

SCHOOL-WIDE POSITIVE BEHAVIORAL INTERVENTIONS AND SUPPORTS:
A FORMATIVE EVALUATION OF FIRST YEAR IMPLEMENTATION

By

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I am forever indebted to my first teacher—my mother, Sandra Marie White Pitts. I am forever grateful for your unconditional love and support.

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DEFINITION OF TERMS

School-Wide Positive Behavior Interventions and Supports	Is a systems approach (three tiers of interventions) for establishing the social culture and individualized behavior supports needed for a school to be a safe and effective learning environment for all students (Sailor, Dunlap, Sugai, & Horner, 2009). It is a proactive approach that requires teachers and other school staff are trained in using School Wide Positive Behavior Intervention and Supports (SWPBIS), while school rules and expectations are universal, school-wide, and visible throughout the campus. It is data-driven and adjusts based on the behavioral needs that are identified by the school's SWPBIS Leadership Team, which meets regularly.
Tangible Reinforcements	Are "tickets" that are utilized by the school staff at the particular school proposed to be studied in this research that are given to recognize students who are "caught" demonstrating model behavior. The tickets are called "Lion Loot" and utilized by the school for the positive behavior tokens provided to students. These tangible reinforcements are given by all school staff members for students exhibiting positive behaviors, generally around other students. These are provided for immediate reinforcement of the individual student, as well as immediate vicarious reinforcement of the other students in the class. Such vicarious reinforcement is an important concept, but is not easily measured. As such, the first two research questions do not consider the number of tangible reinforcements provided, as all students may have benefited from vicarious reinforcement. Regardless, as a crude measurement of adherence to the reinforcement paradigm, the number of Lion Loot given to students is the best measurement available for this archival study. The assumption is that teachers who provide Lion Loot also provide the intangible reinforcements and the other components of the school-wide positive behavior interventions and supports model.
Intangible Reinforcements	In addition to tangible tokens, teachers and staff were trained in how to provide 'intangible reinforcements.' This provided a more immediate method of reinforcing positive behaviors in front of other students, while not relying on the tangible (and less powerful) reinforcements. Intangible reinforcements included: verbal praise, non-verbal praise, and positive gestures (i.e., cheers, thumbs up, high fives, pats on the back, smiling at students, etc.).
Major Referrals	Also known as 'office discipline referrals' (ODR's) are negative behavioral incidents that are entered into the school district's student information system and become part a student's cumulative school record.

Minor Referrals Also known as 'pre-referrals,' are incidents that do not result in an ODR (major) referral but do result in some form of formal documentations, such as a note home or intervention visit from or with the school's administrator for behavior.

Response to Intervention for Behavior Database (Rtl:B) A supplemental database available to schools in the State of Florida participating in SWPBIS. It allows school administrators in charge of behavior to input both major and minor referrals data and run various reports that allow for data-driven decision making with SWPBIS Leadership Teams at the school.

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School Wide Positive Behavior Interventions and Support (SWPBIS) is a broad approach providing school personnel with tools and skills to enhance student academic achievement and improve socially relevant behavior (OSEP-TAC on PBIS, 2016).

SWPBIS is a 'technology' with four core features: (1) behavioral strategies; (2) integrated interventions; (3) commitment to long-term outcomes; and (4) system organizational to ensure sustained impacts (Dunlap, Sailor, Horner & Sugai, 2009).

This research sought to explore the impact of SWPBIS interventions (particularly tangible reinforcements) from two baseline years to the first implementation year, as measured by the number of negative student behaviors (i.e., minor/pre-referrals and major office disciplinary referrals (ODRs)). The study adds to existing research, with an exploration of relationships between tangible reinforcements and referrals. The research was designed as a formative evaluation, focused on the design of an elementary school SWPBIS model. Archival data on 838 students were collected over three years. Data were collapsed for each year, with limitations to monthly regression

analyses discussed. Statistical methods included Chi Squares, critical ratio tests, ANOVAs, and MANOVAs.

The school experienced a 20.17% increase in enrollment, 23.75% decrease in total referrals, 20.05% decrease in minor/pre-referrals, and 45.15% decrease in proportion of major ODRs. There was a significant decrease in the proportion of referrals from the second baseline year to the intervention year. The school realized significantly lower proportions of students receiving minor referrals and ODRs in the intervention year. African American / Black students had a significantly higher average number of major ODRs than Caucasian American / White students in both baseline years, but such differences did not persist into the intervention year. The number of tangible reinforcements did not predict and was not significantly related to the number of negative student behaviors measured by minor referrals and ODRs. The method and results of this research should help inform practice and guide future research in the early implementation phases of SWPBIS models. Overall, this study supported the importance of empowering teachers and staff to improve the quality of the educational learning environment through a system of proactive, comprehensive, School-Wide Positive Behavioral Interventions and Supports.

CHAPTER 1 INTRODUCTION

Statement of the Problem

Over the past several decades, American schools have been plagued with a myriad of ever increasing forms of negative and challenging student behaviors (e.g., Carr, Taylor, & Robinson, 1991; Farmer, Quinn, Hussey, & Holohan, 2001; Greenwood, Delquadri, & Hall, 1984; Gunter, et al., 1994; Kazdin, 1987; Wehby, Symons, & Shores, 1995; Walker, Colvin, & Ramsey, 1995). Disrespect toward school personnel, gross insubordination, classroom disruptions, and fighting top the list, with more alarming and serious forms of violence, such as bullying and school shootings, being of major concern to parents, educators, and the general public (e.g., Glew, Fan, Katon, Rivara, & Kernic, 2005; Leary, Kowalski, Smith, & Phillips, 2003).

Images in the media of school shootings - such as those at Pearl High School in Mississippi in 1997, Columbine High School in Colorado in 1999, and Sandy Hook Elementary School in Connecticut in 2012 - demonstrate the pain, suffering, and negative impact that violent student behavior can have on students, families, and communities, as well as the school's ability to fulfill its obligation to provide a safe place for student learning. From 1999 to early 2016, ABC News reported that America has witnessed 141 deaths at schools during mass murders or attempted mass murders, with 17 of the murderers being 15 years of age or younger (Pearle, 2016). Increasing fear and concern are even felt by students outside of these communities, with results from the National Crime Victimization Survey revealing that 3% of students reported fear of being attacked or harmed at school, while 4.7% of students reported actively avoiding

school activities or classes because they were fearful someone might attack them or harm them (Zhang, Musu-Gillette, & Oudekerk, 2016).

In 2012, Scholastic and the Bill & Melinda Gates Foundation released a comprehensive and detailed report entitled “Primary Sources: America’s Teacher’s on the Teaching Profession.” This report was based on surveys received from 10,000 educators representing elementary, middle, and high schools from all 50 states. The report indicated that 62% of teachers who had been teaching in the same school for at least five years believed that problematic student behavior has worsened in recent years and has resulted in deleterious effects on both teaching and learning. Even more concerning was that behavior concerns of teachers were not limited to any particular group of students, and spanned both high and low socioeconomic statuses (Bill & Melinda Gates Foundation, 2012).

Moreover, according to a national poll of 1,350 veteran elementary school principals conducted by the National Association of Elementary School Principals in 1997, 80% of principals indicated that “too much time is spent on dealing with disruptive and dangerous students” (NAESP, 1997, p. 19) and 81% of teachers polled stated that their worst behaved students are a barrier to effective education in their classrooms for all students (Public Agenda, 2004). Indeed, there is a significant amount of lost instructional time during each instance a classroom is disrupted by inappropriate student behavior – both of the students behaving inappropriately and their peers in the classroom (e.g., e.g., Godwin, Almeda, Petroccia, Baker, & Fisher, 2013; Karweit & Slavin, 1981; Lee, Kelly, & Nyre, 1999; Lemov, 2010). The impact for the offending student is even greater if they are sent out of class (e.g., time out in the front office),

excluded from the classroom for an extended period of time (e.g., in-school-suspension), or excluded from the school for a period of days (e.g., out-of-school suspension, expulsion). Ultimately, the combined effect of inappropriate student behavior in the classroom can result in student underachievement and overall loss of benefits from the school's educational programs. Indeed, nearly every research study exploring classroom behavior management and school culture begins with the same basic tenet – poor student behavior distracts from and negatively impacts the learning environment (e.g., Guardino & Fullerton, 2010; McKeivitt, Dempsey, Ternus, & Shriver, 2012; Scott & Barrett, 2004; Sugai & Horner, 2006).

Certainly, it is the current belief that all students deserve an effective learning environment (e.g., USED, 2015), but this was not always the case. Prior to the 1980s, students identified with disabilities were often placed in hospitals or alternative schools to receive minimal education, as per the philosophy at the time (Torrey, 1997). However, parents of these students felt their children were not getting the same education as their non-disabled peers in the public school-system, and felt they also deserved an equal chance at effective learning environments (e.g., Blankenship, Boon, & Fore, 2007). This brought upon several lawsuits, such as Board of Education of the Hendrick Hudson Central School District v. Rowley (1982); Mills v. Board of Education of District of Columbia (1972); and Honig v. Doe (1988). Ultimately, courts often ruled in favor of the students with disabilities and upheld the idea that they deserved a public education and protection from being unnecessarily punished or removed from school.

Along with these court cases, the United States Congress supported the same notion and passed such laws as the Rehabilitation Act of 1973 (amended in 1986 and

1992), the Individuals with Disabilities in Education Act of 1990 (with significant amendments in 1997), and the American with Disabilities Act of 1990. These laws ultimately required all school systems to provide children identified with disabilities a Free and Appropriate Public Education (FAPE) in the least restrictive environment (USED, 2010; 34 C.F.R. §300.130). By the 1980s, it was believed the 'least restrictive environment' was to have the student included in the regular classrooms as much as possible (i.e., inclusion) (Blankenship, et al., 2007). The practice of inclusion has proven beneficial for many students with disabilities (e.g., Peetsma, Vergeer, Roeleveld, & Karsten, 2001; Powell, 2015), but brought about significant challenges with students not used to having peers with disabilities and teachers not trained in how to best manage their manifest behaviors (Dunlap, Sailor, Horner, & Sugai, 2009). Ultimately, this quickly led to the need for effective and efficient behavior management programming for students with disabilities within the regular classroom environment, primarily to maintain the effective learning environment and maximize student achievement (Dunlap, et al., 2009; Sugai & Horner, 2006).

Given the need for immediate action, one of the first efforts was to incorporate the same theory of behavior management and modification utilized with inpatient children (and adults) with severe disabilities – Applied Behavior Analysis (ABA). ABA had been shown effective at suppressing the most severe behaviors within these controlled settings, so it was applied to students with disabilities in the regular classrooms (Dunlap, et al., 2009). For the most part, studies suggest that the use of ABA had some impact on these students by reducing the instances of their manifest behaviors (e.g., Dunlap, et al., 2009). Unfortunately, many of the seemingly effective

methods brought into the educational settings were based on aversive stimuli and punishment-driven actions, such as use of electrical shock, sprays of water, and other physical and emotional punishments (e.g., Butterfield, 1985; Linscheid, Iwata, Ricketts, Williams, & Griffin, 1990). The public outcry and moral objections of many educators resulted in the need for a more positive alternative to these barbaric methods of behavior management (Singer & Wang, 2009).

In addition to the desire to move away from aversive stimuli and punishment-driven methods, there was also a drastic need to be more culturally sensitive and culturally aware. Since the landmark United States Supreme Court ruling in *Brown vs. Board of Education of Topeka* (347 U.S. 483) in 1954, which ended legal segregation in public schools, minority students have found a system replete with ongoing bias, as well as overt and covert racism (NAACP LDF, 2011). These culturally insensitive practices were only exacerbated by the zero-tolerance policies of the 1990s (Skiba, 2000). Not only have zero-tolerance policies been shown to exacerbate poor behavior (Poe-Yamagata & Jones, 2000; Wald & Losen, 2003), but the American Psychological Association 'Zero Tolerance Task Force' concluded that zero-tolerance is an entirely ineffective system (Skiba et al., 2006).

In part stemming from such zero-tolerance policies and continued insensitivity, Wald and Losen (2003) found that Black students made up 17% of the national student population, but accounted for 34% of those students who had been suspended from school and were 2.6 times more likely to be suspended as White students. Moreover, according to the Office of Civil Rights (U.S. Department of Education, 2014), African-American students without disabilities are more than three times as likely as their white

peers without disabilities to be expelled or suspended from school. Furthermore, over 50% of students who were involved in school-related arrests or referred to law enforcement are Hispanic or African-American (U.S. Department of Education, 2014). It is data like these that supports the unfortunate and concerning cycle known as the “school-to-prison pipeline” (Heitzig, 2009; Skiba, 2000).

Such racial disparities in application of behavior management processes and discipline were recognized by the U.S. Department of Education (USED). In January of 2014, the USED Office for Civil Rights and the U.S. Department of Justice’s Civil Rights Division issued a joint letter to serve as a significant guidance document. The guidance strongly urged schools throughout the nation to not only “administer student discipline in a manner that does not discriminate on the basis of race” (USED, 2014, p. 2), but to also help students succeed through programs that support and reinforce positive student behavior and character development. This guidance served to underscore the decades of research and success that went into creating a more positive method to teach students more positive social behaviors that support the overall learning environment and their academic achievement.

The three aforementioned primary issues led to the development of School-Wide Positive Behavior Interventions and Supports (SWPBIS): (1) need to manage behavior of all students in an inclusive environment to maximize the learning environment; (2) moral objections to aversive stimuli and punishment-driven methods of control; and (3) need for more culturally sensitive and understanding methods to support positive behavior and character. Based on a complex web of prior theories and research (discussed in Chapter 2), SWPBIS is a broad approach designed to provide school

personnel with tools and skills necessary to enhance student academic achievement and improve socially relevant behavior (Florida's PBS Project, 2002a; OSEP, 2016). SWPBIS is designed to allow individual schools flexibility to provide a wide variety of evidence-based and research-based interventions that best meet the needs of their students. Some of the most prominent researchers in PBIS indicate that SWPBIS has four core features: (1) an application of research-based behavioral strategies; (2) use of multiple and integrated intervention elements aligned to the needs of the environment; (3) a commitment to sustained and long-term outcomes; and (4) support within the organizational systems that ensure sustained impacts of the interventions (Dunlap, et al., 2009). In essence, SWPBIS makes use primarily of positive reinforcement of appropriate behaviors, focuses on teaching productive social behaviors (not just suppressing negative behaviors), and is designed with a clear focus on being culturally sensitive (Sugai & Horner, 2009a).

SWPBIS makes use of a three-tiered system of supports: (1) Primary, Tier 1 – whole school interventions impacting 80-90% of the student population; (2) Secondary, Tier 2 – small group interventions impacting 15% of the student population who do not respond to primary tier interventions; and (3) Tertiary, Tier 3 – individual interventions impacting the remaining 5% of the student population who do not respond to primary and secondary tier interventions (McIntosh & Goodman, 2016). Tier 1 interventions are relatively broad and focused on several pre-established school-wide goals, with both tangible and non-tangible incentives provided to students to recognize appropriate behavior. This research focuses on Tier 1 interventions, with all three tiers discussed in the following literature review. This study seeks to examine how the implementation of

a School-Wide Positive Behavior Interventions and Support (SWPBIS) approach can help to reduce incidents of negative and problematic student behavior which should theoretically, in turn, increase learning time for all students.

Purpose and Significance

The present research is essentially a formative evaluation study to investigate the initial, first-year impacts of implementing a comprehensive School-Wide Positive Behavioral Interventions and Support (SWPBIS) model at an elementary school serving students in kindergarten through 5th grade. Impacts and outcomes measured within the current study included both minor/pre-referrals and major office disciplinary referrals (ODRs), as these metrics are most commonly associated with displays of inappropriate and disruptive student behaviors resulting in a deleterious impact on the learning environment. The study adds to an already growing body of research on the utilization of SWPBIS models and techniques, with a somewhat unique exploration of how the provision of tangible positive reinforcements under a token economy relates to the instances of behavioral referrals. In addition, the study has the enhanced purpose to explore potential considerations for school personnel regarding demographic characteristics, cultural differences, and racial biases when reinforcing desired and modeled student behavior using tangible incentives under the SWPBIS approach.

Evidence Justifying the Research Problem

With inappropriate and distracting student behavior significantly reducing the effectiveness of the learning environment (e.g., Guardino & Fullerton, 2010; McKeivitt, et al., 2012; Scott & Barrett, 2004; Sugai & Horner, 2006), the importance of finding positive and proactive methods to help students learn and apply more appropriate behaviors is of great importance throughout the field of education. Such negative

impacts are often exponentially worse for students from traditionally defined minority groups, as they are often given more disciplinary referrals and punishments that remove them from the learning environment for extended periods of time (e.g., Blanchett, 2014; Gonsoulin, Zablocki, & Leone, 2012; Skiba, Arrendondo, & Rausch, 2014; USED, 2014). Fortunately, a great deal of research has shown the positive impacts of School-Wide Positive Behavioral Interventions and Supports (SWPBIS) on the behavior of students attending schools (e.g., Fairbanks, Sugai, Guardino, & Lathrop, 2007; George, White, & Schlaffer, 2003; Nocera, Whitbread, & Nocera, 2014; Scott & Barrett, 2004; Sugai & Horner, 2006; Waadsorp, Bradshaw, & Leaf, 2012). Preventative and proactive behavior management techniques used to teach positive behaviors and stop the emergence of inappropriate behavior patterns have long been found effective, though sometimes difficult to implement (e.g., Walker & Shinn, 2002). SWPBIS was specifically developed to be proactive, positive-focused, and relatively easy to implement in a consistent and effective manner.

Ultimately, SWPBIS has been repeatedly and consistently found effective in reducing the instances of negative student behaviors across all student sub-groups, communities, and grade levels (e.g., Fairbanks, et al., 2007; George, et al., 2003; Nocera, et al., 2014; Scott & Barrett, 2004; Waadsorp, et al., 2012). Scott and Barrett (2004) found significant decreases in ODRs and suspensions from baseline to the first year and second year of SWPBIS implementation, resulting in over 12,000 minutes of gained instructional time with students. George, White, and Schlaffer (2003) found a similar decrease in ODRs from baseline to the second year of implementing a SWPBIS model, with an even more pronounced decrease among students with IEPs. Spencer (2015) found a significant decrease in the number of ODRs within one year of

implementing SWPBIS, with decreases in each of eight primary offense categories indicated on ODRs (e.g., disrespect, refusal to obey, physical contact, profanity, etc.). Menendez, Payne, and Mayton (2008) also conducted a one-year study of a new SWPBIS project and found a reduced number of ODRs, fewer rules-based violations committed of students, and fewer punitive consequences used by teachers (e.g., time outs, written reprimands). Luiselli, Putnam, Handler, and Feinberg (2005) found that SWPBIS resulted in fewer ODRs and school suspensions over the course of two years. Vincent, Swain-Bradway, Tobin and May (2011) conducted a study with 153 elementary schools and found schools implementing high-fidelity SWPBIS had significantly fewer rates of ODRs across all three years of the research, with the disproportionality of referrals between minority and non-minority students significantly lower in schools implementing SWPBIS.

As noted, ODRs were selected as the primary metric for the present study and are most often the primary metric for any study exploring the behavioral impacts of SWPBIS on students. Indeed, only a handful of behavioral metrics are traditionally used to assess impact on the learning environment: in-school suspensions, out-of-school suspensions, expulsion, detentions, office disciplinary referrals (ODRs), school attendance, and tardiness. However, not all of these are appropriate for elementary schools, as some are rare in elementary school (e.g., expulsions and detention) while others are generally out of and elementary student's control (e.g., attendance and tardiness). As such, ODRs are the most common method for assessing continuous behavioral change within elementary schools implementing school-wide preventative interventions, such as that provided by SWPBIS.

ODRs have also been shown to be related to future behavior problems, such as drug use and disorderly conduct in classrooms (e.g., Nelson & Roberts, 2000; Sprague et al., 2001). Pas, Bradshaw and Mitchell (2011) utilized data from 21 elementary schools regarding ODR data from a centralized database, ODR reports from a teacher survey, and scores from the Teacher Observation of Classroom Adaptation–Checklist (TOCA-C). The study found ODRs to be positively correlated with both the disruptive behavior and attention problems subscales, as well as negatively correlated with the prosocial behavior subscale of the TOCA-C. Overall, the researchers determined that ODRs have moderate convergent and divergent validity with behavior ratings on the TOCA-C (Pas, et al., 2011). Other researchers have also found validity for using ODRs as a measure of general behavior (e.g., Irvin, Tobin, Sprague, Sugai, & Vincent, 2004; Scott & Barrett, 2004), with ODRs being related to general misbehavior at school, school attendance, student and teacher perceptions of safety and victimization, classroom orderliness, juvenile delinquency, and behavior disorders.

Deficiencies in Evidence

While the development and application of SWPBIS has been largely shown to significantly reduce the incidents of major ODRs, suspensions, bullying, and other disruptive student behaviors, there are some gaps within existing research that are addressed within the current study. First, nearly every research study exploring ODRs focused on the use of centralized databases to collect archival data about student referrals, which can introduce error in terms of data entry and unwritten policies (Nelson, Benner, Reid, Eptsein, & Currin, 2002). Instead, the present research uses internally collected data on all behavior instances at the school studied, recorded immediately upon the receipt of the minor/pre-referral or ODR by the school

administrator responsible for behavior. Second, few research studies explore ‘minor’ referrals (pre-referrals) that are not recorded in such centralized databases of student behavior, while the present research uses both ‘major’ referrals (ODRs) and ‘minor’ referrals. Third, no studies were found that explored the potential impact of the token economy and tangible reinforcement component of the overall SWPBIS model, with nearly every study in current literature exploring the impact of SWPBIS without focusing on any specific elements of the process. However, the present research specifically compares the level of tangible reinforcements provided and the behavioral impacts mentioned above. Finally, few studies have included differentiated analysis by race and ethnicity due to complications with the recording of such data in centralized databases, while the present research collected all data connected to the individual demographics of each student. Overall, the method of addressing these primary gaps and the results of the present research should help inform practice and guide future research in the early implementation of SWPBIS models.

Research Questions

The overarching goal of this study is to explore whether a comprehensive SWPBIS model will impact the instances of negative student behaviors among elementary school students within the first year of implementation. The secondary goal of this research is to explore potential differences among student sub-groups to drive consideration of demographic characteristics, cultural differences, and racial biases when reinforcing and teaching student behavior under the SWPBIS approach. The tertiary goal is to determine whether the level of tangible reinforcements, as a component of the overall SWPBIS model implemented for this study, was related to any changes in the number of negative student behaviors during the intervention year.

Although a more detailed description of the study design is provided in the third chapter, the research questions that are assessed in the present research are set forth below:

Research Question 1

Regardless of race/ethnicity and student grade level, will there be a significant impact of the SWPBIS intervention from baseline years (pre-intervention) and the intervention year (post-intervention), as measured by the number of instances of negative student behavior by month and by year (i.e., minor referrals and major referrals)?

Research Question 2

Is there a difference by race/ethnicity and/or student grade level in the impact of the SWPBIS intervention from baseline to implementation on the number of negative student behaviors?

Research Question 3

Regardless of race/ethnicity and student grade level, is there a significant relationship between the level of implementation of a SWPBIS initiative (i.e., number of tangible reinforcements provided) and the instances of negative student behavior (i.e., minor referrals and major referrals [ODR])?

Research Question 4

Is there a difference in the impact a SWPBIS intervention (i.e., number of reinforcements) and instances of negative school behavior (i.e., number of minor and major referrals by race/ethnicity and/or grade level)?

CHAPTER 2 REVIEW OF LITERATURE

Overview

Philosophers and teachers have long attempted to understand how best to educate society's youth, with Aristotle encouraging hands-on learning within *The Nicomachean Ethics*: "For the things we have to learn before we can do them, we learn by doing them" (Aristotle, 350 B.C./2000, Book 2). For thousands of years, the field of education has continued to develop new theories and techniques to educate children, while trying to keep with increasing societal demands for enhanced education outcomes. Unfortunately, educators have constantly faced the seemingly insurmountable challenge of managing student and classroom behavior to create the most conducive environment for successful education interventions. There have been several attempts with questionable benefits, such as the often criticized school-to-prison pipeline created by arguably over-reaching zero-tolerance policies (e.g., Heitzig, 2009; NAACP LDF, 2011). The critiques of past efforts have led to new models for improving student behaviors, such as the creation of Single School Cultures, character education techniques, and School-Wide Positive Behavioral Interventions and Supports – the topic of this dissertation.

In attempts to support the overall educational system and address some of the adversities created by other reform efforts, the United States Congress updated the Individuals with Disabilities Education Act in 1997 (IDEA, 1997) to include language specific to the adoption and implementation of Positive Behavioral Interventions and Supports (PBIS). Since this official 'endorsement' for use in special education settings and classrooms, the use of PBIS has since spread to regular education classrooms and

school-wide implementation (FLDOE, 2008). A wide array of acronyms is now used to describe this expanding initiative to improve student behavior - PBIS, PBS, SWPBIS, SWPBS, and EBS. Many of these acronyms are familiar to many educators and practitioners working with children, and each version encompasses the same general approach (FLDOE, 2005). Before focusing on the specific theory and practice of PBIS, it is important to review the theoretical underpinnings that form the foundation for many of the concepts contained within PBIS. It is important for any conceptual model to understand and respect past theories, as they often contain specific concepts and nuances that serve to strengthen the understanding and application of the theory of focus. As such, this section starts with an overview of the most basic elements of the foundational theories, as well as aspects that are salient to the later discussion of PBIS.

It is nearly impossible to begin any discussion of student behavior and education without first discussing the field of psychology. The field of psychology, as the study of human behavior and thoughts, is widely considered to be as old as the field of education, with many psychological concepts dating back to the ancient Greeks (e.g., Hergenhahn, 1992). However, the development of modern psychology is far more recent, with the first formal laboratory dedicated to psychological research starting in 1879 under Wilhelm Wundt – the ‘father of experimental psychology’ (Fancher, 1996). Shortly after, psychology rapidly grew into a wide variety of sub-fields, including G. Stanley Hall’s scientific pedagogy (Brooks-Gunn, & Duncan Johnson, 2006), John Dewey’s educational theory (Dewey, 1986), and Freud’s psychoanalysis (Fancher, 1996). Among these sub-fields was John Watson’s behaviorism, with the eventual development of behavior modification and behavior management theories. Behaviorism

was developed on the shoulders of two primary theories: classical conditioning and operant conditioning.

Behavioral Psychology: The Foundations of Positive Behavioral Supports

Classical Conditioning

Among the earliest theories within the field of behaviorism was classical conditioning, which is concerned primarily with how new behaviors are learned (Kazdin, 2012a). The concept of classical conditioning is most often credited to the physiologist Ivan Pavlov, who happened upon the concept when conducting research on the salivary response of dogs. Pavlov discovered that dogs would begin to salivate when the person who usually fed them would enter the room, without being presented any food. Pavlov's research focus changed from studying reflex responses (i.e., salivation as a result of food in the mouth, pupil constriction in bright light, and muscle flexion in response to pain) to studying how connections were made between various environmental stimuli (Kazdin, 2012a). This led to the well-known sequence of studies where the basic facets of classical conditioning were developed (Kazdin, 2012a; McLeod, 2013).

In essence, there are four primary components to classical conditioning (Rescorla, 2014): (1) unconditioned stimulus (e.g., food); (2) unconditioned response (e.g., saliva); (3) conditioned stimulus (e.g., bell ringing); and (4) conditioned response (e.g., saliva). It is noted that Pavlov argued the saliva produced in the conditioned response differed from that produced in the unconditioned response, so while the conditioned and unconditioned responses are often similar, they are not always the same (Kazdin, 2012a). Researchers went on to introduce a number of more complex conditions that strengthen or weaken the pairing of the conditioned stimulus and

response, such as forward conditioning, simultaneous conditioning, higher-order conditioning, backward conditioning, zero contingency conditioning, extinction, stimulus generalization, stimulus discrimination, and many others (Kazdin, 2012a; Rescorla, 2014). The significance of Pavlov's research to the field of behavior modification was his scientific and learning-based explanation of behavior (Kazdin, 2012a), in addition to bringing forward the concept that antecedent actions and the environment can impact the outcome of behavior.

In relation to theories and models associated with Positive Behavior Interventions and Supports (PBIS), several concepts from classical conditioning are important to understand how PBIS might work within the school setting (Kappell, Dufresne & Mayer, 2012). For instance, the concept of forward conditioning (Kazdin, 2012a) might suggest that verbal praise should be presented first when a student behaves well, followed immediately with any tangible rewards (if assuming the tangible rewards produce a desired level of happiness). With this forward conditioning, the goal would be for the verbal praise alone to eventually be sufficient for the student to feel the same level of happiness as with the tangible reward. Second, the concept of classical extinction (Kazdin, 2012a) helps explain why positive behavioral supports must be consistent across the entire school and maintained across all years while the student is enrolled. More specifically, extinction is when the conditioned stimulus (e.g., verbal praise) is not provided for a period of time, such that it no longer produces the desired response. Eventually, even when provided, the conditioned stimulus no longer 'works' and the process must begin anew (barring any spontaneous recovery, which is beyond the scope of this review). Finally, the concept of stimulus generalization (Kazdin, 2012a)

explains when a teacher successfully pairs a conditioned stimulus (e.g., verbal praise from the teacher) with a desired response, and then finds another conditioned stimulus also elicits the response (e.g., verbal praise from another student). Many other concepts exist within the overall classical conditioning framework, but are outside the scope of this research, such as fear conditioning (Fanselow & Sterlace, 2014).

Operant Conditioning

While classical conditioning provided some of the earliest experimental findings about how humans might learn new behaviors, some theorists felt it did not adequately explain acquisition of new behaviors - particularly those that are not reflexive (Olson & Hergenhahn, 2015). As classical conditioning continued to be researched and as the field of psychology became more robust, E.L. Thorndike and B.F. Skinner began researching and introducing new ideas about human behavior – operant conditioning. Thorndike was the first to research the concepts associated with operant conditioning, calling his findings the “Law of Effect” (he introduced his findings before Skinner developed the term ‘operant conditioning’; Kazdin, 2012a; Keller & Schoenfeld, 2014). In essence, Thorndike (also focusing on animal behavior) placed cats in a ‘puzzle box’ where they needed to do a simple task to escape (e.g., pull a lever) and found they would perform many failed behaviors before doing the necessary task to escape. However, each time the cat was placed into the puzzle, the cat would have fewer failed behaviors and was quicker to perform the escape task. Eventually, the cat would escape the box no sooner than it had been placed inside (Kazdin, 2012a; Keller & Schoenfeld, 2014). In essence, Thorndike formulated several ‘laws’ of behavior, with the “Law of Effect” being the most significant and widely known. In this ‘law,’ Thorndike explained that behaviors followed by pleasant outcomes are strengthened (more likely

to be repeated), while those followed by unpleasant outcomes are weakened (less likely to be repeated; Olson & Hergenhahn, 2015). As applied to humans, this became the basis for the theory of operant conditioning.

While Thorndike helped codify some of these concepts, the basics of operant conditioning are nothing new, and it is widely accepted that parents and caregivers have been using these techniques for thousands of years to teach children acceptable behaviors – rewarding those deemed acceptable and punishing those deemed unacceptable (Miltenberger & Crosland, 2014). However, such simple explanations are inadequate to fully understand why some children learn acceptable behavior and some learn unacceptable behavior. It became the lifework of B.F. Skinner, the ‘father of operant conditioning’, to better understand how organisms learn new behaviors through the complex process of operant conditioning (Olson & Hergenhahn, 2015). While Skinner’s early work was also in animal learning (using pigeons and rats in the famous ‘Skinner Box’), his theories were easier to apply to human learning for a range of behaviors, and they were immediately applicable to a variety of fields (e.g., education, psychology, etc.). As such, operant conditioning finds a much larger place in the foundation of PBIS theories and models (Kappel, Dufresne & Mayer, 2012).

In general, operant conditioning explains that human behavior is learned through a system of rewards and punishments, both positive (additive) and negative (subtractive; Miltenberger, 2012). It differs from classical conditioning, in part, because the behaviors being learned are not reflexive (e.g., salivation, muscle tension, and pupil constriction are all reflexive and hard for an individual to control). Indeed, operant conditioning is more focused on developing and modifying operant behaviors, many of

which are volitional in nature (Miltenberger, 2012). There are two core mechanisms within operant conditioning: reinforcement and punishment. In essence, reinforcement is used when the goal is to increase the occurrence of a targeted behavior, while punishment is used to decrease the occurrence of the targeted behavior (Miltenberger, 2012). Each of these mechanisms can be either 'positive' or 'negative,' which is to describe the 'additive' or 'subtractive' nature of the mechanism (not whether the action is good or bad; Catania, 1979; Miltenberger, 2012). This creates four primary categories of consequences for the targeted behavior: (1) Positive Reinforcement is when the targeted behavior is rewarded with the addition of a desirable stimulus (e.g., a jelly bean, a pat on the back, etc.); (2) Negative Reinforcement is when the targeted behavior is followed by the subtraction or removal of an undesirable stimulus (e.g., tapping on a child's desk with a ruler until they sit up straight – stopping the tapping is negative reinforcement); (3) Positive Punishment is when the targeted behavior is followed by the addition of an aversive stimulus (e.g., spanking, slapping, yelling, referrals, detentions, suspensions, grounding, etc.); and (4) Negative Punishment is when the targeted behavior is followed by the removal of a desirable stimulus (e.g., grounding from television, taking away video games, sitting in time out (removal of social stimulation), etc.) (McConnell, 2001; Miltenberger, 2012).

With these four categories, researchers have been able to explore which is most effective and which work best together. For instance, researchers and theorists in behavioral psychology and education have generally found that 'positive punishment' is entirely ineffective at bringing about behavioral change, serving only to suppress undesired behaviors in the presence of the punisher, but not in other situations (e.g.,

Smith, 2012). In addition, an often overlooked and misunderstood aspect of behavior modification under operant conditioning is that positive reinforcement is matched with negative punishment, while negative reinforcement is matched with positive punishment (McConnell, 2001). This matching essentially explains how a single stimulus can be used as an onset or offset to the behavior (e.g., candy can be given (onset) as a positive reinforcement or removed (offset) as a negative punishment). With a focus on positive reinforcement, it is not surprising that the most efficient and effective method for behavior change occurs when positive reinforcement is paired with negative punishment or when negative reinforcement is paired with positive punishment – as this reduces confusion in the child by associating a more limited number of stimuli (Miltenberger, 2012).

Although Positive Behavioral Interventions and Supports (PBIS) will be further discussed later in this literature review, it is important to mention the linkage between PBIS and operant conditioning beyond that of Applied Behavioral Analysis (also discussed later). In general, PBIS uses the most widely accepted method of modifying and controlling the behavior of children through non-aversive means– a combination of positive reinforcement and negative punishment (Kappel, Dufresne, & Mayer, 2012). Students are given tangible reinforcements and verbal praise for appropriate behaviors, while negative behaviors are largely ignored (thus providing no reinforcement, as attention itself can be reinforcing). When necessary, desirable situations and stimuli are removed when behaviors are inappropriate, such as giving age-appropriate time out or removing the supply box from the student's table – both examples of negative punishment. When applied consistently across the entire school, such rewards and

punishments have the greatest theoretical potential to illicit desirable changes in student behaviors (Putnam & Kincaid, 2015). Again, the linkage between operant conditioning and PBIS are further detailed in the following sections of this literature review.

Social Learning Theory

In addition to the aforementioned theories of conditioning, social learning theory (e.g., Bandura, 1971a) provides additional concepts necessary to understand some of the foundational interventions and components associated with models of positive behavioral support. Early social learning theory grew out of criticism of Skinner's work (e.g., Chomsky, 1959), in that neither classical nor operant conditioning could adequately explain how humans acquire new behaviors that they have never performed before (novel behaviors). Chomsky (1959) was among the first to criticize the conditioning theories by focusing on language acquisition (which cannot be explained through pure conditioning theories), though it was Albert Bandura that introduced some of the more instrumental insights into how humans learn behaviors that they would not otherwise perform. More specifically, Bandura (1971a) argued that the traditional theories of behavioral learning focused on internal mechanisms (e.g., needs, wants, impulses) and ignored much of the influence from external factors and other people. That said, in his early writings, Bandura (1971a) made it clear that social learning theory does not replace the impact of internal factors on learning, only that human behavior is more complex and theories must also account for the influence of environmental and social factors.

For instance, specific to student behaviors in an educational setting, a child is unlikely to ever naturally puff out their cheeks and cross their arms (bubbles and seatbelts) when walking in a line, so theories of conditioning would not easily explain

how they learn these behaviors or how they can quickly learn other 'line behaviors' in a different setting. There must be external factors that provide the initial impetus for the student to perform the behavior, as well as some type of reinforcement to have the behavior continue. Explanations of other classroom behaviors from a purely classical learning theory framework could even be damaging to students, particularly in terms of student misbehavior. For instance, a student who hits another student would be considered to have hostile internal impulses according to classical learning theories, while social learning theory would allow more understanding of the student by considering external influences of the displayed behavior (Bandura, 1971a).

While classical and operant conditioning might not adequately explain acquisition of novel behaviors, social learning theory provides some insight into possible mechanisms – both in the learning and reinforcement of these novel behaviors in social settings. Two primary topics from social learning theory helped develop the models of Positive Behavioral Interventions and Supports (PBIS): modeling and vicarious reinforcement. In order to provide some understanding of these primary elements and their connection to PBIS, they are cursorily described within this literature review.

Modeling

Modeling, or observational learning, was first introduced by Bandura following one of his more famous experiments using the infamous "Bobo doll" (Bandura, 1961; Bandura & Huston, 1961). Modeling was the foundation of Bandura's theories and led to the eventual development of the more comprehensive Social Learning Theory. The basic idea of modeling is that children are not always internally motivated by wants and needs to perform new behaviors, but are constantly surrounded by models that externally influence their behavior. Devoid of any immediate reinforcements or

punishments, a child can perform a novel behavior simply by copying another person's actions. In fact, Bandura (1977), found that children do not just observe and behave immediately, but they encode the modeled behaviors and can access these responses at a later time, thus providing longer-term learning of behaviors.

Bandura (1977) found that children will encode modeled behaviors from a wide variety of sources, including other children, family members, teachers, other adults, film actors, and even cartoon characters on television (Bandura, 1963; Bandura, 1965). Some encoded behaviors are important for the development of the child (regardless of the source), such as learning pro-social behaviors instead of anti-social behaviors. Other encoded behaviors are socially motivated, such as masculine or feminine behaviors, which helps explain why children develop a sense of 'boy things' and 'girl things' without those being specifically taught by parents or teachers (e.g., boys like blue, girls like pink, boys play with trucks, girls play with dolls, etc.). Whether or not these gender differentiations are desired by the parents, they are impossible to avoid, as they are regularly modeled often on television shows, in advertisements and toy marketing, by adults, and by other children.

However, the influence of modeling can be highly beneficial in educational settings across a variety of characteristics – from classroom behavior to motivation to academic achievement (e.g., Field 1981; Wentzel & Muenks, 2016). For instance, specific to classroom behavior, when a new student comes into a classroom, it would be nearly impossible for the teacher to start anew teaching the student all the nuance rules for behavior. Fortunately, within a very short period of time, the new student will encode many of the necessary behaviors by observing those around her, even without any

teacher input (e.g., bubbles and seat belts, pushing in chair, putting backpack on back of chair, etc.). This becomes important when working with children in the classroom under a positive behavioral support model, as the teacher must remember that children can learn both adaptive and maladaptive classroom behaviors simply from observing other children (and even the teacher). There are methods to help mediate the encoding of behaviors through observed positive and negative consequences, with these methods discussed in the next section of this literature review (i.e., vicarious learning).

