The Influence of Participation in School-Wide Positive Behavior Support on Elementary Student Behavior

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Abstract

Schools need sound disciplinary systems in order to maintain school safety and promote student learning. Due to school disruption and violence, punitive methods and exclusionary discipline has increased, as has the number of student suspensions and expulsions from school. In order to meet the obligations and responsibilities of promoting school safety, students are continuing to be removed from the learning environment when misbehaviors occur. The negative results of students being suspended or expelled has forced educational leaders to explore programs that can assist in the decrease of inappropriate behaviors and office referrals, therefore increasing student attendance and academic achievement. School-Wide Positive Behavior Supports, although initially developed to address persistent challenging behavior of students with disabilities, has begun being used as an alternative to those traditional, reactive discipline practices for all students. The purpose of this study was to determine whether there was a difference in behavior referrals (out-of-school suspension and in-school suspension), attendance, and academic achievement (Reading Curriculum Based Measure and Math Computation for students in 1st and 2nd grades and Missouri Assessment Program Communication Arts and Mathematics assessments for students in 3rd, 4th, and 5th grades) after the implementation of School-Wide Positive Behavior Supports. Additionally, the purpose was to determine whether any of these differences were affected by any of the following student variables: gender, grade level, race, special education status, or socio-economic status.

Data from students in 10 elementary schools exposed to School-Wide Positive Behavior Supports the year prior to implementation and two years after implementation

was analyzed. Results of the study denoted there were differences among the race groups' behavior referrals. In addition, there was a difference among the special education groups' behavior referrals after the implementation of SWPBS. There was a decrease in behavior referrals with students having no special education status although students with special education status had an increase in referrals. The evidence also indicated when analyzing changes with attendance, there was not a discernible difference after implementation of School-Wide Positive Behavior Supports. There was a change indicated with socio-economic status based on overall attendance. Academic achievement for students in 1st and 2nd grades was affected by all student variables except gender. Academic scores in 3rd, 4th, and 5th grades were affected by all student variables except gender and socio-economic status. Results of this study could be utilized to improve practices, promote effective student management, and gauge academic achievement. District R needs to continue to research the effect of SWPBS in order to improve the educational environment and determine whether to continue implementation of SWPBS. It is also critical for the district to develop plans of support for all schools that have begun implementation to ensure the most success possible.

Dedication

This study is dedicated to my husband, Tony, for trying so hard to be patient with me throughout my three years in the doctoral program. He helped me with all of my technological challenges, and had the difficult job of keeping me awake endless hours so I could complete my assignments on time. He also stayed calm, on most occasions, as I took my stress out on him when things were tough and I was tired. "Now it is your turn!"

My mother, Ruth Choate-Wilkerson, gave me her never-ending support, love, and inspiration. She taught me to be an independent woman that could accomplish anything I set my mind towards doing. Her moral, spiritual, and emotional support throughout my life gave me the strength many nights when I just knew I could not get through. Thank you for being my rock and my role model. And, yes, this is the last degree.

My father, the late Billy Wilkerson, instilled in me the idea of always setting goals and accomplishing those goals. He pushed me to always be better, always do more, meet challenges head on, and just to "suck it up and go." Although his methods could be direct at times, I know many of my life's accomplishments would have never happened if I had not known this level of drive and determination.

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during my hours of stress, and for my tears and fits of frustration. I made it, but could not have done it without each of you in my life. Cheers!

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Chapter One

Introduction

Problem behaviors, such as aggression, defiance, truancy, property destruction, disruption, and self-injury, are still major challenges in schools and dramatic barriers to academic achievement (Horner, Sugai, & Vincent, 2005). Sugai and Horner (2006) found these problems had been addressed by "get tough" policies, which included stopping the problem behavior and, if that did not work, then suspension or expulsion. These exclusionary approaches have not been successful for many students; moreover, the number of students with problem behaviors has increased (Horner, Sugai, & Vincent, 2005). Due to overwhelming demands from teachers and families alike, schools have become increasingly interested in identifying strategies that reduced disruptive and violent behaviors and raised prosocial behaviors in students (Medley, Little, & Akin-Little, 2008). In order for effective mediation to be implemented, prevention and early intervention must be prioritized, and a school-wide systems approach to positive behavioral interventions created (Eber, Sugai, Smith, & Scott, 2002).

School-wide positive behavior support (SWPBS) is comprised of research-based strategies designed to promote appropriate student behaviors and to create a supportive school environment (McKevitt & Braaksma, 2008). Unlike traditional behavioral management, which viewed the individual as the problem and sought to "fix" him or her by eliminating the challenging behavior, positive behavioral support (PBS) and functional analysis (FA) are used to note systems, settings, and lack of skill as the "problem," and work to change those areas (Warger, 1999). SWPBS has been shown to be an effective tool for improving the school environment, reducing the number of

problematic and disruptive behaviors while creating a climate that was conducive to the learning of all students (Bradshaw, Reinke, Brown, Bevans, & Leaf, 2008). Within the structures of SWPBS, students are acknowledged for appropriate behaviors (McKevitt & Braaksma, 2008). According to Warger (1999), the approaches are characterized as long-term strategies to reduce inappropriate behavior, teach appropriate behavior, and provide contextual supports necessary for successful outcomes. Challenges facing educators are significant and persistent; therefore, if the challenges are not addressed, the impact could be dramatic on students, staff, and the community (Sugai et al., 2000).

Background

This study took place in a Kansas City suburban school district, District R. Although the school district serves more than one city, there is a true sense of a unified community within the district. Community leaders from each area work cooperatively to maintain a level of pride that defines the community.

According to the Missouri Census Data Center (MCDC) Demographic Profile Census (2010), the district boundaries cover more than 32 square miles. The community has a population of approximately 29,526. Caucasians comprise 67.74% of the population followed by 25.13% African American, and 7.13% other, comprised of American Indian, Asian, Hawaiian, and Hispanic populations. The female population at 52.75% is slightly higher than the male population at 47.25%. Approximately 82% of the community members are employed; the median household income was $49,629 with an average household income of $56,211. Nearly 90% of the population graduated high school or earned a General Education Degree (GED). Approximately 10% were living below the level of poverty.

District R information followed closely the community information as shown in the following tables. The information included in Table 1 provides the total number of male and female students enrolled in each of the elementary buildings in District R as retrieved from the Tyler Student Information System.

Table 1

2013-2014 Student Elementary Enrollment Data by Gender

	Total		K		1st		2nd		3rd		4th		5th	
School	M	F	M	F	M	F	M	F	M	F	M	F	M	F
A	205	201	36	35	40	33	33	36	31	24	30	42	35	31
B	203	185	27	38	39	19	33	39	35	31	32	33	37	25
C	197	179	25	18	28	29	29	32	36	45	34	23	45	32
D	201	199	25	34	36	34	35	36	37	37	33	24	35	34
E	220	225	38	33	37	45	34	38	41	39	41	40	29	30
F	194	195	28	37	33	36	20	37	41	21	37	35	35	29
G	224	210	36	30	42	25	47	43	37	38	22	36	40	38
H	172	189	33	31	21	33	30	40	31	29	31	26	26	30
I	219	227	31	37	48	35	28	43	38	27	36	44	38	41
J	191	186	35	37	22	41	34	31	37	32	22	21	41	24

Note. M = Male, F = Female. Retrieved from "Student Data Link" in Tyler Student Information System, 2014.

Provided in Table 2 is information on the ethnicity percentage in each of the elementary buildings in District R, which are disaggregated by Caucasian, African American, Hispanic, and Other. Caucasian and African American ethnicities tended to

be the top two groups in each elementary building; however, some buildings had a much higher percentage of one ethnic group enrolled at the school.

Table 2

2013-2014 Ethnicity Percentages by School

School	Caucasian	African American	Hispanic	Other
A	39.50	44.00	11.80	4.70
B	17.90	65.10	12.10	4.90
C	52.00	31.10	11.60	5.30
D	37.80	43.50	14.80	3.90
E	45.00	32.80	16.60	5.60
F	45.30	39.70	9.40	5.60
G	52.90	34.70	9.10	4.30
H	39.90	45.90	10.90	3.30
I	23.40	62.10	8.90	5.60
J	22.30	62.10	9.20	6.40

Note. Retrieved from "Student Data Link" in Tyler Student Information System, 2014.

The information in Table 3 provides the lunch status of students in each of the elementary buildings in District R. The data are presented by percentage of free and reduced versus the percentage of those paying full price. In District R, nine of the 10 elementary buildings had over 50% of students receiving free/reduced lunches. Six of the 10 buildings were at or nearing 75% of students qualifying for free/reduced lunches.

Table 3

2013-2014 Student Lunch Status Percentages by School

School	Free/Reduced Lunch	Paid Lunch
A	73.4	26.6
B	91.6	8.4
C	47.5	52.5
D	74.8	25.2
E	74.0	26.0
F	62.1	37.9
G	58.7	41.3
H	60.9	39.1
I	77.3	22.7
J	79.7	20.3

Note. Retrieved from "Student Data Link" in Tyler Student Information System, 2014.

Provided in Table 4 is information on the special education status of elementary students in District R. Some elementary buildings had higher percentages of special education students due to self-contained classrooms. SWPBS was developed to help behaviors in the special education setting before being used in all educational settings.

Table 4

2013-2014 Elementary Student Special Education Status Percentages

School	Regular Education	Special Education
A	89.80	10.20
B	85.22	14.78
C	86.72	13.28
D	86.97	13.03
E	83.94	16.06
F	87.72	12.28
G	89.15	10.85
H	81.49	18.51
I	88.64	11.36
J	86.24	13.76

Note. Retrieved from "Student Data Link" in Tyler Student Information System, 2014.

District R Director of Student Services (personal communication, July 21, 2011) indicated that prior to the implementation of SWPBS, District R had reactive school-wide behavior procedures; the procedures focused on the disruptive behaviors at school. This, in turn, set the stage for other negative behavior issues. When students were sent to the office, administration enforced those negative behaviors with the necessary consequences, as they were understood in the discipline handbook, which were most often in-school suspensions (ISS) or out-of-school suspensions (OSS). School-wide rules were not established or even taught consistently with a proactive approach; decisions were often reactive. Nonetheless, consequences varied from teacher to teacher, classroom to classroom, and building to building. There was no consistency with

discipline measures between administration and staff, or even with elementary buildings within the district before the implementation of the SWPBS Program (District R Director of Student Services, personal communication, July 21, 2011).

Provided in Table 5 is information on the number of in-school and out-of-school suspensions for each elementary building in District R. For most buildings, SWPBS was in the third year of implementation during the 2013-2014 school year. Three buildings were the pilot buildings for the program; those buildings were in year four of implementation as of the 2013-2014 school year. Table 5 displays data for the year prior to implementation for each of the buildings although that year was not the same year for each school.

Table 5

ISS and OSS Incidents by School

	Prior to Implementation		2012-2013		2013-2014	
School	ISS	OSS	ISS	OSS	ISS	OSS
A	29	43	16	33	28	33
B	89	151	71	73	48	33
C	0	4	1	17	10	7
D	2	20	10	19	8	19
E	31	66	24	55	13	28
F	13	18	14	47	15	24
G	19	19	21	21	10	42
H	8	23	13	27	20	11
I	2	85	6	70	20	39
J	41	78	14	24	12	34

Note. Retrieved from "Student Discipline Report" in School-Wide Information System, 2014.

Table 6 includes information on attendance percentages for each elementary building in District R. With the implementation of SWPBS, the hope was that attendance percentages would increase. Being able to support positive behaviors should ensure fewer suspensions for students, which in turn, would increase attendance (District R Director of Student Services, personal communication, July 21, 2011).

Table 6

Attendance Percentages

School	2011-2012	2012-2013	2013-2014
A	94.61	94.98	95.38
B	94.51	94.23	94.87
C	96.28	96.04	96.18
D	95.75	95.41	94.81
E	94.53	94.67	94.95
F	96.22	95.27	96.04
G	95.82	95.44	95.56
H	95.75	95.75	95.25
I	94.99	94.33	95.24
J	95.04	94.88	95.35

Note. Retrieved from "Student Data Link" in Tyler Student Information System, 2014.

District R sent a team of staff members to attend a summer institute in June 2011 to examine the methodology and data supporting the SWPBS Program. SWPBS operated under the premise that behavior was not random; it was based on determining not only what, where, when, and how challenging behavior occurred, but also why (Ruef, Higgins, Glaeser, & Patnode, 1998). The team decided that the program would be an effective way to make positive changes within the district by modeling positive behaviors and rewarding students for demonstrating these behaviors. This proactive approach should decrease discipline problems within the school district, and provide the opportunity for students to be responsible for their own behaviors at school (Colvin, 2007).

School-Wide Evaluation Tool. The *School-Wide Evaluation Tool* (SET) is a 28-item questionnaire designed to evaluate the critical features of school-wide effective behavior support across each academic school year. The SET results are used to assess features that are in place, determine annual goals for school-wide effective behavior support, evaluate on-going efforts toward school-wide behavior support, design and revise procedures as needed, and compare efforts toward school-wide effective behavior support from year to year. It is used to determine whether a school has full implementation of school-wide positive behavior support (Horner, et al., 2004).

SET was created to provide a rigorous measure of primary prevention practices within school-wide behavior support, and to determine the level of SWPBS implementation. According to Horner et al. (2004), there are many benefits of collecting and using SET. It provides an "outside" perspective of a building's PBIS implementation efforts. Objective data are also provided regarding implementation efforts using a research-validated instrument. SET requires collection or observation of evidence of PBIS implementation. The SET involves a principal interview, other school staff interviews (minimum of 10), and student interviews (minimum of 15). Collecting products (e.g., discipline handbook, school improvement plan goals, Annual Action Plan, social skills instructional materials/implementation time line, behavior expectation lesson plans, behavior incident summaries or reports, and office discipline referral form) and observations for the posting of behavior expectations are also part of SET. The results of SET provided schools with a measure of the proportion of features that are 1) not targeted or started, 2) in the planning phase, and 3) in the implementation/maintenance phases of development toward a systems approach to school-wide effective behavior support (Todd

et al., 2012). A trained observer gathered the necessary information; all information collected was scored with either a 0 = *Not Implemented,* 1 = *Partially Implemented*, or 2 = *Fully Implemented* (Horner et al., 2004). All elementary buildings of District R participated in SET during the 2012-2013 and 2013-2014 school years as shown in Table 7.

Table 7

SET Results by School

School	SET 2013	SET 2014
A	95/100	100/100
B	97/100	100/100
C	100/100	100/100
D	97/100	100/100
E	94/100	100/100
F	96/100	100/100
G	98/100	100/100
H	96/100	100/100
I	100/100	100/100
J	100/100	100/100

Note. Adapted from "School-Wide Evaluation Tool" as presented by the Regional Professional Development Center, 2014.

An overall summary score was produced based upon the percentage of possible points. A school with an overall summary percentage of 80% and a score of 80% in the category of behavior expectations taught was considered an 80/80 school with full implementation of SWPBS. The SET was designed to provide trend lines of

improvement and sustainability over time (Horner et al., 2004). As shown in Table 7, the 10 elementary buildings were able to sustain at a perfect SET score or progress to achieve the perfect SET score.

Statement of the Problem

Behavior has been an important factor in the success of not only a particular student, but also a school overall. When serious misbehaviors occurred, students were often times placed in alternate settings such as in-school suspension or even assigned out-of-school suspension (Sugai & Horner, 2006). Skiba and Rausch (2006) found that many schools and school districts turned to these procedures that removed children from the opportunity to learn. Students were missing class time and learning while serving ISS and OSS; this led to the hypothesis that when students miss class time, grades drop. According to Sanders (2009), due to the loss of instructional time with a certified teacher, alternate placement could affect academic achievement. Attendance rates suffered as well when out-of-school suspension days were reported as unexcused. When acts of violence occurred, students took the opportunity to join in or pay back those with whom they had problems (Sanders, 2009).

In District R, the number of out-of-school suspensions was a problem as noted through office disciplinary referrals (ODRs) (District R Director of Student Services, personal communication, July 21, 2011). This problem inadvertently affected academic achievement due to number of days out of class. SWPBS is used in schools to promote a positive school environment that facilitates success in teaching and learning (Horner, Sugai, Todd, & Lewis-Palmer, 2005). Through the study of the implementation of SWPBS, District R hoped to determine whether the district-wide implementation of the

SWPBS program with elementary students, first through fifth grades, has had a positive impact on behavior, academics, and attendance in the elementary school buildings.

Purpose of the Study

The first purpose of this study was to determine whether there was a difference in behavior referrals and attendance after the implementation of SWPBS. The second purpose was to determine whether the differences in behavior referrals and attendance after the implementation of SWPBS were affected by any of the following student variables: gender, grade level, race, special education status, or socio-economic status (SES). The third purpose of the study was to determine whether there were differences in 1st and 2nd grade students' academic achievement, as measured by the Reading Curriculum Based Measurement (R-CBM) and the Mathematical Computation (M-COMP), after the implementation of SWPBS. The fourth purpose was to determine whether the differences in 1st and 2nd grade students' academic achievement, as measured by the R-CBM and M-COMP, after the implementation of SWPBS were affected by any of the following student variables: gender, grade level, race, special education status, or SES. The fifth purpose of this study was to determine whether there were differences in 3rd-5th grade students' academic achievement, as measured by the MAP Communication Arts and Mathematics assessments, after the implementation of SWPBS. The final purpose of this study was to determine whether the differences in 3rd-5th grade students' academic achievement, as measured by the MAP Communication Arts and Mathematics assessments, after the implementation of SWPBS were affected by any of the following student variables: gender, grade level, race, special education status, or SES.

Significance of the Study

Implementing the SWPBS Program could be a proactive approach in reducing school discipline problems (Campbell, 2009). The results of the current study may contribute valuable information to help District R determine whether the implementation of SWPBS has been effective. The results of this study could be utilized to improve practices, promote effective student management, and gauge academic achievement of all students. Results obtained from the study may help educational leaders determine whether to implement SWPBS. It may also add to the body of research on SWPBS.

Delimitations

"Delimitations are self-imposed boundaries set by the researcher on the purpose and scope of the study" (Lunenburg & Irby, 2008, p. 134). The following delimitations were identified as part of the study.

- Only one public suburban school district in Missouri was used for the population; therefore, the results may not generalize to other school districts.
- The population for this study included grades 1-5. Kindergarten, middle schools, and high schools in the district were excluded; therefore, the results may not generalize to kindergarten centers or middle and high schools.
- The behavioral progress of the students was based only on the use of data obtained from one data system, School-Wide Information System (SWIS).
- Student suspensions were based on ODR forms.
- The student demographic variables were limited to include gender, race, SES, and special education status.

- Academic achievement was limited to student scores in mathematics and reading for grades 1 and 2 on the R-CBM and M-COMP and for grades 3-5 in communication arts and mathematics on the MAP.

Assumptions

Assumptions are referred to as the "postulates, premises, and propositions that are accepted as operational for purposes of the research" (Lunenburg & Irby, 2008, p. 135). The following assumptions were made in the study.

- All ODR data were complete and accurate.
- All SWIS data were complete and accurate.
- Teachers administered assessments in a standardized manner.
- All assessment scores were complete and accurate.
- Students put forth their best effort on all administered assessments.
- All elementary staff had been through the complete SWPBS training and implemented the processes with fidelity.

Research Questions

Creswell (2014) stated that research questions "narrow and focus the purpose statement" (pp. 148-149). The following research questions were used to guide this study.

RQ1. To what extent was there a change in behavior referrals of 1st through 5th grade students after the implementation of SWPBS?

RQ2. To what extent was the change in behavior referrals of 1st through 5th grade students after the implementation of SWPBS affected by any of the

following student variables: gender, grade level, race, special education status, or SES?

RQ3. To what extent was there a change in attendance of 1st through 5th grade students after the implementation of SWPBS?

RQ4. To what extent was the change in attendance of 1st through 5th grade students after the implementation of SWPBS affected by any of the following student variables: gender, grade level, race, special education, or SES?

RQ5. To what extent was there a change in academic achievement of 1st and 2nd grade students, as measured by the R-CBM, after the implementation of SWPBS?

RQ6. To what extent was the change in academic achievement of 1st and 2nd grade students, as measured by the R-CBM, after the implementation of SWPBS affected by any of the following student variables: gender, grade level, race, special education status, or SES?

RQ7. To what extent was there a change in academic achievement of 1st and 2nd grade students, as measured by the M-COMP, after the implementation of SWPBS?

RQ8. To what extent was the change in academic achievement of 1st and 2nd grade students, as measured by the M-COMP, after the implementation of SWPBS affected by any of the following student variables: gender, grade level, race, special education status, or SES?

RQ9. To what extent was there a change in academic achievement of 3rd through 5th grade students, as measured by the MAP Communication Arts assessment, after the implementation of SWPBS?

RQ10. To what extent was the change in academic achievement of 3rd through 5th grade students, as measured by the MAP Communication Arts assessment, after the implementation of SWPBS affected by any of the following student variables: gender, grade level, race, special education status, or SES?

RQ11. To what extent was there a change in academic achievement of 3rd through 5th grade students, as measured by the MAP Mathematics assessment, after the implementation of SWPBS?

RQ12. To what extent was the change in academic achievement of 3rd through 5th grade students, as measured by the MAP Mathematics assessment, after the implementation of SWPBS affected by any of the following student variables: gender, grade level, race, special education status, or SES?

Definition of Terms

The following section includes definitions of key terms centered on the theory and application components of assessment measures included in this study.

AIMSweb. "AIMSweb is a benchmark and progress monitoring system based on direct, frequent, and continuous student assessment. The results are reported to students, parents, teachers, and administrators via a web-based data management and reporting system to determine response to intervention" (Pearson PsychCorp, 2010a, p. 1).

AIMSweb is a tool that provides computerized assessment, data management, and reporting systems for multi-tiered instruction.

Mathematical Computation (M-COMP). M-COMP is a series of assessments that yield general math computation performance and rate of progress information. It is a timed, 8-minute, open-ended, paper-based test that can be group administered or individually administered (Pearson PsychCorp, 2010b).

Missouri Assessment Program (MAP). MAP is a series of assessments of communication arts, mathematics, and science for grades 3-8; and communication arts, mathematics, science, and social studies for high school. The assessments are designed to assess if students in Missouri are meeting the Show-Me Standards (Department of Elementary and Secondary Education, 2011). For the purpose of this study, the communication arts and mathematics assessments for grades 3, 4, and 5 were utilized.

Office discipline referrals (ODR). ODRs consist of major and minor infractions being reported in detailing student behaviors. A minor infraction can be handled without the help of office administration (e.g., safe seat, buddy room, recovery room). A major infraction is handled by the office administration (e.g., ISS or OSS). ODRs are widely used by personnel to evaluate student behavior and the behavioral climate of schools (Irvin, Tobin, Sprague, Sugai, & Vincent, 2004).

Positive Behavioral Interventions and Supports (PBIS). PBIS refers to effective school-wide interventions that include proactive strategies for defining, teaching, and supporting appropriate student behavior for positive learning environments (Office of Special Education Programs [OSEP] Center on Positive Behavioral

Interventions and Supports, 2011). PBIS is another name used synonymously with Positive Behavior Supports.

Positive Behavior Supports (PBS). Support strategies are utilized in education to aid students having difficulty following rules, which causes difficulty in learning. The PBS process stresses creation of systems to support the adoption and implementation of evidence-based practices and procedures to help students meet social, and therefore, academic goals (OSEP Center on Positive Behavioral Interventions and Supports, 2011).

Reading Curriculum Based Measurement (R-CBM). R-CBM is a teacher-administered assessment to determine the reading ability of students. Students are required to read aloud for one minute. The number of words read correctly and errors are counted and scored. When the passages are used in accordance with the AIMSweb system through Pearson PsychCorp, standardization occurs (Pearson PsychCorp, 2010c).

School-Wide Positive Behavior Supports (SWPBS). The PBS strategies utilized in education to aid students having difficulty following rules, which causes difficulty learning, are adopted by all buildings school-wide. The entire district supports the adoption and implementation of evidence-based practices and procedures (OSEP Center on Positive Behavioral Interventions and Supports, 2011).

Overview of the Methodology

A quantitative research design was used to collect and analyze data for this study. An investigation of the effects of SWPBS on student behaviors, academics, and attendance as determined by examining various data collected from the elementary schools in District R aided in the determinations made through this study. Dependent variables were the archival data for student attendance, behavior referrals, academic

measures of AIMSweb in grades 1 and 2, and MAP in grades 3 through 5. The independent variables were the grade levels, gender, race, special education status, and SES of students. The purposive sampling technique was chosen for this study based on the knowledge of the groups being sampled. The statistical analyses used to test hypotheses for the research questions were multiple analyses of variance (MANOVAs).

Organization of the Study

This study is presented in five chapters. Chapter one included an introduction, background of the study, the statement of the problem, the purpose of the study, the significance of the study, delimitations, assumptions, research questions, a definition of terms used throughout the study, and an overview of the methodology. Chapter two entails a review of literature that relates the history of SWPBS, the steps of SWPBS, the benefits of SWPBS, the challenges of SWPBS, and research on SWPBS. Chapter three includes the methodology and research design of the study; the population and samples; sampling procedures; instrumentation including measurement, validity, and reliability; data collection procedures; data analysis and hypothesis testing; and limitations. Presented in chapter four are the results of hypotheses testing. Chapter five includes the study summary, which includes an overview of the problem, purpose statement and research questions, review of the methodology, major findings, findings related to the literature, conclusions, implications, and recommendations for future research.

Chapter Two

Review of the Literature

Aggressive and delinquent behaviors have steadily been on the rise. Lawmakers, parents, and students alike are becoming increasingly alarmed. Educators are expected to respond in a more effective manner by incorporating policies with little to no tolerance levels, and a tough mentality for misbehaviors (Lewis-Palmer, Sugai, & Larson, 1999). According to Safran and Oswald (2003), when punishment or negative reactions occur, behaviors are often more severe and tend to work against the SWPBS philosophies.

SWPBS has become an alternative to traditional discipline measures and practices through utilization of variables affecting a person's behavior (Kennedy et al., 2001). According to Safran and Oswald (2003), interventions based on Applied Behavior Analysis (ABA) have refocused in a more positive and collaborative manner for expanded use in educational settings. The goal is to alter and teach the alternatives before behavior actually escalates (Carr et al., 1999).

Collaborative teams (administrators, teachers, special services personnel) are essential to SWPBS. Collaborative teams organize relevant data to plan, utilize, and assess strategies of SWPBS. The focus of the specified intervention, whether it is individual or group, is also determined (Todd, Horner, Sugai, & Colvin, 1999). SWPBS takes the preventative approach versus the traditional reactive approach to behaviors (Safran & Oswald, 2003).

Addressed in this literature review is school discipline associated with academic learning, attendance, number of referrals, and socio-economic status. This chapter is divided into six sections and provides research related to history of School-Wide Positive

Behavior Support, description of School-Wide Positive Behavior Support, steps of the School-Wide Positive Behavior Support process, benefits of School-Wide Positive Behavior Support, challenges of School-Wide Positive Behavior Support implementation, and research on School-Wide Positive Behavior Support.

History of School-Wide Positive Behavior Support

In 1965, the Elementary and Secondary Act (ESEA) was the federal government's initial attempt to address diverse needs of the students attending public schools. The act was reauthorized in 2001 and renamed No Child Left Behind (NCLB) (Sergiovanni, Kelleher, McCarthy, & Wirt, 2004). This federal legislation required support for states and local educational programs to implement policies and programs that created safe learning environments for all students at school. SWPBS was funded by the U.S. Department of Education's Office of Special Education Programs (OSEP) and the OSEP Technical Assistance Center on Positive Behavioral Supports. These two groups created documents to highlight effective practices. The success that the behavior program had with special education students created an exemplar for a school-wide behavior modification program focusing on the entire student population (Killu, Weber, Derby, & Barretto, 2006).

The OSEP Center on PBIS first introduced the foundations of SWPBS to the public at the 1992 University of Oregon conference. Five major components laid the groundwork for this program: teaching appropriately specified and acceptable behavior, school-wide efforts, precorrections, positive reinforcement, and occurrence of ODR data (Colvin & Sugai, 2010). Reference was made to the procedures that identify and analyze settings most likely to trigger problem behaviors, as well as the function of the behaviors.

From this, expected and acceptable behaviors would be identified. Modification of the setting occurred in order to reteach acceptable behavior to students through reteaching, reminding, reinforcing, and redirecting (Colvin & Sugai, 2010). SWPBS moved away from the more traditional individualized approach to a broader, more global program. SWPBS involves three components: examining problem behaviors within true-life situations assessing not only the educational setting, but also the social and physical environments; modification of these environments; providing for instruction of appropriate skills (Crimmins & Farrell, 2006).

SWPBS enhanced the functioning level and quality of life for thousands. This led to the inclusion of the approach in the 1997 reauthorization of the Individuals with Disabilities Education Act (P.L. 105-17) or IDEA 1997. The primary intent of IDEA 1997, as related to problem behavior, was to provide positive intervention plans to aid with the misbehaviors impeding learning. This occurred through the increased use of the functional behavioral assessment (FBA) and positive behavior intervention plan (BIP) (Crimmins & Farrell, 2006). The big picture behind the mandate was to ensure IDEA goals were appropriated for the least restrictive environment. Manifestation determination was introduced; it determined whether a behavior was in fact due to a child's disability. If so, schools must, at that determination, provide separate services for students without such disabilities. Students with disabilities should be required to uphold the same discipline standards as other students. Others, however, advocate for different behavior structures so those having behavior struggles are not deprived of an adequate education. This ensured inclusion in the education system and provided hope for students with disabilities. When training by schools began, an unintended consequence of IDEA

1997 occurred. FBA and BIP procedures were soon considered for all students with serious behaviors, not just those with severe disabilities (Crimmins & Farrell, 2006).

In its earliest form, IDEA related to students with disabilities in the Education for All Handicapped Children Act (P.L. 94-142). All students deserve a free and appropriate public education in a least restrictive environment. To make this happen, some students would need additional supports and specialized instruction. Funding in part would come from the federal government. Over the years, the law has been reauthorized to include new approaches, and address procedural problems. IDEA has remained a civil rights law. It continues to protect the rights of students with disabilities to have an equitable education (Crimmins & Farrell, 2006).

As further discussed in Crimmins and Farrell (2006), the obligation for schools to apply approaches was expected even for those with significant behavior problems. Education institutions' response to IDEA 1997 deemed that student behavior could be a product of systemic problems with social and academic aspects of the environment. Although individual supports could not reasonably be advised, a change must occur that would involve the expansion of teacher and administrator training. The 2004 reauthorization of IDEA (P.L. 108-446), or IDEA 2004, recognized the need for these universal approaches to behavior issues (Crimmins & Farrell, 2006).

