The Effects of Positive Behavior Interventions and Supports

On Student and Teacher Outcomes

by

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ABSTRACT

Student behavior problems continue to be a nationwide concern, despite decades of practice with a myriad of disciplinary systems. Students who frequently engage in problematic behaviors are at-risk for a variety of negative life outcomes. School-wide positive behavior interventions and supports (PBIS) is an evidence-based system of school-wide reinforcement and disciplinary procedures that relies on a problem-solving model from a systems perspective. Research based on the implementation of PBIS in schools has found positive effects pertaining to decreases in problem behaviors, increases in academics and attendance, and improved school safety and staff satisfaction. The purpose of this study was to examine the impact of PBIS systems change at varying years of implementation in three middle schools using a cross-sectional design on student outcome variables including office discipline referrals, major disciplinary actions, attendance rates, and academic achievement, along with school climate factors related to teacher burnout. Analysis of variance, non-parametric analysis of variance, and visual analyses were used to evaluate the effects of PBIS at varying years of PBIS implementation. The number of ODRs and major disciplinary decisions issued were greatly decreased with each year of PBIS implementation. Analyses of student academic performance and attendance varied by school and level of PBIS implementation and appeared to be influenced by additional variables, such as socioeconomic status. The length of PBIS implementation was associated with lower teacher ratings of emotional exhaustion and higher school climate ratings. Implications for research and educational practice are addressed.

DEDICATION

This dissertation is dedicated to my family and friends, who have always stood by side and helped me to achieve my dreams.

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Chapter 1

Introduction and Literature Review

Statement of the Problem

As today's society progresses at an unprecedented speed, one would expect the field of education to mirror these changes and yield educational outcomes that are more expansive than ever before. However, this is far from the case. Today's society has been witness to a continued presence of student behavioral problems concomitant with a national lack of progression in academic performance relative to both the United States' own past performance and in comparison with other world nations. According to the U.S. Department of Education (2009), the overall national trend in reading and mathematics scores has increased since 1971; however, these improvements have not always been significant for all age groups and point increases have been relatively small. For example, while 9-year-olds' reading scores increased by about 12 points from 1971 to 2008 (a period of almost 40 years), the reading scores for 13- and 17-year-olds increased by only 5 points and 1 point, respectively (U.S. Department of Education, 2009). Further, student behavior concerns remain a prominent issue among U.S. educators. A review of current research has demonstrated that the lack of change in disciplinary procedures for students in elementary and secondary education is an area of concern and has led the educational community and related service providers to reconsider disciplinary approaches for students in order to reduce negative student outcomes (Horner, et al., 2009).

Problem Behaviors and Disciplinary Procedures in Schools

Although schools have been managing student behavior problems for decades, rates of problem behaviors and effective student consequences continue to be a challenge for schools nationwide. According to Gaustad (1992), there are two primary goals of student discipline; First, to ensure the safety of students and staff, and second, to construct an environment that is conducive to learning. However, student misbehavior continues to be the most frequently reported concern in U.S. schools (Skiba, 2002), and serious student misconduct that involves violence or criminal acts defeats these two disciplinary goals (Gaustad, 1992). Youth violence remains a considerable problem in the U.S. as youth offenders commit violent acts at a higher rate than any other age group, with youth ages 10 to 17 perpetrating a serious, violent victimization in approximately one-quarter of crimes over the past several decades (Hahn, et al, 2007). Less severe problem behaviors were also reportedly quite prevalent. In 2003, 33% of secondary students admitted to being in a physical altercation, with 13% of those fights occurring on school premises (Hahn, et al, 2007). In fact, the most common types of behavior that students are referred for are disruptive behaviors and defiance and disrespect (Putnam, Luiselli, Handler, & Jefferson, 2003).

Despite the stable presence of disruptive behavior and violence in youth, disciplinary procedures in the schools have not changed markedly over the course of several decades. The most commonly reported disciplinary procedures include threatening, punishing, and involving school-based authority figures; however, these procedures are reactive and punitive approaches that have largely been found to be ineffective and limited to only temporary reductions in problem behavior, (Bear, 1998).

Furthermore, reactive approaches to punishment can transpire at the expense of teaching academics. A review conducted by Gottfredson, Karweit, and Gottfredson (1989) that examined data from over 600 U.S. secondary schools found multiple specific school factors that were frequently associated with conduct problems, including rules that were not clear or consistently enforced, disagreement between school staff members on proper responses to behavior problems, student blame of others for their behavior, punitive staff attitudes, poor cooperation between teachers and administrators, misbehavior being ignored, and schools that were large or lacked satisfactory resources for teaching. In the majority of cases in which a meaningful outcome is not achieved following a student's misconduct, there is a poor match between the student's problem behavior and the intervention that was selected, less than acceptable implementation of the intervention, lack of appropriate resources, or the use of simple or general solutions to treat complex problems comprehensively (Walker, et al., 1996). In addition, school practices can actually play a role in the development of antisocial behavior and the potential for school violence (Christle, Nelson, & Jolivette, 2003).

Furthermore, research has shown that the typically selected punishment-based consequences for students' problem behaviors provide only short-term suppression of the problem and may, in fact, increase problem behavior for students with serious antisocial or violent behaviors (Mayer & Sulzer-Azaroff, 1990). Examples of commonly used punishment-based consequences in the schools include verbal reprimands, detention, exclusion, suspension, and expulsion. Long-term consequences of reactive and punishment-based disciplinary actions have been ineffective in establishing and maintaining positive school climates and preventing antisocial behaviors while creating a

false sense of security and diminishing the school's primary responsibility of providing learning opportunities to students. Thus, reactive approaches in and of themselves are not sufficient for developing safe schools and positive climates (Sugai & Horner, 2002). Although exclusion and punishment are the most common responses to student misbehavior, these practices are ineffective at reducing problem behavior in the long-term and are associated with higher rates of school drop-out (Sprick, Borgmeier, Nolet, 2002).

The effects of punishment at the individual student level are not only negative, but fail to teach other more appropriate behaviors. Maag (2001) reviewed research regarding the use of punishment and positive reinforcement practices in schools and found that the temporary suppression of behavior following punishment negatively reinforces the disciplining teacher, thus increasing the likelihood of its use. However, while punishment can be effective for some students, those who do not respond to punishment often display the most challenging behaviors of all, which require intensive intervention and positive supports to correct. Regardless of the reason for using punishment techniques, such as school resistance, misunderstanding of positive reinforcement practices, or the lack of dissemination of research, the most effective evidence-based behavioral practices (i.e., positive reinforcement practices) are not well-implemented in school discipline practices (Skiba & Peterson, 2000). Punishment techniques, such as suspension and expulsion, are associated with a variety of negative outcomes for students. Exclusionary school discipline procedures, including suspension, interfering with academic development and perpetuating a failure cycle, and minimalizing opportunities to improve academic skills and appropriate social behaviors (Costenbader & Markson, 1998).

School suspension, a common form of punishment, has repeatedly been found to be linked to school dropout, and suspension may actually accelerate a course of delinquency for youth (Skiba & Peterson, 2000). In addition to dropout, students who have been suspended have also been found to be at risk for grade retention and are more likely to be involved in the legal system (Costenbader & Markson, 1998). In 2001, school dropouts comprised 85% of juvenile justice cases and 82% of the adult prison inmates (Coalition for Juvenile Justice, 2001). A longitudinal study conducted by Tobin and Sugai (1999) found that students who had referrals for violence in sixth grade typically had similar levels of referrals in eighth grade, were at risk for violent behavior, and had chronic discipline problems later in their academic careers. Ultimately, Tobin and Sugai's (1999) findings suggested that referrals for violence were predictive of school failure for students.

Risk and Protective Factors

While problem behaviors are uniformly demonstrated in schools across the United States, certain risk and protective factors may affect the likelihood of the expression of these behaviors. Christle, Jolivette, and Nelson (2005) described academic failure, school exclusionary discipline practices, and dropout as significant components in a "school to prison pipeline." Christle and colleagues (2005) found that three school-related characteristics were linked to student delinquency: academic failure, suspension, and dropout. However, their results suggested that schools may utilize preventive procedures and policies to help minimize these risks. In terms of violent behavior, Herrenkohl, Lee, and Hawkins (2012) found that risk for violence was predicted by early antisocial behavior, truancy, prior violence, attention problems, family conflict, low school

commitment, and peer delinquency. In terms of student truancy, school performance and involvement with delinquent peers were found to be risk factors highly associated with truancy (Henry & Huizinga, 2007). Furthermore, student truancy is predictive of school dropout, maladjustment, substance use, delinquency, teenage pregnancy, and adult outcomes such as marital instability, mental health issues, criminality, and lower-status jobs (Henry & Huizinga, 2007). Risk for early problem behavior was also found to be linked to tobacco use, alcohol use, marijuana and other illicit drug use, early sexual intercourse, and police contact (Keyes, Iacono, & McGue, 2007). In addition, exposure to violence, either through direct victimization, witnessing violence, or associating with delinquent peers, has been found to be associated with future problem behavior (McGee & Baker, 2002). Bullying is also related to aggression and further relational behavior problems, and is consequentially linked to psychopathologic behavior (Kim, Leventhal, Koh, Hubbard, & Boyce, 2006).

In contrast, Lagana (2004) identified protective factors for students at risk for behavior problems and school dropout, including family cohesion, adult support, and peer support, all of which may improve student outcomes. Schools can help to provide protective factors by fostering a positive, safe learning environment, establishing high, but attainable academic and social expectations, and facilitating student academic and social success (Henry & Huizinga, 2007). Herrenkohl, Lee, and Hawkins (2012) identified personal protective factors for youth violence as low levels of attention problems, adequate refusal skills, low risk taking behaviors, strong school attachment, and limited or no access to marijuana. Coping skills, competence in normative roles, involvement in extracurricular activities, success in school and school achievement, a

supportive relationship with at least one parent, parental monitoring of the child's daily activities, and successful peer relations have also been identified as possible protective factors for students in the development of problem behaviors (Dekovic, 1999).

Integrated Approach to School-Based Prevention

The prevention of problem behaviors is desirable as early problem behaviors may lead to more serious problem behaviors later in life. Current research has suggested that school-based prevention should take an integrated approach, fusing empirically based practices and independent strategies into one enhanced, comprehensible preventive approach that is based on the public health field's conceptual model as applied to school-based problems (Domitrovich, et al., 2010; Walker, et al., 1996). Thus, it is proposed that an integrated model will be more efficient to deliver, will employ the most effective components of social-emotional and behavioral health prevention interventions, and will likely generate additive and synergistic effects from interventions, resulting in a greater impact on youth outcomes (Domitrovich, et al., 2010). A school-based approach to prevention includes interventions for primary, secondary and tertiary forms of prevention for all students, including those not at risk for problems, those with higher risk status for developing behavior problems, and those who exhibit signs of significant behavior problems and antisocial acts (Walker, et al, 1996). To achieve maximal effectiveness, school-based prevention approaches should be directly related to and coordinated with one other within the context of the school environment and its systems of behavior support (Walker, et al, 1996). When a fully integrated prevention approach of this type is implemented, the behavior problems of approximately 75% to 85% of the student

population in a school can be solved with primary prevention procedures at the universal level (Reid, 1993).

Prevention Theory

Prevention research is historically rooted in epidemiological studies that examine factors that increase, as well as factors that protect against the development of problem behaviors or psychological disorders (Flay, et al, 2005). However, prevention science has broadened and has integrated concepts from developmental theory. Prevention science can be conceptualized in terms of ecological analysis (Bronfenbrenner, 1979), sociology, and developmental psychopathology (Greenberg, Domitrovich, & Bumbarger, 2001). Furthermore, prevention of violence and aggressive behavior, aside from being beneficial in and of itself, is necessary as early violent and aggressive behavior is related to later problem behaviors, and early antisocial behavior is a primary predictor of later delinquency (Hahn, et al, 2007).

School-based prevention approaches focus on general problem behaviors and the promotion of social competency, as well as specific risks, and are consistent with an emerging body of research of best practices in prevention that teach affective, social, and behavior skills using cognitive-behavioral strategies that are implemented in the school setting by all school personnel (Kenny, Waldo, Warter, & Barton, 2002). Although prevention initiatives have largely been utilized by public health professions, growing research emphasizes knowledge of risk and protective factors, as well as the development of research-based interventions that enhance the capacities of schools, neighborhoods, and communities to encourage positive youth development (Kenny, et al, 2002).

The United States Public Health Service prevention model is a frequently referred to model as it provides an organizing framework to demonstrate how schools can deliver interventions more effectively while improving outcomes (Walker, et al., 1996). The U.S. Public Health Service prevention model promotes moving from a system of sick care to one that is based on wellness and prevention, thus attempting to prevent disease before it starts and helping people to live longer, healthier lives while minimalizing costs of health care (Office of the Surgeon General, 2011). The U.S. Surgeon General recommended in his 2001 report on youth violence that school systems evaluate their existing discipline procedures and create positive environments that target all students, not just those requiring intensive interventions and support, thus establishing a school-wide prevention approach.

There are multiple components of prevention that are reflected in the national health goals that are applicable to students. A primary objective of Healthy People 2000 was to decrease the pervasiveness of mental health disorders in children and adolescents from an estimated 20% prevalence rate among youth 18 and younger in 1992 to less than 17% (U.S. Department of Health and Human Services, 1991). In addition, the U.S. Department of Health and Human Services (1995) added the objectives of decreasing physical fighting among adolescents, increasing the proportion of both elementary and secondary schools that embrace nonviolent conflict resolution skills, and extending violence prevention programs to the majority of U. S. jurisdictions with populations over 100,000. Finally, the U.S. Department of Health and Human Services recommended in 1991 that schools utilize prevention strategies in order to disconnect and reduce contingencies that maintain antisocial behaviors, enhance opportunities for academic

success, create and maintain positive school environments, and give precedence to universal prevention.

The prevention intervention framework can be defined in terms of three levels, universal, secondary or selected, and tertiary or indicated prevention, which considers the full spectrum of interventions needed to evaluate all levels of risk in a population (Domitrovich, et al., 2010). A growing body of research regarding school interventions supports the use of school-wide universal, secondary, and tertiary features of intervention to address the needs of all students at varying levels of risk in order to achieve the greatest efficacy (Walker, et al., 1996). By utilizing these varying theoretical levels of classification, prevention programs can distinguish populations served along with the timing of intervention, and can employ primary prevention to reduce chances of problems developing and secondary intervention to prevent further problems (Kenny, Waldo, Warter, & Barton, 2002). Universal preventive interventions are proactive interventions that target the general population, while secondary or selective interventions target subgroups with an elevated risk of developing mental disorders, and tertiary or indicated interventions target individuals at high risk for developing a mental disorder, but who do not yet have a diagnosis (Domitrovich, et al., 2010).

School-Wide Positive Behavior Interventions and Supports

School-wide positive behavior interventions and supports (PBIS) refers to an organized system of school-wide reinforcement and disciplinary procedures that relies on a problem-solving model from an evidence-based systems perspective (Sugai & Horner, 2006). Carr and colleagues (2002) defined PBIS as "an applied science that uses educational methods to expand an individual's behavior repertoire and systems change

methods to redesign an individual's living environment to first enhance the individual's quality of life and, second, to minimize his or her problem behavior" (p. 4).

School-wide PBIS endeavors to change the school environment by forming improved systems (including discipline, reinforcement, and data collection) and procedures (including office referrals, reinforcement, and training) that support positive change in pupil and staff behaviors (Bradshaw, Koth, Bevans, Ialongo, & Leaf, 2008). PBIS places an emphasis on the prevention of problem behaviors by utilizing intervention in the absence of problem behavior so that the behavior does not occur again (Carr, et al., 2002). The PBIS system also utilizes proactive skill building strategies, such as modifying the environment and procedures to strengthen communication and self-management skills (Carr, et al., 2002).

Utilizing the PBIS system is reputed to reduce the need for interventions that are more invasive or aversive (such as punishment, suspension, or expulsion,) and can result in systemic changes, well as individualized change (Cohn, 2001). PBIS is grounded in both prevention and developmental theories, as well as behavioral theory in which there is a focus on the context of behaviors, student outcomes, the functions of behaviors, the teaching of replacement behaviors, and individualized data-based decision making (Cohn, 2001). PBIS has demonstrated positive impacts on school climate, not only with students, but also with school staff. Therefore, the goals of PBIS are to develop a positive school environment with consistent rules that identify and change factors that may be inadvertently supporting student behavior problems while teaching students behaviors for success and improving quality of life (Carr, et al., 2002).

Although traditionally the school has been regarded as one of the safest places for the American child, the need for safer schools has become evident lately as more and more acts of school violence, bullying and student victimization have been occurring on the nation's school campuses (Sugai & Horner, 2002). The past few decades have presented important concerns pertaining to school fighting, violence, and disciplinary efforts, and school-wide PBIS has been suggested as an evidence-based approach to address student problem behavior and school climate (Sugai & Horner, 2002).

School-based PBIS applies prosocial strategies to the entire school context through the application of a three-tiered model encompassing primary prevention (using universal strategies for all students), secondary prevention (targeting students who may be at risk for developing behavior problems), and tertiary prevention (utilizing highly individualized and all-encompassing supports for students who exhibit pervasive behavioral challenges; Bambara, Nonnemacher, & Kern, 2009). Universal support is taught to all students within all types of school settings, such as the classroom, the hallways, the playground, the cafeteria, etc., and includes the key features of clearly defining behavior expectations, teaching the expectations, communicating the expectations on a school-wide basis, implementing a comprehensive reinforcement system, and evaluating student progress through data-based decision making (Turnbull, et al., 2002; Sugai et al., 2000). Thus, the goal of universal support is to reduce problem behaviors while promoting appropriate behaviors for all students. Secondary prevention involves the identification of students who require more intense intervention and support at the group level, using strategies such as "check-in/checkout," self-monitoring, and self-management systems while re-teaching expectations in smaller groups (Turnbull, et al.,

2002). In the third tier, individual support is provided to students with even more pervasive problem behaviors who may or may not qualify for special education services, but may still benefit from individually developed supports based on functional assessment and the provision of wraparound services (Turnbull, et al., 2002).

The systems change in PBIS is carried out by school-based teams who are essential to the process. The development of the PBIS leadership is a critical aspect in the successful implementation of PBIS. PBIS teams consist of school leadership teams and student-centered teams, and through a collaborative process, the teams use problem-solving to develop five essential school practices: 1) Defining problem behaviors and ranking their significance; 2) Conducting functional behavioral assessments (FBAs); 3) Developing data-based systems; 4) Generating comprehensive behavior support plans; and 5) Implementing, evaluating, and modifying plans (Bambara, Nonnemacher, & Kern, 2009). Current research has determined the importance of the development of the behavior support team, which should consist of team members who possess knowledge of the student and his or her behavior, knowledge of the context in which the student will receive behavioral support, and knowledge of behavioral theory and foundations of functional assessment (Benazzi, Horner, & Good, 2006). A study conducted by Benazzi and colleagues (2006) found support for the hypothesis that PBIS teams should include at least one specialist trained in behavioral theory and that the use of FBA data as behavior plans generated with the behavior specialist on the team were more likely to include strategies for preventing problem behaviors, as well as reducing the natural reinforcers that maintain the behaviors. It is also recommended that school-based teams have the support of administration, that all types of stakeholders be represented (e.g.,

administrators, general educators, special educators, pupil personnel, paraprofessionals), and that a comprehensive data collection system is utilized (Bohanon-Edmonson, Flannery, Eber, & Sugai, 2004). In addition, research supports the training of school-based teams, including parents, in PBIS with an emphasis on on-site education and including in-vivo problem solving with real cases in order to maintain interagency collaboration and education that results in systems change (Carr, et al., 2002). Three particular key issues should be addressed when forming a PBIS school team, including the challenges of implementation, scheduling issues, and staff turnover (Bohanon-Edmonson, Flannery, Eber, & Sugai, 2004).

Implementation standards. There are multiple steps that must be followed in order to successfully implement PBIS in the schools. School behavioral expectations must be defined by school staff and taught to students, followed by the monitoring of students and rewards for positive behavior practices (Horner, et al., 2009). The PBIS Blueprint provides information regarding the effective and efficient implementation standards for PBIS (OSEP, 2010). These standards were developed to ensure that PBIS implementation is done with high accuracy, sustained over time, is transportable and scalable, fits the characteristics of the local culture, and uses data to guide decision making (OSEP, 2010). The PBIS Blueprint includes 11 implementation foundations, including the involvement of multiple stakeholders, implementation occurring in phases, use of continuous regeneration for sustainability, integrity of practices, and systematic implementation (OSEP, 2010). In addition, PBIS supports are tied to the individual student, the classroom, the school, the district, the community, and the state (OSEP, 2010).

PBIS is typically implemented over five phases. In the first phase, *exploration and adoption*, documentation of a problem occurs, elements of evidence-based practice are identified, and the resources, expertise, and fit to the school are considered (OSEP, 2010). In the second phase, *program installation*, the emphasis is focused on the preparation of initial implementation, and involves identifying funding and resources, and developing strategies, supporting policy, operational procedures, professional development, and start-up costs (OSEP, 2010). In the third phase*, initial implementation*, the goal is to demonstrate how existing resources can be applied to implementation, and practice-related questions and data collection procedures are demonstrated (OSEP, 2010). In the fourth phase, *full implementation*, accurate implementation of the practice is demonstrated and replicated at other sites within the organization, and it is important that all roles, responsibilities, functions, and organizational structures are in place (OSEP, 2010). In the fifth and final phase, *innovation and sustainability*, the focus is on developing policing, recurring funding, and establishing sustainable implementation (OSEP, 2010). In this phase*,* fidelity of practice is maximized and continuous regeneration of policies and practice occurs (OSEP, 2010).

Once school-wide PBIS has been implemented, there are several factors that must be considered in order to ensure successful implementation. Sugai and Horner (2006) recommend applying the following evaluation questions to monitor implementation: 1) Is the practice effective? 2) Is the practice efficient? 3) Is the practice relevant? and 4) Is that practice durable over time? In addition, Sugai and Horner (2006) mention that simply training staff, implementing, and assuming the continuation of effective practices is destined to fail; rather, providing staff members with booster sessions is necessary to

implement with accuracy and maintain staff motivation. The PBIS implementation process should be evaluated to determine which processes are working, which are not, what should be added or eliminated, and what type of data and resources are needed (Sugai & Horner, 2006).

An important feature of PBIS is the ongoing monitoring and evaluation of implementation fidelity. High fidelity of PBIS implementation has been linked with numerous positive outcomes for teachers and students. The developers of PBIS created the School-wide Evaluation Tool (SET; Sugai, Lewis-Palmer, Todd, & Horner, 2001) as a tool for measuring the fidelity of implementation of key PBIS procedures, which is typically completed annually and contains scores on seven key features of PBIS, as well as an overall score (Horner, Todd, Lewis-Pamer, Sugai, & Boland, 2004). These features include defining school wide expectations, teaching expectations, monitoring and acknowledging students who engage in behavioral expectations, correcting problem behaviors, gathering and using information to evaluate and guide decision making, obtaining administrator leadership, and obtaining district level support (Horner, et al., 2004). The authors purport that the intended benefits of PBIS can be seen when fidelity scores on the SET are 80% or higher (Sugai, Lewis-Palmer, Todd, & Horner, 2001).

Expectations. There is empirical support for multiple outcome-based measures in PBIS, including, but not limited to, reductions in office disciplinary referrals, reduced amounts of major punishments given (such as suspensions and expulsions), decreases in student problem behaviors, increases in core academic areas, improvements in student and staff attitudes toward the school climate, enhanced perceptions of safety in the school, and decreased aggression and victimization (Lassen, Steele, & Sailor, 2006;

McIntosh et al., 2009). In addition, studies that have examined the effects of PBIS on school personnel have found advances in school organizational health, staff affiliation, feelings of administrative support, increases in following through with school procedures with fidelity, time and resource support, focus on academics, and decreased staff resistance (Bradshaw, et al., 2008; Wilson, 2004). In 1997, the Individuals with Disabilities in Education Act (IDEA; PL 105-17), recommended PBIS as the intervention of choice for handling challenging behaviors of students with disabilities in the schools. PBIS is the only methodology addressing behavior that is mentioned in the special education law and remains current as the law was amended in 2004 (PBIS.org, 2003).

Although PBIS has been touted as a disciplinary approach supported by research, there is actually not one published study that examines the use of PBIS cross-sectionally at varying years of school implementation. Research has focused more broadly on student outcomes once PBIS has been implemented successfully for several years or at one particular point in a school's implementation. In addition, preliminary PBIS outcome research typically considers student outcomes, but overlooks variables pertaining to school climate, team leadership, and teacher satisfaction (Bradshaw, Koth, Thornton, & Leaf, 2009). Thus, it appears necessary to examine the effectiveness of these factors in totality to assess similarities and differences among student outcomes and school-related factors at varying years of the PBIS implementation process.

Due to the differing phases of PBIS implementation, different outcomes for each year of implementation can be expected. In the first year of implementation, only modest gains are to be expected, but gains begin to increase with each appreciable year of implementation. Netzel and Eber (2003) assessed the implementation of school-wide

PBIS after its first year in an elementary school, and found a 22% reduction in suspensions from the previous school year, as well as a slight decrease in office discipline referrals. The study also noted increased positive staff and student attitude, as well as overall school climate and a slight decrease in staff turnover (Netzel & Eber, 2003).

Bradshaw, Koth, Thornton, and Leaf (2009) found that after one year of PBIS implementation, significant improvements were found in categories of resource influence, staff affiliation, institutional integrity, collegial leadership, and academic emphasis on a measure of organizational health. Bradshaw and colleagues (2009) also found that about two-thirds of the 37 schools included in their study met a high level of fidelity (80% or higher) on the SET after the first year, and by the third year, all but one of the schools met this fidelity level. Luiselli, Putnam, Handler, & Feinberg (2005) conducted a longitudinal study examining the effects of PBIS at each year of implementation, and found that during the first year, office discipline referrals increased during the first three months of intervention, but then decreased for the rest of the school year, and low rates were maintained during the second year of implementation. In addition, Luiselli and colleagues (2005) found that the frequency of suspensions did not decrease during the first year of implementation, but decreased a little during the second year. In addition, scores on standardized reading and math assessments increased from the first year to the second year of PBIS implementation (Luiselli, Putnam, Handler, & Feinberg, 2005).

According to Sugai and Horner (2006), by the third year of implementation, gains in student outcomes and school climate variables should be demonstrated if PBIS has been implemented with fidelity. A longitudinal study conducted by Bradshaw, Koth,

Bevans, Ialongo, and Leaf (2008) found that after three years of school-wide PBIS implementation, staff reports of overall organizational health of the school, resource influence, and staff affiliation with PBIS implementation were significantly improved. In addition, Bradshaw, Reinke, Brown, Bevan, and Leaf (2008) found that after three years of PBIS implementation, schools that were trained in PBIS showed significantly higher levels of implementation fidelity on the SET. Horner and colleagues (2009) also conducted a three-year randomized, wait-list control trial in schools, and found that by the end of the third year of implementing PBIS, improved perceptions of school safety, low numbers of ODRs, and an increase in the proportion of students meeting or exceeding the average on state reading assessments was functionally related to PBIS implementation. Furthermore, a study conducted by Lassen, Steele, and Sailor (2006) found that after three years of PBIS implementation, office discipline referrals and the number of suspensions per student were significantly decreased, while standardized scores in math and reading significantly increased, and fidelity measures on the SET continued to improve with each year of implementation. Interestingly, in a longitudinal study conducted by Bradshaw and colleagues (2009), overall organization health scores appeared to peak after the third year of PBIS implementation and decreased slightly after the fourth year, suggesting the importance of continued training.

PBIS Efficacy

Office discipline referrals. Schools traditionally use office discipline referrals (ODRs) to report and track serious student behaviors that result in punishment consequences, including detention and in- or out-of-school suspension. ODRs are completed by school staff and document behavioral incidents in a systematic manner that

record important details about the incident, such as the location, time of day, persons involved, and clear definitions of the behaviors observed (McIntosh, Campbell, Carter, & Zumbo, 2009). However, ODR data are not always used by schools to make informed decisions regarding the efficacy of the disciplinary decisions made.

The most commonly used outcome measure for assessing the behavioral impact of school-wide PBIS on reductions in problem behavior is data derived from office discipline referrals because of their ease of use and utility in determining a wide range of decisions made by the school (Upreti, Liaupsin, & Koonce, 2010). ODRs have been employed as main outcome measures of problem behavior because they are already in use and relevant to the school, and the referral data is highly accessible (Lassen, Steele, & Sailor, 2006). In addition to these built-in advantages for using ODRs, ODRs are also an essential indicator of the amount and types of problem behaviors that occur in schools.

The use of ODRs to measure student behavioral outcomes has been investigated thoroughly in the literature. A study conducted by McIntosh and colleagues (2009) examined the concurrent validity of the number of ODRs collected with a standardized behavior rating scale (i.e., BASC-2; Reynolds & Kamphaus, 2004), as well as the validity of common cut points to ascertain the level of support needed for the student. They found strong correlations between ODRs and ratings of externalizing behavior and significant differences in behavior ratings on established ODR cut points. These results provided evidence that ODRs that specify clear definitions and are systematically used can be valid measures for assessing the intensity of the support needed for students with externalizing behaviors. Irvin, Tobin, Sprague, Sugai, and Vincent (2004) also investigated the validity of ODR data as indices of school-wide behavioral climate, effects of PBIS, and varying

behavior support needs using Messick's unified approach to validity and found a substantial basis for using and interpreting ODRs for these reasons. A study conducted by Lassen, Steele, and Sailor (2006) examined the utility of ODRs in a PBIS system implemented with fidelity in an urban middle school and found significant reductions in ODRs and suspensions over a 3-year implementation period, which correlated to significant reductions in problem behavior. Luiselli and colleagues (2005) also examined the effects of PBIS in an urban elementary school and found reductions in ODRs and suspensions compared to pre-intervention baseline data over the course of several academic years. The state of Maryland uses a multilevel, state-wide approach to PBIS implementation developed in 1998. In 2006, 186 schools in Maryland collected a full academic year of ODR data which was compared to national averages for ODRs; Maryland reported 43% fewer ODRs compared to national averages in elementary schools, 33% fewer ODRs in middle schools, 37% fewer ODRs in high schools, and 72% fewer ODRs in K-8 school groupings (Barrett, Bradshaw, & Lewis-Palmer, 2008). In addition, an urban school district in Illinois reported a 22% reduction in suspensions after one year of PBIS implementation (Netzel & Eber, 2003).

Furthermore, students with disabilities are overrepresented in school discipline. A study conducted by Tobin, Horner, Vincent, and Swain-Bradway (2012) examined the effects of PBIS on rates of ODRs in special education students, and found that not only did school-wide rates of ODRs decrease by 10% or more, but so did the number of students in special education who received discipline referrals. Overall, these findings suggest that school-wide PBIS supports a decrease in ODRs when implemented with fidelity.