There were many important findings from Bandura's modeling research. First, his research was conducted using kindergarten children, making his findings even more salient for working in elementary schools (the focus of the present research study). Second, Bandura found that children not only learned the original behaviors which they observed, but would often creatively expand upon that behavior (Bandura, 1977). For instance, Bandura found that modeling hitting a blow-up clown with a hammer was copied by children, but then they adapted their behaviors to use other objects to hit the clown (e.g., one boy used the gun to 'pistol whip' the bobo doll, and other actually sat on the doll and shot him in the head with toy gun – none of the models used the gun with the bobo doll). Finally, responding to criticism that the bobo doll was just a toy designed to be hit, Bandura repeated the experiment using a live clown model (cited in Yount, 2010). As with the original research, the children watched an adult female model (on video) aggressively attacking the live clown and then were placed in a room with toys and the same live clown. Supporting the concept of modeling, the children mimicked the model's aggressive behaviors with the live clown – punching him, kicking him, and hitting him with a toy hammer.

Certainly, Bandura's findings were seminal and have been widely used to help inform many behavioral interventions and paradigms, including Positive Behavioral Interventions and Supports (PBIS). Indeed, many interventions traditionally include strategies to either limit, control, or maximize the influence of others on the child of focus. However, the findings have also led to large-scale debates about how society, media, and educators are impacting children's behaviors. For instance, of great concern to the field of education and child development, Bandura (1963) found that children would model aggressive behavior regardless of whether it was performed by another child, an adult, an actor on film, cartoon characters, and even written or verbal descriptions of behaviors (Bandura, 1963; Bandura, 1971b; Bandura, 1977). While gender has some impact on modeling, there is little impact on whether the model is attractive, prestigious, or likable (Bandura, 1977). Some might argue that the concept of teaching children not to bully by showing them videos involving other children getting bullied could actually encode the bully's behaviors as a potential option for future behavior (Jeong & Lee, 2013).

The effectiveness of modeling has also been used by some opponents arguing against including sex education in schools, with the belief that discussing sex or having even animated depictions of sex could increase the potential for pre-marital relations (Weed & Lickona, 2014). Whether good or bad, the concept of modeling has also limited the availability of certain videos, movies, books, and video games to students and teachers in the classroom. To some extent, it has also helped shape the content of children's shows and video games, and some might argue Bandura is the reason nobody was ever hurt in older G.I. Joe cartoons and why Stormtroopers never actually

hit anyone in Star Wars movies, both of which were created in the period of Bandura's modeling research.

Vicarious Reinforcement

Closely connected to the concept of modeling is vicarious reinforcement or vicarious learning. Bandura's research on modeling and aggression helped explain how children can very quickly learn aggressive and inappropriate behaviors by watching their peers at school, their teachers, and their family members at home. Even children that are not inherently aggressive or would not resort to aggressive actions were more likely to respond to frustration through aggression if they had observed a model act aggressively (Bandura, 1977). However, early research studies and explanations of modeling do not provide a complete understanding of how the process works in reality, as they tended to ignore and/or actively remove the impact of behavioral consequences by controlling the environment where behaviors were modeled and performed (discussed below). The previous discussion of operant conditioning has already introduced the concept of reinforcement, which is essentially a behavioral consequence applied to increase the frequency of the behavior (whether it is applying a positive reward or removing a negative stimulus).

When discussing modeling alone, focus is usually placed on early modeling research, which did not generally incorporate consequences to the model's behaviors. For instance, the early "Bobo Doll" studies showed children a model hitting the doll without any positive or negative consequences (e.g., they were not punished or praised, the doll did not pop, nobody was injured). The children encoded and reproduced the aggressive behaviors when placed in a room with the bobo doll without any anticipated consequences to their behavior (which incidentally allowed for them to scale up the

aggressive behaviors) (Bandura, 1961; Bandura, 1977). However, realizing that most behaviors do not occur in a vacuum, Bandura expanded the original study by incorporating reinforcements into the original 'Bobo Doll' experiment (Bandura 1965). Within this study, the aggressive behavior displayed by the model was met with either rewards (i.e., given sweets and a drink for 'championship performance'), punishments (i.e., scolded), or no consequences (i.e., control). As expected, Bandura (1965) found that children in the 'reward' and 'control' conditions displayed more aggressive actions of the models than did the children in the 'punishment' group. Most importantly, the study found that the consequences did not influence the learning or encoding of the modeled behaviors, only whether they were performed by the children (Bandura, 1965). In other words, children are constantly learning behaviors displayed by models (e.g., other children in the classroom), but are only likely to perform those behaviors if they are perceived to be rewarded or have no consequences.

This research formed the basis of the concept of vicarious reinforcement and vicarious punishment, though the later concept is not given much attention in popular writings and theories. In essence, Bandura (1977) theorized that four elements are necessary for modeling to create new behaviors: (1) the child must be paying attention to the model; (2) the child must be able to retain the information that is being modeled; (3) the child must be able to reproduce the behavior being modeled (or an approximation of the behavior); and (4) the child must have some type of motivation to imitate the behavior modeled (Bandura, 1977). This last element is critical, as there is no need for a child to imitate or perform a behavior if there is no internal or external reason to do so. It is important to note that Bandura does not suggest motivation is

required to learn a behavior, only that it will not be displayed without some level of motivation to do so. The theory includes three primary motivators: (1) past reinforcement; (2) promised reinforcements; and (3) vicarious reinforcements (Bandura, 1986). Bandura also discusses punishments along identical lines, which are essentially de-motivators and discourage the imitation of behavior (Bandura, 1977).

Positive Behavioral Interventions and Supports (PBIS) makes substantial use of modeling and all three forms of reinforcement included in Bandura's Social Learning Theory, with a special emphasis on vicarious reinforcement (George, Kincaid, & Pollard-Sage, 2009). It is noted that PBIS does not explicitly include punishment within the model, though there is some level of circumstantial vicarious punishment (e.g., 'bad' behaviors being ignored could be a de-motivator for some children, seeing other students not receiving a reward could also reduce some behaviors). Regardless, the concept of vicarious reinforcement is integral to successful PBIS models, as it would be impossible for any teacher to reward and support every instance of every behavior for every student. Rather, the teacher reinforces a positive behavior in one student, makes a clear announcement that the reinforcement is being given, states the behavior that is being reinforced, and then waits for other students to demonstrate the same behavior. At that point, the teacher can provide additional tangible or verbal reinforcements, but it is not absolutely necessary, as the reinforcement has already occurred vicariously for all students who were paying attention or had their attention grabbed by the announcement of the reinforcement (George, et al., 2009).

It is noted that PBIS can include some level of promised reinforcements, but they are not a typical component of such models (there are some delayed reinforcements,

but these are generally accompanied by immediate reinforcement through a token economy system). It is also important to note that providing reinforcement for every instance of a behavior in a classroom does not align with behavior modification practices determined to be the best for long-lasting change (e.g., Kazdin, 2012a) – wherein intermittent reinforcement produces results that are the least likely to be extinguished if reinforcement is missed. For instance, if a child always receives a reinforcement even if she is the last to perform a behavior and after being reminded how to behave, then there is little incentive or need to independently perform the behavior. Ultimately, the act of bringing attention to the first student to demonstrate the desired behavior models the behavior to other students, provides reinforcement to the student with the proper behavior, and provides several layers of vicarious reinforcement to other students (e.g., verbal praise, tangible reward, increased attention, etc.). In fact, early research by Kazdin (1973) explored the use of vicarious reinforcement in the classroom by pairing students and reinforcing one of the student's either attentive or inattentive behaviors. The researchers found that the observing peer was vicariously reinforced to perform attentive behavior, whether or not the first student had attentive or inattentive behavior reinforced (Kazdin, 1973).

From Behaviorism to Positive Behavioral Interventions and Support

The basic components of operant conditioning (e.g., positive and negative reinforcement and punishment) and social learning theory (e.g., vicarious reinforcement) have earned a prominent place within behavioral management models in classroom settings, and the many educational interventions broadly implemented in recent history have been based on many of these principles (Kazdin, 2012a). Some interventions were adapted to education from non-educational fields (e.g., token

economies), others have had significant challenges overcoming critics and negative impacts (e.g., zero-tolerance), and others have found challenges in the correct implementation of complex school-wide models (e.g., applied behavioral analysis and positive-behavioral supports). Because of their impacts on PBIS, as studied within this research, it is important to explore the connection between these interventions and foundational theories of behavior modification.

Token Economies (Systematic Reinforcement)

Amid the emergence of Social Learning Theory and other new theories of behavior and learning in the 1960s, researchers and clinicians were working to apply the concepts of classical conditioning to a wide array of social and behavioral problems. One such method was the application of primarily operant conditioning concepts through the use of token economy, which was eventually updated and strengthened with the aforementioned concepts from social learning theory, particularly when applied in classroom settings (Kazdin, 2012b). Although it has been asserted that token economies were first codified sometime between the 1800's (Olivares Rodriguez, Montesinos, & Preciado, 2005) and the late 1960's (e.g., Filcheck, McNeil, Greco, & Bernard, 2004; Liberman, 2000), a general consensus exists that token economies were actually created and implemented within some of the first human civilizations, such as the Greeks, Romans, and Aztecs (Kazdin, 1977; Shorr, 2013). Regardless of when they were first created or codified, it is obvious that early token economies were less concerned with the concepts proposed by social learning theory (which was still being formulated in the 1960's). However, more recent token economy models include a better understanding of how modeling, vicarious reinforcement, and social learning can

influence the effectiveness of token economies in educational settings (Kazdin, 2012b; Shorr, 2013).

It is also important to note that not all token economies are created for the same purpose or setting. Token economies have traditionally been used for controlling behavior in mental health facilities and correctional institutions, particularly to control aggressive and unpredictable individuals (Kazdin, 2012b). Within these closed settings, token economies can become extraordinarily complex, with the economies including punishments, token fines, and complex individualized behavior plans. However, given the success of token economies in closed settings, they became more common in psychotherapy with children and special education classrooms to control more problematic behaviors (e.g., Dickerson, Tenhula, & Green-Paden, 2005; Elliott, Gresham, & Witt, 2013). Eventually, token economies were found effective in teaching appropriate behavior and social skills across a wide array of children, and began to be applied within the general classroom setting (e.g., Filcheck, McNeil, Greco, & Bernard, 2004; Soares, Harrison, Vannest, & McClelland, 2016). Token economies applied in elementary school settings are generally not as complex as those within institutional settings or designed for the purposes of clinical therapy, with school-wide token economies generally focused on desired behaviors for all students and including only reinforcement without punishment (Kazdin, 2012b). For the purposes of this research, it is most prudent to focus on the token economies developed and researched for school settings, particularly elementary schools.

Regardless of where token economies were developed or where they are applied, there are several generally shared characteristics of this behavior modification

technique (Kazdin, 1977; Kazdin, 2012b). More specifically, all token economies include the token (secondary reinforcer), that for which tokens are exchanged (back-up reinforcers), and the targeted behavior which is desired to be increased (Kazdin, 2012b). A token economy is essentially a systematic approach to reinforcing and increasing desired behaviors by establishing a relationship between a secondary reinforcer and a back-up reinforcer. The token is specifically designed as a secondary reinforcer under operant conditioning theories, where the reinforcing nature of the token is entirely conditioned (Kazdin, 2012b). This is an important aspect of the token economy, as the token should have no intrinsic value to the person receiving the reinforcement (food and water are examples of primary reinforcers, whereas a ticket has no intrinsic value absent the back-up reinforcer). The back-up reinforcer must have some kind of value to the recipient, whether it be candy, a toy, or a special event. In general, token economies in education settings are set up as 'stores' where children can exchange tokens for any number of back-up reinforcers. Having a wide array of back-up reinforcers helps avoid satiation (discussed below) and ensures a school-wide token economy will contain at least one back-up reinforcers found valuable by each student. If any single student does not find at least one of the back-up reinforcers valuable, the token economy will fail for that student – as the token is only reinforcing if it can be exchanged for a valuable reinforcer.

Immediacy and Satiation

Two concepts are important to consider in discussing token economies under Positive Behavioral Interventions and Supports (PBIS) models: immediacy and satiation. First, it is important to underscore that delayed reinforcement is not as successful as immediate reinforcement (Kazdin, 2012a), but not all reinforcers can be

applied immediately upon the completion of a desired behavior. This is particularly true for reinforcers that are subject to satiation (such as primary reinforcers of food and water) or are expensive. A token economy allows for the immediate application of a secondary reinforcer (the token), while also allowing for a delay in the more valuable reinforcer for the recipient (the back-up reinforcer). Second, it is important to consider the potential of satiation – which is the point at which a reinforcer is no longer valuable because the recipient has too much or no longer cares about the reinforcer (Kazdin, 2012b). In educational settings, a teacher must be careful of satiation of a reinforcer, which occurs when too much of the reinforcer is provided so that it loses the impact on the child's behavior. Fortunately, satiation eventually diminishes within a short period of time if the child is deprived of the reinforcer. However, secondary reinforcers are generally less likely to suffer the effects of satiation, as their reinforcing value has been conditioned (Kazdin, 2012b). This is particularly true of money and tokens within a token economy, as these items have been conditioned to be associated with a wide variety of other reinforcers (the back-up reinforcers). It is noted that the back-up reinforcers (that for which the tokens are exchanged) can suffer from satiation, such that it is important to have a wide variety of items in the 'store' (Kazdin, 2012b). For instance, a child who has free access to candy at home might not find candy a sufficient reward due to satiation (not to mention children who have been forbidden to eat candy at home and might experience anxiety if rewarded with candy).

The concepts of immediacy and satiation work together to help illustrate the benefits of a token economy system. For instance, assume a child desires colorful pencils and the teacher wants her to increase the instances of her sitting in her seat.

Under a positive reinforcement model, the teacher can provide the student with a colored pencil immediately each time she sits in her seat. Eventually, the child will have many colored pencils and will no longer find them valuable due to satiation.

Alternatively, the teacher may inform the student that she will receive a colored pencil if she sits in her seat all day (or at some point during the day). While this system would not result in satiation, it would also not provide immediate feedback to the child for her behavior, thus reducing the effectiveness of the reinforcement. A better method would use a token economy, where the child receives a ticket or a check mark each time she performs the behavior. At the end of the day or week, she can then trade her tickets or checkmarks for a new pencil – this provides both immediate feedback and helps prevent satiation.

Continuous versus Intermittent Reinforcement

Another important element to consider within any token economy, particularly with elementary school students, is the schedule of reinforcement. In general, behavioral theories discuss the difference between continuous and intermittent reinforcement schedules (Kazdin, 2012b). Continuous reinforcement is when all (or nearly all) instances of a desired behavior are rewarded, while intermittent reinforcement schedules only reward some instances of the same behavior. Both are important within the token economies utilized under Positive Behavioral Interventions and Supports (PBIS) models: (1) continuous reinforcement provides for fast learning of new behaviors, but is susceptible to quick extinction when the reinforcement is stopped or paused; (2) intermittent reinforcement provides much slower learning, but is rather robust to extinction, particularly if there is no clear pattern as to the number of times the behavior must be displayed to be rewarded (George, et al., 2009; Kazdin, 2012b).

As such, within PBIS, it may be most beneficial to first provide continuous reinforcement of the targeted behaviors, where every instance of the desired behaviors is rewarded with tokens and/or praise. The teacher can then slowly transition to an intermittent reinforcement schedule, increasing the distance between reinforcements and ‘catch’ the children performing the desired behaviors.

Token Economies Within PBIS

This literature review provides a general overview of token economies, with specific concepts related to the foundational principles of the Positive Behavioral Interventions and Supports (PBIS) models and theories. There are many concepts related to token economies that are either not relevant to the present review and/or are beyond the scope of this research. For instance, Kazdin (2012b) focuses on therapy-based token economies, and discusses several additional topics, such as shaping, chaining, prompting, fading, and stimulus control. Because these additional concepts are generally outside the scope of this research and do not provide additional understanding of token economies used under the PBIS theories, they are not further elucidated within this literature review. Regardless, because token economies are primarily concerned with positive reinforcements (and occasionally negative punishments – removing positive stimuli to decrease behavior), the concept was tapped early as an integral component to include in PBIS models – being integrated into early concept models and research studies (Kappel, Dufresne, & Mayer, 2012; Ullmann & Krasner, 1975). Under the PBIS framework, token economies combine the standard concepts from operant conditioning with important elements of social learning theory, particularly modeling and vicarious reinforcement. The specific components and

processes in using token economies in PBIS will be discussed later in this literature review when introducing the theory and specific components of PBIS models.

Aversive Stimuli and Zero-Tolerance

As mentioned earlier, some behavioral interventions have faced significant challenges in overcoming critics and unintended negative impacts of the intervention. Many of the most challenged and controversial methods utilize aversive stimuli to essentially punish undesired behaviors or exclude the misbehaving students from educational activities (and other students). Perhaps the most well-known of such punishment-driven methods is that of zero-tolerance.

The concept of zero-tolerance did not start in the field of education, but became most prominent in the 1980s during the “war on drugs” (Teske, 2011). The idea of having ‘zero-tolerance’ for specific offenses continued to grow into a variety of areas (e.g., pollution, sexual harassment, etc.), but found the greatest foothold when criminal justice researchers introduced the ‘broken windows’ theory of community change in the late 1980s and early 1990s (Kelling & Coles, 1997). The theory essentially suggests that small offenses (such as a few broken windows) can attract vagrants that break more windows, which then leads to squatters in the buildings, which leads to fires inside the buildings and more serious destruction of the property (Kelling & Coles, 1997). The concept propelled the idea of immediately addressing minor offenses to prevent the emergence of more serious offenses – which underpinned the implementation of zero-tolerance in community policing and within the field of education.

By the early 1990s, schools and administrators became heavily focused on trying to develop ways to control behavior, increase time-on-task, and decrease disruptions from other students. As such, they began to integrate the zero-tolerance movement into

schools and classrooms, with the idea of stopping more serious behavioral issues by applying heavy punishments to any instances of specific behavioral issues (Skiba, 2000). The application of punishments, as described in operant conditioning, is considered 'positive punishment' – not because it is 'good', but because there is the application of an aversive stimulus to decrease the instance of undesirable behavior (e.g., spanking, suspension, forced community service, etc.). While this is not an element of PBIS models, it is included in this review as it helped push education into a need-driven mode to develop more effective and less divisive behavioral control methods (Sugai, Horner, & Gresham, 2002). Certainly, zero-tolerance still exists, but it has largely lost much of its acceptance in most educational settings. In fact, in one of the most wide-reaching admissions of the failure of zero-tolerance, the president of the American Federation of Teachers (Randi Weingarten) recently wrote an editorial expressing that "Zero-tolerance policies intended to maintain safety and order not only have failed to do so but have caused considerable harm." (Weingarten, 2015, p.1).

In essence, as noted above, zero-tolerance applies an aversive stimulus to reduce the occurrence of undesirable behaviors. For instance, if a student gets into a fight, they are arrested and sent to court – with the idea that swift, inflexible, and heavy punishments will deter behavior of the offending student and other students in the school. Other examples are almost comical in the lack of forethought into zero-tolerance policies. For instance, suspending a student for truancy infractions (almost rewarding them with endorsing their desire not to attend school). There are also several examples where zero-tolerance actually exacerbates poor behavior (Poe-Yamagata & Jones, 2000; Wald & Losen, 2003), as it is not generally paired with any other behavior

modification techniques (e.g., negative reinforcement or positive reinforcement). As an example of how negative reinforcement could be applied, the school could have a policy that no students can eat in the courtyard unless there are no fights for the prior week – if there are no fights, then they get to eat in the courtyard, thus removing the aversive situation (hence, negative reinforcement). There are certainly inherent problems with zero-tolerance policies, and this has led some educational theorists and practitioners to sarcastically rename zero-tolerance to “zero intelligence” or “zero evidence” theories (Teske, 2012).

In addition to challenges with zero-tolerance, a number of researchers have demonstrated that other educational interventions often include controversial aversive stimuli and that these interventions are relatively ineffective. For instance, the most common responses to students with conduct disorders are punishment and exclusion (e.g., Lane & Murakami, 1987; Nieto, 2005; Sprick, Borgmeier, & Nolet, 2002), although other research shows that these aversive techniques are not effective in producing long-term reduction in problematic behaviors (Costenbader & Markson, 1988). Moreover, a variety of researchers have demonstrated that punishing problematic behaviors without providing a positive and proactive support system is counterproductive (Sugai, et al., 2002). Indeed, researchers have found that such one-sided punishment can lead to increased instances of undesired behaviors such as aggression, vandalism, truancy, and dropout (e.g., Mayer, 1995; Mayer & Sulzer-Azaroff, 1991; Skiba & Peterson, 1999). Additionally, in a review of over 600 research studies, Horner, Sugai, and Dickey (2016) found that one of the least effective methods for reducing school discipline problems and school violence was punishment. Among these studies, the same

researchers that reported the ineffectiveness of aversive punishment (e.g., Gottfredson, Gottfredson, & Hybl, 1993; Lipsey, 1992; Tolan & Guerra, 1994; Elliott, Hamburg, Williams, 1998) also indicated the most effective methods for addressing problematic behaviors and school violence includes social skills training and behavioral interventions particularly those found in Applied Behavioral Analysis (ABA) and associated theories (such as Positive Behavioral Interventions and Supports).

As the field of education began to push back against the concepts of zero-tolerance and the use of aversive stimuli to control student behavior, researchers discovered unacceptable racial disparities in the application of these punishment-driven methods. For example, Wald and Losen (2003) found that Black students made up 17% of the national student population, but accounted for 34% of those students who had been suspended from school and were 2.6 times more likely to be suspended as White students. The American Psychological Association 'Zero Tolerance Task Force' not only concluded that zero-tolerance is an ineffective system, but (more importantly), there is no evidence that students from minority groups are prone to disruptive or violent behavior (Skiba et al., 2006). Rather, research suggests that the disparity in application of student punishments (with an overrepresentation of student from traditional minority groups) is most often related to a bias among teachers and administrators to more quickly refer and more severely punish these students for minor behavioral issues (Skiba, 2000; Skiba & Knesting, 2001; Weingarten, 2015).

Such disproportionate rates of referrals and punishments transfers to the juvenile justice system, as schools are taking more students in traditional minority groups out of the positive learning environment and punishing often immature behavior (rather than teaching more appropriate behaviors; Skiba, 2000). This is essentially the basis behind

the 'school-to-prison pipeline' argument, and one of the primary arguments against punishment-driven methods of school and classroom control. Essentially, intervention theorists took these critiques to try and develop interventions that would be less controversial and focus on positive behaviors and experiences for students. Moreover, in January of 2014, the U.S. Department of Education's Office for Civil Rights and the U.S. Department of Justice's Civil Rights Division (USED, 2014) issued a joint letter to serve as a significant guidance document and strongly urged schools throughout the nation to not only "administer student discipline in a manner that does not discriminate on the basis of race" (p. 1) but to help students succeed through programs that support and reinforce positive student behavior and character development. Indeed, if applied correctly, Positive Behavioral Interventions and Supports (PBIS) models can help reduce racial disparities and end the school-to-prison pipeline by focusing on positive reinforcement and teaching students more mature and appropriate behavior.

Applied Behavioral Analysis (ABA)

While token economies and realizations regarding the ineffectiveness of aversive interventions helped encourage the widespread integration of PBIS across the United States, some of the deepest roots of PBIS lie within Applied Behavioral Analysis (ABA; Dunlap, et al., 2009). In turn, the roots of ABA are found in all three of the aforementioned theories of learning: classical conditioning, operant conditioning, and social learning theory. In essence, ABA is the systematic application of interventions based on these learning theories to impact specific behaviors, while simultaneously exploring whether any changes are attributable to the intervention process (Baer, Wolf & Risley, 1968). Baer, et al. (1968), who were among the founding theorists of ABA, are often considered to have provided the most comprehensive and standardized

definition of ABA within the first issue of the Journal of Applied Behavior Analysis. Within their article, the researchers indicated that an applied behavior analysis must articulate “the behavior changed, its quantitative characteristics, [and] the experimental manipulations which analyze with clarity what was responsible for the change” (p. 97). In addition, the analysis must include “the technologically exact description of all procedures contributing to that change, the effectiveness of those procedures in making sufficient change for value, and the generality of that change.” (p. 97). With such complexity, theoretical underpinnings, and the systematic nature of application, ABA became known as a ‘technology,’ rather than a simple technique or intervention.

Early in the rapid growth and expansion of ABA, the technology found overwhelming success in modifying and controlling the behavior of institutionalized patients, particularly in terms of manifestations of disabilities, such as aggression and self-injurious behaviors (Dunlap, et al., 2009). By the 1980s, ABA had grown from an emerging theory of applied research to a vetted method of organizing and providing services to school-age children, particularly those with special needs, disabilities, and severe behavior disorders (Dunlap, et al., 2009). However, ‘behavior modification’ was not entirely consistent with the concepts of ABA, and many teachers had some level of misunderstanding about ABA and how it should be applied (Cooper, 1982). In modern educational settings, the term ‘behavior modification’ is used much less often and the concepts of ABA have taken a strong foothold within many classrooms, with an emphasis on assessing the functional relationship between the environment and the behavior of interest (Mace, 1994).

Basic premises of ABA. In general, Applied Behavior Analysis (ABA) is a technology used by behavior analysts to explore and target change in a specific behavior or set of behaviors by observing and reviewing an individual's thoughts, feelings, and behaviors within a standard sequence of antecedents, behaviors, and consequences. The analysis is essentially intended to discover the underlying causes and purposes behind the undesirable targeted behavior, with the ultimate hope of applying methods to decrease or stop the undesired behavior (Pierce & Cheney, 2013). For example, a young girl with autism and limited verbal skills is given a literacy activity requiring her to match a grapheme to the initial sound of a word. Once the teacher places the worksheet in front of her, she begins to rock in her chair, stands up, and throws chair. In response, the teacher removes her from the other students and places her into time-out. Under an ABA framework, the analyst would identify the targeted behavior of concern (i.e., throwing the chair), the antecedents to that behavior (e.g., assigning a challenging literacy activity, rocking in the chair, standing up, heightened anxiety), and the consequences to that behavior (e.g., being placed in time-out, having the literacy activity removed, successfully avoiding the assignment, reduction in anxiety). It is possible that an analyst would consider the chair rocking and standing up as additional focus behaviors, depending on how early the teacher should intervene to prevent the behavior escalation. Regardless, by analyzing the sequence of antecedents, behaviors, and consequences, the analyst could reasonably conclude that the student demonstrated the aforementioned behaviors as a means of avoiding the undesirable literacy task. The analyst would then create specific interventions to help prevent the undesirable behavior, such as buckling the child to her seat while

completing literacy work or providing a mild shock when failing to complete (or begin) the assignment within an allotted timeframe. Such aversive stimuli and punishments (e.g., shock, pain, discomfort, restraint, etc.) were not uncommon in the earlier years of ABA, a fact that helped lead to the development and wide-spread adoption of PBIS (Dunlap, et al., 2009).

From aversive to positive. ABA was initially used by practitioners in institutional settings to stop self-destructive or dangerous behaviors that were unresponsive to medications or other treatments, with most of these individuals having severe disabilities and behavioral disorders (Pierce & Cheney, 2013). As ABA began being used more often within educational settings, practitioners and behavior analysts borrowed a great deal from institutional models and began using more aversive and punishment-based interventions (Pierce & Cheney, 2013). Within the confined environment of an institution, aversive stimuli and punishment were seen as the most efficient and expeditious method of stopping self-damaging or dangerous behaviors (e.g., head banging, scratching, etc.). Applied in educational settings, these aversive stimuli and punishments also appeared effective at stopping undesirable behaviors and began to be widely adopted in working with students with disabilities and severe behavioral problems. There are many examples of these aversive punishments, such as the 'self-injurious behavior inhibiting system' (SIBIS) that used body sensors to immediately punish self-injurious behaviors (e.g., hitting one's face, banging one's head) using an automatically administered electric shock (Linscheid, Iwata, Ricketts, Williams, & Griffin, 1990). In addition, an often-cited article in the New York Times provided a disturbing look at other aversive stimuli and punishments used by schools in

Massachusetts and New Jersey working with students with severe disabilities, such as the use of restraints, starvation, pinching, spanking, cold showers, an automatic vapor spray system, and a 'white noise' helmet (Butterfield, 1985).

As the use of aversive stimuli and punishments grew across the country, moral objections to the use of some techniques (particularly the shocking, water spraying, white noise, and physical punishments) and documented permanent damage caused to some students is argued as the primary 'trigger' that eventually lead to research on positive behavior interventions and the development of PBIS as an independent field from ABA (Singer & Wang, 2009). Indeed, as mentioned earlier, a number of researchers have demonstrated that interventions based on aversive stimuli are relatively ineffective at producing long-term reduction in problematic behaviors (Costenbader & Markson, 1988; Sugai, et al., 2002). Researchers have also found that punishment-driven interventions can lead to increased instances of undesired behaviors (e.g., Mayer, 1995; Mayer & Sulzer-Azaroff, 1991; Skiba & Peterson, 1999) and are among the least effective methods for reducing school discipline problems and school violence (e.g., Gottfredson, et al., 1993; Horner, Sugai, and Dickey, 2016; Lipsey, 1992; Tolan & Guerra, 1994; Elliott, et al., 1998). Other researchers found that punishment is entirely ineffective at bringing about behavioral change, serving only to suppress undesired behaviors in the presence of the punisher, but not in other situations (e.g., Smith, 2012). Fortunately, researchers have found that the most effective methods for addressing problematic behaviors and school violence are social skills training and Positive Behavioral Interventions and Supports (e.g., Gottfredson, et al., 1993; Lipsey, 1992; Tolan & Guerra, 1994; Elliott, et al., 1998).

Thus, it was primarily the principle of morality that created the offshoot of ABA called PBIS, while ABA researchers created their own journal and professional organization to help defend the use of aversive stimuli and punishments in behavior management systems (Singer & Wang, 2009). Unlike many researching and developing ABA theories, researchers and practitioners of PBIS believed that behaviors could be more effectively and humanely changed using positive alternatives to aversion. In addition, early entrants into PBIS were also committed to improving the overall quality of life for PBIS intervention recipients by teaching a range of productive behaviors beyond just trying to reduce discrete target behaviors (Sailor & Wang, 2009). Ultimately, moving from aversive interventions to positive interventions is the key difference between PBIS and ABA, and is one of the most influential reasons why PBIS has become the national model for intervention across the country.

Individual to group intervention. ABA was relatively successful in working with autistic and severely disturbed children in institutional settings, giving it an inroad into the field of education, specifically to support the education of students with disabilities and severe behavioral issues. Upon introduction to educational settings, ABA was focused on working with individuals with disabilities who demonstrated inappropriate and challenging behaviors (i.e., maladaptive, violent, and/or socially inappropriate) with the goal of stopping such behaviors (Dunlap, et al., 2009). As PBIS emerged as a field independent from ABA, initial research and practice was also focused on individuals with disabilities in ESE classrooms, with a focus on individually identified behaviors to help the student succeed in the school environment (Sailor & Wang, 2009). The application of PBIS became more prominent as educational settings moved towards

more inclusion of students with disabilities, but remained focused on individual-based interventions based on individualized functional behavior analysis. However, the overall success and impact of PBIS with individuals was eventually applied across entire schools, now focusing on supporting and teaching behaviors that would support a safe and productive learning environment for all students in the school (rather than for individual students or classrooms; Sailor & Wang, 2009). This represents the second primary difference between traditional ABA and PBIS – a movement from individualized interventions for students with disabilities to school-wide interventions encompassing every student in the school regardless of disability status. The specifics of this school-wide PBIS approach will be described in more detail later in this chapter.

Other differences between ABA and PBIS. Ancillary to the expanded focus of PBIS to the entire school, the method of data collection to inform which behaviors to target and which interventions to implement is also necessarily different. More specifically, as discussed later in this chapter, PBIS focuses on identifying behaviors for intervention, but does not place as much focus on antecedents or consequences - as these are much harder to aggregate into meaningful data across an entire school of hundreds of individual students. That being said, the interventions within PBIS are most often focused on providing new antecedents to elicit more productive behaviors and, thus, theoretically eliminating problematic behavior by making it unnecessary for the student (Ylvisaker, Feeney, & Hibbard, 2006). PBIS also differs from ABA in focusing on environmental changes, teaching and communication skills, and real-world contexts for assessment and intervention (Ylvisaker, Feeney, & Hibbard, 2006). Ultimately, while there are certainly core similarities between ABA and PBIS (e.g., systematic

observation of behavior, understanding of behavior antecedents and consequences, and systematic application of interventions), there are several key differences that have helped shape PBIS into one of the most effective methods of school-wide behavior change and improvement (Sailor & Wang, 2009; Ylvisaker, Feeney, & Hibbard, 2006).

Sociopolitical Roots of PBIS as a School-Wide Intervention Model

While the previous sections of this chapter have focused upon the theoretical underpinnings of Positive Behavioral Interventions and Supports (PBIS), such as operant conditioning, classical conditioning, social learning theory, and applied behavior analysis, it is also important to understand how PBIS actually emerged as a wide-spread movement in the field of education. Some of the reasons for the emergence have already been addressed earlier in this chapter, such as helping to address some of the challenges faced by other classroom and behavior management models applied broadly in schools (e.g., focus on punishments, use of aversive stimuli, or restriction to addressing behavior of individual students). These provide some field-based explanations as to how and why PBIS was expanded to school-wide models of behavioral support. However, it is also important to understand the social and political movements that helped drive the emergence of PBIS as one of the primary methods for school-wide interventions to drive positive behaviors.

Roots in Teaching Students with Disabilities

The need to work with children identified with disabilities was one of the most influential sociopolitical movements that led to the eventual emergence of PBIS as the most utilized theory of change in schools. The movement and need to provide better services to students with disabilities began in the 1950s with deinstitutionalization of those with mental, developmental, and intellectual disorders (Torrey, 1997). The

movement to deinstitutionalize these individuals gained momentum with America's civil rights movement of the 1960s and several publications revealing the terrible and tortuous conditions in these 'hospitals' (Dunlap, et al., 2009). Ultimately, the push to get children and adults out of hospitals and asylums meant they would then be entering communities (and schools) that did not have the infrastructure to support their needs and provide standards of care enjoyed by those without disability, such as education (Torrey, 1997). Over the next 20 years (by the 1980s), the population of hospitals and asylums had decreased by nearly half-a-million people, with fewer than 72,000 remaining in institutions by the mid-1990s (Torrey, 1997). It was no longer acceptable to place children with severe disabilities into institutions, and they began finding their way into the regular public schools.

Having students with severe disabilities would certainly create a challenge, as teachers had few tools to work with these types of children. Fortunately, about the same time that these children began enrolling in public schools, the field of behavior modification (eventually called Applied Behavior Analysis; ABA) was expanding rapidly with studies reporting amazing success in working with children with severe disabilities. However, as noted by Dunlap, et al. (2009), there was a complicated paradox occurring in the 1980s, as schools across America were banning corporal punishment and much of the ABA practices of the time were focused on aversive stimuli and punishments. Some of the punishments and aversives were adopted from behavior control techniques of the same institutions that led to the movement, with some of these punishment-driven behavior techniques discussed in the prior section of this chapter. However, at the time, these aversive techniques seemed to be effective and efficient at quickly changing

student behavior (recall the earlier discussion of suppressing behaviors versus teaching new prosocial behaviors). Fortunately for students with disabilities, many educational professionals found the use of aversives and punishments to be unacceptable in working with any children, particularly those with disabilities (Dunlap, et al., 2009). As such, there was a push among professionals and researchers to find alternatives to the punishment-driven paradigm of ABA at the time.

Researchers first began focusing on alternative explanations for behaviors – moving from just focusing on reducing the occurrence of behaviors to focusing on why and when these behaviors happen. This refocusing of the field led directly to the development of Functional Behavior Analysis (FBA; discussed later in this chapter; Dunlap, et al., 2009). Research continued to show punishment-based paradigms were often more damaging than helpful, and FBA helped increase awareness that there were logical and understandable reasons for the undesirable behaviors of these students with disabilities. Upon a more widespread and public understanding of these behaviors and the students, there became a need to find alternative and non-aversive methods for reducing the emergence of undesirable behaviors (Dunlap, et al., 2009). By the late 1980s, researchers and theorists had broken from the field of ABA to create the field of Positive Behavior Interventions and Supports (PBIS). The initial research efforts of the 1980s led to the inclusion of PBIS in the Individuals with Disabilities in Education Act Amendments of 1997 (IDEA) as a potential mechanism to work with students with disabilities. With this reauthorization (discussed in more detail below), researchers at the University of Oregon received a grant to create the Center on Positive Behavioral Interventions and Supports to provide technical assistance to all schools and districts wishing to implement (Sugai & Simonsen, 2012).

Laws, Rules and Regulations

In addition to the emerging need to find effective methods of working with students with disabilities, the 1980s and 1990s were replete with new rules and regulations requiring schools to provide specific services to these students. Among the first laws to impact schools in regards to students with disabilities was the Rehabilitation Act of 1973, which was subsequently amended in 1986 and 1992. This law was technically designed to ensure equal opportunities for employment among people with disabilities within agencies receiving federal funding, but was eventually extended to a wide range of environments where federal funding is provided (USED, 2010). Of importance to this research, Section 504 of the Rehabilitation Act of 1973, as amended, prohibits discrimination on the basis of disability within educational programs or activities that receive federal funding under the U.S. Department of Education (USED, 2015). This section has become part of the standard terminology in education, providing a '504 Plan' for any student needing additional supports but not covered under the Individuals with Disabilities in Education Act (IDEA).

The second important piece of legislation that drove the incorporation of students with disabilities in public schools was the Education for all Handicapped Children Act of 1975, which was an amendment to a previous law from 1966. This law required schools to create an educational plan for handicapped children that would ensure them an education as close as possible to that provided to non-handicapped children, while ensuring they were placed in the least restrictive environment that allowed the greatest opportunity to interact with non-disabled peers (USED, 2010). This law was eventually revised and renamed as the Individuals with Disabilities in Education Act of 1990 (IDEA). In essence, this law requires schools and districts to provide all students with

disabilities a Free Appropriate Public Education (FAPE) that provides specially designed instruction for their specific needs. The revised law retains the earlier requirement that the educational services must be provided in the least restrictive environment appropriate to each student's individual needs (USED, 2010; 34 C.F.R. §300.130). Although similar to Section 504 of the Rehabilitation Act of 1973, the requirements for services and accommodations under IDEA are more complex and detailed – requiring an Individualized Education Plan (IEP; USED, 2010; 34 C.F.R. §300.340). The breadth of the requirements under IDEA have been solidified by federal courts, where the United States First Court of Appeals ruled that schools were required to provide services to students with disabilities regardless of the severity of the disability (Timothy W. v. Rochester, New Hampshire, School District, 1989). While this is a simplified explanation of IDEA, it provides an understanding of the timeline leading to the establishment of PBIS as a primary method for addressing behavior within entire schools.