IDEA 2004 continued the requirements of manifestation determination, intervention strategies, and FBA and BIP for students with suspensions of 10 days or deemed placement in alternative educational settings. However, the law did make a number of changes in language. The SWPBS supports were to be administered when an individual child's learning either was impeded, or impeded the learning of others. Some

procedures related to manifestation determination were changed. FBA and BIP development was now for students with behavior-related disabilities. By law those students with existing plans were reviewed and adjustments were made as necessary to address behaviors. Most behavioral provisions of IDEA 2004 stayed consistent with IDEA 1997 (Crimmins & Farrell, 2006).

Crimmins and Farrell (2006) also discussed the broader use of SWPBS as contained in IDEA 2004. They specifically referenced the importance of professional development relating to positive behavior intervention and supports through use of IDEA funds. This professional development would focus on behavior problems through interventions, and development of program curricula.

IDEA aided the expansion of SWPBS into general education settings to reach more student behavior needs to include those at-risk for special education placement (Kennedy et al., 2001). Understanding the science of behavior helps to understand the basis for SWPBS. "If a student repeatedly engages in a problem behavior, he/she is most likely doing it for a reason; it is paying off for the student. Therefore, the behavior is functional and serves a purpose for the student" (OSEP Center on Positive Behavioral Interventions and Supports, 2011, p. 14). Students who struggle with communication and positively voicing needs often tend to turn to negative forms of behavior. The type of communication, to these students, is not as important as having needs met. Misbehavior happens for a reason; once the reason is determined, an effective intervention can be defined (Borgmeier, 2003). "Behavior is functional because it pays off in some way and the student is encouraged to repeat the behavior; it is not good or bad" (OSEP Center on Positive Behavioral Interventions and Supports, 2011, p. 14).

Description of School-Wide Positive Behavior Support

Slavin (2009) explained that although punishment and discipline are not synonymous, discipline is often times equated with punishment, and more specifically with corporal punishment. Discipline is seen as following a set of rules and adhering to instruction; it is acting or conducting oneself properly. Students must learn how to act appropriately in whatever situation arises versus always enduring a punishment as a consequence (Martella, Nelson, Marchand-Martella, & O'Reilly, 2012).

Although how to manage student behaviors continues to be of chief concern, disruptions are far outweighing extreme violence at this stage. Teachers work to find ways to limit class disruptions while still managing the behaviors that minimize learning opportunities for peers. Being able to do this successfully would help with teacher burnout and dissatisfaction (Martella et al., 2012). Every year, according to Martella et al. (2012), "New and improved behavior management approaches hit the schools only to be thrown out by the end of the school year" (p. 3). Teachers need deep and thorough training, not the average, superficial training. They need not only be familiar with management approaches, but also with the research to substantiate it. The "flavor of the month procedures are used without a great deal of regard for what has been shown to work. Moreover, there is no unified theory of behavior management" (Martella et al., 2012, p. 4). Because student behaviors vary and not all behaviors can be planned for ahead of time, there is not one seamless, consistent method to managing all behaviors. At this point, teachers put their own twist on established procedures to deal with the problem occurring at that time; they become reactive, not proactive. This can cause student confusion (Martella et al., 2012).

Lane, Wehby, Robertson, and Rogers (2007) explained that behavior management planning must occur at three levels: individualized supports, classroom supports, and schoolwide supports. The individualized behavior management support is implemented for the most troubled students, and most often times, special education students. Behavior and academic programming can aid the reactions to problem behavior. However, often times these supports take on the perspective of the classroom and the instruction supports already in place whereas behavior and academic programming can respond as designed to prevent difficulties at the school level. This comprehensive approach is dependent on the programming to provide effective behavior management. It lends to the proactive shift in behavior management (Lane et al., 2007).

School-based SWPBS can be facilitated at different levels of support. To begin, schoolwide or universal supports are developed for all students across all settings, for example, a violence prevention program. Next, nonclassroom supports are comprised of common areas such as playground, cafeterias, or hallways, and are specified for particular grade levels or even small groups of students. Lastly, individual student supports aide students with chronic problems, which involve intensive interventions specifically for those individuals. When SWPBS supports take into account the needs of all students, those with severe difficulties or behaviors can reap the positive effects of the program as well (Safran & Oswald, 2003).

SWPBS is a variation of approaches leading to the social and learning outcomes of students. SWPBS is not a cookie cutter approach, but rather research on practices and interventions that can cause positive change within systems (OSEP Center on Positive Behavioral Interventions and Supports, 2011). The OSEP Center on Positive Behavioral

Interventions and Supports (2011) provides an organizational approach or framework for SWPBS:

- Improving the social behavioral climate of schools
- Supporting or enhancing the impact of academic instruction on achievement
- Increasing proactive/positive/preventive management while decreasing reactive management
- Integrating academic and behavior initiatives
- Improving support for all students, including students at risk and students with emotional behavioral disabilities. (p. 13)

School-Wide Positive Behavior Supports is not a new approach to discipline measures although it is based upon the principles of ABA. "The goal of SWPBS is to apply behavioral principles in the community in order to reduce problem behaviors and build appropriate behaviors that result in durable change and a rich lifestyle" (Carr et al., 1999, p. 3). Early research studies were focused on individuals having severe cognitive and developmental disabilities. These students displayed both aggressive and destructive behaviors, which often led to student self-injury and destruction of property. SWPBS was found to provide much success with these behaviors. Because there was a significant reduction in negative behaviors within groups, it was determined to incorporate the program with inclusive settings (Safran & Oswald, 2003).

SWPBS provides schools, as well as special and general educators, choices of interventions to develop programs and assess program effectiveness within their classrooms and schools. Being prepared for upcoming changes in behavior promotes the

healthy handling of discipline. SWPBS aides with this reshaping of practices (Safran & Oswald, 2003).

Steps of the School-Wide Positive Behavior Support Process

Providing an education to all students in a safe environment, one that is predictable, falls upon the responsibility of the school system (Colvin, 2007). Forming a collaborative team is one of the first steps of the SWPBS process; this is done with teachers, administrators, and special services personnel. According to Safran and Oswald (2003), collaborative teams collect data. They use data to evaluate strategies before implementing them with students. These collaborative teams then determine the area of focus or target intervention area (individuals, groups, specified settings, or the overall school setting). Collaborative support teams then determine the target area for the intervention. Teams analyze "archival data such as disciplinary office referrals or suspensions to obtain a picture of the building's behavioral landscape" (Safran & Oswald, 2003, p. 363). Data on office referral information, for example, provide a baseline to establish the effectiveness of intervention already in place and to determine if behaviors are unsafe and disorderly. Once this is determined within the school environment, changes can begin to be restructured for management practices. Schools have the mission to ensure the best possible opportunities are provided to students to not only participate fully and contribute to academic learning, but also to be successful socially and with lifestyle skill choices (Safran & Oswald, 2003).

Once a SWPBS team is established and has identified behavioral expectations, a schoolwide token system must be implemented to reinforce appropriate behavior. Consistency among all staff must occur in rewarding behavior using the tokens or

coupons (Safran & Oswald, 2003). Schools must develop school improvement goals to address student academic and social behavior achievement. A mission statement is created that captures the school's spirit and approach to teaching and learning. Together these form the basis for policies, procedures, activities, and decisions that develop the focus on the social and behavioral climate of school (OSEP Center on Positive Behavioral Interventions and Supports, 2011). Colvin (2007) stated that in order for schools to reach their set goals and responsibilities, a positive and proactive plan must be researched and implemented.

SWPBS does provide such a plan. The effectiveness of data to drive decisions, as well as the collaborative means of establishing these alternatives, aids a more positive system rather than the traditional punishment involved with misbehaviors. In addition to utilizing data, surveys to assess needs help in identifying areas where SWPBS could be most beneficial. Although this is not a necessity, the significance to the planning process is clearly enhanced. Through utilization of this holistic approach, SWPBS deters from reactive discipline measures that were so familiar in past practices (Safran & Oswald, 2003). There should also be organizational commitment. Staff should have clear input into the behavior goals and regular feedback in dealing with activities. These are commitments every organization involved with SWPBS should discuss (Colvin, Kameenui, & Sugai, 1993).

According to Martella et al. (2012), teachers must be strong leaders in the classroom; it is up to the teachers to keep students on-task and in accordance with behavior expectations. It is important to do this through hands-on measures of student discussion and modeling appropriate behavior practices versus using methods of force or

coercion. First, before teachers can be assertive with their response style, they must come to terms with the knowledge that they do possess the ability to affect student behaviors. Next, a discipline plan that contains both clarity and effective consequences must be presented to students in a way they are able to understand. Lastly, teacher instruction on these responsible behaviors must take place (Martella et al., 2012).

Epstein, Atkins, Cullinan, Kutash, and Weaver (2008) outlined steps to reduce problem behaviors. Not only does the problem behavior need to be identified, but also what occurred prior to and following the behavior. In order to develop effective interventions, teachers must observe students to gather information that can be utilized to meet the individual needs of students. After this has taken place, the needed changes to the environment can be implemented to help decrease further problem behavior (i.e., academic needs, expected behaviors, room arrangement, class schedules, and activities). Social and behavioral skills should be actively taught to replace unwanted behaviors. Reinforcement of skills will continue to promote that positive classroom environment. Finally, teachers, parents, school personnel, and behavior specialists alike should implement fully and consistently the schoolwide approach in response to student misbehaviors, as well as to benefit positive social interactions with all parties (Epstein et al., 2008).

Benefits of School-Wide Positive Behavior Support

The goal of SWPBS is to "apply behavioral principles in the community in order to reduce problem behaviors and build appropriate behaviors that result in durable change and a rich lifestyle" (Safran & Oswald, 2003, p. 362). As SWPBS continued to emerge, it was utilized to understand and address problem behaviors. There were many benefits

to this holistic approach to treatment. According to Van Wynsberghe (2012), SWPBS helps individuals aspire to set and reach their own personal goals. SWPBS is person-centered; it addresses the individual while respecting the dignity of the person. Van Wynsberghe (2012) further stated that "through listening to the individual, recognizing the individual's skills, strengths, and goals, and the belief that the individual can accomplish these goals, SWPBS is beneficial in developing treatments and strategies that are specific to individual needs" (p. 1). SWPBS approaches challenging behaviors with the determination to eliminate and replace them with prosocial skills (Van Wynsberghe, 2012).

Students, both disabled and non-disabled, can show growth and progress from SWPBS (Cohn, 2001). SWPBS promotes those effective behaviors in both students and schools. As a strategy, SWPBS maintains appropriate social behavior that promotes safer schools. In addition, safer schools provide that effective learning environment. With the added implementation of system-wide interventions, an increase in time engaged in academic activities can improve academic performance. Additionally, Cohn (2001) related that when implemented appropriately SWPBS has long-term positive effects on lifestyle and communication skills of individuals, as well as the problem behaviors.

SWPBS not only promotes positive behaviors, but also leads to positive change. Problem behaviors are reduced through reinforcement of adaptive behaviors in addition to environmental changes. Use of SWPBS limits more intrusive interventions (i.e., punishment or suspension) leading to systemic and individualized change (Cohn, 2001). When coping mechanisms are introduced, there is not as substantial a need for punishment, restrictiveness, or removal of privileges (Van Wynsberghe, 2012). While

SWPBS does focus on the student, it also examines the environmental variables such as task demands and curriculum, as well as the physical setting. The success then comes from meeting the wide range of students in various contexts at differing levels of behavior (Cohn, 2001).

ABA reiterates the fact that environment is a factor in many of the occurring and reoccurring behaviors (Martella et al., 2012). Therefore, ABA is focused on the environmental effects of behavior; making changes to one affects and changes the other. By selecting specific behaviors, social improvement occurs. It is relevant that changes be observable and measurable to show results of changes to an environment. For a change to truly be effective, it must be able to be steady over time, as well as withstand a new setting once the initial program is no longer in place (Martella et al., 2012). Behavior does not exist within the child, but between the environment and the child. According to Safran and Oswald (2003), interventions under the SWPBS umbrella are developed through ABA. They are designed to be proactive through altering problem behaviors before they escalate, and then providing alternatives to those behaviors.

Collaborative support is very much a benefit of SWPBS (Van Wynsberghe, 2012). SWPBS involves collaboration with those supporting the individual to include caregivers, support providers, doctors, teachers, social workers, etc. Through collaboration, the process ties everyone together in dealing with treatments. It also provides support in all settings for new behaviors and skills to be represented, which will enhance the individual's success rate. According to Van Wynsberghe (2012), emphasis with SWPBS is placed on the importance of the outcome to the individual or the group such as a classroom or a school building; it is outcome-focused. The behavioral focus is

to have less aggressive actions take place to not only make school safer places, but also homes and areas within the community.

According to Van Wynsberghe (2012), SWPBS is consistent and works well when used together with person-centered or recovery-based treatment approaches. SWPBS also works alongside other interventions such as prescribed medication to aid mental health treatment. SWPBS can even benefit those with dietary needs, or the need for occupational, speech, or physical therapy (Van Wynsberghe, 2012).

Challenges of School-Wide Positive Behavior Support Implementation

As determined by OSEP Center on Positive Behavioral Interventions and Supports (2011), SWPBS, as with any program, has challenges that can hinder the success and productiveness intended. The program is based on proactive supports, yet reactive measures are often unintentionally utilized; the focus can often times be on punishment or exclusion. Lack of training for staff, both with techniques and procedures of implementation, can be a hindrance. There cannot be the assumption that teachers have a strong knowledge in how to reduce problem behaviors. SWPBS is designed to have specific resources in place in order for success to occur. If resources are limited, the chances of success are also limited. There are various levels to SWPBS. When a lack of preparation and training occurs, there can be confusion and inconsistency. Finally, promoting SWPBS through extrinsic measures is not how the program was intended, although it does occur (OSEP Center on Positive Behavioral Interventions and Supports, 2011).

According to Cohn (2001), many times a functional behavior assessment must occur before the behavioral interventions will be put in place. This is seen as reactive

because it occurs after the behavior is a problem (i.e., after multiple student suspensions). The focus then becomes about punishment and exclusion. When student behavior becomes too challenging, teachers often respond by issuing verbal reprimands, taking student privileges, and providing consequences for improper behaviors many times resulting in ISS or OSS suspension (OSEP Center on Positive Behavioral Interventions and Supports, 2011). If student behavior does not improve, reactive responses increase as student misbehaviors continue. "Justification for the increased use of reactive management strategies is based on the erroneous assumption that the student is inherently bad, will learn a better way of behaving next time, and will never again engage in the problem behavior" (OSEP Center on Positive Behavioral Interventions and Supports, 2011, p. 15). OSEP Center on Positive Behavioral Interventions and Supports (2011) further calculated that such reactive practices are in general quite predictable. Reduction or even removal of negative behaviors by use of consequences provides an immediate reduction of the problem behavior. In turn, when behaviors reoccur, such reactive management practices are sought after once again, only to provide a temporary solution; these behaviors recur many times more frequently and at elevated levels of intensity.

Another significant challenge to the SWPBS program involves the behavior of teachers. Most programs focus on reducing problems in schools by measuring intervention effectiveness through looking only at the behavior of students. According to Oliver, Wehby, and Reschly (2011), student behaviors will most likely change as teacher behaviors change, which will help to ensure the goal of reducing problem behaviors and increase social behaviors in students. Therefore, the structure needed for teachers comes

from classroom management and, in turn, increases the success of classroom practices. Developing proficiency through not only knowledge, but also opportunities is important in adequately preparing teachers (Oliver et al., 2011). Many school-based interventions consist of unproven strategies. The staff implementing the strategies lack training and therefore deal ineffectively with the problems (Cohn, 2001).

The challenge remains within SWPBS as to the success that can be implemented in the educational environment through research-based practices to encourage autonomy (Kelm & McIntosh, 2012). Teachers can positively affect student achievement and motivation, as well as student attachment to school through behavior and social skills. The ability of teachers to complete professional obligations and contain problem behavior with such diverse student needs is becoming more prevalent. Teachers do not feel they have had the necessary training to support social needs of students in order to achieve that safe and positive environment. Teacher attitudes can affect student outcomes (Kelm & McIntosh, 2012).

Although SWPBS is seen as an effective program, not all levels of the program have been carefully studied. Too much emphasis has been placed on the primary (e.g., universal) support level, as well as the effectiveness of SWPBS on students with severe impeding behavior (Lewis & Sugai, 1999). Students who display severe, chronic impeding behaviors should benefit the most from the SWPBS system; they can be provided multiple layered approaches within the continuum of levels of support systems (Hawken & O'Neill, 2006). Crimmins and Farrell (2006) noted the skills that teachers need to implement universal level supports are different from skills needed at the individual support level. Simple BIPs do not require the knowledgeable skills and care of

those supports at the individual level of SWPBS. Hawken and O'Neill (2006) stated that even universal level strategies need modifications when applied to students with severe and chronic impeding behaviors. It is not easy to prepare staff fully for individual-level supports in part due to the required time and effort needed.

Student behavior remains a consistent concern of teachers, administrators, and parents. SWPBS has proven effective in dealing with problem behaviors at the universal level. These resources may be limited, however, as increasing demands continue to be placed on educators and schools alike. It also must be a consideration as to the extent of these approaches towards their efforts as part of the infrastructure or as individual skill sets (Crimmins & Farrell, 2006).

Martella et al. (2012) explained that the use of intrinsic rewards such as pride and self-esteem are encouraged. However, when extrinsic rewards such as tokens or stickers are utilized, intrinsic value can be undermined and harmful to students. According to Chance (1992), extrinsic reinforcers can be task contingent. These reinforcers reward students participating for a specified time on a task without regard to how well the task is performed. There is little likelihood the student will engage in the task in the future. Performance contingency provides external reinforcers when a predetermined performance criterion has been met. Students meeting the criterion will have an increased intrinsic interest, whereas, those students not meeting the performance criteria have an intrinsic decrease. Success contingent reinforcers have a predetermined criterion that is reinforced throughout the tasks to the completion of that criterion. It is important to make sure reinforcers are used versus rewards, as well as using contingent reinforcers rather than task completion reinforcers (Chance, 1992).

Control is often a misperception; it is not always what it seems. Control is associated with manipulation or going against one's will. Everything done is under some form of control. For example, to produce appropriate behavior through the problem-solving process, tasks can be made enjoyable for students in an attempt to motivate learning (Martella et al., 2012).

Research on School-Wide Positive Behavior Support

In a study by Lassen, Steele, and Sailor (2006), a 3-year longitudinal project involving multiple middle schools in a low-income, inner city was conducted. One school served as the unit of analysis. Results of the study indicated that students' academic performance on standardized tests of reading and math were predicted based on behavior referrals and suspensions. However, although there was a statistically significant difference, the effect size accounted for only 1 to 2% of the variance in math and reading scores. There was a significant increase in math over the 3-year study, whereas the reading scores had an initial decrease; a notable increase took place in following years. This supported the idea that as student instruction time increases, academic achievement also increases. Lastly, the results of the study showed a relationship between the adherence of the SWPBS procedures and reductions in problem behavior. An increase was indicated in SET data of SWPBS components during the study. Overall, the major implications of the Lassen et al. (2006) study were that SWPBS was an effective intervention in reducing student problem behaviors in urban middle schools with high misconduct rates. Improvements were found to be sustainable over time. Finally, there may also be a significant impact on academic performance through the increase in amount of instruction time due to the decrease in behavior issues.

In a study by Ross and Horner (2007), the relationship between SWPBS and perceived levels of teacher stress and efficacy was examined. The study included four schools within the state of Oregon. The schools had similar class sizes, socioeconomic status determined by free and reduced lunch percentages, and teachers on staff. SWPBS was considered the independent variable for the study; SET was utilized to evaluate all schools for SWPBS fidelity. The first variable was the level of perceived teacher stress. This was measured by utilizing the Index of Teaching Stress (ITS). The second variable was teacher efficacy as measured by the Teacher Efficacy Scale (TES). Results indicated a significant effect of the level of SWPBS implementation on teacher efficacy. However, there was no significant effect level of SWPBS implementation on teaching stress. There was a small effect size for teacher efficacy and no effect size for teacher stress. Overall, the study determined teachers in schools where SWPBS was implemented with high levels of teacher efficacy scored significantly better as compared to schools where SWPBS was implemented at a low level of teacher efficacy (Ross & Horner, 2007, p. 6).

Oliver et al. (2011) reviewed 12 studies in order to examine the effects of teachers' universal classroom management practices; practices in reducing disruptive, aggressive, and inappropriate behaviors were addressed. The studies were experimental or quasi-experimental with the control groups. Control conditions were "no treatment," "treatment as usual," or a similar condition contrasting the treatment condition, yet not producing change within the outcome of interest. Interventions were conducted in public school general education classes with students in Kindergarten through 12th grade. Seven of the 12 studies were comprised from the same research group and were assessed using Classroom Organization and Management Program (COMP). Three of the studies

included used the treatment "Good Behavior Game" (GBG). Both are preventive programs to reduce inappropriate classroom behaviors. Treatment classrooms had clear, outlined rules and monitored closely the following of those rules. The final two studies utilized multi-component treatments within the universal classroom package. A continuum of treatments occurred and a dependent measure of student behavior was included.

According to Oliver et al. (2011), classrooms having continuous "disruptive behaviors have less academic engaged time" and students, therefore, "have lower grades and do poorer on standardized tests" (p. 6). The results of this study indicated that the earlier disruptive, aggressive behaviors began, the more at-risk those students were to continuing those disruptive behaviors in later grades. The research-based approaches were "necessary to improve both academic and behavioral outcomes for students" (Oliver et al., 2011, p. 7). The management practices in the classrooms did have a significant effect on decreasing problem behaviors. There were less disruptions and aggressive behaviors of students in treatment classrooms versus students in the untreated control classrooms. This demonstrates how the use of effective classroom management enhances improvements with not only student behaviors, but also with establishing a positive environment conducive for effective practices to occur. The expectation was that problematic behaviors would be reduced within the classroom setting once interventions were delivered to the teacher through training and then implemented in the classroom with students. Due to the homogeneity in the sample of effect sizes, and the small sample of studies, it was not possible to determine treatment components contributing to the overall effects.

Coffey and Horner's (2012) study was conducted to identify and validate the components of sustainability that increase the ability of schools to sustain SWPBS and aid student achievement. One hundred and seventeen schools across six states completed sustainability surveys as they related to SWPBS. The survey included closed questions on a Likert scale, frequency ratings, and two open-ended questions about sustainability specific to each individual school. All schools included in the study had existing data based on SET with a minimum of 80% and three to five years of implementation with the last two years demonstrating fidelity constituted sustainability. The sample consisted of sustainers, which met the criteria mentioned above, and non-sustainers, which were schools that were observed for at least three years without meeting the above criteria of 80% on SET. Seventy-nine of those responding to the survey were sustainers, while 38 were non-sustainers.

The results of the study suggest that the best-fitting model of sustainability with SWPBS has support from administration through encouraging communication and uses data to plan and make change with the program and sustain SWPBS over a number of years. Coffey and Horner (2012) indicated that the main limitations of the study dealt with instrumentation and sample sizes. The survey instrument was untested and was unlikely to have comprehensively measured all sustainability components. It was difficult to determine effects of other subscales when administrative support was included in the model. Another identified limitation dealt with the sample group for research questions one and two. They are unbalanced; sustainers make up the majority of the samples.

Kelm and McIntosh (2012) examined relationships between implementation of a school-wide approach to behavior, SWPBS, and teacher self-efficacy. The setting for their study was a rural school district with 28 schools, 20 of which were elementary schools. Approximately 14,000 students were enrolled in the district; 95% spoke English, 8% were identified for special education services, and approximately 16% were identified as low-income. Two schools implementing SWPBS and three not implementing SWPBS participated in the study. Teachers at SWPBS schools had reportedly higher amounts of self-efficacy than did those at non-SWPBS schools. The results of this study indicated that teachers have a positive impact on student academic achievement, motivation, attachment to school, behavior, and social skills when teacher attitudes remain positive and supportive. Academic achievement influences teacher self-efficacy, which then promotes academic achievement. Additionally, there was a decrease in the number of office discipline referrals, student assaults, disciplinary actions, and suspensions. There was also an improvement in the social adjustment of students exhibiting problem behaviors within the schools implementing SWPBS. Students attending schools that engaged in SWPBS displayed higher levels of on-task behaviors, whereas those not implementing SWPBS had high levels of off-task behaviors. Teachers at SWPBS schools felt more prepared to engage students in learning and effectively teach and respond to students with varying abilities.

In a study by Buettner (2013), mixed methods research was conducted to determine the effectiveness of PBIS in the Study School District, an urban district in Illinois. Student discipline was a major issue; inappropriate behavior was affecting the education of not only those suspended, but also those who were behaving. No formal

program existed to deal with discipline; it was handled reactively and punitively at the discretion of teachers and administrators. There was also not quantitative data to show ODRs, seriousness of referrals, and changes in student achievement as measured by standardized testing. In 2007-2008, the school district implemented a district wide discipline system call Positive Behavior Intervention and Support System or PBIS. The study was focused on determining the fidelity and consistency of implementation of PBIS in the district, the effect of PBIS on reduction of office discipline referrals and student suspensions from school, teacher attitudes toward the implementation of PBIS, teacher morale since inception of PBIS, and parent perceptions of the effectiveness of PBIS in promoting positive student behavior. The effect of PBIS on student academic achievement performance was measured through standardized state testing given yearly.

Results of the ANOVA determined that there was not a measureable difference in the number of ODRs during the four years since implementations of PBIS and the preceding school year. There was also not a measureable difference in the type of behavior reflected in the ODR during the four years of implementation and the preceding year. Standardized test scores grades 3 through 7 and high school did not evidence a measureable difference in student academic achievement based on the Illinois Standards Achievement Test (ISAT) performance during the four years following implementation. However, 8th grade students did display a measurable difference in student academic achievement. Finally, the results of the analysis of a climate survey showed teachers did not believe there was a positive school climate after implementation of PBIS; whereas the results of the climate survey data analysis *z* test showed parents believed PBIS had a positive effect on school climate.

The purpose of Miles' (2013) study was to determine if any changes occurred in grades, attendance, and the number of referrals after the implementation of PBIS. A preexisting group was used to explore differences over time on the dependent variables. Quantitative data was collected on the grades, attendance, and the number of discipline referrals of the preexisting group. The researcher targeted students who had been suspended for violating one or more school rules both before and after PBIS. Of the 136 students, 69 had complete school records; their academic scores after implementation of PBIS appeared higher although there was not a significant difference. There was a significant difference between the number of absences in the fall 2010 semester and the fall 2011 semester based on the number of class periods missed versus the number of days missed The mean number of discipline referrals for fall 2011 after implementation of PBIS was significantly different from fall 2010. Results suggest PBIS may serve as an effective intervention for future referrals for students who have been suspended. Students showed significant improvements in both their attendance and number of future discipline referrals; however, no significant change was shown with grades (Miles, 2013).

According to Patterson (2013), the purpose of his research study was to investigate the impact of PBIS on African American students, White American students, Hispanic students, and students of other ethnicities meeting academic performances in math and reading. Research was conducted in one middle school in Pennsylvania from 2007-2010. The Pennsylvania System of School Assessment (PSSA) was administered yearly to assess student academic achievement. A quantitative study took place in a 2-year review. State assessment data (pre and post implementation of PBIS) was collected for 7th and 8th grade middle school students. A quantitative ex post facto design was used

to determine the positive impact of PBIS on the academic achievement of the students. Participants were selected without random assignment, and were from two cohorts of 7th and 8th grade students. The first cohort participated in the PSSA in reading and math during school year 2007-2008 before implementation. By group design, the second cohort was the same group of 7th and 8th grade students who participated in the PSSAs in reading and math during school years 2009-2010 after implementation of PBIS. Pre-existing data from 2007-2010 was the basis of the study; it compared numerical data results obtained through standardized assessments administered pre and post implementation of PBIS. Results from paired-samples *t* tests revealed 2009 PSSA math scores after implementation of PBIS were higher than that of 2008. Of 629 students who completed both exams in 2008-2009, 95% scored higher. There was a statistical significance with main effect between ethnicity and time as related to student mathematical scores after implementation of PBIS. After implementation of PBIS, student scores improved on PSSA reading and math examinations. PBIS had the most positive impact on student achievement with minority students. Results also revealed that minority students scored statistically higher after PBIS implementation on the PSSA reading and math portions of testing.

A mixed method research design was utilized by Beard (2014) to investigate the impact of implementing PBIS on student academic growth and school climate by comparing eight elementary schools (four implementing and four non implementing), which were paired based on free/reduced lunch rate and the Annual Daily Membership. The two groups were formed from a large, urban school district. The difference between groups was examined by analyzing accountability focused on basics with local control

growth, student referrals (ISS/OSS), student surveys, and teacher surveys. Results of the study indicated there was a significant difference in student growth in the implementation schools as compared to non-implementation schools. However, there was not a significant difference in the number of students referred for misbehavior from both groups. In addition, there was not a significant difference between the number of students suspended in implementation and non-implementation schools. Results from the survey showed there was not a significant difference in the school climate between the implementation and non-implementation schools. There was no difference in students' understanding of behavior expectations between implementation and non-implementation schools. No significant difference was noted in students' feelings of a safe environment at school from both groups. However, there was a significant difference between teachers' responses regarding student behavior. Furthermore, a significant difference was noted between the observed outcome compared to the expected outcome for PBIS implementation schools in the district (Beard, 2014).

Hunt (2014) conducted research to determine the effects of implementation of the first stages of PBIS upon student discipline referrals (ODR) rates and student achievement scores. The research was conducted in a rural, low SES middle school in southeastern North Carolina. PBIS was first implemented during the 2012-2013 school year, and research was conducted during the 2013-2014 academic year. A mixed method approach was taken; quantitative data addressed the relationships between discipline, academics, and PBIS. Data were gathered from North Carolina End-of-Grade (NCEOG) composite test scores, ODR data, and the SET. Qualitatively, data was used to determine barriers of PBIS within the school atmosphere. The NCEOG assessment measures

student performance on goals, objectives, and grade-level competencies as they relate to common core standards and federal standards. Quantitative data collected included NCEOG proficiency performance scores for grade 7 in reading and math and grade 8 in reading, math, and science for two years. ODR data was collected for three consecutive, academic years and retrieved monthly. The number of ODRs was compared not only from implementation, but also for each academic year. SET was utilized for two years to assess the success rate of PBIS. The Self-Assessment Survey (SAS) focused on staff implementation levels, and the Implementation Inventory Online (IIO) survey monitored the progress of the implementation of the module beginning stages of PBIS and fidelity to the program. These helped to determine the common themes that were used to identify the barriers of PBIS implementation. According to the results of the chi square tests, there was no significant difference between NCEOG test scores and implementation of PBIS for grade 7 reading and math, as well as grade 8 math and science. No significant difference was noted between overall NCEOG test scores and implementation of PBIS for math. There was a significant difference between NCEOG test scores and implementation of PBIS 8th grade reading, as well as overall NCEOG test scores and implementation PBIS for reading. There was no confirmed effect on student achievement; the findings were mixed. Monthly ODR for three academic years shows the number of ODRs increased each year with year 2 having the most. It is not confirmed that PBIS had impact on student discipline. The barriers showing overlap dealt with buy-in and participation (social skills, student discipline, discipline data, and action planning).