Disciplinary actions. It is not only important that problem behavior is reduced in schools; it is also critical that the severity of the behaviors be minimized, that consequences for inappropriate behaviors be fitting for the level of severity of the behavior, and that student consequences for problem behaviors that remove the student from instructional time be reduced. Following the principles of applied behavior analysis (ABA), if consequences such as suspension and expulsion were truly punishment for an offender, then the student's inappropriate behavior should decrease; however, this is not typically the case for repeat offenders and repeated suspensions may not be effective for changing the problem behaviors of these students (Netzel & Eber, 2003). Disciplinary procedures that react to the problem behavior with harsh consequences to "send a message," such as zero-tolerance policies, have little evidence to support their efficacy, while graduated discipline models in which the severity of the consequence is matched to the severity of the infraction, appear to hold promise as effective and efficient means for organizing disciplinary procedures (Skiba, Horner, Chung, Rausch, May, & Tobin, 2011). Sugai and Horner (2002) note several disciplinary procedures whose efficacy has not been adequately investigated, exhibited, or validated, including the use of zero-tolerance policies, use of security personnel, use of surveillance cameras and metal detectors, implementing school uniform policies, and use of detention, suspension, and expulsion. Furthermore, research has demonstrated the negative effects of school suspensions, which may put youth at risk for delinquency, and have been linked to increased likelihood of student academic failure, drop out, and poor employment outcomes, as well as negative life outcomes (Christle, Jolivette, & Nelson, 2005; Eliason, Horner, & May, 2013).

School-wide PBIS aims to change the aforementioned disciplinary actions by utilizing behavioral foundations and research for systemic change and intervention using well-defined and valued outcomes, principles of behavioral science, and the implementation of empirically validated practices within systems that have generalizable effects (Sugai & Horner, 2002). The communication of school-wide rules that are fair and consistently reinforced, along with the consequences for breaking those rules, can help to maintain students' respect for the school's discipline system and reduce disruptive behavior (Gaustad, 1992). PBIS distinguishes between major and minor behavior offenses in that minor offenses are less intrusive problems that violate rules, but are not egregious enough to warrant action from school administration (Tobin, Horner, Vincent, & Swain-Bradway, 2011). Examples of major offenses include use of alcohol or drugs, bomb threats, physical aggression, and weapons, whereas minor offenses include inappropriate verbal language, tardies, disruption, and dress code violations (Todd, Horner, & Tobin, 2006).

Multiple research studies have indicated a relationship between PBIS implementation and reductions in major behavior offenses and disciplinary actions. A study conducted by Lassen and colleagues (2006) found that the number of suspensions given in a school, which are typically allocated for more serious problem behaviors, was significantly reduced during each year of PBIS implementation, indicating decreases in more severe behaviors. In a study conducted by Muscott, Mann, and LeBrun (2008) across multiple schools of varying grade levels, the implementation of PBIS appeared to reduce documented major and minor discipline problem behaviors by at least 50% during a 6-week follow-up period, with substantial decreases in disruptions, defiance/disrespect,

aggression, physical contact, harassment, inappropriate verbal behavior, and abusive language, with combined cohorts resulting in a 31% reduction in in-school-suspensions and a 19% reduction in out-of-school suspensions. A study conducted by Bradshaw, Mitchell, and Leaf (2010) yielded similar results; the percentage of students with major or minor ODRs was significantly decreased during PBIS implementation, the number of major and minor ODRs per student decreased significantly, and the percentage of students who received suspensions also decreased significantly. In addition to gains in student prosocial behavior, reductions in referrals for major behavior problems reduce the amount of time administrators spend in the referral process, which can be time translated to an increase in instructional time.

The reduction in ODRs and suspensions related to PBIS implementation has important implications for student outcomes. Aside from the immediate effects of problem behaviors disrupting learning and interfering with instruction, frequent and serious disruptive behaviors also pose a danger to the safety of the school environment and the well-being of other students, thus creating a necessity for school-wide behavior programs (Putnam, et al., 2003). Ideally, ODR data should be helpful in identifying discipline problems and establishing interventions that are effective both immediately and in the long term, while reducing prevalence rates (Putnam, Luiselli, Handler, & Jefferson). Recently, antisocial and violent behavior of children in schools has become a substantial concern and educators are being forced to address these behaviors as well as overall school safety (Irvin, Tobin, Sprague, Sugai, & Vincent, 2004). Thus, the implementation of PBIS in the school attends to both remedying the problem behaviors of the individual student, as well as establishing improved school safety as whole. By

implementing PBIS, positive, replacement behaviors are taught, reducing the number of suspensions assigned to students and the amount of class time missed. By learning replacement behaviors and using evidence-based interventions, students with behavior problems have the opportunity to gain protective factors, such as the support of teachers and peers, being in a safe learning environment, and having staff facilitate academic and social success, while learning strategies to rectify their problem behavior.

Academics. One of the leading indicators that schools use to measure student functioning is student performance on standardized achievement tests. The No Child Left Behind Act (NCLB) of 2001 established that schools and districts are required to report on Adequate Yearly Progress (AYP) and demonstrate AYP in the areas of math and reading (PL 107-110). The state of Arizona uses the Arizona Instrument to Measure Standards (AIMS: Arizona Department of Education, 2012a) to assess content standards in the areas of reading, writing, mathematics, and science to verify that a school meets AYP. The AIMS dual-purpose assessment is administered to students in grades 3 – 8 and 10 - 12, and is both a criterion- and norm-referenced assessment that is aligned with state academic standards. The AIMS classifies student performance into one of four levels: Falls Far Below the Standards (FFB); Approaches the Standards (A); Meets the Standards (M), and Exceeds the Standards (E). The AIMS Alternate (AIMS-A) is a test administered to students with significant cognitive disabilities.

Disruptive behaviors in the school lead to losses in instructional time, and consequently, a decline in student academic achievement (Lassen, Steele, & Sailor, 2006). Moreover, there is an interaction between problem behavior and academics that peaks as students transition from middle school to high school, and students with deficits

in academics and social behavior have been shown to be at a greater risk for dropout (McIntosh, et al., 2009). Thus, it follows that interventions designed to reduce problem behaviors may improve the amount of instructional time for students, which may translate to gains in academics. Horner and Sugai (2003) posit that the amount of instructional time that is lost for a student for each problem behavior that results in an ODR is approximately 45 minutes. Further, researchers have demonstrated a strong correlation between antisocial behavior and academic failure among students, with poor academic performance being a predictor of antisocial behavior (McEvoy & Welker, 2000).

Research in PBIS has demonstrated an inverse relationship between academics and problem behavior and multiple studies have supported this finding, indicating improved academic achievement following PBIS implementation. Horner and colleagues (2009) conducted a randomized, wait-list controlled trial examining the effects of school-wide PBIS after three years of implementation in two states and found that students in their study improved in meeting or exceeding state-wide reading assessment standards. A similar study was conducted by Lassen, Steele, and Sailor (2006) in an urban middle school found that after three years of PBIS implementation, standardized math and reading scores significantly increased. Their results also indicated that there was a significant relationship between increased academic performance and decreased student problem behavior. Additionally, a study conducted by Luiselli, Putnam, Handler, and Feinberg (2005) found that both reading and mathematics performance, as measured by a standardized achievement test, improved contemporaneously with PBIS implementation.

These findings have been replicated across the United States. The state of Maryland has adopted a statewide systems approach to the implementation of PBIS, and formative and summative data collected from 421 elementary and middle schools demonstrated higher achievement in the areas of math and reading and lower truancy after the implementation of PBIS (Pas & Bradshaw, 2012). In a study conducted in 428 Illinois schools implementing PBIS, standardized reading and math scores improved significantly over time and schools that implemented school-wide PBIS with fidelity had a larger portion of students who met or exceeded the norm on the state standardized math test than schools that did not implement PBIS with fidelity (Simonsen, et al., 2012).

In addition to improving academic achievement, PBIS has also been found to increase instructional time. Scott and Barrett (2004) conducted a cost-benefit analysis of instructional time saved by teachers as a result of implementing PBIS. By estimating that each ODR corresponded to a 20 minute loss of instructional time and applying this to the reduction in ODRs as a result of PBIS implementation, the authors estimated that a total of 79.5 days of instructional time were saved each year following PBIS implementation.

Attendance. In addition to loss of instructional time due to ODRs, as discussed above, attendance is also a critical factor in school achievement. Student attendance has also been used in the literature as an indicator of PBIS efficacy. It logically follows that the more time a student attends school and thus receives instruction, the more opportunity the student has to learn. Studies examining the efficacy of PBIS have noted improved attendance rates and decreases in truancy. In a study conducted at a middle school with specific goals to improve student attendance and grades, the implementation of PBIS over five years greatly improved attendance concomitantly with student grades, and also

reduced discipline referrals (Taylor-Greene & Kartub, 2000). An additional study conducted in a middle school by Luiselli, Putnam, and Sunderland (2002) found that student attendance increased with each academic year of implementation.

PBIS and Non-Student Based Factors

In addition to the direct effects of PBIS implementation on student outcomes, PBIS research has also demonstrated effects on the morale of school personnel and on school climate. Although a school system may begin to see positive changes after implementing PBIS with fidelity, it is crucial that the staff remain engaged in continuous evaluation and regeneration, and participate in continued training, to maintain these positive effects. Furthermore, improvements in student behavior and academics can lead to better teacher morale and an improved school environment (Bradshaw, Koth, Thornton, & Leaf, 2009). In order for PBIS to be successful, it is important to maintain teacher "buy-in" and minimize teacher attrition. Further, an improved school environment creates a reciprocal relationship with staff and students in which individuals are both reinforced by a positive environment and create a positive environment through being reinforced by improved outcomes. School environment varies depending on the school staff, age of students, and available resources, and specific modifications unique to each individual school may differ. Thus, the sustainability of PBIS, as well the effects of PBIS on school staff and environment, will be discussed.

School Climate. It is important to note that the systemic change induced by PBIS implementation affects all individuals in the school, including students and staff, as well as the overall school environment. As such, effective school learning climates have a direct, positive impact on academic achievement and students' prosocial behaviors

(McEvoy & Welker, 2000). All of the aforementioned positive outcomes of PBIS implementation in schools play a role in cultivating a positive school climate. School climate has been broadly identified as an important component of effective schools, as well as a significant predictor in students' academic success (van Horn, 2003). There is no standard, agreed upon definition for school climate. For the purposes of this study, school climate refers to the attitudes, beliefs, values, and norms that provide the framework for the instructional methods, the level of academic success, and the operation of the school (Brookover, Erickson, & McEvoy, 1997). Thus, school climate pertains to the quality and character of people's school experiences (Cohen, McCabe, Michelli, & Pickeral, 2009). Brookover and colleagues (1978) concluded from their study of school climate and related variables that although some aspects of the school environment clearly make a difference in the academic achievement of schools, such as school composition factors, a favorable school climate was necessary for high achievement in the schools analyzed.

Multiple empirical studies have demonstrated the effects of the implementation of PBIS on school climate. A longitudinal analysis of 37 elementary schools found a significant effect of PBIS on the school's overall organizational health, academic influence, staff affiliation, and resource influence over the course of five years (Bradshaw, Koth, Thornton, & Leaf, 2009). In addition, school-wide PBIS implemented over the course of three years in a randomized trial was functionally related to improvements in perceived safety at school (Horner, et al., 2009).

Sustainability. While there is substantial evidence to indicate that school-based prevention problems can have positive effects on students' behavioral, emotional, and

academic functioning when implemented with fidelity, there are also teacher-related factors that must be taken into consideration that may affect teachers' program implementation and the sustainability of the program (Han & Weiss, 2005). Key steps for program sustainability have been reported in the literature that necessitate linking the program's objectives to the priorities of the school and the district while building support among stakeholders at all levels to generate institutional readiness and support for the systems change (Adelman & Taylor, 2003). An important concern for staff during times of systems change is keeping their jobs at the end of a project, especially when budgets are tight Moreover, staff need to maintain consensus and interest in the project while feeling supported (Adelman & Taylor, 2003). It is important to take sufficient time to lay the foundation essential to systems change before setting actions into motion using a top-down approach (Adelman & Taylor, 2003). Han and Weiss (2005) proposed several teacher-specific and school-specific pre-implementation factors that relate to the quality of program implementation, including supportive school leadership by administrators, teachers' self-efficacy beliefs, educator burn-out, program acceptability, pre-implementation attributions, teacher training, and performance feedback (Han & Weiss, 2005). Each of these factors will be discussed in detail in concordance with aspects of school climate and school culture change.

Teacher burnout. Teacher burnout refers to emotional exhaustion and feelings of fatigue related to classroom practices (Maslach, et al., 1996), which is likely to interfere with the teacher's ability to implement effective classroom practices and can lead to greater amounts of negative interactions with students (Lamude, Scudder, & Furno-Lamude, 1992). Burnout is characterized by a loss of interest in the individuals with

whom one is working that involves diminished respect, sympathy, or positive regard for clients, and can be accompanied by personal stress (Maslach, 1978). Maslach, a leader in the development of the empirical study of teacher burnout, produced the first inventory of burnout that demonstrated high validity (Maslach, 1976; Maslach 1978). Three dimensions of teacher burnout have emerged that combine to form a multidimensional construct of burnout: Emotional Exhaustion, Depersonalization, and Reduced Personal Accomplishment (Bibou-Nakou, Strogiannidou, & Kiosseoglou, 1999). In 1981, Maslach and Jackson developed the Maslach Burnout Inventory (MBI) for human services professions based on the aforementioned three themes. This instrument was updated to the MBI-General Survey for use in all occupations and was based on the three factors of exhaustion, cynicism, and efficacy (Schaufeli Leiter, Maslach, & Jackon, 1996).

Current research has determined that student misbehavior is a major predictor of teacher burnout, and burnout can have significant negative effects on teaching efficacy (Covell, McNeil, & Howe, 2009). Teacher burnout has been associated with several negative outcomes, including diminished performance, irritability, teacher turnover, and absenteeism from work (Reinke, Herman, & Stormont, 2013). Furthermore, teacher efficacy and burnout have been linked to student achievement, as well as teacher performance, with high teacher efficacy being correlated with effective instruction, classroom management, and student academic performance, and low teacher efficacy being correlated with diminished performance and reduced tolerance to student problem behaviors (Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998; Tsouloupas, Carson, Matthews, Grawitch, & Barber, 2010; Tschannen-Moran & Woolfolk Hoy, 2001).

Demographic features of teachers have also been examined as they relate to teacher burnout. Men were more likely to report elevated levels of depersonalization, while women more frequently reported elevated levels of emotional exhaustion and a decreased sense of personal accomplishment (Pas, Bradshaw, & Hershfeldt, 2012). A study conducted by Anderson and Iwanicki (1984) found that younger teachers (20-34 years of age) reported significantly more emotional exhaustion than did older teachers (45 and over); male teachers reported significantly higher levels of burnout than female teachers; and junior high and high school teachers reported significantly higher levels of burnout than elementary school teachers. Interestingly, teacher experience was not found to be a predictor of burnout, as both new and veteran teachers reported similar levels of burnout (Anderson & Iwanicki, 1984).

Similarly, Friedman (1991) examined high- and low-burnout schools, and found that schools that were regarded as high-burnout schools had more older teachers (41-45) and employed more male teachers, with lower levels of education, and more experience, in comparison to schools regarded as low-burnout schools. In addition, Beck and Gargiulo (1983) found that special education teachers of students with intellectual disabilities reported significantly less burnout than regular education teachers.

Teacher burnout versus teacher efficacy affects a multitude of classroom factors, including classroom management strategies, student achievement and motivation, student self-esteem and prosocial attitudes, teacher stress, and teachers' professional commitment (Brouwers & Tomic, 2000). A study conducted by Reinke, Herman, and Stormont (2013) evaluated classroom management strategies used by teachers in 33 elementary classrooms implementing school-wide PBIS with high fidelity and found that teachers

who expressed lower levels of emotional exhaustion used more praise and reported feeling more efficacious than teachers with high rates of disruptive behavior in their classrooms and teachers who used harsh reprimands frequently. Bibou-Nakou, Strogiannidou, and Kiosseoglou (1999) examined teacher burnout in relation to the teachers' perceptions of student problem behavior via the Maslach Burnout Inventory and found that teachers' problem behavior attributions made about students significantly differentiated burnout levels experienced among the teachers; Internal attributions of student behavior were associated with higher levels of emotional exhaustion among the teachers. Pas, Bradshaw, and Hershfeldt (2012) examined the effects of teacher efficacy and burnout in 31 schools over the course of two years, and found that both teacher efficacy and burnout increased over time, with reported burnout increasing more rapidly than feelings of self-efficacy. Ultimately, decreases in teacher efficacy due to student and environmental variables may impact student performance and behavior, and an examination of the effects of PBIS on teacher burnout is warranted.

PBIS in Middle Schools. PBIS has demonstrated efficacy in multiple domains; however, given the preventative foundation of PBIS, a majority of the research has focused solely on elementary school implementation while leaving out middle schools, where a rise in problem behavior is typically seen. Middle schools grant the student more independence and responsibility than was previously expected in elementary school. Interestingly, middle schools have not only been neglected in the area of PBIS research, but appear to be neglected as a domain of study overall in contemporary American education (Hoy & Hannum, 1997). As noted previously, school climate can significantly impact the learning environment, and typically differs from elementary to middle school

(Hoy & Hannum, 1997). Middle schools represent a more social environment in which students have the opportunity to interact with more individuals more often; however, this greater freedom to interact with one another does not guarantee positive social interactions. In addition, research has found that the change during the transition to middle school is heightened by personal and behavioral changes, including heightened emotionality, conflict, and defiance, along with physical changes including the development of puberty (Akos, 2002; Eccles & Midgley, 1989). Furthermore, developmental and academic difficulties have been found to be associated with the change from elementary school to middle school, including increased psychological distress, stress with peer relationships, conflict with authority, academic pressures, and declines in achievement and motivation and attitude toward school (Akos, 2002). A longitudinal study conducted by Pellegrini and Bartini (2000) found that significant increases in bullying and aggressive behavior occurred during the transition to middle school as well. In addition, the study of middle school classroom environments compared to elementary classroom environments has found that middle school classrooms tend to focus more on academic performance goals than on task mastery, leading to a decline in students' perceptions of academic competence (Anderman & Midgley, 1997). With these documented decreases in both grades and behavior, it appears that the implementation of school-wide PBIS in middle schools is just as important as in the younger grades, if not more.

Effects of PBIS over time. PBIS has been effective in reducing discipline problems, improving academics, and increasing attendance. These effects have been found at the three-year level of implementation, with lesser effects found in previous

years. In discipline, major disciplinary punishments, such as suspension and expulsion, decreased even after the first year, but punishment for minor disciplinary problems increased the first year of implementation and then decreased over time (Luiselli, Putnam, Handler, & Feinberg, 2005). Increases in academic achievement have been found from year one with steady increases the longer that PBIS has been implemented (Lassen, Steele, and Sailor, 2006; Simonsen, et al., 2012). Attendance rates have also been shown to greatly improve over the course of multiple years of PBIS implementation (Taylor-Greene & Kartub, 2000). PBIS has also been shows to have positive effects on educators, and teachers have indicated more positive ratings of the school environment, school leadership, and school affiliation (Bradshaw, Koth, Thornton, & Leaf, 2009). School climate has also shown improvement after three years of PBIS implementation related to higher quality ratings of school experiences, school organizational health, and resource influence (Bradshaw, Koth, Thornton, & Leaf, 2009; Cohen, McCabe, Michelli, and Pickeral, 2009).

Purpose of the Study

Given the lack of research pertaining to PBIS in middle schools, as well as the absence of a study that compares PBIS outcomes at differing stages, the purpose of this study was to examine the impact of PBIS systems change at varying years of implementation in three middle schools using a cross-sectional design, while also assessing for within variable differences. At the time of data collection, School A had completed its first year of PBIS implementation, School B had completed its second year of PBIS implementation, and School C had completed its third year of PBIS implementation. In specific, this study assessed the impact of PBIS on student outcome

variables including office discipline referrals, major disciplinary actions, student academic achievement (using AIMS scores to identify student performance in reading and math for grades seven and eight), and student attendance rates, along with school climate factors related to teacher burnout, school safety, and overall school quality.

Research Questions and Hypotheses

1. To what extent will the length of implementation of PBIS have an effect on student office disciplinary referrals, and in particular, referrals for defiance, disrespect, and disruption?
    a. Hypothesis: The number of office disciplinary referrals for defiance, disrespect, and disruption will decrease with each year of PBIS implementation, with the most significant decrease occurring in School C, where PBIS was implemented the longest.
2. To what extent will the length of implementation of PBIS have an effect on major disciplinary decisions, such as in and out of school suspensions, in three middle schools in varying stages of PBIS implementation?
    a. Hypothesis: The number of major disciplinary decisions will decrease with each year of PBIS implementation, with the most significant decrease occurring in School C, where PBIS was implemented the longest.
3. To what extent will the length of implementation of PBIS have an effect on student reading achievement in three middle schools in varying stages of PBIS implementation?
    a. Hypothesis: Student academic achievement in the area of reading, as measured by the AIMS assessment, will increase in each school, with the

greatest increase occurring in School C, where PBIS was implemented the longest.

4. To what extent will the length of implementation of PBIS have an effect on student math achievement in three middle schools in varying stages of PBIS implementation?
    a. Hypothesis: Student academic achievement in the area of math, as measured by the AIMS assessment, will increase in each school, with the greatest increase occurring in School C, where PBIS was implemented the longest.
5. To what extent will the length of implementation of PBIS have an effect on student attendance in three middle schools in varying stages of PBIS implementation?
    a. Hypothesis: The amount of student absences will decrease in each school, with the largest decrease occurring in School C, where PBIS was implemented the longest.
6. To what extent do middle school teachers report burnout in three middle schools in varying stages of PBIS implementation?
    a. Hypothesis: Teachers in School C (the school in the third year of PBIS implementation) will report less burnout than teachers in schools A and B, as measured by the Maslach Burnout Inventory- Educator Survey (MBI-ES).
7. To what extent do middle school teachers report perceptions of safety and overall quality of the school environment in three middle schools in varying stages of PBIS implementation?

a. Hypothesis: Teachers in School C will report higher overall levels of perceived safety than teachers in schools A and B.
b. Hypothesis: Teachers in School C will report higher total levels of quality of the environment than teachers in schools A and B.

Chapter 2

Methodology

Participants

Initial contact was made with the district clinical services director to obtain permission to use previously collected data, as well as to use three schools' personnel as potential participants. Schools were selected on the basis of year of PBIS implementation as well as similar student characteristics such as socioeconomic status and grade level to the extent possible. Only one school had been implementing PBIS for three years and one school had been implementing PBIS for two years. Although these schools varied considerably on some characteristics, such as racial/ethnic composition and SES, these schools were the only two schools implementing PBIS long enough to be selected for the current study, and were thus the only possible choices for the two-year and three-year PBIS schools. The third school was selected based on the criteria of implementing PBIS for one year, as well as a balance of student characteristics between the other two selected schools.

A total of 123 certified teachers from schools A, B, and C were recruited through email and received a description of the study and active informed consent, along with a website link requesting their participation in the study. Teachers had the option to participate in the study by completing the MBI-ES survey provided in the email link. A total of 38 certified teachers from the three schools completed the survey. However, 37 participants were used for the data analysis as one participant only completed half of the survey questions, and a valid score on the MBI could not be calculated for that respondent. Of the 37 participants, 10 were male, 25 were female, and 2 elected to not

provide their gender. There were a total of 11 respondents from School A, 13 respondents from School B, and 13 respondents from School C. The cover letter used to elicit survey participation is present in Appendix A. After following the survey link, the teacher first had to check a box agreeing to informed consent, which then opened up the survey. In addition, the supplemental survey asked demographic questions pertaining to the respondent's gender, age, school employed at, teaching experience, role on campus, level of education, subjects taught, and whether the staff member was involved in general education, self-contained special education, and/or learning resource center (LRC) special education.

Pre-collected school climate survey data included a sample size of 117 teachers and staff members from the three schools. Additional staff members included classified staff. A total of 46 staff members responded from School A, 37 staff members responded from School B, and 34 staff members responded from School C.

In addition, student data from schools A, B, and C were included in the data analyses. Student absence rates, AIMS scores, amount and type of office discipline referrals, and amount of suspensions during the 2010-2011, 2011-2012, and 2012-2013 academic years were used to determine if PBIS had an effect on student behavior and academics.

Data was obtained from three suburban, public middle schools in the same school district, located in the Southwestern United States, that elected to implement the PBIS program to reduce student misbehavior and improve overall school climate. School A is a middle school that educates students from grades six to eight. With approximately 765 students, the student composition is 68% White, 23% Hispanic, 4% Asian, 4% Black, and

2% American Indian or Alaska Native. Approximately one-third of the students at School A are eligible for the free or reduced-price lunch program, and about 8% are English language learners. Because the other two middle schools included in the analysis contain only grades 7 -8, only grades 7-8 were examined at School A. School A implemented PBIS for the first time for the 2012-2013 academic school year, making the current year their first year of implementation. Therefore, school A was in the second phase of PBIS implementation, program installation.

School B is a middle school that educates students in grades seven and eight. With approximately 656 students, the student composition is 77% White, 14% Hispanic, 4% Black, 3% Asian, and 3% American Indian or Alaska Native. Approximately 23% of students at School B are eligible for the free or reduced-price lunch program, and about 2% are English language learners. School B began implementing PBIS during the 2011-2012 academic school year, making the current year their second year of implementation. Therefore, school B was in the third phase of PBIS implementation, initial implementation.

School C is a middle school that educates students in grades seven and eight. With approximately 452 students, the student composition is 45% Hispanic, 42% White, 6% American Indian or Alaska Native, and 6% Black. Approximately 59% of students at School C are eligible for the free or reduced-price lunch program, and about 12% are English language learners. School C began implementing PBIS at the beginning of the 2010-2011 academic school year, making the current year their third year of implementation. Therefore, school C was in the fourth phase of PBIS implementation, full implementation. All school faculty, administrators, and staff were trained in PBIS

procedures to ensure uniformity in implementation, and school team members continued to receive training and support throughout the process.

Measures

Disciplinary measures. A variety of methods were used to collect data pertaining to each research question. Data on office discipline referrals and disciplinary decisions were drawn from the district's data collection system. School policy directs school staff to write an office disciplinary referral when a student violates one of the established school rules. ODRs include the type of infraction, date, time, and location of the misbehavior, as well as the reporter and the assigned consequence. In accordance with PBIS policies, disciplinary decisions ranged in level of severity matched to the type of infraction. Minor discipline incidents included behavior problems such as tardiness, defiance, disrespect, inappropriate language, chewing of gum, and dress code violations. Major discipline incidents, which were handled by administrators, included behavior problems such as physical fights and serious aggression, cheating, harassment or bullying, use of alcohol or drugs, vandalism or property damage, or bringing weapons to school. Major disciplinary decisions included in-school suspension and out of school suspension. ODR data was collected for 2010-2011, 2011-2012, and 2012-2013 school years.

Achievement measures. Academic achievement was assessed utilizing data from the school's AIMS statewide assessment in reading and math (Arizona Department of Education, 2012a). Student scaled scores and performance levels on the reading and math AIMS portions were obtained from the school district for the 2010-2011, 2011-2012, and 2012-2013 school years. The AIMS test was developed by test contractors and the

Arizona Department of Education, teachers, and district test coordinators to eliminate bias and ensure alignment with academic content standards. The AIMS reading and mathematics assessments contain multiple-choice items in which the student is to select the best response from four possible answer choices. Test development involved the use of Arizona educators, who offered professional expertise and judgment and content and bias review. Items on both assessments can contribute to the student's score on the Criterion-Referenced Test (CRT), the norm-referenced test (NRT), or both portions (Arizona Department of Education, 2012a).

Scale scores for the AIMS are determined by the Arizona Department of Education and are classified into four ranges: Exceeds the Standard, Meets the Standard, Approaches the Standard, and Falls Far Below the Standard. Each year, cut scores are determined for these groupings for each grade level (Arizona Department of Education, 2012). Scale scores for grades 3 – 8 are placed on a vertical scale, and range from 200 to 800 on the reading assessment and range from 100 to 640 on the math assessment. Reading and math scale scores remained the same for the 2011, 2012, and 2013 academic years. In the area of reading, the state guidelines for performance level scale scores were as follows for 8th grade students: 602-800 Exceeds, 499-601 Meets, 452-498 Approaches, 270-451 Falls Far Below. The reading performance level scale scores were as follows for 7th grade students: 587-720 Exceeds, 489-586 Meets, 443-488 Approaches, 260-442 Falls Far Below. In the area of math, the performance level scale scores were as follows for 8th grade students: 475-640 Exceeds, 426-474 Meets, 409-425 Approaches, 200-408 Falls Far Below. The math performance level scale scores were as follows for 7th grade

students: 460-620 Exceeds, 411-459 Meets, 382-410 Approaches, 180-381 Falls Far Below (Arizona Department of Education, 2012a).

The yearly AIMS technical reports provide information pertaining to the reliability and validity evidence for the interpretation of the scores of the test used during that given academic year. Information regarding the reliability and validity of test scores on the AIMS assessment during the 2010-2011 academic year was obtained from the 2011 AIMS Technical Report (Arizona Department of Education, 2011). Reliability was estimated using measures of internal consistency on the multiple-choice reading and math portions of the assessment. Reliability estimates were generally good, with Cronbach's alpha levels for the total CRT of .90 for reading and .94 for math on the 7th grade assessment, and .90 for reading and .93 for math on the 8th grade assessment. Internal consistency estimates were lower for the NRT, with alpha levels for the total test of .77 for reading and .86 for math on the 7th grade assessment, and .77 for reading and .86 for math on the 8th grade assessment. Differential item functioning (DIF) was used to assess for item bias. Correlations between scale scores were analyzed by grade level, and correlations were consistently high between tests designed to measure the same constructs, and low between tests developed to measure different constructs.

Information regarding the reliability and validity of test scores on the AIMS assessment during the 2011-2012 academic year was obtained from the 2012 AIMS Technical Report (Arizona Department of Education, 2012b). Internal consistency of the reading and math tests was examined Cronbach's alpha. Internal consistency in the areas of reading and math on the total CRT were high for the test overall, with alpha levels of 0.91 for reading and 0.93 for math for the seventh grade, as well as alpha levels of 0.90

for reading and 0.94 for math for the eighth grade. Validity evidence was discussed in terms of test development, bias, and content validity in the 2012 AIMS Technical report. Item analysis was conducted using differential item functioning (DIF), classification consistency and accuracy, and correlations between scores on tests for each grade level.

