

Capability of Influence: The Impact of PBIS Implementation Fidelity on Elementary
School Teachers' Feelings of Self-Efficacy

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Dedication

I dedicate this work to my family, Matt, Davis, Daniel, and Sabrina Telleen, who have made many sacrifices to support me in this accomplishment. I would also like to honor my parents, Lewis and Rebecca Jeter, who have always modelled the importance of hard work and doing your personal best.

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Abstract

The current study examines the impact of PBIS implementation on teacher self-efficacy (TSE) in elementary schools in Pennsylvania. Research questions evaluate (1) is there a significant difference between elementary teachers' perceptions of self-efficacy in schools implementing PBIS with fidelity and matched comparison schools and (2) what, if any, relationship exists between classroom-level and teacher level variables and elementary teachers' perception of self-efficacy in schools implementing PBIS.

Participants completed a survey comprised of the Teachers' Sense of Efficacy Scale and additional questions regarding demographics and classroom level PBIS practices.

Results show neither a significant difference between elementary teachers' perceptions of self-efficacy in schools implementing PBIS with a high level of fidelity compared to teachers in schools implementing PBIS with a low level of fidelity or a significant relationship did not exist between classroom-level and teacher-level variables and elementary teachers' perception of self-efficacy in schools implementing PBIS. However, participants in both groups rated themselves as having strong efficacy feelings in all areas measured. This suggests that PBIS implementation, alone, may positively influence TSE and could be a direction of future research. Continued research into the possible connection between PBIS implementation and TSE would provide additional support for the implementation of the framework to improve TSE.

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Chapter 1: Introduction

Teacher attrition and turnover are both concerns for the field of education.

Attrition occurs when teachers choose to leave the field of education. A 2021 survey by the EdWeek Research Center showed that almost half of teachers surveyed said they were likely to leave teaching within the next two years (Will, 2021). One could describe the two types of attrition as retirement, which accounts for one third of leaving teachers, and pre-retirement attrition (Sutcher et al., 2016). The rate in which teachers leave a school either to move to a different school, within or outside of their current district, or leave the field all together describes teacher turnover. High rates of teacher turnover and attrition have led to teacher shortages (Carver-Thomas & Darling Hammond, 2017). An annual survey conducted by Frontline Education found that two-thirds of respondents reported having a teacher shortage, a record high since the survey's inception in 2015 (Buttner, 2021).

Shortages occur when there is an imbalance between the quantity of qualified teachers demanded compared to the number of qualified teachers available to fill open positions (Cross, 2017; Sutcher et al., 2016). The U.S. Department of Education records teacher shortage areas (TSAs) across the country. Pennsylvania reported no TSAs existed in the state during the academic years of 1992-1993 through 1999-2000 (Cross, 2017). The Department of Education's report listed eight counties in Pennsylvania as having TSAs in the 2002-2003 academic year. This number has risen to thirty-four counties during the 2019-2020 academic year (*Teacher shortage areas*). These data showed that teacher shortages have increased across the state. Additionally, TSAs in elementary schools had specific shortages in the following subjects: Language Arts,

English as a Second Language, Art and Music Education, World Languages, Special Education, Speech and Language, Health and Physical Fitness, Gifted Education, Core Subjects, and Support Staff (*Teacher shortage areas*). The increase in TSAs in Pennsylvania led researchers to study factors that may contribute to the phenomenon.

A six-year, longitudinal study conducted in the School District of Philadelphia (SDP) sought to better understand students' access to effective teachers and factors related to teacher turnover (Dillon & Malick, 2020). The study found turnover was highest for teachers within their first five years of teaching with 17% of teachers changing schools within the district and 8% leaving the district. Data indicated that a ten-percentage point increase in positive responses on school climate questions reduced the likelihood of a teacher leaving their school by fifteen percent. The authors suggested that improving school climate was a way to strengthen teacher retention. While this study focused solely on the SDP, additional factors have attributed to teacher shortages across the state.

Dr. Tanya Garcia, the Deputy Secretary and Commissioner of the Office of Postsecondary and Higher Education at the Pennsylvania Department of Education testified before the House Education Committee Hearing on the educator workforce shortage on March 15, 2022 (Pennsylvania General Assembly). The testimony reflected national reports that over the last 10 years Pennsylvania's workforce had shrunk in both urban and rural school districts. Several reasons were cited for shortages including a 66% percent reduction in new, state issued, in-state teaching certifications and a 58% reduction in out of state certifications issued. In addition, poor teacher preparation, lack of competitive wages, and "bureaucratic hurdles and antiquated processes" (pg. 1) to

teacher certification were also cited as factors related to shortages. The Deputy Secretary stated that these factors coupled with “the physical and emotional toll of the pandemic” (pg.1) has stressed the educator pipeline to its tipping point. This has resulted in difficulties filling critical staff positions across the state. National research on teacher shortages has revealed additional factors as well as a possible solution for addressing this problem.

Sutcher et al. (2016) completed a detailed national analysis of the sources and extent of teacher shortages. They stated that, “Preventing and solving teacher shortages so that all children receive high-quality instruction in every community is essential in a 21st century economy for the success of individuals as well as for society as a whole” (pg 70). Their analysis named four main factors driving teacher shortages. First, declining enrollment in teacher preparation programs flattened in the past decade resulting in a low supply of new teachers to the field. A 35% decrease in teacher education enrollment between 2009 and 2014, amounted to a reduction of almost 240,000 new teachers (Sutcher et al., 2016). Additional factors driving teacher shortages included rising demands for additional teachers to respond to increased student enrollment, a shift to lower student-teacher ratios, and, most significantly, high levels of teacher attrition. While it is common to focus on how to get more teachers into the profession, Sutcher et al. (2016) recommended focusing on how to keep current teachers in the classroom based on the belief that reducing attrition by half could eliminate teacher shortages.

Statement of the Perspective

Sutcher et al. (2016) analyzed evidence of teacher shortages and found that high rates of teacher attrition contributed to shortages. High levels of teacher attrition

accounted for 8% of teacher vacancies with between 19-30% of early career teachers leaving within their first five years of teaching (Sutcher et al., 2016). A rise in teacher demand increased vacancies to approximately 300,000 vacancies per year. Improving teacher attrition rates could reduce projected teacher shortages more than any other single factor (Sutcher et al., 2016). To improve teacher attrition rates, it is important to understand contributing factors.

Factors Related to Teacher Attrition

It is logical to believe teacher retirement causes attrition. However, Sutcher et al. (2016) found that only a third of exiting teachers listed retirement as their reason for leaving the field. High attrition rates were more driven by teachers leaving the field for other reasons, often related to some form of dissatisfaction. Factors named in the literature included quality of school leadership, instructional leadership, opportunity for collaboration and planning, collegial relationships, burnout, student behavior, and lowered feelings of self-efficacy (Cooper, 2019; Huk et al., 2019; Maslach et al., 2001; McCarthy, 2019). Burnout, student behavior, and lowered feelings of self-efficacy are factors that are most likely to influence teachers individually within the classroom setting.

Teacher Burnout. Burnout is a prolonged response to recurring emotional and interpersonal job-related stressors characterized by *exhaustion*, *cynicism*, and *inefficacy* (Maslach, et al., 2001). Exhaustion is the most widely reported symptom of burnout. It reflects the stress often associated with burnout and results in emotional and cognitive distancing from work demands (Maslach et al., 2001). Distancing from work demands can result in both feelings of depersonalization and cynicism. When teachers put distance

between themselves and their students by actively ignoring the qualities that make their students unique and engaging people it can make it difficult to relate or care about them (Maslach et al., 2001; Suh, 2019). Inefficacy or reduced personal accomplishment arises from a lack of resources to complete difficult tasks. The combination of these feelings can lead to burnout and is associated with decreased satisfaction, commitment, absenteeism, and turnover (Maslach et al., 2001).

Brown (2012) conducted an analysis of 11 studies focused on the relationship between self-efficacy and teacher burnout. Their analysis revealed that a negative relationship existed between teacher self-efficacy and overall burnout in all studies. Emotional exhaustion, cynicism, and inefficacy were negatively correlated with burnout and teacher self-efficacy. These results provided support to Tschannen-Moran et al.'s (1998) theory of self-efficacy that described mastery experiences and physiological/affective states as contributors to teacher self-efficacy. Mastery experiences are similar to feelings of personal accomplishment in that both resulted from successful performance of specific tasks (Maslach et al., 2001; Tschannen-Moran et al., 1998). Physiological or affective states, such as emotional exhaustion, are cues that can affect self-perception of teacher competence and possible feelings of depersonalization (Maslach et al., 2001; Tschannen-Moran et al., 1998). There are situations and contexts more likely to affect mastery experiences and a teacher's physiological states.

Classroom Management and Teacher Self-Efficacy. As one of the most challenging aspects of teaching, classroom management influences teacher's overall job satisfaction (Lee & Davis, 2014). Additionally, student misbehavior (disrespect and inattentiveness) has been positively related to teacher burnout (Huk et al., 2019).

Challenges with classroom management result in both lowered feelings of efficacy and increases in the likelihood of a teacher leaving the profession (Cooper, 2019; Lee & Davis, 2014). Teacher self-efficacy is important to classroom management due to the complexities of responding to student behavior and the emotional challenges that arise when managing classroom environments filled with the diverse needs of students (Lee & Davis, 2014).

Aloe et al. (2014) completed a meta-analysis of 16 studies to better understand the relationship between classroom management self-efficacy (CMSE) and burnout. Researchers found a moderate relationship between CMSE and the three dimensions of burnout. Teachers who had a strong sense of CMSE felt more accomplished (Aloe et al., 2014). Conversely, a lower sense of CMSE was related to increased feelings of emotional exhaustion and depersonalization. The relational effect of CMSE on burnout suggested that teachers with lower self-efficacy beliefs were more susceptible to feelings of exhaustion, depersonalization, and lower levels of personal accomplishment (Aloe et al., 2014). Strategies to mitigate the occurrence and effects of burnout, low efficacy, and student behavior are a way to address high teacher attrition.

Recommendations to Improve Teacher Attrition

Recommendations for improving teacher attrition have included focus on both recruitment and retention policies. The current study focuses on one strategy that may result in the retention of current teachers. Sutchter et al. (2016) recommended the creation of productive school environments that included supportive working conditions, administrative support, and opportunities for collaborative planning and professional development. Considering the strong and reciprocal relationship between TSE and

teacher burnout along with their connection to teacher attrition (Bottiani et al., 2019; Skaalvik & Skaalvik, 2007), this study focused on the implementation of Positive Behavior Interventions and Supports (PBIS) framework as a viable way to improve TSE.

Existing literature provided several examples to support a connection between the implementation of the PBIS framework and improvement in TSE. Strategies, such as PBIS, that focus on prevention and reduction of overall demands on teachers were likely to reduce stress and create a more pleasant and effective working environment (McCarthy, 2019). Taxer et al. (2019) studied the effect of student-teacher relationships on teacher emotional exhaustion. Student-teacher relationships had an indirect influence on a teacher's emotional exhaustion based on their experiences of enjoyment or anger when interacting with their students. Positive student-teacher relationships served as a protective factor against emotional exhaustion (Taxer et al., 2019). Implementation of a school-wide intervention, targeting student behavior, can prevent teacher burnout (Huk et al., 2019)

Herman et al. (2018) studied profiles of teacher stress, burnout, self-efficacy, coping, and associated student outcomes in nine elementary schools implementing PBIS with high fidelity. Teachers who were confident in their capability to manage classroom behaviors had a higher likelihood of engaging in effective practices, resulting in more positive student outcomes. Students of teachers who experienced high levels of stress and had low coping skills had lower adaptive behavior, lower math achievement, and higher disruptive behavior compared to students in classrooms with teachers who had similar levels of stress coupled with high coping skills. Teachers who had both high levels of coping skills and self-efficacy experienced low levels of burnout despite experiencing

intensive school stress. The current study sought to expand upon the current literature by focusing on teachers' feelings of self-efficacy in elementary schools implementing PBIS with low versus high levels of fidelity.

Theoretical Framework

Social cognitive theory explained human functioning in terms of a triadic, reciprocal interaction among behavioral, cognitive, and environmental events acting as interacting determinants of each other (Bandura, 1986). It stated that neither inner nor external forces drove humans, instead psychological functioning was an ongoing process of reciprocal determinism (Bandura, 1986; Wulfert, 2019). Behavioral, cognitive, and environmental factors interact with each other in a bidirectional influential process (Bandura, 1986). The influence of the three factors varied based on activities, individuals, and their characteristics to determine a myriad of outcomes. Cognitive processing mediated the influences of these interactions and allowed individuals to think through different options, imagine possible outcomes, and choose behaviors based on anticipated consequences (Wulfert, 2019).

The development of self-efficacy beliefs was one outcome of cognitive processing of information (Bandura, 1986; Bandura, 2002; Wulfert, 2019). Self-efficacy is a personal judgement of the capability to organize and execute courses of action to attain specific types of performances or outcomes. Capabilities differ from skills. They describe one's judgement of what they can accomplish with their current skills (Bandura, 2002). An efficacy belief that one's skills could effectively achieve future outcomes contributed to competent functioning (Bandura, 1986). These beliefs functioned as a determinant of behavior using self-efficacy appraisals that influenced goals people set for themselves, anticipation of success or failure, effort, and persistence in the face of obstacles.