Summary

SWPBS is used to assess program effectiveness through identifying problems and implementation of interventions. Through this process, decisions on the development of SWPBS can be determined. When teachers and administrators are prepared for behavioral challenges, problems can be handled productively. SWPBS can reshape disciplinary practices and offer alternatives leading to program effectiveness (Safran & Oswald, 2003)

The purpose of chapter two was to provide a brief history of SWPBS, a description of SWPBS, the steps of the SWPBS process, benefits of SWPBS, challenges of SWPBS, and research clarifying the effectiveness of SWPBS. Chapter three includes the research design, population, instrumentation, data collection, data analysis, and limitations of the current study.

Chapter Three

Methods

District R made the decision to implement SWPBS after noticing an increase of ISS and OSS discipline measures. The purpose of this study was to determine whether there were differences in student behavior referrals and attendance at the elementary schools in District R after the implementation of SWPBS and whether the differences were affected by student gender, grade level, race, special education status, or SES. Another purpose of the study was to determine whether there were differences in student achievement after the implementation of SWPBS and whether the differences were affected by students' gender, grade level, race, special education status, or SES.

In this chapter, the methodology used to conduct the study is presented. Included is an explanation of the research design, population and sample, sampling procedure, and instrumentation, which includes measurement, validity, and reliability. Data collection, data analysis, and hypothesis testing follow. The chapter concludes with the limitations of the study.

Research Design

A quantitative research design including archival data was utilized for this study. According to Creswell (2014), a quantitative research design is a means "for testing objective theories by examining the relationship among variables," which "in turn can be measured by instruments so numbered data can be analyzed using statistical procedures" (p. 4). The research design involved the variables of student behavior based on ODR forms, attendance records from elementary schools in District R, and academic scores using AIMSweb and MAP assessments.

The first dependent variable consisted of the archived office referral data documenting incidents of unacceptable behaviors consisting of school suspensions at the elementary buildings both before and after implementation of SWPBS. The next dependent variable pertained to attendance rates of the students before and after SWPBS implementation. Other dependent variables were math and reading test scores as measured before and after implementation of SWPBS. R-CBM and M-COMP scores were used to gauge student academic achievement in grades 1 and 2, whereas MAP scores were used to gauge academic achievement for grades 3 through 5. The independent variables in the study were the grade levels of students (grades 1-5), as well as the students' gender, race, special education status, and SES.

Population and Sample

"The target population is the group of interest to the researcher, the group to which you would like the results of the study to be generalizable" (Lunenburg & Irby, 2008, p. 167). The target population for this study included both regular and special education students in grades 1 through 5 who attend schools that implemented SWPBS. The sample included those students who attended school in District R during the 2012-2013 and 2013-2014 school years. The 10 elementary buildings in District R each housed approximately 350 to 475 students in grades 1 through 5. The number of students per building was included in Table 1.

Sampling Procedures

The purposive sampling technique was chosen to select the sample for this study due to the experience the researcher had with the group sampled. "Purposive sampling is a selection method based on researchers' experiences and knowledge of specific groups

being sampled" (Lunenburg & Irby, 2008, p. 175). This sampling method was chosen based on the knowledge held regarding the discipline measures, attendance, as well as the academic achievement of elementary buildings in District R. Each school had implemented SWPBS for a minimum of three years, providing multiple years of data. Students selected for the study were enrolled in District R grades 1 through 5 at the time of testing. Not all students were included, however. If a student's identification number was not reported within the dependent variables of behavior referrals and attendance as well as the independent variables of the implementation of SWPBS (student gender, grade level, race, special education status, and SES) over the three-year study for research questions 1-4, they were excluded from that portion of the study. In addition, if a 1st or 2nd grade student's identification number was not reported within the dependent variable of academic achievement through R-CBM and M-COMP, as well as the independent variables of the implementation of SWPBS (student gender, grade level, race, special education status, and SES) over the three-year study for research questions 5-8, they were excluded from this portion of the study. If a student had the necessary reading scores, but not the necessary math scores, they were included in the data portion for just reading. The same held true if a student had the necessary math scores, yet not the reading scores. Finally, if a student's identification number from the 3rd through the 5th grades was not reported within the dependent variable of academic achievement through MAP Communication Arts and Mathematics, as well as the independent variables of the implementation of SWPBS (student gender, grade level, race, special education status, and SES) over the three-year study for research questions 9-12, they were excluded from this portion of the study. The same applies for MAP as above; if a student had the

necessary reading scores, but not the necessary math scores, they were included in the data portion for just reading, but not math, and vice versa. In addition, criteria for inclusion in the study was determined if students' scores for the R-CBM, M-COMP, and MAP Communication Arts and Mathematics were on file.

Instrumentation

The following sections detail the information using quantitative instrumentation, including the measurement, reliability, and validity of each. The instrumentation included behavior referrals, attendance, Reading Curriculum-Based Measurement, Mathematics Computations, and the Missouri Assessment Program Communication Arts and Mathematics assessments. These measurements were used to determine the academic achievement of the elementary schools of District R.

Referrals. Behavior referrals are collected in District R weekly. Information on the number of ISS and OSS incidents are placed into SWIS. This data is analyzed monthly and shared with staff to note increases or decreases in major behaviors. The total number of behavior referrals for students in 1st through 5th grades was collected and analyzed from each school year, 2011-2014. Research question 1 addressed the extent of the difference in behavior referrals after the implementation of SWPBS. Research question 2 extended this difference by further focusing on the effect of students' gender, grade level, race, special education status, and SES.

Attendance. Attendance is entered in SIS daily by classroom teachers and authorized by the school secretary. Administration note monthly the increase or decrease in attendance percentages; the district goal is to stay at 90% attendance for 90% of the students. District R's attendance percentages were noted on each individual student

grades first through fifth. Student identification numbers were used to match students to their respective elementary school building. Research question 3 addressed the extent of the difference in attendance after the implementation of SWPBS. Research question 4 extended this difference by further focusing on the effect of students' gender, grade level, race, special education status, and SES.

Achievement Improvement Monitoring System (AIMSweb). AIMSweb is the database which stores Reading Curriculum-Based Measurement (R-CBM) and Mathematics Computations (M-COMP) data used to measure growth in reading and math scores for all students. The program is computerized; it scientifically measures academic performance by comparing expected rates of learning to actual rates of learning. The AIMSweb assessments provide direct feedback on student achievement through frequent benchmark testing and progress monitoring (Pearson PsychCorp, 2010a). The tests are administered three times per year: fall, winter, and spring. There are three benchmark probes and over 30 progress monitoring probes (Deno, 1986). These tests are formative assessments administered within school settings to monitor student progress (Steckler, 2006). Formative assessments provide immediate data for teachers to utilize in order "to diagnose student needs, plan our next steps of instruction, provide students with feedback they can use to improve the quality of their work and help students see and feel in control of their journey to success" (Stiggins, Arter, Chappuis, & Chappuis, 2006, p. 31).

Reading Curriculum-Based Measurement (R-CBM). This testing serves as a periodic check on students' reading development (Pearson PsychCorp, 2010c). "The strength of R-CBM assessment is its ability to serve as a broad signal of the multifaceted construct of reading and its ability to index student performance across a variety of

contexts" (Hintze & Silberglitt, 2005, p. 374). According to Hintze and Silberglitt (2005), these passages were developed using difficult levels of controlled vocabulary. They were written by authors familiar with teaching reading, as well as how students learn to read across a variety of genres. School districts utilize consistent passages for the three assessments to ensure standardization across the district for all students. A median score is determined utilizing the three benchmark scores for each student at each testing. Staff members are trained on the proper administration and scoring procedures, and receive all materials that are needed for testing, which allows for standardization and immediate manipulation of student data, as well as scoring through time (Hintze & Silberglitt, 2005).

Each student is tested one-on-one with a trained staff member, and has his or her own copy of the reading passage. The examiner also has a copy; however, it is different from that of the student copy. The examiner copy is marked with numbers for quick scoring (Shinn & Shinn, 2002). Uniform directions are read to students. Student passages are generally 250-300 words and begin with an introductory sentence as noted in the AIMSweb Training Workbook (Shinn & Shinn, 2002). Teachers can access the data to help guide teaching and determine a positive or negative correlation to SWPBS implementation. Through the administration of these measurements, research question 5 addressed the extent of the differences in 1st and 2nd grade students' academic achievement as measured by R-CBM, after the implementation of SWPBS. Research question 6 extended these differences by further focusing on the effect of students' gender, grade level, race, special education status, or SES.

Measurement. R-CBM assesses fluency through 1-minute timed tests. Fluency is measured by the number of correct answers given during the allotted time. Accuracy is the percentage answered correctly (Pearson PsychCorp, 2010c). Students are given a set amount of time to complete testing with no discussion to take place during testing. Correct answers, as well as errors, are recorded. An error is any of the following: "mispronunciation of the word or substitution, omission, and/or 3 second pauses or struggles" (Shinn & Shinn, 2002, p. 13). During the R-CBM, students read three passages aloud for one minute each. Students then read a passage with missing words and identify the appropriate words to complete the selection.

According to Pearson PsychCorp (2012), for universal screening (benchmark testing), there is a designated set of probes (1, 2, and 3) for the student's grade level. The same set of probes was used for each screening period (fall, winter, and spring). For progress monitoring, a single probe can be administered rather than the set of three, using a different R-CBM probe each time. The probes (probes 4-23 at Grade 1 and 4-33 at Grade 2) are equivalent, and can be given in any order. This can occur as long as a different R-CBM probe is used at each assessment of a particular student.

During administration, the scorer is accountable for the words read correctly (WRC), as well as the number of errors. Students are asked to "begin." Timing starts when the student says the first word. As the student reads the passage orally, the scorer will mark on the examiner copy the words correct and the errors. A slash (/) is drawn through the incorrect word. Any insertions are written above the line of text where the insertion was made. Self-corrections are marked with "SC" if the student self-corrects within three seconds (Pearson PsychCorp, 2012). According to Pearson PsychCorp

(2012), errors are not to be corrected. They are to be marked as incorrect, and the student is to continue reading. If a student stops or struggles with a word for three seconds, the scorer is to provide the word, mark it as incorrect, and move on. At the end of one minute, a bracket is placed after the last word that was attempted, the student is allowed to finish reading that sentence, and then the student is told to stop. The second and third probes are administered the same way.

An R-CBM administration produces a primary score, the number of WRC in one minute, and a secondary score that reflects accuracy, either the number of errors or the percentage of words read correctly. The scores are calculated for each of the three probes, and the final reported score is the median (middle) of the three values. The scores are calculated using the Examiner's Copy. To compute the WRC, the number of errors are counted and subtracted from the numerical value of the last word attempted (Pearson PsychCorp, 2012).

Validity and reliability. AIMSweb R-CBM was created to ensure that the various probes (forms) at the same grade are equivalent and produce similar results. This was accomplished by carefully controlling the content (using readability analyses), and considering studies of the score levels and correlations among probes (Daniel, 2010). Table 8 reports the alternate-form reliability of a single AIMSweb R-CBM benchmark probe at each grade. This was based on the average inter-probe correlation in the development sample of 204 students (approximately 25 per grade). The reliability values are applicable to progress monitoring in which a single probe is administered at each point in time. Universal screening conducted in fall, winter, and spring comprised the benchmark testing. Three R-CBM probes were administered in the same test session; the

student's score is the median of the three scores. This score is reliable based on a broader sampling of performance (Daniel, 2010). Howe and Shinn (2002) explain that the increase in reliability gained by using the median score is not as great as the gain that would be obtained by using the mean of three probes. However, the reliability of the mean provides a useful upper bound for the reliability of the median. The projected reliabilities of the mean of three scores are listed in the second column of Table 8; they were obtained by applying the Spearman-Brown formula to the single-probe reliabilities. The true reliability of benchmark scores at each grade lies between the two values provided in Table 8.

Table 8

R-CBM Alternate-Form Reliability

Grade	Single Probe	Mean of 3 Probes
1	.90	.96
2	.82	.93

Note. Adapted from "Reliability of AIMSweb Reading Curriculum-Based Measurement (R-CBM) (Oral Reading Fluency)," by M. H. Daniel, 2010, p. 2.

Christ and Silberglitt (2007) evaluated the benchmark data of 8,200 students in grades 1 through 5 in rural and suburban school districts in the Midwest. The data collected during this time used three AIMSweb probes. Each benchmark score was the median of the three probes. Table 9 shows multiple validity coefficients available for each grade level, based on different students and reading curricula. Shinn and Shinn (2002) report that AIMSweb "reading validity coefficients are in the .60 to .80 range" which to some extent supports the construct validity of the assessment (p. 35).

Table 9

Reliability of AIMSweb Scores Obtained as Benchmarks

Grade	Fall-Winter	Winter-Spring
1	-	.88
2	.93	.94

Note. Adapted from "Reliability of AIMSweb Reading Curriculum-Based Measurement (R-CBM) (Oral Reading Fluency)," by M. H. Daniel, 2010, p. 3.

The reliability coefficients between benchmark scores at adjacent seasons, indicate the reliability of AIMSweb benchmark scores was .88 or higher.

Math Computation (M-COMP). M-COMP is a revised collection of mathematical computation probes that includes early numeracy and mathematics. It yields general mathematics computation performance and rate of progress through a timed, 8-minute, open-ended, paper-based test that can be administered within a group or individually. M-COMP includes three probes for benchmarking, and 30 probes for progress monitoring for Grades 1 and 2. M-COMP is a revision of the AIMSweb Mathematics-CBM and Mathematics-CBM2 (Pearson PsychCorp, 2010b).

A summary of the test results and the test administration time is provided. In addition, how students are assessed and the actual score can be obtained. These assessments are used to identify students who may need additional support or additional diagnostic testing. Students are identified as "on track." Teachers can access the data to help guide teaching and determine a positive or negative correlation to SWPBS implementation. Through the administration of these measurements, research question 7

was focused on the differences in students' academic achievement, as measured by M-COMP, after the implementation of SWPBS. Research question 8 extended these differences by further focusing on the effects of students' gender, grade level, race, special education status, and SES.

Measurement. Benchmarking students' performance three times a year yields distinct data points. This determines if students are on track with their progress, are struggling and may benefit from intervention, or are out-performing their peers. Progress monitoring for students identified during benchmarking determines whether students are benefitting by measuring their rate of improvement; monitoring will be a benefit from some level of intervention. In progress monitoring, a single, different M-COMP probe is used each time. M-COMP provides 30 progress monitoring probes for each grade. Like the three benchmark probes, the progress monitoring probes are standardized to be equivalent in difficulty. When these two are used together, improvement or lack of improvement in a student's performance has been accurately tracked (Pearson PsychCorp, 2010b).

According to Pearson PsychCorp (2010b), a desirable rate of improvement (ROI) can be determined and progress monitoring decisions made based on achieving that goal. The ROI is represented by a trend line, or slope, which indicates the average weekly improvement. If the trend line (i.e., the actual ROI) meets or exceeds the aim line (i.e., the expected ROI), the student is benefitting from the intervention, and should continue with the program. If the trend line is not meeting or exceeding the aim line, a change should occur within the intervention approach (e.g., same program at higher intensity or a different program). AIMSweb M-COMP has three benchmark probes per grade to be

administered to all students during the standard school year: fall, winter, and spring. The purpose of benchmarking is to ensure that all students are assessed after a similar exposure to the school curriculum. The benchmarking periods range from 4 to 6 weeks; however, the process should be completed within two weeks after a school begins the benchmarking process.

Initial M-COMP benchmark probes can be used as a screening tool to make RTI decisions, and then compare the results to normative- or standards-based data. Using the normative-based data, individual student reports presenting the range of average M-COMP student performance (i.e., scores between the 25th and 74th percentiles) can be generated that shows a student's current M-COMP performance (the number of points earned on a particular probe). The student's performance can be judged using percentile ranks and the raw scores relative to the normative group, and can be used to make screening decisions (Pearson PsychCorp, 2010b).

According to Pearson PsychCorp (2010b), educators can use M-COMP benchmark scores to predict performance on a high-stakes test (i.e., a state-required achievement test) by identifying those students who are most likely to pass as well as those who will not pass the state test. More importantly, it enables students between the extremes of a performance range to be identified. M-COMP uses the same streamlined scoring system used with M-CAP, released in fall 2009. M-COMP scoring assigns a point value based on difficulty of 1, 2, or 3 of each item rather than scoring based on correct digits and partial credit as with M-CBM and M-CBM2.

The point value within each grade for a given item remains the same. Therefore, if the first item on the fall benchmark is valued at 1 point, then it is also valued at 1 point

for every other benchmark, as well as progress monitoring probes for that same grade. This ensures minimizing scoring time, maximizing sensitivity to growth, controls for students who skip to the "easy" items, and ensures psychometric soundness of the process. The total points available do vary slightly across grade levels; within a grade, however, each probe has the exact same total point value. The scoring for grades 1 and 2 is straightforward. The problems are basic computation and number-sense questions. The variability is very slight between what is correct and incorrect (Pearson PsychCorp, 2010b).

Validity and reliability. M-COMP is based on validated, standard, simple to administer and score, and short duration fluency measures where students write answers to computational problems. Within this mathematical structure, there are two broad constructs commonly referred to as computational problems and application based problems. The first requires students to know how to complete mathematical concepts, strategies, and facts. Whereas, the second structure uses mathematical strategies, concepts, and facts to solve a given problem (Howell, Fox, & Morehead, 1993).

Three pilot studies took place to produce anchor probes with the desired content coverage and psychometric properties in which equivalent probes could be generated for national field-testing. Sixteen students were tested in the initial pilot to ensure all directions for administration and individual item directions were clear, grade-level appropriate, no issues arose with item progression, and items functioned properly. The second study was administered to 337 students to determine alternate-form reliability and the time limits for administration at each grade level. One anchor probe and two clone probes were given to the students. Progress towards completing the probes was marked

for each probe at each grade. A correlation analysis was conducted at each grade level to determine the most appropriate amount of time necessary to maintain reliable discriminability. The third study was untimed; anchor probes were administered to a group of 444 students. The intent was to extend the collection of item-specific and probe-level data from the first two studies and to evaluate the performance of all items (Pearson PsychCorp, 2010a).

A national field-test edition of M-COMP assessment followed the pilot studies. It was developed and administered to a sample of 7,703 students of varying demographics. Forty-five probes were utilized including the anchor probe (which was always administered first) for each grade level. The administration time limit was eight minutes, and only a single set of six probes was provided to each student; 22 sets of probes were assembled for each grade (Pearson PsychCorp, 2010a).

According to Pearson PsychCorp (2010b), the item count by probe for both first and second grades was 28, while the probe count by grade for both grade levels moved to 45. After the anchor probe, the remaining M-COMP probes were administered in counter-balanced order, with half of the participants receiving an M-CBM or M-CBM2 probe after the anchor probe or third M-COMP probe. In addition to the National Field Testing Item and Probe count by grade, various groups within those variables were identified and obtained from SIS (i.e., gender [male/female], grade level [1-5], ethnicity [Caucasian, African American, Hispanic and Other], special education status, and SES.

Multiple criteria were used to select the most psychometrically-sound equivalent probes. Pearson's product-moment correlation coefficients were used to assess the consistency of probes within each grade. To evaluate the internal consistency of the

probes, Cronbach's alpha and split-reliability were used. Probe selection was based on the evaluation of these statistical properties and the comparison of the probe mean scored to the aggregated mean for each grade. Analysis of the confidence interval at the 99% level using the standard error of measurement (SEM) showed no statistically significant difference among the final selected probes were statistically equivalent to each other in the grade (Pearson PsychCorp, 2010a, p. 32).

Evidence has been found for reliability and validity of M-COMP. "Scientific-based research has shown that having students write answers to grade-level computational story problems for 2-4 minutes is a reliable and valid general outcome measure of general mathematics computation for typically achieving students through Grade 6" (Shinn, 2004, p.3). Thurber, Shinn, and Smolkowski (2002) found within a study of 207 fourth graders that interscorer agreement reliability was at .83 and found alternate form reliability to be .91.

Data from several studies support the reliability of MCBM, which is now part of M-COMP. Generally, the reliability of mathematics probes has been reported with correlations in the $r = .90$ range across several studies (Marston, 1989). A study by Tindal and Marston (1990) reported interrater reliability at $r = .97$, 1-week test-retest reliability at $r = .87$, and alternate form reliability at $r = .66$. Thurber et al. (2002) reported interrater reliability coefficients ranging from $r = .77$ to $r = .94$ with an average of $r = .87$. The same study produced support for alternate form reliability with a median correlation of $r = .91$ across three types of CBM probes (computation, application, and mixed probe types).

MAP was utilized in this study as a measure of reading and mathematics achievement in grades 3 through 5. Research question 9 was focused on the extent of the differences in 3rd through 5th grade students' academic achievement as measured by MAP Communication Arts after the implementation of SWPBS. Research question 10 extended these differences by further focusing on the effect of students' gender, grade level, race, special education status, and SES. MAP was also utilized as a measure of mathematics achievement in grades 3 through 5. Research question 11 was focused on the extent of the differences in 3rdthrough 5th grade students' academic achievement, as measured by MAP Mathematics assessment, after the implementation of SWPBS. Research question 12 extended these differences by further focusing on the effect of students' gender, grade level, race, special education status, and SES.

Missouri Assessment Program. The Missouri Assessment Program (MAP) is one of several educational reforms mandated by the Outstanding Schools Act of 1993. This act required that Missouri create a statewide assessment system that measured challenging academic standards. As a result of this act, the State Board of Education directed the Missouri Department of Elementary and Secondary Education (DESE) to identify the knowledge, skills, and competencies that Missouri students should acquire by the end of certain grade levels and to evaluate student progress toward those academic standards; thus, Missouri Show-Me Standards were created (CTB/McGraw-Hill, 2011).

The MAP was designed as grade-span tests to measure Missouri's Show-Me Standards. These standards were adopted by the Missouri State Board of Education in 1996. Since their inception, Missouri's Show-Me Standards have been further refined to better delineate Content Standards, Process Standards, and Content Strands/Grade-Level

Expectations as Missouri changed its testing program to comply with the requirements of No Child Left Behind (NCLB), which was enacted in 2001. NCLB required states to develop grade-level tests in both communication arts and mathematics starting in 2006. In accordance with NCLB legislation, student performance, reported in terms of proficiency categories, is used to determine the adequate yearly progress of students at the school, district, and state levels (CTB/McGraw-Hill, 2012).

MAP was administered to students to ensure they were achieving the standards of learning set forth in the Show-Me-Standards. These Standards have been developed by the state of Missouri Department of Education so that students are gaining knowledge on par with students locally and nationally. The assessments provide information on proficiency levels of students in the subjects they are taking, whether instructional support is required in areas, the teacher's effectiveness at teaching students to the standards of learning, and the school's progress in raising achievement levels for their students (CTB/McGraw-Hill, 2012).

MAP Communication Arts. According to the *Missouri Assessment Program Grade-Level Assessments Guide to Interpreting Results* (CTB/McGraw-Hill, 2011), MAP items are aligned with the Show-Me Content Standards/Grade Level Expectation (GLE) Strands. The Show-Me Content Standards/GLE Strands are grouped by content area. The overarching guide to the Communication Arts Content Standards states: "In Communication Arts, students in Missouri public schools will acquire a solid foundation that includes knowledge of and proficiency in" speaking and writing Standard English, reading comprehension, formal and informal writing, evaluation and interpretation, and a broad understanding of language and culture (CTB/McGraw-Hill, 2011, p. 2).

Speaking and writing Standard English testing includes grammar, usage, punctuation, spelling, and capitalization. Reading comprehension testing includes fiction, poetry, and drama, as well as nonfiction works and materials such as biographies, newspapers, and technical manuals. Formal writing tested includes reports, narratives and essays; whereas, informal writing includes outlines and notes. Comprehending and evaluating the content and artistic aspects of oral and visual presentations such as storytelling, debates, lectures, and multi-media productions are tested. The understanding of language and culture is tested through identifying and evaluating relationships between the two (CTB/McGraw-Hill, 2011).

MAP Mathematics. The *Missouri Assessment Program Grade-Level Assessments Guide to Interpreting Results* (CTB/McGraw-Hill, 2011) displays the alignment of MAP items with Show-Me Content Standards/GLE Strands. The Show-Me Content Standards/GLE Strands are grouped by content area. The guide for the Mathematics Standard states: "In Mathematics, students in Missouri public schools will acquire a solid foundation that includes knowledge of number and operations, algebraic relationships, geometric and spatial relationships, measurement, and data and probability" (CTB/McGraw-Hill, 2011, p. 2).

Number and operations testing includes skills such as addition, subtraction, multiplication, and division; estimation and computing techniques; number representations, systems, and relationships; and use of these operations and concepts in the workplace and other situations. Algebraic relationships testing includes algebraic concepts including patterns, relations, and functions; represent and analyze mathematical structures using algebraic symbols; understand quantitative relationships; and analyze

change in various contexts. Geometric and spatial relationships includes geometric and spatial sense including analysis of characteristics/properties of geometric shapes; arguments about geometric relationships; coordinate geometry; symmetry and transformations; and visualization, spatial reasoning, and geometric modeling. Measurement tests the measurable attributes of objects and the units, systems, and processes of measurement; and use of appropriate techniques, tools, and formulas to determine measurements. Data and probability tested data collection and statistical reasoning; formulating questions to be addressed with data analysis and statistics; develop and evaluate inferences based on data; and understand and apply probability concepts (CTB/McGraw-Hill, 2010).

Measurement. MAP is comprised of varying types of items: constructed-response, selected-response, and performance events. Each assessment requires 3 to 5 hours of test administration time. Students are pushed to varying levels of difficulty from selecting multiple-choice answers to applying knowledge and understanding of real-life situations (CTB/McGraw-Hill, 2011). MAP items included in testing were created by Missouri State Assessment authors. The test items were chosen from the *TerraNova* Survey from CTB/McGraw-Hill publishing company. *Terra Nova* Survey is an abbreviated version of the Complete Battery; it provides a general measure of achievement in a minimum amount of testing time. Norm-referenced achievement scores are generated to measure students' academic levels in the different curriculum areas (CTB/McGraw-Hill, 2010).

Scale scores are derived from the correct answers provided by the test takers, and then reported in one of four achievement levels: *Below Basic*, *Basic*, *Proficient*, or

Advanced. Students are expected to show growth by meeting proficiency targets yearly, and those targets gradually increase from year to year. The Missouri school system groups students according to this achievement level as it related to each score range.

MAP test scoring procedures vary according to the type of problem being assessed. Multiple-choice assessments are scored by machines (CTB/McGraw-Hill, 2011). According to Stiggins et al. (2006), there must be a clear articulation of appropriate evaluation criteria when judging the quality of student responses on extended written response questions. CTB/McGraw-Hill (2012) indicated clear procedures to ensure this process takes place.

> Procedures for scoring and, if relevant, scoring criteria should be presented by the test developer in sufficient detail and clarity to maximize the accuracy of scoring. Instructions for using rating scores or for deriving scores obtained by coding, scaling, or classifying constructed responses should be clear. This is especially critical if tests can be scored locally. (p. 57)

A rigorous screening and interviewing process for hand scorers takes place first. Once selected, the scorers attend a training meeting where rubrics and previously field-tested Missouri operational test items are introduced and scored (CTB/McGraw-Hill, 2010).

Validity and reliability. The validity of an assessment is the extent to which the "instrument measures what it purports to measure" (Lunenburg & Irby, 2008, p. 181). The reliability of an assessment is the extent to which scores from the assessment will remain the same between two administrations within a short period; it is the "degree to which an instrument consistently measures whatever it is measuring" (Lunenburg & Irby, 2008, p. 182). Missouri's DESE, in connection with CTB/McGraw-Hill, deemed the

MAP test scores as valid and reliable. This was based on the development of MAP and the content knowledge proving it valid for all taking the test. Irrelevant skills were removed reducing the possibility of bias.

According to CTB/McGraw-Hill (2012), the MAP test items, as well as the overall test, are functioning appropriately. Evidence of validity is approximately .79, which is indicative of MAP test scores accurately measuring the appropriate content. Scoring procedures for MAP assessments are important to ensure confidentiality, reliability, and validity of scores. Missouri put into place scoring practices adhering to the *Standards for Educational and Psychological Testing* set by the American Educational Research Association (AERA), the American Psychological Association (APA), and the National Council on Measurement in Education (NCME) (1999).

> Ultimately, the validity of an intended interpretation of test scores relies on all the available evidence relevant to the technical quality of a testing system. This includes evidence of careful test construction; adequate score reliability; appropriate test administration and scoring; accurate score scaling, equating, and standard setting; and careful attention to fairness for all examinees.
>
> (CTB/McGraw-Hill, 2012, p. 10)

In accordance with the AERA, APA, and NMCE (1999), and in developing and maintaining tests of the highest quality, the reliability of each MAP test was evaluated in a variety of ways: reliability of raw scores, overall standard error of measurement, IRT-based conditional standard error of measurement, and decision consistency of achievement-level classifications (CTB/McGraw-Hill, 2012). The reliability of raw scores on the MAP tests was evaluated using Cronbach's coefficient alpha, which is a

lower-bound estimate of test reliability. The reliability coefficient is a ratio of the variance of true test scores to the variance of the total observed scores, with the values ranging from 0 to 1. The closer the value of the reliability coefficient is to 1, the more consistent the scores; 1 refers to a perfectly consistent test. Reliability coefficients that are equal to or greater than .80 are considered acceptable for tests of moderate length (CTB/McGraw-Hill, 2012). The reliability coefficients for the MAP in communication arts were computed using the census data. All reliability statistics were .90 or greater for all tests, indicating acceptable reliability (CTB/McGraw-Hill, 2012).

Data Collection Procedures

Before the data collection process started for this study, a written request was submitted for permission to conduct research in District R. The research request was reviewed and permissions granted for the data collection procedure for the study (see Appendix A). A request was made that not only all students remain anonymous, but also the buildings and district. A proposal for research was made to the Baker University Institutional Review Board on March 24, 2014 for permission to conduct this study (see Appendix B). Approval was granted on April 3, 2014 (see Appendix C). Data collection procedures began upon approval.

Data used in this study were collected utilizing several sources. District R Assistant Director of Technology-Information Systems obtained the needed data from the district databases. It was collected based on student identification numbers by elementary school. The school district removed the participants' names from the data sets of the study to protect their identities. Student discipline data were retrieved from the District R PowerSchool database system and SWIS data reports. Attendance was

retrieved from the District R PowerSchool and SISFIN databases. Academic scores were retrieved from AIMSweb and MAP test scores. Numerical and coded data of the R-CBM, M-COMP, and the MAP assessments were collected. Participants' names were removed from the data sets to protect their identities.