The third major legislation to impact the provision of services to students with disabilities was the American with Disabilities Act of 1990 (ADA), primarily Title II. The ADA was designated by Congress to “provide a clear and comprehensive national mandate for the elimination of discrimination against individuals with disabilities” (ADA, 1990). This act was significantly amended in 2008 and was renamed the American with Disabilities Act Amendments Act of 2008 (ADA Amendments Act). The amended act intended to undo the actions of courts to limit the scope of protection intended by the original law. However, neither ADA of 1990 nor the ADA Amendments Act of 2008 provide any greater protection for students with disabilities than the aforementioned

laws (which are more specific to education; USED, 2015). As such, while ADA is important to protect the rights of individuals with disabilities, it finds less use within the field of education. Other legislation was passed to help protect the rights of individuals with disabilities, such as the Telecommunications Act of 1996 and the Fair Housing Act of 1988, though most of these additional laws are not related directly with the education of students with disabilities.

Student Inclusion

The two aforementioned sociopolitical movements first deinstitutionalized and incorporated students with disabilities into schools, then established requirements for schools to provide the same education in the least restrictive environment. With momentum in favor of students with disabilities and laws seemingly requiring all accommodations to ensure these students can receive an equitable education with non-disabled students, a significant road block was met with the US Supreme Court ruling in *Board of Education of the Hendrick Hudson Central School District v. Rowley* (1982). In this ruling, the Court determined the law only required school districts to provide students with disabilities with supports necessary for them to demonstrate any level of educational benefit. The Court stated that a school system was not responsible to provide a “potential-maximizing education” for these students (p. 21, 458 U. S. 176). This has helped create a point of contention between parents and schools as to what is an ‘appropriate’ education (under FAPE) and what constitutes the least-restrictive environment (Blankenship, et al., 2007). Schools have been accused of simply seeking to show any educational benefit and selecting placements that represent the least cost in terms of money and personnel (Blankenship, et al., 2007). However, with the support of several court cases and continued efforts by schools to obtain the best results on

required state achievement tests, “inclusion” is introduced as the third major sociopolitical change leading to the widespread utilization of PBIS in schools.

Inclusion has become the new ‘buzz word’ in working with students with disabilities, with the intent of placing these students appropriately in regular classrooms for the maximum amount of time possible each day. Using the most recent data available, the US Department of Education found that 95% of students served under IDEA (i.e., with IEPs) had been educated in regular classrooms for at least some part of the school day (USED, 2015). In addition, this same report found that 62.1% of students served under IDEA were in regular classrooms for at least 80% of the school day (with ‘regular classrooms’ being considered the least restrictive environment). Only 5% of the students served under IDEA were educated outside the regular classroom (e.g., self-contained classrooms). This introduces new complications for teachers within inclusive classrooms, as there may now be students with difficult behaviors that are manifestations of their disability. Learning methods to work with these students without punishing them or distracting from other students required new techniques and systems, and became a focus of PBIS. Indeed, PBIS theorists and researchers developed a paradigm wherein all students in the school are provided positive supports to learn and exhibit positive behaviors, which can help all students (and the teachers).

Positive Behavior Interventions and Supports (PBIS): From Theory to Practice

As discussed earlier, the inclusion of PBIS in school settings, particularly in school-wide settings of “regular education” students, arose out of a need for addressing problematic and challenging student behavior that disrupts the learning environment, compromises the school setting as a ‘safe place,’ and negatively impacts the learning environment—not just for offending student, but also for other students, instructional

personnel, support staff, and other stakeholders. In this section PBIS, more specifically PBIS as a school-wide approach, is described in order to highlight its defining characteristics and features.

Positive Behavior Interventions and Supports (PBIS)

As evidenced by the complex foundational theories and numerous challenges to comprehensive behavior interventions, Positive Behavior Interventions and Supports (PBIS) has a broad and complicated theoretical foundation and resultant definition. Indeed, entire books have been written to explain and describe PBIS, and organizations (e.g., The Technical Assistance Center on Positive Behavioral Interventions and Supports—established by the U.S. Department of Education's Office of Special Education Programs) and large conferences have been designed around supporting PBIS implementation. As such, it would be impossible for this literature review to fully and explicitly define PBIS, particularly as definitions can vary depending on the focus of the setting of implementation. That being said, a brief explanation of the theory and its basic elements will help to illustrate why PBIS was chosen as the intervention of focus for this study.

In essence, PBIS is considered a broad approach designed to provide school personnel with tools and skills necessary to enhance student academic achievement and improve socially relevant behavior (Florida's PBS Project, 2002a; OSEP Technical Assistance Center on PBIS, 2016). Rather than providing a single strategy or intervention, PBIS is designed to allow individual schools and organizations the flexibility to provide a wide variety of evidence-based and research-based interventions that best meet the needs of their populations, specifically students in this case. However, the Florida PBS Project emphasizes that PBIS is not a “packaged curriculum,

scripted intervention, or manualized strategy” (Florida’s PBS Project, 2002b, p.1). Rather, PBIS is more appropriately termed a ‘technology,’ as it is designed to be constantly adapting to the needs of the students, classrooms, and schools through an integrated process of assessment, feedback, and data analysis. Some of the most prominent researchers in PBIS indicate that the ‘technology’ has four core features: (1) an application of research-based behavioral strategies; (2) use of multiple and integrated intervention elements aligned to the needs of the environment; (3) a commitment to sustained and long-term outcomes; and (4) support within the organizational systems that ensure sustained impacts of the interventions (Dunlap, et al., 2009). While developing a single-sentence definition of PBIS is nearly impossible, the above overview is enhanced below with a more thorough description of some of the most prominent elements of the model (e.g., Response to Intervention, staff buy-in, training, etc.).

Multi-Tiered Systems of Support (MTSS)

In addition to pulling from Applied Behavior Analysis, PBIS has pulled from other ‘off-shoot’ intervention models. For example, Multi-Tiered System of Supports (MTSS), previously known as Response to Intervention (RtI), is a critical underlying component of the PBIS approach (McIntosh & Goodman, 2016; Sugai & Horner, 2009b). MTSS essentially utilizes a continuum of three tiers (i.e., primary, secondary, tertiary) that outline differentiated intervention approaches designed to progressively move from those effective with a majority of students (primary, Tier 1 – impacting 80% of the student population receiving the interventions), to those effective with small groups (secondary, Tier 2 – impacting 15% of the student population who do not respond solely to primary tier interventions), and to those effective with individuals (tertiary, Tier 3 –

impacting the remaining 5% of the student population who do not respond to primary and secondary tier interventions; McIntosh & Goodman, 2016). MTSS is used extensively within classrooms when working with students to ascertain if additional educational supports or programs are needed to best meet student needs, and has been described as providing outstanding guiding principles for student assessment and intervention decisions under the PBIS approach (Sugai & Horner, 2009a).

The multi-tier continuum was originally developed primarily to work on the individual student level, with interventions progressing through the continuum when a lower tier was ineffective for the student (McIntosh & Goodman, 2016; Sugai & Horner, 2009a). For example, MTSS can help determine whether students struggling in regular education classrooms are demonstrating deficiencies in their learning to warrant testing for learning disabilities and, if so, whether or not a special education program would be most appropriate for their learning needs (McIntosh & Goodman, 2016). PBIS took the multi-tiered approach of MTSS and applied the continuum to entire classrooms and school settings, essentially helping move the concepts to broader application models (Sugai & Horner, 2009a). Unlike the traditional MTSS approach, PBIS focuses on the entire student body as a whole rather than focusing on individual students. In addition, PBIS tends to focus primarily on Tier 1 interventions, though Tiers 2 and 3 interventions are available for students that need more intensive behavior supports. In essence, PBIS borrows the multi-tier continuum from MTSS to help enhance the overall effectiveness PBIS approach at a school-wide level (McIntosh & Goodman, 2016).

Functional Behavior Assessment (FBA)

PBIS also relies heavily on the behavioral analysis techniques of Functional Behavioral Assessment (FBA), another product of Applied Behavior Analysis (ABA)

(Singer & Wang, 2009). At its most basic level, FBA is a process of collecting and analyzing data regarding a student's maladaptive behavior and the surrounding circumstances to determine the function of the behavior (i.e., the purpose of the behavior for the student; Singer & Wang, 2009). Functional Behavioral Analysis (not 'assessment') was originally developed for use in understanding why people with severe cognitive or communication disabilities behave in specific maladaptive ways (e.g., children with autism; Dixon, Vogel, & Tarbox, 2012). By focusing on an analysis of behaviors and circumstances, there was less need for the individual to explain why they were exhibiting certain behaviors – a characteristic that was particularly important for these individuals that could not communicate well enough to explain the reason for their behaviors. With the reauthorization of the Individuals with Disabilities in Education Act (IDEA) in 1997, Functional Behavioral Assessment (FBA; similar to "Analysis") became a required process for every student identified with a disability if they have serious misconduct that are determined to be manifestations of their disability and would result in a change of placement exceeding 10 days (e.g., placement in an alternative school; 20 U.S.C. §1415(k)(1)(F)(i)). Both processes (i.e., 'analysis' and 'assessment') are essentially the same, though IDEA used the new term because of the broader base of students for whom it would be required.

In general, FBA not only focuses on the antecedents and consequences of maladaptive behaviors to understand the student's reasoning for behaving inappropriately, but also on understanding cultural contexts and social meaning being associated with the maladaptive behaviors (Singer & Wang, 2009). In addition, FBA also focuses on using positive interventions to develop alternative behaviors that reduce

and/or replace the maladaptive behaviors (Singer & Wang, 2009). For this reason, FBA was integrated into the overall method of designing and implementing school-wide PBIS models. However, as with MTSS, functional behavioral assessment was designed to be used at an individual level and is now required by law to be used at an individual level for all students identified with disabilities (Hanley, Iwata, & McCord, 2003). The most current theories and models of school-wide PBIS (the focus of this research) took the individualized techniques used in FBA and applied them to a school-wide method of assessment (Singer & Wang, 2009).

With an individualized method, FBA could be used to determine why a student consistently refuses to read during small-group instruction and ‘acts out’ (e.g., talks back, bothers others, touches materials, etc.) until the teacher removes them from the group (e.g., time-out). In this situation, FBA might discover that the student is engaged in task avoidance because they are embarrassed about their reading ability, which could lead to positive interventions to reduce the maladaptive behavior (e.g., remediation to bolster confidence, encourage asking for help, etc.). School-Wide PBIS (SWPBIS) transposes this technique to focus less on the specific function of behaviors of individual students, and more on behavioral data across the entire school of students. Within the SWPBIS model (similar to FBA), data are collected to discover which are the most salient and frequent maladaptive behaviors across the entire student body, particularly those that are challenging, socially inappropriate, and negatively impacting on student learning and safety (Dunlap, et al., 2009). Within such a school-wide transposition, PBIS also develops positive interventions that can reduce or replace the maladaptive behaviors in those students displaying such behaviors, while also adding

the intent to prevent the emergence of the maladaptive behaviors in students that have not previously behaved in such a way (e.g., Singer & Wang, 2009). Ultimately, this process ensures that all students receive maximum educational benefits.

Design Considerations for SWPBIS

While the theoretical underpinnings of Applied Behavior Analysis, Multi-Tier Support Systems, and Functional Behavioral Assessment all provide a general guide to develop and implement School-Wide Positive Behavioral Interventions and Supports (SWPBIS), it is important to also consider some of the most important aspects in the preliminary design of a school-wide PBIS intervention model. While there are many design considerations for SWPBIS models, the following are four elements that have the most impact on design and ultimate implementation of an effective intervention model. This subsection is focused on elements that must be considered before implementation of the interventions, while the next subsections focus on implementation aspects and considerations of the SWPBIS model.

Design considerations: staff buy-in

It is common knowledge that having staff and employees 'buy-in' to a systematic change initiative is important with any organization, whether they be new human resources initiatives or new ways of working with students. In terms of the systematic and structured changes implemented within SWPBIS, adopting a systems perspective means it is absolutely critical that staff have full 'buy-in' to each new process, procedure, and initiative (Sugai & Horner, 2009a). This is essential if the new techniques are to be consistently implemented with fidelity, particularly in terms of consistently providing the correct positive supports for the proper social behaviors across the entire school. Lack of buy-in can create confusion among the children and

drastically decrease the effectiveness and efficiency of the SWPBIS initiatives both during early implementation and during maintenance phases in future years (Sugai & Horner, 2009a).

The process of staff buy-in for SWPBIS must begin with a core group of school personnel who see a need for improvement in overall student behavior, are willing to implement systematic change, and are willing to help promote the utilization of SWPBIS (Sugai & Horner, 2009a). The initial staff buy-in does not need to compose the entire school, as there are opportunities for increasing buy-in as the design process moves forward. These initial staff might be front-line staff (such as teachers) or administrators, with the latter group needing to incorporate front-line staff as quickly as possible in the process. Regardless of the composition of the initial group, the next step is to obtain administrative approval (if necessary) and develop the 'anchoring' group of personnel known as the school's SWPBIS Team (Sugai & Horner, 2009a). The SWPBIS Team should include members from school administration and all ranks of instructional staff, ideally representing each grade level. This anchoring group must receive formal training in SWPBIS via their state's Department of Education or representing agency, ideally prior to designing any initiatives (FLDOE, 2008).

After the SWPBIS Team has been established and trained, they can begin the process of designing the school-wide interventions under the model. This becomes one of the most important steps for promoting more wide-spread staff buy-in, with the SWPBIS Team discussing and eliciting feedback from other teachers, instructional staff, and non-instructional staff (e.g., paraprofessionals, cafeteria workers, and custodians) (Sugai & Horner, 2009a). Knowing their feedback is being considered will help promote

buy-in, while also providing valuable data for determining the school-wide goals and interventions to be implemented. Overall, it is suggested that at least 80% of school personnel must have 'buy in' (i.e., approve of the core values and overall PBIS intervention philosophy) and agree to implement the PBIS model (once developed) before the school can begin to implement a school-wide PBIS initiative (e.g., Newcomer & Barrett, 2009; Putnam et al., 2009). Indeed, achieving staff buy-in has been found to be directly related to successful implementation of SWPBIS, with this same research indicating that low staff buy-in can result from misperceptions or misunderstandings of the basic foundational theories of SWPBIS, poor understanding of the principles and interventions used within PBIS, and lack of support for overall implementation (Kincaid, Childs, Blase, & Wallace, 2007).

After this buy-in threshold has been achieved, the SWPBIS Team works to draft initial goals and interventions for review by all stakeholders from all areas of the school (e.g., grade level classroom teachers, special area teachers, support staff, school administration, etc.). These stakeholders must then meet to share their concerns, ideas, analyze frequently occurring behavior concerns, and work to develop a collaborative plan of action (Sugai & Horner, 2009a). This task helps with giving everyone involved a voice and further helps promote and reinforce staff buy-in and understanding of the SWPBIS intervention model. Ultimately, the importance of staff buy-in from as many stakeholders as possible cannot be understated. The overall success of a school-wide PBIS initiative hinges on having as many staff as possible implementing the same interventions and supporting the same behaviors, thus promoting successful systematic changes to student behaviors (FLDOE, 2008; Newcomer & Barrett, 2009).

Design considerations: data collection and analysis

As discussed above, school-wide PBIS is closely linked with Functional Behavior Assessment and Applied Behavior Analysis (Singer & Wang, 2009). As such, preliminary and on-going data collection and analysis are integral components of the SWPBIS approach (Sugai & Horner, 2009a). In essence, school-wide behavior data are collected and analyzed to determine the types of challenging and inappropriate social behaviors that students within a school are demonstrating (note that SWPBIS is focused on social behaviors across the school; Sugai & Horner, 2009a). Based on the initial review of data, student behavior priorities are established for intervention under the SWPBIS model. Four types of data sources and collection methods to establish these priorities and associated interventions include: (1) informal observations, (2) formal observations and surveys, (3) school behavioral data, and (4) ongoing data collection methods. Each of these four are briefly discussed below.

Informal observations. Data collection most often begins with an informal analysis of overall student behaviors that are concerning to school personnel, such as students not respecting others, noisy transitions, etc. (FLDOE, 2005). The informal analysis is often completed by the initial group of personnel bringing up the need for a school-wide model of systematic behavioral change. Upon approval of the school administrators to develop a school-wide PBIS model and upon creation of the school's SWPBIS team, additional informal discussions are had with all stakeholders (e.g., grade level classroom teachers, special area teachers, support staff, school administration, etc.) in an effort to identify any additional behavioral concerns across the school population (Sugai & Horner, 2009a). These informal observations are critical for the

design of the PBIS model within the school, and they allow for a deeper understanding and discussion of the behaviors to be focused upon by the interventions.

Formal observations and surveys. Beyond informal observations provided by stakeholders, many schools and districts conduct more formal school climate surveys (Lewis, Barrett, Sugai, Horner, Mitchell, & Starkey, 2016). These surveys are often completed by school personnel and parents, and generally include a section on school discipline and safety. Data from these climate surveys can then be utilized by the school's SWPBIS Team to provide critical information on those student behaviors that school staff and parents perceive to be negatively impacting a school's learning environment. Certainly, not every behavior or issue identified in school climate surveys will be addressed by a SWPBIS intervention model, though behaviors that are reported consistently should be considered when designing the model.

In addition to formal surveys, nearly every school completes formal observations of teachers during annual evaluation processes. These formal evaluations can be summarized by school administrators for use by the school's SWPBIS team. Those student behaviors that caused the greatest disruption during formal evaluations can become areas of focus for the SWPBIS intervention model. In this sense, it is important for the SWPBIS Team and the school administrators to only focus on behaviors that are relatively common disruptions to the learning environment. It is also important to select target behaviors that would benefit the most stakeholders, which is important to help enhance staff buy-in (discussed above). Ultimately, when formal classroom observations are analyzed, reoccurring behavior concerns and themes can be determined and guide a school's PBIS initiative.

School behavioral data: In addition to data from teachers and staff, the school also has access to a plethora of data on student behaviors (particularly undesirable behaviors; e.g., Sugai & Horner, 2009a). For instance, the school may have access to informal 'pre-referral' data that can provide an understanding of those behaviors that were problematic and disruptive, but did not rise to the classification of a formal office discipline referral (e.g., talking with peers after being told to stop repeatedly, throwing a crayon, arguing with a teacher, etc.). In addition to pre-referral data, the school often has access to formal office discipline referral (ODR) data, which is often separated into different levels of offenses depending on their severity (as determined by the school, district, and/or state). Taken together, the pre-referral and referral data can be analyzed to determine the most common behaviors that teachers find to be problematic and disruptive in the years prior to the implementation of SWPBIS (e.g., Clonan, McDougal, Clark, & Davison, 2006; Irvin et al., 2006; Irvin, Tobin, Sprague, Sugai & Vincent, 2004). Certainly, other data are available (e.g., suspensions, detentions, school absences), but these are most commonly used for middle and high school students, and the focus of this research study is elementary school. Indeed, it is most common for research on school-wide PBIS in elementary schools to use ODR's as the primary outcome metric (e.g., Bradshaw, Reinke, Brown, Bevans, & Leaf, 2008; McIntosh, Campbell, Carter, & Zumbo, 2009; Pas, et al., 2011).

On-going data collection and continuous improvement. School personnel certainly have access to a wide variety of informal and formal student data from daily attendance to behavioral data to academic outcomes. All of these data points allow for a school's SWPBIS Team to identify trends in behavior, as well as disaggregate data to

explore any potential differences between student groups based on demographics (e.g., ESE status, gender, race/ethnicity, etc.). This allows for SWPBIS Team to make data-based decisions as to which behaviors to target, while ensuring all student sub-groups are equally impacted by the positive behavior supports. Most definitely, with research showing African American students as being over twice as likely than their white peers to have more serious consequences for the same behaviors (Skive, Horner, Chung, Rausch, May, Tobin, 2011), it is imperative that sub-groups of students are fully considered in all aspects of the SWPBIS design, implementation, and continuous improvement processes. With appropriate SWPBIS positive strategies equally applied to all sub-groups and with appropriate implementation training, this may help to reduce the discrepancies seen in disciplinary data across groups (e.g., Jones, Caravaca, Cizek, Horner, & Vincent, 2006).

In addition to using existing data systems in the design of interventions, the school's SWPBIS team must work with school administrators to develop an ongoing data collection and analysis process for implementation with the PBIS model (Sugai & Horner, 2009a). In some instances, schools may already have data systems to monitor student behavior, such as School-Wide Information System (SWIS). This type of system can be used specifically for behavior data collection and analysis across all three MTSS tiers that make up SWPBIS. In other settings, a state might have a centralized system for collecting behavioral data. For instance, in Florida, all schools utilizing SWPBIS approaches have access to the State of Florida's behavior data collection and analysis system called Response to Intervention for Behavior (RtI:B; FLDOE, 2009).

The RtI:B system is utilized in tandem with a school district's own student information system to collect and analyze student behavior data using a variety of criteria such as discipline type (i.e., pre-referral or ODR), infraction type, location, time, grade level, and other demographic indicators, as well as across all three tiers of interventions (FLDOE, 2009). In addition to behavioral data, the PBIS Team should set up necessary procedures to collect information on utilization of those positive behavior supports that can be reliably measured, which can be useful in exploring how some of the more measurable behavior supports are being implemented (e.g., 'tickets' or 'tokens'). Exploring the utilization of supports by sub-group (e.g., teacher, grade level, race/ethnicity, etc.) could help show deficiencies in the overall implementation of positive supports and guide the provision of additional training and encouragement to stakeholders implementing the interventions. Again, the focus should be on consistently applying the SWPBIS intervention to all students and in all settings (Sugai & Horner, 2009a).

It cannot be overstated that an important hallmark of SWPBIS is the ongoing process of data collection, analysis, and collaboration of all school staff to adjust priorities depending on the behavioral needs of the school (e.g., Sugai & Horner, 2009a). For example, if data demonstrate students are receiving major disciplinary referrals for behavior incidents occurring on the playground, then interventions, such as re-teaching of appropriate playground-based social behavior and etiquette would be provided. However, if after three months, new data indicate that major disciplinary referrals were now on the rise on the bus, then appropriate interventions to address social behavior concerns on the bus would be added to the intervention model. It is the

school-based data-driven decision making and the frequent presentation of data to all stakeholders that helps set SWPBIS apart from other approaches (Sugai & Horner, 2009a).

Design considerations: setting goals and expectations

After gaining sufficient staff buy-in and collecting initial data and determining which behaviors will be at the initial focus of the SWPBIS interventions, the next important step is for the SWPBIS Team to work with all stakeholders in the development of school goals and expectations (Sugai & Horner, 2009a). Based off a close analysis of student behavior data (e.g., ODR's, pre-referrals, etc.), a proposed set of school-wide rules and expectations of behavior are initially developed by the SWPBIS Team, which is composed of representatives from across all grade levels and instructional areas (e.g., Special Areas, ESE, and Regular Education Teachers). In developing the school-wide expectations, the SWPBIS Team must remember the types of behaviors that are most effectively impacted by SWPBIS. In essence, at the most basic foundation of successful SWPBIS intervention models, the SWPBIS Team must give priority to teaching social behaviors focused on improving students' social and academic success (Sugai & Horner, 2009a). Problematic behavior that does not fit under the model of SWPBIS can still be addressed on an individual basis through individualized PBIS, functional behavior assessment techniques, or other appropriate positive-based approach (Sugai & Horner, 2009a).

The goals and expectations established for the school should follow a specific set of rules proposed by the developers and leading researchers of SWPBIS (Sugai & Horner, 2009a). First, there should be relatively few rules (three to five) to help both students and teachers easily and quickly recognize these standard expectations.

Second, they should be brief and phrased with positive language, thus keeping with the overall positive focus of SWPBIS (e.g., “Do not disrespect others” is better phrased positively as “Respect others”). Third, the expectations should be universal for the school environment, including all staff and students, and should have the ability to apply to all settings where students may find themselves (e.g., “clean up after yourself in the cafeteria” is not a universal expectation, but could be included in “be responsible” as a succinct and universal expectation). Fourth, the expectations must recognize the foundational premise that SWPBIS is designed to support academic and behavior outcomes (Sugai & Horner, 2009a), and these desired outcomes must be the focus of the rules (e.g., expectations such as ‘achievement’, ‘respect’, ‘responsibility’, ‘relationships’ all emphasize at least one of these two areas). Finally, Sugai and Horner (2009) state that all expectations should be culturally and contextually appropriate for the students and school.

Upon establishing the initial goals and expectations, it is important for all stakeholders to have input into whether the chosen expectations are acceptable across all grade levels, student sub-groups, and settings at the school. Once a consensus is reached and the expectations approved by school administrators, they become one of the foundational components of Tier I interventions under the SWPBIS approach (discussed below). In essence, these expectations are taught akin to any academic skill, with all school personnel expected to proactively teach, review, model, and re-teach these school-wide rules and expectations of behavior. This process is especially important during times when student behavior is expected or anticipated to escalate (e.g., before the holidays, Spring Break, end of the school year, etc.). As mentioned,

the establishment of school-wide rules, expectations, and the teaching and re-teaching to students make up one of the primary Tier I strategies of SWPBIS, which is expected to positively impact the social and academic success of at least 80% of students within the school (FLDOE, 2016).

Once school-wide rules and expectations are determined and agreed upon, school personnel review current processes and establish new procedures and protocols for the types of behaviors that warrant a formal, office discipline referral or pre-referral. It is important to note that referrals are not forbidden under the SWPBIS model, and inappropriate behaviors are not ignored when they pose a threat to the student or the learning environment. However, it is important that the entire school (all staff and settings) form a unified front (through buy-in) and respond consistently to the same behaviors – so if cussing receives a referral in one classroom, then it would also receive a referral in the library or playground (U.S. Office of Special Education Programs, 2016). The referral procedures and protocols should be a clearly written, agreed upon by all staff as part of a progressive discipline plan, and be followed consistently throughout the school, regardless of area (i.e., classroom, cafeteria, playground, bus loading area, etc.). If warranted, school forms should be reviewed and updated (or created) such that pertinent behavioral data can be collected and aggregated for meaningful use within the SWPBIS initiative. Since SWPBIS is data-driven, it is imperative that data include the type of behavior, time of day, and location, thus providing information necessary to make any necessary changes and implement meaningful strategies to better serve students. Behavior forms should also include demographics to assist school personnel in any future decision-making processes.

Design considerations: staff training

As noted earlier in this section, staff buy-in is one of the most critical elements of successful implementation of SWPBIS, as it helps to ensure consistent application of interventions and a consistent message to students across all stakeholders and all school settings. Difficulties with staff buy-in most often result from misperceptions or misunderstandings of the basic foundational theories of SWPBIS, as well as poor understanding of the principles and interventions used within PBIS (Kincaid, Childs, Blase, & Wallace, 2007). Given that successful SWPBIS implementation requires at least 80% staff buy-in, it is critical to address these potential challenges to getting staff to approve of the core values and overall PBIS intervention philosophy (Newcomer & Barrett, 2009; Putnam et al., 2009). Staff training is one of the most useful and important methods for promoting staff buy-in and ensuring an accurate understanding as to how SWPBIS can help the school and students (e.g., FLDOE, 2016; Sugai & Horner, 2009a). The following three types of training are the most commonly utilized: (1) initial training on SWPBIS; (2) intervention training; and (3) periodic retraining.

Initial SWPBIS training. Initial training for SWPBIS is designed to provide a general understanding of the model and associated interventions for school administrators and members of the SWPBIS Team at the school or schools planning on designing and implementing an SWPBIS intervention model. While interested school personnel may consider beginning a school-wide PBIS initiative through an 'in-house' process within their school, the Technical Assistance Center on Positive Behavioral Interventions and Supports established by the U.S. Department of Education's Office of Special Education Programs recommends that interested schools and districts contact their state's PBIS coordinator to ensure necessary school personnel are familiar with

the tenants, resources, and training available to successfully implement the approach (Lewis, Barrett, Sugai, Horner, Mitchell, & Starkey, 2016). In Florida, the state's Florida PBS Project recommends that interested schools first establish buy-in at the district level and gain administrator support at the school level. With that accomplished, the FLDOE (2002c) recommends the district complete the District Readiness Checklist and participate in the District Action Planning Process facilitated by Florida's PBS Project, which includes a first tier training on SWPBIS to include the primary supports that must be developed and implemented before the school can develop and implement supplemental or intensive supports (described in the next subsection of this proposal).

Ultimately, the initial training is designed to provide a general understanding of SWPBIS to those who will be leading and/or overseeing the SWPBIS interventions, whether they be district or school personnel. It is vital for the SWPBIS Team to have an accurate understanding of SWPBIS prior to developing the school expectations, data collection processes, selected interventions, and other elements and procedures of the SWPBIS model (Sugai & Horner, 2009a). In Florida, when training is complete, the district and SWPBIS Team members receive access to online resources, including the Florida Rtl:B system for data collection and analysis of behavioral data within their school(s) (FLDOE, 2009).

Intervention training of school personnel. After the SWPBIS Team has received the initial PBIS training, provided basic information to school personnel and stakeholders as to the basic principles and theory of SWPBIS, developed school-wide rules and expectations with input from all stakeholders, and selected evidence and researched-based strategies based on the school's need, the SWPBIS Team or representative trains all school personnel on specifics of the chosen model. This

intervention training includes a more in-depth overview of SWPBIS theory and potential outcomes, thorough review of behavior expectations for students, and methods for consistently implementing school-wide strategies for reducing undesired behaviors. This training also provides the SWPBIS Team to review any discipline and behavior protocols (new and old) for addressing and documenting specific behaviors and/or receiving assistance from the school's administrator in charge of student behavior. While 'buy-in' should have been achieved prior to this intervention training, this initial training can further improve buy-in and ensure consistent application of the model interventions.

Re-training through continuous improvement and monitoring. As the SWPBIS initiative and associated interventions are being implemented across all school settings, it is imperative that the implementation and outcomes are tracked and evaluated through a continuous improvement and monitoring process (Sugai & Horner, 2009a). There are two important facets of this process: fidelity and feedback. First, it is important that the SWPBIS Team explore incoming data ensure fidelity in implementing the selected interventions consistently (and correctly) and to ensure all student sub-groups are receiving equal treatment under the model. Second, it is highly beneficial for teachers and stakeholders to receive regular feedback about their implementation of the interventions, successes and changes in their classrooms, and successes and changes across the entire school. Within both the fidelity and feedback processes, the SWPBIS Team is collecting data on how well the SWPBIS model is being implemented and where specific stakeholders can improve the implementation. With such data, school personnel can receive additional 'refresher' trainings. As the SWPBIS approach is malleable and has the ability to be differentiated to the needs of the school, the

approach can be viewed as an initiative in ever changing metamorphosis and driven by student behavior data and needs. As such, during these refresher trainings, the original SWPBIS approach and interventions can be discussed, as well as any new interventions or behavior expectations that have emerged. Staff may be re-trained individually, in small groups, or as an entire school, depending on school needs.

Multi-Tiered System of Supports within the Context SWPBIS

Once the school has addressed most the aforementioned design considerations, the SWPBIS Team must begin to design the actual interventions used for each of the three tiers of interventions used within SWPBIS. The use of three tiers was adopted from Multi-Tiered System of Supports (MTSS), previously known as Response to Intervention (RtI), and is a critical underlying component of the SWPBIS approach (McIntosh & Goodman, 2016; Sugai & Horner, 2009a). More specifically, prior to 2007, SWBPBIS utilized essentially the same framework as MTSS: (1) Primary, Tier 1 – whole school interventions impacting 80% of the student population; (2) Secondary, Tier 2 – small group interventions impacting 15% of the student population who do not respond to primary tier interventions; and (3) Tertiary, Tier 3 – individual interventions impacting the remaining 5% of the student population who do not respond to primary and secondary tier interventions (McIntosh & Goodman, 2016). In 2007, however, the SWPBIS Blueprint was updated to use a “blended continuum” (Lewis et al., 2016, p. 5) of preventative interventions, with less focus on static tiers and labels. Still similar to the original tiered system, the SWPBIS intervention continuum moves from universal interventions to targeted to intensive (Lewis et al., 2016) – with the level of interventions increasing along with the severity of the behavior(s) at focus (Lewis et al, 2016; McIntosh & Goodman, 2016; Sugai & Horner, 2009a). The purpose of using the three-

tier system in SWPBIS is grounded in helping to organize and coordinate the implementation of specific behavioral interventions. As with MTSS, the three continua remain focused on providing interventions and strategies to impact the entire student body, with 80% of the entire student body effectively managed by the universal interventions (Tier 1), 15% by the targeted interventions (Tier 2), and 5% in intensive interventions (Tier 3) (FLDOE, 2016). The primary difference between MTSS and PBIS is the types of interventions used within each tier and the school-wide focus of PBIS. In essence, PBIS borrows the multi-tier continuum from MTSS to help enhance the overall effectiveness PBIS approach at a school-wide level (McIntosh & Goodman, 2016).

Tier 1 (primary - universal) interventions

As noted above, Tier 1 of PBIS is designed to provide universal interventions to reach as many members of the student body as possible, with the theoretical expectation of reaching at least 80% of the students (FLDOE, 2016). As such, Tier 1 interventions are relatively broad and focused on several pre-established school-wide goals (see 'design considerations for PBIS' above for a discussion on the importance and process of setting goals). In fact, setting these school-wide goals and behavior expectations are one of the first interventions under Tier 1, in addition to teaching and re-teaching the rules and expectations to school personnel and students. In Tier 1 strategies, all staff are trained on how to address student behavior by focusing on positives and alternative ways of addressing inappropriate behavior. For example, instead of classroom teachers or school staff pointing out those students who are not sitting and waiting quietly, they would find a student model example and focus on the appropriate behavior of that student. Poor behaviors are not ignored, but they are addressed in more individualized and appropriate ways, with the emphasis on teaching

more appropriate replacement behaviors and not resorting to office disciplinary referrals as a means to remove the student from the (theoretically) desirable atmosphere of the classroom environment and activities.

It is important to note that Tier 1 interventions under SWPBIS bring forth several concepts from the foundational theories discussed earlier in this chapter. For instance, the concepts of operant conditioning explain that human behavior is learned through a system of rewards and punishments, both positive and negative (Miltenberger, 2012), with the most effective model matching positive reinforcement with ‘negative’ punishment (McConnell, 2001; Miltenberger, 2012). Equally important is social learning theory (e.g., Bandura, 1971a), the concept of modeling where children encode modeled behaviors from a wide variety of sources (Bandura, 1963; Bandura, 1965), and the concept of vicarious reinforcement (George, et al., 2009). In addition, SWPBIS applies operant conditioning and social learning theory concepts through the token economy (e.g., Kazdin, 2012b), all of which include the token (secondary reinforcer), that for which tokens are exchanged (back-up reinforcers), and the targeted behavior which is desired to be increased (Kazdin, 2012b). As detailed earlier, the token economy is essentially a systematic approach to reinforcing and increasing desired behaviors by establishing a relationship between a secondary and back-up reinforcer.

Specific to SWPBIS, as part of the Tier 1 intervention system, both tangible and non-tangible incentives are provided to students to recognize appropriate behavior. Tangible incentives in SWPBIS models usually operate under a token economy and consist of “tickets” or tokens that can be spent at a PBIS School Store on small, high-interest items such as bubbles, stickers, pencils, balls, art sets, and bracelets.

Borrowing from the concepts of token economies, these tokens have no intrinsic value to the students beyond their exchangeability for the items they desire from the school store. Having a wide array of back-up reinforcers in the PBIS Store helps avoid satiation and ensures a school-wide token economy will contain at least one back-up reinforcers found valuable by each student. If any single student does not find at least one of the back-up reinforcers valuable, the token economy will fail for that student – as the token is only reinforcing if it can be exchanged for a valuable reinforcer. These tickets or tokens can be given by any school personnel to students when that are “caught” exhibiting the schoolwide behavior expectations or when they are behaving in a specifically desirable way (e.g., sitting quietly with hands in their lap). The tokens should be given with enough frequency to sustain the appropriate behavior being demonstrated, but not used as “payment” for appropriate behavior. It is important to note that providing reinforcement for every instance of a behavior in a classroom does not align with behavior modification practices determined to be the best for long-lasting change, as continuous reinforcement is less robust than intermittent reinforcement against extinction when a reinforcement is missed (Kazdin, 2012a). Staff should be thoroughly trained on the difference between ‘payment’ and ‘reinforcement’.

In addition to tangible rewards, Tier I SWPBIS relies heavily on non-tangible reinforcements. Non-tangible reinforcements have been found equally reinforcing within both direct reinforcement and vicarious reinforcement paradigms (Kazdin, 2012a). As with tangible reinforcements, non-tangible reinforcements are also given to students that are caught demonstrating appropriate behavior in keeping with the school-wide behavior expectations and goals. Non-tangible rewards can consist of verbal praise,

non-verbal praise, affirmative gestures, and physical contact (as appropriate, such as a pat on the back). In some cases, schools may decide to have monthly or quarterly SWPBIS celebration activities (i.e., recognition ceremonies, parties, special lunches, etc.) to recognize students' appropriate behavior, though caution is warranted, as such celebrations might not be reinforcing for all students. Using non-tangible reinforcement, the teacher only needs to reinforce a positive behavior in one student, making a clear announcement that the reinforcement was given, stating the behavior that was reinforced, and then waiting for other students to demonstrate the same behavior. At that point, the teacher can provide additional tangible or non-tangible reinforcements, but it is not absolutely necessary, as the reinforcement already occurred vicariously for all students who were paying attention or had their attention grabbed by the announcement of the reinforcement (George, et al., 2009).

Tier 2 (secondary - targeted) interventions

The secondary level of the SWPBIS, Tier 2, consists of working with small groups of students using more targeted interventions. Depending on the behavior concerns, some Tier 2 interventions can be applied to individual students. Tier 1 interventions are still provided to those students needing Tier 2 interventions, as they are still part of the overall school culture (Sugai & Horner, 2009a). However, students receiving Tier 2 interventions will have additional interventions associated with their individualized needs. For instance, the school may develop a point sheet for those students having difficulty remaining in their seats, which can be customized to any individual student's daily schedule to help the student (and teacher) keep track of this specific behaviors that need increased attention. Other Tier 2 interventions may also consist of academic supports (e.g., small group instruction, tutoring, academic

mentoring) to assist students whose behavior leads to academic deficiencies or social skills groups where students with similar behavior concerns can work on specific skills (e.g., communication).

As a result of these interventions, students may have better and more appropriate interactions with adults and/or peers and reduce verbal altercations and confrontations. The school may provide check-in/check-out supports for students who need more one-on-one adult support to keep them on track and give them feedback on their behavior by reinforcing desired behavior and helping them to recognize and decrease undesirable behavior (Fairbanks, et al., 2007). Tier 2 interventions can also include more comprehensive and complex versions of the token economy provided under Tier 1, though more individualized to address specific behaviors (Sugai & Horner, 2009a).

Tier 2 interventions most often take place with a much larger team of individuals with more specialized expertise, such as the school psychologist and occupational therapists, in addition to the student, classroom teacher, and administrator responsible for behavior (Sugai & Horner, 2009a). Students with similar behavior concerns may work in small groups with the school counselor and/or administrator on group character development and lessons on appropriate behavior. Such targeted interventions often involve the parent to support the more individualized behavior intervention, and researchers recommend a regular method of communication between all stakeholders (e.g., students, parents, teachers, and administrators). It is expected that an intervention at this level would only be utilized for approximately 5-10% (Sugai, 2016), up to 15% of the overall student body at the school (McIntosh & Goodman, 2016)

Tier 3 (tertiary – intensive) interventions

The tertiary level of SWPBIS, Tier 3, consists of highly intensive one-on-one interventions provided by one or several school personnel, including the classroom teacher, school counselor, administrator for behavior, outside counseling resources (if needed), parents, and possibly additional district level personnel specializing in behavior. Tier 1 and Tier 2 level interventions may also still be used with students who are receiving Tier 3 interventions, but only if they are useful and appropriate (Sugai & Horner, 2009a). At this level, which is only intended for between 1% (Sugai, 2016) and 5% (McIntosh & Goodman, 2016) of the student population, monitoring of behavior would include frequent check-ins by staff. There is a higher potential for the student to be moved to a more appropriate educational setting, such as an alternative education setting with additional behavioral staff resources and outside behavior counseling services, when appropriate. Students in need of Tier 3 supports are those students that demonstrate behavior that is chronic, highly disruptive, results in educational and social exclusion, is dangerous, and impedes the individual's ability to learn (Sugai & Horner, 2009a). Tier 3 interventions are not further detailed within this chapter, as they are far outside the scope of this research study.