The principal mechanism of behavior change is self-efficacy. For example, self-perceived efficacy strengthened the ability to cope with difficulties (Wulfert, 2019). Four sources of information: *mastery experiences*, *verbal persuasion*, *vicarious experiences*, and *physiological arousal* influenced the development efficacy beliefs (Bandura, 1986; Tschannen-Moran et al, 1998; Wulfert 2019). Success on difficult tasks created mastery experiences. Vicarious experiences occurred after seeing others, similar to oneself or in similar positions, successfully perform a difficult task. Receiving encouragement to persist or try harder on a difficult task is one example of verbal persuasion. Physiological arousal is physical or social-emotional responses that occurred in the face of difficult tasks or as the result of success. Self-efficacy is either positively or negatively influenced in response to the four sources of efficacy information (Bandura, 1986; Tschannen-Moran et al., 1998; Wulfert 2019). Guidance from a mentor, instructional coach, or trusted colleague can influence teacher efficacy by helping with selection of classroom management strategies, engaging in peer observation, providing praise and highlighting positive attributes of teacher practice, and conferencing to help make sense of reactions and physiological responses is one example of how teachers receive sources of efficacy information on a daily basis (Lee & Davis, 2014). The current study sought to understand how differences in the sources of efficacy information in schools implementing PBIS at differing levels of fidelity could affect ratings of TSE.

Context

The study was conducted in the commonwealth of Pennsylvania. Their education system serves more than 1.7 million students within 500 school districts (*Types of schools*, 2021). Districts in the commonwealth range in size from small rural districts of 200 students to large urban districts of more than 140,000 students. There are more than

160 brick and mortar charter schools, 14 cyber charter schools, and over 2,400 non-public and private schools across the state in addition to traditional public schools (*Types of schools*, 2021; *IU FACTS*, 2019). The state also includes 300 postsecondary and higher education institutions.

Pennsylvania uses a system of 29 Intermediate Units (IUs) to serve as a liaison between school districts and the Pennsylvania Department of Education (PDE) (PAIU, n.d.). IUs were first created in 1971 as public, regional agencies tasked with providing educational, administrative, and technological services to the Commonwealth's public, charter, and non-public schools. PDE and IUs work collaboratively to address Statements of Work priorities identified by PDE. Priority initiatives range from the development and implementation of training and technical assistance to safe schools and school climate supports. Each IU has a behavior initiative and has PBIS facilitators tasked with providing training and technical assistance for the implementation of the PBIS framework. Every year, high quality training and professional development is provided to administrators and teachers. The Pennsylvania Association of Intermediate Units (2022) reported that 12,000 educators receive PBIS training on a yearly basis.

The Bureau of Special Education (BSE) and PDE work in conjunction with the Pennsylvania Training and Technical Assistance Network (PaTTAN) to provide an array of professional development and technical assistance to support students with disabilities (*About PaTTAN*, 2018). Three PaTTAN offices are located in the eastern, central, and western areas of the state. Individual offices work with districts and IUs within their region to “support the efforts and initiatives of the BSE, and to build the capacity of local educational agencies to serve students who receive special education services” (PaTTAN,

2018b, PDE resources). This work is completed by the many initiatives housed within PaTTAN. PaTTAN's behavior initiative is tasked with supplying effective behavior supports, including the implementation and scale up of PBIS (PaTTAN, 2018b).

Consultants from the behavior initiative work with IUs and agencies to provide training and ongoing coaching to individuals in the role of PBIS facilitators across the Commonwealth.

PBIS in Pennsylvania

PBIS has a 20-year history in Pennsylvania. PDE, BSE, and PaTTAN work collaboratively to scale up PBIS implementation across the state to positively and proactively improve outcomes for students with disabilities (Runge, 2018). An initial cohort of 34 schools participated in yearlong PBIS training provided by the Office of Special Education Programs (OSEP) during the 2007-2008 academic year. The Community of Practice on School-Based Behavioral Health (COP on SBBH), a statewide leadership team, was created with the responsibility to coordinate PBIS implementation across the Commonwealth. The COP on SBBH represents cross-disciplinary stakeholder groups, including education agencies, mental health, social services, labor and industry, law, families, youth, and advocacy groups, tasked with advancing PBIS implementation (PAPBS, 2021a; Runge et al., 2018).

The COP on SBBH established the Pennsylvania Positive Behavior Support Network (PAPBS Network) as a subgroup of their organization. The PAPBS Network collaborates with PaTTAN, IUs, and education agencies to direct training and technical assistance and expand PBIS implementation (Runge et al., 2018). They created a system to train and credential individuals to fill the role of PBIS facilitators within the 29 IUs

and additional educational agencies. The network also created an affiliation process for schools that included signing a Commitment to Fidelity, joining the PAPBS Network, and receiving training and ongoing technical assistance from a network trained PBIS Facilitator (PAPBS, 2015).

The scale up efforts have been successful in increasing the number of sites implementing the PBIS framework across the state. An annual program evaluation of PBIS implementation in Pennsylvania showed that the number of affiliated sites have grown from 211 in the 2011-2012 academic year to 1234 in the 2017-2018 academic year (Runge et al., 2018). Elementary (K-5) buildings were the largest implementers with 677 implementing in the 2017-2018 school year. The current study focused on PBIS implementation at the elementary level due to the high number of implementing schools.

Statement of Research Problem and Research Questions

PBIS is an implementation framework designed to enhance academic and social-behavioral outcomes for students. Implementation of the framework reduces behaviors that disrupt the learning process when implemented with fidelity (Rholetter, 2019; Simonsen et al., 2012). Research has suggested that implementation leads to an increase of teachers' efficacy beliefs (Bellezza, 2015; Medina, 2017). The current study sought to expand upon the existing literature by focusing on schools within Pennsylvania's PBIS network who have been implementing for a minimum of three years and have measured fidelity according to network guidelines. This study sought to answer two research questions:

1. Is there a significant difference between elementary teachers' perceptions of self-efficacy in schools implementing PBIS with fidelity and matched comparison schools?
2. What, if any, relationship exists between classroom-level and teacher level variables and elementary teachers' perception of self-efficacy in schools implementing PBIS?

Methodology and Subjects

The present study examined the possible relationship between school wide PBIS implementation, at the Tier 1 level, and elementary teachers' feelings of self-efficacy. At Tier 1, staff use universal practices in all settings to create a positive and predictable environment (Center on PBIS, 2015). Classroom teachers support implementation of Tier 1 practices that include establishing rules and expectations, explicitly teaching expected academic and social behaviors, acknowledging student behavior, and consistently responding to student behavior errors (Hill et. al, 1996). The researcher used purposeful and snowball sampling to select participants based on grade level, number of years of PBIS implementation, and level of fidelity. Elementary teachers, employed at elementary schools implementing PBIS for a minimum of 3 academic years were desired subjects.

The methods of purposeful and snowball sampling increased the likelihood that participants were representative of the characteristics reflected in the study. The researcher used an existing database via the PAPBS Network PBIS evaluation website to find potential elementary schools for selection and placement in either a high or low implementation fidelity group. Placement was dependent on the level of fidelity

established by either the Benchmarks of Quality (BOQ) (Kincaid et al., 2010) or the Tiered Fidelity Inventory (TFI) (Algozzine et al., 2019), with scores above 70% indicative of high fidelity and below 70% indicative of low fidelity.

Elementary teachers in grades K-5 completed an online version of the Teachers' Sense of Efficacy Scale (TSES) (Tschannen-Moran & Woolfolk Hoy, 2001). The TSES measured efficacy in the areas of *Efficacy in Student Engagement*, *Efficacy in Instructional Practices*, and *Efficacy in Classroom Management*. The long form version of the TSES used a likert scale ranging from 1 (none at all) to 9 (a great deal) to rate 24 statements related to efficacy. Additional survey questions supplied demographic information and information about classroom practices related to PBIS implementation. Data included participant gender, ethnic/racial identification, highest degree awarded, years teaching, years in current building, number of tokens/tickets given to students within the last month, number of times school-wide rules and expectations were reviewed with their class within the last month, and the number of office discipline referrals completed for students over the past month.

First, a t-test for independent samples analyzed data to determine if there were differences in teachers' perception of self-efficacy in high versus low fidelity schools. Then data was analyzed using multiple regression of teacher and classroom variables to determine their possible relationship to TSE.

Limitations

There were several limitations to the study. First, purposeful sampling was selected to increase the likelihood that participants reflect specific characteristics related to the study. There are several weaknesses inherent to this sampling method. The specificity of the sample can reduce the ability to generalize the results of the study to

other groups (McMillian, 2016). Second, the size of the sample may make some analyses, such as multiple regression, more difficult. A small sample size can also lead to ambiguous results and conclusions (Salkind, 2017). Third, the TSES and additional survey questions both relied on self-report with no corroboration of the results. Due to the voluntary nature of the survey perhaps teachers who felt more efficacious may have been more likely to participate. Finally, this study took place the academic year following the declaration of the Covid-19 pandemic. Teachers taking part in the study may have reduced feelings of efficacy due to the stress of teaching during a pandemic and the subsequent return to face-to-face teaching with added safety protocols and the pressures to close academic gaps.

Definition of Terms

- a. **Attrition-** Attrition refers to the number of teachers leaving the field (Sutcher et al., 2016)
- b. **Burnout-** Burnout is a prolonged response to recurring emotional and interpersonal job-related stressors, characterized by the three dimensions of *exhaustion*, *cynicism*, and *inefficacy* (Maslach, et al., 2001).
- c. **Efficacy Information-** Sources of information that contribute to the analysis of tasks and self-perception of teaching competence (Tschannen Moran et al., 1998).
- d. **Emotional Exhaustion-** Stress associated with burnout, resulting in emotional and cognitive distancing from work demands ((Maslach et al., 2001).

- e. **Depersonalization-** Difficulty relating to or caring about students or tasks as a result of burnout (Maslach et al., 2001).
- f. **General Teaching Efficacy (GTE)-** Teacher perception of the role of external factors influences on their ability to impact student outcomes (Gibson & Dembo, 1984; Emmer & Hickman, 1991; Tschannen-Moran & Woolfolk-Hoy, 2001).
- g. **Inefficacy-** Reduced personal accomplishment (Maslach et al., 2001).
- h. **Mastery Experiences-** The perception that a performance on a task has been successful (Tschannen Moran et al., 1998).
- i. **Personal Teaching Efficacy (PTE)-** Teacher perception that their ability to accomplish tasks was within their control (Gibson & Dembo, 1984; Emmer & Hickman, 1991; Tschannen-Moran & Woolfolk-Hoy, 2001).
- j. **PBIS-** Positive Behavior Interventions and Supports (PBIS) is an implementation framework designed to enhance academic and social-behavioral outcomes for students by (a) emphasizing the use of data to inform decisions about the selection, implementation, and progress monitoring of evidence-based behavioral practices, and (b) organizing resources and systems to improve implementation fidelity (Sugai & Simonsen, 2012, pg. 1).
- k. **Physiological Arousal-** The level of physiological or emotional arousal a teacher experiences during a task ((Tschannen Moran et al., 1998).
- l. **Self-Efficacy-** A personal judgement of capability to organize and execute courses of action to attain specific types of performances (Bandura, 2002).

- m. Teacher Sense of Efficacy Scale (TSES)-** An empirically validated measure of teacher efficacy (Tschannen-Moran & Woolfolk Hoy, 2001).
- n. Teacher Self Efficacy (TSE)-** A teachers' confidence and belief in their capability to successfully perform teaching tasks (Lee & Davis, 2014).
- o. Teacher shortage areas-** Areas determined by the Secretary of Education as having an area of specific grade, subject matter, discipline classification, or an inadequate supply of elementary or secondary school teachers (Cross, 2017).
- p. Verbal Persuasion-** General of specific statements that provide information about the nature of teaching, give encouragement and strategies for overcoming situational obstacles, and provide specific feedback about a teacher's performance (Tschannen Moran et al., 1998).
- q. Vicarious Experiences-** Provision of impressions about the nature of the teaching task garnered from watching others teach (Tschannen Moran et al., 1998).

Chapter 2: Review of the Literature

Teacher attrition and turnover are both concerns for the field of education. Replacing teachers may result in disruptions in school stability, collegiality, collaboration, and impact the accumulation of institutional knowledge (Carver-Thomas & Darling Hammond, 2017). Although there are many reasons for teacher attrition, one of the most cited reasons is student misbehavior (Bellezza, 2015). Simonsen et. al. (2014) found that poor outcomes for teachers and students were related to ineffective skills in classroom management.

Understanding teacher efficacy may be a way to combat teacher attrition and turnover. Teacher self-efficacy (TSE) is associated with favorable outcomes for students and teachers. Tschannen-Moran and Woolfolk-Hoy (2001) found that a teacher's sense of self-efficacy could play a major role in positive student and classroom outcomes. Specifically, they found teacher efficacy related to teacher persistence, enthusiasm, commitment, and instructional behavior. Teacher's efficacy beliefs influence their willingness to persist when things do not go as expected and their ability to show resilience in the face of setbacks.