Yearly, Missouri DESE opens enrollment for districts to enter their students for the MAP assessment. The Test Coordinator Packages arrive in Missouri school districts approximately one month before testing with the materials for the assessment arriving within approximately two weeks of testing. School District R administered the tests during the state's testing window. Districts then contact the assessment company, CTB/McGraw Hill, to pick up assessments. After the assessment collection, scoring takes place at the state level. Then the released data is delivered back to the participating districts when the analysis is completed. The MAP assessment for communication arts and mathematics were administered to 3rd through 5th graders. The scores were obtained and utilized in this study.

There are three assessment windows within the standardized R-CBM and M-COMP assessments (September, January, and May). Teachers scheduled the assessments within their class day. They were then scored during plan time, and the scores were entered into the Pearson PsychCorp AIMSweb computer system. Grades 1 and 2 were administered both the R-CBM and M-COMP assessments during all three assessment windows. For the purposes of this study, the May assessment window scores were obtained and utilized.

The PowerSchool database system was used to document attendance and discipline issues before implementation of SWPBS. It was one of the database systems

used by school districts in Missouri to report this information to DESE. All teachers used a school-wide discipline form to submit discipline issues that occurred during the school year. Administrators were responsible for recording discipline in PowerSchool. All teachers report attendance via email to the secretary each morning within the first 15 minutes of school. Secretaries were responsible for recording student absences daily into PowerSchool. All discipline and attendance information for the elementary buildings was downloaded from annual reports.

The School Information System (SIS) is a K-12 educational-management software. Included within the system is Student Data Management that aggregates information from various school sites throughout a district to generate customized reports. The management program provides access to specific student data rapidly by monitoring trends in conduct, student mobility, and test scores. With the ability to segment and assess profile records of students' activities, honors, awards, and disciplinary actions, the system monitors discipline referrals. Test scores and assessment tracking can be imported directly into the database from any of the standardized testing programs to track test dates and results. Classroom Network is also included with the system and facilitates classroom attendance. School Information Systems, Inc. operates as a subsidiary of Tyler Technologies, Inc. (2008).

School-Wide Information System (SWIS) reports were utilized to gain further information about the behavioral progress of students. SWIS is a web-based information system used to improve behavior support in schools (McKevitt & Braaksma, 2008). SWIS provided staff with accurate, timely, and practical information for making decisions about discipline. Behavior interventionists collected on-going information

about discipline events from staff, and entered this information through protected, web-based software. According to McKevitt and Braaksma (2008), SWIS provides summaries of this information for use in the design of effective behavior support for individual students, groups of students, or the whole student body. Data from District R were combined into elementary schools by individual student identification numbers, entered into Excel Spreadsheets, and uploaded into the IBM® SPSS® Statistics Faculty Pack 22 for Windows for data analyses.

Data Analysis and Hypothesis Testing

To address the research questions in this study, hypotheses were generated. According to Creswell (2014), "the inferential questions or hypotheses relate variables or compare groups in terms of variables so that inferences can be drawn from the sample to a population" (p. 152). Research hypotheses were tested using varying types of statistical analyses. Based on the objectives of the study, the hypotheses were proposed and tested at the .05 level of significance.

RQ1. To what extent was there a change in behavior referrals of 1st through 5th grade students after the implementation of SWPBS?

H1. There was a change in behavior referrals of 1st through 5th grade students after the implementation of SWPBS.

RQ2. To what extent was the change in behavior referrals of 1st through 5th grade students after the implementation of SWPBS affected by any of the following student variables: gender, grade level, race, special education status, or SES?

H2. The change in behavior referrals of 1st through 5th grade students after the implementation of SWPBS was affected by gender.

H3. The change in behavior referrals of 1st through 5th grade students after the implementation of SWPBS was affected by grade level.

H4. The change in behavior referrals of 1st through 5th grade students after the implementation of SWPBS was affected by race.

H5. The change in behavior referrals of 1st through 5th grade students after the implementation of SWPBS was affected by special education status.

H6. The change in behavior referrals of 1st through 5th grade students after the implementation of SWPBS was affected by SES.

RQ3. To what extent was there a change in attendance of 1st through 5th grade students after the implementation of SWPBS?

H7. There was a change in attendance of 1st through 5th grade students after the implementation of SWPBS.

RQ4. To what extent was the change in attendance of 1st through 5th grade students after the implementation of SWPBS affected by any of the following student variables: gender, grade level, race, special education status, or SES?

H8. The change in attendance of 1st through 5th grade students after the implementation of SWPBS was affected by gender.

H9. The change in attendance of 1st through 5th grade students after the implementation of SWPBS was affected by grade level.

H10. The change in attendance of 1st through 5th grade students after the implementation of SWPBS was affected by race.

H11. The change in attendance of 1st through 5th grade students after the implementation of SWPBS was affected by special education status.

H12. The change in attendance of 1st through 5th grade students after the implementation of SWPBS was affected by SES.

For research questions 1 through 4, a MANOVA was conducted to determine the extent of any main effects of the independent variables of the implementation of SWPBS (hypotheses 1 and 7), gender (hypotheses 2 and 8), grade level (hypotheses 3 and 9), race (hypotheses 4 and 10), special education status (hypotheses 5 and 11), and SES (hypotheses 6 and 12) on the dependent variables of behavior referrals and attendance among 1st, 2nd, 3rd, 4th, and 5th grade students. Additionally, these analyses were conducted to determine the extent of any interactions between any combination of the independent variables of the implementation of SWPBS, gender, grade level, race, special education status, and SES on the dependent variables of behavior referrals and attendance. The Tukey Honestly Significance Difference (HSD) procedure was chosen as the follow-up test to be conducted if any statistically significant main effects or interactions occurred in the analyses. To control for Type I error, this procedure was used to evaluate any pairwise differences among the means of the independent variables.

RQ5. To what extent was there a change in academic achievement of 1st and 2nd grade students, as measured by the R-CBM, after the implementation of SWPBS?

H13. There was a change in academic achievement of 1st and 2nd grade students, as measured by the R-CBM, after the implementation of SWPBS.

RQ6. To what extent was the change in academic achievement of 1st and 2nd grade students, as measured by the R-CBM, after the implementation of SWPBS affected by any of the following student variables: gender, grade level, race, special education status, or SES?

H14. The change in academic achievement of 1st and 2nd grade students, as measured by R-CBM, after the implementation of SWPBS was affected by gender.

H15. The change in academic achievement of 1st and 2nd grade students, as measured by R-CBM, after the implementation of SWPBS was affected by grade level.

H16. The change in academic achievement of 1st and 2nd grade students, as measured by R-CBM, after the implementation of SWPBS was affected by race.

H17. The change in academic achievement of 1st and 2nd grade students, as measured by R-CBM, after the implementation of SWPBS was affected by special education status.

H18. The change in academic achievement of 1st and 2nd grade students, as measured by R-CBM, after the implementation of SWPBS was affected by SES.

RQ7. To what extent was there a change in academic achievement of 1st and 2nd grade students, as measured by the M-COMP, after the implementation of SWPBS?

H19. There was a change in academic achievement of 1st and 2nd grade students, as measured by the M-COMP, after the implementation of SWPBS.

RQ8. To what extent was the change in academic achievement of 1st and 2nd grade students, as measured by the M-COMP, after the implementation of SWPBS affected by any of the following student variables: gender, grade level, race, special education status, or SES?

H20. The change in academic achievement of 1st and 2nd grade students, as measured by the M-COMP, after the implementation of SWPBS was affected by gender.

H21. The change in academic achievement of 1st and 2nd grade students, as measured by the M-COMP, after the implementation of SWPBS was affected by grade level.

H22. The change in academic achievement of 1st and 2nd grade students, as measured by the M-COMP, after the implementation of SWPBS was affected by race.

H23. The change in academic achievement of 1st and 2nd grade students, as measured by the M-COMP, after the implementation of SWPBS was affected by special education status.

H24. The change in academic achievement of 1st and 2nd grade students, as measured by the M-COMP, after the implementation of SWPBS was affected by SES.

For research questions 5 through 8, a MANOVA was conducted to determine the extent of any main effects of the independent variables of the implementation of SWPBS (hypotheses 13 and 19), gender (hypotheses 14 and 20), grade level (hypotheses 15 and 21), race (hypotheses 16 and 22), special education status (hypotheses 17 and 23), and SES (hypotheses 18 and 24) on the dependent variables of student achievement, as measured by R-CBM and M-COMP among 1st and 2nd grade students. Additionally, these analyses were conducted to determine the extent of any interactions between any combination of the independent variables of the implementation of SWPBS, gender, grade level, race, special education status, and SES on the dependent variables of academic achievement, as measured by R-CBM and M-COMP. The Tukey HSD procedure was chosen as the follow-up test to be conducted if any statistically significant main effects or interactions occurred in the analyses. To control for Type I error, this

procedure was used to evaluate any pairwise differences among the means of the independent variables.

RQ9. To what extent was there a change in academic achievement of 3rd through 5th grade students, as measured by the MAP Communication Arts assessment, after the implementation of SWPBS?

H25. There was a change in academic achievement of 3rd through 5th grade students, as measured by the MAP Communication Arts assessment, after the implementation of SWPBS.

RQ10. To what extent was the change in academic achievement of 3rd through 5th grade students, as measured by the MAP Communication Arts assessment, after the implementation of SWPBS affected by any of the following student variables: gender, grade level, race, special education status, or SES?

H26. The change in academic achievement of 3rd through 5th grade students, as measured by the MAP Communication Arts assessment, after the implementation of SWPBS was affected by gender.

H27. The change in academic achievement of 3rd through 5th grade students, as measured by the MAP Communication Arts assessment, after the implementation of SWPBS was affected by grade level.

H28. The change in academic achievement of 3rd through 5th grade students, as measured by the MAP Communication Arts assessment, after the implementation of SWPBS was affected by race.

H29. The change in academic achievement of 3rd through 5th grade students, as measured by the MAP Communication Arts assessment, after the implementation of SWPBS was affected by special education status.

H30. The change in academic achievement of 3rd through 5th grade students, as measured by the MAP Communication Arts assessment, after the implementation of SWPBS was affected by SES.

RQ11. To what extent was there a change in academic achievement of 3rd through 5th grade students, as measured by the MAP Mathematics assessment, after the implementation of SWPBS?

H31. There was a change in academic achievement of 3rd through 5th grade students, as measured by the MAP Mathematics assessment, after the implementation of SWPBS.

RQ12. To what extent was the change in academic achievement of 3rd through 5th grade students, as measured by the MAP Mathematics assessment, after the implementation of SWPBS affected by any of the following student variables: gender, grade level, race, special education status, or SES?

H32. The change in academic achievement of 3rd through 5th grade students, as measured by the MAP Mathematics assessment, after the implementation of SWPBS was affected by gender.

H33. The change in academic achievement of 3rd through 5th grade students, as measured by the MAP Mathematics assessment, after the implementation of SWPBS was affected by grade level.

H34. The change in academic achievement of 3rd through 5th grade students, as measured by the MAP Mathematics assessment, after the implementation of SWPBS was affected by race.

H35. The change in academic achievement of 3rd through 5th grade students, as measured by the MAP Mathematics assessment, after the implementation of SWPBS was affected by special education status.

H36. The change in academic achievement of 3rd through 5th grade students, as measured by the MAP Mathematics assessment, after the implementation of SWPBS was affected by SES.

For research questions 9 through 12, a MANOVA was conducted to determine the extent of any main effects of the independent variables of the implementation of SWPBS (hypotheses 25 and 31), gender (hypotheses 26 and 32), grade level (hypotheses 27 and 33), race (hypotheses 28 and 34), special education status (hypotheses 29 and 35), and SES (hypotheses 30 and 36) on the dependent variables of student achievement as measured by MAP Communication Arts and Mathematics assessments among 3rd, 4th, and 5th grade students. Additionally, these analyses were conducted to determine the extent of any interactions between any combination of the independent variables of the implementation of SWPBS, gender, grade level, race, special education status, and SES on the dependent variables of academic achievement as measured by MAP Communication Arts and Mathematics assessments. The Tukey HSD procedure was chosen as the follow-up test to be conducted if any statistically significant main effects or interactions occurred in the analyses. To control for Type I error, this procedure was used to evaluate any pairwise differences among the means of the independent variables.

Limitations

Limitations of a study are not "under the researcher's control, yet may affect interpretation of findings or generalizability of results" (Lunenburg & Irby, 2008, p. 133). The following are potential limitations of this study:

1. Teachers may not have completed the ODR forms dealing with student behavior. Teacher tolerance to certain behaviors could have caused discrepancies in data.
2. Teacher bias of students was a concern that could have affected results of this study. The bias towards some students may have caused them to make more ODR referrals.
3. Administrators' perceptions and decision-making could have affected discipline measures. Each administrator could have perceived the severity of an issue very differently, which could have affected the determination of the consequence for the issue.
4. Teachers acted as test examiners within their classrooms. Although students took the same tests, discrepancies in the testing environments could have affected the results of this study.
5. Teachers and secretaries were responsible for entering attendance daily. Inaccuracies could have caused discrepancies in data.
6. Teachers were fully trained in the processes and procedures of SWPBS; however, not all teachers may have followed SWPBS with fidelity.

Summary

Included in chapter three was the methodology used for collecting and analyzing data. The quantitative research design conducted was used to establish the effects of SWPBS on not only discipline referral rates, but also academic achievement and attendance after implementation. The population and sample were introduced thoroughly for this study. Sampling procedures were utilized, and therefore, the measurement, validity, and reliability of each instrument were described. Data were collected, research was presented, and hypotheses were formulated and outlined with corresponding data analysis. Limitations of the study were noted. The results of the hypothesis testing are outlined in chapter four.

Chapter Four

Results

The purpose of this study was to determine whether there were differences in behavior referrals and attendance after the implementation of SWPBS, and to assess whether the differences were affected by the student variables of gender, grade level, race, special education status, and SES. Additionally, the study was conducted to determine whether there were differences in 1st and 2nd grade students' academic achievement, as measured by the R-CBM and M-COMP, after the implementation of SWPBS. Moreover, it was important to assess whether the difference in the students' academic achievement was affected by any of the student variables of gender, grade level, race, special education status, or SES. Furthermore, this study was conducted to determine whether there were differences in 3rd through 5th grade students' academic achievement, as measured by the MAP Communication Arts and Mathematics assessments, after the implementation of SWPBS. Accordingly, this study was conducted to determine the affect by the student variables of gender, grade level, race, special education status, or SES. This chapter includes the results of the hypothesis testing.

Hypothesis Testing

MANOVAs were used to test for the difference in two or more vectors of means in the hypotheses. MANOVA is useful in situations where at least some of the independent variables are manipulated. MANOVAs can be used to measure several dependent variables in a single experiment and can protect against Type I errors that might occur if multiple ANOVAs were conducted independently.

RQ1. To what extent was there a change in behavior referrals of 1st through 5th grade students after the implementation of SWPBS?

H1. There was a change in behavior referrals of 1st through 5th grade students after the implementation of SWPBS.

The results of the analysis indicated there was not a statistically significant main effect of the implementation of SWPBS on behavior referrals, $F = 0.743$, $df = 1, 10{,}200$, $p = .389$. See Table 10 for the means and standard deviations for this analysis. There was not a significant difference between the students' average number of behavior referrals before or after the implementation process. This does not support H1.

Table 10

Mean Behavior Referrals

Implementation	*M*	*SD*	*n*
Before implementation of SWPBS	.18	.741	3,458
After implementation of SWPBS	.13	.588	7,263
Total	.14	.642	10,721

RQ2. To what extent was the change in behavior referrals of 1st through 5th grade students after the implementation of SWPBS affected by any of the following student variables: gender, grade level, race, special education status, or SES?

H2. The change in behavior referrals of 1st through 5th grade students after the implementation of SWPBS was affected by gender.

The results of the analysis indicated there was not a statistically significant interaction effect of the implementation of SWPBS and gender on behavior referrals, $F = 0.540$, $df = 1, 10{,}200$, $p = .463$. See Table 11 for the means and standard deviations for

this analysis. For both males and females, there was a slight drop in referrals; however, the difference between males and females overall, after implementation, was not noted as a significant difference. This does not support H2.

Table 11

Mean Behavior Referrals by Gender

Implementation	*M*	*SD*	*n*
Before implementation of SWPBS			
Males	.26	.892	1,815
Females	.09	.511	1,643
Total	.18	.741	3,458
After implementation of SWPBS			
Males	.20	.741	3,713
Females	.05	.351	3,550
Total	.13	.588	7,263
Total			
Males	.22	.794	5,528
Females	.06	.409	5,193
Total	.14	.642	10,721

The results of the analysis indicated there was not a statistically significant main effect of gender on behavior referrals, $F = 2.045$, $df = 1, 10{,}200$, $p = .153$. See the Total column of Table 11 for the means and standard deviations for this analysis. There was not a significant difference in behaviors referrals between males and females.

***H3*.** The change in behavior referrals of 1st through 5th grade students after the implementation of SWPBS was affected by grade level.

The results of the analysis indicated there was not a statistically significant interaction effect of the implementation of SWPBS and grade level on behavior referrals, $F = 0.947$, $df = 4, 10{,}200$, $p = .435$. See Table 12 for the means and standard deviations for this analysis. Although there was a slight decrease in behaviors within each grade level from before to after implementation, there was not a significant difference in these changes when disaggregated by grade level. This does not support H3.

Table 12

Mean Behavior Referrals by Grade Level

Implementation	*M*	*SD*	*n*
Before implementation of SWPBS			
Grade 1	.11	.725	678
Grade 2	.15	.674	665
Grade 3	.17	.741	715
Grade 4	.14	.626	703
Grade 5	.33	.891	697
Total	.18	.741	3,458
After implementation of SWPBS			
Grade 1	.10	.579	1,482
Grade 2	.10	.512	1,498
Grade 3	.12	.688	1,416
Grade 4	.15	.581	1,421
Grade 5	.16	.570	1,446
Total	.13	.588	7,263
Total			
Grade 1	.10	.629	2,160
Grade 2	.11	.567	2,163
Grade 3	.14	.706	2,131
Grade 4	.15	.596	2,124
Grade 5	.22	.695	2,143
Total	.14	.642	10,721

The results of the analysis indicated there was not a statistically significant main effect of grade level on behavior referrals, $F = 0.798$, $df = 4, 10{,}200$, $p = .527$. See the Total column of Table 12 for the means and standard deviations for this analysis. No follow-up post hoc was warranted. Although there were some differences in the average number of behavior referrals across grade levels, these differences were not statistically significant.

H4. The change in behavior referrals of 1st through 5th grade students after the implementation of SWPBS was affected by race.

The results of the analysis indicated there was not a statistically significant interaction effect of the implementation of SWPBS and race on behavior referrals, $F = 0.865$, $df = 6, 10{,}200$, $p = .520$. See Table 13 for the means and standard deviations for this analysis. Overall, there was not a significant difference in behavior referrals among races in grades 1 through 5 after SWPBS was implemented. Although the number of behavior referrals for all groups decreased after the implementation of SWPBS, with the exception of the Asian and Pacific Islander groups, which actually had an increase in behavior referrals, these changes did not result in an interaction effect. This does not support H4.

Table 13

Mean Behavior Referrals by Race

Implementation	*M*	*SD*	*n*
Before implementation of SWPBS			
Asian	.00	.000	43
Black	.25	.824	1,490
Hispanic	.11	.755	370
Indian	.14	.535	14
Mixed	.14	.547	170
Pacific Islander	.08	.400	25
White	.13	.669	1,346
Total	.18	.741	3,458
After implementation of SWPBS			
Asian	.03	.226	97
Black	.17	.637	3,445
Hispanic	.09	.700	800
Indian	.04	.209	23
Mixed	.13	.552	255
Pacific Islander	.38	.824	24
White	.08	.482	2,619
Total	.13	.588	7,263
Total			
Asian	.02	.188	140
Black	.20	.699	4,935
Hispanic	.09	.718	1,170
Indian	.08	.363	37
Mixed	.14	.550	425
Pacific Islander	.22	.654	49
White	.10	.553	3,965
Total	.14	.642	10,721

However, the results of the analysis indicated a marginally statistically significant main effect of race on behavior referrals, $F = 2.000$, $df = 6, 10{,}200$, $p = .062$. See the Total column of Table 13 for the means and standard deviations for this analysis. No follow-up post hoc was warranted. There were differences in the number of behavior referrals among groups.

H5. The change in behavior referrals of 1st through 5th grade students after the implementation of SWPBS was affected by special education status.

The results of the analysis indicated a statistically significant interaction effect of the implementation of SWPBS and special education status on behavior referrals, $F = 4.533$, $df = 1, 10{,}200$, $p < .05$. See Table 14 for the means and standard deviations for this analysis. Students with no special education status displayed a decrease in behavior referrals, whereas, students having a special education status actually demonstrated an increase in referrals after SWPBS was implemented. Students with a special education status, on average, had a higher number of behavior referrals both before and after implementation. This supports H5.

Table 14

Mean Behavior Referrals by Special Education Status

Implementation	*M*	*SD*	*n*
Before implementation of SWPBS			
No Special Education Status	.17	.723	2,916
Special Education Status	.25	.827	542
Total	.18	.741	3,458
After implementation of SWPBS			
No Special Education Status	.11	.508	6,202
Special Education Status	.22	.921	1,061
Total	.13	.588	7,263
Total			
No Special Education Status	.13	.586	9,118
Special Education Status	.23	.890	1,603
Total	.14	.642	10,721

H6. The change in behavior referrals of 1st through 5th grade students after the implementation of SWPBS was affected by SES.

The results of the analysis indicated there was not a statistically significant interaction effect of the implementation of SWPBS and SES on behavior referrals, F = 0.590, df = 2, 10,200, p = .555. See Table 15 for the means and standard deviations for this analysis. All groups' average behavior referrals decreased after the implementation of SWPBS. This does not support H6.

Table 15

Mean Behavior Referrals by SES

Implementation	*M*	*SD*	*n*
Before implementation of SWPBS			
Free	.25	.866	2,050
Reduced	.11	.530	292
Full Pay	.07	.478	1,116
Total	.18	.741	3,458
After implementation of SWPBS			
Free	.16	.649	4,413
Reduced	.10	.471	611
Full Pay	.06	.474	2,239
Total	.13	.588	7,263
Total			
Free	.19	.726	6,463
Reduced	.11	.490	903
Full Pay	.07	.475	3,355
Total	.14	.642	10,721

The results of the analysis indicated there was not a statistically significant main effect of SES on behavior referrals, $F = 1.314$, $df = 2, 10{,}200$, $p = .269$. See Total column of Table 15 for the means and standard deviations for this analysis. No follow-up post hoc was warranted. There was not a statistically significant difference in behavior referrals across SES groups.

***Other interactions for RQ2*.** The results of the analysis indicated a statistically significant interaction effect of the implementation of SWPBS, gender, special education status, and SES on behavior referrals, $F = 3.212$, $df = 2, 10{,}200$, $p < .05$. Moreover, a statistically significant interaction effect was noted with the implementation of SWPBS, grade level, race, and special education status on behavior referrals, $F = 2.217$, $df = 10, 10{,}200$, $p < .05$. Finally, the analysis indicated a marginally statistically significant interaction effect of gender, race, special education status, and SES on behavior referrals, $F = 2.108$, $df = 4, 10{,}200$, $p = .077$. See Appendix D for the means and standard deviations for these analyses.

RQ3. To what extent was there a change in attendance of 1st through 5th grade students after the implementation of SWPBS?

H7. There was a change in attendance of 1st through 5th grade students after the implementation of SWPBS.

The results of the analysis indicated there was not a statistically significant main effect of the implementation of SWPBS on attendance, $F = 1.271$, $df = 1, 10{,}200$, $p = .260$. See Table 16 for the means and standard deviations for this analysis. There was not a significant difference in attendance after the implementation of SWPBS, although a slight decrease occurred. This does not support H7.

Table 16

Mean Percentages of Attendance

Implementation	*M*	*SD*	*n*
Before implementation of SWPBS	95.28	4.625	3,458
After implementation of SWPBS	95.04	5.080	7,263
Total	95.12	4.939	10,721

RQ4. To what extent was the change in attendance of 1st through 5th grade students after the implementation of SWPBS affected by any of the following student variables: gender, grade level, race, special education status, or SES?

H8. The change in attendance of 1st through 5th grade students after the implementation of SWPBS was affected by gender.

The results of the analysis indicated there was not a statistically significant interaction effect of the implementation of SWPBS and gender on attendance, $F = 0.212$, $df = 1, 10{,}200$, $p = .645$. See Table 17 for the means and standard deviations for this analysis. There was a slight decrease in attendance percentage for both males and females after the implementation of SWPBS. However, there was no significant interaction present in the data. This does not support H8.

Table 17

Mean Percentages of Attendance by Gender

Implementation	*M*	*SD*	*n*
Before implementation of SWPBS			
Males	95.11	4.886	1,815
Females	95.47	4.313	1,643
Total	95.28	4.625	3,458
After implementation of SWPBS			
Males	94.86	5.405	3,713
Females	95.22	4.711	3,550
Total	95.04	5.080	7,263
Total			
Males	94.94	5.241	5,528
Females	95.30	4.589	5,193
Total	95.12	4.939	10,721

The results of the analysis indicated there was not a statistically significant main effect of gender on attendance, $F = 1.181$, $df = 1, 10{,}200$, $p = .277$. See the Total column of Table 17 for the means and standard deviations for this analysis. The results show there was not a significant difference in percentage of attendance between males and females.

H9. The change in attendance of 1st through 5th grade students after the implementation of SWPBS was affected by grade level.

The results of the analysis indicated there was not a statistically significant interaction effect of the implementation of SWPBS and grade level on attendance, F = 0.672, df = 4, 10,200, p = .611. See Table 18 for the means and standard deviations for this analysis. There was not a significant difference between grade levels in attendance after implementation of SWPBS. Each grade level had a slight drop, but the changes were not significant. This does not support H9.

Table 18

Mean Percentages of Attendance by Grade Level

Implementation	*M*	*SD*	*n*
Before implementation of SWPBS			
Grade 1	95.10	4.563	678
Grade 2	95.02	4.682	665
Grade 3	95.45	4.606	715
Grade 4	95.43	4.551	703
Grade 5	95.39	4.719	697
Total	95.28	4.625	3,458
After implementation of SWPBS			
Grade 1	94.51	5.683	1,482
Grade 2	94.93	5.023	1,498
Grade 3	95.07	5.564	1,416
Grade 4	95.36	4.508	1,421
Grade 5	95.33	4.437	1,446
Total	95.04	5.080	7,263
Total			
Grade 1	94.70	5.362	2,160
Grade 2	94.95	4.920	2,163
Grade 3	95.20	5.264	2,131
Grade 4	95.39	4.521	2,124
Grade 5	95.35	4.530	2,143
Total	95.12	4.939	10,721

The results of the analysis indicated there was not a statistically significant main effect of grade level on attendance, $F = 1.056$, $df = 4, 10{,}200$, $p = .377$. See the Total column of Table 18 for the means and standard deviations for this analysis. Although there were grade levels with a slightly higher mean percentage, these differences were not statistically significant.

H10. The change in attendance of 1st through 5th grade students after the implementation of SWPBS was affected by race.

The results of the analysis indicated there was not a statistically significant interaction effect of the implementation of SWPBS and race on attendance, $F = 0.966$, $df = 6, 10{,}200$, $p = .446$. See Table 19 for the means and standard deviations for this analysis. There was not a significant difference in attendance based on race after the implementation of SWPBS. All races with the exception of Mixed had a slight decrease in the mean percentage. This does not support H10.

Table 19

Mean Percentages of Attendance by Race (Grades 1-5)

Implementation	*M*	*SD*	*n*
Before implementation of SWPBS			
Asian	96.94	2.436	43
Black	95.36	4.721	1,490
Hispanic	95.46	4.259	370
Indian	95.51	4.318	14
Mixed	94.58	5.470	170
Pacific Islander	93.19	5.550	25
White	95.22	4.519	1,346
Total	95.28	4.625	3,458
After implementation of SWPBS			
Asian	96.71	2.927	97
Black	95.12	5.220	3,445
Hispanic	94.95	5.282	800
Indian	93.40	3.497	23
Mixed	95.02	4.780	255
Pacific Islander	92.64	4.784	24
White	94.94	4.919	2,619
Total	95.04	5.080	7,263
Total			
Asian	96.78	2.779	140
Black	95.19	5.075	4,935
Hispanic	95.11	4.985	1,170
Indian	94.20	3.909	37
Mixed	94.84	5.066	425
Pacific Islander	92.93	5.143	49
White	95.03	4.788	3,965
Total	95.12	4.939	10,721

The results of the analysis indicated there was not a statistically significant main effect of race on attendance, $F = 1.501$, $df = 6, 10{,}200$, $p = .173$. See the Total column of Table 19 for the means and standard deviations for this analysis. There were no differences in attendance among race groups.

H11. The change in attendance of 1st through 5th grade students after the implementation of SWPBS was affected by special education status.

The results of the analysis indicated there was not a statistically significant interaction effect of the implementation of SWPBS and special education status on attendance, $F = 0.309$, $df = 1, 10{,}200$, $p = .579$. See Table 20 for the means and standard deviations for this analysis. There was not a significant difference in attendance between those students who had a special education status and those with no special education status after the implementation of SWPBS. This does not support H11.

Table 20

Mean Percentages of Attendance by Special Education Status

Implementation	*M*	*SD*	*n*
Before implementation of SWPBS			
No Special Education Status	95.41	4.504	2,916
Special Education Status	94.57	5.177	542
Total	95.28	4.625	3,458
After implementation of SWPBS			
No Special Education Status	95.15	4.930	6,202
Special Education Status	94.38	5.842	1,061
Total	95.04	5.080	7,263
Total			
No Special Education Status	95.23	4.799	9,118
Special Education Status	94.46	5.625	1,603
Total	95.12	4.939	10,721

The results of the analysis indicated there was not a statistically significant main effect of special education status on attendance, $F = 1.015$, $df = 1, 10{,}200$, $p = .314$. See the Total column of Table 20 for the means and standard deviations for this analysis. There was not a difference in percentage of attendance between special education status groups.

H12. The change in attendance of 1st through 5th grade students after the implementation of SWPBS was affected by SES.

The results of the analysis indicated there was not a statistically significant interaction effect of the implementation of SWPBS and SES on attendance, $F = 0.795$, $df = 2, 10{,}200$, $p = .452$. See Table 21 for the means and standard deviations for this analysis. There was not a significant difference in attendance among SES groups after the implementation of SWPBS. This does not support H12.