Information regarding the reliability and validity of test scores on the AIMS assessment during the 2012-2013 academic year was obtained from the 2012 AIMS Technical Report (Arizona Department of Education, 2013). Estimates of internal consistency for the seventh and eighth grade AIMS assessments were generally good. Alpha levels for the total CRT were .91 for reading and .93 for math for the seventh grade assessment, and .91 for reading and .94 for math on the eighth grade assessment. Internal consistency estimates for the NRT were slightly lower, with alpha levels for the total test of .78 for reading and .86 for math on the seventh grade assessment, and .78 for reading and .87 for math on the eighth grade assessment. DIF analyses were conducted for ethnic subgroups and gender, and few items demonstrated strong DIF. Correlations were generally high for tests with similar constructs and lower for tests with dissimilar constructs.

Attendance measures. The total number of student absences was reported for each student during the 2010-2011, 2011-2012, and 2012-2013 academic years. In Arizona, attendance is defined for seventh and eighth grade students as the days in which a student "attends more than three-quarters of the instructional time scheduled for the day" (Arizona State Legislature, Title 15 – Education, §15-901, 2013). The data collection system utilized by the school district's reports on period attendance, meaning that the number of absences per period of the school day is displayed for each student for

each of the seven periods of the day. Because some students had varying numbers of reported absences by period, the average number of absences was calculated for each student and rounded to the nearest whole number. Students who received a 0 for number of absences for any one school day period were not included in the data set. A student may have had 0 absences in one class, but at least one or more absences in others, or a student may have had 0 absences in each class (perfect attendance) for the entire school year, yet both types of cases were eliminated from the data reporting software report. Thus, these cases were all excluded from the analysis. Daily absence rates of 0 were not created for the remaining enrolled students as it could not be determined if the remaining students truly had perfect attendance, or if they could have had some absences, but just had no marked absences in one particular class. Creating absence rates of 0 for remaining enrolled students may have resulted in biased results indicating that more students had perfect attendance than there actually were.

Maslach Burnout Inventory – Educators Survey. The Maslasch Burnout Inventory- Educators Survey (MBI-ES), based on the MBI Human Services Survey, was used to assess teacher burnout (Maslach, Jackson, Leiter, Schaufeli, & Schwab, 1986). The MBI-ES was standardized on a sample of 1,025 teachers and was selected for its direct applicability to survey respondents in this study, as well as its ease of use and brief completion time (Maslach, et al., 1996). The MBI-ES is a self-report measure that contains three subscales representing Emotional Exhaustion, Depersonalization, and Personal Accomplishment, which contain 9, 5, and 8 items, respectively. The three constructs selected to represent burnout on the MBI have received vast empirical support in educational settings as well as in exploratory factor analyses (Gold, Roth, Wright,

Michael, & Chin-Yi, 1992). The MBI-ES survey requires respondents to indicate on a 7-point scale how frequently the described work-related situation applies to their current employment situation on a total of 22 questions. A score of *0* represents the answer *Never* and a score of *6* represents the score of *Everyday*.

Scores on the MBI-ES are computed for each subscale; however, no overall composite score is generated. High degrees of burnout are indicated by elevated scores on the Emotional Exhaustion and Depersonalization subscales and depressed scores on the Personal Accomplishment subscale (Wilkerson, 2009). According the MBI-ES manual, scores on both the Emotional Exhaustion and Depersonalization scales are considered high if they are in the upper third of the normative distribution, low if they are in the lower third of the normative distribution, and average if they are in the middle third of the normative distribution (Maslach, et al., 1996). Potential burnout on the Personal Accomplishment scale is considered to be at high risk if the score falls within the lower third of the normative distribution, low risk if the score falls within the upper third of the distribution, and average if the score is in the middle third of the normative distribution (Maslach, et al., 1996). Cut-off scores according to the MBI manual for each of the three subscales are presented in Table 1.

Maslach and colleagues (1996) reported internal consistency measures of Cronbach's coefficient alpha as .90 for Emotional Exhaustion, .79 for Depersonalization, and .71 for Personal Accomplishment (Maslach, et al., 1996). The MBI manual reported that convergent validity studies indicated that the three subscales were related to observations reported by other individuals, including spouses and co-workers (Maslach, et al., 1996). Gold and colleagues (1992) also found evidence to support the validity of

the MBI-ES as a multi-dimensional instrument for assessing teacher burnout with factor analysis findings supporting the structure of the three subscales. The intercorrelations between subscales of the MBI-ES according to the standardization sample as reported in the MBI Manual, Third Edition, are provided in Table 2 (Maslach, et al., 1996).

Supplemental survey. In order to further assess data related to the hypotheses, a supplemental survey was created and included in the email link send to school personnel. This survey was developed to collect data pertaining to the research questions that were not assessed in the MBI-ES and to assess demographic information from the sample of school administrators, certified teachers, and classified personnel. Additional questions pertaining to the current study's research questions included the teachers' perceptions of the main reason for writing ODRs that year, the frequency of ODRs written, the frequency of recommending students for major disciplinary actions, and perception of how long the school has been implementing PBIS. The data collected from these questions were used to support findings pertaining to teacher burnout, ODRs issued and disciplinary actions, teacher buy-in to PBIS, and effects of PBIS on school climate. Appendix B includes the supplemental survey that was used.

School climate survey. A survey of various aspects of school climate was administered to teachers and staff at each of the schools at the end of 2012-2013 school year. Data collected from participant responses on these surveys were provided by the school district. The survey was generated by the school district and included questions pertaining to safety, respect, fairness, bullying, communication with others, responses to problems, school rules, and sense of enjoyment. Appendix C includes the school climate survey.

Procedures

Once approval from the Arizona State University Institutional Review Board was obtained, survey materials were distributed via email to school personnel from schools A, B, and C for completion. Surveys included both the MBI-ES questionnaire, as well as the supplemental survey. Informed consent was obtained from participants prior to the opening of the survey. Existing data was derived from DataCentral, an internal database used by the school district that included information pertaining to ODR data, major disciplinary decision data, academic achievement data, and attendance data. Non-identifiable student data was examined at Schools A, B, and C from the 2010-2011, 2011-2012, and 2012-2013 academic years for seventh and eighth grade students.

Chapter 3

Results

For each research hypothesis addressed, descriptive statistics, including means, frequencies, and standard deviations, were computed. Violations of assumptions were assessed prior to conducting the proposed analyses. Because the varying hypotheses utilized multiple, independent data sets, results will be addressed in the order that the research hypotheses were presented as they pertain to their individual research question.

Hypothesis 1

The first hypothesis stated that the number of office disciplinary referrals for defiance, disrespect, and disruption would decrease with each year of PBIS implementation, with the most significant decrease occurring in School C, which had implemented PBIS for three years. Descriptive statistics were computed and graphs were created to visually depict office referrals for Schools A, B, and C. One-way analyses of variance (ANOVAs) were conducted for each school, with one between-subjects factor (academic year/year of PBIS implementation). The dependent variables were the number of ODRs for defiance, disrespect, and disruption, or the total number of ODRs, received by students who were issued ODRs for that particular academic year. Additional ANOVAs were conducted to assess for differences across varying phases of PBIS implementation during the 2012-2013 academic year. The independent variable was the year of PBIS implementation associated with schools A, B, and C, and the dependent variables were the number of ODRs for defiance, disrespect, and disruption, or the total number of ODRs, received by students who were issued ODRs.

School A. Defiance and disrespect, which comprised one category of referrals, and disruption, a separate referral category, constituted the two most frequently issued types of office discipline referrals during the 2012-2013 year. Disruption was the most common ODR issued in School A, comprising 22.5% off all ODRs given that year. Defiance/disrespect was the second most common ODR issued, comprising 21.1% of all ODRs, and an "Other" type of violation of school policies was the third most common type of referral, issued comprising 6.1% of all ODRs. Figure 1 displays the total percentage and type of ODRs issued to students at School A during the 2012-2013 academic year.

During the 2012-2013 academic year, School A completed its first year of PBIS implementation. An overall decrease in the amount of ODRs issued for defiance and disrespect and disruption was observed across the 2011, 2012, and 2013 academic years, with a total of 189 ODRs for these categories issued in 2011, 181 issued in 2012, and 162 issued in 2013. Figure 2 displays the total number of ODRs for defiance and disrespect, disruption, and the categories combined across the academic years. Figure 3 depicts the total number of ODRs issued for all types of infractions, which also decreased across the three academic years, with a total of 501 ODRs issued in 2011, 416 ODRs issued in 2012, and 379 ODRs issued in 2013.

Descriptive statistics were calculated for students who received ODRs during the three academic years based on the number of ODRs each student obtained for defiance, disrespect, and disruption, as well as the total number of ODRs each student received. Sixth grade students were excluded from the analysis because Schools B and C only contained seventh and eighth grade students. During the 2010-2011 academic year, six

students received ODRs that did not include a description of the type of infraction. During the 2012-2013 academic year, six students received ODRs that did not include a description of the type of infraction. There was no missing data for the 2011-2012 academic year. Analyses of the total number of ODRs issued to seventh and eighth grade students included cases where the type of infraction was missing; however, analyses of referrals for defiance, disrespect, and disruption did not include these cases as it was not known if this could have been this type of ODR or not. Descriptive statistics for School A are presented in Table 3. Students who did not receive any ODRs for that particular academic year were excluded from the analysis.

Analysis of variance (ANOVA) was used to assess whether there were significant differences in the number of ODRs issued to those who received infractions for defiance, disrespect, and disruption, as well as the total number of ODRs, for each academic year. The ratio-level data demonstrated a skewed distribution due to a lower bound of 0 and a small percentage of students obtaining a large amount of referrals. Although the large sample size (n = 491) appears to be robust to the assumption regarding homogeneity of variance, the Welch statistic was selected for use, as the assumption pertaining to the equality of variances may not hold.

A one-way ANOVA was conducted to evaluate the relationship between the number of ODRs for defiance, disrespect, and disruption and the three consecutive academic years. The independent variable, academic year, included three levels: 2010-2011, 2011-2012, and 2012-2013, the last of which represented the first year of PBIS implementation for School A. The dependent variable was the change in the number of ODRs issued for defiance, disrespect, and disruption among students who where issued

referrals from year to year. The ANOVA, using the Welch statistic, was non-significant, *Fasymp*(2, 294.51) = .995, p = .371. Mean differences for students who received ODRs for defiance, disrespect, and disruption increased slightly from the 2010-2011 to the 2011-2012 academic year, and remained consistent through the 2012-2013 academic year. A one-way ANOVA was also conducted to evaluate the relationship between the total number of ODRs issued to students who received referrals during three consecutive academic years. The independent variable, academic year, included the three aforementioned academic years. The dependent variable was the change in the total number of ODRs issued from year to year. The ANOVA, using the Welch statistic, was non-significant, *Fasymp*(2, 296.58) = .297, p = .743. Mean differences for students who received ODRs increased slightly from the 2010-2011 to the 2011-2012 academic year, and remained consistent during the 2012-2013 academic year. In addition, the overall number of students who received ODRs decreased with each academic year.

School B. Defiance/disrespect and disruption comprised the two most frequently issued types of office discipline referrals during the 2012-2013 year for School B. Defiance/disrespect was the most common ODR issued, comprising 28.2% of all ODRs given that year. Disruption was the second most common ODR issued, comprising 19.2% of all ODRs, and drug violation was the third most common type of referral, issued comprising 9.0% of all ODRs. Figure 4 displays all of the ODRs issued to students at School B during the 2012 – 2013 academic year.

School B completed its first year of PBIS implementation at the end of the 2011-2012 academic year, and its second year of PBIS implementation at the end of the 2012-2013 academic year. The number of ODRs issued for defiance, disrespect, and disruption

remained stable during the 2010-2011 and 2011-2012 academic years, with a total of 81 ODRs issued for these categories in 2011 and 88 issued in 2012. A decrease in the number of ODRs issued for defiance and disrespect and disruption was observed in the 2012-2013 academic year, with a total of 38 ODRs for these categories issued in 2013. Figure 5 displays the total amounts of ODRs for defiance and disrespect, disruption, and the categories combined across the academic years. Figure 6 depicts the total amount of ODRs issued for all types of infractions, which decreased across the three academic years, with a total of 303 ODRs issued in 2011, 298 ODRs issued in 2012, 78 ODRs issued in 2013.

Descriptive statistics were calculated for students who received ODRs during the three academic years based on the number of ODRs each student obtained for defiance, disrespect, and disruption, as well as the total number of ODRs each student received. There was no missing information from ODRs during the three academic years assessed for School B. Descriptive statistics for School B are presented in Table 4. Students who did not receive any ODRs for that particular academic year were excluded from the analysis.

ANOVAs were used to assess whether there were significant differences in the number of ODRs issued to those who received infractions for defiance, disrespect, and disruption, as well as the total number of ODRs, for each academic year. The ratio-level data demonstrated a skewed distribution due to a lower bound of 0 and a small percentage of students obtaining a large amount of referrals. Although the large sample size ($n = 270$) appears to be robust to the assumption regarding homogeneity of variance,

the Welch statistic was selected for use, as the assumption pertaining to the equality of variances may not hold.

A one-way ANOVA was conducted to evaluate the number of ODRs for defiance, disrespect, and disruption issued during three consecutive academic years. The independent variable, academic year, included three levels: 2010-2011, 2011-2012, and 2012-2013. The dependent variable was the change in the number of ODRs issued for defiance, disrespect, and disruption in students who received referrals from year to year. The ANOVA, using the Welch statistic, was non-significant, $Fasymp(2, 104.26) = .348$, $p = .74$. Mean differences for students who received ODRs for defiance, disrespect, and disruption increased slightly from the 2010-2011 to the 2011-2012 academic year, and remained consistent during the 2012-2013 academic year. A one-way ANOVA was also conducted to evaluate the relationship between the total number of ODRs issued to students during three consecutive academic years. The independent variable, academic year, included the three aforementioned academic years. The dependent variable was the change in the total number of ODRs issued from year to year. The ANOVA, using the Welch statistic, was non-significant, $Fasymp(2, 122.56) = 2.46$, $p = .09$. Mean differences for students who received ODRs increased slightly from the 2010-2011 to the 2011-2012 academic year, and decreased moderately during the 2012-2013 academic year. In addition, the number of students who received ODRs decreased with each academic year.

School C. Defiance/disrespect and disruption comprised the first and third most frequently issued types of office discipline referrals during the 2012-2013 year for School C. Defiance/disrespect was the most common ODR issued, comprising 15.1% off all ODRs given that year. Disorderly conduct was the second most common ODR issued,

comprising 13.2% of all ODRs, and disruption was the third most common type of referral, issued comprising 9.2% of all ODRs. Figure 7 displays all of the ODRs issued to students at School C during the 2012-2013 academic year.

School C completed their first year of PBIS implementation at the end of the 2010-2011 academic year, their second year of PBIS implementation at the end of the 2011-2012 academic year, and their third year of PBIS implementation at the end of the 2012-2013 academic year. The number of ODRs issued for defiance, disrespect, and disruption decreased with each academic year that PBIS was implemented, with a total of 431 ODRs issued for these categories in 2011, 122 issued in 2012, and 68 issued in 2013. Figure 8 displays the total amounts of ODRs for defiance and disrespect, disruption, and the categories combined across the academic years. Figure 9 depicts the total number of ODRs issued for all types of infractions, which decreased across the three academic years, with a total of 1,351 ODRs issued in 2011, 443 ODRs issued in 2012, 271 ODRs issued in 2013.

Descriptive statistics were calculated for students who received ODRs during the three academic years based on the number of ODRs each student obtained for defiance, disrespect, and disruption, as well as the total number of ODRs each student received. During the 2010-2011 academic year, one student received an ODR that did not include a description of the type of infraction. During the 2011-2012 academic year, one student received an ODR that did not include a description of the type of infraction. There were no ODRs with missing information during the 2012-2013 academic year. Analyses of the total number of ODRs issued to seventh and eighth grade students included cases where the type of infraction was missing; however, analyses of referrals for defiance, disrespect,

and disruption did not include these cases as it was not known if this could have been this type of ODR or not. Descriptive statistics for School C are presented in Table 5. Students who did not receive any ODRs for that particular academic year were excluded from the analysis.

ANOVAs were used to assess whether there were significant differences in the amount of ODRs issued to those who received infractions for defiance, disrespect, and disruption, as well as the total number of ODRs, for each academic year. The ratio-level data demonstrated a skewed distribution due to a lower bound of 0 and a small percentage of students obtaining a large amount of referrals. Although the large sample size (n = 621) appears to be robust to the assumption regarding homogeneity of variance, the Welch statistic was selected for use, as the assumption pertaining to the equality of variances may not hold.

A one-way ANOVA was conducted to evaluate the relationship between the number of ODRs for defiance, disrespect, and disruption and the three consecutive academic years. The independent variable, academic year, included three levels: 2010-2011, 2011-2012, and 2012-2013. The dependent variable was the change in the number of ODRs issued for defiance, disrespect, and disruption from year to year. The ANOVA, using the Welch statistic, was significant, $Fasymp(2, 403.08) = 18.72$, $p < .001$. Follow-up tests were conducted to evaluate pairwise differences among the means. Because the homogeneity of variance assumption was violated and the variances between the groups differed, the Dunnett's C test was used to conduct post hoc comparisons. There was a significant difference in means between the 2010-2011 and 2011-2012 academic years, as well as the 2010-2011 to 2012-2013 academic years, with a significant decrease in ODRs

occurring in each successive school year and year of PBIS implementation. The 95% confidence intervals for the pairwise differences are reported in Table 5.

A one-way ANOVA was also conducted to evaluate the relationship between the total number of ODRs issued to students during three consecutive academic years. The independent variable, academic year, included the three aforementioned academic years. The dependent variable was the change in the total number of ODRs issued from year to year. The ANOVA, using the Welch statistic, was significant, $Fasymp(2, 406.48) = 36.77$, $p < .001$. Follow-up tests were conducted to evaluate pairwise differences among the means. Because the homogeneity of variance assumption was violated and the variances between the groups differed, the Dunnett's C test was used to conduct post hoc comparisons. There was a significant difference in means between the 2010-2011 and 2011-2012, 2010-2011 and 2012-2013, and 2011-2012 and 2012-2013 academic years, with a significant decrease in ODRs occurring in each successive school year and year of PBIS implementation. The 95% confidence intervals for the pairwise differences are reported in Table 5. In addition, the number of students who received ODRs decreased with each academic year.

Comparison across schools. The total number of ODRs issued for defiance/ disrespect and disruption, as well as the total amount of ODRs issued, were assessed across Schools A, B, and C. The percentage of change in ODRs issued for defiance/disrespect and disruption was calculated for each school by taking the reduction in ODRs for defiance/disrespect and disruption across the 2010-2011, 2011-2012, and 2012-2013 academic years and dividing by the total number of ODRs for these three categories during the 2010-2011 academic year. The percentage of change in the total

number of ODRs issued by each school was calculated for each school by taking the reduction in the total number of ODRs across the three academic years and dividing by the total number of ODRs issued during the 2010-2011 academic year. In terms of ODRs issued for defiance, disrespect, and disruption, School A demonstrated a 14.2% reduction in referrals issued, School B demonstrated a 53.1% reduction in referrals issued, and School C demonstrated a 84.2% reduction in referrals issued across the three academic years. Figure 10 displays the percentage of reductions in referrals for defiance, disrespect, and disruption at each school. In terms of total ODRs issued, School A demonstrated a 24.4% reduction in referrals issued, School B demonstrated a 74.2% reduction in referrals issued, and School C demonstrated a 79.9% reduction in referrals issued across the three academic years. Figure 11 displays the total percentage of reductions in referrals for each school. School C, which had been implementing PBIS for three years, showed the largest reductions in ODRs for defiance/disrespect and disruption, as well as in the total number of ODRs issued.

Trends in ODR data were also analyzed graphically by depicting the number of ODRs issued each week at Schools A, B, and C over the three year period. Weekly ODR data are presented in Figure 12. In School A, a visual analysis indicated a slight downward trend in ODR referrals across the three academic years, with the lowest numbers of ODRs issued during the 2012-2013 academic year and School A's first year of PBIS implementation. In School B, a visual analysis indicated somewhat similar rates of ODRs issues during the 2010-2011 and 2011-2012 academic years, and an apparent decrease in weekly ODRs issued during the 2012-2013 academic year, which represented School B's second year of PBIS implementation. In School C, a visual analysis indicated

a substantial reduction in weekly ODRs issued from the first year of PBIS implementation, 2010-2011, to the second year of implementation, 2011-2012, and to the third year of PBIS implementation, 2012-2013. In each of the three schools, weekly ODR rates appeared to remain rather consistent throughout the school year, although reductions in the numbers of ODRs issued were generally observed during each academic year at each school around the winter break period and at the end of the school year.

ANOVAs were used to assess whether there were significant differences in the number of ODRs issued to those who received infractions for defiance, disrespect, and disruption, as well as the total number of ODRs, across the three schools during the 2012-2013 academic year. The ratio-level data demonstrated a skewed distribution due to a lower bound of 0 and a small percentage of students obtaining a large amount of referrals. Although the large sample size (n = 323) appears to be robust to the assumption regarding homogeneity of variance, the Welch statistic was selected for use, as the assumption pertaining to the equality of variances may not hold.

A one-way ANOVA was conducted to evaluate the relationship between the number of ODRs for defiance/disrespect and disruption across Schools A, B, and C during the 2012-2013 academic year. The independent variable, the year of PBIS implementation associated with each school, included three levels: School A (one year), School B (two years), and School C (three years). The dependent variable was the number of ODRs issued for defiance/disrespect and disruption. The ANOVA, using the Welch statistic, was significant, $Fasymp(2, 102.05) = 8.16$, $p = .001$. Follow-up tests were conducted to evaluate pairwise differences among the means. Because the homogeneity of variance assumption was violated and the variances between the groups

differed, the Dunnett's C test was used to conduct post hoc comparisons. There was a significant difference in means between Schools A and C, with a decrease in the number of ODRs for defiance, disrespect, and disruption occurring in each successive school year and year of PBIS implementation, and a significant decrease between the first and third implementation years. The 95% confidence intervals for the pairwise differences are reported in Table 6.

A one-way ANOVA was also conducted to evaluate the relationship between the total number of ODRs issued to students in each of the three schools. The independent variable was the number of years of PBIS implementation associated with each school. The dependent variable was the total number of ODRs issued. The ANOVA, using the Welch statistic, was significant, $Fasymp(2, 108.00) = 4.03$, $p = .02$. Follow-up tests were conducted to evaluate pairwise differences among the means. Because the homogeneity of variance assumption was violated and the variances between the groups differed, the Dunnett's *C* test was used to conduct post hoc comparisons. There was a significant difference in means between total number of ODRs occurring in the first and third years of PBIS implementation associated with Schools A and C. The 95% confidence intervals for the pairwise differences are reported in Table 7.

Finally, one-way ANOVAs were conducted to evaluate the relationship between the three most common types of ODRs, as well as total ODRs, across the three schools, accounting for the entire seventh and eighth grade populations. Because data was only available for students who received ODRs, the remaining portion of the student population was simulated by creating an individual identification numbers for students who did not receive ODRs, and each was assigned a score of 0. Enrollment numbers

reported to the Arizona Department of Education were used for Schools B and C, which were 590 and 463 students, respectively. Because School A also included sixth grade students in the enrollment numbers, the number of seventh and eighth students who completed the AIMS assessment during the 2012-2013 academic year was used as the total number of seventh and eighth grade students at School A, which was 468.

A one-way ANOVA was conducted to evaluate the relationship between the number of ODRs for defiance/disrespect and disruption across Schools A, B, and C during the 2012-2013 academic year including students who did not receive ODRs. The ANOVA, using the Welch statistic, was significant, $Fasymp(2, 908.24) = 12.68$, $p < .001$. Follow-up tests were conducted to evaluate pairwise differences among the means. Because the homogeneity of variance assumption was violated and the variances between the groups differed, the Dunnett's C test was used to conduct post hoc comparisons. There were significant differences in means between Schools A and B, Schools A and C, and Schools B and C. Schools B and C, where PBIS had been implemented for two years and three years, respectively, issued significantly less ODRs for defiance/disrespect and disruption than School A, where PBIS had been implemented for one year. Additionally, School B issued significantly fewer ODRs than School C. The 95% confidence intervals for the pairwise differences are reported in Table 7.

A one-way ANOVA was also conducted to evaluate the relationship between the total number of ODRs issued to students in each of the three schools, including students who did not receive ODRs. The ANOVA, using the Welch statistic, was significant, $Fasymp(2, 830.76) = 39.34$, $p < .001$. Follow-up tests were conducted to evaluate pairwise differences among the means. Because the homogeneity of variance assumption

was violated and the variances between the groups differed, the Dunnett's *C* test was used to conduct post hoc comparisons. There were significant differences in means between Schools A and B, and Schools B and C. Schools B, where PBIS had been implemented for two years, issued significantly less ODRs overall than School A, where PBIS had been implemented for one year, and School C, where PBIS had been implemented for three years. Schools A and C were not significantly discrepant. The 95% confidence intervals for the pairwise differences are reported in Table 7.

Hypothesis 2

The second hypothesis, which stated that the number of major disciplinary decisions will decrease with each year of PBIS implementation, with the most significant decrease occurring in school C, was evaluated through visual analysis of the data. The amount of major disciplinary decisions for the 2011, 2012, and 2013 academic years was evaluated within each school, and across the three schools for the 2012-2013 academic year. Additionally, one-way ANOVAs were conducted for each school, with one between-subjects factor (academic year/year of PBIS implementation). The dependent variable was the number of major disciplinary decisions received by each student who received a disciplinary action. An additional ANOVA was conducted to assess for differences across varying phases of PBIS implementation. The independent variable was the year of PBIS implementation associated with schools A, B, and C, and the dependent variable was the number of major disciplinary decisions received by each student. One disciplinary action of expulsion was issued at one school (School B) during the 2010-2011 academic year. Because this was the only case of expulsion, and this analysis sought to only examine suspension data, this case was also excluded from the analysis

because expulsion would be considered a major disciplinary decision over a minor disciplinary decision.

School A. School A decreased the amount of in- and out-of-school suspensions issued by 28% over a three-year period. Students in the sixth grade who were issued any type of disciplinary decision were excluded from the analysis. School A issued 131 major disciplinary decisions during the 2010-2011 academic year, 119 major disciplinary decisions during the 2011-2012 academic year, and 94 major disciplinary decisions during the 2012-2013 academic year. School A began its first year of PBIS implementation during the 2012-2013 academic year, in which major disciplinary decisions were the lowest. The number of major disciplinary decisions made by School A across the three academic years is depicted in Figure 13.

Descriptive statistics were calculated for students who received a disciplinary action of an in- or out-of-school suspension during the three academic years based on the total number of disciplinary actions administered to students for that given year. Descriptive statistics for School A are presented in Table 8. There were 18 students during the 2010-2011 school year, 13 students during the 2011-2012 school year, and 5 students during the 2012-2013 school year for which the type of disciplinary action issued was not specified. These cases were excluded from the analysis as it is possible that the consequence could have been either a major or minor disciplinary decision. Students who did not receive any disciplinary actions for that particular academic year were excluded from the analysis. An analysis of variance (ANOVA) was used to assess whether there were significant differences in the amount of major disciplinary decisions issued each academic year. The ratio-level data demonstrated a skewed distribution due

to a lower bound of 0 and a small percentage of students obtaining a large amount of major disciplinary actions. Although the large sample size (n = 476) appears to be robust to the assumption regarding homogeneity of variance, the Welch statistic was selected for use, as the assumption pertaining to the equality of variances may not hold.

A one-way ANOVA was conducted to evaluate the number of major disciplinary decisions made during three consecutive academic years. The independent variable, academic year, included three levels: 2010-2011, 2011-2012, and 2012-2013, which represented the first year of PBIS implementation for School A. The dependent variable was the change in the number of major disciplinary decisions issued from year to year. The ANOVA, using the Welch statistic, was non-significant, $Fasypm(2, 474.20) = .522$, $p = .59$. Mean differences for students who received major disciplinary decisions increased slightly from the 2010-2011 to the 2011-2012 academic year, and remained consistent during the 2012-2013 academic year.

School B. School B decreased the amount of in- and out-of-school suspensions issued by 61% over a three-year period. School B issued 99 major disciplinary decisions during the 2010-2011 academic year, 98 major disciplinary decisions during the 2011-2012 academic year, and 39 major disciplinary decisions during the 2012-2013 academic year. School B began its first year of PBIS implementation during the 2011-2012 academic year, and decreased the number of major disciplinary decisions by 59 during the 2012-2013 academic year (PBIS year 2), in which major disciplinary decisions were the lowest. The number of major disciplinary decisions made by School B across the three academic years is depicted in Figure 14.

Descriptive statistics were calculated for students who received a disciplinary action of an in- or out-of-school suspension during the three academic years based on the total number of disciplinary actions administered to students for that given year. Descriptive statistics for School B are presented in Table 9. There were 4 cases during the 2010-2011 school year, 6 cases during the 2011-2012 school year, and 11 cases during the 2012-2013 school year for which the type of disciplinary action issued was not specified. These cases were excluded from the analysis as it is possible that the consequence could have been either a major or minor disciplinary decision. Students who did not receive any disciplinary actions for that particular academic year were excluded from the analysis.

A one-way ANOVA was used to assess whether there were significant differences in the number of major disciplinary decisions issued each academic year. The ratio-level data demonstrated a skewed distribution due to a lower bound of 0 and a small percentage of students obtaining a large amount of major disciplinary actions. Although the large sample size (n = 261) appears to be robust to the assumption regarding homogeneity of variance, the Welch statistic was selected for use, as the assumption pertaining to the equality of variances may not hold.

A one-way ANOVA was conducted to evaluate the number of major disciplinary decisions made during three consecutive academic years at School B. The independent variable, academic year, included three levels: 2010-211, 2011-2012 (PBIS year one), and 2012-2013 (PBIS year two). The dependent variable was the change in the number of major disciplinary decisions issued from year to year. The ANOVA, using the Welch statistic, was non-significant, $Fasymp$ (2, 144.54) = .093, p = .911. Mean differences for

students who received major disciplinary decisions increased slightly from the 2010-2011 to the 2011-2012 academic year, and remained consistent during the 2012-2013 academic year.

School C. School C decreased the amount of in- and out-of-school suspensions issued by 65% over a three-year period. School C issued 457 major disciplinary decisions during the 2010-2011 academic year, 194 major disciplinary decisions during the 2011-2012 academic year, and 165 major disciplinary decisions during the 2012-2013 academic year. School C began its first year of PBIS implementation during the 2010-2011 academic year, and decreased the number of major disciplinary decisions by 273 during the 2012-2013 academic year (PBIS year 2), and another 29 during the 2012-2013 academic year (PBIS year 3), in which major disciplinary decisions were the lowest. The number of major disciplinary decisions made by School C across the three academic years is depicted in Figure 15.