Bellezza (2015) conducted a mixed-methods study of TSE in relation to classroom management to discern predictors of the construct. Results indicated that feelings of efficacy influenced proactive behavior management, teacher practices that prevent problem behavior, and reactive behavior management, teacher responses to problem behavior. They recommended a thorough look at the effect of PBIS on efficacy to extend upon the findings of their study. Along that vein, Medina (2017) studied the effects of classroom experiences and student conduct on teacher self-efficacy in schools

implementing PBIS. PBIS implementation had positive effects on teacher's ratings of efficacy due to emphasis on explicit instruction related to social skills and classroom expectations. A limitation to this study was the absence of a measure of PBIS implementation fidelity. Inclusion of a fidelity measure could strengthen the understanding of the connection between PBIS implementation and teacher's feelings of efficacy. The features of PBIS have the possibility of creating positive sources of efficacy information that could improve TSE.

Social cognitive theory grounds the TSE framework (Bandura, 1993; Bandura, 2006). Social cognitive theory emphasizes the belief that ongoing cognitive processing of the interaction of behavioral, cognitive, and environmental factors drive human behavior (Bandura, 1986). It is these interactions that create sources of efficacy information and help shape efficacy beliefs (Bandura, 1986; Tschannen-Moran et al, 1998; Wulfert 2019). The implementation of the PBIS framework has the potential to positively affect sources of efficacy information and TSE (Fluelen-Ra-El, G., 2020; Medina, 2017).

Teacher Self-Efficacy

The art of teaching combines knowledge, skills, and confidence in one's ability to engage students and do the many things that make for an effective and efficient learning environment. Teacher self-efficacy is a teachers' confidence and belief in their capability to successfully perform teaching tasks (Lee & Davis, 2014). It is unlike self-concept or self-esteem because it describes a person's perception of their performance capability, rather than a more global self-evaluation (Emmer & Hickman, 1991).

Teacher self-efficacy (TSE) correlated with student achievement (Bandura, 1993; Goddard et al., 2000), student behavior outcomes (Reinke et al., 2013), teacher motivation to persist and set high goals (Bandura, 1993), and teacher perception of student behavior (McLean et al., 2019). Hattie (2017) named collective teacher efficacy as the strongest school-based factor influencing student achievement. Goddard et al. (2000) examined the relationship between measures of TSE and the reading and mathematical achievement of students in second, third, and fifth grades. Collective teacher efficacy was significantly and positively associated with differences between school's student achievement in both academic areas. The researchers concluded that collective teacher efficacy directly related to individual TSE and presence of high TSE to positively influence student achievement (Goddard et al., 2000).

TSE influences a teacher's willingness to persist on difficult tasks and can affect resilience in the face of challenges or setbacks (Bandura, 2006; Tschannen-Moran et al., 1998). For example, evidence suggests that teachers who feel ill prepared for their roles develop low feelings of self-efficacy and may choose to leave either their school or the field resulting in high rates of attrition and teacher turn over (Carver-Thomas & Darling-Hammond, 2017; Ingersoll et al., 2012). In addition, teachers also face challenges with the classroom management aspect of the work. Teachers' skills in managing classroom behaviors can influence overall job satisfaction and is one of the most challenging aspects of teaching (Lee & Davis, 2014). Teachers are more likely to leave the profession when these challenges lead to the development of low TSE. The complexity of successfully managing student behaviors and the emotional challenges that may arise increase the importance of having strong feelings of TSE (Lee & Davis, 2014).

To further study this phenomenon, Zee et al. (2016) completed a critical review of 40 years of research on TSE to examine its impact on student academic achievement, teacher well-being, and the quality of classroom processes. They categorized the impact of teacher self-efficacy into the broad areas of *classroom processes*, *students' academic adjustment*, or *teacher's psychological well-being* (Zee et al., 2016, pg. 989). More experienced teachers, who also had high TSE, were more likely to establish classroom processes that allowed them to cope effectively with problem behaviors, have more positive relationships with students, use proactive, student-centered classroom behavior strategies, use diverse instructional strategies, change goals based on student needs, and show positivity about the implementation of new instructional strategies. TSE also consistently predicted student motivation. The literature around teacher's psychological well-being, related to self-efficacy, has associated high TSE with lower levels of stress, emotional exhaustion, and overall burnout and higher levels of personal accomplishment, commitment, and job satisfaction (Zee et al., 2016). Overall, TSE has a positive effect on teacher well-being and improved student outcomes. The construct of TSE developed and expanded over many years.

Early Theories

The theoretical and empirical underpinnings of TSE have evolved over the years. What began as two items on a questionnaire (Armor et al., 1976) has grown into a complex theory and led to the development of many tools designed to measure the construct. TSE research has historically fallen into two competing concepts. The first concept was based on the idea of locus of control, identified through the use of the Rand measure (Rotter & Mulry, 1965) and the other an interaction between behavior, the

environment, and personal factors (Morris et al., 2017). A model of TSE that reconciles the two competing concepts (Tschannen-Moran, Hoy, & Hoy, 1998) serves as the framework for the current study.

Rand Measure. The first measure of teacher efficacy was based on social learning theory (Rotter & Mulry, 1965). This theory posits that individual, cognitive, environmental, and social factors influence learning (Jenlink, 2013). Flexible locus of control is central to social learning theory (Rotter & Mulry, 1965). Individuals with an external locus of control name external factors such as change, fate, or the power of others as the impetus of what happens to them (Taylor, 2013). Behavior change is less likely in individuals with an external locus of control because they do not see themselves as having the power to change the factors affecting their personal outcomes (Taylor, 2013; Rotter & Mulry, 1965). Rotter and Mulry (1965) found that individuals identified as having an external locus of control were more likely to change their behavior when they believed a task was skill related rather than left to chance. In contrast, individuals with an internal locus of control find reinforcement as contingent on their own behavior.

The items added to a questionnaire that first measured TSE centered on teachers' feelings about locus of control (Armor et al., 1976). Teachers answered the following questions: (a) "*When it comes right down to it, a teacher really can't do much--most of a student's motivation and performance depends on his or her home environment*" and (b) "*If I try really hard, I can get through to even the most difficult or unmotivated students*" (Armor et al., 1976, pp. 73). Teachers who agreed that environmental influence overwhelmed their ability to impact students' learning believed that reinforcement of their teaching lay outside their control, with external forces. Conversely, teachers who

believed that reinforcement of teaching activities were within their control, had confidence in their ability to reach difficult students who may be unmotivated to learn. These two concepts were labeled as *general teaching efficacy* (GTE) and *personal teaching efficacy* (PTE). GTE related to teachers' perception of the role of external factors compared to the influence of teachers while PTE related to a teacher's perception about what teachers, in general, can accomplish (Gibson & Dembo, 1984; Emmer & Hickman, 1991; Tschannen-Moran & Woolfolk-Hoy, 2001). While this model of TSE developed, as second model based on the work of Albert Bandura's social cognitive theory his concept of self-efficacy was also developing.

Bandura. Albert Bandura's work in social cognitive theory led to the development of a new definition of TSE. Unlike Rotter's social learning theory, Bandura's (1986) social cognitive theory did not view people as driven by an internal or external locus of control. Instead, "Social cognitive theory holds that the human mind/brain is not viewed as merely reactive to outside and internal factors, but it is considered to be generative and interactive; people make choices that generate their environments" (Paciotti, 2013, pg. 108). The interaction of one's behavior, the environment, and personal factors shape human behavior (Morris et al., 2017).

Bandura's theory of TSE expanded the definition. Efficacy was originally associated with the expectation of a person's belief that they can orchestrate the necessary actions to perform a given task such as teaching or classroom management. Bandura proposed a second type of expectation focused on outcome expectancy or an individual's estimate of the likely consequences of performing a given task at an expected level of competence (Tschannen-Moran & Hoy, 2001). Self-efficacy is a

personal judgement of capability to organize and execute courses of action to attain specific types of performances (Bandura, 2002). Capability describes a judgement of what can be accomplished with present skills. Competent functioning combines skills and self-perception of the capability to use those skills to effectively achieve future outcomes (Bandura, 2002). Without the belief that actions can produce desired effects, there is little incentive to act or persevere in the face of difficult challenges (Bandura, 2006).

Bandura's work fundamentally shifted the definition of self-efficacy. Tschannen-Moran et al. (1998) continued to expand upon his work and develop a new model of teacher efficacy.

An Integrated Model of Teacher Self-Efficacy

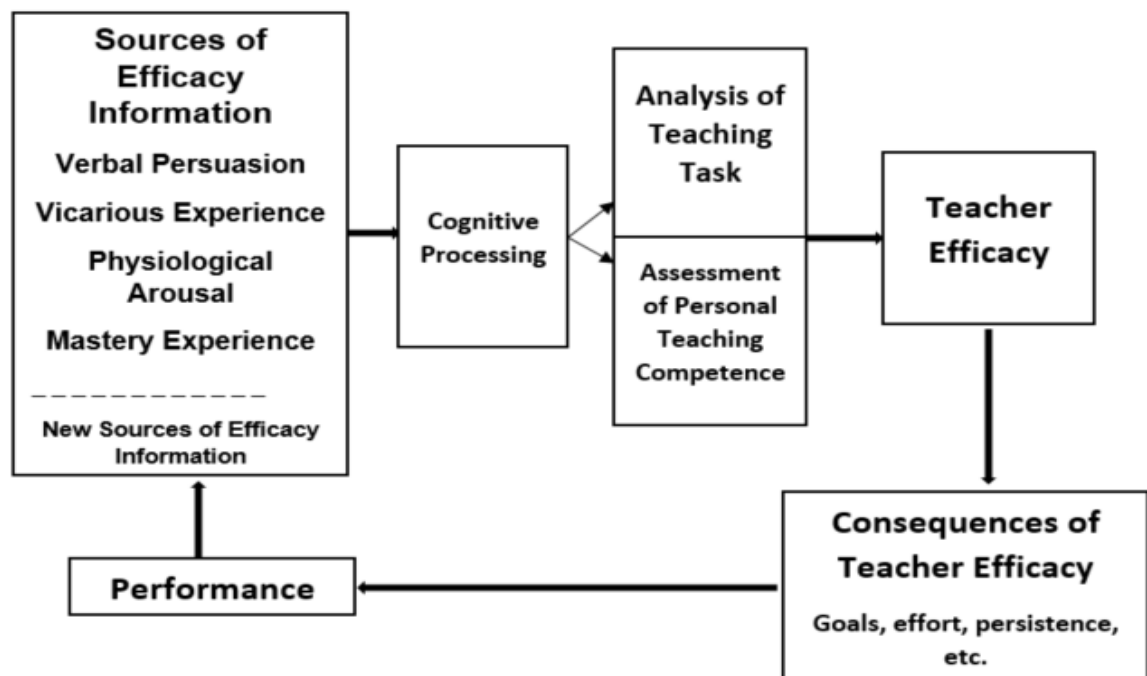
Tschannen-Moran et al. (1998) proposed an integrated model of teacher efficacy grounded in social cognitive theory. The model represented TSE as a cyclical process, Figure 1. First, teachers receive *efficacy information* consisting of *mastery experiences*, *physiological arousal*, *vicarious experiences*, and *verbal persuasion*. Efficacy information can affect self-perception of teaching competence and lead to changes in feelings of self-efficacy.

Verbal Persuasion. Verbal Persuasion occurs on a spectrum from general to specific statements about the nature teaching (Tschannen-Moran et al., 1998). Statements can range from information about pedagogy, praise and encouragement, specific strategies for overcoming challenging situations, to specific performance feedback (Tschannen-Moran et al., 1998; Morris et al., 2017). Participation in professional learning sessions and coursework supply both information about the task of teaching but can also meet the specific needs of the learner thus providing evidence-based strategies and practices that

can add to a teacher's toolkit of skills. Pairing skill development with encouragement from a coach, mentor, or trusted colleague positively influences a teacher's willingness to implement new strategies (Joyce & Showers, 2003). Guidance from a mentor, instructional coach, or trusted colleague in the selection of classroom management and/or instructional strategies in the face of difficult situations influences TSE (Bruce & Ross, 2008; Ross & Bruce, 2007; Yoo, 2017).

Figure 1

Model of Teacher Self-Efficacy



Note. Adapted from Tschannen-Moran et al., 1998

The addition of specific performance feedback from supervisors, colleagues, and students gives the teacher information about how their skills match the demands of a

particular teaching task and compares their performance to others. Teacher evaluation tools provide specific performance feedback on evidenced based indicators associated with effective teaching practices and place teachers in categories such as *unsatisfactory*, *basic*, *proficient*, and *distinguished* (Danielson, 2007). Placement in one these categories gives an indication of other's beliefs of their teaching skills. Verbal persuasion may lower self-perception of personal teaching competence when the feedback received is overly severe and general rather than focused and constructive (Tschannen-Moran et al., 1998). In these situations, teachers may conclude that future attempts on similar tasks will be unsuccessful and lower feelings of efficacy.

Vicarious Experiences. Vicarious experiences, whether in person or virtually, are another source of efficacy information. Observing others teach gives impressions about the nature of teaching (Tschannen-Moran et al., 1998; Morris et al. 2017). Vicarious experiences occur via impressions of teaching formed during teacher education, gossip from other teachers, professional literature, and portrayals of teaching in movies or television (Bruce & Ross, 2008; Ross & Bruce; 2007; Yoo, 2017). Through these types of vicarious experiences, teachers begin to form opinions about who can learn, how much can be learned, and whether they can make a difference in student outcomes (Tschannen-Moran et al., 1998).