Table 21

Mean Percentages of Attendance by SES

Implementation	*M*	*SD*	*n*
Before implementation of SWPBS			
Free	94.65	5.063	2,050
Reduced	96.31	3.311	292
Full Pay	96.17	3.818	1,116
Total	95.28	4.625	3,458
After implementation of SWPBS			
Free	94.57	4.922	4,413
Reduced	96.34	2.972	611
Full Pay	95.61	5.688	2,239
Total	95.04	5.080	7,263
Total			
Free	94.60	4.966	6,463
Reduced	96.33	3.084	903
Full Pay	95.80	5.148	3,355
Total	95.12	4.939	10,721

However, the results of the analysis indicated a statistically significant main effect of SES on attendance, $F = 4.482$, $df = 2, 10{,}200$, $p < .05$. See the Total column of Table 21 for the means and standard deviations for this analysis. The groups were statistically different: reduced status had the largest increase, followed by full pay; the free lunch status group had the lowest average.

A follow-up post hoc was conducted to determine which pairs of means were different using Tukey's HSD. All pairwise comparisons were statistically significant (see Table 22).

Table 22

Tukey HSD Results for Percentage of Attendance by SES (Grades 1-5)

SES Status	Mean Difference	*p*
Reduced - Free	-1.737	< .001
Reduced - Full Pay	0.535	.010
Full Pay - Free	1.202	< .001

RQ5. To what extent was there a change in academic achievement of 1st and 2nd grade students, as measured by the R-CBM, after the implementation of SWPBS?

H13. There was a change in academic achievement of 1st and 2nd grade students, as measured by the R-CBM, after the implementation of SWPBS.

The results of the analysis indicated there was not a statistically significant main effect of the implementation of SWPBS on academic achievement, as measured by the R-CBM, $F = 0.015$, $df = 1, 3{,}530$, $p = .902$. See Table 23 for the means and standard deviations for this analysis. There was not a significant difference in academic

achievement as measured by R-CBM after the implementation of SWPBS. This does not support H13.

Table 23

Mean Academic Achievement (R-CBM) (Grades 1 and 2)

Implementation	*M*	*SD*	*n*
Before implementation of SWPBS	287.09	241.264	1,175
After implementation of SWPBS	279.04	233.725	2,620
Total	281.53	236.083	3,795

RQ6. To what extent was the change in academic achievement of 1st and 2nd grade students, as measured by the R-CBM, after the implementation of SWPBS affected by any of the following student variables: gender, grade level, race, special education status, or SES?

H14. The change in academic achievement of 1st and 2nd grade students, as measured by R-CBM, after the implementation of SWPBS was affected by gender.

The results of the analysis indicated there was not a statistically significant interaction effect of the implementation of SWPBS and gender on academic achievement, as measured by the R-CBM, $F = 0.759$, $df = 1, 3{,}530$, $p = .384$. See Table 24 for the means and standard deviations for this analysis. There was not a significant difference in academic achievement between males and females in 1st and 2nd grade students after the implementation of SWPBS. This does not support H14.

Table 24

Mean Academic Achievement (R-CBM) by Gender (Grades 1 and 2)

Implementation	*M*	*SD*	*n*
Before implementation of SWPBS			
Males	259.93	234.878	600
Females	315.43	244.760	575
Total	287.09	241.264	1,175
After implementation of SWPBS			
Males	260.44	230.315	1,272
Females	296.60	235.640	1,348
Total	279.04	233.725	2,620
Total			
Males	260.28	231.724	1,872
Females	302.23	238.495	1,923
Total	281.53	236.083	3,795

The results of the analysis indicated there was not a statistically significant main effect of gender on academic achievement, as measured by the R-CBM, $F = 0.009$, $df = 1, 3{,}530$, $p = .925$. See the Total column of Table 24 for the means and standard deviations for this analysis. Although females had a higher average, the difference was not enough to be considered statistically significant.

H15. The change in academic achievement of 1st and 2nd grade students, as measured by R-CBM, after the implementation of SWPBS was affected by grade level.

The results of the analysis indicated there was not a statistically significant interaction effect of the implementation of SWPBS and grade level on academic achievement, as measured by the R-CBM, $F = 0.898$, $df = 1, 3{,}530$, $p = .343$. See Table 25 for the means and standard deviations for this analysis. There was not a significant difference in academic achievement between 1st and 2nd grade students after implementation of SWPBS, although the decrease for 2nd grade was slightly more. This does not support H15.

Table 25

Mean Academic Achievement (R-CBM) by Grade Level

Implementation	*M*	*SD*	*n*
Before implementation of SWPBS			
Grade 1	137.05	157.945	583
Grade 2	434.86	216.756	592
Total	287.09	241.264	1,175
After implementation of SWPBS			
Grade 1	136.39	158.006	1,305
Grade 2	420.61	209.371	1,315
Total	279.04	233.725	2,620
Total			
Grade 1	136.59	157.946	1,888
Grade 2	425.03	211.737	1,907
Total	281.53	236.083	3,795

However, the results of the analysis indicated a statistically significant main effect of grade level on academic achievement, as measured by the R-CBM, $F = 86.537$, $df = 1, 3{,}530$, $p < .001$. See the Total column of Table 25 for the means and standard deviations for this analysis. Overall, students in grade 2 had higher R-CBM scores.

H16. The change in academic achievement of 1st and 2nd grade students, as measured by R-CBM, after the implementation of SWPBS was affected by race.

The results of the analysis indicated there was not a statistically significant interaction effect of the implementation of SWPBS and race on academic achievement, as measured by the R-CBM, $F = 1.318$, $df = 1, 3{,}530$, $p = .245$. See Table 26 for the means and standard deviations for this analysis. Whereas there were slight changes within race groups in academic achievement, there was not a significant difference among race groups after implementation of SWPBS. This does not support H16.

Table 26

Mean Academic Achievement (R-CBM) by Race (Grades 1 and 2)

Implementation	*M*	*SD*	*n*
Before implementation of SWPBS			
Asian	366.88	211.028	16
Black	252.59	230.625	494
Hispanic	301.01	250.271	138
Indian	108.00	136.409	5
Mixed	293.43	249.598	67
Pacific Islander	395.00	207.027	6
White	317.54	245.948	449
Total	287.09	241.264	1,175
After implementation of SWPBS			
Asian	400.71	228.222	35
Black	260.53	227.640	1,250
Hispanic	286.96	238.418	289
Indian	240.00	209.022	6
Mixed	316.09	229.645	92
Pacific Islander	292.78	242.926	9
White	293.20	238.655	939
Total	279.04	233.725	2,620
Total			
Asian	390.10	221.426	51
Black	258.28	228.451	1,744
Hispanic	291.50	242.107	427
Indian	180.00	184.499	11
Mixed	306.54	237.747	159
Pacific Islander	333.67	227.411	15
White	301.07	241.219	1,388
Total	281.53	236.083	3,795

However, the results of the analysis indicated a statistically significant main effect of race on academic achievement, as measured by the R-CBM, $F = 4.699$, $df = 6, 3{,}530$, $p < .001$. See the Total column of Table 26 for the means and standard deviations for this analysis.

A follow-up post hoc was conducted to determine which pairs of means were different using Tukey's HSD. There were statistically significant differences between Asian/Black, Asian/Hispanic, Asian/Indian, Asian/White, Black/Hispanic, Black/Mixed, and Black/White pairs. A statistically significant difference is noted when the mean difference probability is < .05 (see Table 27).

Table 27

Tukey HSD Results Academic Achievement (R-CBM) by Race (Grades 1 and 2)

SES Status	Mean Difference	*p*
Asian - Black	130.93	< .001
Asian - Hispanic	92.36	.007
Asian - Indian	210.10	.006
Asian - Mixed	79.39	.075
Asian - Pacific Islander	56.43	.930
Asian - White	86.82	.009
Black - Indian	79.17	.750
Hispanic - Black	38.57	< .001
Hispanic - Indian	117.73	.297
Mixed - Black	51.54	.008
Mixed - Hispanic	12.97	.986
Mixed - Indian	130.71	.204
Mixed - White	7.43	.999
Pacific Islander - Black	74.50	.658
Pacific Islander - Hispanic	35.93	.987
Pacific Islander - Indian	153.67	.292
Pacific Islander - Mixed	22.96	.999
Pacific Islander -White	30.39	.994
White - Black	44.11	< .001
White - Hispanic	5.54	.998
White - Indian	123.27	.234

H17. The change in academic achievement of 1st and 2nd grade students, as measured by R-CBM, after the implementation of SWPBS was affected by special education status.

The results of the analysis indicated there was not a statistically significant interaction effect of the implementation of SWPBS and special education status on academic achievement, as measured by the R-CBM, $F = 0.077$, $df = 1, 3{,}530$, $p = .782$. See Table 28 for the means and standard deviations for this analysis. There was not a significant difference in academic achievement between students with special education status and those without special education status after the implementation of SWPBS. This does not support H17.

Table 28

Mean Academic Achievement (R-CBM) by Special Education Status (Grades 1 and 2)

Implementation	*M*	*SD*	*n*
Before implementation of SWPBS			
No Special Education Status	300.18	242.207	1,040
Special Education Status	186.30	208.677	135
Total	287.09	241.264	1,175
After implementation of SWPBS			
No Special Education Status	291.02	234.338	2,371
Special Education Status	165.02	194.125	249
Total	279.04	233.725	2,620
Total			
No Special Education Status	293.81	236.766	3,411
Special Education Status	172.50	199.350	384
Total	281.53	236.083	3,795

However, the results of the analysis indicated a statistically significant main effect of special education status on academic achievement, as measured by the R-CBM, $F = 22.274$, $df = 1, 3{,}530$, $p < .001$. See the Total column of Table 28 for the means and standard deviations for this analysis. Those students with no special education status had higher average scores on the R-CBM.

H18. The change in academic achievement of 1st and 2nd grade students, as measured by R-CBM, after the implementation of SWPBS was affected by SES.

The results of the analysis indicated there was not a statistically significant interaction effect of the implementation of SWPBS and SES on academic achievement, as measured by the R-CBM, $F = 0.043$, $df = 2, 3{,}530$, $p = .958$. See Table 29 for the means and standard deviations for this analysis. This does not support H18.

Table 29

Mean Academic Achievement (R-CBM) by SES (Grades 1 and 2)

Implementation	*M*	*SD*	*n*
Before implementation of SWPBS			
Free	246.56	229.106	683
Reduced	314.68	247.101	95
Full Pay	350.23	246.299	397
Total	287.09	241.264	1,175
After implementation of SWPBS			
Free	248.84	225.070	1,616
Reduced	309.94	233.702	238
Full Pay	333.15	240.835	766
Total	279.04	233.725	2,620
Total			
Free	248.16	226.229	2,299
Reduced	311.29	237.236	333
Full Pay	338.98	242.743	1,163
Total	281.53	236.083	3,795

However, the results of the analysis indicated a statistically significant main effect of SES on academic achievement, as measured by the R-CBM, $F = 6.380$, $df = 2, 3{,}530$, $p < .05$. See the Total column of Table 29 for the means and standard deviations for this analysis. A follow-up post hoc was conducted to determine which pairs of means were different using Tukey's HSD. All pairwise comparisons were statistically significant (see Table 30).

Table 30

Tukey HSD Results for Academic Achievement (R-CBM) by SES (Grades 1 and 2)

SES Status	Mean Difference	*p*
Reduced - Free	62.16	< .001
Full Pay - Free	89.49	< .001
Full Pay - Reduced	27.33	.039

Other interactions for RQ6. The results of the analysis indicated a statistically significant interaction effect of race and special education status on academic achievement, as measured by the R-CBM, $F = 3.131$, $df = 4, 3{,}530$, $p < .05$. In addition, there was a statistically significant interaction effect of special education status and SES on academic achievement, as measured by the R-CBM, $F = 4.396$, $df = 2, 3{,}530$, $p < .05$. Moreover, there was a marginally statistically significant interaction effect of the implementation of SWPBS, gender, and SES on academic achievement, as measured by the R-CBM, $F = 2.335$, $df = 2, 3{,}530$, $p = .097$, and a marginally statistically significant interaction effect of the implementation of SWPBS, gender, grade level, and SES on

academic achievement, as measured by the R-CBM, $F = 2.374$, $df = 2, 3{,}530$, $p = .093$ (see Appendix E for the means and standard deviations for these analyses).

RQ7. To what extent was there a change in academic achievement of 1st and 2nd grade students, as measured by the M-COMP, after the implementation of SWPBS?

H19. There was a change in academic achievement of 1st and 2nd grade students, as measured by the M-COMP, after the implementation of SWPBS.

The results of the analysis indicated a statistically significant main effect of the implementation of SWPBS on academic achievement, as measured by the M-COMP, $F = 5.762$, $df = 1, 3{,}530$, $p < .05$. See Table 31 for the means and standard deviations for this analysis. There was a significant difference after the implementation of SWPBS in academic achievement as measured by M-COMP scores. This supports H19.

Table 31

Mean Academic Achievement (M-COMP) (Grades 1 and 2)

Implementation	*M*	*SD*	*n*
Before implementation of SWPBS	38.68	10.260	1,149
After implementation of SWPBS	37.45	10.361	2,588
Total	37.83	10.344	3,737

RQ8. To what extent was the change in academic achievement of 1st and 2nd grade students, as measured by the M-COMP, after the implementation of SWPBS affected by any of the following student variables: gender, grade level, race, special education status, or SES?

H20. The change in academic achievement of 1st and 2nd grade students, as measured by the M-COMP, after the implementation of SWPBS was affected by gender.

The results of the analysis indicated there was not a statistically significant interaction effect of the implementation of SWPBS and gender on academic achievement, as measured by the M-COMP, $F = 0.007$, $df = 1, 3{,}530$, $p = .933$. See Table 32 for the means and standard deviations for this analysis. There was not a significant difference between males and females in academic achievement as measured by M-COMP after the implementation of SWPBS. This does not support H20.

Table 32

Mean Academic Achievement (M-COMP) by Gender (Grades 1 and 2)

Implementation	*M*	*SD*	*n*
Before implementation of SWPBS			
Males	38.45	10.495	586
Females	38.92	10.013	563
Total	38.68	10.260	1,149
After implementation of SWPBS			
Males	36.73	10.879	1,259
Females	38.14	9.799	1,329
Total	37.45	10.361	2,588
Total			
Males	37.27	10.786	1,845
Females	38.37	9.867	1,892
Total	37.83	10.344	3,737

The results of the analysis indicated there was not a statistically significant main effect of gender on academic achievement, as measured by the M-COMP, $F = 0.240$, $df =$

1, 3,530, p = .624. See the Total column of Table 32 for the means and standard deviations for this analysis. Although females had a higher average, there was not a statistical difference with males on academic achievement as measured by M-COMP.

H21. The change in academic achievement of 1st and 2nd grade students, as measured by the M-COMP, after the implementation of SWPBS was affected by grade level.

The results of the analysis indicated there was not a statistically significant interaction effect of the implementation of SWPBS and grade level on academic achievement, as measured by the M-COMP, F = 0.547, df = 1, 3,530, p = .460. See Table 33 for the means and standard deviations for this analysis. There was not a significant difference among grade levels in academic achievement as measured by M-COMP after the implementation of SWPBS. This does not support H21.

Table 33

Mean Academic Achievement (M-COMP) by Grade Level

Implementation	*M*	*SD*	*n*
Before implementation of SWPBS			
Grade 1	37.02	10.362	560
Grade 2	40.25	9.917	589
Total	38.68	10.260	1,149
After implementation of SWPBS			
Grade 1	35.55	10.878	1,278
Grade 2	39.30	9.475	1,310
Total	37.45	10.361	2,588
Total			
Grade 1	36.00	10.742	1,838
Grade 2	39.59	9.622	1,899
Total	37.83	10.344	3,787

However, the results of the analysis indicated a marginally statistically significant main effect of grade level on academic achievement, as measured by the M-COMP, F = 3.815, df = 1, 3,530, p = .051. See the Total column of Table 33 for the means and standard deviations for this analysis. Grade 2 had higher scores than grade 1.

H22. The change in academic achievement of 1st and 2nd grade students, as measured by the M-COMP, after the implementation of SWPBS was affected by race.

The results of the analysis indicated a marginally statistically significant interaction effect of the implementation of SWPBS and race on academic achievement,

as measured by the M-COMP, $F = 2.021$, $df = 6, 3{,}530$, $p = .059$. An interaction occurred because some race groups (Asian and Indian) increased in scores as measured on M-COMP, while other race groups had a decrease in scores after the implementation of SWPBS. See Table 34 for the means and standard deviations for this analysis. No follow-up post hoc was warranted.

Table 34

Mean Academic Achievement (M-COMP) by Race (Grades 1 and 2)

Implementation	*M*	*SD*	*n*
Before implementation of SWPBS			
Asian	43.19	7.884	16
Black	36.42	11.340	484
Hispanic	39.98	7.731	130
Indian	35.20	12.795	5
Mixed	40.34	8.617	65
Pacific Islander	44.17	3.312	6
White	40.32	9.512	443
Total	38.68	10.260	1,149
After implementation of SWPBS			
Asian	43.31	6.681	35
Black	35.76	10.897	1,235
Hispanic	37.97	9.878	286
Indian	38.17	11.583	6
Mixed	38.68	9.413	91
Pacific Islander	34.78	12.940	9
White	39.23	9.525	926
Total	37.45	10.361	2,588
Total			
Asian	43.27	7.000	51
Black	35.94	11.024	1,719
Hispanic	38.59	9.299	416
Indian	36.82	11.617	11
Mixed	39.37	9.098	156
Pacific Islander	38.53	11.057	15
White	39.58	9.531	1,369
Total	37.83	10.344	3,737

H23. The change in academic achievement of 1st and 2nd grade students, as measured by the M-COMP, after the implementation of SWPBS was affected by special education status.

The results of the analysis indicated there was not a statistically significant interaction effect of the implementation of SWPBS and special education status on academic achievement, as measured by the M-COMP, $F = 2.692$, $df = 1, 3{,}530$, $p = .101$. See Table 35 for the means and standard deviations for this analysis. There was not a significant difference between students with special education status and those without special education status in academic achievement as measured by M-COMP after implementation of SWPBS. This does not support H23.

Table 35

Mean Academic Achievement (M-COMP) by Special Education Status (Grades 1 and 2)

Implementation	*M*	*SD*	*n*
Before implementation of SWPBS			
No Special Education Status	39.4	9.434	1,017
Special Education Status	33.15	14.053	132
Total	38.68	10.260	1,149
After implementation of SWPBS			
No Special Education Status	38.19	9.713	2,340
Special Education Status	30.46	13.291	248
Total	37.45	10.361	2,588
Total			
No Special Education Status	38.56	9.644	3,357
Special Education Status	31.39	13.602	380
Total	37.83	10.344	3,737

However, the results of the analysis indicated a statistically significant main effect of special education status on academic achievement, as measured by the M-COMP, $F = 11.799$, $df = 1, 3{,}530$, $p < .05$. See the Total column on Table 35 for the means and standard deviations for this analysis. Students with no special education status were slightly higher than students with special education status were.

H24. The change in academic achievement of 1st and 2nd grade students, as measured by the M-COMP, after the implementation of SWPBS was affected by SES.

The results of the analysis indicated there was not a statistically significant interaction effect of the implementation of SWPBS and SES on academic achievement, as measured by the M-COMP, $F = 0.016$, $df = 2, 3{,}530$, $p = .984$. See Table 36 for the means and standard deviations for this analysis. There was not a significant difference among SES groups in academic achievement as measured by M-COMP after the implementation of SWPBS. This does not support H24.

Table 36

Mean Academic Achievement (M-COMP) by SES (Grades 1 and 2)

Implementation	*M*	*SD*	*n*
Before implementation of SWPBS			
Free	37.07	10.797	671
Reduced	40.33	9.313	91
Full Pay	41.07	8.921	387
Total	38.68	10.260	1,149
After implementation of SWPBS			
Free	35.96	10.884	1,593
Reduced	39.02	9.123	236
Full Pay	40.09	8.910	759
Total	37.45	10.361	2,588
Total			
Free	36.29	10.868	2,264
Reduced	39.38	9.181	327
Full Pay	40.42	8.922	1,146
Total	37.83	10.344	3,737

However, the results of the analysis indicated a marginally statistically significant main effect of SES on academic achievement, as measured by the M-COMP, $F = 2.323$, $df = 2, 3{,}530$, $p = .098$. See the Total column on Table 36 for the means and standard deviations for this analysis. Full paying students displayed more of an increase than reduced, which in turn were higher than free.

***Other Interactions for RQ8*.** The results of the analysis indicated a statistically significant interaction effect of the implementation of SWPBS, race, and special education status on academic achievement, as measured by the M-COMP, $F = 3.625$, $df = 3, 3{,}530$, $p < .05$. The results of the analysis indicated marginally statistically significant interaction effects of gender and grade level on academic achievement, as measured by the M-COMP, $F = 2.749$, $df = 1, 3{,}530$, $p = .097$. In addition, there were marginally statistically significant interaction effects on the implementation of SWPBS, gender, and grade level on academic achievement, as measured by the M-COMP, $F = 3.638$, $df = 1, 3{,}530$, $p = .057$. Moreover, there were also marginally statistically significant interaction effects on the implementation of SWPBS, gender, grade level, and special education status on academic achievement, as measured by the M-COMP, $F = 4.215$, $df = 1, 3{,}530$, $p < .05$; and of the implementation of SWPBS, gender, race, and special education status on academic achievement, as measured by the M-COMP, $F = 2.430$, $df = 2, 3{,}530$, $p = .088$ (see Appendix F for means and standard deviations for these analyses).

RQ9. To what extent was there a change in academic achievement of 3rd through 5th grade students, as measured by the MAP Communication Arts assessment, after the implementation of SWPBS?

H25. There was a change in academic achievement of 3rd through 5th grade students, as measured by the MAP Communication Arts assessment, after the implementation of SWPBS.

The results of the analysis indicated there was not a statistically significant main effect of the implementation of SWPBS on academic achievement, as measured by the MAP Communications Arts assessment, $F = 1.032$, $df = 1, 5{,}581$, $p = .310$. See Table 37 for the means and standard deviations for this analysis. There was not a significant difference in academic achievement as measured by MAP Communication Arts after the implementation of SWPBS. This does not support H25.

Table 37

Mean Academic Achievement (MAP Communication Arts) for Grades 3-5

Implementation	*M*	*SD*	*n*
Before implementation of SWPBS	634.57	100.224	1,950
After implementation of SWPBS	635.99	94.511	3,956
Total	635.52	96.429	5,906

RQ10. To what extent was the change in academic achievement of 3rd through 5th grade students, as measured by the MAP Communication Arts assessment, after the implementation of SWPBS affected by any of the following student variables: gender, grade level, race, special education status, or SES?

H26. The change in academic achievement of 3rd through 5th grade students, as measured by the MAP Communication Arts assessment, after the implementation of SWPBS was affected by gender.

The results of the analysis indicated there was not a statistically significant interaction effect of the implementation of SWPBS and gender on academic achievement, as measured by the MAP Communication Arts assessment, $F = 1.491$, $df = 1, 5{,}581$, $p = .222$. See Table 38 for the means and standard deviations for this analysis. There was not a significant difference between males and females in academic achievement as measured by MAP Communication Arts after the implementation of SWPBS. This does not support H26.

Table 38

Mean Academic Achievement (MAP Communication Arts) by Gender (Grades 3-5)

Implementation	*M*	*SD*	*n*
Before implementation of SWPBS			
Males	625.85	108.956	1,011
Females	643.96	88.987	939
Total	634.57	100.224	1,950
After implementation of SWPBS			
Males	627.47	104.667	2,079
Females	645.41	80.791	1,877
Total	635.99	94.511	3,956
Total			
Males	626.94	106.074	3,090
Females	644.93	83.600	2,816
Total	635.52	96.429	5,906

The results of the analysis indicated there was not a statistically significant main effect of gender on academic achievement, as measured by the MAP Communication

Arts assessment, $F = 1.392$, $df = 1, 5{,}581$, $p = .238$. See the Total column on Table 38 for the means and standard deviations for this analysis. Although females had a higher average, there was not a statistical significance between males and females in academic achievement.

H27. The change in academic achievement of 3rd through 5th grade students, as measured by the MAP Communication Arts assessment, after the implementation of SWPBS was affected by grade level.

The results of the analysis indicated a statistically significant interaction effect of the implementation of SWPBS and grade level on academic achievement, as measured by the MAP Communication Arts assessment, $F = 6.859$, $df = 2, 5{,}581$, $p < .05$. See Table 39 for the means and standard deviations for this analysis. An interaction effect occurred when grades 4 and 5 had an increase in academic achievement, whereas grade 3 had a decrease after implementation of SWPBS. This supports H27.

Table 39

Mean Academic Achievement (MAP Communication Arts) by Grade Level

Implementation	*M*	*SD*	*n*
Before implementation of SWPBS			
Grade 3	619.24	93.509	660
Grade 4	633.76	103.759	642
Grade 5	650.99	100.876	648
Total	634.57	100.224	1,950
After implementation of SWPBS			
Grade 3	617.89	90.094	1,306
Grade 4	638.51	92.655	1,309
Grade 5	651.14	97.590	1,341
Total	635.99	94.511	3,956
Total			
Grade 3	618.34	91.233	1,966
Grade 4	636.95	96.449	1,951
Grade 5	651.09	98.647	1,989
Total	635.52	96.429	5,906

H28. The change in academic achievement of 3rd through 5th grade students, as measured by the MAP Communication Arts assessment, after the implementation of SWPBS was affected by race.

The results of the analysis indicated there was not a statistically significant interaction effect of the implementation of SWPBS and race on academic achievement,

as measured by the MAP Communication Arts assessment, $F = 0.925$, $df = 6, 5{,}581$, $p = .476$. See Table 40 for the means and standard deviations for this analysis. There was not a significant interaction effect between race and implementation of SWPBS on academic achievement. This does not support H28.

Table 40

Mean Academic Achievement (MAP Communication Arts) by Race (Grades 3-5)

Implementation	*M*	*SD*	*n*
Before implementation of SWPBS			
Asian	667.35	47.968	26
Black	623.74	96.852	837
Hispanic	633.14	88.435	195
Indian	440.22	330.837	9
Mixed	646.73	83.357	96
Pacific Islander	642.31	50.791	16
White	646.18	101.934	771
Total	634.57	100.224	1,950
After implementation of SWPBS			
Asian	648.50	94.653	58
Black	626.11	95.753	1,854
Hispanic	633.87	95.369	438
Indian	607.56	167.200	16
Mixed	650.06	71.512	135
Pacific Islander	551.36	234.861	14
White	648.65	89.241	1,441
Total	635.99	94.511	3,956
Total			
Asian	654.33	83.202	84
Black	625.37	96.085	2,691
Hispanic	633.64	93.219	633
Indian	547.32	246.328	25
Mixed	648.68	76.499	231
Pacific Islander	599.87	167.902	30
White	647.79	93.844	2,212
Total	635.52	96.429	5,906

However, the results of the analysis indicated a statistically significant main effect of race on academic achievement, as measured by the MAP Communication Arts assessment, $F = 13.160$, $df = 6, 5{,}581$, $p < .001$. See the Total column on Table 40 for the means and standard deviations for this analysis.

A follow-up post hoc was conducted to determine which pairs of means were different using Tukey's HSD. The pairs of means that were statistically significant were Asian/Black, Asian/Indian, Asian/Pacific Islander, Black/Indian, Black/Mixed, Black/White, Hispanic/Indian, Hispanic/White, Indian/Mixed, Indian/White, Mixed/Pacific Islander, and Pacific Islander/White. To be determined as statistically significant, the probability must be < .05 (see Table 41).

Table 41

Tukey HSD Results for Academic Achievement (MAP Communication Arts) by Race (Grades 3-5)

SES Status	Mean Difference	*p*
Asian - Black	28.94	.026
Asian - Hispanic	20.69	.316
Asian - Indian	107.01	< .001
Asian - Mixed	5.66	.998
Asian - Pacific Islander	54.47	.031
Asian - White	6.44	.992
Black - Indian	78.07	< .001
Black - Pacific Islander	25.52	.625
Hispanic - Black	8.25	.260
Hispanic - Indian	86.32	< .001
Hispanic - Pacific Islander	33.78	.299
Mixed - Black	23.29	< .001
Mixed - Hispanic	15.03	.210
Mixed - Indian	101.36	< .001
Mixed - Pacific Islander	48.81	.037
Mixed - White	.78	1.00
Pacific Islander - Indian	52.55	.218
White - Black	22.51	< .001
White - Hispanic	14.26	.002
White - Indian	100.58	< .001
White - Pacific Islander	48.03	.026

H29. The change in academic achievement of 3rd through 5th grade students, as measured by the MAP Communication Arts assessment, after the implementation of SWPBS was affected by special education status.

The results of the analysis indicated a marginally statistically significant interaction effect of the implementation of SWPBS and special education status on academic achievement, as measured by the MAP Communication Arts assessment, F = 2.762, df = 1, 5,581, p = .097. See Table 42 for the means and standard deviations for this analysis. Students with no special education status had an increase, whereas students with special education status decreased. No follow-up post hoc was warranted.

Table 42

Mean Academic Achievement (MAP Communication Arts) by Special Education Status (Grades 3-5)

Implementation	*M*	*SD*	*n*
Before implementation of SWPBS			
No Special Education Status	653.28	49.143	1,601
Special Education Status	548.76	190.155	349
Total	634.57	100.224	1,950
After implementation of SWPBS			
No Special Education Status	653.13	45.861	3,277
Special Education Status	553.26	183.490	679
Total	635.99	94.511	3,956
Total			
No Special Education Status	653.18	46.958	4,878
Special Education Status	551.73	185.699	1,028
Total	635.52	96.429	5,906

H30. The change in academic achievement of 3rd through 5th grade students, as measured by the MAP Communication Arts assessment, after the implementation of SWPBS was affected by SES.

The results of the analysis indicated there was not a statistically significant interaction effect of the implementation of SWPBS and SES on academic achievement, as measured by the MAP Communication Arts assessment, $F = 0.048$, $df = 2, 5{,}581$, $p = .953$. See Table 43 for the means and standard deviations for this analysis. There was

not a significant difference among SES groups in academic achievement as measured by MAP Communication Arts after the implementation of SWPBS. This does not support H30.

Table 43

Mean Academic Achievement (MAP Communication Arts) by SES (Grades 3-5)

Implementation	*M*	*SD*	*n*
Before implementation of SWPBS			
Free	624.34	103.500	1,108
Reduced	626.65	100.980	190
Full Pay	654.26	91.171	652
Total	634.57	100.224	1,950
After implementation of SWPBS			
Free	626.16	101.537	2,329
Reduced	643.45	71.226	346
Full Pay	651.84	83.899	1,281
Total	635.99	94.511	3,956
Total			
Free	625.57	102.162	3,437
Reduced	637.49	83.297	536
Full Pay	652.65	86.405	1,933
Total	635.52	96.429	5,906

The results of the analysis indicated there was not a statistically significant main effect of SES on academic achievement, as measured by the MAP Communication Arts

assessment, $F = 2.062$, $df = 2, 5{,}581$, $p = .127$. See the Total column of Table 43 for the means and standard deviations for this analysis. There was not a significant difference among SES groups in academic achievement as measured by the MAP Communication Arts assessment.