Descriptive statistics were calculated for students who received a disciplinary action of an in- or out-of-school suspension during the three academic years based on the total number of disciplinary actions administered to students for that given year. There were 14 students during the 2010-2011 school year, 10 cases during the 2011-2012 school year, and 3 cases during the 2012-2013 school year for which the type of disciplinary action issued was not specified. These cases were excluded from the analysis as it is possible that the consequence could have been either a major or minor disciplinary decision. Students who did not receive any disciplinary actions for that particular academic year were excluded from the analysis.

A one-way ANOVA was used to assess whether there were significant differences in the amount of major disciplinary decisions issued each academic year. The ratio-level data demonstrated a skewed distribution due to a lower bound of 0 and a small percentage of students obtaining a large amount of major disciplinary actions. Although the large sample size (n = 571) appears to be robust to the assumption regarding homogeneity of variance, the Welch statistic was selected for use as the assumption pertaining to the equality of variances was not upheld.

A one-way ANOVA was conducted to evaluate the number of major disciplinary decisions made during three consecutive academic years. The independent variable, academic year, included three levels: 2010-2011, 2011-2012, and 2012-2013, which represented the first through third years of PBIS implementation for School C. The dependent variable was the change in the number of major disciplinary decisions issued from year to year. The ANOVA, using the Welch statistic, was significant, *Fasypm*(2, 359.32) = 7.49, $p = .001$. Follow-up tests were conducted to evaluate pairwise differences among the means. Because the homogeneity of variance assumption was violated and the variances between the groups differed, the Dunnett's *C* test was used to conduct post hoc comparisons. There was a significant difference in means between the 2010-2011 and 2011-2012 academic years, as well as the 2010-2011 and 2012-2013 academic years, with a significant decrease in the number of major disciplinary decisions issued to those who received disciplinary consequences from the first year of PBIS implementation (2010-2011) to the second and third years of PBIS implementation (2011-2012 and 2012-2013). Descriptive statistics and 95% confidence intervals for School C are presented in Table 10.

Comparison across schools. The percentage reduction in major disciplinary decisions issued by Schools A, B, and C were compared for the 2012-2013 academic year. Schools B and C greatly reduced (over 60%) the numbers of in- and out-of-school suspensions after two to three years of PBIS implementation. The percentage reduction major disciplinary decisions made by Schools A, B, and C across the 2012-2013 academic year is depicted in Figure 16.

A one-way ANOVA was conducted to evaluate the relationship between the number of major disciplinary decisions made during the 2012-2013 academic year at each of the three schools associated with varying stages of PBIS implementation. The independent variable was the stage of PBIS implementation associated with Schools A, B, and C. The dependent variable was the number of major disciplinary decisions issued to students who received disciplinary consequences. The ANOVA, using the Welch statistic, was significant, $Fasypm(2, 158.37) = 4.20$, $p = .01$. Follow-up tests were conducted to evaluate pairwise differences among the means. Because the homogeneity of variance assumption was violated and the variances between the groups differed, the Dunnett's *C* test was used to conduct post hoc comparisons. There was a significant difference in means between Schools A and C, with School C having a significantly higher mean amount of major disciplinary consequences issued to students who received disciplinary actions. Descriptive statistics and 95% confidence intervals for the pairwise comparisons are presented in Table 11.

Hypotheses 3 and 4

Hypotheses three and four stated that the implementation of PBIS would increase academic achievement scores in the areas of reading and math, as measured by the AIMS

assessment, within each school, and across schools, with the highest reading and math scores occurring in School C. Achievement scores in reading and math were evaluated within each school across a three year period, and across schools for the 2012-2013 academic year, using a Kruskal-Wallis H test to assess the number of students falling within each of the four AIMS performance levels. A rating score of 1 represented the category Falls Far Below, a rating score of 2 represented the category Approaches, a rating score of 3 represented the category Meets, and a rating score of 4 represented the category Exceeds. ANOVAs were also used to evaluate achievement scale scores in reading and math within each school across a three-year period and across schools for the 2012-2013 academic year.

Reading.

School A. In the area of reading, the median performance level for students in School A for all three academic years, 2010-2011, 2011-2012, and 2012-2013, was a 3, or Meets. Frequencies indicating the number and percentage of students scoring in each of the four performance levels are presented in Table 12 by academic year. In the 2010-2011 academic year, 79.5% of students met or exceeded reading standards, in the 2011-2012 academic year, 83.4% of students met or exceeded reading standards, and 83.6% of students met or exceeded reading standards during the 2012-2013 academic year. The 2012-2013 academic year comprised the first year of PBIS implementation at School A. The percentage of students meeting or exceeding on the reading portion of the AIMS increased by 4.1% from 2011 to the first year of PBIS implementation in 2013. Students at School C earned a mean score of 2.88 (*SD* = .722) in 2011, a mean score of 2.96 (*SD* = .632), and a mean score of 2.94 (*SD* = .566) in 2013. Results of a Kruskal-Wallis H test

indicated that AIMS reading achievement performance levels were not statistically different between the 2010-2011, 2011-2012, and 2012-2013 academic years, $\chi^2(2) = 2.142$, $p = .343$. Student performance levels on AIMS reading assessments remained consistent from the years prior to PBIS implementation to the first year of PBIS implementation.

In order to further assess academic achievement in reading, AIMS scale scores were analyzed using one-way ANOVAs, with the year prior to PBIS implementation (2011-2012) and the first year of PBIS implementation (2012-2013) being the two levels of the independent variable, and AIMS reading scale scores being the dependent variable. Due to differences in the way that data was reported during the varying school years, missing data varied based on the school year it was reported. During the 2011-2012 academic year, there were 39 students who were not present for the entire school year. For these students, the data reporting software does not include the student identification number or grade level, so these scores were excluded from the analysis. Additionally, there were 22 students in the eighth grade and 31 students in the seventh grade for which scale scores were not reported. Thus, a total of 92 cases were excluded from the 2011-2012 data. During the 2012-2013 academic year, there were 27 students in the eighth grade and 50 students in the seventh grade for which scale scores were not reported. Thus, a total of 77 cases were excluded from the 2012-2013 data.

In order to control for the possibility of committing a Type I error, the alpha level for each grade level ANOVA was set to .025. The ANOVA comparing seventh grade AIMS reading scores from the two years prior to PBIS implementation to the first year of PBIS implementation in School A was non-significant, $F(1, 445) = .30$, $p = .58$. Levene's

test of homogeneity of variance was non-significant, $p = .054$, indicating that the equality of variance assumption was not violated. Visual inspection of scale score histogram plots indicated that the distributions generally adhered to the normal curve. The results of this analysis indicate that there were no significant differences in reading score means for seventh grade students between the 2011-2012 and 2012-2013 academic years. The means and standard deviations for the two academic years are reported in Table 13. The ANOVA for eighth grade AIMS reading scores in School A was non-significant, $F(1, 434) = .35$, $p = .51$, indicating that there were no significant differences between eighth grade reading scale scores across the two academic years. The means and standard deviations for eighth grade reading scale scores at School A for the three academic years are reported in Table 13.

School B. In the area of reading, the median performance level for students in School B for each of the three academic years (2010-2011, 2011-2012, 2012-2013) was a 3, or Meets. Frequencies indicating the number and percentage of students scoring in each of the four performance levels are presented in Table 14 by academic year. In the 2010-2011 academic year, 83.5% of students met or exceeded reading standards, followed by 86.1% during the 2011-2012 academic year, and 83.5% during the 2012-2013 academic year. The 2012 academic year comprised the first year of PBIS implementation at School B, and 2012-2013 comprised the second academic year of PBIS implementation. The percentage of students meeting or exceeding on the reading portion of the AIMS slightly increased by 2.6% from the 2010-2011 academic year to the 2012 academic year, and then decreased by 2.6% and returned to the same percentage of students meeting and exceeding standards during the second year of PBIS

implementation. The mean performance level at School B was 2.91 (*SD* = .661) in 2011, 2.93 (*SD* = .595) in 2012, and 2.90 (*SD* = .620) in 2013. AIMS reading achievement performance levels were not statistically different between the 2010-2011, 2011-2012, and 2012-2013 academic years, $\chi^2(2) = 0.986$, $p = .611$. Student AIMS readings performance levels remained consistent from the year prior to PBIS implementation to the second year of PBIS implementation.

In order to further assess academic achievement in reading, AIMS scale scores were analyzed using one-way ANOVAs, with the three academic years being the three levels of the independent variable, and AIMS reading scale scores being the dependent variable. Missing data varied based on the school year it was reported. During the 2011-2012 academic year, no missing data was reported. During the 2011-2012 academic year, there were 39 students who were not present for the entire school year. For these students, the data reporting software does not include the student identification number or grade level, so these scores were excluded from the analysis. Additionally, there were 33 students in the eighth grade and 21 students in the seventh grade for which scale scores were not reported. Thus, a total of 93 cases were excluded from the 2011-2012 data. During the 2012-2013 academic year, there were 19 students in the eighth grade and 19 students in the seventh grade for which scale scores were not reported. Thus, a total of 38 cases were excluded from the 2012-2013 data.

In order to control for the possibility of committing a Type I error, the alpha level for each grade level ANOVA was set to .025. The ANOVA for seventh grade AIMS reading scores in School B was significant, $F(2, 817) = 11.25$, $p < .001$. The strength of the relationship between the academic years and reading achievement, as assessed by η^2,

was small, with the academic year accounting for 2.7% of the variance in reading achievement scores. Levene's test of homogeneity of variance was non-significant, p = .172, indicating that the equality of variance assumption was not violated. Visual inspection of scale score histogram plots indicated that the distributions generally adhered to the normal curve. Follow-up tests were conducted to evaluate pairwise differences among the means. The Tukey HSD procedure was used to control for Type I error across the pairwise comparisons. The results of this analysis indicate that there were significant differences in means between the 2010-2011 and 2011-2012 academic years, and the 2010-2011 and 2012-2013 academic years, indicating that reading achievement scores were significantly higher during the 2010-2011 academic year than the following two academic years. The 95% confidence intervals for the pairwise comparisons, as well as the means and standard deviations for the three academic years, are reported in Table 15.

The ANOVA for eighth grade AIMS reading scores was significant, $F(2, 819) = 9.45$, $p < .001$. The strength of the relationship between the academic years and reading achievement, as assessed by η^2, was small, with the academic year accounting for 2.3% of the variance in reading achievement scores. Levene's test of homogeneity of variance was significant, $p = .001$; however, the large sample size is generally robust to this assumption. Visual inspection of scale score histogram plots indicated that the distributions generally adhered to the normal curve. The Tukey HSD procedure was used to control for Type I error across the pairwise comparisons. The results of this analysis indicate that there were significant differences in means between the 2010-2011 and 2011-2012 academic years, and the 2010-2011 and 2012-2013 academic years, indicating

that reading achievement scores for eighth grade students were significantly higher during the 2011-2012 and 2012-2013 academic years than the 2010-2011 academic year. The 95% confidence intervals for the pairwise comparisons, as well as the means and standard deviations for the three academic years, are reported in Table 16.

School C. In the area of reading, the median performance level for students in School C for each of the three schools academic years (2010-2011, 2011-2012, 2012-2013) was a 3, or Meets. Frequencies indicating the number and percentage of students scoring in each of the four performance levels are presented in Table 17 by academic year. In the 2010-2011 academic year, 68.7% of students met or exceeded reading standards, followed by 75.7% during the 2011-2012 academic year, and 76.9% during the 2012-2013 academic year. This comprised the first, second, and third years of PBIS implementation at School C, respectively. Thus, the percentage of students meeting or exceeding on the reading portion of the AIMS increased by 8.2% from the first to the third year of PBIS implementation. Students at School C obtained mean performance levels of 2.67 (*SD* = .772) in 2011, 2.78 (*SD* =.659) in 2012, and 2.80 (*SD* = .721) in 2013. AIMS reading achievement performance levels were significantly different between years 2011, 2012, and 2013, $\chi^2(2) = 11.535$, $p = .003$. Pairwise comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons. *Post-hoc* analysis revealed statistically significant differences in reading achievement scores between the 2010-2011 year and the 2011-2012 year ($p = .044$), as well as the 2010-2011 year and the 2012-2013 year ($p = .004$).

In order to further assess academic achievement in reading in School C, AIMS scale scores were analyzed using one-way ANOVAs, with the three academic years being

the three levels of the independent variable, and AIMS reading scale scores being the dependent variable. Missing data varied based on the school year it was reported. During the 2010-2011 academic year, there was one student in seventh grade and one student in eighth grade for which scale scores were not reported. During the 2011-2012 academic year, there were 35 students who were not present for the entire school year. For these students, the data reporting software does not include the student identification number or grade level, so these scores were excluded from the analysis. Additionally, there were 22 students in the eighth grade and 47 students in the seventh grade for which scale scores were not reported. Thus, a total of 104 cases were excluded from the 2011-2012 data. During the 2012-2013 academic year, there were 47 students in the eighth grade and 33 students in the seventh grade for which scale scores were not reported. Thus, a total of 80 cases were excluded from the 2012-2013 reading data.

In order to control for the possibility of committing a Type I error, the alpha level for each grade level ANOVA was set to .025. The ANOVA for seventh grade AIMS reading scores was significant, $F(2, 648) = 4.07$, $p = .018$. The strength of the relationship between the academic years and reading achievement, as assessed by η^2, was small, with the academic year accounting for 1.2% of the variance in reading achievement scores. Levene's test of homogeneity of variance was non-significant, $p = .115$, indicating that the equality of variance assumption was not violated. Visual inspection of scale score histogram plots indicated that the distributions generally adhered to the normal curve. The Tukey HSD procedure was used to control for Type I error across the pairwise comparisons. The results of this analysis indicate that there were significant differences in means between the 2010-2011 and 2011-2012 academic years,

indicating that reading achievement scores were significantly higher during the 2010-2011 academic year than the 2011-2012 academic year. The 95% confidence intervals for the pairwise comparisons, as well as the means and standard deviations for the three academic years, are reported in Table 18.

The ANOVA for eighth grade AIMS reading scores was significant, $F(2, 651) = 11.80$, $p < .001$. The strength of the relationship between the academic years and reading achievement, as assessed by η^2, was small, with the academic year accounting for 3.5% of the variance in reading achievement scores. Levene's test of homogeneity of variance was non-significant, $p = .078$, indicating that the equality of variance assumption was not violated. Visual inspection of scale score histogram plots indicated that the distributions generally adhered to the normal curve. The Tukey HSD procedure was used to control for Type I error across the pairwise comparisons. The results of this analysis indicate that there were significant differences in means between the 2010-2011 and 2011-2012 academic years and the 2010-2011 and 2012-2013 academic years, indicating that reading achievement scores were significantly higher during the 2011-2012 and 2012-2013 academic years than the previous academic year. The two most recent academic years analyzed represented the second and third years of PBIS implementation in School C. The 95% confidence intervals for the pairwise comparisons, as well as the means and standard deviations for the three academic years, are reported in Table 19.

Comparison across schools. An across school comparison was made across Schools A, B, and C during the 2012-2013 academic year to assess for differences in reading achievement scores during the varying stages of PBIS implementation. In the area of reading, the median score for each of the three schools during the 2012-2013

academic year was a 3, or Meets. Frequencies indicating the number and percentage of students scoring in each of the four performance levels are presented in Table 20 for each school. In the 2012-2013 academic year, 83.6% of students at School A met or exceeded reading standards, 83.5% of students at School B met or exceeded reading standards, and 76.9% of students at School C met or exceeded reading standards. The percentage of students meeting or exceeding on the reading portion of the AIMS was equivalent in Schools A and B, and 6.7% lower in School C, which represented the third year of PBIS implementation. Students at School A obtained a mean performance level of 2.94 (*SD* = .57), students at School B reported a mean score of 2.90 (*SD* =.62), and students at School C reported a mean score of 2.81 (*SD* = .70). AIMS reading performance levels were statistically significant between Schools A, B, and C, $\chi^2(2) = 7.352$, $p = .025$. Pairwise comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons. *Post-hoc* analysis revealed statistically significant differences in reading achievement scores between School A and School C, with School A having significantly higher reading performance level ($p = .032$).

In order to further assess academic achievement in reading across the varying stages of PBIS implementation, AIMS scale scores were analyzed using one-way ANOVAs, with the three schools and associated levels of PBIS implementation being the three levels of the independent variable, and AIMS reading scale scores being the dependent variable. In order to control for the possibility of committing a Type I error, the alpha level for each grade level ANOVA was set to .025. The ANOVA for seventh grade AIMS reading scores across Schools A, B, and C was significant, $F(2, 667) = 22.95$, $p < .001$. The strength of the relationship between the amount of time PBIS was

implemented (associated with each school) and seventh grade reading achievement, as assessed by η^2, was moderate, with the school/year of implementation accounting for 6.4% of the variance in reading achievement scores. Levene's test of homogeneity of variance was non-significant, $p = .230$, indicating that the equality of variance assumption was not violated. Visual inspection of scale score histogram plots indicated that the distributions generally adhered to the normal curve. The Tukey HSD procedure was used to control for Type I error across the pairwise comparisons. The results of this analysis indicate that there were significant differences in means in seventh grade reading scores between Schools A and B, as well as Schools B and C. Results indicated that reading achievement scores were significantly higher in School B as compared to School A, and significantly lower in School C as compared to School B. There were no significant differences between Schools A and C. The 95% confidence intervals for the pairwise comparisons, as well as the means and standard deviations for the three academic years, are reported in Table 21.

The ANOVA for eighth grade AIMS reading scores across Schools A, B, and C was significant, $F(2, 716) = 4.88$, $p = .008$. The strength of the relationship between the amount of time PBIS was implemented (associated with each school) and eighth grade reading achievement, as assessed by η^2, was small, with the school/year of implementation accounting for 1.3% of the variance in reading achievement scores. Levene's test of homogeneity of variance was significant, $p = .041$; however, the large sample size used in this analysis is generally robust to this assumption. Visual inspection of scale score histogram plots indicated that the distributions generally adhered to the normal curve. The Tukey HSD procedure was used to control for Type I error across the

pairwise comparisons. The results of this analysis indicate that there were significant differences in means in eighth grade reading scores between Schools B and C, indicating that reading achievement scores were significantly higher in School B as compared to School C. The 95% confidence intervals for the pairwise comparisons, as well as the means and standard deviations for the three academic years, are reported in Table 22.

Math.

School A. In the area of math, the median score for School A for each of the three academic years was a 3, or Meets. Frequencies indicating the number and percentage of students scoring in each of the four performance levels are presented in Table 23 by academic year. In the 2010-2011 academic year, 64.2% of students met or exceeded math standards, followed by 65.0% during the 2011-2012 academic year, and 63.7% during the 2012-2013 academic year. The percentage of students meeting or exceeding on the math portion of the AIMS increased by 0.8% from the 2011 academic year to the 2012 academic year, and decreased slightly by 1.3% from the 2012 academic year to the 2013 academic year, which was School A's first year of PBIS implementation. Students at School A obtained mean performance levels of 2.76 (*SD* = 1.142) in 2011, 2.79 (*SD* = 1.030) in 2012, and 2.72 (*SD* = 1.023) in 2013. AIMS math achievement performance levels were not statistically different from one another between the 2011, 2012, and 2013 academic years, $\chi^2(2) = 1.583$, $p = .453$. Student AIMS performance levels in math remained consistent from the years prior to PBIS implementation to the second year of PBIS implementation.

In order to further assess academic achievement in math in School A, AIMS scale scores were analyzed using one-way ANOVAs, with the year prior to PBIS

implementation (2011-2012) and the first year of PBIS implementation (2012-2013) being the two levels of the independent variable, and AIMS math scale scores being the dependent variable. During the 2011-2012 academic year, there were 43 students who were not present for the entire school year. For these students, the data reporting software does not include the student identification number or grade level, so these scores were excluded from the analysis. Additionally, there were 23 students in the eighth grade and 31 students in the seventh grade for which scale scores were not reported. Thus, a total of 97 cases were excluded from the 2011-2012 data. During the 2012-2013 academic year, there were 27 students in the eighth grade and 50 students in the seventh grade for which scale scores were not reported. Thus, a total of 77 cases were excluded from the 2012-2013 data.

In order to control for the possibility of committing a Type I error, the alpha level for each grade level ANOVA was set to .025. The ANOVA for seventh grade AIMS math scores was significant, $F(1, 441) = 66.37$, $p < .001$. The strength of the relationship between the academic years and math achievement, as assessed by η^2, was moderate, with the non-PBIS academic year accounting for 13% of the variance in math achievement scores. Levene's test of homogeneity of variance was non-significant, $p = .23$. Visual inspection of scale score histogram plots indicated that the distributions generally adhered to the normal curve. The results of this analysis indicated that there were significant differences in means between the 2011-2012 and 2012-2013 academic years, indicating that math achievement scores were significantly higher during the 2011-2012 academic year. The means and standard deviations for the two academic years are reported in Table 24.

The ANOVA for eighth grade AIMS math scores was significant, $F(1, 476) = 15.42$, $p < .001$. The strength of the relationship between the academic years and math achievement, as assessed by η^2, was small, with the academic year accounting for 3% of the variance in math achievement scores. Levene's test of homogeneity of variance was non-significant, $p = .92$. Visual inspection of scale score histogram plots indicated that the distributions generally adhered to the normal curve. The results of this analysis indicated that there were significant differences in means between the 2011-2012 and 2012-2013 academic years, indicating that math achievement scores were significantly higher during the year prior to PBIS implementation. The means and standard deviations for the two academic years are reported in Table 24.

School B. In the area of math, the median performance level for School B for each of the three academic year was a 3, or Meets. Frequencies indicating the number and percentage of students scoring in each of the four performance levels are presented in Table 25 by academic year. In the 2010-2011 academic year, 69.0% of students met or exceeded math standards, followed by 66.3% during the 2011-2012 academic year, and 64.3% during the 2012-2013 academic year. The percentage of students meeting or exceeding on the math portion of the AIMS increased by 2.7% from the 2011 academic year to the 2012 academic year, which was School B's first year of PBIS implementation. The percentage of students meeting or exceeding on the math portion of the AIMS decreased slightly by 2.0% from the 2012 academic year to the 2013 academic year, which was School B's second year of PBIS implementation. Students at School B obtained mean performance levels of 2.78 (SD = .1.075) in 2011, 2.80 (SD = 1.071) in 2012, and 2.71 (SD = 1.090) in 2013. AIMS math achievement performance levels were

not statistically different between the 2011, 2012, and 2013 academic years, $\chi^2(2) = 2.468$, $p = .291$. Thus, performance levels in the area of math at School B remained consistent throughout the three academic years examined.

In order to further assess academic achievement in math, AIMS scale scores were analyzed using one-way ANOVAs, with the three academic years being the three levels of the independent variable, and AIMS math scale scores being the dependent variable. Missing data varied based on the school year it was reported. During the 2010-2011 academic year, there was one student in seventh grade and three students in eighth grade for which scale scores were not reported. During the 2011-2012 academic year, there were 39 students who were not present for the entire school year. For these students, the data reporting software does not include the student identification number or grade level, so these scores were excluded from the analysis. Additionally, there were 34 students in the eighth grade and 20 students in the seventh grade for which scale scores were not reported. Thus, a total of 93 cases were excluded from the 2011-2012 data. During the 2012-2013 academic year, there were 19 students in the eighth grade and 19 students in the seventh grade for which scale scores were not reported. Thus, a total of 38 cases were excluded from the 2012-2013 data.

In order to control for the possibility of committing a Type I error, the alpha level for each grade level ANOVA was set to .025. The ANOVA for seventh grade AIMS math scores was significant, $F(2, 816) = 8.169$, $p < .001$. The strength of the relationship between the academic years and math achievement, as assessed by η^2, was small, with the academic year accounting for 2.0% of the variance in seventh grade math achievement scores. Levene's test of homogeneity of variance was significant, $p = .006$;

however, the large sample size used is robust to this assumption. Visual inspection of scale score histogram plots indicated that the distributions generally adhered to the normal curve. The Tukey HSD procedure was used to control for Type I error across the pairwise comparisons. The results of this analysis indicate that there were significant differences in means between the 2010-2011 and 2011-2012 academic years, indicating that math achievement scores were significantly higher during the 2010-2011 academic year than the following academic years in School B. There were no statistically significant differences between the 2010-2011 and 2012-2013 academic years. The 95% confidence intervals for the pairwise comparisons, as well as the means and standard deviations for the three academic years, are reported in Table 26.

The ANOVA for eighth grade AIMS math scores in School B was non-significant, $F(2, 816) = 1.38$, $p = .252$. Levene's test of homogeneity of variance was significant, $p = .305$; however, the large sample size used is generally robust to this assumption. Visual inspection of scale score histogram plots indicated that the distributions generally adhered to the normal curve. The results of this analysis indicate that there were no significant differences in AIMS math score means between the 2010-2011, 2011-2012, and 2012-2013 academic years in School B. The means and standard deviations for the three academic years for eighth grade students are reported in Table 27.

School C. In the area of math, the median performance level for students in School C for the 2010-2011 academic year was a 2, or Approaches, and the median performance level during the 2011-2012 and 2012-2013 academic years was a 3, or Meets. Frequencies indicating the number and percentage of students scoring in each of the four performance levels are presented in Table 28 by academic year. In the 2010-

2011 academic year, 44.4% of students met or exceeded reading standards, followed by 53.7% during the 2011-2012 academic year, and 51.3% during the 2012-2013 academic year. These years comprised the first, second, and third years of PBIS implementation at School C, respectively. Thus, the percentage of students meeting or exceeding on the math portion of the AIMS increased by 9.3% from the first to the second year of PBIS implementation, and decreased slightly by 2.4% from the second to the third year of PBIS implementation. Students at School C obtained mean performance levels of 2.21 (*SD* = .1.015) in 2011, 2.45 (*SD* =1.109) in 2012, and 2.41 (*SD* = .1.096) in 2013. AIMS math performance levels were statistically significant between 2010-2011, 2011-2012, and 2012-2013 academic years, $\chi^2(2) = 14.111$, $p = .001$. Pairwise comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons. *Post-hoc* analysis revealed statistically significant differences in math performance levels between the 2010-2011 year and the 2011-2012 year ($p = .002$), as well as the 2010-2011 year and the 2012-2013 year ($p = .013$). This analysis supported the hypothesis that the continued implementation of PBIS in School C was associated with significantly higher math achievement scores.

In order to further assess academic achievement in math, AIMS scale scores were analyzed using one-way ANOVAs, with the three academic years being the three levels of the independent variable, and AIMS math scale scores being the dependent variable. Missing data varied based on the school year it was reported. During the 2010-2011 academic year, there was one student in seventh grade and one student in eighth grade for which scale scores were not reported. During the 2011-2012 academic year, there were 36 students who were not present for the entire school year. For these students, the data

reporting software does not include the student identification number or grade level, so these scores were excluded from the analysis. Additionally, there were 22 students in the eighth grade and 47 students in the seventh grade for which scale scores were not reported. Thus, a total of 104 cases were excluded from the 2011-2012 data. During the 2012-2013 academic year, there were 47 students in the eighth grade and 33 students in the seventh grade for which scale scores were not reported. Thus, a total of 80 cases were excluded from the 2012-2013 data.

In order to control for the possibility of committing a Type I error, the alpha level for each grade level ANOVA was set to .025. The ANOVA for seventh grade AIMS math scores in School C was significant, $F(2, 648) = 3.88$, $p = .021$. The strength of the relationship between the academic years and math achievement, as assessed by η^2, was small, with the academic year accounting for 1.2% of the variance in seventh grade math achievement scores. Levene's test of homogeneity of variance was significant, $p = .021$; however, the large sample size used is robust to this assumption. Visual inspection of scale score histogram plots indicated that the distributions generally adhered to the normal curve. The Tukey HSD procedure was used to control for Type I error across the pairwise comparisons. The results of this analysis indicate that there were significant differences in means between the 2010-2011 and 2012-2013 academic years, indicating that math achievement scores were significantly higher during the 2010-2011 academic year than the 2012-2013 academic year. There were no statistically significant differences between the 2010-2011 and 2011-2012 academic years, or the 2011-2012 and 2012-2013 academic years. The 95% confidence intervals for the pairwise comparisons, as well as the means and standard deviations for the three academic years, are reported in Table 29.

The ANOVA for eighth grade AIMS math scores in School C was non-significant, $F(2, 651) = 1.76$, $p = .173$. Levene's test of homogeneity of variance was significant, $p < .001$. Visual inspection of scale score histogram plots indicated that the distributions generally adhered to the normal curve. The results of this analysis indicate that there were no significant differences in eighth grade math scale score means between the 2010-2011, 2011-2012, and 2012-2013 academic years. The means and standard deviations for the three academic years are reported in Table 30.

Comparison across schools. In the area of math, the median performance levels for Schools A, B, and C for 2012-2013 academic year were all a 3, or Meets. Frequencies indicating the number and percentage of students scoring in each of the four performance levels are presented in Table 31. In the 2012-2013 academic year, 63.7% of students met or exceeded math standards at School A, 64.3% of students met or exceeded math standards at School B, and 51.3% of students met or exceeded math standards at School C. The percentage of students meeting or exceeding standards in math was nearly equivalent in Schools A and B. There was a difference of approximately 13.0% in students meeting or exceeding math standards between Schools A and B and School C. Students at School A obtained a mean math performance level of 2.73 ($SD = 1.02$), students at School B earned a mean performance level of 2.71 ($SD = 1.09$), and students at School C earned a mean performance level of 2.41 ($SD = 1.10$). Results of a Kruskal-Wallis H Test indicated that AIMS math achievement performance levels were statistically significant between Schools A, B, and C, $\chi^2(2) = 25.28$, $p < .001$. Pairwise comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons. *Post-hoc* analysis revealed statistically significant differences

in math performance levels between Schools A and C ($p < .001$) and Schools B and C ($p < .001$).

In order to further assess academic achievement in math across the varying stages of PBIS implementation, AIMS scale scores were analyzed using one-way ANOVAs for the seventh and eighth grades, with the three schools and associated levels of PBIS implementation being the three levels of the independent variable, and AIMS math scale scores being the dependent variable. In order to control for the possibility of committing a Type I error, the alpha level for each grade level ANOVA was set to .025. The ANOVA for seventh grade AIMS math scores across Schools A, B, and C was significant, $F(2, 668) = 32.86$, $p < .001$. The strength of the relationship between the amount of time PBIS was implemented (associated with each school) and seventh grade math achievement, as assessed by η^2, was moderate, with the school/year of implementation accounting for 9.0% of the variance in math achievement scores. Levene's test of homogeneity of variance was significant, $p = .036$; however, the sample size was large. Visual inspection of scale score histogram plots indicated that the distributions generally adhered to the normal curve. Follow-up tests were conducted to evaluate pairwise differences among the means. The Tukey HSD procedure was used to control for Type I error across the pairwise comparisons. The results of this analysis indicate that there were significant differences in means in seventh grade math scores between Schools A and B, School B and C, and Schools A and C. Results indicated that math achievement scores were significantly higher in School B as compared to Schools A and C, but School A was significantly higher than School C. The 95% confidence intervals for the pairwise

comparisons, as well as the means and standard deviations for the three academic years, are reported in Table 32.