Watching skilled colleagues can affect the observer's feeling of their personal teaching competence (Bruce & Ross, 2008; Looney, 2003; Ross & Bruce; 2007; & Yoo, 2017). Observing admired, credible colleagues who teach in a similar context can lead observers to believe that they too have the capability to be successful teachers (Tschannen-Moran et al., 1998; Tschannen-Moran & Johnson, 2010). Conversely, seeing

a colleague's failure to succeed, despite strong effort, can erode efficacy beliefs when the teacher perceives the task as unmanageable (Bandura, 2006; Tschannen-Moran et al., 1998).

Physiological Arousal. The third source of efficacy information, physiological arousal, reflects the level of physiological or emotional arousal a teacher feels during the completion of tasks (Tschannen-Moran et al., 1998; Yoo, 2016). Arousal, rapid breathing, sweating, and increased heart rate, are either positively or negatively categorized dependent on context, teacher's history or experiences, and overall level of arousal (Bandura, 1997). A moderate level of arousal can improve performance by increasing focus and energy on a task, while a high level of arousal can impair functioning and make it difficult to effectively apply skills and capabilities to a task (Tschannen-Moran et al., 1998; Yoo, 2016).

Yoo (2016) studied the effects of professional learning on teachers' feelings of TSE. They found that teachers who were less successful reported higher states of physiological arousal. Teachers reporting higher states of arousal also exhibited learned helplessness and rated themselves with a lower sense of efficacy.

Physiological states influence teacher perception of personal teaching competence and functions as either a positive or negative source of efficacy information. Engaging in peer observation, highlighting positive attributes of teacher practice, and conferencing can help make sense of reactions and physiological responses (Lee & Davis, 2014), and lead to an increase in mastery experiences.

Mastery Experiences. Mastery experiences are the final source of efficacy information. They result from successful performance of specific tasks coupled with the belief of future proficient performances (Tschannen-Moran et al., 1998). The belief that future performances on a specific task will be successful strengthens efficacy beliefs (Bruce & Ross, 2008; Looney, 2003; Ross & Bruce, 2007; & Yoo, 2017). Changes in beliefs are more likely to occur when a task successfully completed with little help from others or early in the learning process (Bandura, 1997; Morris et al., 2016; Tschannen-Moran et al., 1998). Success after repeated failures, with extensive help from others, or on easy or unimportant tasks does not improve efficacy beliefs (Bandura, 1997; Tschannen-Moran et al., 1998). Experiencing failure lessens efficacy beliefs and contributes to the belief that future attempts on that task will also be unsuccessful.

All four sources of efficacy information contribute to a teacher's analysis of teaching tasks and to beliefs of their level of teaching competence on the task. The four sources of efficacy information each impact self-perception, but Tschannen et al. (1998) stated that mastery experiences, paired with physiological arousal associated with them, most heavily influence self-perception. It is in those instances of actual teaching that teachers can evaluate the capabilities they bring to a specific task and experience the results of their performance.

Cognitive Processes. Following the input of new sources of efficacy information, teachers engage in the process of interpretation. Cognitive processing determines how the various sources of efficacy information influence the analysis of the teaching task and the assessment of personal teaching competence (Tschannen-Moran et al., 1998). Biases and past experiences color how teachers process sources efficacy

information. For example, success or failure on tasks attributed to either external versus personal factors color the analysis of the task in terms of its level of difficulty and associated feelings personal teaching competence (Bandura 1997; Tschannen-Moran et al., 1998).

Teachers' assessment of the requirements to successfully complete a task is part of the analysis of a teaching task (Tschannen-Moran et al., 1998). Personal knowledge, instructional skills, and resources are all considered during their analysis. Personal teaching competence is a teacher's judgement of the adequacy of their instructional strategies and abilities to be successful on that task (Tschannen-Moran et al., 1998). Teachers who receive professional learning or coaching are more likely to have more positive view of their personal teaching competence (Bruce & Ross, 2008; Looney, 2003; Ross & Bruce; 2007; & Yoo, 2017).

Both analysis of the teaching task and feelings of personal teaching competence are important because teacher efficacy is context specific (Goddard, Hoy and Hoy, 2000). Feelings of efficacy can increase or decrease based on particular subjects, settings, groups of students, availability of resources, and various other circumstances (Bruce & Ross, 2008; Looney, 2003; Ross & Bruce; 2007; Yoo, 2017). A teacher may feel capable in one context and incapable in another. Their level of perceived competence of their ability to succeed on a particular teaching task influence functioning in that context (Tschannen-Moran et al., 1998). Teachers' belief that they have the ability to improve their skills through additional training and experience influence TSE.

Teacher Self-Efficacy. Teachers' judgement of their personal competence in light of analysis of the task and context directly related to perception of TSE (Tschannen-

Moran, 1998). Conceptualizing teacher efficacy in this way allows for the consideration of the combination of competence and context as an explanation of resultant teacher efficacy (Tschannen-Moran et al., 1998; Morris et al., 2016). Tschannen-Moran et al. (1998) believed that their integrated model allowed for a broader examination of the specific teaching task and context, beyond the focus on barriers teachers face in general, and provides a clearer understanding of teachers' efficacy beliefs. The cyclical nature of the model illustrates that proficiency of a performance creates new mastery experiences that serve as a new source of efficacy information, beginning the efficacy cycle anew (Morris et al., 2016). The efficacy cycle can result in either increasing or lowering feelings of efficacy and over time; this process stabilizes into a relatively enduring set of efficacy beliefs (Bandura, 1993; Tschannen- Moran et al., 1998).

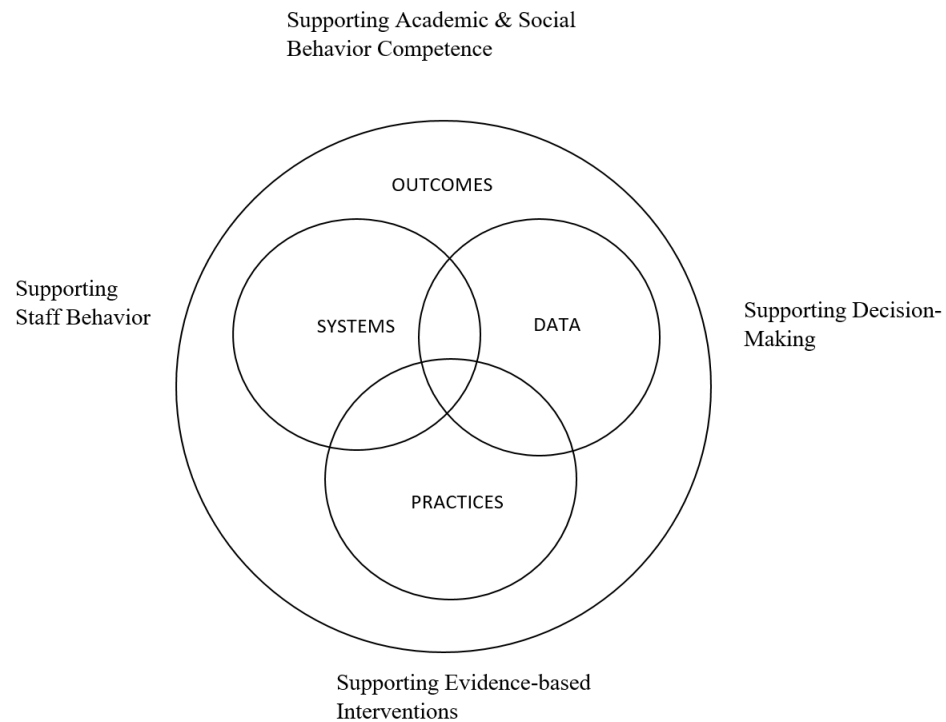
Improving teacher efficacy beliefs can positively affect student and teacher outcomes. Specifically, teachers with a strong sense of TSE are more likely to persist on tasks (Bandura, 2006). Tschannen-Moran et al.'s (1998) integrated model focuses on the role four sources of efficacy information can have on feelings of self-efficacy. The interaction of mastery experiences, verbal persuasion, vicarious experiences, and physiological arousal affect self-perception of teaching competence and can lead to changes in TSE. The use of relational interventions and frameworks such as PBIS have the potential to supply positive sources of efficacy information and positively affect TSE.

Positive Behavior Interventions and Supports

Positive Behavior Interventions and Supports (PBIS) is an implementation framework designed to enhance academic and social-behavioral outcomes for students by (a) emphasizing the use of data to inform decisions about the selection, implementation,

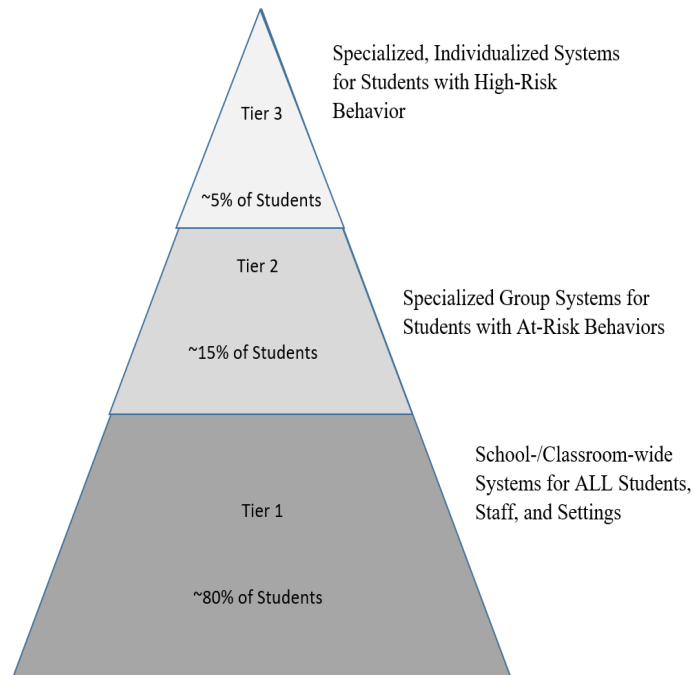
and progress monitoring of evidence-based behavioral practices, and (b) organizing resources and systems to improve implementation fidelity (Sugai & Simonsen, 2012, pg. 1). The conceptual framework underpinning PBIS consists of the interaction of *systems*, *data*, and *practices* to improve student outcomes, see Figure 2 (OSEP, 2021). Student needs drive the selection of evidence-based practices, data collection, and intervention evaluation throughout various systems. Adoption of evidence- and research-based practices is designed to support students across the various school systems including the (a) school wide (e.g. 3-5 positively stated rules, specific teaching and acknowledgement of behavioral expectations, delineation of teacher versus office managed behaviors and written process for responding to student behavior errors), (b) non classroom (e.g. processes for active supervision, teaching and re-teaching of setting specific routines), (c) classroom (e.g. active engagement strategies, effective instruction, and active supervision), and (d) individual (e.g. function-based interventions, increased progress monitoring, and explicit skills instruction) systems (Hill et. al., 1996; Sugai & Simonsen, 2012).

The combination of practices, data, and systems, implemented within three tiers of intensity, comprise the PBIS framework (see Figure 3). The three tiers of the framework were modelled after multi-tiered prevention logic from the field of public health (Walker et. al., 1996). Tier 1 focuses on primary prevention strategies, Tier 2 on targeted interventions or secondary prevention, and Tier 3, tertiary intervention, on the most intensive supports for individual students (Horner et al., 2010; OSEP, 2021). Practices on this continuum include a process for universal screening, progress monitoring, data-based decision-making rules, monitoring of implementation fidelity, and continuous, embedded

Figure 2*PBIS Conceptual Framework*

Note. Adapted from OSEP, 2021.

professional development. The PBIS framework has the collection and analysis of data at its core. The collection and analysis of data guide decision-making about setting priorities for improvement, matching needs to practices, choosing intervention strategies, outcome evaluation, and measurement of implementation fidelity (McIntosh & Goodman, 2016; OSEP, 2021). The framework has evolved over the years into its current iteration.

Figure 3*PBIS Tiers of Supports*

Note. Adapted from OSEP, 2021.

Historical Development

An amendment to the Individuals with Disabilities Education Act (IDEA) section 614(d)(3)(B)(i) of Public Law 105-17 mentioned the terminology *positive behavior interventions and supports* in 1997. It stated that “in the case of a child whose behavior impedes his or her learning or that of others, the child’s Individualized Education Program (IEP) team must consider, when appropriate, strategies, including positive behavior intervention strategies and supports, to address that behavior” (Sugai et. al., 2000; pg. 131). Researchers at the University of Oregon responded to the need for a process for improve selection, implementation, and documentation of effective

behavioral interventions for students identified as having behavior disorders by conducting a series of studies and evaluation projects (Sugai & Simonsen, 2012). After the reauthorization of IDEA, the University of Oregon received a grant to establish the national Center on Positive Behavioral Intervention and Supports.

The Center disseminated resources and provided technical assistance to local educational agencies (LEAs) wishing to implement evidence-based practices to improve outcomes for students with behavioral disorders (Sugai & Simonsen, 2012). The Center created the website, www.pbis.org, to virtually house a collection of evidence-based behavior practices. Activities of the Center eventually expanded beyond dissemination of resources and technical assistance for students with behavior disorders. Their focus shifted to school-wide support of all students with an emphasis on implementation practices and systems that are the blueprint of the current PBIS framework (Center on PBIS, 2015; Sugai & Simonsen, 2012). PBIS has emerged as an approach to optimize the capacity of schools to address school-wide, classroom, and individual student behavior by creating policies, structures, and routines that emphasize the identification, implementation, and sustained use of research validated practices to improve student outcomes (Center on PBIS, 2015; Rholetter, 2019; Simonsen & Myers, 2015; Sugai et al., 2000).