Other interactions for RQ10. The results of analysis indicated there were statistically significant and marginally statistically significant interaction effects between multiple combinations of the independent variables on academic achievement, as measured by the MAP Communication Arts assessment (see Appendix G).

RQ11. To what extent was there a change in academic achievement of 3rd through 5th grade students, as measured by the MAP Mathematics assessment, after the implementation of SWPBS?

H31. There was a change in academic achievement of 3rd through 5th grade students, as measured by the MAP Mathematics assessment, after the implementation of SWPBS.

The results of the analysis indicated there was not a statistically significant main effect of the implementation of SWPBS on academic achievement, as measured by the MAP Mathematics assessment, $F = 0.140$, $df = 1, 5{,}581$, $p = .709$. See Table 44 for the means and standard deviations for this analysis. There was not a significant difference in academic achievement, as measured by the MAP Mathematic assessment, after the implementation of SWPBS. This does not support H31.

Table 44

Mean Academic Achievement (MAP Mathematics) for Grades 3-5

Implementation	*M*	*SD*	*n*
Before implementation of SWPBS	629.25	97.583	1,946
After implementation of SWPBS	629.46	92.853	3,952
Total	629.39	94.431	5,898

RQ12. To what extent was the change in academic achievement of 3rd through 5th grade students, as measured by the MAP Mathematics assessment, after the implementation of SWPBS affected by any of the following student variables: gender, grade level, race, special education status, or SES?

H32. The change in academic achievement of 3rd through 5th grade students, as measured by the MAP Mathematics assessment, after the implementation of SWPBS was affected by gender.

The results of the analysis indicated there was not a statistically significant interaction effect of the implementation of SWPBS and gender on academic achievement, as measured by the MAP Mathematics assessment, $F = 0.290$, $df = 1, 5{,}581$, $p = .590$. See Table 45 for the means and standard deviations for this analysis. There was not a statistical difference between males and females in academic achievement as measured by the MAP Mathematics assessment, after the implementation of SWPBS. This does not support H32.

Table 45

Mean Academic Achievement (MAP Mathematics) by Gender (Grades 3-5)

Implementation	*M*	*SD*	*n*
Before implementation of SWPBS			
Males	624.07	106.129	1,008
Females	634.82	87.187	938
Total	629.25	97.583	1,946
After implementation of SWPBS			
Males	623.72	104.870	2,075
Females	635.80	76.959	1,877
Total	629.46	92.853	3,952
Total			
Males	623.83	105.267	3,083
Females	635.47	80.498	2,815
Total	629.39	94.431	5,898

The results of the analysis indicated there was not a statistically significant main effect of gender on academic achievement, as measured by the MAP Mathematics assessment, $F = 1.031$, $df = 1, 5{,}581$, $p = .310$. See the Total column on Table 45 for the means and standard deviations for this analysis. Although the females had a slightly higher average score, there was not a significant difference between the two groups in academic achievement as measured by the MAP Mathematics assessment.

H33. The change in academic achievement of 3rd through 5th grade students, as measured by the MAP Mathematics assessment, after the implementation of SWPBS was affected by grade level.

The results of the analysis indicated a statistically significant interaction effect of the implementation of SWPBS and grade level on academic achievement, as measured by the MAP Mathematics assessment, $F = 4.472$, $df = 2, 5{,}581$, $p < .05$. See Table 46 for the means and standard deviations for this analysis. An interaction effect occurred when grades 3 and 5 had a decrease in academic achievement, whereas grade 4 had an increase from before implementation to after implementation of SWPBS. This supports H33.

Table 46

Mean Academic Achievement (MAP Mathematics) by Grade Level

Implementation	*M*	*SD*	*n*
Before implementation of SWPBS			
Grade 3	609.24	87.216	657
Grade 4	626.41	96.857	642
Grade 5	652.38	103.374	647
Total	629.25	97.583	1,946
After implementation of SWPBS			
Grade 3	607.45	90.132	1,304
Grade 4	629.03	86.070	1,307
Grade 5	651.27	96.714	1,341
Total	629.46	92.853	3,952
Total			
Grade 3	608.05	89.147	1,961
Grade 4	628.17	89.750	1,949
Grade 5	651.63	98.906	1,988
Total	629.39	94.431	5,898

H34. The change in academic achievement of 3rd through 5th grade students, as measured by the MAP Mathematics assessment, after the implementation of SWPBS was affected by race.

The results of the analysis indicated there was not a statistically significant interaction effect of the implementation of SWPBS and race on academic achievement,

as measured by the MAP Mathematics assessment, $F = 1.566$, $df = 6, 5{,}581$, $p = .153$. See Table 47 for the means and standard deviations for this analysis. The Asian group had the highest mean both before and after implementation. Although some groups (Hispanic and Pacific Islander) had a slight decrease in scores, there was not a significant difference among race groups on academic achievement, as measured by MAP Mathematics, after the implementation of SWPBS. This does not support H34.

Table 47

Mean Academic Achievement (MAP Mathematics) by Race (Grades 3-5)

Implementation	*M*	*SD*	*n*
Before implementation of SWPBS			
Asian	664.69	35.413	26
Black	615.69	96.554	836
Hispanic	636.06	77.504	195
Indian	562.11	214.559	9
Mixed	641.34	79.659	96
Pacific Islander	638.88	53.027	16
White	640.15	103.297	768
Total	629.25	97.583	1,946
After implementation of SWPBS			
Asian	650.60	97.731	58
Black	617.16	94.121	1,852
Hispanic	629.24	83.424	438
Indian	600.19	166.924	16
Mixed	645.16	69.967	135
Pacific Islander	574.07	167.497	14
White	643.88	91.147	1,439
Total	629.46	92.853	3,952
Total			
Asian	654.96	83.546	84
Black	616.71	94.869	2,688
Hispanic	631.34	81.646	633
Indian	586.48	181.956	25
Mixed	643.58	74.005	231
Pacific Islander	608.63	122.932	30
White	642.58	95.544	2,207
Total			

However, the results of the analysis indicated a statistically significant main effect of race on academic achievement, as measured by the MAP Mathematics assessment, F = 14.376, df = 6, 5,581, $p < .001$. See the Total column on Table 47 for the means and standard deviations for this analysis.

A follow-up post hoc was conducted to determine which pairs of means were different using Tukey's HSD. Those pairs showing a statistically significant difference were Asian/Black, Asian/Indian, Black/Hispanic, Black/Mixed, Black/White, Hispanic/White, Indian/Mixed, and Indian/White (see Table 48). A statistically significant difference is shown when the probability is < .05.

Table 48

Tukey HSD Results for Academic Achievement (MAP Mathematics) by Race (Grades 3-5)

SES Status	Mean Difference	*p*
Asian - Black	38.26	< .001
Asian - Hispanic	23.62	.157
Asian - Indian	68.48	.004
Asian - Mixed	11.39	.928
Asian - Pacific Islander	46.33	.102
Asian - White	12.38	.817
Black - Indian	30.23	.511
Black - Pacific Islander	8.07	.998
Hispanic - Black	14.64	.001
Hispanic - Indian	44.86	.095
Hispanic - Pacific Islander	22.71	.746
Mixed - Black	26.87	< .001
Mixed - Hispanic	12.23	.439
Mixed - Indian	57.10	.015
Mixed - Pacific Islander	34.94	.285
Mixed - White	.99	1.00
Pacific Islander - Indian	22.15	.952
White - Black	25.88	< .001
White - Hispanic	11.24	.035
White - Indian	56.10	.011
White - Pacific Islander	33.95	.256

H35. The change in academic achievement of 3rd through 5th grade students, as measured by the MAP Mathematics assessment, after the implementation of SWPBS was affected by special education status.

The results of the analysis indicated there was not a statistically significant interaction effect of the implementation of SWPBS and special education status on academic achievement, as measured by the MAP Mathematics assessment, $F = 0.973$, $df = 1, 5{,}581$, $p = .324$. See Table 49 for the means and standard deviations for this analysis. Although the students with no special education status had a higher increase in scores, there was not a significant difference between special education status groups in academic achievement, as measured by the MAP Mathematics assessment, after implementation of SWPBS. This does not support H35.

Table 49

Mean Academic Achievement (MAP Mathematics) by Special Education Status (Grades 3-5)

Implementation	*M*	*SD*	*n*
Before implementation of SWPBS			
No Special Education Status	647.18	44.608	1,598
Special Education Status	546.92	189.576	348
Total	629.25	97.583	1,946
After implementation of SWPBS			
No Special Education Status	645.47	44.332	3,273
Special Education Status	552.27	183.175	679
Total	629.46	92.853	3,952
Total			
No Special Education Status	646.03	44.426	4,871
Special Education Status	550.46	185.294	1,027
Total	629.39	94.431	5,898

However, the results of the analysis indicated a statistically significant main effect of special education status on academic achievement, as measured by the MAP Mathematics assessment, $F = 114.086$, $df = 1, 5{,}581$, $p < .001$. See the Total column of Table 49 for the means and standard deviations for this analysis. The no special education status group had higher scores on average than the special education status group.

H36. The change in academic achievement of 3rd through 5th grade students, as measured by the MAP Mathematics assessment, after the implementation of SWPBS was affected by SES.

The results of the analysis indicated there was not a statistically significant interaction effect of the implementation of SWPBS and SES on academic achievement, as measured by the MAP Mathematics assessment, $F = 0.216$, $df = 2, 5{,}581$, $p = .806$. See Table 50 for the means and standard deviations for this analysis. There was not a significant difference among SES groups in academic achievement, as measured by the MAP Mathematics assessment, after the implementation of SWPBS. This does not support H36.

Table 50

Mean Academic Achievement (MAP Mathematics) by SES (Grades 3-5)

Implementation	*M*	*SD*	*n*
Before implementation of SWPBS			
Free	620.25	98.530	1,104
Reduced	621.93	101.518	190
Full Pay	646.62	92.489	652
Total	629.25	97.583	1,946
After implementation of SWPBS			
Free	620.41	97.284	2,326
Reduced	638.30	73.709	346
Full Pay	643.51	87.156	1,280
Total	629.46	92.853	3,952
Total			
Free	620.36	97.672	3,430
Reduced	632.49	84.887	536
Full Pay	644.56	88.980	1,932
Total	629.39	94.431	5,898

The results of the analysis indicated there was not a statistically significant main effect of SES on academic achievement, as measured by the MAP Mathematics assessment, $F = 0.680$, $df = 2, 5{,}581$, $p = .506$. See the Total column on Table 50 for the means and standard deviations for this analysis. The group paying full price was larger than that of the reduced group, which in turn was larger than the free group.

Other interactions for RQ12. The results of analysis indicated there were statistically significant and marginally statistically significant interaction effects between multiple combinations of the independent variables on academic achievement, as measured by the MAP Mathematics assessment (see Appendix H).

Summary

This chapter included the results of hypothesis testing for this study. MANOVAs were conducted to determine the extent of any effects of the independent variables on the dependent variables of behavior referrals, attendance, and academic achievement among 1^{st}, 2^{nd}, 3^{rd}, 4^{th}, and 5^{th} grade students. The analyses were conducted to determine the extent of any interactions between any combination of the independent variables on the dependent variables. The Tukey HSD procedure was chosen as the follow-up test to be conducted if any statistically significant main effects occurred in the analysis; it was used to evaluate any pairwise differences among the means of the independent variables. Chapter five includes an overview of the study, major findings, findings related to the literature, implications for action, recommendations for future research, and concluding remarks.

Chapter Five

Interpretation and Recommendations

Behavior has been an important factor in the success of not only the students, but also a school overall. Often times when students display misbehaviors they are placed in alternative settings such as ISS and even OSS. As students are removed from school, they are also removed from the opportunity to learn. In addition to missing academics, their absences add to future attendance issues. According to Sanders (2009), due to the loss of instructional time with a certified teacher, alternate placement could affect academic achievement. Attendance rates could suffer as well when out-of-school suspension days are reported as unexcused. The purpose of this study was to determine the effects of SWPBS upon student behavior referrals, student attendance issues, and student academic issues before and after its implementation. Chapter five includes a study summary, the findings related to the literature, and the conclusions of the research.

Study Summary

Progressively during the last decade, the nation has set higher expectations for student performance and academic achievement. Student misbehaviors are disruptive to the school environment and, therefore, have a negative impact on the classroom learning atmosphere. This in turn hinders all student academic performance. The objective of this study was to determine if there were differences in student behavior referrals, attendance, and academic achievement after the implementation of SWPBS as they relate to student gender, grade level, race, special education status, and SES. Within this section, an overview of the problem, purpose statement and research questions, review of the methodology, and major findings are discussed.

Overview of the problem. Traditional reactive measures have been used throughout the years to suppress undesirable student behaviors. The consequences most often led to in-school suspension or even out-of-school suspension. These methods tended to prove ineffective in improving student behavior and helping to increase not only academic performance, but also attendance.

In District R, the number of out-of-school suspensions was a problem as noted through ODRs (District R Director of Student Services, personal communication, July 21, 2011). This problem inadvertently affected academic achievement due to number of days out of class. SWPBS is used in schools to promote a positive school environment that facilitates success in teaching and learning (Horner, Sugai, Todd, & Lewis-Palmer, 2005). Through the study of the implementation of SWPBS, District R desired to determine whether the district-wide implementation of the SWPBS program with elementary students, first grade through fifth grade, has had a positive impact on behavior, attendance, and academics in the elementary school buildings.

Purpose statement and research questions. Twelve research questions were written to address the purposes stated in this study. The first purpose of the study was to determine whether there were differences in behavior referrals and attendance after the implementation of SWPBS as addressed by research questions 1 and 3. The second purpose, as addressed by research questions 2 and 4, was to determine whether the differences in behavior referrals and attendance after the implementation of SWPBS were affected by any of the following student variables: gender, grade level, race, special education status, SES. The third purpose of the study was to determine whether there were differences in 1st and 2nd grade students' academic achievement, as measured by the

R-CBM and the M-COMP after the implementation of SWPBS. Differences were addressed by research questions 5 and 7. The fourth purpose, as addressed by research questions 6 and 8, was to determine whether the differences in 1st and 2nd grade students' academic achievement, as measured by the R-CBM and M-COMP, after the implementation of SWPBS were affected by any of the following student variables: gender, grade level, race, special education, or SES. The fifth purpose of this study, as addressed by research questions 9 and 11, was to determine whether there were differences in 3rd through 5th grade students' academic achievement, as measured by the MAP Communication Arts and Mathematics assessments, after the implementation of SWPBS. The sixth purpose was to determine whether the differences in 3rd through 5th grade students' academic achievement, as measured by the MAP Communication Arts and Mathematics assessments, after the implementation of SWPBS were affected by any of the following student variables: gender, grade level, race, special education, or SES, as addressed by research questions 10 and 12.

Review of the methodology. A quantitative research design was used for this study. An analysis of the effects of SWPBS on student behaviors, attendance, and academics were determined by examining various data collected from the elementary schools in District R. Dependent variables were the archival data for behavior referrals, student attendance, and academic measures of AIMSweb in grades 1 and 2, as well as MAP in grades 3 through 5. The independent variables were the gender, grade levels, race, special education status, and SES of students, and implementation of SWPBS. The purposive sampling technique was chosen for this study based on the knowledge of the groups being sampled. The statistical analyses used to test hypotheses for the research

questions were MANOVAs. The analyses were conducted to determine the extent of any interactions between any combination of the independent variables on the dependent variables. The Tukey HSD procedure was chosen as the follow-up test to be conducted if any statistically significant main effects occurred in the analysis; it was used to evaluate any pairwise differences among the means of the independent variables.

Major findings. A detailed presentation of the results of the 12 research questions and 36 hypotheses was provided in chapter four. In focusing on behavior referrals, when students were divided into multiple groups, both by race and implementation of SWPBS, there were not any significant changes in behavior referrals within the groups. However, there was a main effect present, which means there were differences among the race groups' behavior referrals. In addition, there was a difference among the special education groups' behavior referrals after the implementation of SWPBS. There was a decrease in behavior referrals with students having no special education status although students with special education status had an increase in referrals. No other variables had effects on behavior referrals.

Attendance was another area of focus both before and after implementation of SWPBS. Although there were no significant changes in attendance within the groups presented, there was a main effect indicated. There were differences among SES groups' attendance rates. Those with reduced rates had the largest increase. This was followed by full paying students, and finally those with free pay status. No other student variables had a significant effect on attendance rates.

Academic achievement was broken into two areas for 1st and 2nd grade students, R-CBM and M-COMP. Both were affected by all variables except gender. Results of

analysis showed no significant effects within grade level before or after the implementation of SWPBS. There were, however, differences among grade levels' academic achievement as measured by R-CBM assessment scores. Second grade students had an overall increase in scores. The same held true for race groups, with statistical differences among Asian /Black, Asian/Hispanic, Asian/White, Black/Hispanic, Black/Mixed, and Black/White groups. In addition, no special education status group had higher average scores. SES groups also were in this category with all pairs showing significant differences. There was a change in academic achievement through M-COMP scores as shown after the implementation of SWPBS. There were similar effects of student variables for M-COMP as there were R-CBM. Differences among grade levels' academic achievement were displayed with second grade students showing higher scores. An interaction occurred with race groups: Asian and Indian races increased in scores after the implementation of SWPBS. Students with no special education status scored higher on M-COMP assessments as opposed to those with special education status. Finally, SES groups showed marginal differences with full paying students displaying higher academic mathematical scores than reduced or free groups.

Academic achievement was also separated into two assessment areas for 3rd, 4th, and 5th grades, MAP Communication Arts and Mathematics. All variables had an effect except gender and SES. Within grade level groups on MAP Communication Arts, grades 4 and 5 had an increase in academic achievement, whereas grade 3 had a decrease in scores after the implementation of SWPBS. On MAP Mathematics, grade 4 had another increase in assessment scores, and grades 3 and 5 had a decrease in assessment scores after the implementation of SWPBS. Several race groups, for both MAP Communication

Arts and Mathematics, show statistically significant differences. For both assessment measures, the SES groups had differences in average scores. The no special education status group had higher means on MAP Communication Arts and Mathematics than the special education group.

Findings Related to the Literature

The goal of this study was to determine whether the implementation of SWPBS had a positive effect on behavior referrals, attendance, and academic achievement as determined through student variables of gender, grade level, race, special education status, and SES. Published research related to this study was described in chapter two. This section will relate the findings of this study to previous research.

SWPBS has been recognized as an effective intervention in reducing student behavior problems in many studies. The results of this study indicated there was not a significant change in the number of ODRs after implementation of SWPBS; behaviors were sustained. Behavior disruptions decreased among the race groups, as well as with students having no special education status after the implementation of SWPBS. This is similar to the findings of Lassen et al. (2006) where SWPBS was described as a support system that sustains behaviors over time. Additionally, Buettner (2013) and Beard (2014) did not discern a measurable difference in the numbers of ODRs or suspensions during implementation. There was also no difference reflected with type of behavior. Hunt (2014) actually noted an increase in ODRs. In contrast to the results of this study were the findings of Coffey and Horner (2012), Oliver et al. (2011), Kelm and McIntosh (2012), and Miles (2013). Coffey and Horner (2012) researched sustainability of SWPBS and discovered that the program works best in schools with administrative support.

There was a decrease in the number of office discipline referrals, student assaults, disciplinary actions, and suspensions. Oliver et al. (2011) examined the effects of teachers' management in reducing inappropriate behaviors. After implementation of SWPBS, treated schools did have fewer behavior issues than untreated schools. Kelm and McIntosh (2012) and Miles (2013) implemented the school-wide approach to student behaviors. There was a decrease in the number of ODRs, discipline, and suspensions within the schools implementing SWPBS.

Per the findings of this study, there was not a significant difference in attendance after the implementation of SWPBS. Only in the area of SES was there a main effect on attendance. The findings of this study were in contrast to Miles (2013) when determining attendance after implementation of SWPBS. In the study by Miles, attendance increased substantially after the implementation of SWPBS.

The results of this study showed no significant differences in achievement within grade levels after the implementation of SWPBS. In contrast, Lassen et al. (2006) found that there were differences in students' academic performance in mathematics after the implementation of SWPBS. Initially, a decrease was seen with reading although there was a notable increase in following years. Similarly, Buettner (2013) found that standardized test scores grades 3 through 7 and high school did not evidence a measureable difference in student academic achievement based on the Illinois Standards Achievement Test (ISAT) performance during the four years following SWPBS implementation. However, in contrast, Buettner (2013) found that students in grade 8 did have a higher increase in academic achievement in mathematics. Similarly, Hunt (2014) determined that after the implementation of PBIS, there was no significant difference

between NCEOG test scores for grade 7 reading and mathematics, as well as grade 8 mathematics and science. However, after the implementation of PBIS, there was a significant difference in NCEOG test scores for grade 8 reading, as well as overall NCEOG test scores for reading.

The results of this study indicated that there was not a significant difference among race groups on students' academic achievement after the implementation of SWPBS. In contrast, Patterson (2013) found that 95% of minority students scored higher in mathematics and reading. Patterson stated the results revealed that minority students scored statistically higher after PBIS implementation on the PSSA reading and mathematics portions of test. The findings in this study indicated that there was not a significant difference in academic achievement among SES groups after the implementation of SWPBS. This supports the work of Hunt (2014) who conducted research in a rural, low SES middle school in southeastern North Carolina and found mixed results as previously stated.

Conclusions

The conclusion section of this study expands on three areas. Suggestions of implications for action will be the first area discussed. In addition, recommendations for future research will be explored. The final area contains concluding remarks concerning this study.

Implications for action. Results of the study lead to implications for further action. The research was collected over a 3-year period. The changes in number of behavior referrals, attendance, and academic achievement of students after the implementation of SWPBS were analyzed. School District R can choose to continue

collecting data. When districts implement new programs, there is normally the standard of working with the program for at least five years to gain a true picture of what is occurring according to the Associate Superintendent of Curriculum and Instruction (personal communication, 2012). Therefore, it is recommended that District R continue to collect data for at least two more years and then conduct the data analyses again. By adding two more years of data, it will be possible to note clear trends and areas of deficit.

Multiple sources of data were used in this study, which were entered into computer systems by various district employees. Research on the training involved with those who enter data would be important. Noting the method of collection, as well as the extent of training with individuals in this area, would help to determine the fidelity measures included in the analyses. In terms of training, it would be important to learn how much training teachers had before implementation. With high teacher turnover, the district would also need to ensure regular, explicit initial training with all new employees. It would be just as important to provide refresher training periodically for employees of the district, to help with fidelity to the program, as well as more accurate data collection. The results of this study could be utilized to improve practices, promote effective student management, and gauge academic achievement of all students. Results obtained from the study may help educational leaders determine whether to continue implementation of SWPBS.

District R should research survey tools in order to monitor fidelity to the SWPBS model. It would be important for consistency of the program to ensure administrator and teacher fidelity to the SWPBS model. Providing the survey at the beginning of the school year and then again at the end of the school year, would help to gauge that continuity and

fidelity. It would also open the lines of communication between administration and teachers as to the strengths and weaknesses of the program and the next steps of implementation that should be taken. Continuing to partner monthly for training updates with the Regional Professional Development Center (RPDC) would keep District R apprised of new changes to the program, as well as current information released by the state.

The special education status variable had an effect of some kind on every variable within the study except attendance. District R may want to research the findings for the special education program to determine strengths and weaknesses that would inhibit benefits of the full implementation of SWPBS. In addition, conducting in-depth research within the low SES group may be beneficial as well. This area showed a decrease in trends within many student variables.

Recommendations for future research. The recommendations are based on the findings of this study. The findings were presented to the district's leadership team as evidence for further research of student number of behavior referrals, attendance, and academic achievement after the implementation of SWPBS. District R made the decision to implement SWPBS throughout the entire district. The findings of this study showed effects within the 10 elementary schools. It would be beneficial to analyze corresponding data from the two preschool centers, three middle schools, two high schools, and the success academy. This would determine whether a similar pattern in data would be found, or discrepancies would be discovered.

It is recommended that a mixed methods study be developed not only to add to the quantitative data collected, but also to acknowledge the perceptions of SWPBS by

staff members within the district. It would be important to interview a wide range of staff throughout the district, to include administration from each elementary building, as well as teachers from each building. To gain the perspective of different grade ranges, there should be early childhood and intermediate elementary teachers represented. Additionally, interviewing parents about their perceptions of SWPBS, and how it works with their children would add an additional variable to the study. Thus, a comparison between parent perceptions and staff perceptions could be made.

An additional recommendation for future research might be to survey teachers and principals to gain their perceptions of how well SWPBS has worked. A survey could be administered to parents in order to compare the perceptions between teachers and parents. It would be beneficial to note parent perceptions of SWPBS not only in the school setting, but also as it filters into their homes based on student actions and behaviors. Another possibility would be to survey students in grades 4 and above related to their perceptions of SWPBS.

It is recommended that a comparison be made between District R and other districts that are implementing SWPBS. The additional districts could be chosen from other states that have similar demographics to District R. It would be beneficial to compare the student behaviors, attendance rates, and academic achievement levels from other districts to that of District R. It would also be important to note how long SWPBS had been successfully implemented within the other participating districts. In contrast, substantial information could be gained from researching a school district that does not have a similar demographic. The researcher could note similarities and differences

within the districts and discern what elements might make SWPBS more or less successful than that of District R.

Concluding remarks. "Classrooms with frequent disruptive behaviors have less academic engaged time, and the students in disruptive classrooms tend to have lower grades and do poorer on standardized tests" (Oliver et al., 2011, p. 4). Although no significant changes occurred in behavior referrals, race groups and the special education status group noted a decrease in referrals. In addition, there were no significant changes in attendance although SES groups had an effect on attendance rates. At a minimum, SWPBS helped to maintain academic achievement among grade levels, race, special education status, and SES status groups. It is important to continue the research into SWPBS in order to improve the educational environment and help students to achieve academically and socially. It is also important for District R to develop plans of support for all schools that have begun the implementation process in order to have the most success possible.

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Appendices

Appendix A: Request to Conduct Research

[redacted]

June 17, 2013

Elizabeth Arbisi
2632 SW Carlton Drive
Lee's Summit, MO 64082

The research project, *The Influence of Participation in School-Wide Positive Behavior Support on Elementary Student Behavior,* has been approved for the [redacted] School District with the following criteria:

- The research will provide the district with additional information regarding the impact School-Wide Positive Behavior Supports has had on the academic, behavioral growth, and attendance of students over the last several years.
- [redacted], Associate Superintendent, will serve as district contact and liaison for any data or other information needed during this project. You can reach [redacted] email or at 8[redacted]
- All information will be reported under an alternate name; no specific district or building names will be used.

Sincerely,

[redacted]

[redacted]

www.[redacted].org

Appendix B: IRB Proposal for Research

BAKER UNIVERSITY

SCHOOL OF EDUCATION
GRADUATE DEPARTMENT

Date:
IRB PROTOCOL NUMBER _____
(IRB USE ONLY)

IRB REQUEST
Proposal for Research
Submitted to the Baker University Institutional Review Board

I. Research Investigator(s) (Students must list faculty sponsor first)

Department(s) **School of Education Graduate Department**

Name	Signature	
1. Dr. Susan Rogers	Susan Rogers	Major Advisor
2. Katie Hole	Katie Hole	Research Analyst
3.		University Committee Member
4. Dr. Staci Mathes		External Committee Member

Elizabeth Wilkerson-Arbisi

Principal Investigator: Elizabeth Wilkerson-Arbisi
Phone: (573) 757-5912
Email: elizabeth.arbisi@raytownschools.org
Mailing address: 2632 SW Carlton Drive
Lee's Summit, MO 64082

Faculty sponsor: Susan Rogers
Phone: 913-344-1226 (Office) 785-230-2801 (Cell)
Email: srogers@bakeru.edu

Expected Category of Review: ___Exempt __X__Expedited ___Full

II: Protocol: (Type the title of your study)

The Influence of Participation in School-Wide Positive Behavior Support on Elementary Student Behavior

Summary

In a sentence or two, please describe the background and purpose of the research.

District R had a reactive school-wide behavior approach which focused on disruptive behaviors, and in turn, many in-school and out-of-school suspensions resulted. The purpose of the research is to explore the difference in behavior of elementary students prior to and after implementation of School-Wide Positive Behavior Support (SWPBS).

Briefly describe each condition or manipulation to be included within the study.

There are no conditions or manipulations that will be included within the study.

What measures or observations will be taken in the study? If any questionnaire or other instruments are used, provide a brief description and attach a copy.
Will the subjects encounter the risk of psychological, social, physical or legal risk? If so, please describe the nature of the risk and any measures designed to mitigate that risk.

Archived data will be used in this study; therefore, no measures or observations will be taken. The subjects will not encounter any psychological, social, physical, or legal risks.

Will any stress to subjects be involved? If so, please describe.

There will be no stress to subjects involved in this study.

Will the subjects be deceived or misled in any way? If so, include an outline or script of the debriefing.

Subjects will not be deceived or misled in any way.

Will there be a request for information which subjects might consider to be personal or sensitive? If so, please include a description.

Requested information will not be considered to be personal or sensitive in nature.

Will the subjects be presented with materials which might be considered to be offensive, threatening, or degrading? If so, please describe.

No materials will be used that are considered offensive, threatening, or degrading.

Approximately how much time will be demanded of each subject?

There will not be any time demanded personally from subjects for this study.

Who will be the subjects in this study? How will they be solicited or contacted? Provide an outline or script of the information which will be provided to subjects prior to their volunteering to participate. Include a copy of any written solicitation as well as an outline of any oral solicitation.

Certified staff, administrators, and students from each elementary building in District R will be the participants of the study. The information will be archived data from discipline referrals, test scores, and attendance records. There will be no surveys, so the participants will not be solicited or contacted.

What steps will be taken to insure that each subject's participation is voluntary? What if any inducements will be offered to the subjects for their participation?

No subject participation is needed because there will be no surveys; archived data will be used in the study. No inducements will be offered to administration, teachers, or students.

How will you insure that the subjects give their consent prior to participating? Will a written consent form be used? If so, include the form. If not, explain why not.

Subjects will not need to give prior consent for participation; no written consent form will be used.

Will any aspect of the data be made a part of any permanent record that can be identified with the subject? If so, please explain the necessity.

All data collected with the study will remain anonymous and not be part of any permanent record.

Will the fact that a subject did or did not participate in a specific experiment or study be made part of any permanent record available to a supervisor, teacher or employer? If so, explain.

No information of any kind will be made part of permanent records accessible to a supervisor, teacher, or employer.