Impacts and Outcomes of SWPBIS

Since the 1980s, a great deal of research has shown the positive impacts of SWPBIS on student behavior, the learning environment, and academic achievement (e.g., Sugai & Horner, 2006). Following the inclusion of Positive Behavioral Interventions and Supports (PBIS) in the IDEA Amendments Act of 1997 (20 USC §1400 et seq.), the number of research studies supporting the effectiveness or the processes and interventions associated with PBIS have blossomed (Dunlap, et al.,

2009). As PBIS expanded to School-Wide PBIS, the majority of research continued to show positive impacts of implementing the SWPBIS model under the aforementioned continuum of supports (e.g., Fairbanks, et al., 2007; George, et al., 2003; Nocera, et al., 2014; Scott & Barrett, 2004; Waadsorp, et al., 2012). Although some research and findings have been discussed in prior sections, it is important to specifically address some of the most recent research regarding the primary elements of SWPBIS under investigation within the present research. While not all research discussed within this section is specific to SWPBIS, the studies are generally focused on behavior modification, positive reinforcement, or other specific elements of the SWPBIS model.

Learning Environment and Behavior

As mentioned earlier in this chapter, staff buy-in is among the most important first steps to designing and implementing a successful SWPBIS intervention model (Newcomer & Barrett, 2009; Putnam et al., 2009; Sugai & Horner, 2009a). Such buy-in requires sound arguments and explanations as to how the interventions will support both the students and the teachers to help accomplish the annual goals associated with academic achievement and social learning. As such, one of the most useful and impactful arguments for using SWPBIS is that it can positively influence the classroom and school learning environment (e.g., Adelman & Taylor, 2002. Dorman & Adams, 2004; Fraser, 1998; Freiberg, 1999).

The learning environment. There are certainly many theories and concepts about what makes a 'good' learning environment for students (e.g., Fraser, 2002; Miller & Cunningham, 2011; Moos, 1979; Patrick, Ryan, & Kaplan, 2007), but it is often considered one that is safe, positive, intellectually stimulating, interesting, and culturally sensitive (among many other concepts proposed by hundreds of theorists and

researchers). Miller and Cunningham (2011) attempt to break down the environment into three interrelated components: (1) the physical environment (e.g., classroom management, collaboration, cooperative groups, etc.); (2) the psychological environment (e.g., interaction between teacher and students, student participation, communication of goals, etc.); and (3) teacher characteristics and behaviors (e.g., professional development, school culture, etc.). Each of these components could be addressed within a SWPBIS model either directly or indirectly (e.g., improving student behavior could improve each of these). Moos (1979) presents a slightly different three-dimension model of strong classroom learning environments, which has been referenced heavily in literature: (1) Relationship Dimension (e.g., nature and intensity of personal relationships); (2) Personal Development Dimension (e.g., opportunities personal growth and self-development); and (3) System Maintenance and Change Dimension (e.g., orderly, clear expectations, control, and responsive). Moos (1979) dimensions have even been used in the development of research instruments to measure perceptions of classroom environments (e.g., Fraser, 2002). Other researchers have found a positive relationship between student motivation and engagement and their perceptions of the degree of social support they felt in the classroom environment (Patrick, Ryan, & Kaplan, 2007).

Regardless of how the learning environment is defined and measured, the general consensus is that finding ways to maximize and support the learning environment will support the social development and ultimate academic achievement of students. Indeed, over the last 40 years, a great deal of focus has been placed on improving the classroom environment, and research has found a positive relationship to desired student outcomes, such as motivation, engagement, and learning (e.g.,

Adelman & Taylor, 2002. Dorman & Adams, 2004). Other researchers have found significant relationships between classroom climate and student behavior, self-efficacy, social emotional development, achievement, burnout, and overall perceived school quality (e.g., Fraser, 1998; Freiberg, 1999). However, while it is important to understand how a good learning environment supports students, teachers, and schools, it is also important to understand what influences the learning environment – either positively or negatively.

Impacts of student behavior and discipline. In an attempt to understand what influences the learning environment, many studies have focused on the deleterious influence of negative student behavior on efficacy and efficiency of the school and classroom learning environments. Indeed, nearly every study exploring classroom behavior management and school culture begins with the same basic tenet – poor student behavior distracts from and negatively impacts the learning environment (e.g., Guardino & Fullerton, 2010; McKeivitt, et al., 2012; Scott & Barrett, 2004; Sugai & Horner, 2006). The deleterious effects can be insurmountable for some teachers, including difficulty managing and controlling the classroom, difficulty teaching and presenting content to the students, loss of focus of students or the entire classroom, and a reduction in the amount of time on task. When the teacher stops teaching to deal with a student’s behavior, it can decrease the time on task for both the individual student and other students who attend to the distraction. Even more time can be lost for students who are sent to the office on a referral or suspended from school.

In fact, Scott and Barrett (2004) performed a thorough review of data from an elementary school in Baltimore and found that office disciplinary referrals resulted in removal of a student from the classroom for an average of at least 20 minutes (nearly

6% of the learning time provided during the school day), while a suspension resulted in a loss of at least 6 hours of instructional time for each day of suspension. Not surprisingly then, according to the National Association of Elementary School Principals, 80% of principals indicate that “too much time is spent on dealing with disruptive and dangerous students” and 81% of teachers polled stated that their worst behaved students are a barrier to effective education in their classrooms (Public Agenda, 2004). Moreover, the US Department of Education (USED) revealed that secondary schools suspend or expel over 2 million students each year, which USED Secretary Duncan stated results in a “staggering amount of lost learning time and lost opportunity to provide more meaningful support” (St. George, 2014).

Disproportional impacts of discipline on minority students. The negative impacts of disciplinary procedures for problematic behavior is even more pronounced for students from traditionally defined minority groups and those identified with a special need or disability. This fact was underscored by US Department of Education Secretary Duncan and US Attorney General Holder in 2014, when they revealed that minority students and those with disabilities were disproportionately impacted by school discipline – with African American more than three times more likely to be suspended or expelled than their white peers (USED, 2014). The Discipline Disparities Collaborative (Skiba, Arrendondo, & Rausch, 2014) reported consistent findings that African American students and students with disabilities have disproportionately higher rates of office disciplinary referrals (ODRs), suspensions, and expulsions. Importantly, the researchers found that the differences were not fully explained by poverty or rates of misbehavior.

This disproportionality has been supported by a number of studies completed in recent years, and none of the studies found any other student demographic, behavior, or school factors to explain the disproportionate disciplinary outcomes (e.g., Eitle & Eitle, 2004; Gonsoulin, Zablocki, & Leone, 2012; Rocque, 2010). Other researchers have found African American children to be disproportionately placed in special education settings (e.g., Blanchett, 2014). In general, most researchers looking at disparities and disproportionalities for students from traditional minority groups and those identified with disabilities have also focused on factors that might have caused these social issues. Aside from the very real issues of white privilege and racism discussed by some theorists (which are beyond the scope of this research), among the most prominent reasons behind the disproportional discipline outcomes are a lack of teacher preparation and training, a focus on punishment and discipline as the first response, and misperceptions of the cultural aspects of students and their communities (e.g., Blanchett, 2014; Gonsoulin, Zablocki, & Leone, 2012; Skiba, Arrendondo, & Rausch, 2014; USED, 2014).

Impacting Behavior with SWPBIS Interventions

The overwhelming focus on using punishments and severe disciplinary procedures in attempts to control student behaviors and enforce an effective learning environment has met with a great deal of criticism, from the aforementioned disproportionality to the 'school-to-prison pipeline' (e.g., Heitzig, 2009; NAACP LDF, 2011). In fact, the Washington Post quoted USED Secretary Duncan as stating that "the need to rethink and redesign school discipline practices is frankly long overdue," adding that zero-tolerance and disciplinary practices are making "students feel unwelcome in their own schools; they disrupt the learning process, ... and they can

have a significant and lasting negative effects on the long-term well-being of our young people” (St. George, 2014). Fortunately, other well-documented options exist for helping manage student behavior without reliance on reactive and punitive discipline procedures. In fact, Walker and Shinn (2002) make a concerted argument as to the importance and overwhelming success of prevention interventions to stop inappropriate behavior patterns before they have an impact on the environment, but concede that the greatest challenge is finding the willpower to actually implement preventative strategies. One such proactive, preventative, and positive-focused intervention model is School-Wide Positive Behavioral Interventions and Supports (SWPBIS), which was discussed at length earlier and is the focus of the present research.

Using the most global statement possible, SWPBIS has been repeatedly and consistently found effective in reducing the instances of negative student behaviors across all student sub-groups, communities (e.g., urban, rural, etc.), and all student grade levels (e.g., Fairbanks, et al., 2007; George, et al., 2003; Nocera, et al., 2014; Scott & Barrett, 2004; Waadsorp, et al., 2012). This section provides an overview of some such studies, but a complete review of the hundreds of studies that support SWPBIS as a model for reducing problematic student behavior would be outside the scope of this literature review. One such study related directly to the concepts of student behavior and lost learning time was conducted by Scott and Barrett (2004) at an elementary school in Baltimore, Maryland.

Scott and Barrett (2004) first provided training and guided the development of a comprehensive SWPBIS model and measured a number of outcome variables, including office disciplinary referrals (ODRs) and school suspensions. The study found

that ODRs decreased from 608 at baseline (the year prior to implementation) to 108 in the first year and 46 in the second year of SWPBIS implementation. Based on their finding that each ODR resulted in an average of 20 minutes of lost instructional time, this resulted in a decrease from 12,160 minutes of lost instruction at baseline to 2,160 in the first year and 920 in the second year – an average gain of 10,620 minutes of instructional time per year. In addition to ODRs, the study found that student disciplinary suspensions decreased from 77 at baseline to 32 in the first year and 22 in the second year of implementation. Assuming each suspension results in a loss of 6 hours of instructional time, this resulted in a decrease of lost instructional time from 462 hours in the baseline year to 192 hours in the first year and 132 hours in the second year of implementation – an average gain of approximately 50 days of instruction each year across the school (Scott & Barrett, 2004). While Scott and Barrett (2004) calculated the cost to the learning environment of suspensions and ODRs, most studies have not gone to that extent and assume any reduction in these disciplinary processes are beneficial to both the student and the learning environment.

Similar to Scott and Barrett (2004), George, White, and Schlafler (2003) explored the impact of applying a SWPBIS model to an elementary school over the course of two years and found a similarly impressive decrease in ODRs. More specifically, ODRs decreased from 1,717 during the baseline year to 702 during the first year of SWPBIS implementation and 619 during the second year. These researchers also explored afterschool detentions, which decreased from 845 in the baseline year to only 85 in the first year of SWPBIS implementation. The researchers further discovered that the impact was even more pronounced for students with IEPs, decreasing from 298 of the

total ODRs in the baseline year (17.3% of the total) to only 34 in the first year (4.8% of the total ODRs). In another study, Spencer (2015) worked with a small intermediate school to implement SWPBIS after a large number of students were increasingly being sent to the office on ODRs due to disruptive behavior. After implementation of the SWPBIS model, the research found a significant decrease in the number of ODRs within each of the eight primary offense categories indicated on ODRs (e.g., disrespect, refusal to obey, physical contact, profanity, etc.) – decreasing from 593 in the baseline year to 268 after the first year of SWPBIS. Menendez, Payne, and Mayton (2008) conducted a one-year study of a new SWPBIS project at an elementary school and found a reduced number of ODRs, fewer rules-based violations of students, and fewer punitive consequences used by teachers (e.g., time outs, written reprimands). Luiselli, Putnam, Handler, and Feinberg (2005) found that SWPBIS resulted in fewer ODRs and school suspensions over the course of two years, with an average of 1.3 ODRs per day at baseline decreasing to 0.7 per day in the first year of implementation and 0.5 per day by the second year of implementation. Suspensions also significantly decreased from 0.3 per day in the baseline to 0.25 in the first year and 0.2 in the second year of SWPBIS implementation.

As noted above, it is impossible to review all the research that shows a positive impact on student behavior after implementing a SWPBIS intervention model through the reduction in ODRs (e.g., Bohanon et al., 2006; McCurdy, Mannella, & Eldridge, 2003; Sprague, Walker, Golly, White, Myers, & Shannon, 2001; Taylor-Greene, et al., 1997). However, Vincent, Swain-Bradway, Tobin and May (2011) conducted a study with one of the largest number of elementary schools and is important to mention due to

the unique focus on racial disproportionality. The study was an archival analysis of 153 elementary schools, with 72 demonstrating a high-fidelity implementation of SWPBIS (as demonstrated by self-evaluations or external evaluations) and 81 not implementing SWPBIS (or a low-fidelity implementation). Data were collected on major ODRs and student demographics over a three-year period, with a requirement being the schools collect and report major ODRs by student race/ethnicity. Consistent with other research, the researchers found that the schools implementing high-fidelity SWPBIS had significantly fewer rates of ODRs across all three years as compared to the schools not implementing SWPBIS. However, this study was focused on determining whether discipline disproportionality was impacted by SWPBIS interventions. While the findings showed that a disproportional number of minority students compared to white students received ODRs in all schools, regardless of SWPBIS, an important finding is that the level of disproportionality was lower in schools with SWPBIS. The researchers suggest that the findings demonstrate the potential of SWPBIS to help decrease the discipline gap that currently exists in education (Vincent, Swain-Bradway, Tobin, & May, 2011).

While much research has been completed at the elementary school level, there are also numerous studies supporting the use of SWPBIS in middle schools and high schools. For instance, Nocera, Whitbread, and Nocera (2014) found that a comprehensive SWPBIS model could be combined with a school-wide model of data-driven decision making and data teams to have positive impacts on student behavior with middle school students. The researchers found that the number of teacher discipline referrals and student suspensions were reduced, including significant improvement among students identified with disabilities. In another study, Caldarella

and colleagues (2011) collected data from two middle schools, with one implementing SWPBIS for a period of four years and the other serving as the quasi-control.

Ultimately, the researchers found that teachers provided higher ratings of the school climate at the intervention school, while teachers in the control school reporting the same or worse feelings regarding the school climate. More specific to student behavior, the students in the intervention school had significantly fewer tardiness, absences, and ODRs for discipline issues. Lassen, Steele and Sailor (2006) explored the implementation of SWPBIS in an urban middle school over the course of three years, finding that the average number of referrals actually increased in the first year of implementation (from 5.22 per student at baseline to 6.84 per student in year 1). However, by the third year of implementation, the average number of referrals per student had decreased to 3.7, which represented a significant decrease from the first year of implementation. As such, not all studies have shown an immediate improvement in student behavior.

High schools have also found success implementing SWPBIS interventions, as demonstrated by research such as that completed by Flannery, Fenning, Kato, and McIntosh (2014). These researchers conducted a three-year effectiveness trial using 12 high schools, with eight implementing SWPBIS and four serving as a control comparison. Overall, the researchers found significant decreases in the number of student ODRs within the SWPBIS schools and increases in the schools not implementing SWPBIS (Flannery, Fenning, Kato, & McIntosh, 2014). Still other researchers have explored entire school districts and found significant impacts of SWPBIS across all grade levels, such as decreases in problematic behaviors,

decreased numbers of referrals, and increased perceptions of school safety (e.g., McIntosh, Bennett, & Price, 2011).

Certainly, not all studies have explored the impact on student behavior using standardized school data, which has provided for a better understanding of some of the more nuanced changes that result from the implementation of SWPBIS. For instance, Waadsorp, Bradshaw, and Leaf (2012) performed a randomized control effectiveness trial to explore the impact of SWPBIS using 37 elementary schools and over 12,000 children. The researchers found that children in schools with SWPBIS had lower teacher-reported rates of bullying (both the number of children who bullied and were bullied) and were reported by teachers to be less rejected by peers than in schools without SWPBIS. It is noted the researchers used a single observation checklist to assess the impact of SWPBIS, rather than school discipline records. However, from the same research program and longitudinal study, schools implementing SWPBIS showed a significant reduction in the number of school suspensions and ODRs over the course the five-year study (Bradshaw, Mitchell, & Leaf, 2010).

In addition, not all studies use the full SWPBIS approach, though there are many studies that have explored whether similar aspects of behavior management are effective in impacting student behavior. For instance, Fairbanks, Sugai, Guardino, and Lathrop (2007) conducted a small study of two 2nd grade classrooms to explore whether Rtl could be effective in reducing inappropriate student behaviors. The study taught and applied a 'check-in / check-out' (CICO) targeted intervention (i.e., daily behavior reports) designed to provide additional structure and feedback to students. Overall, the researchers found that the procedure was effective in reducing negative

student behavior such as inappropriate physical contact, talk-outs, inappropriate placement, noncompliance, and non-disruptive off-task behavior (Fairbanks, et al., 2007).

Office disciplinary referrals as primary metric of behavior. In reviewing the hundreds of research studies exploring SWPBIS and student behavior, it becomes apparent that only a handful of outcome metrics are used to assess impact on the learning environment. Indeed, behavioral data are the most commonly used metrics to assess the impact of SWPBIS under continuous improvement models, as they are data readily available to the school administrators and teachers. These metrics traditionally include in-school suspensions, out-of-school suspensions, expulsion, detentions, office disciplinary referrals, school attendance, and tardiness. However, not all of these are appropriate for elementary schools, as some are very rare with ES students (e.g., expulsions and detention) while others are generally out of the control of the younger students (e.g., attendance and tardiness). However, what can be readily measured on a continuous basis (daily, if needed) are office disciplinary referrals (ODRs), and these have become the most common method for assessing behavioral change within schools implementing school-wide preventative interventions.

With ODRs being one of the primary measures of student behavior impacts in research on SWPBIS interventions, it is important to understand whether such a metric is a valid representation of student behavior. Certainly, ODRs have been shown to be related to future behavior problems, such as drug use and disorderly conduct in classrooms (e.g., Nelson & Roberts, 2000; Sprague et al., 2001). However, not all research has been so clear. Nelson, Benner, Reid, Eptsein, and Currin (2002) utilized

the Teacher Report Form (TRF) to assess whether students receiving ODRs met the clinical and borderline cut-scores on one or more of the eleven scales and subscales (e.g., withdrawn, social problems, attention problems, delinquent behavior, aggressive behavior). Unfortunately, students who scored at the clinical and borderline levels on the TRF scales did not necessarily receive ODRs, while students who received ODRs did not necessarily score at these levels on the TRF. For instance, of those students with ODRs, only 3.1% were found to be clinically aggressive and 2.5% were found to have clinically impaired attention. The results from the Nelson et al. (2002) study calls into question the convergent validity of using ODRs as a true measure of student behavior, though the authors admit to the substantial difficulties in researching validity of a variable with so many uncontrollable contextual variables.

To help address some of the gaps in research on the validity of using ODRs, Pas, Bradshaw and Mitchell (2011) collected data from 21 elementary schools implementing high-fidelity SWPBIS intervention models. The researchers collected ODR data from a centralized database, ODR data from a teacher survey, and scores from the Teacher Observation of Classroom Adaptation–Checklist (TOCA-C). Overall, the findings revealed that the centralized database of ODRs and the teacher report of whether students were referred to the office were moderately correlated. This raises some question about using a centralized database, where the school administrators might not record every instance of a referral to the office (e.g., many administrators do not encode ‘minor’ referrals into the centralized database). In fact, over 40% of the students where teachers reported having sent to the office at least two times had one or no ODRs recorded in the centralized system. In terms of convergent and divergent validity, the study found ODRs to be positively correlated with both the disruptive

behavior and attention problems subscales, as well as negatively correlated with the prosocial behavior subscale of the TOCA-C. Overall, the researchers determined that ODRs have moderate convergent and divergent validity with behavior ratings on the TOCA-C (Pas, et al., 2011). Other researchers have also found validity for using ODRs as a measure of general behavior (e.g., Irvin, et al., 2004; Scott & Barrett, 2004), with ODRs being related to general misbehavior at school, school attendance, student and teacher perceptions of safety and victimization, classroom orderliness, juvenile delinquency, and behavior disorders. Ultimately, Irvin et al. (2004) found that higher rates of ODRs was related to higher levels of a variety of problematic behaviors in school.

Impacting Academic Achievement with SWPBIS Interventions

The impact of disruptive student behavior on the learning environment and impact of SWPBIS on reducing such behaviors cannot ignore the importance of one of the highest-stake metrics used in the United States – academic achievement using standardized achievement tests (Byrd & Vinson, 2008). Most certainly, academic achievement is one of the most controversial and most important metrics in schools under current law and administration. In general, if disruptive behavior negatively impacts the learning environment and reduces time-on-task, then it would also theoretically impact academic achievement, as implied by US Department of Education Secretary Duncan (USED, 2014). There are a number of research studies that have explored the impact of SWPBIS or associated components on academic achievement in reading, mathematics, and science.

Some research supporting the use of SWPBIS methods did not specifically explore the implementation of SWPBIS, though did explore behavior management

methods that directly relate to those provided under SWPBIS. One such study conducted by Abidsereshki, Abkenar, Ashoori, and Mirzamani (2015) compared the effectiveness of tangible and social reinforcements with 8th grade female students identified with intellectual disabilities in science. Although the research was completed in Iran, the results are meaningful and the researchers ultimately found that reinforcements were effective in improving academic achievement. Interestingly, the researchers found tangible reinforcements to be significantly more effective at increasing student achievement scores in science than social reinforcements, while both were significantly better than the control (no reinforcements). While this research did not specifically research SWPBIS, the use of tangible and social reinforcements are an integral component of many SWPBIS intervention models.

Cotton (2001) completed a meta-analysis of 37 reports exploring several interventions common to SWPBIS, such as praise, symbolic rewards (e.g., gold stars), token rewards (e.g., points, tickets), tangible rewards (e.g., edibles), and activity rewards (e.g., free time, field trip). Overall, the analysis found that contingent reinforcement was positively related to achievement, while non-contingent reinforcement was not. In addition, rewards for correct responses was related to achievement, but there was no added benefit for combining rewards with response cost, suggesting response cost is an unnecessary addition to a behavior management program (and rarely part of a SWPBIS intervention). On a similar topic, Broughton and Lahey (1978) is an older study, but found that both positive reinforcement and response cost resulted in improved mathematics performance for elementary school students in a remedial math course, though a combined approach was less impactful as either technique alone.

While a number of studies have explored techniques similar to those used in SWPBIS, there are many studies that have specifically explored the impact of SWPBIS on the academic achievement of students. For instance, Menendez, Payne, and Mayton (2008) found that within one year of implementing a SWPBIS intervention in an elementary school, the students demonstrated significantly higher scores on the state-mandated academic achievement test for 3rd grade students (the school was only K-3). Using a within-subjects design, Luiselli, Putnam, Handler, and Feinberg (2005) found that students attending a school with a newly implemented SWPBIS intervention model demonstrated significant improvement in academic achievement, with these students demonstrated an average of 18 percentage point improvement in reading comprehension and 25 percentage point improvement in mathematics knowledge.

Nocera, Whitbread, and Nocera (2014) found that middle school students in a school with SWPBIS improved their scores on statewide achievement tests by an average of 25% in reading and 11% in mathematics, suggesting the primary change factor was the implementation of a new SWPBIS intervention model. Lassen, Steele, and Sailor (2006) found that academic achievement of middle school students significantly increased from the first year of implementing a new SWPBIS intervention to the second year of implementation, with an additional increase in the third year of implementation. Furthermore, other studies have explored entire school districts and found increased academic achievement across all grade levels following the implementation of SWPBIS (McIntosh, Bennett, & Price, 2011).

Impact of fidelity on SWPBIS outcomes. Fidelity within SWPBIS implementation is the extent to which school personnel and administrators are faithful to

the established approach and specific interventions designed to impact the school and classroom learning environments. Several studies exploring the impact of SWPBIS on behavioral and academic outcomes have also included a measure of the fidelity of the implementation. For instance, Flanner, Fenning, Kato and McIntosh (2014) studied eight high schools implementing SWPBIS and found that an increase in the fidelity of implementation was associated with a significant decrease in the number of ODRs for inappropriate student behavior. Other studies have found that schools implementing SWPBIS with high fidelity showed a significant reduction in the number of school suspensions and ODRs over a five-year period than did those schools with lower fidelity implementation (Bradshaw, et al., 2010).

In a somewhat unique study showing an initial worsening of student behavior after first implementing SWPBIS, Lassen, Steele and Sailor (2006) found that the average number of referrals had significantly decreased by the third year implementation. Importantly, the researchers measured fidelity of implementing components of SWPBIS using the School-wide Evaluation Tool (SET; Horner et al, 2004; Sugai, Lewis-Palmer, Todd, & Horner, 2001) and found that fidelity was correlated to the disciplinary outcome data – with the school only implementing 24.97% of the critical SWPBIS components in the first year, but 69.64% in the third year. Or more connection to the present study and specific to Florida, 54 of 67 (81%) school districts have worked work with Florida’s PBIS Project to receive training and technical assistance on providing SWPBIS. In the most recent annual report, the project found that schools with higher fidelity had 35% fewer ODRs and 36% fewer out-of-school suspensions over the course of SWPBIS implementation (Florida’s PBIS Project, 2016).

Impact of training on SWPBIS implementation. The impact of training on the high-fidelity implementation of SWPBIS intervention models cannot be understated, with one of the critical components of the design and implementation process being the training of all school personnel and administrators on SWPBIS (FLDOE, 2016; Sugai & Horner, 2009a). While a number of studies speak to the importance of training or include training as a core component of the studied intervention model (e.g., Scott & Barrett, 2004), fewer studies actually explore the impact of the training itself on the fidelity of SWPBIS implementation. For instance, Bradshaw and colleagues (2008) conducted a randomized trial with 37 elementary schools to explore whether training would have an impact on successful implementation of a comprehensive SWPBIS intervention model. The researchers utilized the School-wide Evaluation Tool (SET; Horner et al, 2004; Sugai, et al., 2001) to measure how well the schools were implementing the various components of SWPBIS with fidelity. Overall, the researchers found that schools receiving training in SWPBIS implemented the model with significantly higher fidelity than did those schools that were not formally trained, both during the first and second years of implementation (Bradshaw, Reinke, Brown, Bevans, & Leaf, 2008).

Summary

For thousands of years, the human race has been concerned with how to educate youth to be productive citizens and useful members of society (e.g., Aristotle, 350 B.C./2000). While society has changed and the extent of education content has drastically expanded, today's teachers continue to face some of the same challenges in striving to provide the highest quality of education to America's children. The field has responded with a plethora of educational theories and reform initiatives designed to

address challenges determined the most deleterious to the education of youth. For at least the past 100 years, changes in educational environments and classroom composition have resulted in an increased focus on effective management and control of behavior to maximize the effectiveness of the learning environment. The focus on student behavior and the learning environment became increasingly important as America progressed through the deinstitutionalization movement of the 1950s, the civil rights movement of the 1960s, the increasingly negative views of corporal punishment in the 1980s, and the growing desire to serve students with disabilities in 'regular' student classrooms and associated laws of the 1980s and 1990s.

Fortunately, as these movements and changes were exerting increasing influence on the education environment, researchers and theorists were developing or adopting a number of behavioral management techniques, such as Applied Behavior Analysis (ABA), Functional Behavioral Assessment, and Positive Behavioral Interventions and Supports. Using theoretical foundations from classical conditioning (e.g., Kazdin, 2012a), operant conditioning (e.g., Miltenberger, 2012), and social learning theory (e.g., Bandura, 1971a), these techniques drew heavily upon such interventions and behavioral concepts as modeling (e.g., Bandura, 1961; Bandura & Huston, 1961), vicarious reinforcement (e.g., Bandura, 1977), and token economies (Kazdin, 2012b). Unfortunately, the use of aversive stimuli and punishments began to increase across the country under the use of ABA, as did the moral objections to the use of some techniques (e.g., shocking, water spray, and physical punishment).

These moral objections and documented permanent damage caused to some students is seen as the primary 'trigger' that eventually lead to research on positive

behavior interventions and the development of PBIS as an independent field (Singer & Wang, 2009). In essence, PBIS is considered a broad approach designed to provide school personnel with tools and skills necessary to enhance student academic achievement and improve socially relevant behavior (Florida's PBS Project, 2002a; OSEP Technical Assistance Center on PBIS, 2016). Some of the most prominent researchers in PBIS indicate that the 'technology' has four core features: (1) an application of research-based behavioral strategies; (2) use of multiple and integrated intervention elements aligned to the needs of the environment; (3) a commitment to sustained and long-term outcomes; and (4) support within the organizational systems that ensure sustained impacts of the interventions (Dunlap, et al., 2009). School-Wide PBIS (SWPBIS) applies the PBIS technology to focus less on individual students, and more on behaviors across the entire school of students to enhance the learning environment.

The development and application of SWPBIS has been largely supported with a number of research studies across the world. These studies have shown that SWPBIS can significantly reduce the incidents of negative and disruptive student behavior as measured by such metrics as office disciplinary referrals (ODRs; e.g., George, et al., 2003; Nocera, et al., 2014; Putnam, Handler, & Feinberg, 2005; Scott & Barrett, 2004; Spencer, 2015), school suspensions (e.g., Nocera, et al., 2014; Putnam, Handler, & Feinberg, 2005; Scott & Barrett, 2004), and incidents of student bullying (Waadsorp, et al., 2012). In addition, SWPBIS has been shown effective in improving the academic achievement of students (e.g., Abidsereshki, Abkenar, Ashoori, & Mirzamani, 2015; Broughton & Lahey, 1978; Cotton, 2001; Luiselli, Putnam, Handler, & Feinberg, 2005;

Menendez, Payne, & Mayton, 2008). As noted in the prior chapter and outlined in the next chapter, the present research addresses several gaps within past research: (1) using internally collected data on all behavior instances at the school studies; (2) using both 'major' referrals (ODRs) and 'minor' referrals; (3) comparing the level of tangible reinforcements provided and the behavioral impacts mentioned above; and (4) analyzing tangible reinforcements, major referrals (ODRs), and minor referrals by race and ethnicity, with all data connected to the individual demographics of each student. Overall, the method of addressing these primary gaps and the results of the present research should help inform practice and guide future research in the early implementation of SWPBIS.

CHAPTER 3 METHODOLOGY

Purpose of Study

This study was designed to investigate the initial impacts of implementing a School-Wide Positive Behavioral Interventions and Supports (SWPBIS) model on negative student behaviors among elementary school students in Florida. The study was conducted during the first year of implementing the SWPBIS model, which was specifically designed to decrease instances of two primary types of disciplinary referrals requiring behavioral intervention by school administrators (i.e., minor pre-referrals and major office discipline referrals). The study adds to an already growing body of research on the utilization of SWPBIS models and techniques, with a somewhat unique exploration of the relation between tangible positive reinforcements and discipline referrals (ODRs and minor/pre-referrals). As noted in the previous chapters, this study is founded with an enhanced purpose to explore demographic differences with both reinforcements and referrals provided to students, as it is imperative that school personnel and administrators consider cultural differences and internal biases when applying SWPBIS reinforcements and disciplinary consequences.

Research Design

The present research study was designed as a formative evaluation study, with a focus on forming and informing the design of a SWPBIS model for elementary school students at the selected school. As a formative evaluation study, the intervention and associated processes for implementing the SWPBIS model were investigated during the development of the model, rather than after the model had been fully implemented. In fact, some research on SWPBIS approaches suggests that full implementation of the

school-wide model (and associated changes in the philosophy as to how schools handle inappropriate student behavior) can take from between three to five years (Florida Department of Education [FLDOE], 2008; Stormont, Lewis, Beckner, & Johnson, 2008). However, other research and theorists suggest that schools can see positive impacts on student behavior even within the first year of implementation, though it may still take several years for the philosophy of the school to change (FLDOE, 2008; FLDOE, 2005; George, et al., 2003; Nocera, et al., 2014; Putnam, Handler, & Feinberg, 2005; Scott & Barrett, 2004; Spencer, 2015).

It is noted that any SWPBIS model is often considered more of a process, rather than a defined program that can be immediately implemented at full-force and with the exact components needed to impart the desired level of changes in the school. Indeed, the process of implementing SWPBIS necessarily includes ongoing adaptations to meet the changing needs of the school and students. As such, the time it takes to see results can vary drastically by school, though the general consensus in the field is that the critical components of the model can be implemented within the first three months to one year (FLDOE, 2005). The present research study focused exploration on the immediate impacts only during the first year of implementation and did not consider changes to school philosophy (which can take several years to realize). As such, it is most prudent to consider this a formative evaluation study rather than the assessment of a fully developed SWPBIS intervention model.

The foundation of this research utilized a non-randomized, quasi-experimental design for applying and assessing the SWPBIS intervention model. The use of a quasi-experimental design was necessary, as randomly assigning students to intervention and

non-intervention groups would have been entirely impractical and potentially unethical. More specifically, the SWPBIS interventions were applied as part of the overall School Improvement Plan, which required the intervention be applied for all students, with all staff and faculty, and across the entire school. Even if the researcher had been able to randomly assign students to intervention and non-intervention groups, it would have been impossible for staff and faculty to visibly identify some students as 'intervention' and some as 'control' without unethically alienating some students and depriving them of reinforcements in the presence of other students.

The potential damage such a method could cause was famously demonstrated by Jane Elliott's brown eye/blue eye experiment, where groups of students demonstrated prejudice and discrimination after being assigned to a group based only on their eye color (Peters, 1970). It would also have been relatively impossible to differentiate groups of students, as the intervention was applied by all staff members across the school, including staff and faculty that interact with multiple groups of students at once (e.g., cafeteria staff, media center staff, etc.) – a necessary element of successful SWPBIS models (Sugai & Horner, 2009a). Moreover, even if the students had been randomly assigned to intervention and control groups, it would have been practically impossible to prevent vicarious learning and contamination of the control group due to their observation of intervention group reinforcements and/or discussions of such reinforcements among students.

As such, because all students in the school were included in the initial baseline year and the subsequent intervention year without randomization, the research is considered a pretest-posttest, one-group, quasi-experimental design (Reichardt, 2009).

The quasi-experimental design explored student behavior data (i.e., incidences of major referrals (ODRs) and minor (pre) referrals) for two baseline school years prior to the implementation of the SWPBIS model (2012-13 and 2013-14) and one intervention school year during the first year of SWPBIS model implementation (2014-15). Realizing that one-group, pretest-posttest quasi-experimental designs are particularly sensitive to threats to internal validity (Reichardt, 2009), it is important to note that the principal, BRT, and the majority of staff and faculty remained consistent throughout the three years of data collection. Several other design characteristics were intended to reduce threats to internal validity (Reichardt, 2009), such as: (1) using all students in the school, rather than only the students that attended all three years, helps prevent threats from 'maturation' of the students; (2) utilizing data across the entire school year, rather than only part of the school year helps prevent threats from 'seasonality'; and (3) by collecting all data by month (see data collection procedures later in this chapter), the threat to validity associated with 'attrition' is reduced. The elementary school selected for this study was located in North Central Florida, with all kindergarten to fifth-grade students attending the school included in the total student sample.

As noted previously, the SWPBIS model implemented during the 2014-2015 academic year at the selected elementary school was part of the School Improvement Plan. Indeed, the SWPBIS model would have been applied and most of the data would have been collected regardless of this study. However, the school and district had no intention of analyzing the data associated with the SWPBIS model and associated interventions due to the complexity of disaggregating and recording the data metrics (e.g., number of reinforcements per student per month, number of minor pre-referrals

per student per month, etc.). As such, this study obtained approval to access, collect, and analyze three years of archival data associated with the two baseline years and the SWPBIS model implementation year. Approval was obtained from both (1) the University of Florida, Institutional Review Board (IRB-02) and (2) the Alachua County Public Schools Department of Research, Assessment, and Student Information. Primary data metrics collected as part of this study are discussed later in this chapter, with additional archival data approved for collection including such information as school population, gender, race/ethnicity of students, number of 504/IEP students, Free-Reduced Lunch percentage of the overall school population, and feedback surveys from the school faculty and staff members during the course of SWPBIS implementation.

Participants

Target Population and Setting

All data were collected and interventions were applied at an elementary school in North Central Florida. Although technically a convenience sample, the entire population of students attending the school participated in the SWPBIS model and associated interventions. No students from kindergarten through fifth grade were excluded from the study, though not all students in the school received tangible reinforcements (all students received some level of the SWPBIS invention model, whether through direct or vicarious reinforcements). The school selected is relatively representative of the overall composition of the county in which it resides, with the school enrolling students far outside the standard enrollment zone. For instance, the school has a large number of ‘waiver’ students with special permission to attend the school outside their assigned enrollment zone, in part due to special programming at the school for students with special needs and disabilities, as well as highly desired combined-grade-level classes.

It is important to note the school was selected in part because the researcher was the behavioral resource teacher (BRT), principal intern, and PBIS Coach for the school, and was responsible for the direct oversight of all SWPBIS interventions, supporting teachers' classroom management, overseeing student discipline and behavior activities, and maintaining disciplinary data.

Participants and Descriptive Statistics

All participants attended the school where the SWPBIS model was implemented. The principal agreed to assist with the data collection process, and all data were collected by the BRT and principal investigator on this research study. As noted, all school-age students attending the school during the course of the three years of data collection were included in the study sample (the school has a pre-kindergarten program which was not included in the study due to non-traditional operations). No school-age students were excluded from the sample. However, due to limitations of the approved archival data collection, the research project was only permitted to collect limited data on students with disciplinary actions during the two baseline years (i.e., student identification number, limited demographics, and number of minor pre-referrals and major office discipline referrals by month).

Overall, data on a total of 838 students were collected over the three years explored by this research (i.e., Baseline Year 1, Baseline Year 2, and Intervention Year 3), with 32 students having data in the first year, 150 with data from the second year, and 755 with data from the intervention year. Of these students, 89 had multiple years of data, as they were enrolled during the intervention year and had prior disciplinary actions during at least one baseline year. In addition, 78 students had data only from the baseline years, as they had prior disciplinary actions during the baseline years but

were not enrolled during the intervention year. Finally, 671 students were enrolled during the intervention year without any prior disciplinary actions and, as such, did not have any data from baseline years. This is not to suggest students without multiple years of data were not enrolled during the baseline years, only that they did not have any formal disciplinary actions during those years. Regardless, the method of data collection prevented the need to exclude students that only attended the school for a short period of time (e.g., those attending only a few days at the beginning of a school year before being transferred on a waiver), as those students would have neither reinforcements nor referrals and would not impact the overall data analysis. As such, for the purposes of descriptive statistics, all students enrolled in the school during the three years are included.

Race and ethnicity. Of the 838 students included in the total sample, the final participant sample consisted of 288 (34.4%) students identified as African American or Black; 357 (42.6%) identified as Caucasian American or White; 98 (11.7%) identified as Hispanic or Latina(o); 34 (4.1%) identified as Asian American or Pacific Islander, and 59 (7.0%) identified as multiple ethnicities. The School District only reports multiple ethnicities within archival data as a single general category, without providing a specific breakdown of which multiple ethnicities are included. As such, students considered “multiple ethnicities” must be considered as an entirely separate group for the purposes of data analysis and descriptive statistics.