Fundamentally, PBIS combines (a) behavioral science, (b) practical, evidence-based interventions, (c) social values, (d) and a systems perspective (Sugai et al., 2000). Behavioral science states that human behavior changes and responds to environmental factors. This belief led to the development of practical interventions designed to reduce problem behavior. All three tiers of the framework reflect interventions that emphasize

(a) environmental redesign to prevent behavior before it occurs, (b) curriculum redesign to increase academic learning time, (c) removal of rewards that may be inadvertently reinforcing problem behaviors, and (d) the collection and analysis of data (Sugai et.al., 2000).

Universal-Tier 1

The foundation of PBIS occurs at Tier 1 and sets up primary prevention or universal practices (Center on PBIS, 2015; OSEP, 2021; Simonsen et al., 2012; Simonsen & Myers, 2015). Primary prevention strategies focus on the creation and enhancement of protective factors school-wide to reduce the likelihood that students become ‘at-risk’ for negative outcomes (Hill et. al, 1996; Simonsen et al, 2012). All staff use universal practices in all settings to create a positive, predictable environment for all students. An effective school arises from the development of a common vision and use of common language and practices to ensure that staff provide, and students have a common experience throughout the school (Center on PBIS, 2015; Ross & Horner, 2007; Simonsen & Myers, 2015). Critical components of Tier 1 include:

- development of a behavior matrix to operationally define the application of school wide rules within various school settings,
- explicit teaching, re-teaching, and reinforcement of school wide rules and expectations,
- creation and use of visual supports to reinforce the following of school-wide rules and expectations,
- implementation of a continuum of strategies to reinforce student and staff behavior,

- implementation of a continuum of strategies to respond to student behaviors including procedures, behavior definitions, and documentation forms (Center on PBIS, 2015; Simonsen & Myers, 2015).

A team, representative of the various stakeholders within the school building, receives training and technical assistance to guide implementation of the framework. The team functions include training and orientation of staff, development and implementation of Tier 1 critical features, and regular collection and analysis of outcome and fidelity data (Horner et al., 2010; McIntosh & Goodman, 2016; Simonsen & Myers, 2015).

The universal Tier 1 system meets the needs of most students by setting rules and expectations, explicitly teaching expected academic and social behaviors, and organizing and developing standards for the activities of all staff members (Hill et. al, 1996).

Schools can expect that approximately 80% of students will respond to Tier 1 practices with successful behavioral and academic outcomes (OSEP, 2021; Simonsen & Myers, 2015). The classroom system functions as part of Tier 1. Classroom teachers employ Tier 1 practices within the classroom and non-classroom systems.

Positive Classroom Behavior Supports. One of four interactive systems within a school is the classroom system. Teachers develop classroom systems that reflect the larger school-wide policies and procedures to manage the academic performance and social behavior of their students (Hill et. al., 1996). Positive Classroom Behavior Supports (PCBS) are critical to the success of both students and staff. Simonsen et al. (2014) stated that student disruptive behaviors has a negative effect on student outcomes. Classroom management skills are essential in the prevention of and reaction to student behavior errors (Simonsen et al., 2008). Skills with classroom management are critical

for both teachers and students because when teachers effectively manage their classrooms to maximize engagement the probability of academic success increases (Simonsen et al., 2014).

Preventative and responsive PCBS practices have the most impact when implemented within a PBIS framework (OSEP, 2021; Freeman et al., 2017). Classroom practices mirror universal Tier 1 practices. For example, the explicit teaching of expectations and acknowledgement of student behaviors occur in both the classroom and schoolwide systems (OSEP, 2015). Consistent implementation of PCBS practices promote appropriate student behavior and reduce the likelihood of escalation of inappropriate behavior (OSEP, 2015; Simonsen et al., 2014; Swain-Bradway et al., 2017). Consistent implementation fidelity of PCBS meets the needs of more than 80% of students (OSEP, 2021).

PCBS and school wide PBIS both utilize implementation of a full continuum of practices to meet students' needs at all three tiers. Foundational, school-level and classroom-level supports bolster both implementation fidelity and benefits of PCBS (OSEP, 2021). School-level supports include universal Tier 1 practices, professional learning opportunities for staff, and a leadership team who develops policies to support implementation and actively monitors the implementation process and status (OSEP, 2015). Teacher practices mirror universal system practices by (a) teaching expectations, providing student acknowledgment, and responding to student behavior, (b) using data for classroom management decisions, (c) implementing effective teaching strategies, and (d) matching the curriculum to student needs (OSEP, 2015; Swain-Bradway et al., 2017).

The seven principles of *professional, cultural, informed, fidelity-based, educational, instructive, and preventative* encapsulate the foundational values of PCBS (see Table 1).

Table 1

Definitions of PCBS Principles

Principle	Definition
Professional	Display behavior that is businesslike, unbiased, objective, and impartial
Cultural	Show consideration of student's learning history and experiences
Informed	Utilize data for problem identification and decision-making
Fidelity-Based	Monitor and evaluate implementation and adjust as needed
Educational	Consideration of the quality of design and delivery of instruction
Instructive	Explicit teaching, modeling, monitoring, and reinforcement of expectations
Preventative	Classroom environment designed to encourage the use of previously taught social skills and discourage behavior errors

Note. Adapted from OSEP, 2015.

PCBS evidence-based practices address *Foundations, Practices, and Data Systems* of the classroom. Teachers engage in foundational PCBS interventions and supports prior to students' classroom arrival. Design of the physical environment of the classroom, development of predictable routines, and identification of 3-5 positively stated

expectations are three evidence practices used to maximize structure and communicate teacher expectations (OSEP, 2015; Simonsen et al., 2008; Simonsen & Myers, 2015).

Practices are either preventative or in response to a behavior error. Proactive and positive PCBS classroom practices implemented consistently support prevention of and response to student behavior errors (OSEP, 2015; Simonsen & Freeman, 2017; Simonsen & Myers, 2015). Preventative practices fall along a continuum of strategies that reinforce expected behavior by providing high rates of opportunities to respond to instruction, prompting students to meet classroom expectations, active supervision, and use of varied, high rates of acknowledgement specific to and contingent on student behaviors (OSEP, 2015; Simonsen et al., 2008; Simonsen & Myers, 2015). Teachers anticipate student behavior errors and develop a continuum of response strategies. Brief, contingent, specific error correction, differential reinforcement, planned ignoring, overcorrection, and time-out from reinforcement are examples of possible strategies (OSEP, 2015; Simonsen et al., 2008; Simonsen & Myers, 2015).

Teacher developed data systems evaluate PCBS by first setting goals for student behavior that align with classroom expectations. Next, teachers use progress monitoring data and determine if students are continuing to commit behavior errors at a rate that does not meet their classroom goals (OSEP, 2015). Implementation fidelity and student outcome data drive classroom decisions about the effectiveness of classroom management practices (OSEP, 2015; OSEP, 2021). Teachers make modifications to their PCBS practices based on their analysis of classroom data. A referral process for students who continue to demonstrate difficulty determines the need for additional interventions at tiers 2 or 3.

Targeted-Tier 2

Students receive targeted, secondary prevention support at Tier 2 when data indicate poor behavioral outcomes (OSEP, 2021; Rholetter, 2019; Simonsen & Myers, 2015). Students receiving Tier 2 supports exhibit mild, yet persistent behavioral needs. These students receive layers of universal and targeted supports to help improve behavioral outcomes. Intensification of universal practices at Tier 2 improve the outcomes of students unable to meet academic, behavioral, and social-emotional expectations (Horner et al., 2010). Increased use of pre-corrections, adult supervision, frequency of reinforcement along with instruction and practice of academic, self-regulation, and social skills create a level of support to address student needs. (OSEP, 2021; Simonsen & Myers, 2015). Students identified as ‘at risk’ receive targeted intervention in addition to the critical features of Tier 1 practice.

Small groups of students with similar needs access targeted interventions. Common Tier 2 interventions include Check in Check Out, Check and Connect, academic skills groups, and social skills instruction (Horner et al., 2010; McIntosh & Goodman, 2016; Ross & Horner, 2007; Simonsen & Myers, 2015;). School staff implement interventions quickly and efficiently in either the classroom or a small group setting. (Rholetter, 2019). Critical features of Tier 2 interventions are:

- continuous availability,
- student placement within 72 hours of referral or identification,
- alignment with Tier 1 practices,
- all staff support implementation,
- data-based decision making,

- function based,
- increased parental involvement,
- students choose to participate,
- continuous monitoring and evaluation (Kincaid & Iovannone, 2020; OSEP, 2021).

An Advanced Tiers team made up of an administrator, individuals with behavioral expertise, and representatives from various stakeholder groups identify students in need of supports. The Advanced Tiers team uses a combination of screening data, teacher referrals, parent referrals, and self-referrals to identify students for interventions (Kincaid & Iovannone, 2020; McIntosh & Goodman, 2016; OSEP, 2021). Before the team considers Tier 2 supports, they first consider if the student(s) has received Tier 1 supports with fidelity and the overall number of students being referred (Kincaid & Iovannone, 2020). Research shows approximately 15% of the student population require Tier 2 supports (OSEP, 2021; Simonsen & Myers, 2015). If more than 15% of the student population's needs are not met with universal supports, this indicates a need to improve implementation at Tier 1 or adjust academic, social-emotional, and behavioral practices rather than the provision of Tier 2 intervention (Kincaid & Iovannone, 2020; OSEP, 2021).

The Advanced Tiers team places students in function-based interventions and monitors student progress upon identification of student needs (Rholetter, 2019). The team works to ensure development of individual student goals, intervention implementation fidelity, and increased communication with parents about student progress (Kincaid & Jovonne, 2020; OSEP, 2021; Simonsen & Myers, 2015). They

routinely review implementation fidelity of specific interventions and student progress monitoring data to share with teachers, staff, and parents. Data decision rules support evaluation of the effectiveness of interventions. (Kincaid & Iovannone, 2020; OSEP, 2021; Horner et al., 2010; Simonsen & Myers, 2015). These rules provide criteria for fading, modifying, or discontinuing an intervention as well as determining when students need more intensive support available through Tier 3 strategies.

Tertiary-Tier 3

Students who are dangerous, highly disruptive, or engage in behaviors that are frequent or highly intense show need for Tier 3 supports (OSEP, 2021). At most schools approximately 1-5% of students demonstrate high risk or chronic behavior patterns that require intensive, individualized support (OSEP, 2021; Simonsen & Myers, 2015).

Educators often misinterpret Tier 3 as special education placement (Kincaid & Iovannone, 2020). Students with an IEP may receive Tier 3 supports, but it is not a requirement that students must have an IEP to access them. Another myth is students must experience failure at Tiers 1 and 2 before they are able to access interventions at Tier 3 (Kincaid & Iovannone, 2020). Students identified as in need of intensive, Tier 3 interventions either have data that indicate significant behavioral needs or were unresponsive to universal and/or targeted interventions (Kincaid & Iovannone, 2020, McIntosh & Goodman, 2016; OSEP, 2021; Simonsen & Myers, 2015).

The Advanced Tiers Team's role at Tier 3 becomes more focused on problem-solving for individual students. Family members take part in meetings to discuss student behavior, assist in the development of support strategies across the home and school context, identify student preferences and strengths, and review intervention history

(Bureau of Exceptional and Student Services, 2014). The inclusion of school and community experts in social work, mental health, and the medical field further expands the team when necessary. The team uses person-centered planning and a problem-solving process to develop a vision, targeted goals, and a positive behavior support plan (PBSP) that may include wrap-around services (Bureau of Exceptional and Student Services, 2014; OSEP, 2021).

The Advanced Tiers Team gathers data to identify specific student needs and match them with evidence-based interventions. Data gathering includes the completion of a functional behavior assessment (FBA). An FBA is a process of gathering data to determine target behaviors in relation to antecedent and consequent events (Bureau of Exceptional and Student Services, 2014, OSEP, 2021; Steege et al., 2019). Hypothesis statements summarize FBA data to explain the function or why of the behavior and name antecedents to the behavior of concern (Bureau of Exceptional and Student Services, 2014, OSEP, 2021; Kincaid & Iovannone, 2020). The student team primarily reviews existing data when completing a brief FBA. More complex FBAs use additional data sources, increased parent involvement, and possible coordination with outside agencies to determine student needs. The Advanced Tiers team guides this process including the development of individualized support plans.

A review of all FBA data collected determines the individual needs of the student and guides design of a PBSP. The PBSP consists of multiple components: (a) strategies to prevent the occurrence of the behavior (e.g., modifications to the environment, increased structure, curricular demands), (b) skill instruction (e.g., social skills, replacement behaviors, academic skills), (c) increased acknowledgement (e.g., academic

feedback, behavioral feedback), and (d) removal of reinforcers for the problem behavior (Bureau of Exceptional and Student Services, 2014, OSEP, 2021; Steege et al., 2019).