What steps will be taken to insure the confidentiality of the data? Where will it be stored? How long will it be stored? What will be done with it after the study is completed?

For confidentiality purposes, all data will be stored in a locked cabinet in an office. It will remain there for the duration of the study and will be destroyed three years after completion of the study.

If there are any risks involved in the study, are there any offsetting benefits that might accrue to either the subjects or society?

There are no risks or offsetting benefits.

Will any data from files or archival data be used? If so, please describe.

Archival data of office discipline referrals, academic achievement measured by Achievement Improvement Monitoring System (AIMS) and Missouri Assessment Program (MAP), and attendance records will be used. Office discipline referrals from the year before implementation of SWPBS, as well as the present data, will be utilized to note the changes in the elementary students' behaviors. Attendance records will also be reviewed to note a change in attendance rates of students before and after implementation of SWPBS.

Appendix C: IRB Approval Letter

BAKER UNIVERSITY
Own Confidence

April 3, 2014

Elizabeth Arbisi,

The Baker University IRB has reviewed your research project application regarding your proposal and has approved it under Expedited Review. As described, the project complies with all the requirements and policies established by the University for protection of human subjects in research. Unless renewed, approval lapses one year after approval date.

The Baker University IRB requires that your consent form must include the date of approval and expiration date (one year from today). Please be aware of the following:

1. At designated intervals (usually annually) until the project is completed, a Project Status Report must be returned to the IRB.
2. Any significant change in the research protocol as described should be reviewed by this Committee prior to altering the project.
3. Notify the IRB about any new investigators not named in original application.
4. Any injury to a subject because of the research procedures must be reported to the IRB Chair or representative immediately.
5. When signed consent documents are required, the primary investigator must retain the signed consent documents for at least three years past completion of the research activity. If you use a signed consent form, provide a copy of the consent form to subjects at the time of consent.
6. If this is a funded project, keep a copy of this approval letter with your proposal/grant file.

Please inform Office of Institutional Research (OIR) or myself when this project is terminated. As noted above, you must also provide OIR with an annual status report and receive approval for maintaining your status. If your project receives funding which requests an annual update approval, you must request this from the IRB one month prior to the annual update. Thank you for your cooperation. If you have any questions, please contact me.

Sincerely,

Thomas Peard
Chair, Baker University IRB

Appendix D: Tables for Other Interactions for RQ2

Table D1

Interaction Effect of Gender, Special Education Status, and SES on Behavior Referrals for RQ2

Implementation	Gender	Special Education	SES	*M*	*SD*	*n*
Before Implementation of SWPBS						
	Male	No Special Education	Free	.34	1.058	849
			Reduced	.22	.790	121
			Full Pay	.11	.526	473
			Total	.25	.901	1,443
		Special Education	Free	.38	.970	245
			Reduced	.03	.171	34
			Full Pay	.14	.618	93
			Total	.28	.856	372
		Total	Free	.35	1.038	1,094
			Reduced	.18	.707	155
			Full Pay	.11	.542	566
			Total	.26	.892	1,815
	Female	No Special Education	Free	.12	.543	839
			Reduced	.02	.129	119
			Full Pay	.03	.393	515
			Total	.08	.474	1,473
		Special Education	Free	.19	.870	117
			Reduced	.06	.236	18
			Full Pay	.11	.471	35
			Total	.16	.756	170
		Total	Free	.13	.592	956
			Reduced	.02	.147	137
			Full Pay	.04	.399	550
			Total	.09	.511	1,643
	Total	No Special Education	Free	.23	.849	1,688
			Reduced	.12	.577	240
			Full Pay	.07	.463	988
			Total	.17	.723	2,916
		Special Education	Free	.31	.942	362
			Reduced	.04	.194	52
			Full Pay	.13	.580	128
			Total	.25	.827	542
		Total	Free	.25	.866	2,050
			Reduced	.11	.530	292
			Full Pay	.07	.478	1,116
			Total	.18	.741	3,458
After Implementation of SWPBS						
	Male	No Special Education	Free	.23	.749	1,760
			Reduced	.10	.399	277

			Full Pay	.08	.440	927
			Total	.18	.643	2,964
		Special Education	Free	.34	1.041	486
			Reduced	.31	.868	68
			Full Pay	.15	1.067	195
			Total	.29	1.035	749
		Total	Free	.26	.822	2,246
			Reduced	.14	.530	345
			Full Pay	.10	.598	1,122
			Total	.20	.741	3,713
	Female	No Special Education	Free	.07	.348	1,931
			Reduced	.06	.388	248
			Full Pay	.02	.276	1,059
			Total	.05	.330	3,238
		Special Education	Free	.05	.536	236
			Reduced	.00	.000	18
			Full Pay	.12	.564	58
			Total	.06	.525	312
		Total	Free	.07	.373	2,167
			Reduced	.05	.375	266
			Full Pay	.03	.298	1,117
			Total	.05	.351	3,550
	Total	No Special Education	Free	.15	.581	3,691
			Reduced	.08	.394	525
			Full Pay	.05	.363	1,986
			Total	.11	.508	6,202
		Special Education	Free	.25	.917	722
			Reduced	.24	.781	86
			Full Pay	.14	.974	253
			Total	.22	.921	1,061
		Total	Free	.16	.649	4,413
			Reduced	.10	.471	611
			Full Pay	.06	.474	2,239
			Total	.13	.588	7,263
Total						
	Male	No Special Education	Free	.27	.863	2,609
			Reduced	.14	.550	398
			Full Pay	.09	.471	1,400
			Total	.20	.739	4,407
		Special Education	Free	.35	1.017	731
			Reduced	.22	.726	102
			Full Pay	.15	.944	288
			Total	.29	.979	1,121
		Total	Free	.29	.900	3,340
			Reduced	.16	.590	500
			Full Pay	.10	.580	1,688
			Total	.22	.794	5,528
	Female	No Special Education	Free	.08	.417	2,770

		Reduced	.04	.328	367
		Full Pay	.03	.319	1,574
		Total	.06	.381	4,711
	Special Education	Free	.10	.667	353
		Reduced	.03	.167	36
		Full Pay	.12	.529	93
		Total	.10	.618	482
	Total	Free	.08	.452	3,123
		Reduced	.04	.317	403
		Full Pay	.03	.334	1,667
		Total	.06	.409	5,193
Total	No Special Education	Free	.17	.678	5,379
		Reduced	.09	.459	765
		Full Pay	.06	.399	2,974
		Total	.13	.586	9,118
	Special Education	Free	.27	.925	1,084
		Reduced	.17	.635	138
		Full Pay	.14	.861	381
		Total	.23	.890	1,603
	Total	Free	.19	.726	6,463
		Reduced	.11	.490	903
		Full Pay	.07	.475	3,355
		Total	.14	.642	10,721

Table D2

Interaction Effect of Grade Level, Special Education Status, and Race on Behavior Referrals for RQ2

Implementation	Grade	Special Education	Race	*M*	*SD*	*n*
Before Implementation of SWPBS						
	1	No Special Education	A	.00	.000	8
		Total		.00	.000	8
		No Special Education	B	.08	.382	265
		Special Education		.13	.428	31
		Total		.08	.386	296
		No Special Education	H	.22	1.557	73
		Special Education		.17	.408	6
		Total		.22	1.499	79
		No Special Education	I	.00	.000	3
		Total		.00	.000	3
		No Special Education	M	.03	.167	36
		Special Education		.00	.000	3
		Total		.03	.160	39
		No Special Education	P	.00	.000	3
		Total		.00	.000	3
		No Special Education	W	.10	.640	218
		Special Education		.34	1.181	32
		Total		.13	.733	250
	2	No Special Education	A	.00	.000	9
		Total		.00	.000	9
		No Special Education	B	.22	.842	233
		Special Education		.14	.516	43
		Total		.21	.800	276
		No Special Education	H	.03	.169	69
		Special Education		.18	.603	11
		Total		.05	.271	80
		No Special Education	I	.00	.000	2
		Total		.00	.000	2
		No Special Education	M	.11	.315	28
		Special Education		.00	.000	5
		Total		.09	.292	33
		No Special Education	P	.00	.000	3
		Special Education		.00	.000	1
		Total		.00	.000	4
		No Special Education	W	.10	.519	220
		Special Education		.29	1.167	41
		Total		.13	.665	261
		No Special Education	Total	.14	.641	564
		Special Education		.20	.837	101

	Total		.15	.674	665
	No Special Education	A	.00	.000	7
	Total		.00	.000	7
	No special Education	B	.18	.650	251
	Special education		.24	.639	46
	Total		.19	.647	297
	No Special Education	H	.07	.322	56
3	Special education		.08	.277	13
	Total		.07	.312	69
	No Special Education	I	.00	.000	4
	Special Education		.00	.000	2
	Total		.00	.000	6
	No Special Education	M	.21	.819	29
	Special Education		.00	.000	4
	Total		.18	.769	33
	No Special Education	P	.00	.000	3
	Total		.00	.000	3
	No Special Education	W	.15	.876	236
	Special Education		.25	.976	64
	Total		.17	.898	300
	No Special Education	Total	.16	.730	586
	Special Education		.22	.790	129
	Total		.17	.741	715
4	No Special Education	Asian	.00	.000	9
	Special Education		.00	.000	2
	Total		.00	.000	11
	No Special Education	Black	.22	.861	265
	Special Education		.25	.654	55
	Total		.23	.827	320
	No Special Education	Hispanic	.07	.315	68
	Special Education		.33	.707	9
	Total		.10	.383	77
	No Special Education	Indian	.00	.000	. 2
	Total		.00	.000	2
	No Special Education	Mixed	.11	.424	27
	Special Education		.00	.000	5
	Total		.09	.390	32
	No Special Education	Pacific Islander	.00	.000	4
	Total		.00	.000	4
	No Special Education	White	.02	.179	215
	Special Education		.24	.821	42
	Total		.06	.376	257
	No Special Education	Total	.12	.610	590
	Special Education		.24	.698	113
	Total		.14	.626	703
5	No Special Education	Asian	.00	.000	8
	Total		.00	.000	8
	No Special Education	Black	.54	1.153	61

		Special Education		.57	1.258	61
		Total		.54	1.173	301
		No Special Education	Hispanic	.12	.415	60
		Special Education		.00	.000	5
		Total		.11	.400	65
		No Special Education	Indian	2.00	.000	1
		Total		2.00	.000	1
		No Special Education	Mixed	.38	.862	29
		Special Education		.00	.000	4
		Total		.33	.816	33
		No Special Education	Pacific Islander	.22	.667	9
		Special Education		.00	.000	2
		Total		.18	.603	11
		No Special Education	White	.15	.532	223
		Special Education		.13	.474	55
		Total		.15	.520	278
		No Special Education	Total	.32	.878	570
		Special Education		.33	.952	127
		Total		.33	.891	697
	Total	No Special Education	Asian	.00	.000	41
		Special Education		.00	.000	2
		Total		.00	.000	43
		No Special Education	Black	.24	.824	1,254
		Special Education		.30	.823	236
		Total		.25	.824	1,490
		No Special Education	Hispanic	.10	.785	326
		Special Education		.16	.479	44
		Total		.11	. 755	370
		No Special Education	Indian	.17	.577	12
		Special Education		.00	.000	2
		Total		.14	.535	14
		No Special Education	Mixed	.16	.582	149
		Special Education		.00	.000	21
		Total		.14	.547	170
		No Special Education	Pacific Islander	.09	.426	22
		Special Education		.00	.000	3
		Total		.08	.400	25
		No Special Education	White	.11	.601	1,112
		Special Education		.24	.923	234
		Total		.13	.669	1,346
		No Special Education	Total	.13	.669	1,346
		Special Education		.25	.827	542
		Total		.18	.741	3,458
After Implementation of SWPBS						
	1	No Special Education	Asian	.00	.000	17

	Special Education		.00	.000	2
	Total		.00	.000	19
	No Special Education	Black	.12	.599	633
	Special Education		.19	.473	59
	Total		.13	.589	692
	No Special Education	Hispanic	.03	.418	143
	Special Education		.00	.00	16
	Total		.03	.397	159
	No Special Education	Indian	.00	.00	3
	Total		.00	.00	3
	No Special Education	Mixed	.12	.733	48
	Total		.12	.733	48
	No Special Education	Pacific Islander	.00	.000	5
	Total		.00	.000	5
	No Special Education	White	.07	.490	488
	Special Education		.22	1.144	68
	Total		.09	.609	556
	No Special Education	Total	.09	.544	1,337
	Special Education		.18	.839	145
	Total		.10	.579	1,482
2	No Special Education	Asian	.11	.459	19
	Special Education		.00	.00	1
	Total		.10	.447	20
	No Special Education	Black	.12	.565	644
	Special Education		.23	.855	84
	Total		.13	.606	728
	No Special Education	Hispanic	.05	.335	150
	Special Education		.37	1,025	16
	Total		.08	.454	166
	No Special Education	Indian	.00	.000	3
	Total		.00	.000	3
	No Special Education	Mixed	.09	.348	55
	Special Education		.17	.408	6
	Total		.10	.351	61
	No Special Education	Pacific Islander	.00	.000	5
	Total		.00	.000	5
	No Special Education	White	.04	.358	440
	Special Education		.12	.544	75
	Total		.05	.391	515
	No Special Education	Total	.09	.470	1,316
	Special Education		.19	.744	182
	Total		.10	.512	1,498
3	No Special Education	Asian	.05	.218	21

	Special Education		.00	.000	1
	Total		.05	.213	22
	No Special Education	Black	.09	.369	575
	Special Education		.27	1,134	106
	Total		.12	.564	681
	No Special Education	Hispanic	.04	.235	141
	Special Education		1.04	3.432	24
	Total		.19	1.351	165
	No Special Education	Indian	.25	.500	4
	Special Education		.00	.000	1
	Total		.20	.447	5
	No Special Education	Mixed	.05	.221	40
	Special Education		.00	.000	6
	Total		.04	.206	46
	No Special Education	Pacific Islander	1.00	1.000	5
	Special Education		.00	.000	1
	Total		.83	.983	6
	No Special Education	White	.08	.389	413
	Special Education		.26	.999	78
	Total		.11	.537	491
	No Special Education	Total	.08	.366	1,199
	Special Education		.34	1.517	217
	Total		.12	.688	1,416
4	No Special Education	Asian	.00	.000	15
	Special Education		.00	.000	1
	Total		.00	.000	16
	No Special Education	Black	.20	.628	545
	Special Education		.25	.806	110
	Total		.21	.661	655
	No Special Education	Hispanic	.08	.341	132
	Special Education		.04	.209	23
	Total		.07	.325	155
	No Special Education	Indian	.00	.000	5
	Special Education		.00	.000	3
	Total		.00	.000	8
	No Special Education	Mixed	.29	.814	41
	Special Education		.00	.000	7
	Total		.25	.758	48
	No Special Education	Pacific Islander	1.50	2.121	2
	Total		1.50	2.121	2
	No Special Education	White	.10	.517	438
	Special Education		.13	.444	99
	Total		.10	.504	537

	No Special Education	Total	.15	.572	1,178
	Special Education		.17	.619	243
	Total		.15	.581	1,421
5	No Special Education	Asian	.00	.000	16
	Special Education		.00	.000	4
	Total		.00	.000	20
	No Special Education	Black	.27	.747	547
	Special Education		.30	.712	142
	Total		.27	.740	689
	No Special Education	Hispanic	.07	.336	128
	Special Education		.04	.192	27
	Total		.06	.316	155
	No Special Education	Indian	.00	.000	4
	Total		.00	.000	4
	No Special Education	Mixed	.15	.556	46
	Special Education		.17	.408	6
	Total		.15	.538	52
	No Special Education	Pacific Islander	.00	.000	5
	Special Education		1.00	.000	1
	Total		.17	.408	6
	No Special Education	White	04	.208	426
	Special Education		.14	.541	94
	Total		.06	.474	520
	No Special Education	Total	.15	.558	1,172
	Special Education		.21	.616	274
	Total		.16	.570	1,446
Total	No Special Education	Asian	.03	.237	88
	Special Education		.00	.000	9
	Total		.03	.226	97
	No Special Education	Black	.16	.595	2,944
	Special Education		.26	.839	501
	Total		.17	.637	3,445
	No Special Education	Hispanic	.05	.338	694
	Special Education		.31	1,709	106
	Total		.09	.700	800
	No Special Education	Indian	.05	.229	19
	Special Education		.00	.000	4
	Total		.04	.209	23
	No Special Education	Mixed	.14	.574	230
	Special Education		.08	.277	25
	Total		.13	.552	255
	No Special Education	Pacific Islander	.36	.848	22
	Special Education		.50	.707	2

		Total		.38	.824	24
		No Special Education	White	.07	.411	2,205
		Special Education		.17	.753	414
		Total		.08	.482	2,619
		No Special Education	Total	.11	.508	6,202
		Special Education		.22	.921	1,061
		Total		.13	.588	7,263
Total						
	1	No Special Education	Asian	.00	.000	25
		Special Education		.00	.000	2
		Total		.00	.000	27
		No Special Education	Black	.11	.544	898
		Special Education		.17	.456	90
		Total		.11	.536	988
		No Special Education	Hispanic	.10	.967	216
		Special Education		.05	.213	22
		Total		.09	.923	238
		No Special Education	Indian	.00	.000	6
		Total		.00	.000	6
		No Special Education	Mixed	.08	.564	84
		Special Education		.00	.000	3
		Total		.08	.554	87
		No Special Education	Pacific Islander	.00	.000	8
		Total		.00	.000	8
		No Special Education	White	.08	.540	706
		Special Education		.26	1.151	100
		Total		.10	.650	806
		No Special Education	Total	.09	.600	1,943
		Special Education		.19	.629	217
		Total		.10	.629	2,160
	2	No Special Education	Asian	.07	.378	28
		Special Education		.00	.000	1
		Total		.07	.371	29
		No Special Education	Black	.15	.651	877
		Special Education		.20	.756	127
		Total		.16	.665	1,004
		No Special Education	Hispanic	.04	.292	219
		Special Education		.30	.869	27
		Total		.07	.403	246
		No Special Education	Indian	.00	.000	5
		Total		.00	.000	5
		No Special Education	Mixed	.10	.335	83
		Special Education		.09	.302	11

	Total		.10	.330	94
	No Special Education	Pacific Islander	.00	.000	8
	Special Education		.00	.000	1
	Total		.00	.000	9
	No Special Education	White	.06	.419	660
	Special Education		.18	.819	116
	Total		.08	.501	776
	No Special Education	Total	.10	.527	1,880
	Special Education		.19	.777	283
	Total		.11	.567	2,163
3	No Special Education	Asian	.04	.189	28
	Special Education		.00	.000	1
	Total		.03	.186	29
	No Special Education	Black	.12	.474	826
	Special Education		.26	1.008	152
	Total		.14	.591	978
	No Special Education	Hispanic	.05	.262	197
	Special Education		.70	2.788	37
	Total		.15	1.147	234
	No Special Education	Indian	.13	.354	8
	Special Education		.00	.000	3
	Total		.09	.302	11
	No Special Education	Mixed	.12	.557	69
	Special Education		.00	.000	10
	Total		.10	.521	79
	No Special Education	Pacific Islander	.63	.916	8
	Special Education		.00	.000	1
	Total		.56	.882	9
	No Special Education	White	.11	.613	649
	Special Education		.25	.985	142
	Total		.13	.696	791
	No Special Education	Total	.11	.516	1,785
	Special Education		.29	1.294	346
	Total		.14	.706	2,131
4	No Special Education	Asian	.00	.000	24
	Special Education		.00	.000	3
	Total		.00	.000	27
	No Special Education	Black	.21	.712	810
	Special Education		.25	.754	165
	Total		.21	.719	975
	No Special Education	Hispanic	.08	.332	200
	Special Education		.13	.421	32
	Total		.08	.345	232

	No Special Education	Indian	.00	.000	7
	Special Education		.00	.000	3
	Total		.00	.000	10
	No Special Education	Mixed	.22	.688	68
	Special Education		.00	.000	12
	Total		.19	.638	80
	No Special Education	Pacific Islander	.50	1.225	6
	Total		.50	1.225	6
	No Special Education	White	.07	.473	653
	Special Education		.16	.581	141
	Total		.09	.467	794
	No Special Education	Total	.14	.585	1,768
	Special Education		.19	.645	356
	Total		.15	.596	2,214
5	No Special Education	Asian	.00	.000	24
	Special Education		.00	.000	4
	Total		.00	.000	28
	No Special Education	Black	.35	.899	787
	Special Education		.38	.917	203
	Total		.35	.902	990
	No Special Education	Hispanic	.09	.363	188
	Special Education		.03	.177	32
	Total		.08	.342	220
	No Special Education	Indian	.40	.894	5
	Total		.40	.894	5
	No Special Education	Mixed	.24	.694	75
	Special Education		.10	.316	10
	Total		.22	.661	85
	No Special Education	Pacific Islander	.14	.535	14
	Special Education		.33	.577	3
	Total		.18	.529	17
	No Special Education	White	.08	.358	649
	Special Education		.13	.515	149
	Total		.09	.392	798
	No Special Education	Total	.21	.684	1,742
	Special Education		.25	.740	401
	Total		.22	.695	2,143
Total	No Special Education	Asian	.02	.196	129
	Special Education		.00	.00	11
	Total		.02	.188	140
	No Special Education	Black	.18	.673	4,198
	Special Education		.27	.833	737
	Total		.20	.699	4,935

No Special Education	Hispanic	.07	.524	1,020
Special Education		.27	1.459	150
Total		.09	.718	1,170
No Special Education	Indian	.10	.396	31
Special Education		.00	.000	6
Total		.08	.363	37
No Special Education	Mixed	.15	.577	379
Special Education		.04	.206	46
Total		.14	.550	425
No Special Education	Pacific Islander	.23	.677	44
Special Education		.20	.447	5
Total		.22	.654	49
No Special Education	White	.08	.483	3,317
Special Education		.19	.919	648
Total		.10	.553	3,965
No Special Education	Total	.13	.586	9,118
Special Education		.23	.890	1,603
Total		.14	.642	10,721

Table D3

Interaction Effect of Gender, Race, Special Education Status, and SES for RQ2

Gender	Race	Special Education	SES	*M*	*SD*	*n*
Male						
	Asian	No Special Education	Free	.00	.000	33
			Reduced	.00	.000	8
			Full Pay	.09	.390	32
			Total	.04	.260	73
		Special Education	Free	.00	.000	1
			Reduced	.00	.000	3
			Full Pay	.00	.000	3
			Total	.00	.000	7
		Total	Free	.00	.000	34
			Reduced	.00	.000	11
			Full Pay	.09	.373	35
			Total	.04	.249	80
	Black	No Special Education	Free	.33	.905	1,330
			Reduced	.21	.713	189
			Full Pay	.15	.669	442
			Total	.28	.843	1,961
		Special Education	Free	.39	.945	374
			Reduced	.28	.861	46
			Full Pay	.05	.209	88
			Total	.32	.865	508
		Total	Free	.35	.914	1,704
			Reduced	.23	.743	235
			Full Pay	.13	.618	530
			Total	.29	.848	2,469
	Hispanic	No Special Education	Free	.14	.811	333
			Reduced	.07	.325	55
			Full Pay	.06	.398	124
			Total	.12	.691	512
		Special Education	Free	.31	1.291	70
			Reduced	.40	.966	10
			Full Pay	.52	2.694	27
			Total	.37	1.719	107
		Total	Free	.17	.913	403
			Reduced	.12	.484	65
			Full Pay	.15	1.191	151
			Total	.16	.955	619
	Indian	No Special Education	Free	.29	.756	7
			Reduced	.00	.000	2
			Full Pay	.20	.447	5
			Total	.21	.579	14
		Special Education	Free	.00	.000	3
			Reduced			
			Full Pay	.00		1

		Total	.00	.000	4
	Total	Free	.20	.632	10
		Reduced	.00	.000	2
		Full Pay	.17	.408	6
		Total	.17	.514	18
Mixed	No Special Education	Free	.36	.898	116
		Reduced	.13	.354	8
		Full Pay	.02	.140	51
		Total	.25	.754	175
	Special Education	Free	.09	.288	23
		Reduced	.00	.000	9
		Full Pay	.00	.000	2
		Total	.06	.239	34
	Total	Free	.32	.834	139
		Reduced	.06	.243	17
		Full Pay	.02	.137	53
		Total	.22	.700	209
Pacific Islander	No Special Education	Free	.37	.839	27
		Reduced	.00	.000	2
		Full Pay	.00	.000	4
		Total	.30	.770	33
	Special Education	Free	.25	.500	4
		Reduced			
		Full Pay			
		Total	.25	.500	4
	Total	Free	.35	.798	31
		Reduced	.00	.000	2
		Full Pay	.00	.000	4
		Total	.30	.740	37
White	No Special Education	Free	.21	.814	763
		Reduced	.08	.348	134
		Full Pay	.07	.338	742
		Total	.13	.612	1,639
	Special Education	Free	.34	1.087	256
		Reduced	.15	.558	34
		Full Pay	.14	.594	167
		Total	.25	.906	457
	Total	Free	.24	.891	1,019
		Reduced	.10	.398	168
		Full Pay	.08	.398	909
		Total	.16	.688	2,096
Total	No Special Education	Free	.27	.863	2,609
		Reduced	.14	.550	398
		Full Pay	.09	.471	1,400
		Total	.20	.739	4,407
	Special Education	Free	.35	1.017	731
		Reduced	.22	.726	102
		Full Pay	.15	.944	288
		Total	.29	.979	1,121

		Total	Free	.29	.900	3,340
			Reduced	.16	.590	500
			Full Pay	.10	.580	1,688
			Total	.22	.794	5,528
Female						
	Asian	No Special Education	Free	.00	.000	17
			Reduced	.00	.000	11
			Full Pay	.00	.000	28
			Total	.00	.000	56
		Special Education	Free	.00	.000	1
			Reduced			
			Full Pay	.00	.000	3
			Total	.00	.000	4
		Total	Free	.00	.000	18
			Reduced	.00	.000	11
			Full Pay	.00	.000	31
			Total	.00	.000	60
	Black	No Special Education	Free	.12	.503	1,557
			Reduced	.09	.463	181
			Full Pay	.03	.267	499
			Total	.10	.459	2,237
		Special Education	Free	.13	.752	188
			Reduced	.06	.243	17
			Full Pay	.37	.924	24
			Total	.15	.748	229
		Total	Free	.12	.535	1,745
			Reduced	.09	.448	198
			Full Pay	.05	.333	523
			Total	.10	.493	2,466
	Hispanic	No Special Education	Free	.04	.318	333
			Reduced	.00	.000	41
			Full Pay	.00	.000	134
			Total	.02	.258	508
		Special Education	Free	.00	.000	33
			Reduced	.00	.000	5
			Full Pay	.00	.000	5
			Total	.00	.000	43
		Total	Free	.03	.303	366
			Reduced	.00	.000	46
			Full Pay	.00	.000	139
			Total	.02	.248	551
	Indian	No Special Education	Free	.00	.000	8
			Full Pay	.00	.000	9
			Total	.00	.000	17
		Special Education	Free	.00		1
			Full Pay	.00		1
			Total	.00	.000	2
		Total	Free	.00	.000	9
			Full Pay	.00	.000	10
			Total	.00	.000	19

	Mixed	No Special Education	Free	.08	.397	123
			Reduced	.00	.000	16
			Full Pay	.03	.248	65
			Total	.06	.339	204
		Special Education	Free	.00	.000	7
			Reduced	.00	.000	2
			Full Pay	.00	.000	3
			Total	.00	.000	12
		Total	Free	.08	.386	130
			Reduced	.00	.000	18
			Full Pay	.03	.243	68
			Total	.06	.329	216
	Pacific Islander	No Special Education	Free	.00	.000	11
			Total	.00	.000	11
		Special Education	Free	00		1
			Total	.00		1
		Total	Free	.00	.000	12
			Total	.00	.000	12
	White	No Special Education	Free	.03	.205	721
			Reduced	.00	.000	118
			Full Pay	.03	.379	839
			Total	.03	.300	1,678
		Special Education	Free	.07	.645	122
			Reduced	.00	.000	12
			Full Pay	.04	.265	57
			Total	.06	.535	191
		Total	Free	.04	.310	843
			Reduced	.00	.000	130
			Full Pay	.03	.373	896
			Total	.03	.332	1,869
	Total	No Special Education	Free	.08	.417	2,770
			Reduced	.04	.328	367
			Full Pay	.03	.319	1,574
			Total	.06	.381	4,711
		Special Education	Free	.10	.667	353
			Reduced	.03	.167	36
			Full Pay	.12	.529	93
			Total	.10	.618	482
		Total	Free	.08	.452	3,123
			Reduced	.04	.317	403
			Full Pay	.03	.334	1,667
			Total	.06	.409	5,193
Total						
	Asian	No Special Education	Free	.00	.000	50
			Reduced	.00	.000	19
			Full Pay	.05	.287	60
			Total	.02	.196	129
		Special Education	Free	.00	.000	2
			Reduced	.00	.000	3

		Full Pay	.00	.000	6
		Total	.00	.000	11
	Total	Free	.00	.000	52
		Reduced	.00	.000	22
		Full Pay	.05	.274	66
		Total	.02	.188	140
Black	No Special Education	Free	.22	.724	2,887
		Reduced	.15	.606	370
		Full Pay	.09	.501	941
		Total	.18	.673	4,198
	Special Education	Free	.31	.893	562
		Reduced	.22	.750	63
		Full Pay	.12	.479	112
		Total	.27	.833	737
	Total	Free	.23	.755	3,449
		Reduced	.16	.629	433
		Full Pay	.09	.499	1,053
		Total	.20	.699	4,935
Hispanic	No Special Education	Free	.09	.618	666
		Reduced	.04	.248	96
		Full Pay	.03	.277	258
		Total	.07	.524	1,020
	Special Education	Free	.21	1.072	103
		Reduced	.27	.799	15
		Full Pay	.44	2.475	32
		Total	.27	1.459	150
	Total	Free	.11	.696	769
		Reduced	.07	.374	111
		Full Pay	.08	.861	290
		Total	.09	.718	1,170
Indian	No Special Education	Free	.13	.516	15
		Reduced	.00	.000	2
		Full Pay	.07	.267	14
		Total	.10	.396	31
	Special Education	Free	.00	.000	4
		Reduced	.00		
		Full Pay	.00	.000	2
		Total	.00	.000	6
	Total	Free	.11	.459	19
		Reduced	.00	.000	2
		Full Pay	.06	.250	16
		Total	.08	.363	37
Mixed	No Special Education	Free	.22	.700	239
		Reduced	.04	.204	24
		Full Pay	.03	.207	116
		Total	.15	.577	379
	Special Education	Free	.07	.254	30
		Reduced	.00	.000	11
		Full Pay	.00	.000	5
		Total	.04	.206	46