Because of the restrictions of archival data collection, the overall participant demographics can be misleading, such that it is important to consider the overall school population during the intervention year as a more accurate depiction of the school

demographics across all three years. Ultimately, during the intervention year (when all student demographics could be collected), the 755 students in the sample consisted of 243 (32.2%) students identified as African American or Black; 334 (44.2%) identified as Caucasian American or White; 91 (12.1%) identified as Hispanic or Latina(o); 32 (4.2%) identified as Asian American or Pacific Islander, and 53 (7.0%) identified as multiple ethnicities. However, as shown in Table 3.1, when only considering those students with formal disciplinary actions during each year (i.e., at least one minor pre-referral and/or major office discipline referral (ODR)), the distribution of ethnicities across the three years of data collection are relatively disproportional to the overall school demographics. For instance, during the intervention year, African American students represented a higher proportion of students receiving referrals (45.7% in the intervention year) than the proportion of total students in the school (32.2% in the intervention year) - thus further demonstrating the need for this study.

Table 3-1. Distribution of ethnicity by year (students with disciplinary actions)

<i>n</i> = 250 *	Baseline Year 1		Baseline Year 2		Intervention Year 3		Unduplicated All Years	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
	African American / Black	18	56.3%	79	52.7%	58	45.7%	124
Caucasian American / White	7	21.9%	40	26.7%	43	33.9%	76	30.4%
Hispanic / Latina(o)	3	9.4%	16	10.7%	11	8.7%	24	9.6%
Native American	0	0.0%	0	0.0%	1	0.8%	1	0.4%
Pacific Islander / Asian Am.	0	0.0%	2	1.3%	3	2.4%	5	2.0%
Multiple Ethnicities	4	12.5%	13	8.7%	11	8.7%	20	8.0%
Total	32	--	150	--	127	--	250	--

Note: Race/Ethnicity categories are those established by the Local School District.
 Race/Ethnicity categories are presented in alphabetical order.
 59 Students had disciplinary actions in more than one year, with 250 total students represented.

In addition to the race and ethnicity of students, it is important to also look at the demographics of the faculty and staff who provided the interventions associated with the

applied PBIS model. Due to limitations of the archival data collection process, complete demographic data were not available on faculty and staff from the first year of baseline, such that these data are not reported herein. However, when exploring the distribution of faculty and staff from the second baseline year and intervention year, the distribution appears quite disproportional compared to the student population. More specifically, as shown in Table 3-2, the vast majority of faculty and staff on whom demographics were collected were reported to be Caucasian American / White in both the second baseline year (N=49, 90.7%) and the intervention year (N=56, 91.8%). Only a small percentage of faculty and staff were from the traditionally defined minority groups, with the intervention year including 4.9% of faculty/staff identified as African American / Black (N=3), 1.6% identified as Hispanic / Latina(o) (N=1), and 1.6% identified as Asian American (N=1).

Table 3-2. Distribution of ethnicity by year (faculty / staff)

	Baseline Year 1		Baseline Year 2		Intervention Year 3	
	<u>n</u>	%	<u>n</u>	%	<u>n</u>	%
African American / Black	--	--	2	3.7%	3	4.9%
Caucasian American / White	--	--	49	90.7%	56	91.8%
Hispanic / Latina(o)	--	--	1	1.9%	1	1.6%
Pacific Islander / Asian Am.	--	--	2	3.7%	1	1.6%
Total	--	--	54	--	61	--

Note: Race/Ethnicity categories are those established by the Local School District.
Race/Ethnicity categories are presented in alphabetical order.

Gender: In addition to race / ethnicity, the archival data process collected data on the gender of students during the two baseline years and the intervention year. As with other demographic data, limitations of archival data only allowed gender data to be collected from those students with at least one office disciplinary referral during the respective baseline year. In looking at all 838 unduplicated students across all three

years of the archival data collection (83 unduplicated students from the two baseline years and 755 from the intervention year), the overall student participant sample consisted of 55.1% (N=462) males and 44.9% (N=376) females. As with other demographics, the distribution of students across genders was relatively consistent when looking at only the 755 students that attended during the 2014-2015 intervention year. More specifically, 54.2% (N=409) students were reported as male and 45.8% (N=346) students were reported as female during the intervention year. Gender is reported by the district according to a dichotomous classification of ‘male’ and ‘female.’

Given the focus of this research on those students receiving office disciplinary referrals, it is important to explore demographics of those students that displayed behavioral issues during each of the three study years. More specifically, as shown in Table 3-3, the distributions of student gender in each of the three study years was largely incongruous with the distribution of the overall student population and the distribution of students enrolled in the 2014-2015 intervention year. For instance, during the 2014-2015 intervention year, students with at least one office disciplinary referral were composed of 80.3% (N=102) males and 19.7% (N=25) females – a substantially higher proportion of males than contained in the overall student enrollment during the same year (i.e., 54.2%; N=409 of 755).

Table 3-3. Distribution of gender by year (students with disciplinary actions)

<i>n</i> = 250 *	Baseline Year 1		Baseline Year 2		Intervention Year 3		Unduplicated All Years	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Male Student	26	81.3%	109	72.7%	102	80.3%	182	72.8%
Female Student	6	18.8%	41	27.3%	25	19.7%	68	27.2%
Total	32	--	150	--	127	--	250	--

Note: Gender categories are established and reported by the Local School District.
59 Students had disciplinary actions in more than one year, with 250 total students represented.

In addition to gender distribution of students, the archival data collection included the gender of faculty and staff during the second baseline year and the intervention year. As with other faculty and staff demographics, data from the first baseline year were not available for collection. Regardless, as shown in Table 3-4, the vast majority of faculty and staff during both the second baseline year and the intervention year were female, with 88.9% (N=48) reporting as female during the second baseline year and 91.8% (N=56) reporting as female during the intervention year. Such a distribution is relatively consistent with that of the overall state.

For instance, according to the most recent data reported by the Florida Department of Education across all elementary and secondary schools, 77.4% (N=407,828) of all staff and faculty across the state in 2012-2013 identified as females, compared to only 22.6% (N=119,061) identifying as males (Education Information and Accountability Services (EIAS), 2013). Exploring only elementary schools during the 2012-2013 academic year (the most recent data provided by the FLDOE), the FLDOE reported elementary teachers across Florida to be composed of 89.9% (N=66,408) females and 10.1% (N=7,479) males (the FLDOE did not break out elementary school gender distribution for all staff members; EIAS, 2013).

Table 3-4. Distribution of gender by year (faculty / staff)

	Baseline Year 1		Baseline Year 2		Intervention Year 3	
	<u>n</u>	%	<u>n</u>	%	<u>n</u>	%
Male Faculty / Staff	--	--	6	11.1%	5	8.2%
Female Faculty / Staff	--	--	48	88.9%	56	91.8%
Total	--	--	54	--	61	--

Note: Gender identification is provided by staff and reported by the Local School District.

School grade level. As with race and ethnicity, the distribution of students across school grade levels can be explored in two methods: (1) all student participants and (2) students with at least one office disciplinary referral. First, of the 838 unduplicated students included in the sample across all three study years and with grade level data reported, 36 students (4.3%) were in voluntary pre-kindergarten; 185 students (22.1%) were in kindergarten; 118 students (14.1%) were in 1st Grade; 126 students (15.0%) were in 2nd Grade; 129 students (15.4%) were in 3rd Grade; 112 students (13.4%) were in 4th Grade; and 132 students (15.8%) were in 5th Grade. The distribution of student across grade levels is relatively consistent when looking at only those 755 students enrolled during the 2014-2015 academic year (i.e., intervention year), with 34 students (4.5%) in voluntary pre-kindergarten; 170 (22.5%) in kindergarten; 113 (15.0%) in 1st Grade; 115 (15.2%) in 2nd Grade; 116 (15.4%) in 3rd Grade; 108 (14.3%) in 4th Grade; and 99 students (13.1%) in 5th Grade.

The consistency of these distributions is expected, as the only unduplicated students included in the total sample that were not enrolled in 2014-2015 were students with at least one disciplinary referral that left the school prior to the intervention year. However, it is also important to explore the distribution of only those students with disciplinary referrals across the three years of the research study. As with race/ethnicity, Table 3-5 presents the distribution of students with disabilities across both baseline years and the intervention year, as well as the distribution of the unduplicated students across all three years. Ultimately, the distribution of students with disciplinary referrals is relatively consistent across all three years, with 56.4% (N=141) of unduplicated students with referrals across all three years being in 3rd grade

or higher. This is relatively disproportionate with the overall distribution of the 838 unduplicated students, where only 44.5% (N=373) of students were in 3rd grade or higher. When appropriate, differences by grade level are detailed in the results section of this research.

Table 3-5. Distribution of grade level by year (students w/ discipline actions)

<i>n</i> = 250 *	Baseline Year 1		Baseline Year 2		Intervention Year 3		Unduplicated All Years	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Voluntary Pre-K	0	0.0%	2	1.3%	2	1.6%	4	1.6%
Kindergarten	4	12.5%	21	14.0%	24	18.9%	43	17.2%
1 st Grade	7	21.9%	14	9.3%	13	10.2%	25	10.0%
2 nd Grade	7	21.9%	23	15.3%	20	15.7%	37	14.8%
3 rd Grade	6	18.8%	34	22.7%	22	17.3%	45	18.0%
4 th Grade	3	9.4%	27	18.0%	26	20.5%	43	17.2%
5 th Grade	5	15.6%	29	19.3%	20	15.7%	53	21.2%
Total	32	--	150	--	127	--	250	--

Note: 59 Students had disciplinary actions in more than one year, with 250 total students represented.

Free and reduced price lunch. As one of the primary indicators of poverty within Florida’s public school system, it is important to explore the distribution of the student sample in terms of their free or reduced price lunch status. Unlike other demographic data, the district collected and stored necessary archival data for all three study years, though the data were not provided by individual student (with the district providing only a final overall distribution for the school for each year). Regardless, as shown in Table 3-6, data from the three years of study suggest relatively consistent proportions of students qualified for free and/or reduced-price lunch. More specifically, nearly half the students qualified for free or reduced-price lunch in each year of study, with 54.5% (N=335) of all the school population qualifying for free or reduced price

lunch in the first baseline year, 60.6% (N=383) qualifying in the second baseline year, and 51.7% (N=390) qualifying during the intervention year.

Table 3-6. Free and reduced price lunch (all students)

	Baseline Year 1		Baseline Year 2		Intervention Year 3	
	<u>n</u>	%	<u>n</u>	%	<u>n</u>	%
Free Lunch	301	48.9%	346	54.7%	355	47.0%
Reduced Price Lunch	34	5.5%	37	5.9%	35	4.6%
Paid Lunch	280	45.5%	249	39.4%	365	48.3%
Total	615	--	632	--	755	--

Note: Lunch categories are established by the USED and reported by the Local School District.

As with other demographic variables and given the focus of the research on students displaying negative school behaviors, it is important to explore the free and reduced-price lunch distribution of students that displayed behavioral issues during each of the three study years. As shown in Table 3-7, for each year of the study, the proportion of students with disciplinary referrals receiving free or reduced-price lunch appears higher than the proportion of students receiving free or reduced-price lunch across the entire school for each respective year. For instance, 72.4% (N=92) of students with discipline actions (N=127) during the intervention year qualified for free or reduced-price lunch, while only 51.7% of the overall student population at this school qualified during the same year. This disproportionality is consistent across all three years of the study (i.e., first baseline year, second baseline year, and intervention year). Ultimately, exploring only the 250 unduplicated students across all three years, archival data revealed 76.4% of all students with office disciplinary referrals qualified for free or reduced-price lunch.

Table 3-7. Free and reduced price lunch (students w/ discipline actions)

$\underline{n} = 250$ *	Baseline Year 1		Baseline Year 2		Intervention Year 3		Unduplicated All Years	
	\underline{n}	%	\underline{n}	%	\underline{n}	%	\underline{n}	%
Free / Reduced-Price	30	93.8%	121	80.7%	92	72.4%	191	76.4%
Paid Lunch	2	6.3%	29	19.3%	35	27.6%	59	23.6%
Total	32	--	150	--	127	--	250	--

Note: Lunch categories are established by the USED and reported by the Local School District. 59 Students had disciplinary actions in more than one year, with 250 total students represented.

Student special needs. For the purposes of demographics, archival data were also collected on the special need status of students participating in the research study. Two elements of special needs were collected for the purposes of this study: (1) students identified as having ‘exceptional student education’ status (ESE); and (2) students with a ‘Section 504’ plan for accommodations. It is important to note that all students identified as ESE had an Individualized Education Plan (IEP), such that this was not utilized as a separate demographic category. Regardless, under the archival data collection process, the district provided aggregate data on these variables for the 2013-2014 academic year (i.e., second baseline year) and 2014-2015 academic year (i.e., intervention year). The district would not provide aggregate data from the 2012-2013 academic year, nor data on all individual students for these years (unless they had received a behavioral referral). Ultimately, data revealed that 127 students (20.1% of 632 students) were identified as ESE students during the second baseline year, while 122 students (16.2% of 755 students) were identified as ESE during the intervention year. In addition to ESE, the district reported that 47 students (7.4%) received accommodations under Section 504 during the second baseline year, and 44 students (5.8%) received accommodations under Section 504 during the intervention year.

In addition to school-wide data on student special needs, archival data was collected on special need status for each individual student that received a behavioral referral during the three study years. As shown in Table 3-8, the proportion of students identified as ESE or receiving accommodations under Section 504 were relatively higher than the overall school proportions of all students in these categories. For instance, 20.5% (N=26) of students with behavioral referrals during the intervention year were identified as ESE (compared to 16.2% of all 755 students enrolled during the intervention year) and 14.2% (N=18) of students with behavioral referrals receiving accommodations under Section 504 (over twice the proportion within the total student enrollment during the same year: 5.8%).

Table 3-8. Distribution of special needs by year (students w/ discipline actions)

<i>n</i> = 250 *	Baseline Year 1		Baseline Year 2		Intervention Year 3		Unduplicated All Years	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
ESE / IEP								
Yes	10	31.3%	28	18.7%	26	20.5%	51	20.4%
No	22	68.8%	122	81.3%	101	79.5%	199	79.6%
Section 504 Plan								
Yes	3	9.4%	15	10.0%	18	14.2%	27	10.8%
No	29	90.6%	135	90.0%	109	85.8%	223	89.2%
Either / Both (ESE / 504)								
Yes	11	34.4%	43	28.7%	44	34.6%	75	30.0%
No	21	65.6%	107	71.3%	83	65.4%	175	70.0%
Total	32	--	150	--	127	--	250	--

Note: 59 Students had disciplinary actions in more than one year, with 250 total students represented.

However, while it is common for students to receive only one categorical designation, it is possible for some students to receive both ESE status and a Section 504 plan. As such, Table 3-8 also shows the proportion of students with behavioral referrals that were identified within either or both special need category during each of

the study years, as well as the proportion within the unduplicated student participant sample. As shown, across all three years of the study and exploring only unduplicated students, data revealed that 75 students (30.0%) were identified as ESE students and/or received accommodations under Section 504.

Years of experience (faculty / staff). Although only a limited amount of demographics were permitted to be collected on faculty and staff, the researcher was able to collect the total years of experience in education for each of the faculty and staff members. As with other demographics on faculty and staff, only the second baseline year and intervention year were accessible for archival data collection. As shown in Table 3-9, experience data were obtained from 54 faculty and staff during the second baseline year and 61 faculty and staff during the intervention year. The average experience across all faculty and staff, with faculty and staff having an average of 12.8 years of experience during the second baseline year (sd = 10.4), with an average of 14.5 years of experience during the intervention year (sd = 10.7).

Table 3-9. Years of experience in education (faculty / staff)

	Baseline Year 1	Baseline Year 2	Intervention Year 3
	--	<u>n</u> = 54	<u>n</u> = 61
Minimum	--	1	<1
Maximum	--	38	39
Mean (\bar{x})	--	12.8	14.5
Standard Deviation (sd)	--	10.4	10.7

Note: Years of experience are official records reported by the Local School District.

Neither student participants nor faculty/staff members received compensation for their participation in this research. Numerous measures were taken to protect the confidentiality of the participating students and faculty/staff, and no data were connected directly to student names. Moreover, all participants and data were treated

in accordance with the Health Insurance Portability and Accountability Act (HIPAA), the Family Education Rights and Privacy Act, and the ethical standards of the American Educational Research Association.

The School-Wide Intervention Model

Development of the Intervention

As with any comprehensive intervention model, a great deal of planning must take place prior to the design and implementation of the interventions. It is important to summarize the pre-design activities that led to the development of the SWPBIS model applied and investigated under this research study. At the beginning of the second baseline year (2013-14), the school's new Behavior Resource Teacher (BRT) approached the new principal about implementing a SWPBIS model, as it had not previously been implemented at the school. The principal would not allow the implementation of such a model without first (1) establishing a baseline to determine whether a need for SWPBIS existed, and (2) gaining the support of school faculty. As such, the initial focus was gaining the support of stakeholders and faculty.

The concept of SWPBIS was presented to school grade-level team leaders in 2013, who provided positive feedback and guarded interest in implementing a SWPBIS approach. The concept of SWPBIS was then presented to all teachers and instructional staff working at the school during the second baseline year, with an overwhelming majority of teachers expressing support for implementing a SWPBIS approach if designed with their input. After establishing faculty and staff support, the concept was presented to the Parent-Teacher Association (PTA) with an accompanying request for the provision of student incentives and equipment to create a school store (where students trade their earned 'tokens' for small high-interest items). By October 2013, the

PTA had already committed \$800 to purchase necessary materials and incentives for the implementation of the emerging SWPBIS model.

After obtaining an overall and initial commitment from school faculty, staff, and parents, the BRT and school administrators began the process of developing the SWPBIS model based on best-practices in the field of education. A SWPBIS Team was created to include the BRT, school principal, school counselor, a primary-grade (K-2) teacher representative, and an intermediate grade (3-5) teacher representative. In December 2013, all SWPBIS Team members attended a PBIS Coaches Training presented by the Florida's Positive Behavioral Support Project at the University of South Florida. Within the context of this training, the SWPBIS Team members progressed on developing the logistics of implementing SWPBIS at the intervention school, including necessary roles and responsibilities for implementing the SWPBIS model and methods for ensuring the highest level of 'buy-in' from the faculty and staff. The SWPBIS Team also discussed best methods for ensuring all faculty and staff were properly and consistently implementing any chosen SWPBIS components.

In January 2014, the SWPBIS Team began the process of looking at school behavior data and disciplinary referrals to determine areas where student behavior could be addressed and improved through common SWPBIS model interventions. The SWPBIS Team solidified a list of seven intervention strategies that could be implemented under a school-specific SWPBIS model.

In addition, the SWPBIS Team identified the following three school-wide student behavioral expectations as part of the overall SWPBIS model: (1) respect yourself and others, (2) respect school property, and (3) keep your hands, feet, and objects to

yourself. The SWPBIS Team also developed the list of materials (e.g., rolling carts for school store, incentives, etc.) needed to start the program, and developed potential SWPBIS group events to further enhance the incentives (e.g., parties, student recognition programs, etc.).

The initial plan was to begin the SWPBIS model in February 2014. However, the principal and BRT faced substantial faculty push-back about adding a new set of responsibilities associated with learning and implementing SWPBIS in the middle of the year, as well as feedback regarding the stress and anxiety associated with upcoming statewide standardized testing. As such, the principal and SWPBIS Team agreed to delay the implementation of the SWPBIS model until the beginning of the 2014-2015 academic year. It was believed there would be enhanced success and impact, as well as better adherence to the interventions, if the SWPBIS model was rolled out at the very beginning of the next school year. Moreover, the delayed implementation was beneficial in allowing the school administration to develop trainings for faculty and staff, as well as develop a plan for providing the necessary training during the required pre-planning weeks to ensure sufficient time for absorption and processing of the new information, while also addressing concerns and questions.

Carefully designed SWPBIS models are only effective if those implementing the interventions do so consistently and completely, such that it is imperative for faculty and school staff to be well-trained in the planned interventions (FLDOE, 2016; Scott & Barrett, 2004; Sugai & Horner, 2009a). Indeed, a key feature of any effective SWPBIS model is the consistent application of the reinforcements to all students in all settings (Sugai & Horner, 2009a). As noted previously, the delay in implementing the SWPBIS

model until the beginning of the 2014-2015 academic year allowed for faculty and staff to be trained during the pre-planning week of the academic year (before students began attending). During this time, all faculty and staff were trained in SWPBIS, including both in the general concepts and the specific interventions designed by the SWPBIS Team for the intervention school. During this training, SWPBIS Team members were introduced as the primary resources for questions or concerns regarding the SWPBIS model. In addition, 2012-2013 and 2013-2014 data on student discipline and referrals was presented to demonstrate the urgent need for the selected SWPBIS interventions to address problematic and challenging student behaviors that resulted in lost instructional time and reduced educational benefits to students in the prior academic years. The training was focused on providing an understanding of the SWPBIS model interventions and methods to ensuring consistent and adequate implementation of the interventions.

Intervention Design

As mentioned previously, the SWPBIS Team developed seven interventions strategies to comprise the overall SWPBIS model and meet the school's student behavior needs and goals. The seven primary intervention strategies selected by the SWPBIS Team were implemented simultaneously at the beginning of the 2014-2015 academic year – after the faculty and staff were provided training specific to the consistent implementation of these intervention strategies. The following are the seven primary strategies selected, as well as a brief explanation of each strategy utilized by the school throughout the 2014-15 school year.

School-wide expectations of behavior. Within this strategy, teachers and school staff were provided the school-wide expectations that were to be prominently

displayed, taught, re-taught, and referenced when addressing student behavior throughout the school year. These school-wide expectations of behaviors were displayed in every classroom, hallways, and within common-use rooms (e.g., cafeteria, media center, auditorium, etc.). This strategy is a standard component of most school-wide PBIS models, wherein the recommendation is to create three to five expectations that fully encompass the behavioral concerns identified by the school SWPBIS Team (Sugai & Horner, 2009a). For the purposes of this school intervention, the following behavioral expectations were identified: (1) respect yourself and others, (2) respect school property, and (3) keep your hands, feet, and objects to yourself. These expectations were presented to all students in the school at the beginning of the academic year, with posters of these basic expectations posted prominently in all classroom and student-use areas (e.g., cafeteria, media center, hallways). Teachers were expected to reinforce these expectations throughout the year using other interventions (e.g., morning meeting would include a review of these expectations).

Morning meeting. The “Morning Meeting” was not a new concept to most of the teachers at the intervention school, with many teachers using “Morning Meetings” to review specific concepts and reintroduce the learning from the prior day. However, for the purposes of this research, the “Morning Meeting” was modified to include concepts designed to enhance the SWPBIS model using concepts from core educational theory (Charney, 2015; Nelson, Lott, & Glenn, 2013), which underscores the importance of having teachers and students welcome one another, share something with the class, and then discuss the day’s agenda. SWPBIS theory also considers morning meetings as primary prevention technique to create a more positive school culture, wherein

positive student behaviors can be taught by the teacher, modeled by other students, and consistently reinforced in a small group social-interaction setting (Sugai & Horner, 2009a). Within the current intervention model, “Morning Meeting” for all grade levels was included as the first 15 minutes of the daily Master Schedule, with the intent for teachers to spend time to get to know their students, build rapport with students, and allow students to build a learning community. Teachers were encouraged to ask students about their weekend, share their favorite foods or music, talk about and share positive experiences they have had with their families, plans for future vacations, or talk about age-appropriate headlines from the newspaper. Teachers received reminders that the “Morning Meeting” should be a means of building positive relationships and rapport with students.

Tangible incentives in the form tickets (i.e., Lion Loot & school store). The concept of tangible incentives is not unique to this research nor positive behavioral support theory, but is considered a foundational element of school-wide PBIS models (Kappel, Dufresne, & Mayer, 2012; Ullmann & Krasner, 1975). The importance of reinforcement paradigms has certainly been underscored by many past researchers and theorists, including positive reinforcement under operant conditioning theory (Skinner, 1953) and vicarious learning under social learning theory (Bandura, 1962). Using such concepts, the first models of token economies were developed and applied in mental health hospitals, with application to children in educational settings developed more recently. In essence, a token economy has three basic requirements (Kazdin, 1977; Kazdin, 2012b): (1) an object used as the immediate reinforcer with no intrinsic value (i.e., the token); (2) a ‘back-up’ reinforcer with personal value for which the token

can be exchanged; and (3) specific and clear criteria for obtaining tokens (e.g., specific behaviors to be modified or controlled).

Tokens: For the purposes of this intervention model, the school developed tickets called “Lion Loot” that recognized exemplary student behavior and could be spent at the SWPBIS School Store (described below). Teachers were trained on the use of “Lion Loot” tickets as a means of recognizing students “caught” demonstrating exemplary student behavior. Teachers were also taught how give out tickets in a meaningful way and in a way that the SWPBIS Team could track their distribution. For instance, teachers were instructed to award “Lion Loot” intermittently to avoid predictability, increase the impact of the token system on developing positive student behavior, and increase the longevity of impacts on student behavior (Miltenberger, 2012). Teachers were also instructed to ‘make a production’ when providing “Lion Loot” to any particular student, so as to increase the vicarious learning of other students and couple the token with verbal reinforcement. When not providing “Lion Loot”, the teachers provided verbal praise and encouragement (an incentive that could not be recorded for this study). To provide for tracking of the Lion Loot, teachers were to write their name and the student’s name on the back of all “Lion Loot” awarded. The tickets were simple printed items with the school’s behavioral expectations printed on the front. They were designed to have no intrinsic value, but could be traded for items from the PBIS school store.

Back-Up reinforcer (school store): The SWPBIS School Store was a venue where students could spend their earned tickets (i.e., Lion Loot) on small, high-interest items, such as small toys, trinkets, stickers, bubbles, balls, pencils, erasers, and bracelets. All items for the school store were donated by the PTA or business partners.

The amount of tickets for items varied depending on the size of the item (as students tend to connect cost with size). For example, students could purchase stickers, pencils, and erasers for one ticket, while items such as basket balls and art kits cost upwards of twenty-five tickets – with more savvy students saving their tickets for the entire year to purchase the larger items. All school faculty and staff were responsible for initialing the tickets given to students. The initial of the teacher would be used to validate that it was earned and the student was required to put their name on it as a way for the SWPBIS Team to keep track of the frequency of how teachers and staff were recognizing positive student behavior.

The initial plan for the SWPBIS School Store was that it would be open for students to spend their tickets (i.e., Lion Loot) two days per week in the morning; Tuesdays would be for grades K-2nd and Thursdays would be for grades 3rd-5th. Student safety patrols in the 5th grade were to be utilized to run the school store, while being supervised and assisted by a teacher. Once the SWPBIS School Store began operating in September, the volume of students overwhelmed the store and it was impossible for all students to select items and turn in their tickets before their next class. The BRT/PBIS Coach and school principal were able to devise a new schedule that allowed for the SWPBIS School Store to be open every day of the week in various locations around the school campus, such that students could spend their tickets and maintain the excitement of earning and spending tickets under the SWPBIS initiative. During subsequent team leader and faculty meetings, some kindergarten and first grade teachers indicated that students who rode the school bus and participated in the school's USDA breakfast program were still unable to make it to the SWPBIS School Store. The solution devised by the SWPBIS Team was to allow teachers from grade

level teams to pick up the SWPBIS School Store carts and take them to their classrooms, such that primary-aged students could make purchases. The classroom teacher was responsible for ensuring that all spent tickets included the teacher's name and the student's name. These changes ultimately strengthened the tangible reward system by making it easier and more quickly connected to exchanging the "Lion Loot" for the back-up reinforcers (i.e., SWPBIS School Store items).

Positive speak (language and phrases). In addition to the use of tangible reinforcements under a token economy, teachers and staff members were taught and instructed how and when to use positive language and phrases when addressing challenging or inappropriate behavior. The teachers and staff were taught to try focusing on a student demonstrating appropriate behavior, perhaps giving them a ticket for their appropriate behavior ("Lion Loot"), rather than providing a focus on the student(s) who are not displaying appropriate behavior for the situation. Teachers were encouraged to avoid using sarcastic or condescending tones if discussing inappropriate student behavior, instead stating the facts and keeping adult emotions out of the discussion. Teachers were also encouraged to be direct with praise, be genuine with the students, give specific praise about behaviors (rather than general praise about the child as a whole), avoid personal judgements, and believe in the abilities of the students (adapted from Brady, Forton, & Porter, 2015).

Verbal and non-verbal praise and affirmation. While positive speak provides a general method for verbally interacting with students and their behaviors, teachers were also taught how to provide non-tangible rewards to the students. Non-tangible rewards can consist of verbal praise, non-verbal praise, affirmative gestures, and physical contact (as appropriate, such as a pat on the back). The use of verbal praise

(e.g., 'good job', 'great work', 'awesome', 'I like how you ...', etc.) and non-verbal praise (e.g., 'thumbs up', high five, directed smiling, touch on the shoulder) was to be used in conjunction with the tangible reinforcement system (Lion Loot) to further reinforce positive student behavior. Teachers and staff were taught the concept of forward conditioning (Kazdin, 2012a), which suggests that verbal praise be presented first when a student behaves well, followed immediately with any tangible rewards (e.g., Lion Loot). With this forward conditioning, the goal is eventually for the verbal praise alone to be sufficient for the student to feel the same level of happiness as with the tangible reward. Teachers and staff were to incorporate verbal praise and non-verbal praise/cues as another means to recognize positive student behavior. For example, in recognizing that some children are motivated by the desire to please adults, teachers were taught to use phrases that capitalize on such desires (e.g., "I am so impressed with how you helped up your classmate who fell down.").

Progressive discipline plan and plan fidelity. While the goal of SWPBIS is to provide positive, proactive, and reinforcement-based interventions to teach students appropriate classroom and school behaviors, it is generally anticipated that some students will have already learned effective disruptive behavior and/or will learn these behaviors and bring them to school. As such, it is important that there be a clearly defined and detailed school-wide progressive discipline plan to address disruptive and dangerous student behaviors (e.g., Sugai & Horner, 2009b). Teachers were trained in the discipline plan, which included a progression through the following levels: (1) time-out in classroom, (2) time-out in another teacher's classroom, (3) parent/guardian phone call and/or notification, and (4) if no change, front office intervention through an office

disciplinary referral. Teachers were informed of the expectation that the progressive discipline plan be followed with fidelity, using a progressive discipline plan checklist to demonstrate they had attempted to work with the student at least twice prior to requesting the student be removed from the classroom setting. Teachers were also provided with minor / pre-referral forms (i.e., Behavior Notice Forms) that could be used as a formal way of documenting inappropriate behavior and informing parents, but less formal than an office discipline referral (ODR).

Expectation of IEP, 504 Plan, and behavior intervention plan (BIP) fidelity.

In addition to a progressive disciplinary plan, teachers were reminded to carefully review student records to ensure that IEPs, 504 Plans, and Behavior Improvement Plans (BIPs) were being followed with fidelity. Teachers were reminded of their responsibility to be diligent in reviewing student records to insure they were complying with student IEPs, 504 Plans, and BIPs, if applicable, so as to best ensure the students were being educated and treated in accordance with any additional supports they may need that could impact their behavior in the classroom setting. Teachers were provided coaching and assistance from the BRT and SWPBIS Team in strategies to apply the full SWPBIS model and interventions with all students, regardless of disability or special accommodations. Teachers were trained in the origins of SWPBIS as an individualized intervention model for students with severe disabilities and behavioral issues, such that SWPBIS should be equally applicable to all students in the school.

Other interventions, incentives, and activities. In addition to the aforementioned strategies for the first year of SWPBIS implementation under this formative evaluation study, teachers were also supported with morning announcements

about SWPBIS and the school store to help build interest among the students and reinforce the overall token economy system. In addition, teachers were provided some flexibility to implement alternatives to the SWPBIS School Store, such as eating in the classroom with the teacher, eating outside at the picnic tables, and sitting in special area of the classroom. Alternatives were not used to replace the school store, as some students might not have been motivated by the alternative activities and the tokens (“Lion Loot”) are only as effective as the back-up reinforcers.

Model Implementation Support and Training

Initial training (pre-planning). As mentioned above, all teachers and staff were provided detailed training on the SWPBIS model and specific interventions. At the conclusion of the training, teachers and school staff were given time to ask questions regarding the SWPBIS initiative and model, provided with posters of the school-wide expectations of student behavior, provided with tickets (i.e., Lion Loot) for recognizing students “caught” demonstrating exemplary student behavior that aligned to the school-wide behavior expectations set forth by school staff, pre-referral forms (minor referrals), and major ODR forms. Moreover, teachers were asked to discuss the SWPBIS initiative, including the school-wide behavior expectations, how tickets could be reviewed with students, and how to begin using tickets starting the first week of school. Furthermore, the BRT made a presentation about the SWPBIS initiative during the school-wide morning show broadcast to all classrooms to build excitement about the SWPBIS initiative among students. The SWPBIS School Store and the incentives was also shown on school television, and the BRT explained how incentives could be ‘purchased’ with Lion Loot. Periodic announcements were made on the school’s closed circuit television show throughout the school year to remind students about the potential

rewards for demonstrating appropriate school and classroom behaviors. Teachers were also encouraged to explain the SWPBIS initiative during the “Open House” shortly after the start of school to inform parents and guardians of the new initiative.

Faculty meetings (school-based, monthly). Faculty meetings were held at least once per month with the entire school. During these meetings, teachers were presented with overall school-wide student behavior data using the Florida Response to Intervention for Behavior Database (RtI:B) website (www.flrtib.org). Both major office discipline referrals (ODRs) and minor pre-referral data were presented to the faculty by grade level totals, month to month comparisons, comparisons from prior year, type of behavior infraction, location of infraction, time of day, and demographic break down of disciplined students. Teachers were informed of data-based trends and strategies for helping to curb problematic behaviors and teach more productive behaviors - particularly among those students demonstrating repeated occurrences of the same inappropriate behavior. Teachers were informed about the number of tickets spent at the PBIS School Store, while also soliciting input regarding student availability to spend tickets (the input was then used to adjust the operations of the school store). In addition, teachers were reminded and retrained about how to use tickets (i.e., Lion Loot), particularly when the SWPBIS Team discovered faculty or staff using the “Lion Loot” in ways incongruent with the overall SWPBIS model (e.g., giving them routinely for the completion of homework). Finally, during each meeting, the BRT would review of the SWPBIS approach and the seven strategies detailed above. Particular focus was given to the progressive discipline plan model, distribution of tickets, and use of positive language.

Data chats (grade-level, team-based, quarterly). In addition to monthly faculty meetings, all faculty participated in grade-level meetings within their respective teams for 'data chats' (a common activity in elementary schools across Florida). During these data chats, teachers in each grade level were presented with grade-level-specific student behavior data using the Florida Response to Intervention for Behavior Database (Rtl:B) website (www.flrtib.org). Both major office discipline referrals (ODR) and minor pre-referral data were presented to teams by individual teacher totals, type of behavior infraction, location of infraction, time of day, and demographic break down of disciplined students. Teachers were informed of data-based trends, while also being provided strategies for helping to curb problematic behaviors. Finally, teachers were reminded about how to use tickets (i.e., Lion Loot) during data meetings, and their pattern of awarding Lion Loot was reviewed to help ensure consistency with the SWPBIS model.

Focused reminders. While all faculty were reminded of the selected SWPBIS interventions during meetings, not all faculty attended these meetings regularly (e.g., illness, vacations, etc.) and there were often many other topics discussed during these meetings, such that the SWPBIS reminders could get 'lost' for some teachers. As such, the SWPBIS Team provided several focused reminders to faculty and staff. For instance, during the first week of school, the BRT sent e-mails to reiterate and outline the SWPBIS plan to the faculty and staff, remind faculty and staff about school behavior goals (i.e., reducing pre-referrals and major office discipline referrals (ODRs)), and remind how to distribute "Lion Loot" tickets in a productive and meaningful way. The BRT also sent reminders to faculty and staff during those times of the year when problematic student behavior typically would spike. The purpose was to remind faculty

and staff of the need to remind and re-teach students of school-wide behavior expectations and ask that the faculty and staff be mindful of their own emotions and stress when interacting with excited or panicked students. For example, typical times throughout the school year where problematic student behavior escalated was during Halloween, days prior Thanksgiving break, days prior to Winter Break, Valentine's Day, days prior to Spring Break, and toward the end of the school year.

In addition to such email reminders, the PBIS Team members (e.g., School Counselor and BRT) would periodically e-mail and meet with teachers regarding students with IEP's, 504 Plans, or BIPs to ensure that the teachers were implementing accommodations and/or plans with fidelity and helping students with known problematic behaviors be successful in class. Within these emails and during these meetings, teachers and staff were reminded as to the importance of implementing the SWPBIS model and interventions consistently across all students, including those with accommodations or plans. Further meetings were held with grade-level team leaders, wherein the BRT would remind team leaders to share behavior trends based on student discipline data with their team and encourage them to remind and reteach school-wide behavior expectations to each of their team members.

Retraining. During the second semester of the school year, the SWPBIS Team provided a retraining of SWPBIS and illustrated improvements in student behavior using comparisons of month-to-month student data from the second baseline year and the intervention year. At the conclusion of the second training, teachers were able to ask questions, while some teachers shared their successes with using SWPBIS strategies and their own classroom rewards beyond the "Lion Loot" and non-tangible rewards

worked into the SWPBIS model (e.g., letting the entire class eat lunch in the classroom, homework pass, popcorn party, etc.).

Direct intervention of SWPBIS Team. Not all classroom teachers had initial success in implementing the SWPBIS interventions, either due to trepidation, doubt, or lack of specific skills. In these situations, the BRT (Behavior Resource Teacher) would provide direct assistance and intervention in the classroom. These supports included in-person modeling of SWPBIS interventions and providing in vivo guidance for teachers about the interventions (e.g., some teachers were worried about giving too few or too many Lion Loot). While teachers required mostly ‘troubleshooting’ conversations (e.g., when and where to give Lion Loot), staff members that were not classroom teachers (including cafeteria staff) required more modeling to show them how to give the actual Lion Loot under the SWPBIS model. Finally, when situations arose that a member of the school’s administrative team had to remove a student from class or an activity for inappropriate behavior, the administrator would stress the school-wide behavior expectations as part of the discipline process.

Classroom evaluations (implementation checks). During both walk-throughs and formal classroom observations, the BRT/PBIS Coach and school principal ensured school-wide behavior expectations were clearly visible in every classroom. More specifically, during the implementation year, the PBIS Coach and Team conducted classroom and campus checks using the PBIS Benchmarks of Quality (BoQ) tool to assess the level and degree of SWPBIS implementation. These were done in conjunction with the Mid-year and End-of-Year SWPBIS Evaluations completed as part of the process implemented by the FLDOE to support schools with SWPBIS models.

During such teacher appraisal and walk-throughs from administrators, teachers were monitored to ensure they demonstrated positive relationships and rapport with students. Administrators were mindful to check that SWPBIS strategies (e.g., positive language, verbal praise, Lion Loot, etc.) were being utilized with fidelity for teachers with more minor and/or major referrals for students in their classrooms. Moreover, students were also observed to see that they demonstrated appropriate behavior when interacting with peers. If students were off-task or demonstrating inappropriate classroom behavior, the administrator would watch to see if that behavior was addressed within the SWPBIS strategies adopted by the school. During follow-ups to class walk-throughs and formal classroom evaluations, school administrators would complement teachers regarding behavior management strategies used and, when necessary, discuss areas that needed to be addressed and provide teachers with useful strategies.