The ANOVA for eighth grade AIMS math scores across Schools A, B, and C was significant, $F(2, 713) = 8.62$, $p < .001$. The strength of the relationship between the amount of time PBIS was implemented (associated with each school) and seventh grade math achievement, as assessed by η^2, was small, with the school/year of implementation accounting for 2.4% of the variance in math achievement scores. Levene's test of homogeneity of variance was significant, $p = .037$; however, the sample size was large. Follow-up tests were conducted to evaluate pairwise differences among the means. The Tukey HSD procedure was used to control for Type I error across the pairwise comparisons. The results of this analysis indicate that there were significant differences in means in eighth grade math scores between Schools A and C, as well as between Schools B and C, indicating that math achievement scores were significantly higher in Schools A and B as compared to School C. The 95% confidence intervals for the pairwise comparisons, as well as the means and standard deviations for the three academic years, are reported in Table 33.

Hypothesis 5

The fifth hypothesis, which stated that the number of student absences will decrease in each school, with the largest decrease occurring in School C, was evaluated using one-way, between subjects ANOVA designs. ANOVA analyses were conducted for Schools A, B, C across the 2010-2011, 2011-2012, and 2012-2013 academic years, with the three academic years comprising the independent variable, and the number of student absences comprising the dependent variable. An additional one-way ANOVA was

conducted, with the independent variable comprised of the number of years PBIS was implemented (school), and the dependent variable comprised of students absences during the 2012-2013 academic year. Data was reported on only the students who had absences during each particular academic year; thus, students who did not have any absences were excluded from the analysis.

School A. The independent variable in the ANOVA analysis for School A consisted of the 2010-2011, 2011-2012, and 2012-2013 academic years, with the 2012-2013 academic year being School A's first year of PBIS implementation. The dependent variable was the number of student absences. The ANOVA was significant, $F(2, 1368) = 38.05$, $p < .001$. The effect size, as assessed by η^2, was small, with the academic year accounting for 5% of the variance in student absences.

Follow-up tests were conducted to evaluate pairwise differences among the means. The variances among the three groups ranged from 82.4 to 129.0, indicating that the variances are somewhat different from each other. The test of homogeneity of variance was non-significant, $p = .07$, indicating that the equality of variance assumption was not violated. The Tukey HSD procedure was used to control for Type I error across the pairwise comparisons. The results of this analysis indicate that there were significant differences in means between the 2010-2011 and 2012-2013 academic years, and the 2011-2102 and 2012-2013 academic years, indicating that the two academic years prior to implementing PBIS had significantly reduced student absences compared to the 2012-2013 academic year when PBIS implementation began. The 95% confidence intervals for the pairwise comparisons, as well as the means and standard deviations for the three academic years, are reported in Table 34.

School B. The independent variable in the ANOVA analysis for School B consisted of the 2010-2011, 2011-2012, and 2012-2013 academic years, with the 2011-2012 academic year being School A's first year of PBIS implementation, and the 2012-2013 academic year being School B's second year of PBIS implementation. The dependent variable was the number of student absences. The ANOVA was significant, $F(2, 1270) = 25.69$, $p < .001$. The strength of the relationship between the years of PBIS implementation and the number of absences, as assessed by η^2, was small, with the academic year accounting for 4% of the variance in student absences.

Follow-up tests were conducted to evaluate pairwise differences among the means. The Tukey HSD procedure was used to control for Type I error across the pairwise comparisons. The results of this analysis indicate that there were significant differences in means between the 2010-2011 and 2011-2012 academic years and the 2011-2012 and 2012-2013 academic years. The analysis indicates that the number of student absences significantly increased during the first year of PBIS implementation, but then significantly decreased during the second year of PBIS implementation. The 95% confidence intervals for the pairwise comparisons, as well as the means and standard deviations for the three academic years, are reported in Table 35.

School C. The independent variable in the ANOVA analysis for School C consisted of the 2010-2011, 2011-2012, and 2012-2013 academic years, with the 2012-2013 academic year being School A's first year of PBIS implementation. The dependent variable was the number of student absences. The ANOVA was significant, $F(2, 1191) = 20.00$, $p < .001$. The strength of the relationship between the years of PBIS

implementation and the number of absences, as assessed by η^2, was small, with the academic year accounting for 3% of the variance of student absences.

Follow-up tests were conducted to evaluate pairwise differences among the means. The Tukey HSD procedure was used to control for Type I error across the pairwise comparisons. The results of this analysis indicate that there were significant differences in means between the 2010-2011 and 2011-2012, 2010-2013 and 2012-2013, and the 2011-2012 and 2012-2013 academic years. Follow-up procedures indicated that the number of student absences significantly increased from first year of PBIS implementation to the second, but absences were significantly decreased between the first and third years of PBIS implementation, as well as the second and third years of PBIS implementation. The 95% confidence intervals for the pairwise comparisons, as well as the means and standard deviations for the three academic years, are reported in Table 36.

Comparison across schools. A one-way ANOVA was conducted to evaluate the relationship between the number of years of PBIS implementation associated with each school and the number of student absences. The independent variable in the analysis across schools, years of PBIS implementation, included three levels: one year associated with School A, two years associated with School B, and three years associated with School C. The dependent variable was the number of student absences for the 2012-2013 school year. The ANOVA was significant, $F(2, 929) = 46.10$, $p < .001$. The strength of the relationship between the years of PBIS implementation and the number of absences, as assessed by η^2, was moderate, with the years of PBIS implementation factor accounting for 9% of the variance in student absences.

Follow-up tests were conducted to evaluate pairwise differences among the means. The test of homogeneity of variance was significant, $p < .001$, indicating that the equality of variance assumption was violated. The Dunnett's *C* follow-up test was selected as it does not assume equal variances among the three groups. There were significant differences in means between Schools A and B, as well as Schools A and C, indicating that the schools that had implemented PBIS for two years (School B) and three years (School C) had significantly reduced student absences compared to School A, where PBIS had been implemented for one year. The 95% confidence intervals for the pairwise comparisons, as well as the means and standard deviations for the three schools, are reported in Table 37.

Hypothesis 6

The sixth hypothesis, which stated that teachers in school C will report less burnout than teachers in schools A and B, was evaluated using a one-way multivariate analysis of variance (MANOVA) design to determine the effect of the amount of years implementing PBIS (associated with schools A, B, and C) on the three dependent measures of teacher burnout, which included the three scales of the MBI-ES (Emotional Exhaustion, Depersonalization, and Personal Accomplishment). A description of the teacher sample is presented in Table 38. Descriptive statistics and frequencies were computed for each of the three schools' respondents and burnout-ratings based on the MBI survey results. Significant differences were found among the three schools on the dependent measures, Wilks's $\Lambda = .68$, $F(6,64) = 2.26$, $p < .05$. The multivariate η^2 based on Wilks's Λ was moderate, .175. Table 39 contains the means and the standard deviations on the dependent variables for the three groups.

Analyses of variances on the dependent variables were conducted using follow-up tests to the MANOVA. Using the Bonferroni method, each ANOVA was tested at the .0167 level. The ANOVA on the Emotional Exhaustion scales was significant, $F(2,34) = 4.77$, $p < .0167$, $\eta^2 = .22$. The ANOVA on the Depersonalization scales was nonsignificant, $F(2,34) = .51$, $p = .60$, $\eta^2 = .03$. The ANOVA on the Personal Accomplishment Scale was nonsignificant, $F(2,34) = .26$, $p = .77$, $\eta^2 = .02$.

Post hoc analyses to the univariate ANOVA for the Emotional Exhaustion scale scores consisted of conducting pairwise comparisons to find which school implementing PBIS affected the scale most strongly. Each pairwise comparison was tested at the .0167 level. School C, the school that had been implementing PBIS the longest, displayed significantly reduced scores on the measure of Emotional Exhaustion related to teaching in comparison with School A. Schools A and B were not significantly different from one another.

MANOVA designs were also used to assess whether characteristics of the teacher sample were related to the three dependent measures of teacher burnout on the MBI, (Emotional Exhaustion, Depersonalization, and Personal Accomplishment). The MANOVA assessing for differences in gender on the three MBI subscales was nonsignificant, Wilks's $\Lambda = .89$, $F(3,31) = 1.23$, $p = .32$. A MANOVA was conducted to assess for differences in teacher age on the three MBI subscales, with the ages of 20-34 years representing the younger teachers, 34-44 years representing the middle group of teachers, and 45 or more years of age representing the older group of teachers. Teacher age ranges were grouped in this fashion to replicate the age groupings used in Pas, Bradshaw, and Hershfeldt's study (2012). The MANOVA was nonsignificant, Wilks's Λ

= .82, $F(6,58) = .96$, $p = .46$. A MANOVA was conducted to assess for differences in the number of years of experience teacher that participants had on the three MBI subscales, with 1 to 5 years representing some experience, 5 to 14 years representing the middle experience group, and 15 or more years representing the most experienced group. Groupings of teacher experience were loosely based off Anderson and Iwanicki's 1984 study and mean numbers of teaching experience reported by teachers. The MANOVA was nonsignificant, Wilks's $\Lambda = .69$, $F(6,60) = 2.08$, $p = .07$. A MANOVA was conducted to assess for differences in the teachers' employment setting, which included teachers in the general education setting, teachers in the special education setting, and teachers who worked in multiple settings, in co-taught classes, or in general education settings with additional support. The MANOVA was nonsignificant, Wilks's $\Lambda = .69$, $F(6,64) = 2.15$, $p = .06$. Finally, a MANOVA was conducted to assess for differences if teachers were second career teachers or not. The MANOVA was nonsignificant, Wilks's $\Lambda = .97$, $F(3,33) = .38$, $p = .77$. Thus, demographic differences among the teachers did not impact the teachers' burnout ratings, but the number of years that PBIS was implemented appeared to significantly decrease emotional exhaustion among the teacher sample.

Hypothesis 7

The seventh hypothesis stated that educators in School C will report higher levels perceived safety of the school environment, as well as improved overall quality of the education environment, as rated by the teacher participants. Data was utilized from the staff school climate surveys to determine the relationship between PBIS and perceived safety of staff in the school environment. The means, medians, and standard deviations

for school safety ratings are displayed in Table 40. In order to test the first component of the seventh hypothesis that staff at school C, where PBIS had been implemented for three years, would experience significantly higher ratings of perceived safety in the school, a Kruskal-Wallis test was conducted. A rating score of 0 represented the category Strongly Disagree, a rating score of 1 represented the category Disagree, a rating score of 2 represented the category Agree, and a rating score of 3 represented the category Strongly Agree. The median score for each of the three schools was a 2, or Agree. Participants at School A reported a mean score of 2.087 (*SD* = .551), participants at School B reported a mean score of 2.270 (*SD* =.693), and participants at School C reported a mean score of 2.382 (*SD* = .652). Perceived safety of staff was statistically significant between Schools A, B, and C, $\chi^2(2) = 6.37$, $p = .041$. Pairwise comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons. Post hoc analyses revealed statistically significant differences in ratings of perceived safety between School A and School C, with School C having significantly higher ratings of perceived safety.

In order to assess the second component of the seventh hypothesis, that the overall quality of the school climate, as rated by the teacher participants, would be highest in School C, means were calculated for each of the 19 survey questions for each school. In order to calculate item means, responses were coded so that a 1 represented Strongly Agree, a 2 represented Disagree, and 3 represented Agree, and a 4 represented Strongly Agree. One item, which represented the third item on the survey, was reverse coded, as it stated, “Students threaten and bully others in this school.” The individual item means were then totaled to compute a composite score for each school. That number was then

averaged across the 19 survey questions, to yield an overall average measure of the overall perception of school climate. The mean overall rating of school climate was 2.97 in School A (*SD* = .272), 3.05 in School B (*SD* = .301), and 3.27 in School C (*SD* = .301). Figure 17 displays the mean climate ratings and standard deviations for the three schools.

A Kruskal-Wallis test was conducted using the average rating for each of the 19 school climate questions for each school. The median score for each of the three schools was a 2, or Agree. The means, medians, and standard deviations for overall school climate ratings are displayed in Table 41. The overall rating of school climate was statistically significant between Schools A, B, and C, $\chi^2(2) = 9.63$, $p = .008$. Pairwise comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons. Post hoc analyses revealed statistically significant differences in ratings of overall school climate between School A and School C, with School C reporting significantly higher overall ratings of school climate.

Chapter 4

Discussion

Research Summary

In many middle schools, school suspensions are the primary means to deal with student problem behaviors, and many suspensions are due to behaviors of defiance and disruption (Dupper & Krishef, 1993). Current research suggests that student problem behaviors may affect instructional time and therefore may negatively impact both offending students' and their classmates' achievement (Lassen, et al., 2006). Additionally, teachers have reported that classroom behavior management is the most difficult part of their job, and student problem behaviors have been linked to decreased feelings of teacher efficacy and increased levels of teacher burnout (Reinke, et al., 2013). Finally, increased student problem behaviors may influence both student and staff perceptions of school climate factors, such as feelings of safety within the school, respect for all members of the school community, family and community involvement, and consistency of disciplinary policies (Bradshaw, et al., 2008).

PBIS is a prevention-based framework utilized by school teams to promote positive behaviors for all students using a three-tiered intervention approach. Students who are not responsive to tier one supports, as evidenced by behavior problems, are progressively given more individualized behavior interventions based on their unique needs in an effort to teach prosocial behaviors and decrease problem behaviors. Previous research regarding the effects of PBIS on student outcomes has indicated that the implementation of PBIS was associated with decreased ODRs issued, reduced amounts of major disciplinary decisions, improved student attendance, and improved student

achievement scores (Lassen, et al., 2006; Luiselli, et al., 2005; Horner, et al., 2009; Taylor-Greene & Kartub, 2000). Positive effects of PBIS implementation are not limited to students. Previous research has demonstrated that PBIS implementation was associated with improved teacher morale and perceptions of school climate and safety (Bradshaw, Koth, Thornton, & Leaf, 2009; Horner, et al., 2009). Research regarding the effects of PBIS in middle schools is more limited, however, as the majority of studies conducted examined data from elementary schools.

The present study examined the effects of PBIS implementation in three middle schools in the same school district, each of which was in its first, second, or third year of PBIS implementation. The study was designed to examine the intervention effects of student outcomes, as well as teacher and staff outcomes and perceptions. Student outcomes were examined using ODR data, suspension data, attendance data, and academic achievement scores on a statewide standardized assessment in math and reading (AIMS). Student outcomes were assessed within each school across a three-year time frame, and across the three schools, which were in various stages of PBIS implementation, during the most recent academic year. The study also assessed teacher-related measures of burnout using the Maslach Burnout Inventory for Educators (Maslach, Jackson, Leiter, Schaufeli, & Schwab, 1986) and perceptions of school climate and safety using a district-generated school climate survey.

Conclusions

The current study examined student variables, including the number of office discipline referrals and major disciplinary decisions issued, student achievement, and

student attendance, as well as teacher burnout and teacher reports regarding the school climate.

Office discipline referrals. The description of PBIS purports that it is a behavioral framework designed to improve the quality of life and minimize problem behavior using educational methods (Carr, et al. 2002). As such, the use of ODRs as a data source indicating student problem behavior has been frequently utilized in PBIS research, and numerous studies indicate reductions in ODRs in schools following the implementation of PBIS (Luiselli, et al., 2005; Putnam, et al., 2003; Simonsen, et al., 2011). In the present study, the total number of ODRs issued, as well as the amount of referrals issued for defiance, disrespect, and disruption, decreased in Schools A, B, and C across the 2010-2011, 2011-2012, and 2012-2013 academic years. In each of the three schools, defiance/disrespect and disruption constituted two of the top three categories of referrals issued, which is consistent with current research suggesting that these types of infractions are common behavior problems reported in schools. Each of the three schools displayed percentage reductions in total referrals issued from the 2010-2011 to the 2012-2013 academic years. School A demonstrated a 24% reduction in referrals, which is consistent with research that some gains may be seen in the first year of PBIS implementation. Schools B and C demonstrated 74% and 80% reductions in ODRs issued, respectively, from the 2010-2011 to the 2012-2013 academic years. Substantial reductions in referrals were evident with each additional year of PBIS implementation. Additionally, Schools A, B, and C demonstrated 14%, 53%, and 84% reductions in ODRs issued for defiance, disrespect, and disruption during the 2010-2011 to the 2012-2013 academic years. This data supports the hypothesis that reductions in ODRs occurred

when PBIS was implemented in three schools, and greater reductions were evident with each additional year of PBIS implementation. As demonstrated with previous research, the effects of PBIS on ODR reductions appeared to accumulate over time, with the largest reductions occurring during the third year of PBIS implementation (Lassen, et al., 2006; Simonsen, et al., 2012).

Results from analyses of variance indicated that mean amounts of total ODRs and ODRs issued for defiance, disrespect, and disruption for students who received referrals did not significantly differ across the 2010-2011, 2011-2012, and 2012-2013 academic years in Schools A and B. In School C, the mean number of ODRs received by students who were issued ODRs decreased significantly with each successive school year. Mean numbers of ODRs issued for defiance, disrespect, and disruption to students who received referrals also decreased significantly from the 2010-2011 to the 2011-2012 academic year, and these reductions were maintained during the 2012-2013 academic year. School C had been implementing PBIS for three years at the end of the 2012-2013 academic year, and significant ODR reductions were evident with each year of PBIS implementation.

Mean numbers of total referrals and referrals for defiance, disrespect, and disruption for students who received referrals were also examined through analyses of variances across the three schools during the 2012-2013 academic years. Significant reductions in total referrals and referrals for defiance, disrespect, and disruption for students who received infractions were evident between School A, where PBIS had been implemented for one year, and School C, where PBIS had been implemented for three years. When data was simulated for the remaining student population, significant

reductions in referrals for defiance, disrespect, and disruption were observed in the schools that had been implementing PBIS for two and three years. In terms of overall ODRs issued, School B, where PBIS was implemented for two years, issued significantly less ODRs overall during 2012-2013 than Schools A and C.

Limitations and future research. The increasing percentage of reductions in referrals issued with each successive year of PBIS implementation shows promise and supports the use of PBIS in the schools to improve student behavior and lessen student discipline problems. Data regarding mean differences in ODRs issued to students also shows promise; however, limitations existed within this analysis. ODR data reported by the schools utilized a convenience sample, in which only the students who received infractions were included in the data set. The data collected by the school district pertaining to student ODRs and major disciplinary decisions was complete in including the student's ID number, grade level, description of the ODR or disciplinary decision, as well as other pertinent information. However, information regarding students who did not commit any infractions or receive disciplinary actions was not available through the data analysis software. Thus, the data represented only a subset of the school population. While a more comprehensive analysis would include all students who attended the school for a particular academic year, this data was not available through the data reporting software used by the school district. The inclusion of individuals who did not receive referrals would also result in a positively skewed distribution since few students received referrals. Thus, inclusion of individuals who were enrolled during the academic year of interest was not possible, and data could only be analyzed in terms of the students who had received infractions and consequences. Further, about 1% to 7% of students

demonstrate chronic and intensive needs, and many behavioral infractions are issued to these same students (Netzel & Eber, 2003).

PBIS is designed to be effective with all students, including those who do exhibit behavior problems and receive referrals. Thus, significantly reduced amounts of mean ODRs in the third year of PBIS implementation issued to those displaying behavior problems demonstrates the effectiveness of PBIS with these particular students. Because PBIS is a school-wide intervention, data pertaining to students who did not receive infractions would be necessary in order to make inferences about the effectiveness of PBIS on ODRs at a school-wide level. In addition, students identified as being at-risk (received two or more ODRs in a given school year) who responded well to PBIS could potentially be dropped out of the analysis, and this data is important in interpreting treatment effects. For instance, if a student attended a school in seventh and eighth grade, and received multiple referrals in the seventh grade, but no referrals in the eighth grade, he or she would not have been included in the data for the eighth grade academic year because the number of referrals was 0. When specifically analyzing students identified as being at risk (having previous referrals), this information would be important in assessing the effects of PBIS implementation and the response to intervention for the particular subgroup of students. Data for students who did not receive ODRs could not be simulated for within school analyses because the sample was not longitudinal and accurate comparisons could not be made without tracking students. When data was simulated for the across school analysis, the resulting distribution was highly skewed, particularly in School B.

Future research should include data pertaining to ODRs issued for all students during a given school year. Additionally, longitudinal analysis of students who attended schools in which PBIS was implemented for three years would be beneficial in examining the effects of PBIS on all students across time, as well as specifically focusing on those who received ODRs during the first or second year and comparing means of ODRs received with the third year of implementation.

Additionally, differences in the three schools analyzed may have accounted for differences in ODR rates. Schools A and B were similar in terms of racial/ethnic composition and SES; however, School C had more racial/ethnic variability and the overall SES level of students' families was lower. In addition, race and low SES have been found to be associated with disproportionate disciplinary outcomes and increased risk for school suspensions (Skiba, et al., 2011). Due to differences in data reporting during the various academic years, these differences could not be controlled for, and may ultimately affect outcomes. School A also differed from Schools B and C in that School A contained students in the 6th, 7th, and 8th grades, while the latter two schools contained only the 7th and 8th grades (although the 6th grade students were excluded from analyses). Despite these differences, a significant effect for ODR reduction was found.

Implications. Consistent with previous research (Bradshaw, et al., 2010), results of ODR data analysis indicate that overall numbers of ODRs issued and ODRs issued for defiance, disrespect, and disruption decreased in each school as PBIS was implemented, and decreased with each additional year of PBIS implementation. Thus, the current study supports the use of PBIS in the reduction of student referrals. Further, PBIS appears to

affect referral rates in students who received ODRs, and the third year of PBIS implementation appeared to the time in which these differences were the greatest.

Major disciplinary decisions. The total number of major disciplinary decisions, which included in- and out-of-school suspensions, decreased in Schools A, B, and C across the 2010-2011, 2011-2012, and 2012-2013 academic years. Each of the three schools displayed percentage reductions in major disciplinary decisions issued from the 2010-2011 to the 2012-2013 academic years. School A demonstrated a 28% overall reduction in major disciplinary decisions from the 2010-2011 to the 2012-2013 academic years, which is consistent with research that some gains may be seen in the first year of PBIS implementation. Schools B and C demonstrated 61% and 65% reductions in major disciplinary decisions issued, respectively, from the 2010-2011 to the 2012-2013 academic years. As hypothesized, substantial reductions in major disciplinary decisions were evident with each additional year of PBIS implementation.

Results from analyses of variance indicated that mean amounts of major disciplinary consequences issued to students who received disciplinary consequences did not significantly differ across the 2010-2011, 2011-2012, and 2012-2013 academic years in Schools A and B. In School C, the mean number of in- and out-of-school suspensions issued to students who received disciplinary consequences decreased significantly from the first year of PBIS implementation to the second, and these reductions were maintained during the third year of implementation as well. Interestingly, results from analyses of variance across the three schools during the 2012-2013 academic year indicated that School C issued significantly more major disciplinary decisions to students who were issued disciplinary consequences than School A. When comparing mean

numbers of major disciplinary actions to students who were issued consequences, School A had the lowest overall mean, School B had the middle mean, and School C had the highest mean number of major disciplinary decisions issued.

Limitations and future research. The comparison of means of major disciplinary decisions issued to students who received consequences presented with several limitations. When comparing numbers within schools, School C, where PBIS had been implemented for three years, was the only school to demonstrate significant reductions across three school years. However, when making comparisons across schools in varying stages of PBIS implementation, School C had the highest number of major disciplinary decisions issued. Thus, it appears that when making across school comparisons, there are a number of student-related variables that affect mean numbers that need to be controlled for. Given the convenience sample provided by the school district, students who were not issued any type of disciplinary consequence were not included in the data. This represented only a subset of the school population. Thus, only students who received some type of disciplinary consequence were included in the analysis, and resulting findings cannot be generalized to the school's overall population.

Accordingly, sample sizes from the three schools varied substantially, with approximately 130 students receiving some type of consequence in Schools A and C, and 42 students in School B receiving some type of consequence during the final year of the analysis. While an outlier, or a student with an excessively high number of in- and out-of-school suspensions, would have less of an impact in School A or C, it would have a much more profound effect on mean major disciplinary decisions issued at School B due to the smaller sample size. Further, comparisons across the schools may not be appropriate

without controlling for additional factors, such as racial/ethnic background, SES, and special education factors. Skiba and colleagues (2011) have clearly documented the disproportionality of students of minority backgrounds and lower socioeconomic statuses as being overrepresented in school discipline referrals, suspension rates, and expulsion rates. Therefore, future researching examining major disciplinary decisions issued would benefit from including these factors, as well as including all students, not only those who received consequences.

Furthermore, although moderate to large decreases were demonstrated within each school, these decreases are not apparent when only mean amounts of referrals for students who received disciplinary consequences are examined. The addition of students who did not receive disciplinary consequences to the analysis may better reflect these overall trends within the schools.

Implications. Consistent with previous research, results of major disciplinary decision data analysis indicate that overall numbers of in- and out-of-school suspensions decreased in each school as PBIS was implemented, and decreased with each additional year of PBIS implementation. Thus, the current study supports the use of PBIS in the reduction of major disciplinary decisions made in schools. While School C, where PBIS was implemented for three years, was the only school to demonstrate significant reductions in in- and out-of-school suspensions issued to students who received consequences, these reductions were not apparent when comparisons were made across the three schools in various stages of implementation. PBIS appears to affect overall rates of issuing major disciplinary decisions, as well as major consequences issued to students

who violate school rules, but more information may be needed in order to draw valid across school comparisons.

Achievement. The implementation of PBIS in schools has demonstrated significant improvements in reading and math achievement in multiple research studies (Horner, et al, 2009; Lassen, et al., 2006; Luiselli, et al., 2005; Simonsen, et al, 2011). Reading and math achievement were examined across the 2010-2011, 2011-2012, and 2012-2013 academic years in Schools A, B, and C. In School A, the performance levels of students in reading and math remained consistent across the three academic years, with median scores of Meets in both areas. Reading scale scores for 7th and 8th grade students remained consistent from the year prior to PBIS implementation to the first year of PBIS implementation. Interestingly, mean scale scores in math decreased by about 30 points from the year prior to PBIS implementation to the first year of PBIS implementation for 7th grade students. The mean scale score in math for 8th grade students decreased by approximately 15 points from the year prior to PBIS implementation to the first year of PBIS implementation. However, math mean scores still fell within the Meets range each year. The finding regarding consistency in reading scores is not unexpected as School A began implementing PBIS during the 2012-2013 academic year. Research suggests that while some gains are reported after the first year of PBIS implementation, significant results are not to be expected after the first year of implementation. However, the decrease in math mean scores is of some concern. This finding is particularly notable in 7th grade students. Although the math mean scale scores still fell within the Meets range, there was a significant decrease numerically in mean scale scores.

In School B, the performance levels of students in reading and math remained consistent across the three academic years, with median scores of Meets in both areas. The amount of students meeting or exceeding AIMS reading standards remained consistent across the three academic years. While reading scale scores for 8th grade students increased by about 15 points from 2010-2011 to 2011-2012, and remained consistent to 2012-2013, reading scale scores for 7th grade students decreased by about 15 points from 2010-2011 to 2011-2012, and then increased 5 points from 2011-2012 to 2012-2013. In math, scale scores decreased slightly for 8th grade students, by about 7 points from the year prior to PBIS implementation to the second year of PBIS implementation, but this decrease was not statistically significant. Mean scale scores decreased by about 17 points for 7th grade students from the 2010-2011 to 2011-2012 academic years, but then increased by about 7 points the following year. The academic year did not appear to contribute a substantial amount to the variance in the analyses in reading or math. Although not statistically significant, the number of students Meeting or Exceeding on the AIMS math assessment slightly decreased with each successive school year. While scale scores decreased in both reading and math during the first year of PBIS implementation during the 2011-2012 year, scores generally increased the following year during the second year of implementation. Ultimately, evidence to support the positive effect of PBIS on academic achievement in School B is limited.

In School C, the performance levels of students in reading remained consistent across the three academic years, with median scores of Meets across the academic years. In math, the median performance level was an Approaches during the 2010-2011 academic year, and increased to Meets during the following two academic years.

Significantly more students obtained scores that fell within the Meets or Exceeds range during the 2011-2012 and 2012-2013 academic years than the 2010-2011 academic year in both reading and math. Reading scale scores for 8th grade students increased by about 20 points from the first year of PBIS implementation to the second, and remained consistent during the third year of implementation. Inversely, scale scores for 7th grade students decreased by about 10 points from the first year of PBIS implementation to the second, and remained consistent during the third year of implementation. However, mean scores still fell within the Meets range. A similar pattern was observed in math scale scores for 7th grade students. Mean scale scores in math remained consistent during the 2010-2011 to 2011-2012 academic years, and then decreased by about 10 points during the 2012-2013 academic year for 7th grade students. Mean scale scores in math remained consistent across the three academic years for 8th grade students, increasing slightly during the second year of PBIS implementation, and then decreasing slightly during the third year. The academic year did not appear to contribute a substantial amount to the variance in the analyses for reading or math scores. Although more students scored within the passing range during the second and third years of PBIS implementation at School C, these gains were not evidenced in mean scale scores obtained by students during these academic years. This finding is somewhat inconsistent in that one would expect mean scale scores to increase concomitantly with increases in numbers of students Meeting or Exceeding standards.

Comparisons of AIMS scores in reading and math were made across the three schools during the 2012-2013 academic year in order to assess differences in the first, second, and third years of PBIS implementation. In the area of reading, Schools A and B

had a slightly higher percentage of students Meeting or Exceeding standards than School C. Mean scale scores in reading for 7th and 8th grade students were higher in Schools A and B than in School C, which was in its third year of PBIS implementation. Similarly, Schools A and B had higher percentages of students Meeting or Exceeding on the AIMS math assessment than School C during the 2012-2013 academic year. Mean scale scores in math for 7th and 8th grade students were higher in Schools A and B than in School C. Achievement scores were higher for the schools in their first and second years of PBIS implementation than the school in its third year of implementation. Although School C made more academic gains throughout the years, when compared to the other two schools, these gains were not apparent.

Limitations and future research. Several limitations were present in the analysis of academic achievement. One particular consideration pertains to additional factors that may have influenced comparisons across schools. While Schools A, B, and C were all from the same school district, the schools were not able to be adequately matched on demographic characteristics. Without controlling for factors such as student background, special education, SES, and other possible student variables, conclusions drawn about academic achievement across schools may not be an entirely representative picture. Future research should include these additional factors in order to draw more valid conclusions.