Students receive individualized, layered supports while continuing to experience universal and targeted support in addition to the strategies designed within their PBSP (Horner et al., 2010). The PBSP includes strategies for collecting student outcome and intervention fidelity data. The PBSP has decision rules to guide the team in determining the effectiveness of an intervention and next steps to follow if the student is unable to meet goals (Bureau of Exceptional and Student Services, 2014, OSEP, 2021). The Advanced Tiers team, including the parent, meets frequently to review student progress and make evaluative decisions.

Benefits of Implementation

Decades of research confirms the positive impact the PBIS framework has had on student outcomes. Studies conducted in schools implementing the framework have seen improvements in their effectiveness by increasing (a) student attendance, (b) academic learning time, and (c) academic engagement during instruction (Brooks et al., 2003; Horner et al., 2009; McDaniel et al., 2016). Furthermore, when implemented with fidelity, data showed a reduction of behaviors that disrupt the learning process (Rholetter, 2019; Simonsen et al., 2012). Schools implementing PBIS with fidelity have experienced significant effects on student behavioral, academic, and contextual outcomes (Bradshaw et al., 2010).

Behavioral outcomes. Waasdorp and Bradshaw (2012) completed a longitudinal, randomized controlled effectiveness trial of 37 public elementary schools to study the

effect of PBIS implementation on bullying and peer rejection. Teachers' observation of bullying and peer rejection was significantly reduced in schools implementing PBIS compared to buildings not implementing. The researcher suggested that implementation of PBIS with fidelity lowers instances of bullying by improving school climate (Waasdorp & Bradshaw, 2012).

In addition to reduced bullying behaviors, PBIS implementation can result in a reduction of office discipline referrals (ODRs) and suspensions (Bradshaw et al., 2010; Simonsen et.al., 2012). Schools that maintain high rates of implementation experienced a sustained decrease in discipline incidents (Childs et al., 2016; Gage et al., 2019). Furthermore, PBIS was developed as a strategy to improve outcomes for students with disabilities. A quasi-experimental study of disciplinary practices compared the outcomes of students attending schools implementing the PBIS framework to students attending schools that were not implementers. Students with disabilities and Black students were significantly less likely to receive an out of school suspension when they attended schools implementing PBIS with fidelity when compared to students in these two groups who attended schools that were not implementing PBIS (Gage et al., 2019). Students not only had a reduction in negative behavioral outcomes but also perceived their school as safer (Horner et al., 2009). Improved academic outcomes may also be experienced when the PBIS framework is implemented with fidelity.

Academic outcomes. Research has shown mixed results of the effects of PBIS implementation on student academic outcomes. The results of several longitudinal studies have shown improvement in standardized math and reading scores, but these results did not reach a level of significance (Bradshaw et al., 2010, Simonsen et.al., 2012). Horner

et. al. (2009) conducted a randomized, wait-list controlled analysis of elementary schools implementing PBIS. Results indicated that students increased third grade reading performance. The researchers believed higher rates of attendance, attention, and student engagement contributed to teachers' ability to improve academic outcomes.

Studies of Tier 2 strategies have evaluated their ability to improve students' academic behavior. Check in Check Out (CICO) is a common Tier 2 strategy designed to reduce problem behavior and increase academic engagement (Tutura et al., 2014). A modified version of CICO, designed to support students engaged in behavior to avoid instructional activities, was studied and results showed that students' experiencing the intervention both reduced their performance of problem behavior and increased work completion and homework accuracy. A similar study of the Check, Connect, and Expect (CCE), another Tier 2 strategy, showed that students who received the intervention displayed statistically significant improvement of academic engagement. Thus far student behavior and academic outcomes have been considered, but PBIS implementation also has the potential to address overall school health.

School health. PBIS attempts to alter school environments using improved systems and procedures. Existing research documents the positive influence of PBIS implementation on perceptions of school safety, organizational health and school climate. A longitudinal study of PBIS implementation showed a link between implementation and staff perception of school safety with staff identifying the presence of more protective factors between pre-implementation and year 1 PBIS implementation (Runge et al., 2018). A group-randomized controlled study of the impact of PBIS implementation on staff reports of school organizational health showed significant improvement of several

aspects of organizational health, including the overall health, resource influence (administrator's ability to lobby for and positively allocate resources) and staff affiliation (collegiality, commitment to students, trust, and sense of accomplishment) (Bradshaw et al., 2008). This effect tended to be greatest around the third year of implementation. Schools demonstrating a lower level of organizational health pre-implementation showed the greatest benefits from implementation of the PBIS framework. A study of the effect of PBIS implementation on student ratings of school climate suggested that PBIS fidelity was significantly related to school climate (Elrod et al., 2022). Schools that implemented PBIS for multiple years with fidelity had stronger ratings of school climate and fewer ODRs in later years.

Pennsylvania recognized the many benefits to PBIS implementation and established its first implementation cohort in 2007 (Runge et al., 2018). The state partnered with the Midwest PBIS network to develop a community of practice and began efforts to scale up PBIS implementation statewide.

Pennsylvania PBIS Network

Part of PBIS implementation involves yearly program evaluation and action planning. Systematic gathering and assessment of data increases the likelihood of sustained implementation and helps determine the success of implementation (Mercer et al., 2018; Runge et al., 2018). Higher levels of implementation were associated with better student outcomes (Mercer et al., 2017). Teams use fidelity data to monitor implementation over time, find strengths and needs, and to action plan for continued growth (OSEP, 2010).

McIntosh et al. (2018) conducted a three-year longitudinal study to examine what school-level, practice-level, and district-level variables predicted sustained, multi-year, implementation of universal Tier 1 PBIS. Results showed that the strongest practice-level predictors of sustained implementation were fidelity within the first year of implementation and team data use. The school-level predictor of elementary grade level was a statistically significant predictor of year's 2-4 sustainability. Sustainability was more likely when the district had a high number of schools implementing and expansion of the initiative.

PBIS began as an intervention to positively and proactively improve outcomes for students with disabilities beginning in the summer of 2007 (Runge et al., 2018). Since that time over 1200 local educational agencies have joined Pennsylvania's PBIS network. The Community of Practice on School Based Behavioral Health (CoP SBBH) coordinates implementation of PBIS across the state. Many community organizations, representing education, mental health, social services, law, families, and youth, partner together as members of CoP SBBH (PAPBS, 2021a; Runge et al, 2018). The PAPBS Network functions as a subcommittee of the COP SBBH. Member schools and facilitators, tasked with providing training and technical assistance, and collaborating educational and mental health agencies make up the PAPBS Network (Runge et al., 2018). The mission of the network is:

The mission of the Pennsylvania Positive Behavior Support Network (PAPBS Network), through training and technical assistance, is to support early childhood programs, schools and their family and community partners to create and sustain comprehensive, school-based behavioral health support systems to promote the

academic, social and emotional well-being of all Pennsylvania's students. The network's goal is to ensure that all schools have the necessary technical assistance, collaborative opportunities, and evaluative tools needed to overcome nonacademic barriers to learning and achieve competence and confidence in advancing academic, social, and emotional success for all students, (PAPBS, 2021c, Provisional Facilitators Documents section).

Local facilitators receive formal training from the PAPBS Network to supply training and ongoing technical assistance to schools that choose to become network members. Facilitators collaborate with schools and districts to secure commitment to PBIS implementation, help with annual data gathering and analysis and demonstrate the ability to have productive relationships with administrators, colleagues, students, and the community to achieve high levels of implementation fidelity (PAPBS, 2021b). There are currently over 140 trained facilitators across the state (Runge, 2018). School teams wishing to join the Network partner with a facilitator to determine readiness and sign a commitment letter. The letter articulates the agreed upon commitments of the school district, principal, and building level team to implement the PBIS framework including the collection, analysis, and submission of fidelity data (PAPBS, 2015). Network member schools measure fidelity every spring using approved fidelity instruments. The Team Implementation Checklist (TIC), Benchmarks of Quality (BoQ), and Tiered Fidelity Inventory (TFI) are each research-validated tools designed to measure implementation of PBIS implementation (Mercer, 2017; Runge, 2018). The Network has established a score of 70% or higher as an indicator of implementation fidelity for both the BOQ and TFI (PAPBS, 2021b; Runge, 2018). Implementing schools upload their

fidelity scores to the network on an annual basis. Network criteria identified scores 70% or higher as *fully implementing*, less than 70% as *partially implementing*, and schools that do not submit scores as *not implementing* (Runge, 2018).

It is the belief and mission of the PAPBS Network that implementation of the PBIS framework will promote the academic, social and emotional well-being of students (PAPBS, 2021c). The benefits of PBIS implementation have the potential to not only positively affect student outcomes but also teacher outcomes such as changes in TSE.

PBIS and Teacher Efficacy

In the integrated model of teacher efficacy mastery experiences, physiological arousal, vicarious experiences, and verbal persuasion provide sources of information that can affect teachers' perceptions of teaching competence and lead to changes in TSE. Implementation of the PBIS framework creates opportunities to receive positive sources of efficacy information. Table 2 provides examples of PBIS practices and components that may act as sources of efficacy information. Several studies have sought to explore the relationship between PBIS implementation and TSE.

Ross and Horner (2007) examined teacher outcomes of PBIS implementation in high implementing compared to low implementing middle schools. Teachers in high implementing schools rated themselves as having significantly less stress and significantly higher ratings of TSE. Limitations of this study included a small sample size. The researchers also used a measure of efficacy that did not mirror the integrated model of efficacy developed by Tschannen-Moran et al. (1998).

Table 2*PBIS Sources of Efficacy Information*

Source of Efficacy Information	PBIS Components
Mastery Experience	PBIS goal setting Completion of yearly acknowledgement requirements Individual goal setting
Physiological Arousal	PBIS problem-solving meetings Review of fidelity assessments Yearly action planning
Vicarious Experiences	Grade level and staff meetings focused on PBIS data PBIS celebrations
Verbal Persuasion	PBIS professional learning sessions Reviews of PBIS strategies PBIS facilitators/coaches

Note. OSEP, 2010; OSEP, 2015

Several studies found results similar to Ross and Horner using Tschannen-Moran's measure of TSE, the Teacher Sense of Efficacy Scale (TSES). The study also found school-level and teacher-level variables that influenced teacher well-being, including teachers' perception of efficacy. School-level variables of improved teaming structures, opportunities for collaboration, and positive interactions between adults and students were attributed with changing the culture of the school through development of systems and data usage. Teacher-level variables of increased usage of evidence-based practices, established teaching expectations, and positive reinforcement were found in buildings implementing PBIS with fidelity. Taken together, school- and teacher-level

variables positively affect teacher efficacy and highly encouraged the adoption of PBIS (Ross et al., 2012; Ross & Horner, 2007).

Classroom experiences centered on classroom management practices and overall PBIS implementation have led to increased teacher efficacy beliefs (Bellezza, 2015; Medina, 2017). Teachers who create classrooms that are safe and positive are more capable of engaging students and using strategies to meet student needs (Kelm & McIntosh, 2012). Utilizing strategies that allow for increased student engagement and positive adult/student interactions has resulted in lower feelings of teacher anxiety and increased TSE for teacher's receiving professional learning on and implementing PBIS (Couet, 2014; Ross et. al., 2012).

The results of these studies are promising. They have been able to make a connection between PBIS implementation and improved TSE. The current study seeks to expand upon these earlier studies by focusing on schools within Pennsylvania's PBIS network who have been implementing for a minimum of three years and have measured fidelity according to network guidelines.

Summary

Teacher turnover and attrition continue to plague public schools across the country with roughly 16 percent of teachers leaving their schools and 8 percent choosing to leave the profession (Carver-Thomas & Darling-Hammond, 2017). One of the most often cited reasons for teacher's leaving the field is discipline or student behavior. Classroom management influences teacher's overall job satisfaction and is one of the most challenging facets of teaching (Lee & Davis, 2014).

TSE refers to a teachers' confidence and belief in their capability to successfully perform teaching tasks (Lee & Davis, 2014). Positive outcomes for both teachers and students have been correlated with TSE (Bandura, 1993; Goddard et al., 2000; McLean et al., 2019; Reinke et al., 2013). Strong TSE influences teacher's willingness to persist on difficult tasks, like student behavior challenges (Bandura, 2006; Tschannen-Moran et al., 1998). Having the ability to persist in the face of difficulty can affect resiliency. High TSE is associated with lower levels of stress, emotional exhaustion, and overall burnout and higher levels of personal accomplishment, commitment, and job satisfaction (Zee et al., 2016).

Positive Behavior Interventions and Supports (PBIS) is an implementation framework designed to enhance academic and social-behavioral outcomes for students. When implemented with fidelity, PBIS can reduce behaviors that disrupt the learning process (Rholetter, 2019; Simonsen et al., 2012). Research has suggested that implementation of PBIS increased teacher's efficacy beliefs (Bellezza, 2015; Medina, 2017). The current study seeks to expand upon the existing literature by focusing on schools within Pennsylvania's PBIS network, have been implementing for a minimum of three years, and have measured fidelity according to network guidelines. Quantitative methodologies will be employed to determine if teacher perception of self-efficacy differs dependent on the level of PBIS implementation fidelity, in addition to analyzing the relationship between classroom-level variables, teacher level variables and ratings of self-efficacy.

CHAPTER 3: Methodology

The purpose of this quantitative research study was to investigate the possible relationship between TSE and PBIS implementation in elementary schools in Pennsylvania. Additional information on classroom- and teacher-level variables supplied demographic data and information about practices related to PBIS implementation.