Teacher individualized discussions / support. Faculty and staff were also provided more individualized support and retraining, as needed based on data. For instance, the supervising teacher of the SWPBIS School Store would convey to the BRT/PBIS coach when many tickets were coming from the same teacher(s). In other cases, some teachers would report their observations when another faculty or staff were giving out tickets in a non-intermittent manner that was inconsistent with the SWPBIS strategy. Members of the SWPBIS Team would tactfully approach teachers where concern had been expressed and ask that they describe their process for distributing tickets. If they were not doing it in a strategic and graduated manner, then they would receive feedback and retraining to better help them utilize the strategy of tangible reinforcements. Some teachers would be approached if they were not giving out any

tickets or few tickets. In those cases, some shared they preferred to use individual and whole-class incentives, such as earning the ability to eat lunch in the classroom with the teacher or at the picnic tables. In other cases, teachers stated they used verbal and non-verbal praise because they felt it was be more meaningful to the student in their class instead of receiving tickets. These teachers were reminded as to the school-wide model and the importance of all faculty and staff implementing the chosen interventions with fidelity and consistency, as this is a multi-year model and their students would be better served by learning the system before they move to another teacher the next year (or another environment in the school during the intervention year).

Finally, to help provide individualized support, two lead SWPBIS Team members were assigned to support either primary or intermediate grades, and they were made available to answer any questions or to support teachers directly. These SWPBIS Team representatives did not initiate conversations, but were the contacts for any questions that emerged. If needed, the teachers or the team leaders could come to the BRT/PBIS Coach for more information.

Measures and Metrics

Office Discipline Referrals (ODRs; Major Referrals)

Major ODRs are formal documents created by the school district and used to record a behavioral incident that was deemed a major infraction to the district's student code of conduct, jeopardizes the safety and/or learning environment of other students, and ultimately results in the student being removed from class by a school administrator. These incidents are formally recorded, require specific actions by the administrators, and become part of a student's cumulative school record. Major ODRs may be written by any classroom teacher, school staff member, bus driver, or school

administrator. By policy, once an ODR is written and sent to the school administrators, the administrator is required to investigate the incident, determine its validity, and assign an appropriate consequence in accordance with the district's code of student conduct. Major ODRs are entered into the district's student database and become part of the student's cumulative school record. In the context of the school at focus in this study, ODR incidents were recorded into both (1) an internal school district database for use in the SWPBIS planning and implementation process and (2) the Florida Response to Intervention for Behavior (RtI:B) database. Data were collected and compared from both resources, which were found to exactly match (as the Behavior Resource Teacher was responsible for maintaining both databases). These data were used for data-driven decision making purposes within the school, as well as for sharing with teachers and other stakeholders at quarterly data chats, grade level team meetings, and monthly faculty meetings.

Although already discussed in detail within Chapter 2, it warrants repeating the fact that ODRs are among the most prevalent and common outcome measures for student behavior within SWPBIS literature and research (e.g., Fairbanks, et al., 2007; George, et al., 2003; Nocera, et al., 2014; Scott & Barrett, 2004; Sugai & Horner, 2006; Waadsorp, et al., 2012). As noted previously, ODRs have been shown to be related to future behavior problems, such as drug use and disorderly conduct in classrooms (e.g., Nelson & Roberts, 2000; Sprague et al., 2001). Pas, Bradshaw and Mitchell (2011) found ODRs to be positively correlated with both the disruptive behavior and attention problems subscales, as well as negatively correlated with the prosocial behavior subscale of the Teacher Observation of Classroom Adaptation–Checklist (TOCA-C). Overall, the researchers determined that ODRs have moderate convergent and

divergent validity with behavior ratings on the TOCA-C (Pas, et al., 2011). Other researchers have also found validity for using ODRs as a measure of general behavior (e.g., Irvin, et al., 2004; Scott & Barrett, 2004), with ODRs being related to general misbehavior at school, school attendance, student and teacher perceptions of safety and victimization, classroom orderliness, juvenile delinquency, and behavior disorders.

Minor Referrals (Pre-Referrals)

While Major ODRs are recorded within central databases and are the most common focus of outcome research on student behaviors following SWPBIS, this is also a common limitation of past research on SWPBIS. More specifically, past studies most often obtained archival data from centralized databases and generally had little ability to explore data on disciplinary issues that did not rise to the level of a formal office discipline referral for administrator action (i.e., Major ODR). Indeed, with respect to the school at focus of the present study, incidents of Major ODRs and associated actions taken by administrators were available in the Florida Response to Intervention for Behavior (Rtl:B) database (as with any school implementing SWPBIS in Florida). Data on behavioral incidents that were less problematic or did not represent a major infraction of the code of conduct are also recorded on the Rtl:B database, but are not collected on the district database and are rarely collected within other centralized database systems for student behavior.

Minor referrals (pre-referrals) are still considered formal documentation, but there are no official forms or the forms are generated at the school level (e.g., Behavior Notice Form, formal note from the teacher, etc.). Minor pre-referrals are for those behaviors that do not immediately or significantly jeopardize the safety and/or learning environment of other students, but continued display of the behavior and/or escalation

of the behavior could rise to the level requiring a Major ODR. Within the progressive discipline plan for the school at focus of this study, all minor pre-referrals were required to include a formal note from the classroom teacher, a note from the school staff member addressing the behavior, and/or intervention from the school administration that did not necessarily require removal from the classroom environment. These incidents were recorded at the school level to assist with data-driven decision making and for sharing with teachers and other stakeholders at quarterly data chats, grade level team meetings, and monthly faculty meetings. The ability of this research study to explore minor pre-referrals separately and together with Major ODRs is a unique extension to prior studies in the SWPBIS literature.

Tangible Reinforcements (Lion Loot)

As noted in the prior chapter, SWBPBIS makes use of a three-tiered system of supports: (1) Primary, Tier 1 – whole school interventions impacting 80-90% of the student population; (2) Secondary, Tier 2 – small group interventions impacting 15% of the student population who do not respond to primary tier interventions; and (3) Tertiary, Tier 3 – individual interventions impacting the remaining 5% of the student population who do not respond to primary and secondary tier interventions (McIntosh & Goodman, 2016). This research focuses on Tier 1 interventions, with a primary focus on the tangible reinforcements provided to students under a token-economy intervention. Tier 1 interventions are relatively broad and with several pre-established school-wide goals, with both tangible and non-tangible incentives are provided to students to recognize appropriate behavior. Few studies in SWPBIS literature have included a quantitative method for assessing the extent to which a specific intervention was implemented, as it is often difficult to measure the provision of reinforcements. However, while non-

tangible reinforcements would be relatively impossible to assess while keeping to the expectations for the behavior be genuinely praised (the method of recording the reinforcement would likely take more time and reduce the incidents of supports), the present study devised a method for quantitatively assessing the administration of tangible reinforcements (i.e., “Lion Loot”).

All token economies include the tangible token (secondary reinforcer), that for which tokens are exchanged (back-up reinforcers), and the targeted behavior which is desired to be increased (Kazdin, 2012b). A token economy is essentially a systematic approach to reinforcing and increasing desired behaviors by establishing a relationship between a secondary reinforcer and a back-up reinforcer. For the present research, the tangible reinforcements (i.e., “Lion Loot”) were tickets that students received when they were “caught” demonstrating exemplary student behavior that aligned to the school-wide behavior expectations set forth by school staff. The Lion Loot could be exchanged by the student at the SWPBIS School Store, which was opened daily at strategic locations throughout the school where students could “purchase” high-interest items for varying amounts of tickets (e.g., pencils, erasers, bubbles, sunglasses, bracelets, necklaces, basket balls, folders, art sets, books, game cards, etc.). These items were the back-up reinforcers under the token economy model. The present study collected data on the number of tangible tickets (Lion Loot) given to a specific student during the course of the intervention school year.

To support this data collection effort, the classroom teacher or school staff member who gave the Lion Loot to the student(s) was required to write both the teacher/staff name and the student’s name on the back of the Lion Loot (a 2-inch by 4-inch ticket printed on green paper, with the SWPBIS school goals included on the front).

When the student exchanged the ticket at the SWPBIS School Store, the supervising teacher and/or student helpers (i.e., 5th grade safety patrols) at the school store insured that the ticket had a teacher's name and student name to ensure it was received validly and not acquired inappropriately (i.e., stolen, found, gifted to another student). At the end of each day, the supervising teacher would put the exchanged tickets from the SWPBIS School Store in a dated envelope and submit the envelope to the school's Behavior Resource Teacher and SWPBIS Coach.

A Microsoft Excel database was created with a separate worksheet for each grade level (K-5th) and each individual classroom by teacher. Worksheets were also created for Special Area teachers (i.e., Art, Music, P.E., and Media) and other school staff who gave out tickets (i.e., cafeteria monitors, front office staff, speech/language pathologists, and school administration). Students could have been listed multiple times across worksheets, thus ensuring the deepest level of data collection and storage. For each day, the number of Lion Loot exchanged by the student was recorded under the teacher who provided the Lion Loot (based on the name inscribed on the back of the ticket). These data were then aggregated by month, such that the number of tickets by student and by teacher were utilized for data reporting and sharing with stakeholders and during SWPBIS meetings and trainings. However, these data were aggregated further for the purposes of the present research, with the final database used for statistical analyses showing the number of Lion Loot provided by each teacher and the number of Lion Loot exchanged at the School Store by each student.

It is noted that the Lion Loot (tangible reinforcements) did not have the date when the reinforcement was provided, such that the database created for the present study could only record the date the Lion Loot was exchanged at the SWPBIS School Store.

This will be further discussed in Chapter 4, as this represented an unexpected limitation for the findings of this study. More specifically, the original intent was to explore provision of tangible reinforcements by month of the academic year, which could then be compared to the number of ODRs provided each month. However, because students would ‘save’ their Lion Loot for months to receive the more expensive and desirable items, it was realized that the number of Lion Loot provided and the number of Lion Loot exchanged each month would not match.

Other Data of Interest

In addition to the primary indicators and demographic data detailed earlier in this chapter, additional data were collected under the approved research study. These additional data were primarily implementation checks for the purposes of ensuring the proper implementation of the SWPBIS model designed by the school SWPBIS Team. The additional data included meeting agenda and minutes from SWPBIS planning and implementation meetings, agenda from faculty meetings and trainings where SWPBIS was discussed and/or focused upon, reports required by the FLDOE SWPBIS technical assistance project, and staff surveys on the implementation of SWPBIS. These additional data are not a focus of the present research and are not considered within the analysis of the quantitative and demographic data. However, some information from these additional data sources may be included in the discussion, insofar as they provide context or qualify the findings of the primary metrics.

Procedures

As noted previously, this study collected archival data using a convenience sample of students attending a Florida elementary school that had implemented SWPBIS for one year. As the study explored data from the all kindergarten through 5th

grade students attending this school, there was no random assignment or random sampling (as discussed under the participant section of this chapter). The archival data collected spanned a period of three school years (i.e., 2012-2013, 2013-2014, 2014-2015) and consisted of both intervention data and demographic data for all students in the school. More specifically, intervention data included major office discipline referrals (ODRs), minor referrals (pre-referrals), utilization of Lion Loot (tangible reinforcements) by student and teacher, and SWPBIS implementation data (e.g., meeting agendas and minutes pertaining to SWPBIS planning and implementation, required state SWPBIS formative reports, End-of-Year Report, and staff surveys). Additionally, school demographic data were collected and included both student demographics (i.e., gender, race/ethnicity, Free & Reduced Lunch Program status, 504/IEP status, and gifted education program status) and staff demographics (i.e., gender, race/ethnicity, and years of experience). Referrals (major and minor) were the ultimate measure for determining if the implementation of the SWPBIS model (independent variable) made a significant difference in student behavior (dependent variable). A detailed archival data collection protocol was submitted and approved by both the University of Florida Institutional Review Board (IRB) and the Alachua County Public Schools Department of Research, Assessment, and Student Information.

CHAPTER 4 RESULTS

This chapter is separated into five sections. The first section presents the independent variable (i.e., tangible reinforcements) in terms of descriptive data and preliminary analyses for this variable. In the second section, descriptive data and preliminary analyses are presented for the primary dependent variables (i.e., number of minor / pre-referrals, number of major office disciplinary referrals, and the total number of all referrals). The third section provides an explanation of selected statistical analyses, with the fourth and fifth sections exploring the specific research questions, as originally proposed. A discussion of all findings is provided in the discussion chapter rather than within the results section. For all statistical analyses presented and discussed in this chapter, a probability level of $p < .05$ was used as the criterion for statistical significance. Statistical analyses were run using IBM SPSS Statistics (version 23) or The R Project for Statistical Computing (R Version 3.3.1, Bug in Your Hair) – with the latter being an open-source, UNIX-based statistical environment developed by a number of prominent statisticians (Hornik, 2016). Both statistical software packages are commonly used within social science and educational research.

The overarching goal of this study is to explore whether a comprehensive SWPBIS model will impact the instances of negative student behaviors among elementary school students within the first year of implementation. The secondary goal is to explore potential differences among student sub-groups to drive consideration of demographic characteristics, cultural differences, and racial biases when reinforcing and teaching student behavior under the SWPBIS approach. The tertiary goal is to determine whether the level of tangible reinforcements, as a component of the overall

SWPBIS model implemented for this study, was related to any changes in the number of negative student behaviors during the intervention year.

Prior to presenting the detailed findings from this research study, the following are the most salient findings related to the four research questions presented in previous chapters and discussed later in this chapter. First, during the study years, the school experienced a 20.17% increase in enrollment, coupled with an 23.75% decrease in total referrals, a 20.05% decrease in minor/pre-referrals, and a 45.15% decrease in proportion of major ODRs. Second, there was a significant decrease in the proportion of referrals from the second baseline year to the intervention year. Third, the school realized significantly lower proportions of students receiving minor referrals and ODRs in the intervention year. Fourth, African American / Black students had a significantly higher average number of major ODRs than Caucasian American / White students in both baseline years, but such differences did not persist into the intervention year. However, African American students represented a higher proportion of students receiving referrals (45.7% in the intervention year) than the proportion of total students in the school (32.2% in the intervention year). Finally, the number of tangible reinforcements did not predict and was not significantly related to the number of negative student behaviors measured by minor referrals and ODRs. These primary findings are presented in more detail in the following sections of this dissertation.

Section One: Descriptive and Preliminary Analysis (Independent Variable)

The first two results sections focus on descriptive analysis for the independent variable (i.e., number of tangible reinforcements provided to students) and the dependent variables (i.e., number of minor pre-referrals and number of major office discipline referrals). Scatter plots were first constructed to ensure there were no

significant outliers that may have corrupted or invalidated the results of further analyses. While no significant outliers were found, there was a need to exclude pre-kindergarten students. First, pre-kindergarten students accounted for only four (4) of the 250 unduplicated students across all baseline and intervention years with any recorded instance of disciplinary action (e.g., pre-referral and/or major office discipline referral). Second, a single instance of tangible reinforcement (i.e., Lion Loot) was provided to only one pre-kindergarten student during the intervention year (0.01% of all Lion Loot provided during the year). Finally, pre-kindergarten teachers were not expected to participate in the SWPBIS model implemented under this research study. As such, all data from pre-kindergarten students were excluded from this study and are not further considered within the results and analyses.

With the exclusion of pre-kindergarten students, the tables within this section provide descriptive statistics for the number of (1) tangible reinforcements (Lion Loot) awarded to students during the intervention year (i.e., independent variable). As shown in Table 4-1, students receiving the tangible reinforcement were generally spread across all grade levels relatively equally, with 86.1% of all students enrolled during the intervention year receiving at least one tangible reinforcement (i.e., Lion Loot). It is possible the remaining students did not receive any Lion Loot, or received the tangible (secondary) reinforcement without exchanging it for the backup (primary) reinforcements at the SWPBIS School Store. Because the tangible reinforcement was only recorded when exchanged, the non-exchanged Lion Loot are necessarily excluded from consideration within this study.

In terms of the independent variable of the present research (i.e., the number of tangible reinforcements), as shown in Table 4-1, a total of 621 students received at

least one tangible reinforcement during the intervention year (86.01% of the 722 students enrolled during the same year in kindergarten through fifth grade). In comparison to the overall sample of 722 students enrolled during the intervention year (2014-2015), a Pearson’s Chi-Square test of goodness-of-fit was conducted to determine whether the actual grade-level distribution of students receiving at least one tangible reinforcement differed from the theoretical grade-level distribution of students that were expected to receive a reinforcement (i.e., theoretically, all students enrolled should receive at least one reinforcement). Ultimately, students receiving tangible reinforcements were equally distributed according to the grade-level distribution of the total population of students at the school during the intervention year, $X^2 (5, N = 722) = 2.706, p = 0.745$.

Table 4-1. Students receiving tangible reinforcement by grade (lion loot)

Grade	N (All)	% (All)	N (1+)	% (1+)	Min	Max	Mean	SD
Kindergarten	170	23.58%	152	24.48%	0	89	22.12	17.87
Grade 1	114	15.81%	104	16.75%	0	83	16.11	12.82
Grade 2	116	15.95%	104	16.75%	0	99	22.59	20.42
Grade 3	117	16.09%	107	17.23%	0	128	31.09	27.11
Grade 4	109	14.98%	84	13.53%	0	68	13.05	13.60
Grade 5	100	13.73%	70	11.27%	0	80	13.92	17.02
Total (All Grades)	722	--	621	--	0	128	20.80	19.70

Note: (1+) statistics only include those students receiving one or more lion loot.
Tangible reinforcements were only provided during the intervention year (2014-2015).

As such, results reveal no significant concerns that any specific grade level had a higher proportion of students receiving reinforcements than represented in the overall school population, with 152 kindergarten students (24.48%) of students receiving at least one reinforcement compared to 170 total kindergarten students (23.58%); 104 first graders (16.75%) with tangible reinforcements compared to 114 (15.81%) of all students; 104 second graders (16.75%) with tangible reinforcements compared to 115

(15.95%) of all students; 107 third graders (17.23%) with tangible reinforcements compared to 116 (16.09%) of all students; 84 fourth graders (13.53%) with tangible reinforcements compared to 108 (14.98%) of all students; and 70 fifth graders (11.27%) with tangible reinforcements compared to 99 (13.73%) of all students. In addition to exploring the proportion of students receiving the tangible reinforcements (i.e., Lion Loot), it is also important to explore descriptive statistics related to the distribution of individual Lion Loot rewards across student grade levels.

As shown in Table 4-2, a total of 14,654 tangible reinforcements (i.e., Lion Loot) were provided to students across all six grade levels included in the research design, with over one-quarter given to kindergarten students and an additional quarter given to third grade students. In comparison to the overall sample of 621 students enrolled during the intervention year (2014-2015) and receiving at least one Lion Loot, a Pearson's Chi-Square test of goodness-of-fit was conducted to determine whether the actual distribution of Lion Loot exchanged differed from the theoretical distribution of tangible reinforcements based on the grade-level distribution of students receiving a reinforcement (i.e., theoretically, all students had an equal chance to receive the same level of tangible reinforcement). Ultimately, the number of tangible reinforcements were not equally distributed according to the distribution of the population of students provided with tangible reinforcements and enrolled at the school during the intervention year, $X^2 (5, N = 622) = 34.047, p < 0.001$.

Follow-up z-score tests revealed no significant difference between the proportion of kindergarten students receiving tangible reinforcements (24.48%) and the proportion of total reinforcements given to kindergarten students (25.67%; $z = -0.6647, p = 0.509$); second graders (respectively, 16.75% and 17.87%, $z = -0.7132, p = 0.478$), and fifth

graders (respectively, 11.27% and 9.46%, $z = 1.5016$, $p = 0.134$). However, first grade students were significantly less likely to receive Lion Loot (12.53%) than they were to be represented in the school population (16.75%; $z = 3.092$, $p = 0.002$), as were fourth graders (respectively, 9.46% and 13.53%; $z = 3.1559$, $p = 0.002$). Conversely, third graders were significantly more likely to receive Lion Loot (24.80%) than they were to be represented in the school population (17.23%; $z = -4.2957$, $p < 0.001$). These findings must be considered when assessing the research questions and discussing the meaningfulness of any findings associated with the administration of tangible reinforcements across the six student grade levels included in this study.

Table 4-2. Number of tangible reinforcements by grade level (lion loot)

Grade	N (1+)	% (1+)	# Loot	% Loot	Max	Mean	SD
Kindergarten	152	24.48%	3,761	25.67%	89	22.12	17.87
Grade 1	104	16.75%	1,836	12.53%	83	16.25	12.79
Grade 2	104	16.75%	2,618	17.87%	99	22.77	20.42
Grade 3	107	17.23%	3,634	24.80%	128	31.33	27.10
Grade 4	84	13.53%	1,418	9.68%	68	13.13	13.64
Grade 5	70	11.27%	1,387	9.46%	80	14.01	17.08
Total (All Grades)	621	--	14,654	--	360	19.86	23.27

Note: (1+) statistics only include those students receiving one or more lion loot.
Tangible reinforcements were only provided during the intervention year (2014-2015).

In addition to student grade level, administration of Lion Loot to students must be considered in relation to student gender and reported race/ethnicity. As shown in Table 4-3, as expected based on the theoretical model that all students have an equal chance of receiving the tangible reinforcements, an approximately equal proportion of tangible reinforcements (i.e., Lion Loot) was administered to male students ($N = 7,580$; 51.73%) as to female students ($N = 7,074$; 43.27%). A Pearson's Chi-Square test of goodness-of-fit showed no significant difference between the distribution of Lion Loot across the

two genders and the proportion of students receiving at least one tangible reinforcement, $X^2(1, N = 621) = 0.207, p = 0.649$.

Table 4-3. Descriptives for independent variable by ethnicity and gender

Gender		A	B	H	I	W	M	Total
Male	N (1+)	15	110	37	1	144	20	327
	% (1+)	4.6%	33.6%	11.3%	0.3%	44.0%	6.1%	--
	# Lion Loot	467	2462	887	9	3218	537	7580
	% Lion Loot	6.2%	32.5%	11.7%	0.1%	42.5%	7.1%	--
	Max	73	125	79	9	97	83	125
	Mean	29.19	18.51	21.63	9.00	19.27	19.89	19.64
	SD	22.81	19.81	18.29	--	19.54	21.91	19.81
Female	N (1+)	13	85	40	1	131	24	294
	% (1+)	4.4%	28.9%	13.6%	0.3%	44.6%	8.2%	--
	# Lion Loot	448	1998	1106	68	3009	445	7074
	% Lion Loot	6.3%	28.2%	15.6%	1.0%	42.5%	6.3%	--
	Max	128	120	77	68	99	64	128
	Mean	34.46	19.98	25.72	68.00	19.54	17.80	20.99
	SD	33.23	20.87	17.06	--	17.51	16.74	19.59
All Genders	N (1+)	28	195	77	2	275	44	621
	% (1+)	4.5%	31.4%	12.4%	0.3%	44.3%	7.1%	--
	# Lion Loot	915	4460	1993	77	6227	982	14654
	% Lion Loot	6.2%	30.4%	13.6%	0.5%	42.5%	6.7%	--
	Max	128	125	79	68	99	83	128
	Mean	31.55	19.14	23.73	38.50	19.40	18.88	20.27
	SD	27.55	20.24	17.68	41.72	18.56	19.43	19.71

Note: (1+) statistics only include those students receiving one or more lion loot. Tangible reinforcements were only provided during the intervention year (2014-2015). Excludes 361 instances of Lion Loot which were missing student names and information. Ethnicity Codes: A = Asian American; B = "Black / African American", H = "Hispanic / Latina(o)"; I = "Native American or Pacific Islander"; W = "White / Caucasian American"; M = "Multiple Ethnicities". Categories determined by School District and reported in alphabetical order.

When exploring the administration of Lion Loot (i.e., tangible reinforcements) to students across racial and ethnic categories, it initially appears that Lion Loot were more likely to be awarded to "White" or Caucasian American students (42.5% of all Lion Loot) and "Black" or African American students (30.4% of all Lion Loot). However, as

shown in Table 4-3, when comparing instances of Lion Loot to the overall distribution of the students receiving at least one tangible reinforcement, differences in administration of Lion Loot appear consistent with the student population. Pearson's Chi-Square test of goodness-of-fit was conducted to determine whether the actual distribution of students receiving at least one tangible reinforcement by racial and ethnicity categories differed from the theoretical distribution of students that were expected to receive a reinforcement (i.e., theoretically, the proportion of reinforcements for each ethnicity should be equal to the proportion of students enrolled for each ethnicity). Ultimately, results suggest that students receiving tangible reinforcements were equally distributed across the six racial/ethnic groups according to the distribution of the population of students during the intervention year that received at least one Lion Loot, $\chi^2 (5, N = 621) = 4.778, p = 0.444$. As such, administration of Lion Loot by race/ethnicity is not further explored within this section of this chapter.

Further exploring the administration of tangible reinforcements (i.e., Lion Loot) across students, as shown in Table A-1 (Appendix A), the number of reinforcements provided to students was collected from a total of 60 teachers, staff members, and administrators working with students in kindergarten through fifth grade. Two of the teachers included in the study did not provide any Lion Loot during the school year, and several teachers shared the same job during the course of the year (e.g., the school had more than one music teacher during the course of the year). It is also important to note that Table A-1 (Appendix A) indicates the number of Lion Loot (reinforcements) exchanged for SWPBIS School Store items each month, while the actual reinforcement could have been administered at any time during or prior to the month indicated.

Regardless, a total of 15,015 Lion Loot were awarded during the academic year, with 360 being exchanged without connected student information and one (1) exchanged from a pre-kindergarten student. These 361 Lion Loot were not included in descriptive statistics indicated previously in this chapter. As shown in Table A-1, the 58 staff members provided between 6 and 1,050 tangible reinforcements, with the average staff member providing 250.25 Lion Loot during the course of the year (SD = 224.02).

Table 4-4 provides the total number of Lion Loot by month, with nearly half (47.2%) of all Lion Loot being recorded in the last three months of the school year. Table 4-4 demonstrates the importance of using caution when interpreting data within this research according to distribution by month, with an understanding that data were only able to be collected when the students exchanged the Lion Loot for backup reinforcements (not when they were awarded). As noted in the prior chapter, Lion Loot were provided as secondary reinforcements to provide for immediate and consistent reinforcement of desired student behaviors. However, these secondary reinforcements only hold value insofar as they can be exchanged for back-up reinforcements (i.e., high-interest items provided within the SWPBIS School Store). Because some students saved their Lion Loot until they were able to afford a higher-interest or more rewarding item, there were many instances of Lion Loot being exchanged in the months after they were originally awarded. This is further considered in the discussion chapter, but it is important to note the apparent pattern of exchange, with a large number of Lion Loot exchanged in the first month (9.7% of all Lion Loot) and nearly half of all Lion Loot exchanged in the last three months of the academic year. Table 4-4 also provides the distribution of Lion Loot by month for the 14,654 'tickets' that could be attributed to a

specific student, with 360 ‘tickets’ missing student identification information and one coming from a pre-kindergarten student and excluded from the study.

Table 4-4. Number of tangible reinforcements by month (lion loot)

Type		Sept	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Tot.
All Lion	n	1457	981	888	942	1023	1325	1311	2031	3334	1723	15015
Loot	%	9.7%	6.5%	5.9%	6.3%	6.8%	8.8%	8.7%	13.5%	22.2%	11.5%	--
Identified	n	1444	971	884	937	1007	1288	1240	1923	3278	1682	14654
Lion Loot	%	9.6%	6.5%	5.9%	6.2%	6.7%	8.6%	8.3%	12.8%	21.8%	11.2%	--

Note: “Identified Lion Loot” excludes 360 instances where the tangible reinforcement did not include student identification and one (1) instance where the recipient was in pre-kindergarten.

Section Two: Descriptive and Preliminary Analysis (Dependent Variable)

This section focuses on descriptive analysis for the dependent variables (i.e., number of minor pre-referrals and number of major office discipline referrals). As with the independent variable, scatter plots were first constructed for each dependent variable to ensure there were no significant outliers that may have corrupted or invalidated the results of further analyses. No significant outliers were found within the dependent variables, though pre-kindergarten students had already been excluded from this research due issues already outlined regarding the receipt of Lion Loot (i.e., tangible reinforcements) and the overall lack of participation in the interventions associated with School-Wide Positive Behavioral Support (SWPBIS). With the exclusion of pre-kindergarten students, the tables within this section provide descriptive statistics for the number of (1) minor/pre-referrals given to students for the second baseline and intervention years, (2) major office disciplinary referrals given to students during all three years of the study, and (3) total referrals given to students for each of the three study years.

For all three years of this study (i.e., two baseline years and one intervention year), data were collected on the number of minor or pre-referrals and the number of major office disciplinary referrals (ODRs), with the school not collecting data on minor/pre-referrals during the first baseline year. As shown in Table 4-5, a total of 125 students during the intervention year, 148 during the second baseline year, and 32 during the first baseline year received at least one disciplinary action during the course of the respective academic year. All students included in Table 4-5 received at least one referral from at least one of the two categories (i.e., minor or major).

Table 4-5. Descriptive statistics for dependent variables (discipline)

Variable / Year	N (1+)	Min	Max	Mean (1+)	SD (1+)
Number of Minor / Pre-Referrals					
2012-2013 (Baseline 1)	--	--	--	--	--
2013-2014 (Baseline 2)	141	1	24	3.52	4.02
2014-2015 (Intervention)	121	1	44	4.04	5.97
Number of Major Office Disciplinary Referrals					
2012-2013 (Baseline 1)	32	1	14	2.41	2.65
2013-2014 (Baseline 2)	48	1	6	1.81	1.38
2014-2015 (Intervention)	36	1	4	1.61	0.87
Number of All Referrals (Total)					
2012-2013 (Baseline 1)	32	1	14	2.41	2.65
2013-2014 (Baseline 2)	150	1	29	3.98	4.80
2014-2015 (Intervention)	125	1	45	4.38	6.36

Note: (1+) statistics only include those students with one or more instance under each category. Minor / Pre-Referrals were not recorded by the school in 2012-2013.

Students receiving at least one referral of any type tended to receive more than one referral, with the average student receiving 2.41 total referrals in the first baseline year, 3.94 total referrals in the second baseline year, and 4.38 total referrals in the intervention year. The higher average number of referrals in the intervention year must be considered in conjunction with the lower number of total referrals given during the

intervention year (N=547) than the number of referrals given during the second baseline year (N=583). This suggests that fewer students required behavioral intervention during the intervention year, but required the intervention more often per student. It is also noted that the change in average total referrals appears driven by changes in the average number of minor or pre-referrals, which is expected with the SWPBIS model that encourages the pre-referrals before major ODRs are written. Ultimately, the data outlined in Table 4-5 reveal no major concerns for proceeding with using both minor/pre-referrals and major referrals as the dependent variables for this study.

While there appears to be a large number of referrals and students receiving referrals, several caveats are important to consider when interpreting results from this research. First, during the intervention year when data from the entire school were available, the total number of students receiving at least one referral (N = 125) is only a small percentage (17.3%) of the total student population from Kindergarten to 5th grade (N = 721), such that the vast majority of students did not receive referrals and are not reflected in Table 4-5. Second, a small number of students accounted for a large number of referrals. More specifically, intervention year data show that only 17 students received ten or more referrals - 13.6% of the 125 students with at least one referral during the intervention year - with these students accounting for 50.8% of all referrals written that year (N = 278 of 547 referrals). Similarly, data from baseline year show that only 12 students received 10 or more referrals, representing only 9.6% of the all students receiving referrals, but 33.1% of all referrals given (N = 193 of 583 referrals). These findings are incorporated into the discussion of results, when appropriate, and should be considered when interpreting the results within this chapter.

In addition to general information about instances of disciplinary measures, it is important to explore whether there are problematic or important differences between three primary demographic variables collected for each year of the study (i.e., baseline years and intervention year): (1) student grade level; (2) student race and ethnicity; and (3) student gender. For each of these demographic variables, this section explores the relationship between the school distribution and the distribution of students receiving minor/pre-referrals and/or major office disciplinary referrals. However, as school-wide demographics were only available for the intervention year at the student-level, only the distributions from the intervention year are compared for the purposes of the preliminary statistics presented in this section. Following sections are designed to answer research questions associated with this study, while this section provides only preliminary comparisons and explorations for the purposes of improving the interpretation of results.

Table 4-6 presents the distribution of minor/pre-referrals and major office disciplinary referrals. As discussed previously, minor referrals were not recorded by the school in the first baseline year, while major office disciplinary referrals were recorded for all three years (i.e., first baseline, second baseline, and intervention years). While there appears to be some differences between the number of referrals given each year to students at each grade level, any analysis of the data to explore such differences is reserved for the specific research questions and more sophisticated statistical comparisons detailed below. However, preliminary statistics are important to explore how the distribution of referrals across grade levels compares to the distribution of all students attending the school.

As noted previously, a total of 721 students attended the school during the intervention year in grades Kindergarten through fifth grade, with 170 in kindergarten

(23.6%), 113 in first grade (15.7%), 115 in second grade (16.0%), 116 in third grade (16.1%), 108 in fourth grade (15.0%), and 99 in fifth grade (13.7%). In comparison to the distribution of all referrals (both minor pre-referrals and major office disciplinary referrals), a Pearson's Chi-Square test of goodness-of-fit was conducted to determine whether the actual distribution of referrals across student grade levels differed from the theoretical distribution of referrals if all students had equal chances of receiving referrals (i.e., theoretically, the proportion of referrals for each grade level should be equal to the proportion of students enrolled within each grade level). Ultimately, results suggest that referrals were not proportionally distributed across student grade levels according to the distribution of the population of students during the intervention year, $X^2 (5, N = 721) = 62.192, p < 0.001$.

Post-hoc z-score tests revealed no significant difference between the proportion of referrals given to second grade students (17.9%) and the proportion of second graders at the school during the intervention year (16.0%; $z = -0.9274, p = 0.352$), the proportion of referrals to third graders (12.8%) and the proportion of enrolled third graders (16.1%; $z = 1.6409, p = 0.101$), and the proportion of referrals to fifth graders (11.2%) and the proportion of enrolled fifth graders (13.7%; $z = 1.3699, p = 0.171$). However, kindergarten students received a significantly higher proportion of referrals (29.1%) than the proportion of kindergarten students enrolled in the school during the intervention year (23.6%; $z = -2.2085, p = 0.027$), as did fourth grade students (24.9% of referrals, 15.0% of enrolled students; $z = -4.4218, p < .001$). Conversely, first grade students had a significantly lower proportion of referrals (4.2%) than the proportion of first grade students enrolled during the intervention year (15.7%; $z = 6.5360, p < .001$). Interestingly, as noted previously, first graders were also less likely to receive the

tangible reinforcements than they were to be represented in the school population, as were fourth graders. Although proportional differences of referrals are more acceptable due to the individualized nature of referrals, these findings must still be considered when assessing the research questions and discussing the meaningfulness of any findings associated with the administration of tangible reinforcements across the six student grade levels included in this study.

Table 4-6. Minor and major referrals by school grade

Grade		Minor / Pre-Referrals			Major Office Referrals			All Referrals (Total)		
		B1	B2	INT	B1	B2	INT	B1	B2	INT
KG	N	--	71	139	24	13	20	24	84	159
	%	--	14.3%	28.4%	31.2%	14.9%	34.5%	31.2%	14.4%	29.1%*
Gr. 1	N	--	43	22	14	9	1	14	52	23
	%	--	8.7%	4.5%	18.2%	10.3%	1.7%	18.2%	8.9%	4.2%*
Gr. 2	N	--	81	89	11	14	9	11	95	98
	%	--	16.3%	18.2%	14.3%	16.1%	15.5%	14.3%	16.3%	17.9%
Gr. 3	N	--	99	61	10	16	9	10	115	70
	%	--	20%	12.5%	13%	18.4%	15.5%	13%	19.7%	12.8%
Gr. 4	N	--	79	125	6	21	11	6	100	136
	%	--	15.9%	25.6%	7.8%	24.1%	19%	7.8%	17.2%	24.9%*
Gr. 5	N	--	123	53	12	14	8	12	137	61
	%	--	24.8%	10.8%	15.6%	16.1%	13.8%	15.6%	23.5%	11.2%
Total	N	--	496	489	77	87	58	77	583	547

Note: B1 and B2 are the two baseline years, INT is the intervention year.
 Minor / Pre-Referrals were not recorded by the school in 2012-2013 (B1)
 Percentages represent percent of total number of each referral type for each respective year.
 * indicates significant difference from proportion of students in school population.

In addition to student grade level, incidents of disciplinary referrals given to students must be considered in relation to student gender and reported race/ethnicity. As shown in Table 4-7, the distribution of referrals across student gender categories appears to be disproportional to the overall student population. More specifically, the population of students attending the school during the intervention year (N = 721) were

composed of 53.4% males (N = 385) and 46.6% females (N = 336). Theoretically, students of all genders have equal chances of receiving referrals, such that it would be theoretically expected for the number of referrals to be distributed the same as the overall population of students. However, using data shown in Table 4-7, a Pearson's Chi-Square test of goodness-of-fit using the total of all referrals during the intervention year showed a significant difference in the distribution of the numbers of referrals by gender and the overall distribution of students by gender, $X^2 (1, N = 721) = 169.3, p < .001$. In this light, there was a significantly greater proportion of referrals given to male students (87.8% of referrals) during the intervention year than the proportion of students enrolled in the school that same year (53.4% of students). This is largely consistent with past research showing that boys tend to receive more referrals than girls, largely due to the fact that boys engage in a broader range of disruptive behavior (e.g., Skiba, Michael, Nardo, & Peterson, 2000). However, this significant difference between genders must be considered when discussing the results of this research and will be further covered within the discussion section. Research questions already proposed to analyze differences between gender categories.

Table 4-7. Minor and major referrals by student gender

Gender		Minor / Pre-Referrals			Major Office Referrals			All Referrals (Total)		
		B1	B2	INT	B1	B2	INT	B1	B2	INT
Male	N	--	422	427	68	71	53	68	493	480
	%	--	85.1%	87.3%	88.3%	81.6%	91.4%	88.3%	84.6%	87.8%*
Female	N	--	74	62	9	16	5	9	90	67
	%	--	14.9%	12.7%	11.7%	18.4%	8.6%	11.7%	15.4%	12.2%*
Total	N	--	496	489	77	87	58	77	583	547

Note: B1 and B2 are the two baseline years, INT is the intervention year.
 Minor / Pre-Referrals were not recorded by the school in 2012-2013 (B1)
 Percentages represent percent of total number of each referral type for each respective year.
 * indicates significant difference from proportion of students in school population.

When exploring the distribution of referrals across racial and ethnic categories, the majority of referrals were given to “Black” or African American students during the first baseline year (57.1% of all referrals), the second baseline year (57.6%), and the intervention year (56.7%). To explore whether the distribution of referrals administered during the intervention year was consistent with the distribution of enrolled students by reported race and ethnicity, a Pearson’s Chi-Square test of goodness-of-fit was conducted with the theoretical basis that all students had relatively equal chance of receiving a referral during the intervention year. Ultimately, results suggest that the distribution of referrals across students by race and ethnicity was significantly different than the distribution of all students across the same racial and ethnic categories, $X^2 (5, N = 721) = 82.378, p < 0.001$.