Another limitation pertains to missing data. The data reported from the schools were a convenience sample. It is important to consider that the data sets for AIMS scale scores reported by the school district contained missing data for the 2011-2012 and 2012-2013 academic years. With each of the three schools, some of the scale scores were

excluded from the analysis because students who had not attended the school for the entire academic year were not identified in the data set reported by the school district, nor was their grade level included. Without knowing the students' grade level, their scale scores could not be effectively analyzed due to the vertical scaling of AIMS scale scores by grade level. Other students' identification information was included in the data, but their AIMS scores were missing. All of these students were excluded from the analysis as well. Because the nature of the missing data was unknown, it was determined that using a method to replace the missing data, such as multiple imputation or mean replacement, may not adequately replace the missing data. Listwise deletion was used to omit cases with missing data. Although the sample size remained large and maintained sufficient power, there is a potential for bias in the results of the analysis. As such, scale score analyses should be interpreted with caution.

In the area of reading, Schools A and B had a high percentage of students who met or exceeded AIMS standards prior to the implementation of PBIS. Due to this high initial baseline, it may be more difficult for Schools A and B to significantly improve these scores. In the area of math, each of the three schools had significantly less students Meeting or Exceeding standards. In terms of scale scores, no significant improvements were seen in math scale scores, and scores generally tended to decrease slightly during either the 2011-2012 or 2012-2013 academic years.

Implications. Achievement scores at the three schools were variable across time, year of PBIS implementation, and grade level in both reading and math. Previous studies assessing student achievement in terms of standard scores or percentile ranks found significant increases in scores after implementing PBIS (Lassen, et al., 2006; Luiselli, et

al., 2005). However, consistencies could not be drawn with regard to these variables in the present study, and achievement scale scores did not reflect any particular pattern in regard to PBIS implementation. Although specific trends in AIMS scale scores could not be determined in correspondence to PBIS implementation, this may be due in part to missing data. Additionally, comparisons made across schools indicated that scores were higher in the schools implementing PBIS for one and two years compared to the school that had been implementing for three years, and did not reflect substantial positive changes within the schools.

In terms of students passing the AIMS, the analysis of performance level data supported the implementation of PBIS in order to increase the number of students meeting or exceeding grade-level standards, with the greatest increases occurring in School C, where PBIS had been implemented for three years. This finding was consistent with the findings of Horner and colleagues (2009), in which more students were found to be meeting or exceeding state expectations in reading after PBIS had been implemented for three years. The analysis of rates of passing the AIMS assessments holds important implications at both the student and school levels. The AIMS assessment is currently utilized as a competency test that high school students must pass in order to graduate from high school. In addition, beginning during the 2013-2014 academic year, Arizona will implement statute A.R.S. § 15-701, which requires that schools do not promote third grade students who obtain a score on the reading AIMS assessment demonstrating that they fall far below grade level standards. Schools are required to demonstrate adequate yearly progress (AYP) as mandated by NCLB (2001), part of which is determined by the percentage of students meeting proficiency in state standards. Student AIMS scores also

affect a school's letter grade, which is a statewide accountability system in which schools are assigned grades of A through F designed to help parents make informed decisions regarding their children's education. School letter grades take into account student growth, including the percentage of students passing the AIMS, the reduction in students who obtained scores in the Falls Far Below range, and the growth of the lowest performing students (bottom 25%; Arizona Department of Education, 2013). Thus, significant increases in the percentage of students passing the AIMS assessment substantially impacts individual student outcomes as well as federal funding for schools and public perception of the school's effectiveness.

Attendance. The implementation of PBIS has also been shown to improve student attendance **(**Luiselli, et al., 2002; Taylor-Greene & Kartub, 2000). In the current study, student attendance was examined in terms of student absences across three academic years in Schools A, B, and C, as well as across the three schools during the 2012-2103 academic year. In School A, student absences remained stable during the 2010-2011 and 2011-2012 academic years, with a mean of approximately 10 absences for students who were absent at least one day. Interestingly, this number increased significantly to about 16 days absent during the 2012-2013 academic year, which was School A's first year of PBIS implementation. In School B, the mean number of absences for students who were absent rose from approximately 10 to 13 from the 2010-2011 to 2011-2012 academic years, but then decreased back to about 10 absences during the 2012-2013 academic year, which was School B's second year of PBIS implementation. Interestingly, student absences increased during the first year of PBIS implementation in both Schools A and B, but then decreased during the second year of implementation in

School B. In School C, the mean number of absences for students who were absent increased from about 13 to 16 absences from the 2010-2011 to the 2011-2012 academic years, and then decreased to approximately 11 absences during the 2012-2013 academic year. School C ultimately reached its lowest number of mean absences during its third year of PBIS implementation. However, the year of PBIS implementation accounted for a small amount of the variance in student absences, constituting about 3%.

Comparisons of attendance rates were also made across the three schools during the 2012-2013 academic year. Schools B and C, where PBIS had been implemented for two and three years, respectively, had significantly reduced the mean number of student absences when compared with School A, where PBIS had been implemented for the first year. The mean number of absences for students was about 16 days in School A, about 10 days in School B, and about 11 days in School C, which translates to approximately an extra week of instruction for students in the latter two schools. The year of PBIS implementation accounted for 9% of the variance in student absences.

Limitations and future research. Data pertaining to student enrollment rates was recorded by the district in terms of the number of absences of students who had at least one absence. Information regarding the number of days that each student was present was not available. Thus, data was analyzed in terms of the number of absences a student had, and excluded students who were present every day during a given academic year. This represented only a subset of the school population. Because of this, absence data could only be examined for students who were absent one or more days during a particular academic year, and limits the generalizability of results to only those who were absent. Further research would benefit from including all students who attended the school in the

analysis in order to examine the effects of PBIS on attendance school-wide. With this data included, it would also be possible to examine the amount of days present for each student by calculating the number of days present based on the total number of days in an academic year. Additionally, the number of student absences reported represents a different percentage of students at each school because the school populations varied.

The data system changed the way that student absences were reported from the 2010-2011 academic year to the 2011-2012 and 2012-2013 academic years. For the 2010-2011 academic year, student absences were reported as an overall absence total per student. For the following two academic years, absences were reported per period out of a seven period school day. Thus, an average number of absences was calculated for each student. This number may not have been representative in all cases. For example, for students who frequently missed first period, but were present more often for the other periods during the day, an average number of absences may not have been the most accurate. For students who consistently missed the same number of periods, this number was more appropriate.

Implications. Within each of the schools, student absences tended to increase slightly during the early years of PBIS implementation, and then decrease slightly. Only the first year of PBIS implementation was examined in School A, which happened to represent the highest mean number of absences in School A during the time period examined. Schools B and C followed similar tends in that student absences increased at first by a few days, and then decreased with continued PBIS implementation. The greatest reductions in student absences were observed in the last academic year assessed, during the second and third years of PBIS implementation for Schools B and C,

respectively. As demonstrated in previous research (Luiselli, et al., 2002; Taylor-Greene & Kartub, 2000), the continued implementation of PBIS (for multiple academic years) appears to support student attendance rate improvement.

Teacher burnout. Regarding teacher burnout, teachers who had been implementing PBIS for three years reported significantly fewer feelings of emotional fatigue (i.e., lower score on Emotional Exhaustion on the MBI) than teachers who had been implementing PBIS for one or two years. This finding is consistent with the literature reviewed that student performance and behavior impact teachers' emotions associated with work (Reinke, et al., 2012), and supports the hypothesis that teachers who had been implementing PBIS the longest (i.e., three years) would report reduced feelings of emotional strain associated with school. The mean rating of Emotional Exhaustion for teachers at School C fell within the low end of the Average range, and was close to being in the Low Risk range, while the mean rating for School B fell within the high end of the Average range, and the mean rating for School A fell within the High Risk range. As predicted, with each year of PBIS implementation, ratings on the Emotional Exhaustion scale decreased from High Risk to Low Average.

Unexpectedly, there were no observed relationships between teachers' feelings of Depersonalization or Personal Accomplishment and the amount of time that the teacher had been implementing PBIS. However, decreases in mean ratings may not be observed if teachers already felt positively about their own sense of accomplishment within their profession and did not make impersonal or responses of "unfeeling" toward students. Mean ratings on the Depersonalization scale for all three schools were well within the Low Risk range. These responses indicate that teachers in the three schools appear to

genuinely care about their students, and significant reductions would prove to be difficult given that scores in this area were already low. Similarly, mean ratings for teachers in each of the three schools all fell within the Low Risk range on the Personal Accomplishment scale. These scores indicate that teachers in each of the three schools appear to feel competent and successful in their teaching career, and significant increases in a teacher's sense of accomplishment would also prove to be difficult given the already high ratings of personal sense of accomplishment. In addition, there were a number of teachers in schools B and C that had not been teaching in that school for the duration of PBIS implementation. In School B, there were three teachers who had been at the school for one year, and PBIS had been implemented for two years. In School C, there were four teachers who had just completed their first year at the school, and two teachers who had taught at the school for two years, and PBIS had been implemented for three years.

There were no significant differences between teacher participants on the measures of Emotional Exhaustion, Depersonalization, or Personal Accomplishment related to the teachers' gender, age, years of experience teaching, setting in which the teacher taught, or whether or not the educator was a second career teacher. Although this finding was interesting given that previous research indicated that male educators and younger educators have reported experiencing more burnout (Anderson & Iwanicki,1984; Pas, et al., 2012), this may also lend more support to the finding that PBIS implementation was associated with significantly reduced emotional exhaustion among educators in the current study.

Limitations and future research. There were several limitations in the analysis of teacher burnout at Schools A, B, and C. The sample size at each of the three schools was

relatively small, although attempts were made to remind the teachers to complete the survey. Thus, the sample may not be fully representative of all teachers at the schools. Further, School A contained grade levels 6 – 8, while Schools B and C contained grade levels of 7 – 8. Ratings on the MBI from teachers of 6th grade students could not be excluded from the analysis due to the already small sample size; however, this factor could have influenced teachers' ratings differently at School A. A further possible explanation for low teacher participation may involve the timing of data collection, which occurred in May of the 2012-2013 academic year. At the end of the school year, teachers are generally busy with completing final grades, preparing for the summer, and potentially dealing with student behaviors. Another consideration pertains to changes in the school district during the 2012-2013 academic year. In April of the 2012-2013, teachers were informed about upcoming budget cuts and the possibility of staff reductions district wide. Teachers' ratings may have been affected by unknown job security factors regarding the upcoming school year.

Additionally, differences across different schools may have also factored in to teacher perceptions and ratings of burnout. As previously mentioned, a number of demographic differences existed in terms of students that comprised the population at each school. Although there were not significant differences among the teachers in the characteristics examined, this may have been due to small sample size. Additional characteristics pertaining to the teacher may have also had an impact on the teacher's ratings that were not assessed in the current study. It is possible that teachers who completed the MBI possess some characteristic different than that of teachers who elected to not complete the survey, and may have felt less burnt out than those teachers.

For example, a teacher who already felt "burned out" may not want to take on any additional tasks, such as completing a survey. This may lend to the possibility of sampling bias. Another limitation may be that the MBI-ES was not administered to teachers at the end of each school year to allow for comparisons.

Implications. The implementation of PBIS appeared to significantly reduce teacher burnout pertaining to emotional exhaustion with each additional year of PBIS implementation. With the heavy demands placed on teachers regarding the management of increasingly larger class sizes of students, being held accountable for student achievement and performance, and ensuring that instruction is differentiated in such a way that all students are able to learn, teacher burnout is a risk factor that appears to affect teachers of all ages and backgrounds. Teacher burnout has the potential to influence students' perceptions of school and learning, as well as student academic achievement and behavior. The implementation of the PBIS framework in middle schools appears to benefit not only students, but also teachers, as evidenced by the substantial reductions in emotional exhaustion reported by teachers. Although teachers in each of the three schools did not appear to differ in terms of reported feelings of depersonalization and personal accomplishment, teacher ratings in these areas were consistently low on depersonalization and high on personal accomplishment, indicating that teachers already felt adequate in these areas.

School climate. The school climate questionnaire administered to educators in the three schools addressed the educator's perceptions of essential components of school climate, including rules, safety, bullying, respect, and communication. An overall rating of school climate was computed for all participating teachers in each of the three schools

taking all of the school climate questionnaire factors into account. Results of this analysis supported the hypothesis that teachers who had been implementing PBIS the longest would report higher overall ratings of school climate, with teachers who had been implementing PBIS for three years reporting significantly higher school climate ratings. Overall mean ratings of school climate increased with each year of PBIS implementation, with the highest overall rating occurring during the third year of implementation. Teachers at School C endorsed the highest levels of respect and communication between staff, students, and parents, perceptions of school safety, and well-defined rules and expectations, as well as the lowest levels of bullying between students.

School safety is a critical element in ensuring the success of students and a point of focus in the PBIS framework (Horner, et al., 2009). Thus, assessing staff perceptions of safety within the school is an important factor in evaluating the success of PBIS implementation. As predicted, teachers who had been implementing PBIS the longest (i.e., three years) reported significantly higher ratings of feeling safe within the school environment. Mean ratings of perceived safety increased with each year of PBIS implementation for the first three years, with the highest ratings occurring in the third year. These results also offer an important practical implication in that the highest ratings of school safety occurred in the school that was the most ethnically and culturally diverse, had the highest amount of students receiving free and reduced lunch, and had the lowest median household income in comparison to the other two schools included in the analysis.

Limitations and future research. Several limitations should be considered in the analysis of school climate in the present study. As with the teacher burnout survey, a

number of demographic characteristics may have influenced teacher ratings on the school climate survey, including new knowledge of upcoming district changes, workload, and characteristics unique to that particular staff member. In addition, characteristics unique to a particular school or students at a particular school could have impacted teacher responses. The school climate survey was not administered at each school during the end of each school year, so comparisons across time could not be made.

Additionally, school climate surveys were anonymously completed by staff members at each of the three schools. Information regarding the employee's position at the school, or any other identifying characteristics, was not available. Thus, it is possible that the staff member samples differed from one another on some dimension. For instance, more members of the PBIS team at one school may have responded to the survey than in other schools. Future research should examine these characteristics of the staff sample. Future research should also expand upon the current areas of school climate, including factors such as bullying, student respect, and staff communication.

Implications. The highest ratings of school safety and overall school climate were reported in School C, where PBIS had been implemented for three years. School B, where PBIS had been implemented for two years, had the second highest ratings for safety and school climate, followed by School A, where PBIS had been implemented for one year. The highest ratings of school climate occurred in School C, where the least amount of teacher burnout was reported. Improved school climate may help to buffer teacher's feelings of exhaustion with their work and improve teacher efficacy. It is important to note that positive ratings of safety and school climate were reported in each of the three schools; however, these ratings were significantly higher in School C, where

PBIS was in its third year of implementation. This finding is consistent with current research that has documented improvements in perceived safety in the school (Horner et al., 2009) and school climate factors after PBIS had been implemented for at least three years (Bradshaw, et al., 2008). In addition, the population at School C had a higher percentage of minority students, lower SES, and lower achievement scores compared to Schools A and B, but had the highest perceptions of school climate reported by teachers, which may be due to longer PBIS implementation.

Study Summary

The current study examined the relationship between PBIS and multiple student and teacher related variables. Improvements were not observed in mean scale scores on measures of reading and math achievement; however, PBIS did appear to be associated with substantial increases in the percentage of students passing reading and math standards-based assessments the longer that PBIS was implemented. Student behavior appeared to improve with each additional year of PBIS implementation (up to three years), as evidenced by reductions in office discipline referrals for defiance, disrespect, and disruption, overall ODRs issued at schools, and the number of major disciplinary decisions issued. Additionally, school climate appeared to improve, and teacher burnout pertaining to emotional exhaustion decreased as PBIS continued to be implemented.

Overall, School C, where PBIS was implemented for three years, exhibited the most gains for students and teachers in terms of the variables examined. School A, which had implemented PBIS for only one year, exhibited some gains, such as an overall reduction in the number of ODRs and major disciplinary decisions issued, which is consistent with research that some gains may occur in the first year of PBIS

implementation, but gains may not be substantial at this time. School B showed more gains than School A, with reductions in ODRs, major disciplinary decisions issued, and student absences, and decreases in teacher reports of emotional exhaustion, and slightly improved school climate ratings. School C demonstrated significant gains in all of the variables examined, including significantly reduced rates of ODRs and major disciplinary decisions issued, increases in the number of students meeting or exceeding reading and math achievement standards, significant reductions in teacher reports of emotional exhaustion, and significant increases in teacher perceptions of school climate. Student level variables in School C showed improvements in academic achievement and attendance concomitant with decreases in office discipline referrals and student suspensions. In turn, teacher-related variables demonstrated low rates of teacher burnout, along with high ratings of perceived safety and overall school climate. Ultimately, the current study supports the use of PBIS in middle schools for a variety of student and teacher-related factors, with the most significant gains occurring during the third year of PBIS implementation. The greatest changes observed in the current study pertained to student behavior variable decreases (ODRs and student suspensions), decreases in teacher reported emotional exhaustion, and improvements in school climate perceptions. While some student achievement and attendance improvements were noted, changes related to these variables may take longer before significant changes are apparent. Thus, the implementation of PBIS should continue to be explored regarding the outcomes of students, as well as teachers.

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Table 1

Categorization for Risk of Burnout among K-12 Teachers According to the MBI Standardization Sample

MBI Subscale	Low Risk	Average	High Risk
Emotional Exhaustion	≤ 16	17 - 26	≥ 27
Depersonalization	≤ 8	9 - 13	≥ 14
Personal Accomplishment	≥ 37	36 - 31	≤ 30

Note. From *Maslach Burnout Inventory, Educator Survey*, by C. Maslach, S. E. Jackson, M. P. Leiter, W. B. Schaufeli, & R. L. Schwab, Copyright 1996 by Mind Garden, Inc., All Rights Reserved, MindGarden, www.mindgarden.com.

Table 2

Intercorrelations Between the MBI Subscales in Accordance with the Standardization Sample

	Depersonalization	Personal Accomplishment
Emotional Exhaustion	0.52	-.22
Depersonalization	--	-.26

Note. From *Maslach Burnout Inventory, Educator Survey*, by C. Maslach, S. E. Jackson, M. P. Leiter, W. B. Schaufeli, & R. L. Schwab, Copyright 1996 by Mind Garden, Inc., All Rights Reserved, MindGarden, www.mindgarden.com.

Table 3

Office Discipline Referral (ODR) Descriptive Statistics for School A

Academic Year	N	*M*	*SD*	Variance	Skewness
2010-2011					
Def./Dis./Disr.	197	.96	1.46	2.12	2.28
Total ODR	197	2.51	2.30	5.29	2.24
2011-2012					
Def./Dis./Disr.	154	1.18	1.75	3.06	3.83
Total ODR	154	2.68	2.65	7.04	2.52
2012-2013					
Def./Dis./Disr.	140	1.16	1.85	3.41	2.58
Total ODR	140	2.70	2.92	8.52	2.92

Note. Def./Dis./Disr. represents Defiance, Disrespect, and Disruption.

Table 4

Office Discipline Referral (ODR) Descriptive Statistics for School B

Academic Year	N	*M*	*SD*	Variance	Skewness
2010-2011					
Def./Dis./Disr.	120	.68	1.20	1.45	3.01
Total ODR	120	2.53	2.67	7.13	3.10
2011-2012					
Def./Dis./Disr.	106	.83	2.14	4.60	5.12
Total ODR	106	2.81	2.84	8.06	2.88
2012-2013					
Def./Dis./Disr.	44	.86	1.89	3.56	5.03
Total ODR	44	1.77	2.51	6.32	5.47

Note. Def./Dis./Disr. represents Defiance, Disrespect, and Disruption.

Table 5

Office Discipline Referral (ODR) Descriptive Statistics for School C with 95% Confidence Intervals

Academic Year	N	*M*	*SD*	Variance	Skewness	2010-2011	2011-2012
2010-2011							
Def./Dis./Disr.	305	1.41	2.29	5.26	2.25		
Total ODR	305	4.43	4.51	20.33	2.01		
2011-2012							
Def./Dis./Disr.	177	.69	1.22	1.50	1.95	.35 to 1.10*	
Total ODR	177	2.50	2.09	4.39	1.75	1.21 to 2.64*	
2012-2013							
Def./Dis./Disr.	139	.49	.88	.77	2.04	.57 to 1.28*	-.08 to .48
Total ODR	139	1.95	1.53	2.35	1.77	1.80 to 3.16*	.07 to 1.04*

Note. Def./Dis./Disr. represents Defiance, Disrespect, and Disruption. An asterisk indicates that the 95% confidence interval does not contain zero, and therefore the difference in means is significant using the Dunnett's *C* procedure.

Table 6

ODR Descriptive Statistics for Students who Received Referrals in Schools A, B, and C during the 2012-2013 Academic Year

Academic Year	N	*M*	*SD*	Variance	Skewness	School A	School B
School A							
Def./Dis./Disr.	140	1.17	1.86	3.41	2.58		
Total ODR	140	2.71	2.92	8.52	2.92		
School B							
Def./Dis./Disr.	44	.86	1.88	3.56	5.03	-.47 to 1.10	
Total ODR	44	1.78	2.51	6.32	5.47	-.16 to 2.02	
School C							
Def./Dis./Disr.	139	.49	.88	.77	2.04	.28 to 1.10*	-.34 to 1.09
Total ODR	139	1.95	1.53	2.35	1.77	.10 to 1.42*	-1.15 to .79

Note. Def./Dis./Disr. represents Defiance, Disrespect, and Disruption. An asterisk indicates that the 95% confidence interval does not contain zero, and therefore the difference in means is significant using the Dunnett's *C* procedure.

Table 7

ODR Descriptive Statistics for Schools A, B, and C with Simulated Population Data

Academic Year	N	*M*	*SD*	Variance	Skewness	School A	School B
School A							
Def./Dis./Disr.	468	.35	1.14	1.30	5.02		
Total ODR	468	.80	1.99	3.96	4.57		
School B							
Def./Dis./Disr.	590	.06	.56	.31	17.42	.15 to .42*	
Total ODR	590	.13	.82	.68	15.53	.43 to .90*	
School C							
Def./Dis./Disr.	463	.15	.53	.28	4.42	.06 to .34*	-.16 to -.003*
Total ODR	463	.59	1.23	1.50	2.93	-.04 to .466	-.61 to -.30*

Note. Def./Dis./Disr. represents Defiance, Disrespect, and Disruption. An asterisk indicates that the 95% confidence interval does not contain zero, and therefore the difference in means is significant using the Dunnett's *C* procedure.

Table 8

Major Disciplinary Decision Descriptive Statistics for School A

Academic Year	N	Mean	SD	Variance	Skewness
2010-2011	197	.67	.95	.91	1.97
2011-2012	152	.77	1.17	1.37	2.06
2012-2013	127	.75	1.24	1.54	3.33

Table 9

Major Disciplinary Decision Descriptive Statistics for School B

Academic Year	N	*M*	*SD*	Variance	Skewness
2010-2011	113	.87	1.22	1.49	3.28
2011-2012	106	.92	1.12	1.25	2.15
2012-2013	42	.93	.68	.46	1.08

Table 10

Major Disciplinary Decision Descriptive Statistics for School C with 95% Confidence Intervals

Academic Year	N	*M*	*SD*	Variance	Skewness	2010-2011	2011-2012
2010-2011	262	1.78	2.28	5.19	2.37		
2011-2012	174	1.12	1.38	1.90	2.28	.24 to 1.07*	
2012-2013	135	1.21	1.37	1.87	2.31	.10 to 1.02*	-.59 to .40

Note: An asterisk indicates that the 95% confidence interval does not contain zero, and therefore the difference in means is significant using the Dunnett's *C* procedure.

Table 11

Major Disciplinary Decision Descriptive Statistics across Schools A, B, and C with 95% Confidence Intervals

Academic Year	N	*M*	*SD*	School A	School B
School A	127	.75	1.24		
School B	42	.93	.68	-.70 to .34	
School C	135	1.21	1.37	-.83 to -.10*	-.80 to .23

Note: An asterisk indicates that the 95% confidence interval does not contain zero, and therefore the difference in means is significant using the Dunnett's *C* procedure.

Table 12

Frequencies and Percentages for Student AIMS Reading Performance Levels in School A across Three Academic Years

AIMS Reading Performance Level	2010-2011		2011-2012		2012-2013	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Falls Far Below	32	6.2%	11	2.6%	6	1.3%
Approaches	74	14.3%	58	14.0%	71	15.2%
Meets	336	65.0%	282	70.0%	335	71.6%
Exceeds	75	14.5%	64	15.4%	56	12.0%
Total	517	100.0%	415	100.0%	468	100.0%

Table 13

Means and Standard Deviations for Seventh and Eighth Grade Reading Achievement Scores across the 2011-2012 and 2012-2013 Academic Years in School A

	7th Grade		8th Grade	
Year	*M*	*SD*	*M*	*SD*
2011-2012	521.83	46.48	541.79	45.26
2012-2013	519.55	40.82	538.83	47.75

Table 14

Frequencies and Percentages for Student AIMS Reading Performance Levels in School B across Three Academic Years

AIMS Reading Performance Level	2010-2011		2011-2012		2012-2013	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Falls Far Below	31	5.1%	23	3.6%	24	4.1%
Approaches	70	11.4%	65	10.2%	73	12.4%
Meets	433	70.8%	477	75.1%	429	72.8%
Exceeds	78	12.7%	70	11.0%	63	10.7%
Total	612	100.0%	635	100.0%	589	100.0%

Table 15

95% Confidence Intervals of Pairwise Differences in Mean Changes in Seventh Grade Reading Achievement Scores across Three Academic Years in School B

Year	*M*	*SD*	2010-2011	2011-2012
2010-2011	546.93	43.20		
2011-2012	530.58	43.87	7.96 to 24.73*	
2012-2013	535.83	38.50	2.83 to 19.37*	-14.03 to 3.53

Note: An asterisk indicates that the 95% confidence interval does not contain zero, and therefore the difference in means is significant using the Tukey HSD procedure.

Table 16

95% Confidence Intervals of Pairwise Differences in Mean Changes in Eighth Grade Reading Achievement Scores across Three Academic Years in School B

Year	*M*	*SD*	2010-2011	2011-2012
2010-2011	530.41	53.55		
2011-2012	546.82	46.81	-25.90 to -6.93*	
2012-2013	543.74	41.68	-22.90 to -3.76*	-6.73 to 12.90

Note: An asterisk indicates that the 95% confidence interval does not contain zero, and therefore the difference in means is significant using the Tukey HSD procedure.

Table 17

Frequencies and Percentages for Student AIMS Reading Performance Levels in School C across Three Academic Years

AIMS Reading Performance Level	2010-2011		2011-2012		2012-2013	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Falls Far Below	38	7.3%	20	4.6%	27	6.1%
Approaches	126	24.1%	87	19.8%	75	17.0%
Meets	324	62.0%	297	67.7%	292	66.4%
Exceeds	35	6.7%	35	8.0%	46	10.5%
Total	523	100.0%	439	100.0%	440	100.0%

Table 18

95% Confidence Intervals of Pairwise Differences in Mean Changes in Seventh Grade Reading Achievement Scores across Three Academic Years in School C

Year	*M*	*SD*	2010-2011	2011-2012
2010-2011	520.63	43.20		
2011-2012	510.95	43.87	.68 to 18.69*	
2012-2013	511.55	38.50	-.26 to 18.42	-10.39 to 9.18

Note: An asterisk indicates that the 95% confidence interval does not contain zero, and therefore the difference in means is significant using the Tukey HSD procedure.

Table 19

95% Confidence Intervals of Pairwise Differences in Mean Changes in Eighth Grade Reading Achievement Scores across Three Academic Years in School C

Year	*M*	*SD*	2010-2011	2011-2012
2010-2011	513.83	54.06		
2011-2012	535.02	48.25	-32.68 to -9.71*	
2012-2013	530.98	44.55	-27.75 to -6.55*	-7.90 to 15.99

Note: An asterisk indicates that the 95% confidence interval does not contain zero, and therefore the difference in means is significant using the Tukey HSD procedure.

Table 20

Frequencies and Percentages for Student AIMS Reading Performance across Schools A, B, and C during the 2012-2013 Academic Year

AIMS Reading Performance Level	School A		School B		School C	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Falls Far Below	6	1.3%	24	4.7%	27	6.1%
Approaches	71	15.2%	73	12.4%	75	17.0%
Meets	335	71.6%	429	72.8%	292	66.4%
Exceeds	56	12.0%	63	10.7%	46	10.5%
Total	468	100.0%	589	100.0%	440	100.0%

Table 21

95% Confidence Intervals of Pairwise Differences in Mean Changes in Seventh Grade Reading Achievement scores across Schools A, B, and C during the 2012-2013 Academic Year

Year	*M*	*SD*	School A	School B
School A	519.55	40.82		
School B	535.83	38.50	-24.27 to -7.99*	
School C	511.55	36.68	-1.04 to 17.05	15.49 to 33.07*

Note: An asterisk indicates that the 95% confidence interval does not contain zero, and therefore the difference in means is significant using the Tukey HSD procedure.

Table 22

95% Confidence Intervals of Pairwise Differences in Mean Changes in Eighth Grade Reading Achievement scores across Schools A, B, and C during the 2012-2013 Academic Year

Year	*M*	*SD*	School A	School B
School A	538.83	47.75		
School B	543.74	41.68	-14.31 to 4.49	
School C	530.98	44.54	-1.93 to 17.63	3.13 to 22.39*

Note: An asterisk indicates that the 95% confidence interval does not contain zero, and therefore the difference in means is significant using the Tukey HSD procedure.

Table 23

Frequencies and Percentages for Student AIMS Math Performance Levels in School A across Three Academic Years

AIMS Math Performance Level	2010-2011		2011-2012		2012-2013	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Falls Far Below	114	22.1%	62	15.0%	78	16.7%
Approaches	71	13.7%	83	20.0%	91	19.5%
Meets	156	30.2%	145	35.0%	178	38.2%
Exceeds	176	34.0%	124	30.0%	119	25.5%
Total	517	100.0%	414	100.0%	466	100.0%

Table 24

Means and Standard Deviations for Seventh and Eighth Grade Math Achievement Scores across Two Academic Years in School A

	7th Grade		8th Grade	
Year	*M*	*SD*	*M*	*SD*
2011-2012	415.25	52.94	442.10	56.89
2012-2013	410.53	44.81	432.97	52.02

Table 25

Frequencies and Percentages for Student AIMS Math Performance Levels in School B across Three Academic Years

AIMS Math Performance Level	2010-2011		2011-2012		2012-2013	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Falls Far Below	122	20.0%	112	17.6%	124	21.1%
Approaches	67	11.0%	102	16.1%	86	14.6%
Meets	243	39.8%	219	34.5%	214	36.4%
Exceeds	178	29.2%	202	31.8%	164	27.9%
Total	610	100.0%	635	100.0%	588	100.0%

Table 26

95% Confidence Intervals of Pairwise Differences in Mean Changes in Seventh Grade Math Achievement Scores across Three Academic Years in School B

Year	*M*	*SD*	2010-2011	2011-2012
2010-2011	440.05	50.54		
2011-2012	423.95	48.79	6.66 to 25.54*	
2012-2013	430.99	41.17	-.25 to 18.36	-16.91 to 2.83

Note: An asterisk indicates that the 95% confidence interval does not contain zero, and therefore the difference in means is significant using the Tukey HSD procedure.