Research has suggested that implementation of the PBIS framework can increase teacher's efficacy beliefs (Bellezza, 2015; Medina, 2017). The current study sought to expand upon existing literature by measuring TSE in elementary schools within Pennsylvania's PBIS network, which had been implementing the framework for a minimum of three years and had measured fidelity according to PAPBS network guidelines. This study sought to answer two research questions:

1. Is there a significant difference between elementary teacher's perceptions of self-efficacy in schools implementing PBIS with fidelity and matched comparison schools?
2. What, if any, relationship exists between classroom-level and teacher level variables and elementary teachers' perception of self-efficacy in schools implementing PBIS?

The following sections of this chapter discusses the statement of the problem, research setting and context, sampling methods, selection of participants, instrumentation, data collection and data analysis procedures. The chapter also discusses ethical considerations such as researcher bias and consent.

Research Setting and Context

This research study sampled teachers from identified elementary schools within Pennsylvania. There is a 20-year history of PBIS implementation within the state with

over 670 elementary schools participating in the PAPBS Network (Runge et al. 2018). This study focused on the feelings of elementary teachers, as opposed to middle and high teachers, due to the high percentage of implementing schools at the elementary level.

Elementary schools that have been implementing PBIS at Tier One for a minimum of three years and have completed the PAPBS Network process for fidelity measurement in the last academic year met the criteria for sampling sites. Full implementation of an innovation leads to the realization of the expected benefits of the evidence-based practice (Fixsen et al., 2005). The process of full implementation of an innovation requires between 2 to 4 years. Setting the inclusion criteria for schools that have been implementing for a minimum of three years provided the opportunity for full implementation of PBIS and time for the benefits of its implementation to influence teachers' classroom practices.

Measures of Implementation Fidelity

The PAPBS Network (2021) developed eligibility requirements for statewide recognition of PBIS implementation fidelity. Criteria for Tier 1 implementation fidelity includes: a) 70% or higher measured by the Benchmarks of Quality (BoQ) or Tiered Fidelity Inventory (TFI) (Tier 1 section) and a minimum of 80% participation rate of certified staff on the Self-Assessment Survey. Both the BoQ and TFI are widely considered valid measures of Tier 1 implementation fidelity (Childs et al. 2011; Kincaid & George, 2010; McIntosh et al., 2017). Table 3 gives a comparison of the two tools. Schools that join the PaPBS network sign a commitment letter that communicates the expectation that teams engage in a yearly assessment of implementation fidelity each Spring (PaPBS, 2015).

Table 3*A Comparison of Measures of PBIS Fidelity*

Measure	Tiers assessed	Type	Purposes	Completers	Subscales (items)
<i>Benchmarks of Quality (BoQ)</i>	Tier 1	External or self-assessment	Assess fidelity at Tier I Guide full implementation	External coach and PBIS team	<ul style="list-style-type: none"> • PBIS Team • Faculty Commitment • Effective Procedures for Dealing with Discipline • Data Entry and Analysis Plan Established • Expectations and Rules Developed • Reward/Recognition Program Established • Lesson Plans for Teaching Expectations/Rules • Implementation Plan • Classroom Systems • Evaluation
<i>Tiered Fidelity Inventory (TFI)</i>	Tiers 1-3	External or self-assessment	Assess fidelity at all three tiers Guide systems implementation Progress monitoring	External coach and PBIS teams	<ul style="list-style-type: none"> • Tier I Team Implementation • Evaluation • Tier II Teams Interventions Evaluation • Tier III Teams • Resources • Support Plans • Evaluation

The BoQ was developed in 2005 as a tool to efficiently measure initial and sustained implementation of school wide PBIS (Childs et al. 2011; Kincaid & George, 2010). PBIS teams, with the support of an external facilitator, complete the BoQ each Spring for the dual purposes of measuring fidelity of implementation and identification of

needs for action planning (Kincaid & George, 2010). The BoQ consists of 53 items which fall into 10 subscales: 1) PBIS team, 2) faculty commitment, 3) effective discipline procedures, 4) data entry, 5) expectations and rules, 6) reward system, 7) lesson plans for teaching behavioral expectations, 8) implementation plan, 9) classroom systems, and 10) evaluation. A total score of 70% or higher indicates implementation fidelity (Vincent & Tobin, 2012). The BoQ assesses implementation at Tier 1 only, whereas the TFI measures implementation at all three tiers.

The TFI was developed based on features and items of existing PBIS fidelity measures to create one instrument that could be used to efficiently, validly, and reliably to measure PBIS implementation fidelity at all three tiers (Algozzine et al., 2019; McIntosh et al., 2017). PBIS teams, with support from an external PBIS facilitator, use a likert scale and detailed rubric to score items on the TFI as *not implemented*, *partially implemented*, or *fully implemented*. The Tier 1 subscale assesses fifteen critical features of school-wide supports. Tier 1 implementation scores are divided into three subscales focused on *Teams*, *Implementation*, and *Evaluation*. Similar to the BoQ, a subscale or total score of 70% or higher is indicative of implementation fidelity (PaPBS Network, 2021).

The level of implementation at Tier 1 served as the indicator for fidelity for this study. Fidelity of Tier 1 implementation was chosen as the indicator because of the universal nature of the tier with all teachers contributing to implementation at Tier 1.

Sampling

A combination of purposive and snowball sampling was used to recruit participants. Purposive sampling is a nonrandom sampling procedure used in

quantitative studies to ensure that participants have specific characteristics germane to the research study (McMillan, 2016). Researchers use this sampling method when there is a specific population of interest. Snowball sampling was also employed to increase the number of potential participants. In snowball sampling, initial participants recommend or identify additional individuals who have the profile, attributes, or desired characteristics (McMillan, 2016). Potential participants were initially identified from an existing database and received an email that included a description of the study, consent, a link to the survey and the request to forward the email to additional teachers within their building.

The researcher referred to an existing database, PBIS Evaluation, containing information of all network member schools within Pennsylvania, including their yearly fidelity data, to identify potential participant schools. Criteria for inclusion in the study is PBIS implementation for a minimum of three years and engagement in the PAPBS Network's process for monitoring implementation fidelity. The researcher reviewed a report of elementary PBIS implementers and their fidelity scores for the 2018-2019 and 2020-2021 academic years to generate a list of schools that met the criteria.

The researcher then placed the identified schools in either a low or high-fidelity group. Performance on the Benchmarks of Quality (BOQ) or Tiered Fidelity Inventory (TFI) was used to determine level of fidelity. An overall score of 70% or higher is indicative of high fidelity and 69% or lower is indicative of low fidelity (PAPBS, 2021b). Teachers from identified schools received an email containing a link to an online survey and an informed consent letter. Survey responses were collected electronically and downloaded into an Excel spreadsheet to prepare for analysis.

Research Instrument

The Teachers' Sense of Efficacy Scale (TSES) measures TSE (Tschannen-Moran & Hoy, 2001). The researcher used the long version of the TSES into a Google form, see Appendix A. Teachers rated 24 statements using a likert scale ranging from 1 (none at all) to 9 (a great deal). Studies of factor analysis of the instrument found that three moderately correlated factors made up the subscales of the instrument: *efficacy in student engagement, efficacy in instructional practices, and efficacy in classroom management* (Fives & Buehl, 2010; Tschannen-Moran & Hoy, 2001). Credibility of research partially depends on high quality measurement that is both valid and reliable (McMillan, 2016). Tschannen-Moran and Hoy (2001) conducted several studies during the construction of the TSES with pre- and in-service teachers to examine factor structure, reliability, and validity.

Factor Analysis

Tschannen-Moran & Hoy (2001) used principal-axis factoring with varimax rotation to examine the existing factors that encompass the 24 TSES items. The analysis yielded three factors with loadings ranging from 0.50 to 0.78. The researchers named the three factors *efficacy for instructional strategies, efficacy for classroom management, and efficacy for student engagement*. Reliability for each subscale were 0.91 for *instruction*, 0.90 for *classroom management*, and 0.87 for *engagement*. Intercorrelations between the subscales were 0.60, 0.70, and 0.58 respectively ($p < 0.001$). Additional analysis of the three subscales revealed one strong factor accounting for 75% of the variance. All items loaded on the single factor with loadings ranging from 0.49 to 0.76. These factor

analyses support the use of both the subscale scores and total score to assess teacher efficacy.

Validity and Reliability

Validity is a judgement of the appropriateness of a measure for the specific inferences, interpretations, and conclusions that result from the scores generated by the measure (McMillan, 2016, pg. 155). Content validity ensures that the content of the measure is representative of an appropriate definition or construct. Tschannen-Moran and Hoy (2001) established content validity with a panel of subject experts and a review of the existing literature. Construct validity is an indication that a tool is measuring an underlying psychological construct (Salkind, 2017). The authors of the measure (Tschannen-Moran & Hoy, 2001) examined construct validity by correlating the TSES with scores of three existing efficacy measures. The total scale score of the TSES was positively correlated to all three existing efficacy measures (Tschannen-Moran & Hoy; 2001). Internal consistency reliability, the degree to which an individual's answers items measuring the same concept are consistent (McMillan, 2016), was high as indicated by Cronbach Alpha = .90 (Tschannen-Moran & Hoy; 2001).

Additional Questions

The researcher added questions to the survey to gather information about teacher demographics and classroom level PBIS practices. Demographic information included participant gender, ethnic/racial identification, highest degree awarded, grade level taught, years teaching, and years in their current building. A sample of staff interview questions from the Schoolwide Evaluation Tool (SET) was also included with the survey. (Sugai et al., 2005). The SET is a valid and reliable measure used to assess PBIS fidelity

at the Tier 1 level (Horner et al., 2004). The staff interview questions from the SET asked teachers to report how often they engage in classroom practices, name office managed behaviors, and recite their procedure for responding to an intruder with a weapon. The researcher chose to include the three questions that were specific to classroom practices to assist in understanding the teachers' role in supporting PBIS implementation at the classroom level. Participants provided information about the number of tokens/tickets given to students, number of times school-wide rules and expectations were reviewed with their class, and the number of office discipline referrals completed for students over the last month. Participants recorded their answers electronically on a Google form.

Data Collection

The researcher requested permission from the Director of the Pennsylvania Training and Technical Assistance (PaTTAN) for the use of their statewide database to review existing data for the purpose of finding potential schools for the study, see Appendix B. Access to PaTTAN's PBIS Evaluation database allowed the researcher to disaggregate data to identify elementary schools that have been collecting fidelity data for the last three academic years. Identified schools were placed into either a *high fidelity* or *low fidelity* group based on their fidelity assessment from the 2020-2021 academic year. The researcher next requested permission from PaTTAN's Director to use PaTTAN's WisdomWhere system, see Appendix C, to send the online survey directly to teachers. The email system found participants who attended behavior sessions at PaTTAN as recipients of the email request.

After receipt of approval from the Millersville University Institutional Review Board (IRB), emails were sent to the identified group using PaTTAN's WisdomWhere

system. The email included a brief description of the study's purpose, a link to the survey, and information about consent, see Appendix D. Teachers who agreed to take part acknowledged informed consent by clicking a link within the email to access the survey. Additionally, the directions included in the email invited participants to forward the email to other teachers within their organization to increase the number of potential respondents. The researcher also gained permission and used PaTTAN's pTrack database to contact current PBIS facilitators. Facilitators received the consent email and survey link with the request to forward the email to their elementary schools currently implementing the PBIS framework. Due to a low response rate, the researcher used school websites and the pTrack database to directly email teachers the consent email and survey link. These emails were followed up with two reminders to complete the survey. Participants did not receive compensation for participation in the survey.

Data Analysis

Participants had six weeks to complete the online survey. Data were automatically populated into a Google sheet. The researcher added codes to differentiate responses from participants in the low and high-fidelity groups before data were combined and uploaded into the SPSS platform for data analysis. Processes used to analyze the data included use of descriptive statistics, a *t*-test for independent samples, and multiple regression.

Descriptive Statistics

Descriptive statistics organize and describe the characteristics of data (McMillan, 2016). They are essential to understanding quantitative studies due to their ability to

provide simple summaries about the sample and measures (Trochim, 2021). The N for each group reflects the number of valid survey responses. The mean or average describes the central tendency of the efficacy ratings for each group. Standard deviation shows the relation or dispersion of each set of scores to the mean of the group. Descriptive statistics summarized the study's sample.

T-Test for Independent Samples

Data were next analyzed using a *t*-test for independent samples. A *t*-test for independent samples examines statistical differences between the means of two groups on one or more variables (Salkind, 2017). The dependent variable in the current study was overall teachers' perception of efficacy calculated using the total scale score from the TSES. The independent variable was level of PBIS implementation fidelity. Two groups, high fidelity implementers and low fidelity implementers were compared. The groups met the requirement that there is no relationship between the subjects in each sample (Kent State, 2021). The participants were only members of one group; participants in the one group were not able to influence participants in the other group; and no group could influence the other group.

Analysis of the data considered the normal distribution of the dependent variable for each group as well as the homogeneity of variance. A distribution that is heavily skewed may reduce the power of the test, especially in the case of small samples (Kent State, 2021). Overall, this method of analysis reflected the design of the study and effectively helped answer the first research question about the possibility of a difference between elementary teachers' perceptions of self-efficacy based on the degree of PBIS implementation.