Post-hoc z-score tests revealed no significant difference between the proportion of referrals given to Asian American students (2.7%) and the proportion of Asian American students at the school during the intervention year (4.0%; $z = 1.2334, p = 0.219$), the proportion of referrals to Native American and Pacific Island students (0.3%) and the proportion of enrolled Native American and Pacific Island students (0.2%; $z = 0.3433, p = 0.728$), and the proportion of referrals to students identified as multiple ethnicities (7.2%) and the proportion of enrolled students identified as multiple ethnicities (6.4%; $z = 0.5677, p = 0.569$). However, the proportion of referrals given to students identified as Hispanic (4.4%) and White / Caucasian American (29.6%) were both significantly lower than the proportion of enrolled students during the intervention year that were identified as, respectively, Hispanic (11.7%; $z = 4.5887, p < .001$) and White / Caucasian American (44.5%, $z = 5.4132, p < .001$). Conversely, the proportion of referrals given to students identified as Black / African American (56.7%) was

significantly higher than the proportion of enrolled students identified as Black / African American (32.3%, $z = -8.681$, $p < .001$). Such differences are important considerations for the application of discipline at the intervention school, and are relatively consistent with findings of past research (e.g., Skiba, et al., 2000). It is important to note that two of the four research questions include student race and ethnicity within the statistical analysis.

Table 4-8. Minor and major referrals by student ethnicity / race

Race		Minor / Pre-Referrals			Major Office Referrals			All Referrals (Total)		
		B1	B2	INT	B1	B2	INT	B1	B2	INT
A	N	--	2	13	0	0	2	0	2	15
	%	--	0.4%	2.7%	0%	0%	3.4%	0%	0.3%	2.7%
B	N	--	283	277	44	53	33	44	336	310
	%	--	57.1%	56.6%	57.1%	60.9%	56.9%	57.1%	57.6%	56.7%*
H	N	--	34	22	16	4	2	16	38	24
	%	--	6.9%	4.5%	20.8%	4.6%	3.4%	20.8%	6.5%	4.4%*
I	N	--	0	1	0	0	0	0	0	1
	%	--	0%	0.2%	0%	0%	0%	0%	0%	0.2%
W	N	--	115	143	13	15	19	13	130	162
	%	--	23.2%	29.2%	16.9%	17.2%	32.8%	16.9%	22.3%	29.6%*
M	N	--	62	33	4	15	2	4	77	35
	%	--	12.5%	6.7%	5.2%	17.2%	3.4%	5.2%	13.2%	6.4%
Total	N	--	496	489	77	87	58	77	583	547

Note: B1 and B2 are the two baseline years, INT is the intervention year.
 Minor / Pre-Referrals were not recorded by the school in 2012-2013 (B1)
 Percentages represent percent of total number of each referral type for each respective year.
 Ethnicity Codes: A = Asian American; B = "Black / African American", H = "Hispanic / Latina(o)";
 I = "Native American or Pacific Islander"; W = "White / Caucasian American"; M = "Multiple
 Ethnicities". Categories determined by School District and reported in alphabetical order.
 * indicates significant difference from proportion of students in school population.

Table 4-9 provides the total number of referrals given to students for each month of the academic school year, with the first and last months of the school year having the lowest incidence of referrals for all three years for which data were collected (i.e., first baseline year, second baseline year, and intervention year). During the first baseline

year, 32.5% of referrals were given during the first four months and 45.5% were given during the last four months, which was relatively consistent in the second baseline year (27.0% and 45.3%, respectively). The intervention year shows a more balanced distribution of referrals, with 35.1% given during the first four months, 32.2% given during the middle three months, and 32.8% given during the last four months.

Table 4-9. Distribution of minor and major referrals by month

Month		Minor / Pre-Referrals			Major Office Referrals			All Referrals (Total)		
		B1	B2	INT	B1	B2	INT	B1	B2	INT
Aug.	N	--	2	8	2	5	1	2	7	9
	%	--	0.4%	1.6%	2.6%	5.7%	1.7%	2.6%	1.2%	1.6%
Sept.	N	--	37	73	6	13	5	6	50	78
	%	--	7.5%	14.9%	7.8%	14.9%	8.6%	7.8%	8.6%*	14.3%*
Oct.	N	--	43	50	11	7	6	11	50	56
	%	--	8.7%	10.2%	14.3%	8%	10.3%	14.3%	8.6%	10.2%
Nov.	N	--	39	47	6	11	2	6	50	49
	%	--	7.9%	9.6%	7.8%	12.6%	3.4%	7.8%	8.6%	9%
Dec.	N	--	34	33	6	5	1	6	39	34
	%	--	6.9%	6.7%	7.8%	5.7%	1.7%	7.8%	6.7%	6.2%
Jan.	N	--	62	50	2	8	5	2	70	55
	%	--	12.5%	10.2%	2.6%	9.2%	8.6%	2.6%	12%	10.1%
Feb.	N	--	46	71	9	7	16	9	53	87
	%	--	9.3%	14.5%	11.7%	8%	27.6%	11.7%	9.1%*	15.9%*
Mar.	N	--	42	43	10	13	6	10	55	49
	%	--	8.5%	8.8%	13%	14.9%	10.3%	13%	9.4%	9%
Apr.	N	--	65	60	13	10	6	13	75	66
	%	--	13.1%	12.3%	16.9%	11.5%	10.3%	16.9%	12.9%	12.1%
May	N	--	121	52	12	8	10	12	129	62
	%	--	24.4%	10.6%	15.6%	9.2%	17.2%	15.6%	22.1%*	11.3%*
June	N	--	5	2	--	--	--	--	5	2
	%	--	1.0%	0.4%	--	--	--	--	0.9%	0.4%
Total	N	--	496	489	77	87	58	77	583	547

Note: B1 and B2 are the two baseline years, INT is the intervention year.
 Minor / Pre-Referrals were not recorded by the school in 2012-2013 (B1)
 Percentages represent percent of total number of each referral type for each respective year.
 * indicates significant difference from Baseline 2 to Intervention in monthly proportion of referrals

A Pearson's Chi-Square test of goodness-of-fit was conducted to compare the distribution of referrals during the second baseline year and the intervention year, with the two distributions shown to be significantly different ($X^2 (10, N = 578) = 40.613, p < 0.001$). Post-hoc z-score tests revealed no significant differences for most months of the academic year, though did reveal significant differences between the proportion of referrals given in September from the second baseline year (8.6%) to the intervention year (14.3%; $z = -3.0125, p = .003$); February (9.1% to 15.9%; $z = -3.4745, p < .001$); and May (22.1% to 11.3%, $z = 4.8377, p < .001$). Unlike Lion Loot (i.e., the tangible reinforcements), referral data were more accurately collected and recorded in the month where they actually occurred (rather than when the students exchanged the tickets for Lion Loot). This is further considered in the discussion chapter, but it is important to note the apparent pattern of referrals was more balanced across the year during the intervention year, whereas baseline years were largely loaded towards the end of the academic years.

Section Three: Selection of Analyses

There are four research questions associated with this study. Each of the research questions are related - with research questions one and two directly related, and research questions three and four directly related. These two sets of research questions are explored within section four and five of this dissertation, with research questions one and two the focus of section four. The first two research questions are focused on whether the number of negative student behaviors changed from baseline to intervention, with research question two expanding the exploration by adding difference across race/ethnicity and gender. The second two research questions focus on whether the level of Lion Loot (tangible reinforcers) awarded can predict student negative

behaviors. Regardless of the research question being explored, all data were first analyzed for normalcy to ensure assumptions of parametric statistics were not violated. In addition, data were explored for outliers, with no potential outliers identified that were determined to impact the results, such that all students on whom data were collected were included in the presented analyses. All research questions were explored with a two-tailed alpha level of .05.

There are some important limitations to the data which must be discussed in the results section and expanded upon in the discussion, as these issues and limitations helped guide the selection of analyses. First, as noted previously, for all research questions, negative student behaviors were measured with two specific metrics: (1) number of minor / pre-referrals and (2) number of major office disciplinary referrals. When possible, the number of referrals were measured both as the total number of referrals during the baseline and intervention years, as well as the difference between the baseline and intervention years. To explore the difference between baseline and intervention years, the total number of referrals from the intervention year was subtracted from the number of referrals during the baseline year, with these differences then squared to ensure no negative values. It is noted that data and statistical findings involving difference scores were interpreted using the square of the differences.

It is important to reiterate that the school did not collect data on minor / pre-referrals during the first baseline year. Moreover, minor referrals from the first baseline year were not stored in any centralized database and were not stored at the school level, such that there was no possibility to retrieve information on minor / pre-referrals from the first baseline year. The school began collecting information on minor / pre-referrals in the second baseline year, specifically to begin the planning and design

process for the School-Wide Positive Behavioral Intervention and Support (SWPBIS) model at focus in this research. With this limitation, the originally planned analyzes for all four research questions were impacted, as the first baseline year could not be utilized in analyses exploring minor referrals or total referrals.

Within the original analysis plan, there was also consideration for exploring student behavioral impacts both by year and month, particularly for research questions three and four (e.g., exploring whether the implementation of SWPBIS reinforcements would impact referrals by month). However, it became clear that there were some potential complications with any type of monthly analysis. First, there were some differences by year as to when district diagnostics are provided, when spring break occurs, and when standardized testing occurs – all events that can have an impact on referrals and student behaviors. In addition to schedule differences, there were also issues with students unexpectedly ‘hoarding’ their reinforcements, wherein students held their ‘tickets’ (Lion Loot) from prior months to afford a more desirable incentive later in the year (e.g., if there is was dinosaur egg that cost 50 tickets and they only receive 5 tickets a month, they might hold all their tickets until the final month of the year).

This was not a foreseen issue, and the study procedures provided no alternative method with which to assess the month during which the reinforcements were earned (only when they were used at the SWPBIS School Store). There were also possible issues with specific teachers and the number of referrals, where newer teachers may give fewer referrals at the beginning of the year because they do not want to develop a reputation for sending students out of class (or any number of other reasons) or may give fewer reinforcers because they do not want to seem too ‘soft’ – with none of these individual characteristics a focus of this research. As such, based on these primary

concerns and limitations, all four Research Questions were analyzed based on aggregate data for the entire school year, rather than by month.

In addition to time-based regression analyses (i.e., exploring data by month), the original plan also called for regression to explore both the number of referrals and the number of tangible reinforcements (Lion Loot) provided to individual students across the course of the baseline and intervention years. Although this had the possibility to provide the most interesting results, two primary data characteristics precluded the usefulness of regression to explore these research questions as originally anticipated. First, it is noted there were many students with no referrals (major and/or minor) in both the baseline and intervention periods, thus producing a large number of students with 'true zero' values. Second, the large number of students with 'true zero' scores for referrals and lower levels of Lion Loot created a considerable skew in the distribution (with the overwhelming majority of students having no referrals of any type), which led to the distribution of both dependent and independent variables violating the assumption of a Gaussian (or normal) distribution and the mean number of referrals being very near zero.

As such, exploring data at a student level would not only violate the assumption of normality - a cornerstone assumption of parametric statistics – but any regression using individual, student-level data would likely have a very low R² and be relatively uninterpretable. Fortunately, the original plan of statistical analyses had anticipated this potential scenario and, should regression produce a result with low R² because of the many 'zeros' in the dataset (noting these are not missing values, but true values of having no referrals), non-parametric statistics were planned to be used for additional

analyses at the student-level or classroom-level. However, non-parametric statistics rely upon the median as the measure of central tendency, which was also complicated by the overwhelming number of students with true zero values on the dependent variables (i.e., number of minor pre-referrals, number of major office disciplinary referrals, and total number of referrals over the course of the year).

In addition to possible non-parametric statistics in lieu of regressions, analyses also included Chi Square analyses (presented in prior sections on demographic and descriptive statistics), z-tests of independent proportions, analyses of variance (ANOVAs), and multi-variate analyses of variance (MANOVAs). Although the ANOVA and MANOVA procedures are parametric and hold the same assumption for Gaussian distributions as regression analysis, these procedures are more robust than regression when the non-normality is secondary to a skewed distribution rather than outliers, such as with the current research study (Tabachnick & Fidell, 1996; French, Macedo, Poulsen, Waterson, & Yu, 2002). Results of any necessary analysis of other assumptions and details of the specific characteristics of each statistical procedure performed are provided in the following sections of this dissertation. Results from such procedures are also detailed in the following sections in this chapter.

Section Four: Research Question One and Two

The first research question is focused on exploring whether the students attending the targeted school demonstrated fewer referrals during the intervention year than during the baseline years. More specifically, the first research question reads: “Regardless of race/ethnicity and student grade level, will there be a significant impact of the SWPBIS intervention from baseline years (pre-intervention) and the intervention year (post-intervention), as measured by the number of instances of negative student

behavior by month and by year (i.e., minor referrals and major referrals)?” The second research question expands upon the first, with the addition of race/ethnicity and grade level differences, reading as follows: “Is there a difference by race/ethnicity and/or student grade level in the impact of the SWPBIS intervention from baseline to implementation on the number of negative student behaviors?”

As noted in the prior section, the first research question was originally intended to be assessed at the student-level through the use of regression analysis by month and year, with inherent data characteristics precluding the analysis of data by month using regression analysis. As such, analyses of variance (ANOVAs) are the more appropriate parametric method to determine whether there were differences between the three years of the study in terms of the number of negative student behaviors recorded through punitive behavioral interventions (i.e., minor/pre-referrals, major office disciplinary referrals, and total referrals). However, as also discussed in the prior section, the large number of ‘true zeros’ in the dependent (outcome) variables for the vast majority of students led to a skewed distribution, with the mean number of referrals being very near zero. As such, any results of parametric statistics must be considered with caution due to the violation of the Gaussian Distribution and the reliance on means in the analysis, though the large sample sizes help mitigate these effects.

The first and second research questions were explored with two analyses: an analysis of variance (ANOVA) and a multivariate analysis of variance (MANOVA). Using data from the 848 students with data from at least one of the three data collection years, the initial ANOVA was performed to explore the relationship of academic year (i.e., first baseline year, second baseline year, and intervention year), student grade level, and student race/ethnicity on the instances of negative student behaviors

measured only by major office disciplinary referrals. Because the first baseline year did not include minor/pre-referral data, it could not be included in a MANOVA or any analyses involving minor/pre-referral or total referral data. As such, a MANOVA was performed using data from only the second baseline year and the intervention year to explore the relationship of academic year, student grade level, and student race/ethnicity on the instances of negative student behaviors using all three dependent variables (i.e., minor/pre-referrals, major office disciplinary referrals, and total referrals). The first research question focuses only on the main effect of academic year on the instances of negative student behaviors, while the second research question expands upon the first, and is most concerned with the interaction effects between academic year and student categories (i.e., grade level and race/ethnicity).

As noted above, a three-way analysis of variance (ANOVA) was conducted to explore the number of major office disciplinary referrals (i.e., major negative student behaviors) based on academic year (i.e., first baseline year, second baseline year, and intervention year), student grade level (i.e., KG, 1st, 2nd, 3rd, 4th, and 5th grades), and student race/ethnicity (i.e., African American / Black, Hispanic / Latina(o), Multi-Ethnic, and Caucasian American / White). Results of the three-way ANOVA are presented in Table 4-10. As shown, specific to the first research question, there was a significant main effect of academic year ($F(2,1773)=3.731$, $p=0.024$) based on the omnibus F-test performed by the ANOVA. However, post-hoc analyses using the Tukey HSD test to control for multiple pairwise comparisons, demonstrated no significant differences between the average number of referrals per student for the first baseline year ($M=0.13$, $SD=0.828$), second baseline year ($M=0.15$, $SD=0.636$); and intervention year ($M=0.08$, $SD=0.402$). Such a result is not unusual, and the omnibus F-test performed by the

ANOVA may be the effect of a more complex contrast (Cardinal & Aitken, 2006), and may be due to a lack of statistical power to resolve the more conservative post-hoc comparisons performed using the Tukey HSD method.

In addition to the main effect of academic year on instances of negative student behaviors (i.e., major office disciplinary referrals), Table 4-10 also provides results of the ANOVA for the second research question. The second research question focuses on whether there were significant differences across years in instances of negative student behaviors between race/ethnicity and/or student grade level. As such, the second research question is primarily concerned with the interactions produced by the ANOVA wherein academic year is considered. As shown, results of the ANOVA revealed no significant interactions with academic year and student race/ethnicity (MS=0.678, $F(6,1773)=1.714$, $p=0.114$); academic year and student grade level (MS=0.481, $F(10,1773)=1.215$, $p=0.276$); or with the three-way interaction of academic year, student grade level, and student race/ethnicity (MS=0.454, $F(30,1773)=1.148$, $p=0.266$).

Table 4-10. ANOVA table (major office disciplinary referrals)

Source	Type III Sum of Sqs	df	Mean Square	F	p
Year	2.952	2	1.476	3.731	.024
Ethnicity	12.017	3	4.006	10.126	.000**
Grade	1.149	5	.230	.581	.715
Year * Ethnicity	4.067	6	.678	1.714	.114
Year * Grade	4.806	10	.481	1.215	.276
Ethnicity * Grade	5.696	15	.380	.960	.496
Year * Ethnicity * Grade	13.620	30	.454	1.148	.266
Error	701.360	1773	.396		
Total	767.000	1845			

** Significant finding at the established Alpha level of 0.05.

While no interactions were significant, the results of the ANOVA demonstrate a significant main effect of ethnicity ($MS=4.006$, $F(3,1733)=10.126$, $p<0.001$), wherein there were significant differences in the number of major office disciplinary referrals between student race/ethnicity categories when combined across all three academic years of interest (i.e., first baseline year, second baseline year, and intervention year). Post-hoc analyses were performed using the Tukey HSD test to control for multiple pairwise comparisons. Post-hoc analyses demonstrated that African American / Black students were more likely to receive major office disciplinary referrals ($M=0.22$, $SD=0.774$) across all three academic years of study combined than were Caucasian American / White ($M=0.05$, $SD=0.354$; $M_{diff}=0.17$, $MS_e=0.396$, $p<0.001$). There were no significant differences between the number of major office disciplinary referrals given to students within these racial/ethnic groups and those identified as Hispanic / Latina(o) ($M=0.09$, $SD=0.935$) or Multi-Ethnic ($M=0.15$, $SD=0.656$).

A three-way multivariate analysis of variance (MANOVA) was also conducted to explore the instances of negative student behaviors (i.e., minor/pre-referrals, major office disciplinary referrals, and total referrals) based on academic year (i.e., second baseline year and intervention year), student grade level (i.e., KG, 1st, 2nd, 3rd, 4th, and 5th grades), and student race/ethnicity (i.e., African American / Black, Hispanic / Latina(o), Multi-Ethnic, and Caucasian American / White). It is noted that the first baseline years is excluded from the MANOVA, as there were no minor/pre-referral data collected by the school or school district, and the 'total' number of referrals could not be calculated (as this is the summation of the minor/pre-referrals and the major office disciplinary referrals). Results of the MANOVA are provided in Table 4-11.

Table 4-11. MANOVA table (minor, major, and total referrals)

Source	Dependent Variable	Type III SS	df	Mean Square	F	p
Year	Minor	19.796	1	19.796	2.736	.098
	Major	2.740	1	2.740	10.226	.001**
	Total	37.263	1	37.263	4.066	.044**
Ethnicity	Minor	297.729	3	99.243	13.719	.000**
	Major	7.611	3	2.537	9.470	.000**
	Total	399.370	3	133.123	14.527	.000**
Grade	Minor	52.100	5	10.420	1.440	.207
	Major	2.383	5	.477	1.779	.114
	Total	75.671	5	15.134	1.651	.144
Year * Ethnicity	Minor	15.147	3	5.049	.698	.553
	Major	2.381	3	.794	2.962	.031**
	Total	29.514	3	9.838	1.074	.359
Year * Grade	Minor	16.365	5	3.273	.452	.812
	Major	1.695	5	.339	1.266	.276
	Total	21.743	5	4.349	.475	.795
Ethnicity * Grade	Minor	149.919	15	9.995	1.382	.148
	Major	4.792	15	.319	1.193	.270
	Total	192.559	15	12.837	1.401	.139
Year * Ethnicity * Grade	Minor	109.597	15	7.306	1.010	.442
	Major	2.969	15	.198	.739	.746
	Total	120.399	15	8.027	.876	.592
Error	Minor	8847.075	1223	7.234		
	Major	327.630	1223	.268		
	Total	11207.613	1223	9.164		
Total	Minor	10260.000	1271			
	Major	364.000	1271			
	Total	13046.000	1271			

In relation to the first research question, results of the MANOVA demonstrate significant main effects for academic year in terms of major office disciplinary referrals (MS=2.740, $F(1,1223)=10.226$, $p=0.001$) and total referrals (summation of minor/pre-referrals and major office disciplinary referrals; MS=37.263, $F(1,1223)=4.066$, $p=0.044$). More specifically, students were more likely to receive major office disciplinary referrals

during the second baseline year ($M=0.15$, $SD=0.636$) than during the intervention year ($M=0.08$, $SD=0.402$), and were more likely to receive any type of referral during the second baseline year ($M=1.02$, $SD=2.995$) than during the intervention year ($M=0.77$, $SD=3.148$). Results demonstrate no significant difference in receipt of minor/pre-referrals from the second baseline year ($M=0.87$, $SD=2.520$) to the intervention year ($M=0.69$, $SD=2.903$; $MS=19.796$, $F(1,1223)=2.736$, $p=0.098$).

As introduced previously, the second research question builds upon the first research question to explore whether differences in negative student behaviors (as measured by minor/pre-referrals, major office disciplinary referrals, and total referrals) are further influenced by student grade level and/or student race/ethnicity. As shown in Table 4-11, combined data across both the second baseline year and the intervention year demonstrate significant main effects of ethnicity for all three dependent variables: minor/pre-referrals ($MS=99.243$, $F(3,1223)=13.719$, $p<0.001$), major office disciplinary referrals ($MS=2.537$, $F(3,1223)=9.470$, $p<0.001$), and total referrals ($MS=133.123$, $F(3,1223)=14.527$, $p<0.001$). Post hoc analyses using Tukey's HSD method to control for multiple pairwise comparisons demonstrate that African American / Black students were significantly more likely to receive minor/pre-referrals ($M=1.31$, $SD=3.836$) than both Hispanic / Latina(o) students ($M=0.34$, $SD=1.135$; $M_{diff}=0.96$, $p=.001$) and Caucasian American / White students ($M=0.45$, $SD=1.821$; $M_{diff}=0.86$, $p<.001$) across the second baseline year and intervention year. Similarly, across both years, African American / Black students were more likely to receive major office disciplinary referrals ($M=0.20$, $SD=0.676$) than both Hispanic / Latina(o) students ($M=0.04$, $SD=0.189$; $M_{diff}=0.16$, $p=.004$) and Caucasian American / White students ($M=0.06$, $SD=0.372$; $M_{diff}=0.14$, $p<.001$). Finally, the same pattern was found for the total referrals (the

summation of minor/pre-referrals and major office disciplinary referrals), with African American / Black students significantly more likely to receive any referral ($M=1.51$, $SD=4.238$) than both Hispanic / Latina(o) students ($M=0.38$, $SD=1.223$; $M_{diff}=1.13$, $p<.001$) and Caucasian American / White students ($M=0.50$, $SD=2.109$; $M_{diff}=1.00$, $p<.001$) across the second baseline year and intervention year.

While main effects are important, the second research question is more focused on the interactions between academic year and the two demographic variables (i.e., student race/ethnicity and student grade level). As shown in Table 4-11, the MANOVA produced no significant interactions between student grade level and academic year for minor/pre-referrals ($MS=3.273$, $F(5,1223)=0.452$, $p=0.812$), major referrals ($MS=0.339$, $F(5,1223)=1.266$, $p=0.276$), or the summative total referrals ($MS=4.349$, $F(5,1223)=0.0475$, $p=0.795$). There were also no significant three-way interactions involving academic year, student grade level, or student race/ethnicity. However, the MANOVA revealed a significant interaction for major office disciplinary referrals between the second baseline year and the intervention year for students within different racial/ethnic groups ($MS=0.794$, $F(3,1223)=2.962$, $p=0.031$).

Post-hoc simple effects analysis using estimated marginal means and the Bonferroni correction for multiple comparisons (used to explore the significant interaction) revealed that African American students received a significantly higher number of major office disciplinary referrals than White in the first baseline year ($M_{AA}=0.278$, $M_{CA}=0.041$, $M_{diff}=0.237$, $StdErr=0.061$, $p=0.001$) and in the second baseline year ($M_{AA}=0.263$, $M_{CA}=0.058$, $M_{diff}=0.205$, $StdErr=0.059$, $p=0.003$). However, this pattern of significant differences was not found during the intervention year, with African American / Black students receiving a statistically similar average number of

major office disciplinary referrals as their fellow Caucasian American / White students ($M_{AA}=0.142$, $M_{CA}=0.059$, $M_{diff}=0.082$, $StdErr=0.054$, $p=.764$). Post-hoc simple effects analysis on the second baseline year also revealed that students identified as multi-ethnic had a significantly higher number of major office disciplinary referrals, on average, than both Hispanic / Latina(o) students ($M_{ME}=0.385$, $M_{HA}=0.051$, $M_{diff}=0.334$, $StdErr=0.123$, $p=0.040$) and Caucasian American / White students ($M_{ME}=0.385$, $M_{CA}=0.058$, $M_{diff}=0.326$, $StdErr=0.108$, $p=0.015$). However, based on simple main effects analysis using the Bonferroni correction, there were no significant differences in the average number of major office disciplinary referrals between any of the four racial / ethnic groups explored (i.e., African American / Black; Hispanic / Latina(o); Multi-Ethnic, and Caucasian American / White) during the intervention year.

Test of independent proportions. While ANOVA and MANOVA help illustrate significant differences in average instances of negative student behaviors, the aforementioned issues inherent in the data (e.g., predominantly true zeros, skewed distribution, etc.) necessitate some caution when interpreting the results of statistical analyses at the student-level. As such, to help answer the first and second research questions, additional analyses were conducted to explore the school-wide proportion of instances of negative student behaviors. More specifically, a test of independent proportions was conducted to explore the proportion of minor/pre-referrals, major office disciplinary referrals, and total referrals based on the total number of students enrolled during each academic year of interest (i.e., first baseline year, second baseline year, and intervention year). Exploration of annual proportions of referrals is not as heavily impacted by the fact that most students have no referrals, as it explores the proportion of all students with at least one referral and/or the proportion of referrals across all

students enrolled. This method also controls for the differences in number of students per year. For instance, there were 50 fewer total referrals from the second baseline year to the intervention year (8.38% of the total baseline referrals), but this can be misleading due to the fact that there were 121 more students in the intervention year attending the school (a 20.17% increase in enrollment).

As such, it is important to do a test of independent proportions to determine whether there is a difference in proportions of referrals across the two years (the first baseline year does not have minor/pre-referrals, such that total referrals cannot be calculated). The z-test of independent proportions is also known as the t-test of independent proportions and the critical ratio test. Regardless of the name, it is identical to the chi-square test, except that the standard normal deviate is estimated (e.g., Snedecore & Cochran, 1991; Woodward, 1999). It is noted that research suggests a significant reduction in referrals can be expected within the first year of SWPBIS implementation, with most research focused on sheer numbers of referrals rather than proportional analysis (e.g., George, et al., 2003; Luiselli, Putnam, Handler, & Feinberg, 2005; Scott & Barrett, 2004; Spencer, 2015). In terms of the present research, the school realized a 20.17% increase in enrollment from the second baseline year to the intervention year, coupled with an 23.75% decrease in total referrals, a 20.05% decrease in minor/pre-referrals, and a 45.15% decrease in major office disciplinary referrals. Comparing proportions and changes is not necessarily meaningful if not statistically significant. Table 4-12 provides the proportionality of minor/pre-referrals, major office disciplinary referrals, and total referrals based on the total student enrollment for each year of study (i.e., first baseline year, second baseline year, and intervention year).

As shown in Table 4-12, the school at focus enrolled 594 students in the first baseline year, 600 students in the second baseline year, and 721 students in the intervention year. In terms of major office disciplinary referrals (ODRs), the school administered 77 ODRs to 32 students in the first baseline year, 88 ODRs to 49 students in the second baseline year, and 58 ODRs to 36 students in the intervention year. The proportionality of major office disciplinary referrals provided to the total number of students enrolled was 12.96% in the first baseline year, 14.67% in the second baseline year, and 8.04% in the intervention year. A test of independent proportions on major office disciplinary referrals indicates that there was no significant difference in the proportion of major referrals to enrolled students from the first baseline year (12.96%) to the second baseline year (14.67%; $Z=-0.8529$, $p=0.395$). However, a test of independent proportions demonstrated a significant difference between the proportion of referrals given to enrolled students in the second baseline year (the year immediately prior to implementing SWPBIS) and the intervention year - with 88 major referrals across 600 students in the second baseline year (14.67%), compared to 58 major referrals among 721 students in the intervention year (8.04%; $Z=3.8221$, $p<0.001$).

As shown in Table 4-12, the number of major office disciplinary referrals decreased by 30 from the second baseline year to the intervention year (34.09% reduction), while the proportion of major referrals to enrolled students decreased 45.15% from the second baseline year to the intervention year. The significant decrease in proportionality is maintained from the second baseline year to the intervention year when exploring the proportion of students receiving referrals compared to the total enrollment, with the intervention year having a significantly lower proportion of students receiving major office disciplinary referrals (4.99%) than the second baseline

year (8.17%; Z=2.3406, p=0.019). This equates to a 38.89% decrease in the proportion of students receiving major office disciplinary referrals in the intervention year compared to the number receiving such major referrals in the second baseline year.

Table 4-12. Proportionality of referrals given by student enrollment

Year	N (Total)	# Stud. w/ Referrals	% Stud. w/ Referrals	Difference Prior Year	# Referrals	% Ref. / All Stud.	Difference Prior Year
<i>Minor / Pre-Referrals</i>							
1 st Baseline	594	--	--	--	--	--	--
2 nd Baseline	600	143	23.83%	--	509	84.83%	--
Intervention	721	121	16.78%	- 29.58%*	489	67.82%	- 20.05%*
<i>Major Office Disciplinary Referrals</i>							
1 st Baseline	594	32	5.39%	--	77	12.96%	--
2 nd Baseline	600	49	8.17%	+ 51.59%*	88	14.67%	+ 13.14%
Intervention	721	36	4.99%	- 38.89%*	58	8.04%	- 45.15%*
<i>Total Referrals</i>							
1 st Baseline	594	--	--	--	--	--	--
2 nd Baseline	600	150	25.00%	--	597	99.50%	--
Intervention	721	125	17.34%	- 30.65%*	547	75.87%	- 23.75%*

Note: "Difference Prior Year" is the difference in proportions from the two years compared divided by the proportion of the earlier comparison year. This provides the percent difference in proportion of referrals from year to year.

* indicates significant difference from prior year.

Table 4-12 also provides information on changes with minor/pre-referrals and total referrals (noting total referrals is the sum of minor/pre-referrals and major office disciplinary referrals). As noted previously, the school district and school did not collect data on minor/pre-referrals during the first baseline year, such that the first baseline year is excluded from analyses involving minor/pre-referrals and total referrals. Regardless, a test of independent proportions between the second baseline year and the intervention year demonstrated a significant decrease in the proportion of minor/pre-referrals given to enrolled students in the second baseline year to the intervention year – with 509 minor referrals across 600 students in the second baseline year (84.83%)

decreasing to 489 minor referrals across 721 students in the intervention year (67.82%; $Z=7.1623$, $p<0.001$) – a 20.05% decrease in the number of minor/pre-referrals given based on the total enrollment of the school. The significant decrease in proportionality is maintained from the second baseline year to the intervention year when exploring the proportion of students receiving minor/pre-referrals compared to the total student enrollment, with the intervention year having a significantly lower proportion of students receiving minor/pre-referrals (16.8%) than the second baseline year (23.8%; $Z=3.1909$, $p=0.001$). This equates to a 29.58% decrease in the proportion of students receiving minor/pre-referrals from the second baseline year to the intervention year.

Table 4-12 finally provides a breakdown of the proportion of all referrals based on total student enrollment each year and the proportion of students receiving any referral based on total student enrollment each year. A test of independent proportions between the second baseline year and the intervention year demonstrated a significant decrease in the proportion of all referrals given to all enrolled students in the second baseline year to the intervention year – with 597 referrals across 600 students in the second baseline year (99.50%) decreasing to 489 referrals across 721 students in the intervention year (75.87%; $Z=12.555$, $p<0.001$) – representing a 23.75% decrease in the number of all referrals given based on the total enrollment of the school. The significant decrease in proportionality is maintained when exploring the proportion of students receiving any referral based on the total student enrollment, with the intervention year having a significantly lower proportion of students receiving any type of referral (17.34%) than the second baseline year (25.00%; $Z=3.4155$, $p<0.001$) – thus representing a 30.65% decrease in the proportion of students receiving referrals from the second baseline year to the intervention year.

Section Five: Research Questions Three and Four

As noted previously, while research questions one and two are directly related, research questions three and four are also directly related. Research questions three and four are the focus of this section. As with the first two research questions, all data were first analyzed for normalcy to ensure assumptions of parametric statistics are not violated. In addition, no potential outliers were identified that were determined to impact the results. The third research question was as follows: “Regardless of race/ethnicity and student grade level, is there a significant relationship between the level of implementation of a SWPBIS initiative (i.e., number of tangible reinforcements provided) and the instances of negative student behavior (i.e., minor referrals and major referrals [ODR]).” The fourth research question expanded upon the third question, and asked: “Is there a difference in the impact a SWPBIS intervention (i.e., number of reinforcements) and instances of negative school behavior (i.e., number of minor and major referrals) by race/ethnicity and/or grade level?”

The third research question was originally planned to be explored using multiple regression for each month of the academic year, exploring the connection between the number of Lion Loot provided to each student (predictor variable) and the number of referrals provided to each student (outcome variables). As noted in Section Three of this chapter, the original intent to explore data by month was precluded when students unexpectedly held their Lion Loot outside the month it was awarded (generally to ‘save up’ for more desirable secondary reinforcers). As such, because Lion Loot was recorded only when students exchanged the ‘tickets’ and not when they were awarded, these data are not considered reliable when analyzed by month, such that no analysis was completed to explore monthly data.

Ultimately, using data from the 721 students enrolled during the intervention year, a multiple linear regression was completed to determine the extent to which the number of tangible reinforcements (Lion Loot) provided to students predicted the three outcome variables of associated with negative student behaviors (i.e., number of minor/pre-referrals, major office disciplinary referrals, and total referrals). As shown in Table 4-13, The multiple regression was not significant with a very low coefficient of determination ($R^2=0.000$; $F(2,720)=0.096$, $p=.909$).

Table 4-13. Multiple regression ANOVA table (research question 3)

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	74.529	2	37.265	.096	.909
Residual	279445.526	718	389.200		
Total	279520.056	720			

$R^2 = 0.000$; Adjusted $R^2 = -0.003$

Based on these findings, a regression equation cannot be developed to predict incidence of negative student behaviors with incidence of tangible reinforcers under the school-wide positive behavioral interventions and supports model (SWPBIS). This finding is not surprising given the large number of “true zero” values for all three outcome variables, with the overwhelming majority of students receiving no minor/pre-referrals or major office disciplinary referrals during the intervention year. As noted previously, such a large number of ‘true zeros’ impacts the mean and skews the distribution, with regression not robust against such inherent data issues.

As originally proposed in the analysis plan, should the regression produce insignificant results and/or produce a regression with low R^2 , data would be analyzed with an ANOVA and correlation. Within this procedure, the a priori threshold was set at 0.6 for a meaningful correlation. As presented in Table 4-14, a correlational analysis

produced no significant correlation between the number of tangible reinforcements provided to students (i.e., Lion Loot) and the number of negative student behaviors measured by minor/pre-referrals, major office disciplinary referrals, or total referrals.

Table 4-14. Correlation matrix: Lion Loot and negative student behaviors

Correlation with # of Lion Loot	Intervention Year			2 nd Baseline Year		
	# Minor Referrals	# Major Referrals	# Total Referrals	# Minor Referrals	# Major Referrals	# Total Referrals
Pearson Correlation	-0.001	-0.014	-0.003	-0.005	0.03	0.001
Sig. (2-tailed)	0.973	0.706	0.936	0.888	0.424	0.968

The final research question expanded upon the fourth question, with a focus on exploring whether there was a difference in the impact of the SWPBIS intervention based on student race/ethnicity or student grade level. The fourth research question also intended to explore whether instances of negative school behavior were different by student race/ethnicity and student grade level, a consideration that was already explored under the analyses for the second research question presented previously in this chapter. While the final research question was primarily intended to explore whether findings from the third research question were different by student race/ethnicity and grade level, the lack of significant findings from the third research question negate the need for additional analysis, as there appears to be no statistically significant relationship between the provision of tangible reinforcements and the incidences of negative student behaviors measured by minor and major referrals.

However, the fourth research question also intended to explore whether there were differences in the application of the tangible reinforcements (i.e., Lion Loot) between student racial/ethnic groups and/or student grade levels. To test for these differences, a two-way analysis of variance (ANOVA) was conducted to explore the

number of tangible reinforcements (i.e., Lion Loot) based on student grade level (i.e., KG, 1st, 2nd, 3rd, 4th, and 5th grades) and student race/ethnicity (i.e., African American / Black, Hispanic / Latina(o), Multi-Ethnic, and Caucasian American / White). Only the 690 students identified within the aforementioned racial / ethnic groups were included in the analysis, with the small number of Asian American and Native American students excluded due to the small sample sizes. Results of the two-way ANOVA are presented in Table 4-15.

Table 4-15. ANOVA table (Lion Loot reinforcements)

Source	Type III Sum of Sqs	df	Mean Square	F	p
Model	28066.131	23	1220.267	3.629	.000
Ethnicity	1280.064	3	426.688	1.269	.284
Grade	15099.895	5	3019.979	8.981	.000
Ethnicity * Grade	4178.042	15	278.536	.828	.646
Error	223952.269	666	336.265		
Total	522526.000	690			

** Significant finding at the established Alpha level of 0.05.

As shown in Table 4-15, specific to the fourth research question, there was not a significant main effect of student race/ethnicity on provision of tangible reinforcements based on the omnibus F-test performed by the ANOVA ($F(3,666)=1.269$, $p=0.284$), nor was there a significant interaction between student race/ethnicity and grade level on the number of tangible reinforcement provided to students ($F(15,666)=0.828$, $p=0.646$). For instance, 32.3% of all Lion Loot was awarded to African American / Black students, who accounted for 30.4% of students enrolled during the intervention year. Similarly, 44.5% of the Lion Loot was awarded to Caucasian American / White students, who accounted for 42.5% of all students enrolled during the intervention year.

Although students were awarded tangible reinforcements (i.e., Lion Loot) at a similar rate across ethnicities, a significant main effect was found for student grade level ($F(5,666)=8.981, p<.001$), with post-hoc analyses using the Tukey HSD test to control for multiple pairwise comparisons demonstrating a complex pattern of differences between student grade levels. Based on post-hoc analyses, third-grade students were significantly more likely to receive the tangible reinforcement ($M_3=33.162$) than were any of the other grade levels, including kindergarten ($M_K=20.745; M_{diff}=12.714, p<0.001$), first-grade ($M_1=17.573, M_{diff}=15.590, p<0.001$), second-grade ($M_2=24.299, M_{diff}=8.863, p=0.012$), fourth-grade ($M_4=12.484, M_{diff}=20.678, p<0.001$), and fifth-grade ($M_5=14.036, M_{diff}=19.126, p<0.001$). In addition, second-grade students were more likely to receive tangible reinforcements ($M_2=24.299$) than first-grade students ($M_1=17.573, M_{diff}=6.726, p=0.031$), fourth-grade students ($M_4=12.484, M_{diff}=11.815, p<0.001$), and fifth-grade students ($M_5=14.036, M_{diff}=10.263, p=0.002$). Finally, kindergarten students were more likely to receive tangle reinforcements ($M_K=20.745$) than both fourth-grade students ($M_4=12.484, M_{diff}=8.261, p=0.005$) and fifth-grade students ($M_5=14.036, M_{diff}=6.709, p=0.030$).

