	○	○	○	○
3h. Additional READING interventions?	○	○	○	○	○	○

Schoolwide Positive Behavioral Support SurveyR

3i. The implementation of SWPBS has resulted in increased student engagement in MATH instruction.	○	○	○	○	○	○
3j. Increased student engagement in READING instruction.	○	○	○	○	○	○
3k. The implementation of SWPBS has resulted in increased time for MATH instruction.	○	○	○	○	○	○
3l. Increased time for READING instruction?	○	○	○	○	○	○

4. My school has been implementing SWPBS for?

- ○ 2 years
- ○ 3 years
- ○ 4 or more years

5. The SIZE of my school is ?

- ○ 500 or less students
- ○ 500-900 students
- ○ 900 or more students

6. Since implementing SWPBS, MATH achievement at my school as measured by SOL scores, has?

- ☐ Improved
- ☐ Stayed the same
- ☐ Decreased

7. Since implementing SWPBS at my school, READING achievement as measured by SOL scores has ?

- ○ Improved
- ○ Stayed the same
- ○ Decreased

8. How many years have you been principal at THIS school?

- ○ 1-2 years
- ○ 2-4 years
- ○ 5 or more years

Schoolwide Positive Behavioral Support SurveyR

9. Please share any changes in your school demographics and/or school programs that have, in your opinion, influenced or impacted the implementation and/or effectivenss of SWPBS at your school.

Appendix G: SWPBS Data Collection Protocol

Code	Size		Math Base	Year 2	Math Diff	SET	TIC	SuspenBase	Suspen2	SuspenDiff	Implem	Effect	3a	3b	3c	3g	3i	3k	Math
			2001-2002	2003-2004		Year 2	Year 2	2001-2002	2003-2004		mean	mean							
11																			
12																			
			2002-03	2004-05				2002-2003	2004-2005										
21																			
			2003-04	2005-06		2005-06	2005-06	2003-2004	2005-2006										
31																			
32																			
33																			
34																			
35																			
36																			
37																			
38																			
39																			
310																			
311																			
312																			
			2004-05	2006-07		2006-07	2006-07	2004-2005	2006-2007										
41																			
42																			
43																			
44																			
45																			
46																			
47																			
48																			
49																			
410																			
411																			
	SOL 5thgrade				Math	Base													
	SOL 5thgrade				Math	Year 2													

Appendix H: Letters for Web-based Survey

H1: Initial Letter to Participants for Survey Response

Dear :

The Research Screening Committee approved recently my sponsorship of a study entitled, *The Relationship among School-wide Positive Behavior Support, School Size, and Academic Achievement*. We are hopeful that the results of this work will provide additional support for PBS and its effectiveness specifically in our district.

Besides looking at historical data (e.g., office discipline referrals per year, implementation fidelity tools, Standard of Learning scores), principals are being invited to share their perceptions relative to PBS. Your input is important so we hope you choose to participate given this busy time of year. There is a brief survey of 45-items designed to capture your perceptions. This survey is estimated to take about 10-mintues to complete and may be accessed via –

http://www.surveymonkey.com/s.aspx?sm=fry2fRA8Nmr0OJ0cpn225A_3d_3d

or you may wait for the e-mail message from SurveyMonkey.com to reach your inbox in a day or two.

Remember, your participation is voluntary. I appreciate all that you do to make PBS successful at your schools. Please contact me if you need additional information or questions.

Sincerely,

Name
PBS Educational Specialist

H2: First Follow Up Email to Participants for Survey Response

The District Research Screening Committee recently approved a study under the direction of name of district PBS specialist entitled The Relationship of SWPBS, School Size, and Academic Achievement. The survey is very short taking about 10 minutes to complete. Also, please know that all responses are anonymous and participation is voluntary.
Here is a link to the survey:
Your opinions as elementary school principals are an extremely important component of this study.
Thank for your participation and please disregard this message if you have already submitted a completed survey.

Please note: If you do not wish to receive further emails from us, please click the link below, and you will be automatically removed from our mailing list
http://www.survey.com/optout.aspx

H3: Second Follow Up Email to Participants for Survey Response

A huge thank you to all the principals who have completed the survey as a part of the research study on SWPBS, School Size, and Achievement under the direction of district PBS specialist. While we know that this is an incredibly busy time of year for principals, principal opinions and insights are a very critical part of this study. For those who have not responded please take about 10 minutes to complete the survey.
The survey link is
We cannot tell you how much we appreciate your participation in this study. Please remember that all responses are anonymous and your participation is voluntary.
Thank you so much for all that you do to support your school and the PBS effort!! Thank you!!

Please note: If you do not wish to receive further emails from us, please click the link below, and you will be automatically removed from our mailing list.
http://www.surveymonkey.com/optout.aspx?sm=Xu0kpL7ZwI5mKZ8omV8YEg_3d_3d

H4: Third Follow Up Email to Participants for Survey Response

An enormous thank you to the 21 of the 26 contacted elementary principals who have returned the SWPBS, School Size, Achievement Survey. To the remaining 5 principals please take the 10 minutes to complete and return the survey by this Friday, May 30. Your opinions and insights are very important to the study.

Here is a link to the survey:
http://www.surveymonkey.com/s.aspx?sm=Xu0kpL7ZwI5mKZ8omV8YEg_3d_3d

Please remember that all responses are anonymous and your participation is voluntary. Thank you!!!

Please note: If you do not wish to receive further emails from us, please click the link below, and you will be automatically removed from our mailing list.
http://www.surveymonkey.com/optout.aspx?sm=Xu0kpL7ZwI5mKZ8omV8YEg_3d_3d