Table 27

Means and Standard Deviations for Eighth Grade Math Achievement Scores across Three Academic Years in School B

Year	*M*	*SD*
2010-2011	440.24	46.70
2011-2012	436.21	52.73
2012-2013	433.45	45.36

Table 28

Frequencies and Percentages for Student AIMS Math Performance Levels in School C across Three Academic Years

AIMS Math Performance Level	2010-2011		2011-2012		2012-2013	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Falls Far Below	176	33.5%	127	28.9%	129	29.3%
Approaches	116	22.1%	76	17.3%	86	19.5%
Meets	182	34.7%	148	33.7%	144	32.7%
Exceeds	51	9.7%	88	20.0%	82	18.6%
Total	525	100.0%	439	100.0%	441	100.0%

Table 29

95% Confidence Intervals of Pairwise Differences in Mean Changes in Seventh Grade Math Achievement Scores across Three Academic Years in School C

Year	*M*	*SD*	2010-2011	2011-2012
2010-2011	410.78	44.54		
2011-2012	409.06	45.16	-7.66 to 11.10	
2012-2013	399.72	43.11	1.33 to 20.78*	-.86 to 19.53

Note: An asterisk indicates that the 95% confidence interval does not contain zero, and therefore the difference in means is significant using the Tukey HSD procedure.

Table 30

Means and Standard Deviations for Eighth Grade Math Achievement Scores across Three Academic Years in School C

Year	*M*	*SD*
2010-2011	417.25	39.60
2011-2012	425.04	57.22
2012-2013	417.31	44.14

Table 31

Frequencies and Percentages for Student AIMS Math Performance Levels across Schools A, B, and C during the 2012-2013 Academic Year

AIMS Math Performance Level	School A		School B		School C	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Falls Far Below	78	16.7%	124	21.1%	129	29.3%
Approaches	91	19.5%	86	14.6%	86	19.5%
Meets	178	38.2%	214	36.4%	144	32.7%
Exceeds	119	25.5%	164	27.9%	82	18.6%
Total	466	100.0%	588	100.0%	441	100.0%

Table 32

95% Confidence Intervals of Pairwise Differences in Mean Changes in Seventh Grade Math Achievement Scores across Schools A, B, and C during the 2012-2013 Academic Year

Year	*M*	*SD*	School A	School B
School A	519.55	40.82		
School B	535.83	38.50	-29.33 to -11.59*	
School C	511.55	36.68	1.13 to 20.48*	21.85 to 40.68*

Note: An asterisk indicates that the 95% confidence interval does not contain zero, and therefore the difference in means is significant using the Tukey HSD procedure.

Table 33

95% Confidence Intervals of Pairwise Differences in Mean Changes in Eighth Grade Math Achievement Scores across Schools A, B, and C during the 2012-2013 Academic Year

Year	*M*	*SD*	School A	School B
School A	432.97	52.02		
School B	433.46	45.36	-10.48 to 9.50	
School C	417.31	44.14	5.26 to 26.05*	5.94 to 26.34*

Note: An asterisk indicates that the 95% confidence interval does not contain zero, and therefore the difference in means is significant using the Tukey HSD procedure.

Table 34

95% Confidence Intervals of Pairwise Differences in Mean Changes in Student Absences in School A across Three Academic Years

Year	*M*	*SD*	2010-2011	2011-2012
2010-2011	10.71	9.09		
2011-2012	10.45	10.32	-1.18 to 1.70	
2012-2013	16.41	11.36	-7.43 to -3.97*	-7.69 to -4.24*

Note: An asterisk indicates that the 95% confidence interval does not contain zero, and therefore the difference in means is significant using the Tukey HSD procedure.

Table 35

95% Confidence Intervals of Pairwise Differences in Mean Changes in Student Absences in School B across Three Academic Years

Year	*M*	*SD*	2010-2011	2011-2012
2010-2011	9.76	8.01		
2011-2012	13.17	6.20	-4.55 to -2.27*	
2012-2013	10.24	6.42	-1.67 to .71	1.58 to 4.28*

Note: An asterisk indicates that the 95% confidence interval does not contain zero, and therefore the difference in means is significant using the Tukey HSD procedure.

Table 36

95% Confidence Intervals of Pairwise Differences in Mean Changes in Student Absences in School C across Three Academic Years

Year	*M*	*SD*	2010-2011	2011-2012
2010-2011	12.83	11.43		
2011-2012	15.95	9.57	-4.83 to 1.43*	
2012-2013	10.95	7.34	.28 to 3.46*	3.14 to 6.87*

Note: An asterisk indicates that the 95% confidence interval does not contain zero, and therefore the difference in means is significant using the Tukey HSD procedure.

Table 37

95% Confidence Intervals of Pairwise Differences in Mean Changes in Student Absences across Schools A, B, and C during the 2012-2013 Academic Year

School	*M*	*SD*	School A	School B
A	16.41	11.36		
B	10.24	6.42	4.36 to 7.98*	
C	10.95	7.34	3.63 to 7.28*	-2.37 to .94

Note: An asterisk indicates that the 95% confidence interval does not contain zero, and therefore the difference in means is significant at the .05 significance using Dunnett's *C*.

Table 38

Description of Teacher Participants

Category	Level/range	n	%	*M*
School	A	11	29.70	-
	B	13	35.10	-
	C	13	35.10	-
	Total	37		
Gender	Male	11	29.70	-
	Female	24	64.90	-
	Unanswered	2	5.40	-
Age	25-66	34	-	45.50
Educational attainment	Masters degree or masters plus 30	26	72.20	-
	Post-Baccalaureate teaching certification	4	11.10	-
	Bachelor degree	6	16.70	-
Years taught total	1-39	35	-	15.23
Years taught at current school	0-19	35	-	6.60
Full-time or part-time	Full-time	37	100	-
	Part-time	0	0	-
Teaching Setting	General education or general education co-taught classes	29	82.90	-
	Special education resource setting	2	5.70	-
	Special education self-contained setting	4	11.4	-
Second Career teacher	No	20	54.10	-
	Yes	17	45.90	-
Referrals given in past year	0-20	30	-	3.30
In school suspension referrals in last year	0-6	35	-	0.84
Out of school suspension referrals in last year	0-12	36	-	.75

Table 39

Means and Standard Deviations for the MBI-ES Measures of Emotional Exhaustion, Depersonalization, and Personal Accomplishment for Schools A, B, and C

School		Emotional Exhaustion		Depersonalization		Personal Accomplishment	
	N	*M*	*SD*	*M*	*SD*	*M*	*SD*
A	11	29.54	9.06	6.64	5.39	38.45	4.78
B	13	25.38	9.31	4.62	4.46	37.85	4.45
C	13	18.15	9.22	5.38	4.86	37.23	3.19
Total Sample	37	24.08	10.12	5.49	4.82	37.81	4.07

Table 40

Descriptive Statistics for Staff Ratings of Perceived School Safety in Schools A, B, and C

School	N	*M*	*SD*	Median
A	46	2.087	.551	2.0
B	37	2.270	.693	2.0
C	34	2.382	.652	2.0

Table 41

Descriptive Statistics for Staff Ratings of Overall School Climate in Schools A, B, and C

School	N	*M*	*SD*	Median
A	19	2.973	.272	2.0
B	19	3.052	.301	2.0
C	19	3.265	.301	2.0

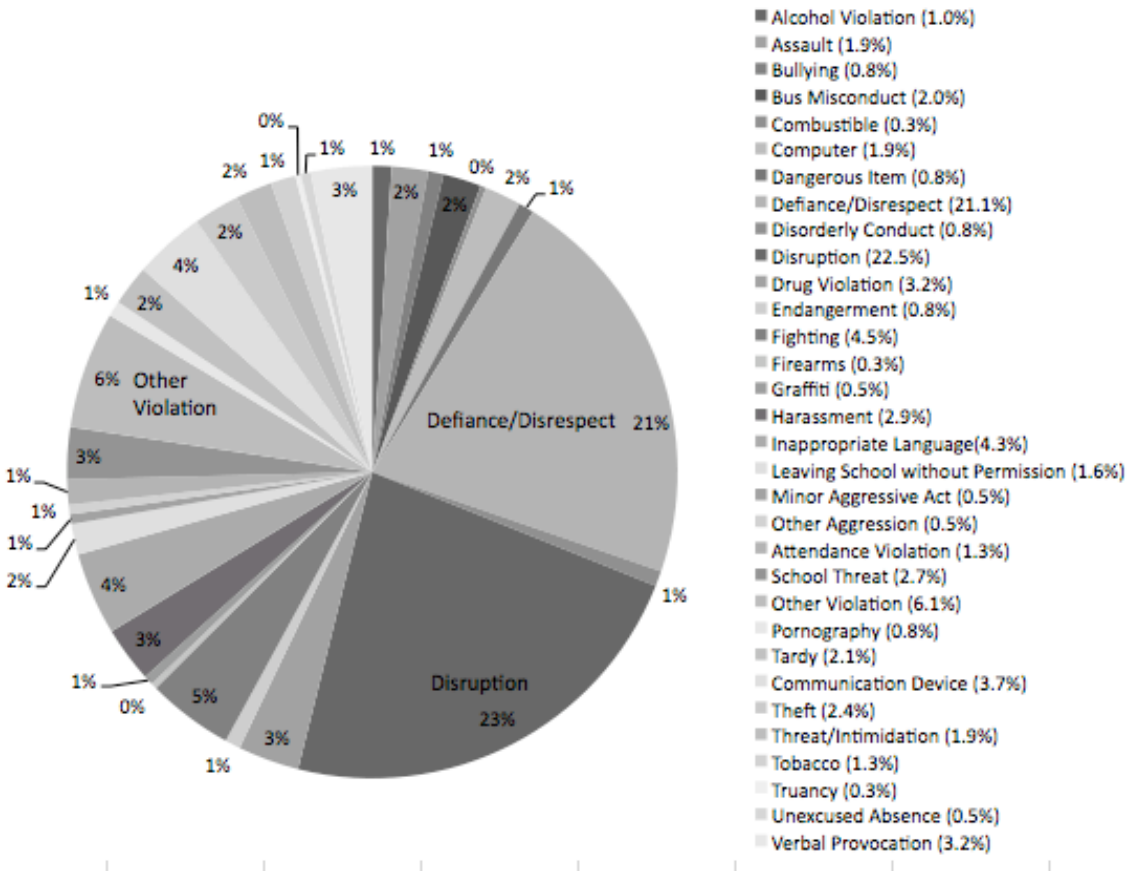

Figure 1. Composition of office discipline referrals at School A during the 2012 – 2013 academic year.

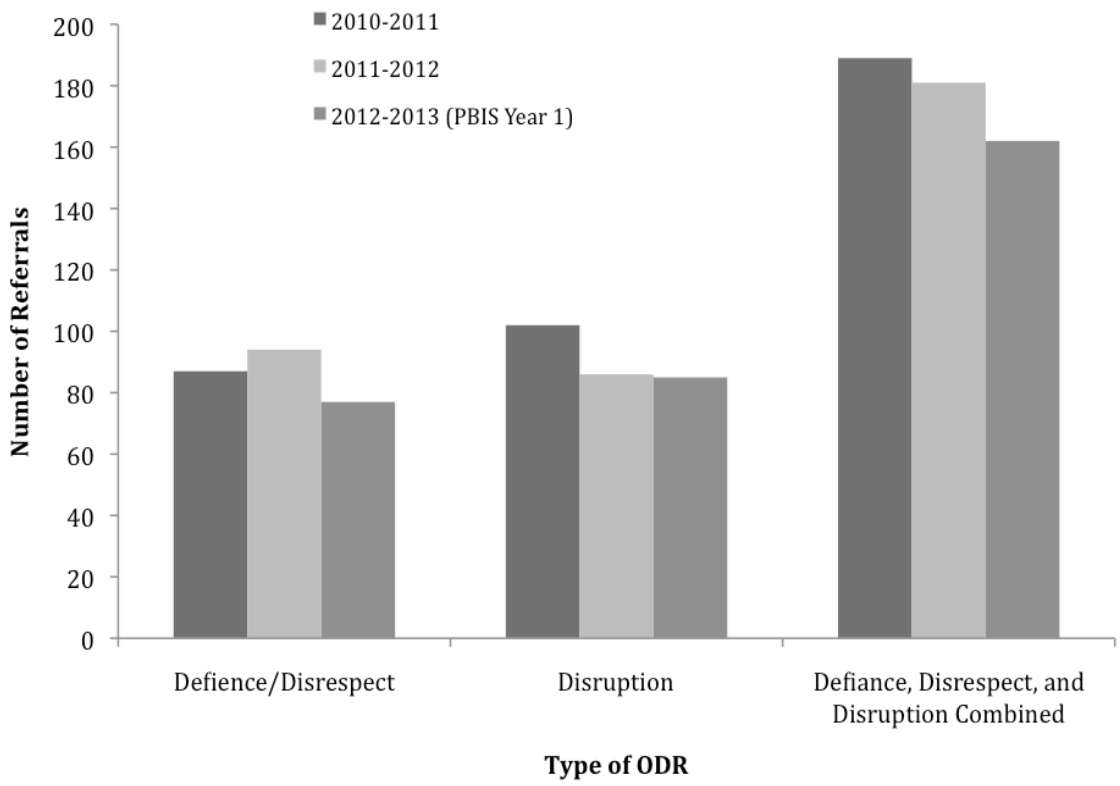

Figure 2. Number of ODRs issued for defiance and disrespect, disruption, and both categories combined at School A for the 2010-2011, 2011-2012, and 2012-2013 academic years.

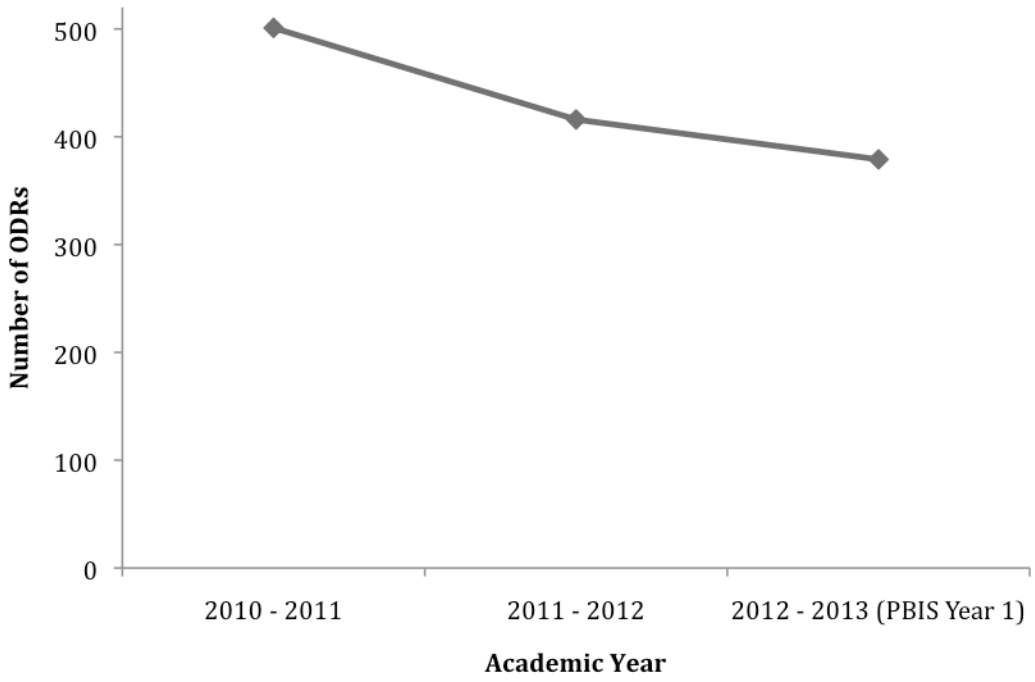

Figure 3. Total number of ODRs issued at School A 2010-2011, 2011-2012, and 2012-2013 academic years.

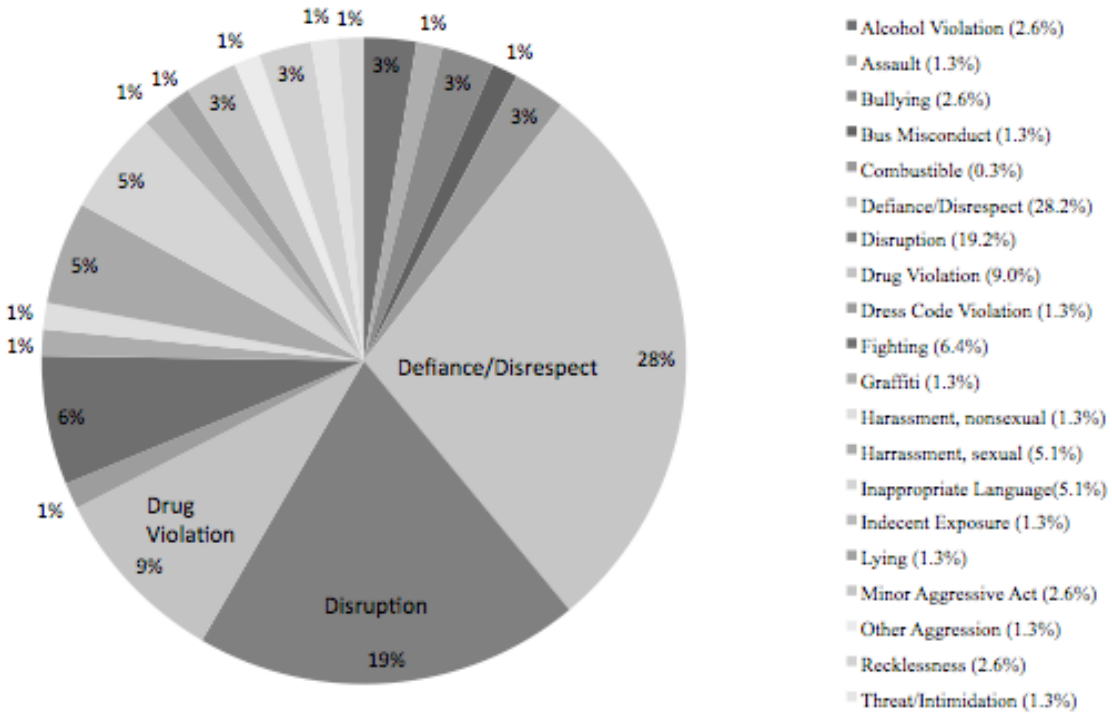

Figure 4. Composition of office discipline referrals at School B during the 2012 – 2013 academic year.

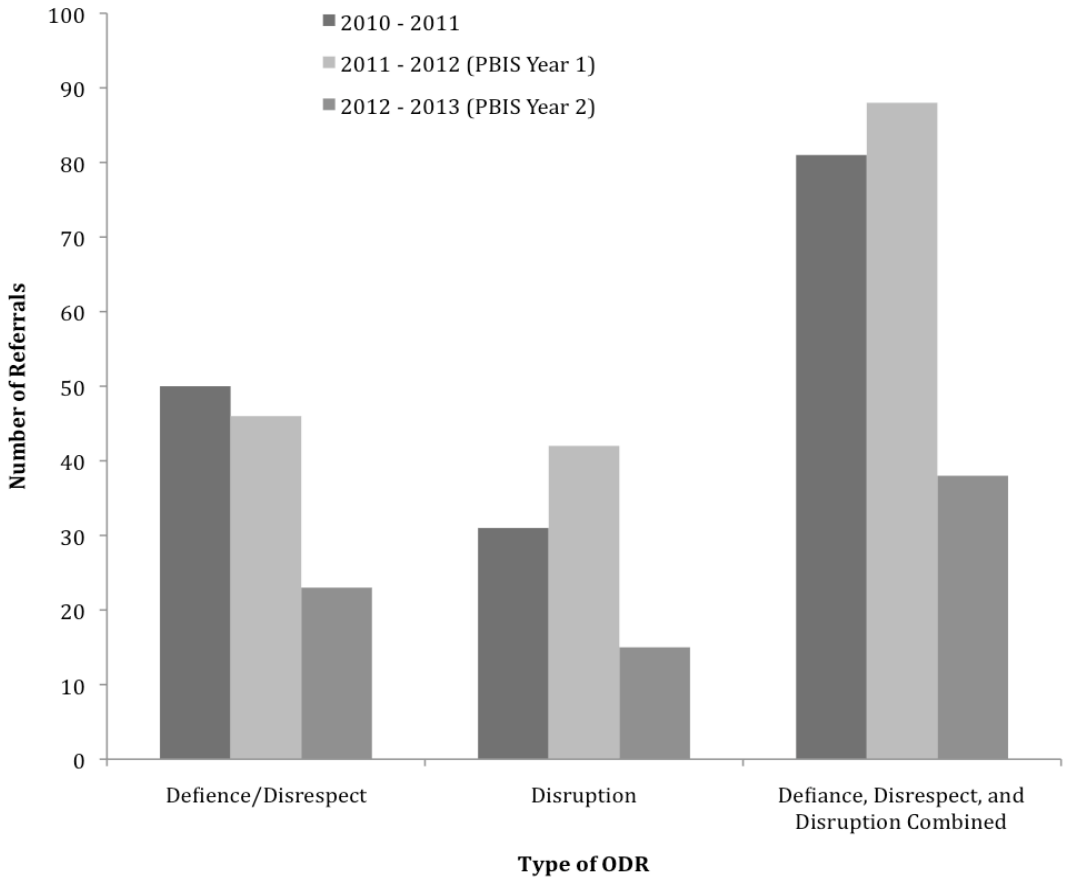

Figure 5. Number of ODRs issued for defiance and disrespect, disruption, and both categories combined at School B for the 2010-2011, 2011-2012, and 2012-2013 academic years.

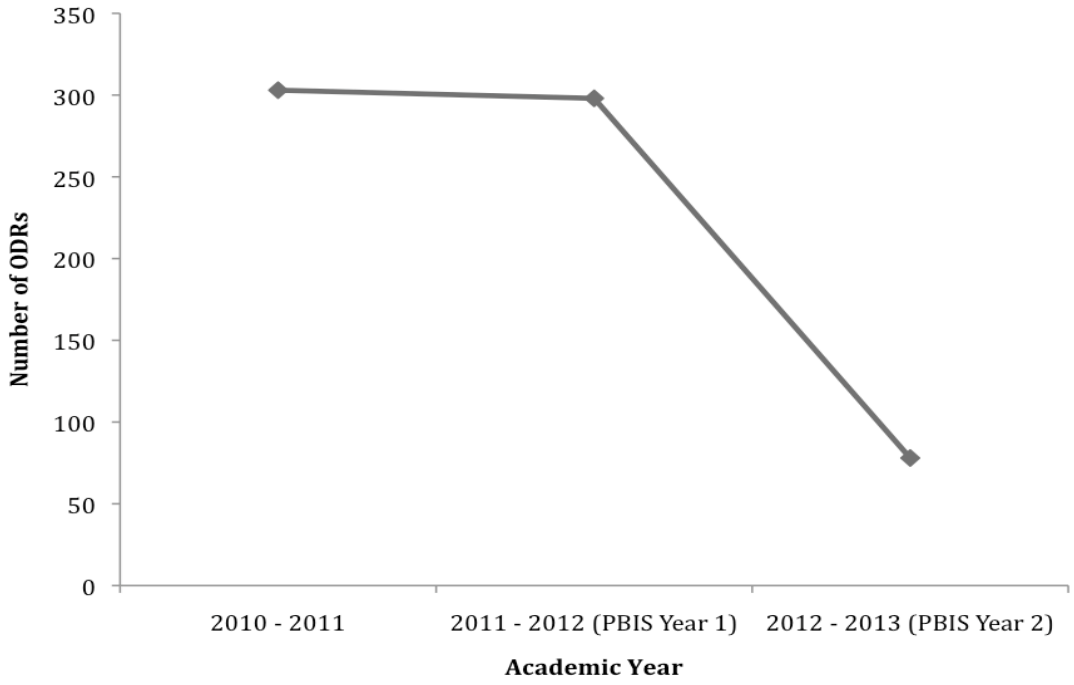

Figure 6. Total number of ODRs issued at School B across the 2010-2011, 2011-2012, and 2012-2013 academic years.

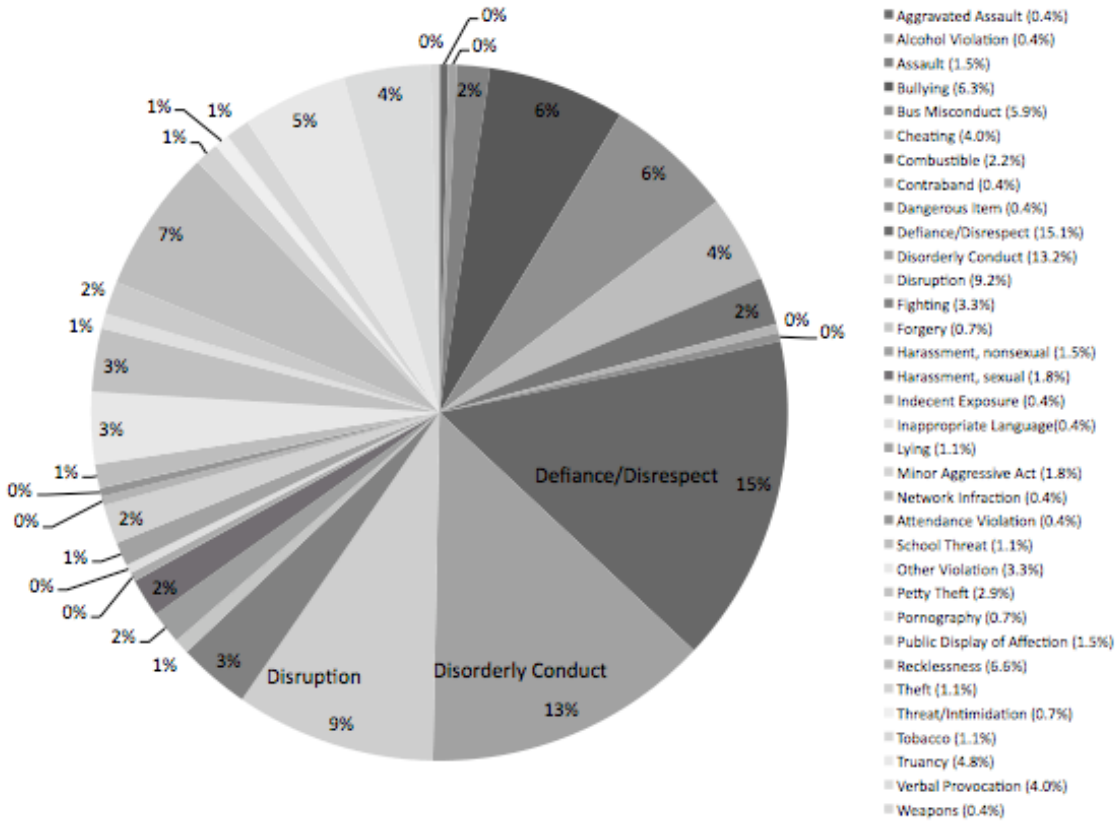

Figure 7. Composition of office discipline referrals at School C during the 2012 – 2013 academic year.

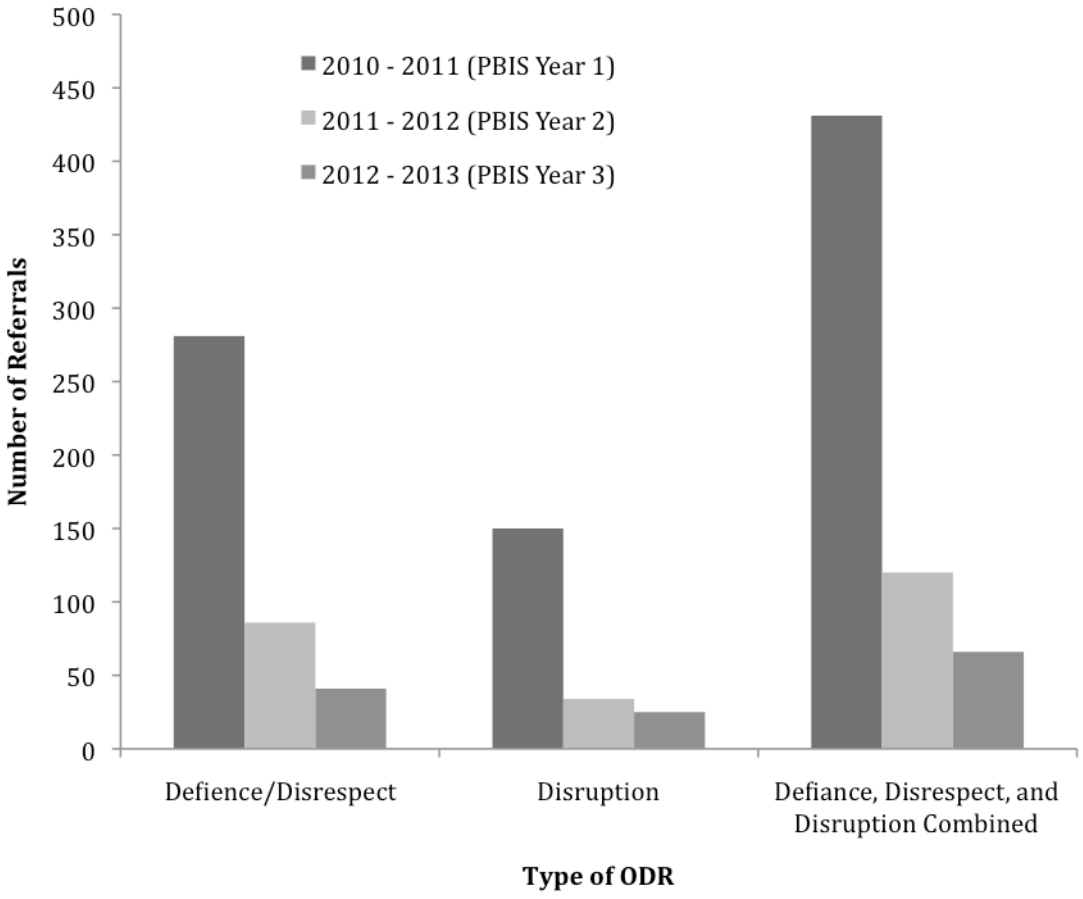

Figure 8. Number of ODRs issued for defiance and disrespect, disruption, and both categories combined at School C for the 2010-2011, 2011-2012, and 2012-2013 academic years.