CHAPTER 5 DISCUSSION

Previous chapters have established that encouraging and establishing an educational atmosphere conducive to learning has long been a struggle within school systems and schools. Theories and philosophies on learning and behavior date back to at least the time of Plato and Aristotle. Since at least the late 1800's, America has sought to codify and formalize methods to shape and control student behavior to improve learning outcomes. For instance, William James, the Father of American Psychology (Pajares, 2003), discussed the important relationship between education and the development of prosocial student behavior as early as 1892 (James, 1925). With significant sociopolitical changes in America during the 1900s and a dramatic upswing in undesirable student behaviors, the late 1900s saw educational practices focus on controlling student behavior through reactive and aversive management strategies (e.g., Singer & Wang, 2009; Skiba et al., 2006; Wald & Losen, 2003). The overall ineffectiveness of these strategies, racial disparities in the application of the aversive interventions, and public outcry over permanent damage caused by some aversive interventions drove the need for a more positive method to teach and encourage proper behavior (e.g., Florida's PBS Project, 2002a; OSEP, 2016; U.S. Department of Education, 2014).

In essence, Positive Behavioral Interventions and Supports (PBIS) was developed as a broad approach designed to provide school personnel with positive tools and skills necessary to enhance student academic achievement and improve socially relevant behavior (Florida's PBS Project, 2002a; OSEP Technical Assistance Center on PBIS, 2016). Some of the most prominent researchers in PBIS indicate that

the ‘technology’ has four core features: (1) an application of research-based behavioral strategies; (2) use of multiple and integrated intervention elements aligned to the needs of the environment; (3) a commitment to sustained and long-term outcomes; and (4) support within the organizational systems that ensure sustained impacts of the interventions (Dunlap, et al., 2009). School-Wide PBIS (SWPBIS) applies the PBIS technology to focus less on individual students, and more on behaviors across the entire school of students to enhance the learning environment.

The development and application of SWPBIS has been largely supported with a number of research studies. These studies have shown SWPBIS can reduce the incidents of negative and disruptive student behavior as measured by such metrics as office disciplinary referrals (ODRs; e.g., George, et al., 2003; Nocera, et al., 2014; Putnam, et al., 2005; Scott & Barrett, 2004; Spencer, 2015), school suspensions (e.g., Nocera, et al., 2014; Putnam, et al., 2005; Scott & Barrett, 2004), and incidents of student bullying (Waadsorp, et al., 2012). However, as noted in prior chapters, the present research addresses several gaps within past research: (1) using internally collected data on all behavior instances at the school; (2) using both ‘major’ referrals (ODRs) and ‘minor’ referrals; (3) comparing the level of tangible reinforcements provided and the behavioral impacts mentioned above; and (4) analyzing tangible reinforcements, major referrals (ODRs), and minor referrals by race and ethnicity, with all data connected to the individual demographics of each student. Overall, the method of addressing these primary gaps and the results of the present research should help inform practice and guide future research in the early implementation of SWPBIS.

Synopsis of Findings

In essence, it was hypothesized that the implementation of a comprehensive School-Wide Positive Behavioral Interventions and Supports (SWPBIS) model with tangible reinforcements would be effective in reducing the incidence of disruptive student behaviors, as measured by minor/pre-referrals and major office disciplinary referrals. Ultimately, all four research questions detailed in the prior chapters were explored and resulted in some important findings relevant to the field of education and the main-stream focus on positive behavior interventions and supports. It is noted that some research questions were met with a lack of significant findings, which does not suggest a lack of meaningful findings. Any lack of significance found with the current analyses can also be interpreted when meaningful, and may suggest a potential flaw in the prior research (where the current study does not match past research), a flaw in the present research, or the presence of extraneous variables that were not or could not be measured during the course of the present study. The following provides the most salient and interpretable findings from this research.

The primary goal of this research was to determine whether there was a change in the number of referrals from the baseline years to the intervention year, with the primary change in the school culture being the new implementation of the School-Wide Positive Behavior interventions and Supports (SWPBIS) model. Overall, data from two baseline years and the intervention year demonstrated that students receiving at least one referral of any type tended to receive more than one referral, with the average student receiving 2.41 total referrals in the first baseline year, 3.94 total referrals in the second baseline year, and 4.38 total referrals in the intervention year. The higher average number of referrals in the intervention year must be considered in conjunction

with the lower number of total referrals given during the intervention year (N=547) than the number of referrals given during the second baseline year (N=583). This suggests that fewer students required behavioral intervention during the intervention year, but required the intervention more often per student. It is also noted that the change in average total referrals appears driven by changes in the average number of minor or pre-referrals, which is expected with the SWPBIS model that encourages the pre-referrals before major office disciplinary referrals are written.

Over the course of the study, the school realized a 20.17% increase in enrollment from the second baseline year to the intervention year, coupled with an 23.75% decrease in total referrals, a 20.05% decrease in minor/pre-referrals, and a 45.15% decrease in proportion of major office disciplinary referrals to total student enrollment. The school administered 77 major office disciplinary referrals to 32 students in the first baseline year, 88 to 49 students in the second baseline year, and 58 to 36 students in the intervention year. While there was no difference in the proportion of major referrals to enrolled students from the first to the second baseline years, there was a significant decrease in the proportion of referrals from the second baseline year (the year immediately prior to implementing SWPBIS) to the intervention year. Moreover, the intervention year realized a significantly lower proportion of students receiving major office disciplinary referrals than the second baseline year (a 38.89% decrease in the proportion of students receiving major office disciplinary referrals). In addition to major office disciplinary referrals, the school realized a significant decrease in the proportion of minor/pre-referrals and total referrals given to enrolled students in the second baseline year to the intervention year. The intervention year also had a

significantly lower proportion of students receiving minor/pre-referrals than the second baseline year (a 29.58% decrease in the proportion of students receiving minor/pre-referrals, and a 30.65% decrease in the proportion of students receiving any type of referral from baseline to intervention).

The second goal of this research was to explore whether the impact of the SWPBIS initiative had differential impact on students based on their race/ethnicity and/or grade level in school. In terms of student grade level, results show some differences in student grade level, but the differences did not reveal a pattern. Most notably, when compared with the proportion of total students at each grade level, kindergarten and fourth grade students received a significantly higher proportion of referrals during the intervention year, while first grade students had a significantly lower proportion of referrals. Otherwise, when combined and explored across all three study years, students in each grade level were no more likely to receive any type of referral (i.e., minor/pre-referral, major office disciplinary referrals, or total referrals) than students in any other grade levels. In terms of student race and ethnicity, more important patterns of results emerge. For instance, during the intervention year, African American students represented a higher proportion of students receiving referrals (45.7% in the intervention year) than the proportion of total students in the school (32.2% in the intervention year) - thus further demonstrating the need for this study.

The proportion of referrals given to students identified as Hispanic and White / Caucasian American were both significantly lower than the proportion of enrolled students during the intervention year from these groups, while the proportion of referrals given to students identified as African American / Black was significantly higher than the

proportion of enrolled students identified as such. Such differences are important considerations for the application of discipline at the intervention school, and are relatively consistent with findings of past research (e.g., Skiba, et al., 2000). In addition, African American / Black students had a higher average rate of major office disciplinary referrals across all three academic years of study combined than did Caucasian American / White students. African American / Black students also had significantly higher rates of minor/pre-referrals and major office disciplinary referrals than both Hispanic / Latina(o) and Caucasian American / White students across the second baseline year and intervention year (combined). Importantly, while African American / Black students had a significantly higher average number of major office disciplinary referrals than Caucasian American / White students in both baseline years, such differences did not persist into the intervention year. In fact, there were no significant differences in the average number of major office disciplinary referrals between any of the four racial / ethnic groups explored (i.e., African American / Black; Hispanic / Latina(o); Multi-Ethnic, and Caucasian American / White) during the intervention year.

In addition to student grade level and race/ethnic, students with at least one office disciplinary referral during the intervention year were composed of 87.8% males and 12.2% females – a substantially higher proportion of males than contained in the overall student enrollment during the same year. In addition, 72.4% of students with at least one referral during the intervention year qualified for free or reduced-price lunch, compared to 51.7% of the overall student population. Finally, 20.5% of students with referrals during the intervention year were identified as ESE, compared to 16.2% of all students enrolled, and 14.2% received accommodations under Section 504, compared

to 5.8% of the school population during the same intervention year. These are important variables for consideration when designing future research studies, but were outside the scope of the present research.

The third goal of this research was to explore the extent to which the use of tangible reinforcements impacted the change in negative student behavior (e.g., minor/pre-referrals, major office disciplinary referrals, and total referrals). As noted in Chapter Four, it is important to use caution when interpreting data within this research according to distribution by month, as data were only able to be collected when the students exchanged the Lion Loot for backup reinforcements (not when they were awarded). As noted in Chapter Three, Lion Loot were provided as secondary reinforcements to provide for immediate and consistent reinforcement of desired student behaviors. However, these secondary reinforcements only hold value insofar as they can be exchanged for back-up reinforcements (i.e., high-interest items provided within the SWPBIS School Store). Because some students saved their Lion Loot until they were able to afford a higher-interest or more rewarding item, there were many instances of Lion Loot being exchanged in the months after they were originally awarded. It is important to note the apparent pattern of exchange, with a large number of Lion Loot exchanged in the first month (9.7% of all Lion Loot) and nearly half of all Lion Loot exchanged in the last three months of the academic year. Moreover, it is noted that 86.1% of all students enrolled during the intervention year received at least one tangible reinforcement (i.e., Lion Loot). It is possible the remaining students did not receive any Lion Loot, or received the tangible (secondary) reinforcement without exchanging it for the backup (primary) reinforcements at the SWPBIS School Store. Because the

tangible reinforcement was only recorded when exchanged, the non-exchanged Lion Loot were necessarily excluded from consideration within this study. Ultimately, with the challenges noted above, the number of tangible reinforcements (Lion Loot) did not predict and was not significantly related to the number of negative student behaviors measured by minor/pre-referrals, major office disciplinary referrals, or total referrals.

The research also looked to explore whether there were differences in the application of the tangible reinforcements (i.e., Lion Loot) between student racial/ethnic groups and/or student grade levels. Results demonstrated no significant differences between student race/ethnicity groups on the provision of tangible reinforcements, with the proportion of Lion Loot given to student racial/ethnic groups matching the overall proportion of enrollment of students within the same groups. However, while students receiving tangible reinforcements were equally distributed according to the grade-level distribution of the total population of students at the school during the intervention year, the number of tangible reinforcements were not equally distributed according to the distribution of the population of students provided with tangible reinforcements and enrolled at the school during the intervention year. More specifically, third grade students were significantly more likely to receive Lion Loot than any other grade level of students, and fourth and fifth grade students less likely to receive Lion Loot than students in kindergarten or second grade.

Implications

With the rising focus on instructional time for students, the rising stakes of academic achievement tests, and the high need to support teacher in better managing classroom behavior, this research presents clear implications for education. Certainly, much research has explored the impact of School-Wide Positive Behavior Interventions

and Supports (SWPBIS), and this research both confirms past research and provides new insights and implications for educators and schools implementing such a complex and comprehensive intervention model. Based on results from this research and coupled with results from past research, even within the first year of implementation, it appears SWPBIS is a viable method for reducing incidence of negative student behaviors and increasing learning time for those students most prone to receive referrals. The following provides the most salient implications from the findings of the present study.

Referrals and Negative Student Behaviors

One of the most important implications of this research study is the overall change in the number of minor/pre-referrals and major office disciplinary referrals given to students for demonstration of negative student behaviors. Certainly, there was some expectation for the number of referrals to be reduced in the first year, with the primary expectation (based on past research) for the major office disciplinary referrals to have the greatest reduction. Results supported findings of several past studies, including Scott and Barrett (2004), who found that office disciplinary referrals (ODRs) decreased from 608 at baseline (the year prior to implementation) to 108 in the first year and 46 in the second year of SWPBIS implementation. George, et al. (2003) found ODRs decreased from 1,717 during the baseline year to 702 during the first year of SWPBIS implementation and 619 during the second year. Spencer (2015) found the number of ODRs decreased from 593 in the baseline year to 268 after the first year of SWPBIS. Finally, Luiselli, et al. (2005) found that SWPBIS resulted in fewer ODRs, with an average of 1.3 ODRs per day at baseline decreasing to 0.7 per day in the first year of implementation and 0.5 per day by the second year of implementation. Overall, the

present research supports the findings of these past studies (and many others), while also demonstrating that the impact of SWPBIS goes beyond major office disciplinary referrals (ODRs). As discussed in Chapter Two, ODRs are the most common behavioral indicator used in research on SWPBIS (e.g., Pas, et al., 2011), but few (if any) studies have explored internal school data on minor/pre-referrals (referrals that do not meet the seriousness of ODRs and are rarely recorded outside of internal student records). More specifically, following the implementation of SWPBIS under the same principal and school administrators as the baseline years, the school demonstrated significantly fewer minor/pre-referrals and major ODRs – thus supporting and expanding past research. As noted previously, the school realized a 20.17% increase in enrollment from the second baseline to the intervention year, coupled with an 23.75% decrease in total referrals, a 20.05% decrease in minor/pre-referrals, and a 45.15% decrease in to proportion of major office disciplinary referrals based on total student enrollment.

The importance of decreasing minor/pre-referrals is similar to that of reducing major ODRs, as both create a disruption in the school day for the student and the entire class. Reducing these disruptions not only reduces time away from the learning lessons, but also decreases disruptions for all students and can positively impact the teacher's overall effectiveness (Skiba, 2000). Indeed, nearly every study exploring classroom behavior management and school culture begins with the same basic tenet – poor student behavior distracts from and negatively impacts the learning environment (e.g., Guardino & Fullerton, 2010; McKeivitt, et al., 2012; Scott & Barrett, 2004; Sugai & Horner, 2006). The deleterious effects can be insurmountable for some teachers,

including difficulty managing and controlling the classroom, difficulty teaching and presenting content to the students, loss of focus of students or the entire classroom, and a reduction in the amount of time on task. When the teacher stops teaching to deal with a student's behavior, it can decrease the time on task for both the individual student and other students who attend to the distraction. Even more time can be lost for students who are sent to the office on a referral or suspended from school. In fact, Scott and Barrett (2004) performed a thorough review of data from an elementary school in Baltimore and found that office disciplinary referrals resulted in removal of a student from the classroom for an average of at least 20 minutes (nearly 6% of the learning time provided during the school day), while a suspension resulted in a loss of at least 6 hours of instructional time for each day of suspension. Not surprisingly then, according to the National Association of Elementary School Principals, 80% of principals indicate that "too much time is spent on dealing with disruptive and dangerous students" and 81% of teachers polled stated that their worst behaved students are a barrier to effective education in their classrooms (Public Agenda, 2004). This study demonstrates that implementing a comprehensive SWPBIS model can help decrease both major behavior issues and minor behavioral distractions (which still have a negative impact on the learning environment).

Ethnic Disproportionality of Referrals

Three primary issues led to the development of School-Wide Positive Behavior Interventions and Supports (SWPBIS): (1) need to manage behavior of all students in an inclusive environment to maximize the learning environment; (2) moral objections to aversive stimuli and punishment-driven methods of control; and (3) need for more culturally sensitive and understanding methods to support positive behavior and

character. As noted in Chapter Two, since the landmark United States Supreme Court ruling in *Brown vs. Board of Education of Topeka* (347 U.S. 483) in 1954, which ended legal segregation in public schools, minority students have endured an educational system replete with ongoing bias, as well as overt and covert racism (NAACP LDF, 2011). “Zero Tolerance” policies only exacerbated this ongoing bias (Skiba, 2000), and several prominent national agencies have discredited these policies (e.g., Skiba et al., 2006). However, the impact of these policies and sociocultural aspects of the education field have resulted in wide-spread institutionalized racism (Jones, 2000), where African American and Black students are facing barriers to obtaining the highest quality of educational opportunities, in part due to disproportionate punishments that take them out of class and away from lessons. Past research has found that Black students were more than three times more likely to be suspended as White students (e.g., Wald & Losen, 2003; U.S. Department of Education, 2014). It is data like these that supports the unfortunate and concerning cycle known as the “school-to-prison pipeline” (Heitzig, 2009; Skiba, 2000). The U.S. Department of Education (USED, 2014) called on schools to “administer student discipline in a manner that does not discriminate on the basis of race” (p. 2), and help students succeed through programs that support and reinforce positive student behavior and character development. Findings from the present research related to racial and ethnic disproportionality can be separated into two primary groups: punishments and rewards.

For the purpose of this study, ‘punishments’ were measured with the number of minor/pre-referrals and the number of major office disciplinary referrals administered to enrolled students during the course of the academic years of focus. It is noted that

minor/pre-referrals could be relatively minor, but still required the attention of the school administrators and often removed the student from the classroom. Major office disciplinary referrals were more serious and necessitated a more serious consequence and longer time away from the classroom and lessons (either through an extended visit to the office, in-school suspension, out-of-school suspension, or sending the child home). Such time lost from the learning day can be a significant negative impact on student learning, with Scott and Barrett (2004) estimating at least 20 minutes for an office referral and at least 6 hours for suspensions. As such, when students from one racial/ethnic group receive more referrals and punishments than other groups, they also receive less quality education and time on task. Thus, SWPBIS was partially developed to help reduce overall referrals and, perhaps more importantly, reduce the disproportionality between students from traditional minority groups and those from traditional majority groups.

This study demonstrated that, as expected from past research, the African American / Black students were significantly more likely to receive referrals than their Caucasian American / White fellow students, with the average number of referrals for African American / Black students higher than their counterparts and the proportion of African American / Black students receiving referrals significantly higher than their proportion of the overall school. It is important to note that, in terms of major office disciplinary referrals, the racial/ethnic differences in average number of referrals appear to dissipate in the intervention year – where African American / Black students were similar in the average number of referrals received. The number of students with any type of referral (minor or major) decreased from 150 to 127 from the second baseline

year to the intervention year, and the number of African American / Black students with at least one referral decreased from 79 to 58. While not significant, this still demonstrates some meaningful progress and research suggests that sustained SWPBIS can continue to decrease the number of students with referrals. That being said, the fact that the proportion of students receiving referrals still demonstrated ethnic disparities, there continues to be a need for additional training and support to reduce the use of punitive classroom removals (e.g., referrals) and increase the instances of positive behavior supports.

Impact of Tangible Reinforcements (Lion Loot)

The third and fourth research questions were focused on the provision of Lion Loot and whether it was related to the number of referrals given during the intervention year. While the analysis by month was precluded by students collecting and holding Lion Loot to save up for better items from the school store (see limitations and recommendations for future research), the overall analysis of Lion Loot suggested that it was not related to the number of referrals when explored across all students. This was somewhat unexpected from when the research was first designed, but it became an expected result as the intervention model was applied and teachers were trained. Most importantly, the entire purpose of the tangible reinforcement is that all students should be rewarded for positive behaviors and the reward should be given with a level of fanfare (thus increasing vicarious reinforcement). Moreover, teachers were trained to provide fewer tangible reinforcements (more verbal reinforcements) to those students behaving well so as to increase the effectiveness of the reinforcement process (see Chapter 2 for a discussion of intermittent reinforcement) and prevent satiation (see Chapter 2 for a discussion of satiation with reinforcements). As such, students who

were always behaving well would often receive the same number of Lion Loot as students who were often struggling with behavior (as teachers and staff members would more readily see the positive behaviors of more troubled students and would not risk satiation with applying the tangible reinforcement). Ultimately, this means that students on both sides of the spectrum could receive potentially equal number of Lion Loot, such that the lack of significance in relation to the number of referrals is less surprising based on how SWPBIS is implemented. While this lack of significance is less exciting, it remains a meaningful finding and helps demonstrate the overall implementation of this component of the SWPBIS model. Future research should consider other methods to measure the implementation of Tier I interventions if desiring to explore how differentiation in implementation impacts outcomes.

Based on a complex web of prior theories and research (discussed in Chapter 2), SWPBIS is a broad approach designed to provide school personnel with tools and skills necessary to enhance student academic achievement and improve socially relevant behavior (Florida's PBS Project, 2002a; OSEP, 2016). Some of the most prominent researchers in PBIS indicate that SWPBIS has four core features (noted at the beginning of this chapter): (1) an application of research-based behavioral strategies; (2) use of multiple and integrated intervention elements aligned to the needs of the environment; (3) a commitment to sustained and long-term outcomes; and (4) support within the organizational systems that ensure sustained impacts of the interventions (Dunlap, et al., 2009). In essence, SWPBIS makes use primarily of positive reinforcement of appropriate behaviors, focuses on teaching productive social behaviors (not just suppressing negative behaviors), and is designed with a clear focus on being

culturally sensitive (Sugai & Horner, 2009a). SWPBIS makes use of a three-tiered system of supports: (1) Primary, Tier 1 – whole school interventions impacting 80-90% of the student population; (2) Secondary, Tier 2 – small group interventions impacting 15% of the student population who do not respond to primary tier interventions; and (3) Tertiary, Tier 3 – individual interventions impacting the remaining 5% of the student population who do not respond to primary and secondary tier interventions (McIntosh & Goodman, 2016). As such, it might be that the implementation of tangible reinforcements (Lion Loot) and the School Store were only a small component of the overall SWPBIS model, such that the measurement of Lion Loot as the primary indicator of implementation overestimated the importance of the tangible reinforcements and/or underestimated the importance of the many other components (e.g., data chats, training, etc.). Future research might consider how to better measure implementation using, as noted above, a measure that is not expected to be administered to all students equally.

Classroom Learning and Vicarious Learning

While not a focus of this research study, it is also important to note that there was some challenge with exploring data at the student-level - the purpose of this research. Indeed, it could be argued that students are grouped within a classroom and that every student in the classroom would see the rewards (Lion Loot) and punishments (referrals) provided to all other students in the classroom (see Chapter Two for research about vicarious learning and modeling). As such, every time a student receives a tangible reinforcement, there is vicarious learning with all students in the classroom – a situation that cannot be accurately measured for research across an entire school. It might be important for future research studies to look at the classroom-level, as this would

potentially help explain the impact of the intervention without having some of the same limitations as looking at the individual student level. It is also important to consider whether referrals themselves (given that they were given out significantly less often in the intervention year) also became stronger deterrents to negative behaviors. In other words, referrals were given less often and might appear to be more serious punishments to the students – such that they were more focused on not receiving referrals and/or the vicarious punishment was more effective at preventing other students from engaging the same behaviors. In this sense, it might have been less about the receipt of Lion Loot and more about the severity of referrals that led to the reduction in overall referrals in the intervention year (or a combination of these interventions). As this is far beyond the scope of the present research, it is left to future researchers to consider ways to measure such subjective thoughts with young children.

Research Methodology

While the development and application of SWPBIS has been largely shown to significantly reduce the incidents of major office disciplinary referrals, suspensions, bullying, and other disruptive student behaviors, there are some gaps within past research that were addressed within the current study. First, nearly every research study exploring office disciplinary referrals focused on the use of centralized databases to collect archival data about student referrals, which can introduce error in terms of data entry and unwritten policies (Nelson, et al., 2002), while the present research used internally collected data on all behavior instances at the school studied. Second, few research studies explore ‘minor’ referrals (pre-referrals) that are not be recorded in such centralized databases of student behavior, while the present research used both ‘major’ referrals (ODRs) and ‘minor’ referrals. Finally, few studies have included differentiated

analysis by race and ethnicity due to complications with the recording of such data in centralized databases, while the present research collected data connected to the individual demographics of each student. Overall, the method of addressing these primary gaps and the results of the present research should help inform practice and guide future research in the early implementation phases of SWPBIS models.

Limitations and Future Research

Although there were important findings and implications of the present study, there also existed some limitations which could be addressed by future research. One such limitation was the method utilized to administer and collect data on the tangible reinforcements (i.e., Lion Loot). The method employed was effective in showing the total number of tangible reinforcements provided to each student by each teacher (as the student name and teacher name were both recorded on the actual ticket). However, three of the original assumptions regarding the exchange of the Lion Loot were not realized: (1) students would not lose their tickets; (2) students would be able to exchange their tickets daily; and (3) students would regularly exchange the tickets at the SWPBIS School Store. Of these, the greatest limitation was that students did not regularly exchange their tickets, either because they did not have enough opportunities or because they saved their tickets to purchase a more desirable (and more expensive) item from the SWPBIS School Store. Because the methodology was based on counting the tickets during the month they were exchanged, tickets could have been counted in months other than when they were awarded. This specifically limited the ability within this research to compare the number of tangible reinforcements directly to the number of referrals by week or month. Several directions could be made for future research to eliminate this limitation: (1) have teachers record the tangible reinforcements by student

each day; (2) have teachers write the date awarded on the tangible reinforcement (along with the student and teacher name); and/or (3) color code the tangible reinforcements for each of the 10 academic months (thus providing visual indicators as to the months the tickets were provided). Each of these methods creates increased effort for the teacher and school staff, but would deepen the data and allow for monthly (or weekly) comparison of the intervention with school behavioral data.

A second limitation of this research revolved around the provision of training and development to the teachers and school staff. While the researcher provided several trainings and feedback reports to teachers, a survey of staff conducted by the school (the full results are outside the scope of this research) revealed that staff requested additional training and some staff did not entirely understand the overall SWPBIS model and interventions. The pattern of tangible reinforcements (see Appendix A) also revealed some discrepancies across teachers, with some providing only a handful of tickets and some providing nearly 1,000 tickets (one provided more than 1,000). As such, more training and theoretical understanding might have helped the teachers in implementing the model, such as making a 'show' when giving the tangible reinforcements to increase vicarious reinforcement. The trainings provided were focused on application, with some theoretical understanding being assumed and might not have been fully present. For instance, teachers were assumed to know that students might not be taught prosocial behaviors for classroom while at home, such that the teacher (and school) are responsible for teaching the positive behaviors necessary for a productive learning environment. Future research may consider increasing the level of training, both in terms of content and frequency, while implementing a method for assessing the training and including as a variable within the research study.

A third limitation and potential direction for future research stems from the need for regular feedback to teachers and staff members, particularly as SWPBIS requires teachers to be proactive in teaching and reinforcing positive student behaviors. While reactive disciplinary practices rarely require proactive planning, SWPBIS is more data-driven in selecting which behaviors to reinforce and how best to reinforce behaviors for each student. For instance, if a student is having particular difficulty walking correctly in a line, then the teacher would want to plan when and how to apply reinforcements (whether tangible or intangible) to elicit the desired change in this student. However, developing individualized behavior modification plans is time consuming and requires substantial data to develop, initiate, and monitor the plan. Of course, if the student has not yet behaved in an unproductive manner, then it is not possible to predict that they might misbehave. Similarly, developing a behavior modification plan that targets only individual students ignores the potential benefits that SWPBIS can have on those students who are already behaving well, but are not being rewarded (e.g., vicarious reinforcement, modeling, etc.). As such, future research may incorporate feedback methods, such as 'data chats' weekly or monthly, to help teachers become more aware of how they are interacting with their students – comparing student groups, grade levels, or individual teachers. A data dashboard showing the number of tangible reinforcements compared to behavioral and academic data could also help provide needed feedback. Depending on the depth of the data, the teacher can quickly explore potential paths to take when a student demonstrates unproductive behavior not previously demonstrated.

As noted in Chapter Two, not all research has shown ODRs to be a valid and reliable measure of student negative behavior. While hundreds of research studies use

these data as the primary measure of student behavior, not all research has shown them to be the most valid measure. For instance, Nelson, et al. (2002) utilized the Teacher Report Form (TRF) and questioned the convergent validity of using ODRs as a true measure of student behavior. Other studies have combined the use of student behavior data measured by referrals to include additional survey data and rubric scores (e.g., Pas, et al., 2011). As such, future research may consider using a validated and reliable behavioral survey in combination with school-level behavioral data in assessing the impact of SWPBIS implementation. It is noted that research has demonstrated some challenges with teacher assessments, such as only a moderate correlation between teacher-reports of whether students were sent to the office and school records showing such referrals (Pas, et al., 2011), such that it would be important for future research to retain the use of school records (ideally both minor/pre-referrals and major office disciplinary referrals). This being said, more research than not has found validity for using ODRs as a measure of general behavior (e.g., Irvin, et al., 2004; Scott & Barrett, 2004), with ODRs being related to general misbehavior at school, school attendance, student and teacher perceptions of safety and victimization, classroom orderliness, juvenile delinquency, and behavior disorders.

Several past research studies have also utilized fidelity assessments as part of their studies into SWPBIS (e.g., Bradshaw, et al., 2008; Bradshaw, et al., 2010), with the most common assessment being the School-Wide Evaluation Tool (SET) developed by some of the foundational theorists of PBIS (Sugai, et al., 2001). The present research did not utilize formalized fidelity checks due to limitations with both human resources and hesitation of school administrators to implement any additional teacher or classroom evaluation process within the school day. Indeed, the SET requires trained

assessors to visit the school and classrooms, providing observational scores on seven separate key features. Such a process can be rather time consuming and intrusive on the school day, and the present resource did not have the capacity to engage in such an effort. However, future research is encouraged to consider using a method to ensure fidelity of the planned interventions and behavioral supports. Certainly, as discussed throughout this dissertation, the importance of fidelity, continuity, and consistency are critical to maximize the impact of PBIS models.

Future studies stemming from the present research can certainly include a plethora of additional variables and enhancements. For instance, the inclusion of pre-kindergarten students could provide interesting information as to the application of the model to a younger population, and could be explored in longitudinal research to determine whether such early intervention improves kindergarten readiness and/or behavior in early grades. Future research could also include personality measures of teachers and staff administering the tangible reinforcements to determine whether there are personality traits that impact the implementation and/or effectiveness of the chosen interventions. It would likely be most beneficial to focus on traits that can either be modified or easily measured to enhance the overall SWPBIS model. Overall, this study has supported the importance of empowering teachers and staff members to improve the quality of the educational learning environment through a system of proactive, comprehensive, School-Wide Positive Behavioral Interventions and Supports.

APPENDIX
ADDITIONAL RESULTS TABLES

Table A-1. Administration of independent variable (Lion Loot) by staff member

Teacher	Type	N	Sept	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Tot.
T001	Teacher	46	21	6	7	11	0	3	3	8	46	56	161
T002	Teacher	21	22	19	7	11	1	17	8	14	20	0	119
T003	Teacher	24	101	52	15	0	66	49	0	228	0	94	605
T004	Teacher	57	16	7	20	7	4	20	36	22	36	53	221
T005	Para	169	8	39	46	41	28	30	59	76	52	20	399
T006	Admin	19	0	2	3	0	10	3	0	0	2	0	20
T007	Teacher	27	61	9	32	11	6	42	15	4	11	26	217
T008	Admin	95	9	3	4	6	4	6	14	10	15	7	78
T009	Para	29	0	0	4	4	1	24	6	13	21	20	93
T010	Teacher	17	0	0	0	0	0	0	0	0	0	0	0
T011	Teacher	11	0	0	0	0	0	0	0	0	6	0	6
T012	Teacher	46	18	7	13	11	8	7	10	12	32	0	118
T013	Teacher	37	106	82	44	71	63	62	47	71	53	35	634
T014	Teacher	101	47	10	4	9	12	11	3	8	15	5	124
T015	Teacher	29	0	0	0	0	0	10	28	79	58	142	317
T016	Teacher	106	15	24	16	12	13	16	10	5	48	27	186
T017	Teacher	26	12	17	23	21	27	45	21	38	66	53	323
T018	Teacher	24	31	24	6	51	28	34	31	54	59	1	319
T019	Teacher	22	58	49	17	41	2	38	21	52	66	30	374
T020	Teacher	87	99	62	56	30	73	147	100	95	299	89	1050
T021	Teacher	29	31	55	48	137	135	36	98	118	60	27	745
T022	Teacher	31	58	17	30	49	17	79	21	172	264	7	714
T023	Teacher	20	13	25	29	3	9	15	12	5	50	11	172
T024	Teacher	135	16	2	20	8	12	16	10	29	51	33	197
T025	Teacher	8	0	44	1	0	16	0	27	82	0	18	188
T026	Teacher	155	36	14	9	3	2	25	23	16	50	34	212
T027	Teacher	27	16	32	10	11	29	47	29	20	113	65	372
T028	Teacher	54	31	9	26	5	6	9	8	16	117	24	251
T029	Para	273	6	11	25	31	40	54	55	88	279	75	664
T030	Teacher	28	54	41	25	25	22	48	27	35	36	36	349
T031	Teacher	22	18	14	20	17	10	8	1	23	13	0	124
T032	Teacher	20	28	5	6	17	7	1	24	13	44	0	145
T033	Teacher	20	14	8	15	15	7	47	13	11	52	10	192
T034	Teacher	53	31	10	24	9	4	2	2	9	36	20	147

Table A-1. Continued

Teacher	Type	N	Sept	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Tot.
T034	Teacher	53	31	10	24	9	4	2	2	9	36	20	147
T035	Teacher	40	9	2	6	4	2	5	3	3	9	8	51
T036	Teacher	1	0	0	0	1	0	0	9	5	0	2	17
T037	Teacher	22	43	13	35	13	20	26	1	0	20	7	178
T038	Teacher	83	0	0	0	0	0	5	10	26	45	14	100
T039	Teacher	43	36	14	8	10	47	75	132	106	173	103	704
T040	Para	61	3	2	3	15	13	23	13	10	10	1	93
T041	Teacher	13	0	0	0	24	0	1	0	1	28	0	54
T042	Teacher	46	23	2	8	5	2	0	4	8	14	0	66
T043	Teacher	46	18	6	34	14	18	13	6	20	88	29	246
T044	Teacher	7	0	19	0	0	12	0	10	57	0	18	116
T045	Admin	58	14	37	17	14	30	12	45	71	60	105	405
T046	Teacher	16	0	0	0	0	0	0	0	0	0	0	0
T047	Teacher	25	10	25	10	3	12	28	9	6	9	18	130
T048	Teacher	45	2	2	2	6	6	8	7	10	3	8	54
T049	Teacher	24	9	6	3	13	0	7	38	34	51	10	171
T050	Teacher	24	99	14	26	11	30	16	26	7	8	35	272
T051	Teacher	73	13	11	13	9	3	23	7	29	99	71	278
T052	Teacher	33	1	2	2	1	1	5	1	11	1	8	33
T053	Teacher	63	1	0	3	5	7	33	33	28	102	86	298
T054	Teacher	20	7	2	4	2	5	9	3	4	21	0	57
T055	Teacher	60	42	43	37	34	84	35	110	65	156	97	703
T056	Admin	8	0	0	5	0	0	0	0	0	2	1	8
T057	Teacher	22	24	18	25	4	37	20	11	49	49	75	312
T058	Teacher	27	56	12	0	1	1	1	8	0	144	0	223
T059	Teacher	38	7	11	23	32	10	29	14	14	19	5	164
T060	Teacher	23	64	41	19	54	21	0	49	41	153	4	446
TOTAL	--	--	1457	981	888	942	1023	1325	1311	2031	3334	1723	15015

Note: "N" represents the total number of students to whom the teacher provided reinforcements
Tangible reinforcements were only provided during the intervention year (2014-2015).
361 instances of Lion Loot were missing student information, but could be attributed to a teacher.

Table A-2. Proportionality of reinforcements by ethnicity and grade

	KG	1	2	3	4	5	Total
Black	# Students	53	36	41	40	28	233
	# Referrals	62	13	76	22	95	310
	# Lion Loot	1155	589	700	1171	275	4460
	Proportion	18.63	45.31	9.21	53.23	2.89	14.39
White	# Students	75	50	45	53	56	321
	# Referrals	69	3	15	36	33	162
	# Lion Loot	1504	752	1127	1540	794	6227
	Proportion	21.80	250.67	75.13	42.78	24.06	85.00
Asian	# Students	9	3	7	4	2	29
	# Referrals	13	1	1	0	0	15
	# Lion Loot	350	25	159	262	66	915
	Proportion	26.92	25.00	159.00	65.50	33.00	13.25
Hispani	# Students	20	15	13	15	10	84
	# Referrals	2	2	3	12	3	24
	# Lion Loot	476	300	443	496	113	1993
	Proportion	238.00	150.00	147.67	41.33	37.67	82.50
Native	# Students	1	.	.	.	1	2
	# Referrals	0	.	.	.	1	1
	# Lion Loot	68	.	.	.	9	77
	Proportion	68.00	.	.	.	9.00	77.00
Multiple	# Students	12.00	9.00	9.00	4.00	11.00	52.00
	# Referrals	13	4	3	0	4	35
	# Lion Loot	208	170	189	165	161	982
	Proportion	16.00	42.50	63.00	41.25	40.25	8.09
All	# Students	170	113	115	116	108	721
	# Referrals	159	23	98	70	136	547
	# Lion Loot	3761	1836	2618	3634	1418	14654
	Proportion	23.65	79.83	26.71	51.91	10.43	22.74

Note: (1+) statistics only include those students receiving one or more lion loot.
 Tangible reinforcements were only provided during the intervention year (2014-2015).
 Excludes 361 instances of Lion Loot which were missing student names and information.
 Race/Ethnicity categories were defined by the School District, as reported.

Proportionality. This is calculated by taking the average lion loot per student enrolled in the specific category (even if they did not receive loot) divided by the average number of referrals per student enrolled in the race/grade category (regardless whether they received a referral). If there were no referrals, then the proportion becomes simply the average lion loot per student. Lower proportionalities indicate a lower proportion of lion loot to referrals, indicating the less-desirable situation. The goal within SWPBIS would

be for student groups with higher numbers of referrals to have a corresponding higher number of tangible reinforcements. A lower proportion suggests that the students within the specific group were more likely to receive referrals than tangible reinforcements, which is generally counter to the foundational principles of SWPBIS.

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BIOGRAPHICAL SKETCH

Joshua Earl Pitts White was born in Gainesville, Florida, at Shands Teaching Hospital at the University of Florida. He grew up just outside of the small rural town of Bronson, Florida in Levy County. There, he lived with his two parents and six siblings (four brothers and two sisters). He attended Bronson High School and graduated with honors in 1999. Upon graduating high school, Mr. White attended Central Florida Community College in Ocala, Florida, as well as Santa Fe Community College in Gainesville, Florida.

In May of 2002, he graduated with high honors with an Associate in Arts degree from Central Florida Community College. Upon transferring to the University of Florida, he earned a Bachelor of Music in music education degree in 2005—graduating with highest honors, Summa Cum Laude, a Master of Music degree with a major in music education in 2008, a Specialist in Education in educational leadership degree in 2013, and finally his Doctor of Education in educational leadership degree in 2017. Since graduating with his bachelor's degree, Mr. White has continuously worked full time while pursuing his graduate studies serving in various roles as a music teacher, classroom teacher, behavioral resource teacher, and principal intern for Alachua County Public Schools for the last eleven years. Mr. White also served two years as a program evaluator for curriculum, instruction, and afterschool activities for the State of Florida 21st Century Community Learning Centers Project.