	Total	Free	.20	.667	269
		Reduced	.03	.169	35
		Full Pay	.02	.203	121
		Total	.14	.550	425
Pacific Islander	No Special Education	Free	.26	.724	38
		Reduced	.00	.000	2
		Full Pay	.00	.000	4
		Total	.23	.677	44
	Special Education	Free	.20	.447	5
		Total	.20	.447	5
	Total	Free	.26	.693	43
		Reduced	.00	.000	2
		Full Pay	.00	.000	4
		Total	.22	.654	49
White	No Special Education	Free	.12	.607	1,484
		Reduced	.04	.257	252
		Full Pay	.05	.361	1,581
		Total	.08	.483	3,317
	Special Education	Free	.25	.973	378
		Reduced	.11	.482	46
		Full Pay	.12	.531	224
		Total	.19	.819	648
	Total	Free	.15	.699	1,862
		Reduced	.05	.302	298
		Full Pay	.05	.387	1,805
		Total	.10	.553	3,965
Total	No Special Education	Free	.17	.678	5,379
		Reduced	.09	.459	765
		Full Pay	.06	.399	2,974
		Total	.13	.586	9,118
	Special Education	Free	.27	.925	1,084
		Reduced	.17	.635	138
		Full Pay	.14	.861	381
		Total	.23	.890	1,603
	Total	Free	.19	.726	6,463
		Reduced	.11	.490	903
		Full Pay	.07	.475	3,355
		Total	.14	.642	10,721

Appendix E: Tables for Other Interactions for RQ4

Table E1

Interaction Effect of Race and Special Education Status on Attendance for RQ4

Race	Special Education	*M*	*SD*	*n*
Asian	No Special Education	395.31	221.572	48
	Special Education	306.67	246.847	3
	Total	390.10	221.426	51
Black	No Special Education	270.94	229.356	1,578
	Special Education	137.98	180.154	166
	Total	258.28	228.451	1,744
Hispanic	No Special Education	303.94	243.441	391
	Special Education	156.39	180.458	36
	Total	291.50	242.107	427
Indian	No Special Education	180.00	184.499	11
	Total	180.00	184.499	11
Mixed	No Special Education	301.54	237.354	149
	Special Education	381.00	243.514	10
	Total	306.54	237.747	159
Pacific Islander	No Special Education	333.67	227.411	15
	Total	333.67	227.411	15
White	No Special Education	315.76	241.874	1,219
	Special Education	195.12	208.277	169
	Total	301.07	241.219	1,388
Total	No Special Education	293.81	236.766	3,411
	Special Education	172.50	199.350	384
	Total	281.53	236.083	3,795

Table E2

Interaction Effect of Special Education Status and SES on Attendance for RQ4

Special Education	SES	*M*	*SD*	*n*
No Special Education	Free	260.94	227.569	2,049
	Reduced	329.60	238.906	297
	Full Pay	347.08	242.533	1,065
	Total	293.81	236.766	3,411
Special Education	Free	143.48	184.494	250
	Reduced	160.28	157.675	36
	Full Pay	251.02	228.279	98
	Total	172.50	199.350	384
Total	Free	248.16	226.229	2,299
	Reduced	311.29	237.236	333
	Full Pay	338.98	242.743	1,163
	Total	281.53	236.083	3,795

Table E3

Interaction Effect of Gender and SES on Attendance for RQ4

Implementation	Gender	SES	*M*	*SD*	*n*
Before Implementation	Male	Free	222.65	221.319	345
		Reduced	304.26	251.098	54
		Full Pay	312.01	242.105	201
		Total	259.93	234.878	600
	Female	Free	270.96	234.612	338
		Reduced	328.41	244.145	41
		Full Pay	389.41	245.003	196
		Total	315.43	244.760	575
	Total	Free	246.56	229.106	693
		Reduced	314.68	247.101	95
		Full Pay	350.23	246.299	397
		Total	287.09	241.264	1,175
After Implementation	Male	Free	231.15	220.447	798
		Reduced	293.52	237.993	132
		Full Pay	315.99	238.421	342
		Total	260.44	230.315	1,272
	Female	Free	266.10	228.307	818
		Reduced	330.38	227.708	106
		Full Pay	346.99	242.160	424
		Total	296.60	235.640	1,348
	Total	Free	248.84	225.070	1,616
		Reduced	309.94	233.702	238
		Full Pay	333.15	240.835	766
		Total	279.04	233.725	2,620
Total	Male	Free	228.59	220.648	1,143
		Reduced	296.64	241.236	186
		Full Pay	314.52	239.576	543
		Total	260.28	231.724	1,872
	Female	Free	267.52	230.077	1,156

		Reduced	329.83	231.563	147
		Full Pay	360.40	243.665	620
		Total	302.23	238.495	1,923
	Total	Free	248.16	226.229	2,299
		Reduced	311.29	237.236	333
		Full Pay	338.98	242.743	1,163
		Total	281.53	236.083	3,795

Table E4

Interaction Effect of Gender, Grade, and SES on Attendance for RQ4

Implementation	Gender	Grade	SES	*M*	*SD*	*n*
Before						
	Male	1	Free	104.95	149.729	186
			Reduced	171.21	180.221	29
			Full Pay	163.35	162.795	103
			Total	129.91	159.263	318
		2	Free	360.35	212.146	159
			Reduced	458.60	234.816	25
			Full Pay	468.27	211.784	98
			Total	406.56	219.716	282
		Total	Free	222.65	221.319	345
			Reduced	304.26	251.098	54
			Full Pay	312.01	242.105	201
			Total	259.93	234.878	600
	Female	1	Free	97.45	125.575	157
			Reduced	191.59	200.448	22
			Full Pay	221.80	161.933	86
			Total	145.62	156.216	265
		2	Free	421.46	200.874	181
			Reduced	486.84	190.286	19
			Full Pay	520.45	217.815	110
			Total	460.60	211.104	310
		Total	Free	270.96	234.612	338
			Reduced	328.41	244.145	41
			Full Pay	389.41	245.003	196
			Total	315.43	244.760	575
	Total	1	Free	101.52	139.047	343
			Reduced	180.00	187.531	51
			Full Pay	189.95	164.580	189
			Total	137.05	157.945	583
		2	Free	392.88	208.167	340
			Reduced	470.80	214.785	44
			Full Pay	495.87	216.060	208
			Total	434.86	216.756	592
		Total	Free	246.56	229.106	683
			Reduced	314.68	247.101	95
			Full Pay	350.23	246.299	397
			Total	287.09	241.264	1,175
After						
	Male	1	Free	93.17	130.718	393
			Reduced	123.22	148.634	59
			Full Pay	175.84	175.748	167
			Total	118.34	150.024	619

		2	Free	365.05	206.873	405
			Reduced	431.16	205.630	73
			Full Pay	449.74	212.344	175
			Total	395.14	211.492	653
		Total	Free	231.15	220.447	798
			Reduced	293.52	237.993	132
			Full Pay	315.99	238.421	342
			Total	260.44	230.315	1,272
	Female	1	Free	120.53	148.231	408
			Reduced	201.20	184.564	50
			Full Pay	199.56	170.644	228
			Total	152.67	163.281	686
		2	Free	410.96	200.198	410
			Reduced	445.71	199.815	56
			Full Pay	518.49	195.781	196
			Total	445.74	204.326	662
		Total	Free	266.10	228.307	818
			Reduced	330.38	227.708	106
			Full Pay	346.99	242.160	424
			Total	296.60	235.640	1,348
	Total	1	Free	107.10	140.494	801
			Reduced	158.99	169.832	109
			Full Pay	189.53	172.997	395
			Total	136.39	158.006	1,305
		2	Free	388.15	204.710	815
			Reduced	437.48	202.466	129
			Full Pay	486.06	206.365	371
			Total	420.61	209.371	1,315
		Total	Free	248.84	225.070	1,616
			Reduced	309.94	233.702	238
			Full Pay	333.15	240.835	766
			Total	279.04	233.725	2,620
Total						
	Male	1	Free	96.95	137.093	579
			Reduced	139.03	160.299	88
			Full Pay	171.07	170.724	270
			Total	122.26	153.235	937
		2	Free	363.72	208.195	564
			Reduced	438.16	212.539	98
			Full Pay	456.39	211.941	273
			Total	398.58	213.952	935
		Total	Free	228.59	220.648	1,143
			Reduced	296.64	241.236	186
			Full Pay	314.52	239.576	543
			Total	260.28	231.724	1,872
	Female	1	Free	114.12	142.565	565
			Reduced	198.26	188.183	72
			Full Pay	205.65	168.340	314

		Total	150.71	161.293	951
	2	Free	414.18	200.294	591
		Reduced	456.13	196.994	75
		Full Pay	519.20	203.623	306
		Total	450.48	206.519	972
	Total	Free	267.52	230.077	1,156
		Reduced	329.83	231.563	147
		Full Pay	360.40	243.665	620
		Total	302.23	238.495	1,923
Total	1	Free	105.43	140.024	1,144
		Reduced	165.69	175.348	160
		Full Pay	189.67	170.178	584
		Total	136.59	157.946	1,888
	2	Free	389.54	205.655	1,155
		Reduced	445.95	205.550	173
		Full Pay	489.59	209.766	579
		Total	425.03	211.737	1,907
	Total	Free	248.16	226.229	2,299
		Reduced	311.29	237.236	333
		Full Pay	338.98	242.743	1,163
		Total	281.53	236.083	3,795

Appendix F: Tables for Other Interactions for RQ8

Table F1

Interaction Effect of Race and Special Education Status on Academic Achievement for RQ8 (Grades 1 and 2)

Implementation	Race	Special Education	*M*	*SD*	*n*
Before	Asian	No Special Education	43.19	7.884	16
		Total	43.19	7.884	16
	Black	No Special Education	37.43	10.390	432
		Special Education	28.06	15.019	52
		Total	36.42	11.340	484
	Hispanic	No Special Education	39.75	7.735	118
		Special Education	42.25	7.641	12
		Total	39.98	7.731	130
	Indian	No Special Education	35.20	12.795	5
		Total	35.20	12.795	5
	Mixed	No Special Education	40.84	8.124	58
		Special Education	36.14	11.922	7
		Total	40.34	8.617	65
	Pacific	No Special Education	44.17	3.312	6
		Total	44.17	3.312	6
	White	No Special Education	41.12	8.585	382
		Special Education	35.36	13.018	61
		Total	40.32	9.512	443
	Total	No Special Education	39.40	9.434	1,017
		Special Education	33.15	14.053	132
		Total	38.68	10.260	1,149
After	Asian	No Special Education	43.69	6.732	32
		Special Education	39.33	5.508	3
		Total	43.31	6.681	35
	Black	No Special Education	36.71	10.166	1,121
		Special Education	26.36	13.201	114
		Total	35.76	10.897	1,235
	Hispanic	No Special Education	38.44	9.458	264
		Special Education	32.23	12.913	22
		Total	37.97	9.878	286
	Indian	No Special Education	38.17	11.583	6
		Total	38.17	11.583	6
	Mixed	No Special Education	38.67	9.565	88
		Special Education	39.00	2.646	3
		Total	38.68	9.413	91
	Pacific	No Special Education	34.78	12.940	9
		Total	34.78	12.940	9
	White	No Special Education	39.90	8.845	820
		Special Education	34.01	12.568	106
		Total	39.23	9.525	926

		No Special Education	38.19	9.713	2,340
		Special Education	30.46	13.291	248
		Total	37.45	10.361	2,588
Total	Asian	No Special Education	43.52	7.056	48
		Special Education	39.33	5.508	3
		Total	43.27	7.000	51
	Black	No Special Education	36.91	10.231	1,553
		Special Education	26.89	13.773	166
		Total	35.94	11.024	1,719
	Hispanic	No Special Education	38.85	8.971	382
		Special Education	35.76	12.215	34
		Total	38.59	9.299	416
	Indian	No Special Education	36.82	11.617	11
		Total	36.82	11.617	11
	Mixed	No Special Education	39.53	9.054	146
		Special Education	37.00	9.911	10
		Total	39.37	9.098	156
	Pacific	No Special Education	38.53	11.057	15
		Total	38.53	11.057	15
	White	No Special Education	40.29	8.778	1,202
		Special Education	34.50	12.712	167
		Total	39.58	9.531	1,369
	Total	No Special Education	38.56	9.644	3,357
		Special Education	31.39	13.602	380
		Total	37.83	10.344	3,737

Table F2

Interaction Effect of Gender and Grade Level on Academic Achievement for RQ8 (Grades 1 and 2)

Gender	Grade	*M*	*SD*	*n*
Male	1	35.68	11.136	916
	2	38.84	10.195	929
	Total	37.27	10.786	1,845
Female	1	36.32	10.333	922
	2	40.32	8.985	970
	Total	38.37	9.867	1,892
Total	1	36.00	10.742	1,838
	2	39.59	9.622	1,899
	Total	37.83	10.344	3,737

Table F3

Interaction Effect of Gender and Grade Level on Academic Achievement for RQ8 (Grades 1 and 2)

Implementation	Gender	Grade	*M*	*SD*	*n*
Before	Male	1	36.96	10.432	307
		2	40.08	10.338	279
		Total	38.45	10.495	586
	Female	1	37.09	10.296	253
		2	40.40	9.537	310
		Total	38.92	10.013	563
	Total	1	37.02	10.362	560
		2	40.25	9.917	589
		Total	38.68	10.260	1,149
After	Male	1	35.03	11.428	609
		2	38.31	10.094	650
		Total	36.73	10.879	1,259
	Female	1	36.03	10.339	669
		2	40.27	8.721	660
		Total	38.14	9.799	1,329
	Total	1	35.55	10.878	1,278
		2	39.30	9.475	1,310
		Total	37.45	10.361	2,588
Total	Male	1	35.68	11.136	916
		2	38.84	10.195	929
		Total	37.27	10.786	1,845
	Female	1	36.32	10.333	922
		2	40.32	8.985	970
		Total	38.37	9.867	1,892
	Total	1	36.00	10.742	1,838
		2	39.59	9.622	1,899
		Total	37.83	10.344	3,737

Table F4

Interaction Effect of Gender, Grade Level, and Special Education Status on Academic Achievement for RQ8 (Grades 1 and 2)

Implementation	Gender	Grade	Special Education	*M*	*SD*	*n*
Before						
	Male	1	No Special Education	37.69	9.563	272
			Special Education	31.34	14.625	35
			Total	36.96	10.432	307
		2	No Special Education	41.43	8.939	218
			Special Education	35.28	13.274	61
			Total	40.08	10.338	279
		Total	No Special Education	39.35	9.466	490
			Special Education	33.84	13.837	96
			Total	38.45	10.495	586
	Female	1	No Special Education	37.51	9.903	239
			Special Education	29.93	14.172	14
			Total	37.09	10.296	253
		2	No Special Education	41.03	8.684	288
			Special Education	32.18	15.212	22
			Total	40.40	9.537	310
		Total	No Special Education	39.44	9.412	527
			Special Education	31.31	14.652	36
			Total	38.92	10.013	563
	Total	1	No Special Education	37.61	9.714	511
			Special Education	30.94	14.363	49
			Total	37.02	10.362	560
		2	No Special Education	41.20	8.788	506
			Special Education	34.46	13.787	83
			Total	40.25	9.917	589
		Total	No Special Education	39.40	9.434	1,017
			Special Education	33.15	14.053	132
			Total	38.68	10.260	1,149
After						
	Male	1	No Special Education	35.72	11.009	535
			Special Education	30.08	13.147	74
			Total	35.03	11.428	609
		2	No Special Education	39.72	8.736	549
			Special Education	30.63	13.140	101
			Total	38.31	10.094	650
		Total	No Special Education	37.75	10.118	1,084
			Special Education	30.40	13.108	175
			Total	36.73	10.879	1,259
	Female	1	No Special Education	36.44	9.989	634
			Special Education	28.43	13.149	35

			Total	36.03	10.339	669
		2	No Special Education	40.74	8.071	622
			Special Education	32.61	14.038	38
			Total	40.27	8.721	660
		Total	No Special Education	38.57	9.337	1,256
			Special Education	30.60	13.810	73
			Total	38.14	9.799	1,329
	Total	1	No Special Education	36.11	10.469	1,169
			Special Education	29.55	13.195	109
			Total	35.55	10.878	1,278
		2	No Special Education	40.26	8.401	1,171
			Special Education	31.17	13.369	139
			Total	39.30	9.475	1,310
		Total	No Special Education	38.19	9.713	2,340
			Special Education	30.46	13.291	248
			Total	37.45	10.361	2,588
Total						
	Male	1	No Special Education	36.38	10.578	807
			Special Education	30.49	13.583	109
			Total	35.68	11.136	916
		2	No Special Education	40.21	8.822	767
			Special Education	32.38	13.342	162
			Total	38.84	10.195	929
		Total	No Special Education	38.25	9.944	1,574
			Special Education	31.62	13.447	271
			Total	37.27	10.786	1,845
	Female	1	No Special Education	36.74	9.971	873
			Special Education	28.86	13.506	49
			Total	36.32	10.333	922
		2	No Special Education	40.83	8.267	910
			Special Education	32.45	14.352	60
		Total	Total	40.32	8.985	970
			No Special Education	38.83	9.365	1,783
			Special Education	30.83	14.029	109
			Total	38.37	9.867	1,892
	Total	1	No Special Education	36.57	10.266	1,680
			Special Education	29.98	13.538	158
			Total	36.00	10.742	1,838
		2	No Special Education	40.55	8.528	1,677
			Special Education	32.40	13.589	222
			Total	39.59	9.622	1,899
		Total	No Special Education	38.56	9.644	3,357
			Special Education	31.39	13.602	380
			Total	37.83	10.344	3,737

Table F5

Interaction Effect of Gender, Race, and Special Education Status on Academic Achievement for RQ8 (Grades 1 and 2)

Implementation	Gender	Race	Special Education	*M*	*SD*	*n*
Before	Male	Asian	No Special Education	42.18	8.471	11
			Total	42.18	8.471	11
		Black	No Special Education	36.82	10.487	187
			Special Education	27.21	16.151	33
			Total	35.38	11.973	220
		Hispanic	No Special Education	40.92	7.224	53
			Special Education	41.22	7.902	9
			Total	40.97	7.259	62
		Indian	No Special Education	32.33	17.156	3
			Total	32.33	17.156	3
		Mixed	No Special Education	42.39	6.828	28
			Special Education	35.00	12.633	6
			Total	41.09	8.397	34
		Pacific Islander	No Special Education	43.40	3.050	5
			Total	43.40	3.050	5
		White	No Special Education	40.70	8.836	203
			Special Education	36.87	11.442	48
			Total	39.97	9.485	251
		Total	No Special Education	39.35	9.466	490
			Special Education	33.84	13.837	96
			Total	38.45	10.495	586
	Female	Asian	No Special Education	45.40	6.693	5
			Total	45.40	6.693	5
		Black	No Special Education	37.89	10.314	245
			Special Education	29.53	13.108	19
			Total	37.28	10.730	264
		Hispanic	No Special Education	38.78	8.055	65
			Special Education	45.33	7.234	3
			Total	39.07	8.086	68
		Indian	No Special Education	39.50	2.121	2
			Total	39.50	2.121	2
		Mixed	No Special Education	39.40	9.046	30
			Special Education	43.00		1
			Total	39.52	8.918	31
		Pacific Islander	No Special Education	48.00		1
			Total	48.00		1
		White	No Special Education	41.59	8.292	179
			Special Education	29.77	17.074	13
			Total	40.79	9.552	192
		Total	No Special Education	39.44	9.412	527

			Special Education	31.31	14.652	36
			Total	38.92	10.013	563
	Total	Asian	No Special Education	43.19	7.884	16
			Total	43.19	7.884	16
		Black	No Special Education	37.43	10.390	432
			Special Education	28.06	15.019	52
			Total	36.42	11.340	484
		Hispanic	No Special Education	39.75	7.735	118
			Special Education	42.25	7.641	12
			Total	39.98	7.731	130
		Indian	No Special Education	35.20	12.795	5
			Total	35.20	12.795	5
		Mixed	No Special Education	40.84	8.124	58
			Special Education	36.14	11.922	7
			Total	40.34	8.617	65
		Pacific Islander	No Special Education	44.17	3.312	6
			Total	44.17	3.312	6
		White	No Special Education	41.12	8.585	382
			Special Education	35.36	13.018	61
			Total	40.32	9.512	443
		Total	No Special Education	39.40	9.434	1,017
			Special Education	33.15	14.053	132
			Total	38.68	10.260	1,149
After	Male	Asian	No Special Education	44.33	3.658	15
			Total	44.33	3.658	15
		Black	No Special Education	35.77	10.673	488
			Special Education	27.00	13.129	79
			Total	34.55	11.445	567
		Hispanic	No Special Education	38.51	9.923	144
			Special Education	33.24	12.726	17
			Total	37.95	10.336	161
		Indian	No Special Education	32.00		1
			Total	32.00		1
		Mixed	No Special Education	39.27	9.015	48
			Special Education	36.00		1
			Total	39.20	8.933	49
		Pacific Islander	No Special Education	37.83	8.134	6
			Total	37.83	8.134	6
		White	No Special Education	39.55	9.300	382
			Special Education	33.15	12.581	78
			Total	38.47	10.204	460
		Total	No Special Education	37.75	10.118	1,084
			Special Education	30.40	13.108	175
			Total	36.73	10.879	1,259
	Female	Asian	No Special Education	43.12	8.681	17
			Special Education	39.33	5.508	3
			Total	42.55	8.281	20
		Black	No Special Education	37.44	9.704	633

			Special Education	24.91	13.441	35
			Total	36.78	10.307	668
		Hispanic	No Special Education	38.37	8.908	120
			Special Education	28.80	14.446	5
			Total	37.98	9.297	125
		Indian	No Special Education	39.40	12.502	5
			Total	39.40	12.502	5
		Mixed	No Special Education	37.95	10.256	40
			Special Education	40.50	.707	2
			Total	38.07	10.018	42
		Pacific Islander	No Special Education	28.67	20.502	3
			Total	28.67	20.502	3
		White	No Special Education	40.21	8.427	438
			Special Education	36.39	12.443	28
			Total	39.98	8.749	466
		Total	No Special Education	38.57	9.337	1,256
			Special Education	30.60	13.810	73
			Total	38.14	9.799	1,329
	Total	Asian	No Special Education	43.69	6.732	32
			Special Education	39.33	5.508	3
			Total	43.31	6.681	35
		Black	No Special Education	36.71	10.166	1,121
			Special Education	26.36	13.201	114
			Total	35.76	10.897	1,235
		Hispanic	No Special Education	38.44	9.458	264
			Special Education	32.23	12.913	22
			Total	37.97	9.878	286
		Indian	No Special Education	38.17	11.583	6
			Total	38.17	11.583	6
		Mixed	No Special Education	38.67	9.565	88
			Special Education	39.00	2.646	3
			Total	38.68	9.413	91
		Pacific Islander	No Special Education	34.78	12.940	9
			Total	34.78	12.940	9
		White	No Special Education	39.90	8.845	820
			Special Education	34.01	12.568	106
			Total	39.23	9.525	926
		Total	No Special Education	38.19	9.713	2,340
			Special Education	30.46	13.291	248
			Total	37.45	10.361	2,588
Total	Male	Asian	No Special Education	43.42	6.113	26
			Total	43.42	6.113	26
		Black	No Special Education	36.06	10.624	675
			Special Education	27.06	14.012	112
			Total	34.78	11.594	787
		Hispanic	No Special Education	39.16	9.319	197
			Special Education	36.00	11.775	26
			Total	38.79	9.660	223

	Indian	No Special Education	32.25	14.009	4
		Total	32.25	14.009	4
	Mixed	No Special Education	40.42	8.367	76
		Special Education	35.14	11.539	7
		Total	39.98	8.715	83
	Pacific Islander	No Special Education	40.36	6.727	11
		Total	40.36	6.727	11
	White	No Special Education	39.95	9.150	585
		Special Education	34.57	12.248	126
		Total	39.00	9.975	711
	Total	No Special Education	38.25	9.944	1,574
		Special Education	31.62	13.447	271
		Total	37.27	10.786	1,845
Female	Asian	No Special Education	43.64	8.180	22
		Special Education	39.33	5.508	3
		Total	43.12	7.944	25
	Black	No Special Education	37.56	9.874	878
		Special Education	26.54	13.386	54
		Total	36.92	10.425	932
	Hispanic	No Special Education	38.51	8.599	185
		Special Education	35.00	14.402	8
		Total	38.37	8.883	193
	Indian	No Special Education	39.43	10.245	7
		Total	39.43	10.245	7
	Mixed	No Special Education	38.57	9.714	70
		Special Education	41.33	1.528	3
		Total	38.68	9.529	73
	Pacific Islander	No Special Education	33.50	19.330	4
		Total	33.50	19.330	4
	White	No Special Education	40.61	8.404	617
		Special Education	34.29	14.203	41
		Total	40.21	8.991	658
	Total	No Special Education	38.83	9.365	1,783
		Special Education	30.83	14.029	109
		Total	38.37	9.867	1,892
Total	Asian	No Special Education	43.52	7.056	48
		Special Education	39.33	5.508	3
		Total	43.27	7.000	51
	Black	No Special Education	36.91	10.231	1,553
		Special Education	26.89	13.773	166
		Total	35.94	11.024	1,719
	Hispanic	No Special Education	38.85	8.971	382
		Special Education	35.76	12.215	34
		Total	38.59	9.299	416
	Indian	No Special Education	36.82	11.617	11
		Total	36.82	11.617	11
	Mixed	No Special Education	39.53	9.054	146
		Special Education	37.00	9.911	10

	Total	39.37	9.098	156
Pacific Islander	No Special Education	38.53	11.057	15
	Total	38.53	11.057	15
White	No Special Education	40.29	8.778	1,202
	Special Education	34.50	12.712	167
	Total	39.58	9.531	1,369
Total	No Special Education	38.56	9.644	3,357
	Special Education	31.39	13.602	380
	Total	37.83	10.344	3,737

Appendix G: Table for Other Interactions for RQ10

Table G1

Interaction Effects between Multiple Combinations of the Independent Variables on Academic Achievement as Measured by MAP Communication Arts for RQ10

Independent Variables	*F*	*df*	*p*
Gender * Race	3.006	6	.006
Gender * SPED Status	6.774	1	.009
Grade * Race	4.848	12	.000
Grade * SPED Status	11.642	2	.000
Race * SPED Status	6.160	6	.000
Race * SES	5.568	11	.000
SWPBS Imp * Gender * Grade	4.940	2	.007
SWPBS Imp * Gender * Race	1.915	6	.075
SWPBS Imp * Grade * SPED Status	15.161	2	.000
SWPBS Imp * Grade * SES	3.919	4	.004
SWPBS Imp * Race * SES	2.360	10	.009
SWPBS Imp * SPED Status * SES	3.034	2	.048
Gender * Grade * Race	1.795	10	.056
Gender * Grade * SES	5.010	4	.000
Gender * Race * SPED Status	5.117	4	.000
Gender * Race * SES	3.891	8	.000
Gender * SPED Status * SES	3.296	2	.037
Grade * Race * SPED Status	8.533	7	.000
Grade * Race * SES	3.188	18	.000
Grade * SPED Status * SES	2.998	4	.018
Race * SPED Status * SES	7.219	7	.000
SWPBS Imp * Gender * Grade * SPED Status	4.126	2	.016
SWPBS Imp * Gender * Grade * SES	7.803	4	.000
SWPBS Imp * Gender * Race * SPED Status	6.024	2	.002
SWPBS Imp * Grade* Race * SES	8.635	12	.000
SWPBS Imp * Grade * SPED Status * SES	7.531	4	.000
SWPBS Imp * Race * SPED Status * SES	3.745	4	.005
Gender * Grade * Race * SPED Status	3.645	4	.006
Gender * Grade * SPED Status * SES	7.971	4	.000
Gender * Race * SPED Status * SES	7.921	4	.000
Grade * Race * SPED Status * SES	6.684	8	.000
SWPBS Imp * Gender * Grade * Race * SPED	2.658	4	.031
SWPBS Imp * Gender * Grade * Race * SES	2.087	9	.027
SWPBS Imp * Gender * Grade * SPED *SES	10.948	4	.000
SWPBS Imp * Grade * Race * SPED * SESS	26.722	4	.000
SWPBS Imp *Gender *Grade *Race * SPED*SE	7.687	2	.000

Appendix H: Table for Other Interactions for RQ12

Table H1

Interaction Effects between Multiple Combinations of the Independent Variables on Academic Achievement as Measured by MAP Mathematics for RQ12

Independent Variables	*F*	*df*	*p*
Gender * Race	3.149	6	.004
Gender * SPED Status	3.366	1	.067
Grade * Race	3.349	12	.000
Grade * SPED Status	5.739	2	.003
Grade * SES	2.068	4	.082
Race * SPED Status	6.983	6	.000
Race * SES	5.543	11	.000
SWPBS Implementation * Gender * Grade	4.672	2	.009
SWPBS Implementation * Gender * Race	1.901	6	.077
SWPBS Implementation * Grade * SPED Status	10.152	2	.000
SWPBS Implementation * Grade * SES	3.556	4	.007
SWPBS Implementation * Race * SES	2.075	10	.023
Gender * Grade * Race	1.938	10	.036
Gender * Grade * SES	4.540	4	.001
Gender * Race * SPED Status	5.555	4	.000
Gender * Race * SES	3.126	8	.002
Gender * SPED Status * SES	2.950	2	.052
Grade * Race * SPED Status	6.073	7	.000
Grade * Race * SES	2.546	18	.000
Grade * SPED Status * SES	3.369	4	.009
Race * SPED Status * SES	8.194	7	.000
SWPBS Implementation * Gender * Grade * Race	2.105	7	.040
SWPBS Implementation * Gender * Grade * SPED Status	4.808	2	.008
SWPBS Implementation * Gender * Grade * SES	6.630	4	.000
SWPBS Implementation * Gender* Race * SPED Status	4.353	2	.013
SWPBS Implementation * Grade * Race * SES	7.509	12	.000
SWPBS Implementation * Grade* SPED Status * SES	6.712	4	.000
SWPBS Implementation * Race *SPED Status * SES	4.277	4	.002
Gender * Grade * Race * SPED Status	4.511	4	.001
Gender * Grade * SPED Status * SES	7.258	4	.000
Gender * Race * SPED Status * SES	6.214	4	.000
Grade * Race * SPED Status * SES	5.433	8	.000
SWPBS Implementation * Gender * Grade * Race * SPED	4.214	4	.002
SWPBS Implementation * Gender * Grade * Race * SES	1.910	9	.046
SWPBS Implementation * Gender * Grade * SPED *SES	9.874	4	.000
SWPBS Implementation * Grade * Race * SPED * SES	23.140	4	.000
SWPBS Implementation *Gender *Grade *Race * SPED*SES	9.453	2	.000