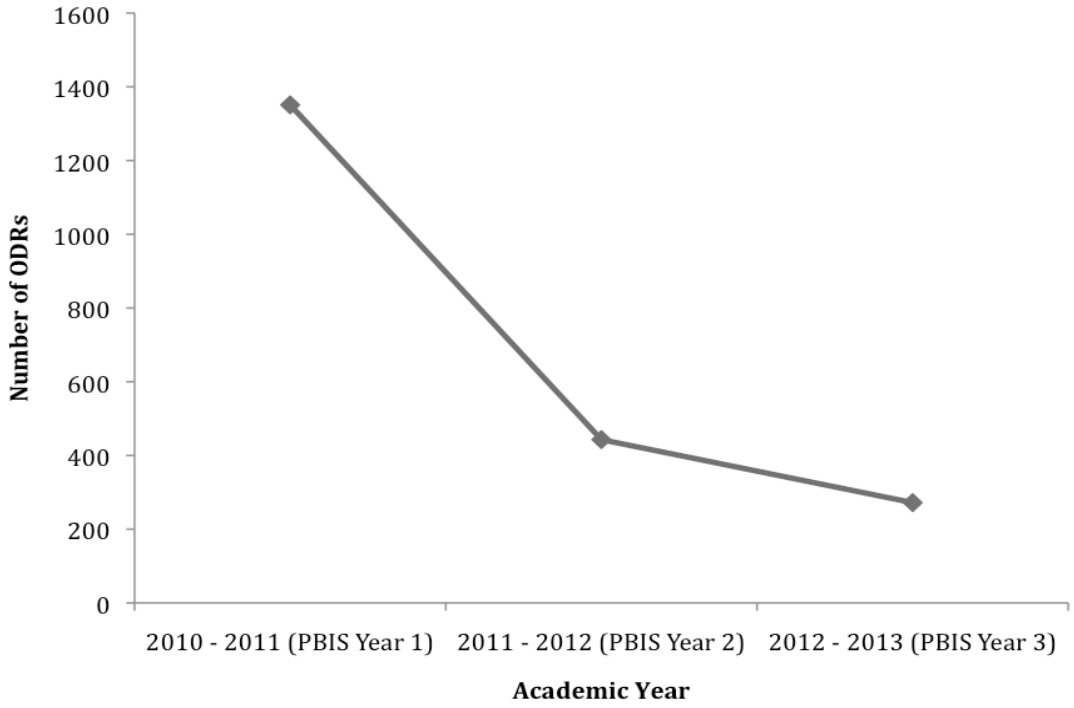

Figure 9. Total number of ODRs issued at School C across the 2010-2011, 2011-2012, and 2012-2013 academic years.

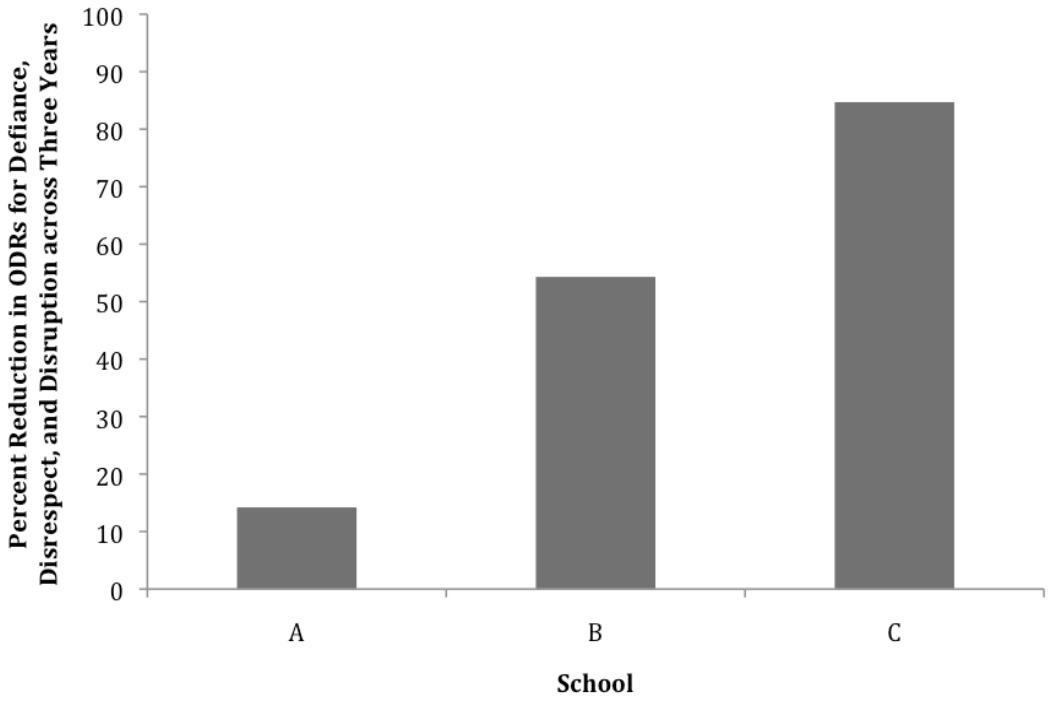

Figure 10. Percentage reduction in ODRs issued for defiance and disrespect and disruption in Schools A, B, and C.

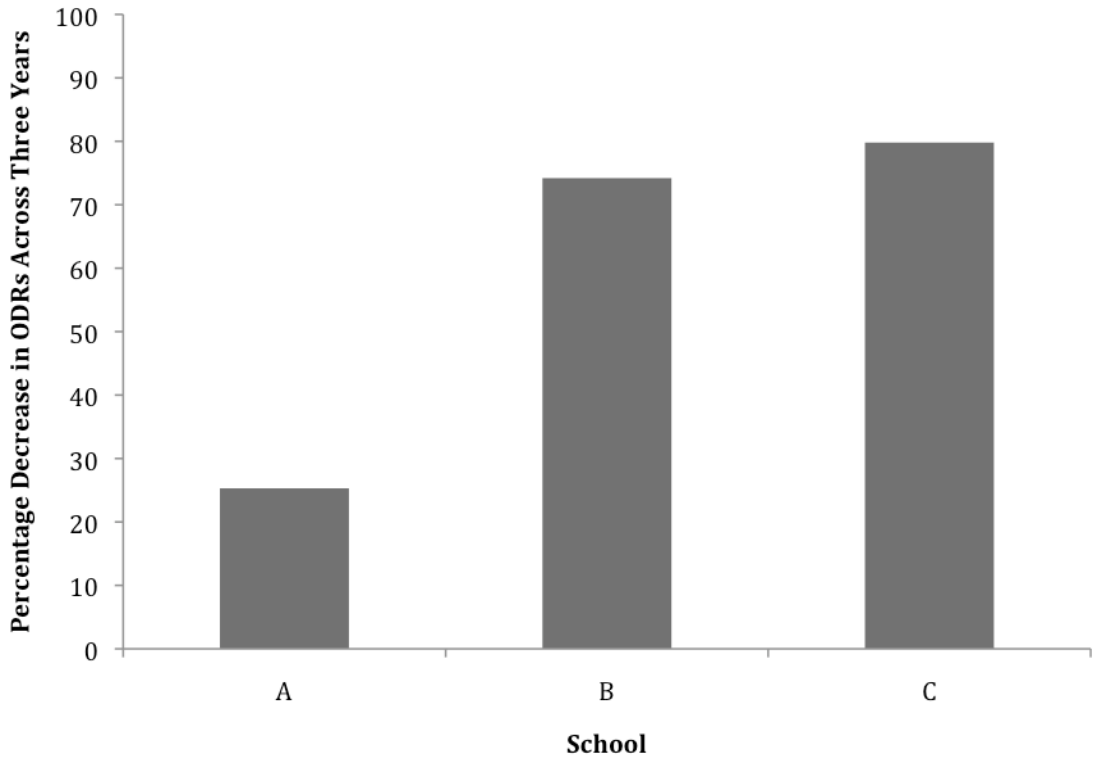

Figure 11. Percentage reduction in the total number of ODRs issued in Schools A, B, and C.

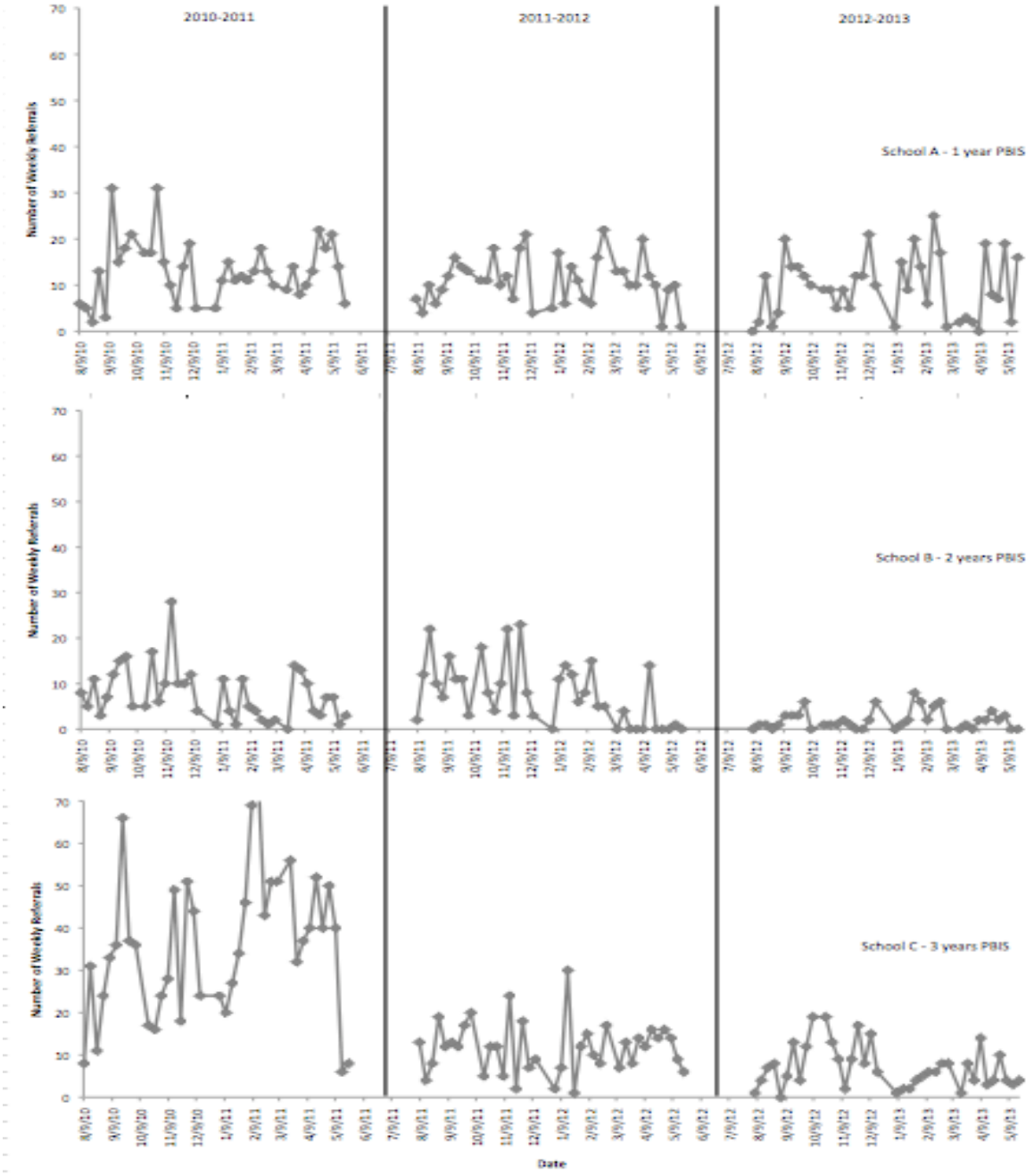

Figure 12. Weekly rates of ODRs issued in Schools A, B, and C across Three Academic Years.

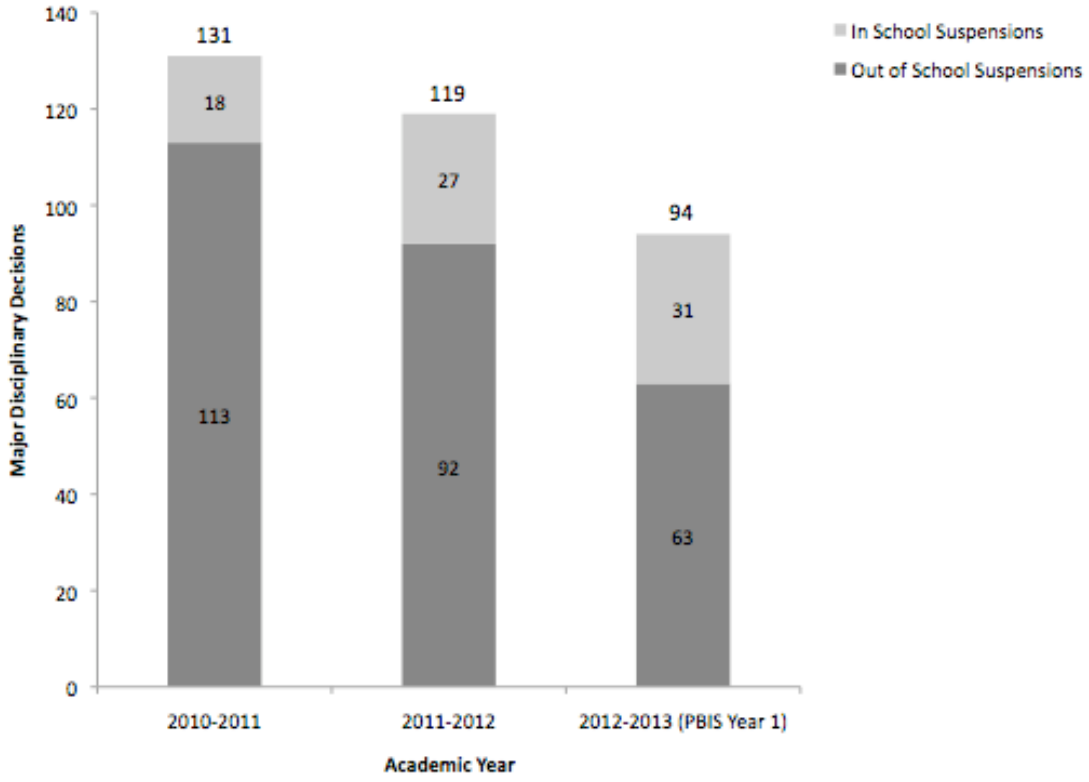

Figure 13. Total number of major disciplinary decisions made at School A across the 2010-2011, 2011-2012, and 2012-2013 academic years.

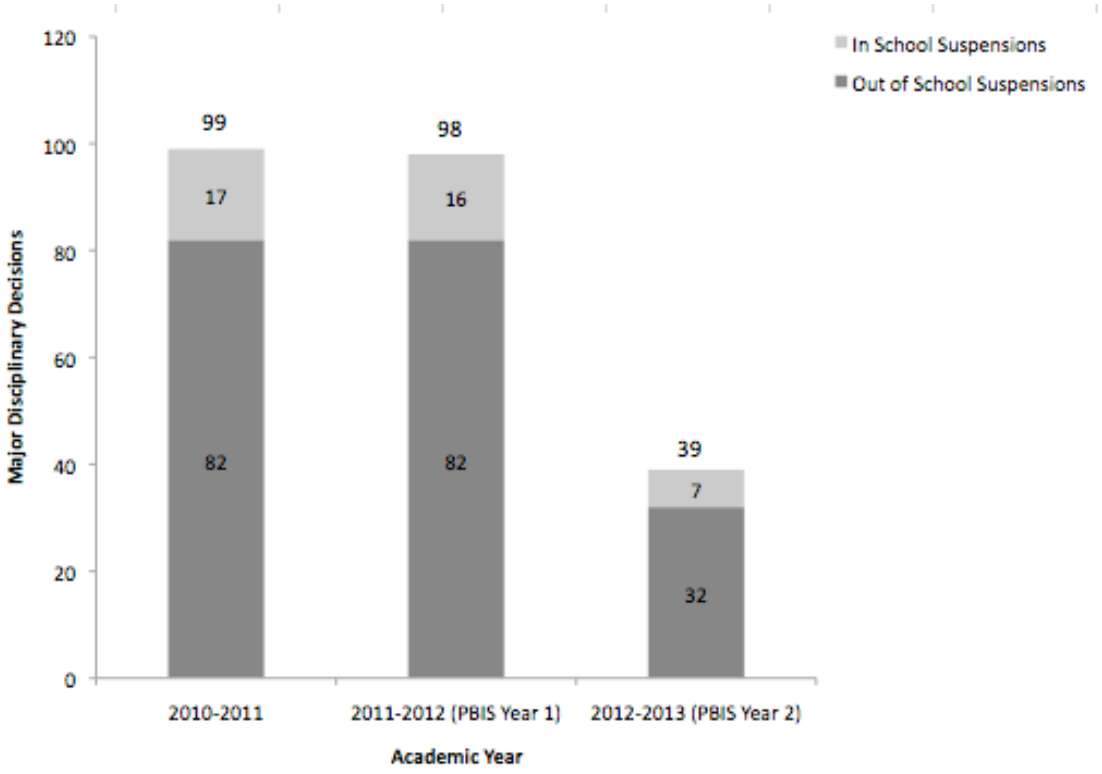

Figure 14. Total number of major disciplinary decisions made at School B across the 2010-2011, 2011-2012, and 2012-2013 academic years.

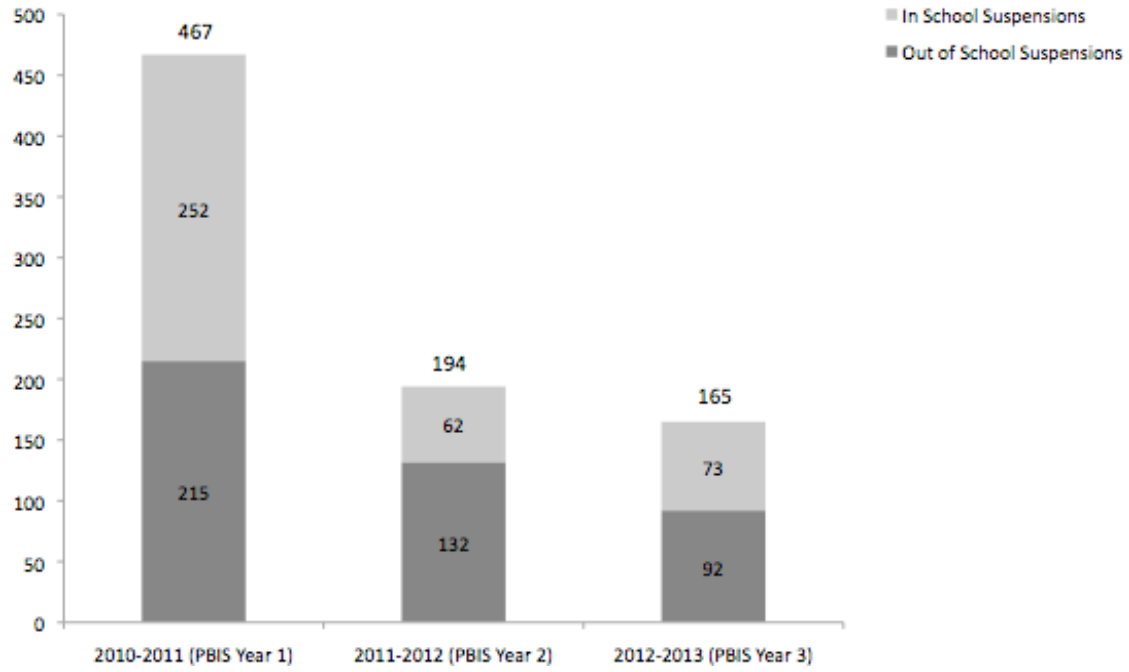

Figure 15. Total number of major disciplinary decisions made at School C across the 2011, 2012, and 2013 academic years.

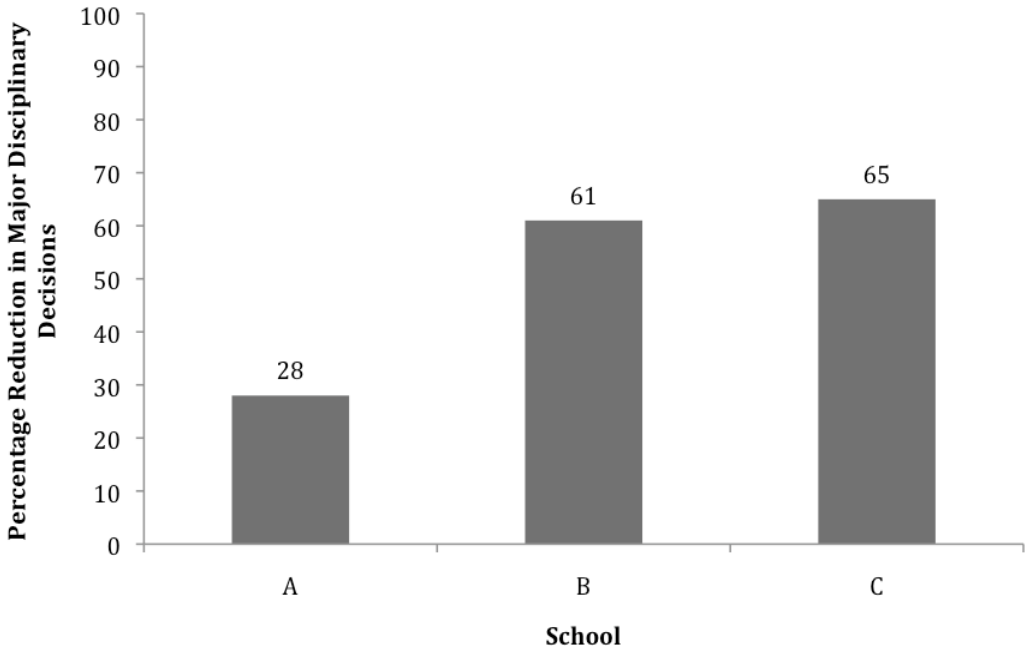

Figure 16. Percentage reduction in major disciplinary decisions issued by Schools A, B, and C during the 2012-2013 academic year.

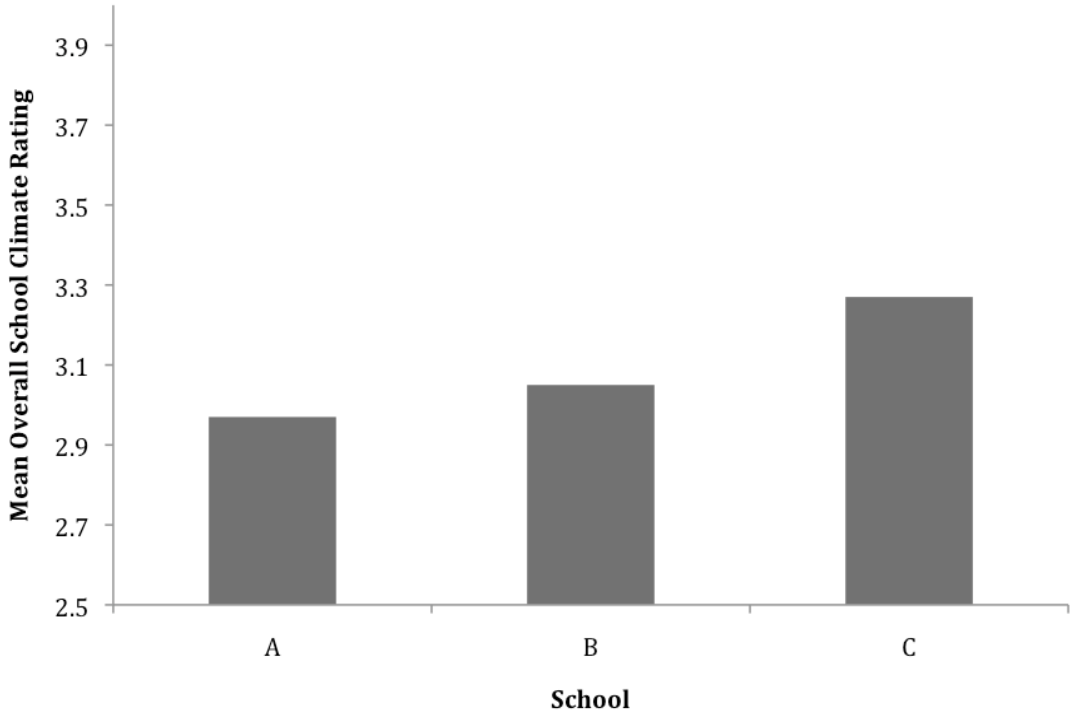

Figure 17. Overall ratings of school climate by teachers at Schools A, B, and C during the 2012-2013 academic year.

APPENDIX A

PARTICIPANT COVER LETTER

Participant Cover Letter

Dear Participant:

We are conducting a survey in the Scottsdale Unified School District regarding the effectiveness of the Positive Behavior Intervention Support System (PBIS). We are asking all staff members at selected PBIS schools to complete the attached survey.

The entire survey is offered online and takes only about 10-20 minutes to complete. Survey materials can be accessed by clicking on the link at the end of this letter. You will be asked to read a brief introduction and then answer a series of demographic and professionally related questions. While your participation in the study is completely voluntary, it will provide us with extremely valuable information and will contribute to a better understanding of PBIS and its effects on students and school personnel. The survey is completely anonymous and no information linking you to your responses will be maintained. There are no foreseeable risks to you as a participant and while there is no real direct benefit, we are offering as an incentive the possibility of winning a $5.00 Starbucks coffee gift certificate at each school where there is a 60% response rate. All staff members' names will be entered into a drawing and five winners from each school will be selected.

I am a graduate student working under the supervision of Dr. Linda Caterino in the Division of Education Leadership and Innovation at Arizona State University. I am completing this study as part of my Ph.D. program requirements in the School Psychology Training program.

If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, you can contact the project supervisor, Dr. Linda Caterino, at Linda.Caterino@asu.edu. To ensure confidentiality, all identifying data will be removed as soon as we receive your survey.

If you have any questions, please contact Erin Bartosik at Erin.Bartosik@asu.edu.

Thank you in advance for you participation!

Erin Bartosik, M.A.
Doctoral Graduate Student
School Psychology Training Program
Arizona State University

Study Link: https://www.surveymonkey.com/s/22HTVCR

APPENDIX B

SUPPLEMENTAL SURVEY

Supplemental Survey

I give consent to participate in the research study as described in the informed consent text above.

_____ Yes _____ No

Please indicate your role on campus:

_____ Administrator _____ Certified Teacher

_____ Classified Personnel – Please indicate your job title _____

Do you work full-time or part-time?

_____ Full-time _____ Part-time

Gender:

_____ Male _____ Female

Educational Attainment (check only one answer):

_____ High School Diploma _____ Associate's Degree

_____ Bachelor's Degree _____ Post-Baccalaureate Teacher Certification

_____ Master's Degree _____ Master's plus 30

_____ Doctoral Degree

Age:

_____ Years

How long have you been teaching?

_____ Years

How many years have you been teaching at this school?

____Years

What school are you assigned to?

_____ School A _____ School B _____ School C

Do you plan to return to this school next year?

_____ Yes _____ No

If not, why? _____

What grade level do you currently teach/oversee?

_____ 6^{th} _____ 7^{th} _____ 8^{th}

In which setting do you primarily teach?

_____ Regular Education

_____ Special Education – LRC

_____ Special Education – Self-Contained

Are you a second career teacher?

_____ Yes _____ No

What subjects/classes do you teach?

_____

_____

For how long has your school been implementing Positive Behavior Interventions and Supports (PBIS)?

_____ Years _____Don't Know

Please rank the following top *3* reasons for which you write office discipline referrals, with number 1 being the most often occurring:

_____ Defiance/Disrespect _____ Disruption _____ Cheating

_____ Dress Code _____ Inappropriate Language _____ Tardy

_____ Physical Aggression _____ Harassment/Bullying _____ Theft

_____ Property Damage _____ Technology violation _____ Skip Class

_____ Use of alcohol/drugs/tobacco ____ Pranks _____ Horseplay

_____ Skateboarding _____ Public Display of Affection

_____Other: _____

About how many times this school year have you written an office discipline referral?

_____ Times

How many times this year have you recommended a student for an….

_____ In-School Suspension?

_____ Out of School Suspension?

_____ Expulsion?

APPENDIX C

SCHOOL CLIMATE SURVEY

School Climate Survey

Below are items listed about our school, please select the one response from strongly disagree, disagree, agree, or strongly agree that best represents your view.

1. The school rules are fair	Strongly Disagree	Disagree	Agree	Strongly Agree
2. Students treat students of all races/ethnicities with respect	Strongly Disagree	Disagree	Agree	Strongly Agree
3. Students threaten and bully others in this school	Strongly Disagree	Disagree	Agree	Strongly Agree
4. Staff/Teachers treat students of all races and ethnicities with respect	Strongly Disagree	Disagree	Agree	Strongly Agree
5. This school is safe	Strongly Disagree	Disagree	Agree	Strongly Agree
6. The school does a good job communicating with parents	Strongly Disagree	Disagree	Agree	Strongly Agree
7. Staff/Teachers are fair when correcting student misbehavior	Strongly Disagree	Disagree	Agree	Strongly Agree
8. Teachers listen to students when they have a problem	Strongly Disagree	Disagree	Agree	Strongly Agree
9. Students get along with each other	Strongly Disagree	Disagree	Agree	Strongly Agree
10. Parents are informed not only about their children's misbehavior, but also	Strongly Disagree	Disagree	Agree	Strongly Agree

about good behavior

11. Consequences for breaking school rules are fair	Strongly Disagree	Disagree	Agree	Strongly Agree
12. Teachers work closely with parents to help students when they have a problem	Strongly Disagree	Disagree	Agree	Strongly Agree
13. Students know what is expected of their behavior	Strongly Disagree	Disagree	Agree	Strongly Agree
14. Staff/Teachers care about the students	Strongly Disagree	Disagree	Agree	Strongly Agree
15. Staff/Teachers treat each other with respect	Strongly Disagree	Disagree	Agree	Strongly Agree
16. Staff/Teachers communicate well with one another	Strongly Disagree	Disagree	Agree	Strongly Agree
17. Students treat staff/teachers with respect	Strongly Disagree	Disagree	Agree	Strongly Agree
18. I enjoy coming to this school	Strongly Disagree	Disagree	Agree	Strongly Agree
19. Students are praised often for meeting school expectations	Strongly Disagree	Disagree	Agree	Strongly Agree