Multiple Regression

Multiple regression is a method of analysis used to model a quantitative outcome variable from regressor variables. TSE was the outcome variable and teacher demographics, and classroom-level practices were the regressor variables in the present study. The multiple regression equation used both outcome and regressor variable scores to predict values of the outcome variable, self-efficacy (McMillan, 2016). The equation attempted to model variation in the outcome variable by quantifying the contribution of each regressor variable to the outcome variable (Kelly & Bolin, 2016). Multiple regression has three primary purposes: (a) description, (b) prediction, or (b) explanation. This study used multiple regression to describe the relationship among variables. The regression separated the variance in the outcome variable, TSE, into the amount of variance attributed by each regressor and the amount which remained unexplained by the variables present in the study. Utilizing this method of data analysis to understand the relationship between classroom- and teacher level variables and teacher perception of self-efficacy answers the second research question.

Ethical Considerations

A review of ethical practices guided the research design including ensuring that the researcher protects participants from harm and that the benefits derived from the study outweigh any potential risks associated with participation (McMillan, 2016). All participants were supplied informed consent. The consent email included a statement that the study involved research, a description of the study's purpose, the expected duration of participation, a description of the procedures, a description of any risks or discomforts, a description of any benefits to participants, a description of the

confidentiality of data and protection of identifying information, a statement that participation was voluntary, and the researcher's contact information. Informed consent represents the principle of *respect for persons*, the idea that individuals are autonomous and have the right to make their own independent decisions about their actions.

Educational research has minimal risk to participants (McMillan, 2016). Teachers who chose to participate did not put themselves in any greater risk than they would typically experience during a normal workday. The process of data gathering was not time intensive, anonymous, and non-intrusive. A summary of results of the study maintained confidentiality of individual participants.

The researcher is currently employed by PaTTAN as the co-statewide lead of their behavior initiative, an executive member of the COP on SBBH, a member of the statewide coordination team tasked with overseeing the scale-up of PBIS implementation, and is an independent PBIS facilitator who has provided training and technical assistance for PBIS implementation to schools across the state. Transparency was of upmost importance due to the researcher's current position and history working in schools. The study design addressed concerns about researcher influence and conflict of interest. Permissions were sought and documented to ensure that data regarding PBIS implementation fidelity, school information, and PBIS facilitator addresses were accessed with PaTTAN's knowledge. The researcher also disclosed their role at PaTTAN and provided written assurance to potential participants that the study was not sponsored by or connected to PaTTAN, the Pennsylvania Department of Education, or Bureau of Special Education. Emails sent to PBIS requesting their assistance included a statement that forwarding the email was not at the request of PaTTAN or the PAPBS Network. The

sampling methods also helped reduce researcher influence through the use PaTTAN databases and facilitators to initially contact potential participants the researcher could not select participants based on past relationships. Researcher bias was partially addressed through the development of the criteria for inclusion in the study. This created a database of potential sites rather than relying on the researcher's connections to former schools. Additionally, school names, used to place participant responses into the appropriate fidelity group, were removed to both maintain participant anonymity and prevent the researcher from possibly inferring additional information regarding participant responses due to a possible connection to the school. The use of these procedures helped to control for researcher influence and bias.

Summary

This quantitative study investigated the relationship between TSE and fidelity of PBIS implementation in elementary schools in the Commonwealth of Pennsylvania. The researcher examined survey data gathered using the Teachers' Sense of Efficacy tool to determine if a statistical difference existed between the two groups' measures of TSE. Multiple regression analysis helped to decide if teacher-level and/or classroom-level practices were possible contributors of TSE. This methodology allowed the researcher to quantify results of the survey and answer the study's two research questions through data analysis.

Chapter 4: Results

Introduction

This study sought to investigate the possible relationship between TSE and PBIS implementation fidelity in elementary schools in Pennsylvania. The TSES measured TSE in the areas of *Student Engagement*, *Instructional Practices*, and *Classroom Management*. Additional questions gathered demographic information and information regarding classroom practices associated with PBIS implementation. This study sought to answer two research questions:

1. Is there a significant difference between elementary teachers' perceptions of self-efficacy in schools implementing PBIS with fidelity and matched comparison schools?
2. What, if any, relationship exists between classroom-level and teacher-level variables and elementary teachers' perception of self-efficacy in schools implementing PBIS?

This chapter presents the findings of the study, first with the presentation of the results, followed by a discussion. Results and a discussion of the descriptive statistics, independent samples *t*-test, and multiple regression analyses are provided.

Data Collection

The study used a combination of purposive and snowball sampling to recruit participants. The researcher used several databases to find possible participants. PaTTAN's WisdomWhere, pTrack, and PBIS Evaluation databases provided access to potential participants.

First, the WisdomWhere database identified possible participants by filtering users who had registered to attend professional learning sessions focused on behavior topics. The system queued up 28,677 past registrants (personal communication, Jen Miller, December 6, 2021) who received an email that included a description of the study, consent decree, and a link to the survey instrument.

The pTrack system is a data repository for PAPBS network schools. The system includes the ability to email individuals who are PBIS network facilitators. Approximately 156 facilitators received an email from the researcher with a description of the study, consent decree, and a link to the survey instrument to forward to their respective elementary PBIS sites. Several facilitators responded to the researcher to communicate their agreement to forward the information, but it is unclear how many schools or individuals received the email using this method.

PBIS Evaluation is an online tool used to monitor implementation fidelity across Pennsylvania. PaTTAN granted permission and gave the researcher login information to use the database for the identification of elementary schools who met study criteria: a) PBIS implementation for a minimum of three academic years and b) completed fidelity assessments in accordance with PAPBS guidelines. Two hundred and sixty-five schools met the criteria. Forty-six schools were placed in the low fidelity group and 219 schools were placed in the high fidelity group based on their fidelity ratings from the 2020-2021 academic year. The researcher used information from school websites to identify classroom teachers and sent direct emails to approximately 1100 classroom teachers in both low and high fidelity schools in an effort to increase the number of survey responses.

Response Rate and Attrition

Data collection took place from December 6, 2021 to February 1, 2022. During that time 206 participants accessed the survey. The first five questions on the survey acted as filters to remove individuals who did not meet the study criteria. Screening questions included:

1. *My current school is implementing Positive Behavior Interventions and Supports.*
2. *I currently teach in an elementary school.*
3. *Building name.*
4. *What is your current role?*
5. *How many years have you worked, in any position, in this school?*

The questions screened out participants not currently working in an implementing school, non-classroom staff, and teachers employed less than one academic year in an elementary school that implemented PBIS.

Forty subjects completed the survey after application of the screening questions. Each subject named their current school. This information determined the school's PBIS affiliation and level of implementation fidelity. The researcher excluded 9 surveys because the subjects did not work in elementary schools that collected PBIS fidelity data in the 2020-2021 academic year, leaving 31 subjects. The remaining subjects populated *high* or *low* fidelity groups based on their school's PBIS fidelity score in the 2020-2021 academic year. Twenty subjects were placed in the high fidelity group and eleven in the low fidelity group.

Data Preparation

Survey responses were downloaded from Google into an excel spreadsheet to prepare for analysis. The data ($n=31$) contained no missing responses. The researcher added columns to calculate composite and subscale scores from the TSES questions included in the survey. Finally, coding of data occurred in preparation of upload into SPSS, a statistical software, for data analysis.

Population

The population for this research study consisted of classroom teachers in elementary schools that had implemented the PBIS framework for a minimum of 3 academic years and completed PAPBS Network fidelity measures in the commonwealth of Pennsylvania.

Sample

Purposive and snowball sampling methods identified classroom teachers in elementary schools that met the study criteria. Thirty-one teachers from a total of 27 elementary schools across the Commonwealth participated in the study. Table 4 displays the demographic characteristics of the final sample. The majority of participants were white (90%), female (84%) teachers. Teacher gender and racial demographics in Pennsylvania were similar to that of study participants. Statewide data of all certified staff showed that 94% of classroom teachers are white and 74% of teachers identify as female (Fontana & Lapp, 2018; PDE, 2022).

Participants shared their highest degree earned, number of years as an educator, and the grade level taught at the time of the study. Of the 31 participants, 16% had only a

bachelor's degree ($n = 5$) and 84% ($n = 26$) had a master's degree. The average education level of classroom teachers in the state is a bachelor's degree (PDE, 2022). Three percent of participants ($n = 1$) had been teaching 3-5 years, 16% ($n = 5$) had been teaching 6-10 years, 19% ($n = 6$) had been teaching 11-15 years, and 61% ($n = 19$) had more than 15 years of teaching experience. No participants had been teaching for fewer than two years. Typically, teachers in Pennsylvania have an average of 15 years of service as a professional educator (PDE, 2022). The sample group represented all elementary grades with the lowest percentage at 4th and the highest at 1st grade. Thirteen percent ($n = 4$) taught kindergarten, 22% ($n = 7$) taught first grade, 16% ($n = 5$) taught second grade, 13% ($n = 4$) taught third grade, 6% ($n = 2$) taught fourth grade, 16% ($n = 5$) taught fifth grade, and 13% ($n = 4$) taught sixth grade.

Analysis of Research Questions

This research study focused on understanding the possible influence of PBIS implementation on elementary TSE. The researcher was able to obtain quantitative data using an online survey to answer the study's two research questions. Findings are reported using tables and descriptive analysis.

Table 4

Demographic Information for Participants: Gender, Race, Experience, Education Level, and Grade Level Taught

Demographics	Frequency of Response	%
Gender		
Female	26	84
Male	3	9
Non-binary	--	--
Prefer not to say	2	6
Race/Ethnicity*		
Black	1	3
White	28	90
Prefer not to answer	2	6
Number of years in Education		
<2	--	--
3-5	1	3
6-10	5	16
11-15	6	19
>15	19	61
Highest degree awarded		
Bachelor's	5	16
Master's	26	84
Doctorate	--	--

Current grade level taught

Kindergarten	4	13
1st	7	22
2nd	5	16
3rd	4	13
4th	2	6
5th	5	16
6 th	4	13

Note. $n=31$. *No responses were recorded in other racial/ethnic groups.

Research Question 1

The first research question was, “Is there a significant difference between elementary teachers’ perceptions of self-efficacy in schools implementing PBIS with fidelity and matched comparison schools?” The TSES measured TSE in three domains: student engagement, instructional engagement, and classroom management. Each domain produced a subscale score and combined to produce a total efficacy score. Participants used a likert scale to rate the extent to which teachers could influence their feelings of efficacy. A rating of 1 indicated *not at all*, 3 indicated *very little*, 5 indicated *some degree*, 7 indicated *quite a bit*, and 9 indicated *a great deal* of influence over the particular facet of teaching. This allowed the researcher to analyze both the means and standard deviations for the high and low fidelity group and compare the means between both groups to determine if there was a significant difference between elementary teachers’ perception of self-efficacy dependent on their school’s level of implementation

fidelity of the PBIS framework. Table 5 shows the mean, standard deviation, and *t*-test results for all three domains and total efficacy score.

Table 5

Independent Samples t-Tests

DV	Low Fidelity			High Fidelity			Group Comparison		
	Mean	SD	N	Mean	SD	N	<i>t</i>	<i>df</i>	<i>p</i>
ETS	7.03	.704	11	7.37	.821	20	-1.158	29	.256
SE	6.81	1.143	11	7.01	.964	20	-.528	29	.602
IE	7.23	.906	11	7.59	.835	20	-1.115	29	.274
CM	7.27	.593	11	7.50	.758	20	-.852	29	.401

Note. DV=Dependent Variables, ETS=Efficacy Total Score, SE=Student Engagement, IE= Instructional Engagement, CM=Classroom Management. Likert scale: 1 *not at all*, 3 *very little*, 5 *some degree*, 7 *quite a bit*, and 9 *a great deal*.

The independent samples *t*-test revealed there was not a significant difference in teachers' overall feelings of efficacy between teachers in low fidelity ($M = 7.03$, $SD = .704$) compared to teachers in high fidelity ($M = 7.37$, $SD = .821$) schools; $t(29) = -1.158$, $p = .256$. Teachers in both groups acknowledge students for positive classroom behaviors at a similar rate.

The independent samples *t*-test revealed there was not a significant difference in teachers' feelings of efficacy regarding student engagement between teachers in low fidelity ($M = 6.81$, $SD = 1.143$) compared to teachers in high fidelity ($M = 7.01$, $SD =$

.964) schools; $t(29) = -.528, p = .602$. The average ratings of teachers in both groups were relatively high and indicated that teachers felt confidence that they were capable of influencing student engagement in the classroom.

The independent samples t -test revealed there was not a significant difference in teachers' feelings of efficacy regarding instructional engagement between teachers in low fidelity ($M = 7.23, SD = .906$) compared to teachers in high fidelity ($M = 7.59, SD = .835$) schools; $t(29) = -1.115, p = .274$. The average rating for teachers in both groups were higher than 7, which indicated they felt confidence that they were capable of influencing instructional engagement in the classroom.

The independent samples t -test revealed there was not a significant difference in teachers' feelings of efficacy regarding classroom management between teachers in low fidelity ($M = 7.27, SD = .593$) compared to teachers in high fidelity ($M = 7.50, SD = .758$) schools; $t(29) = -.852, p = .401$. Teachers in both groups indicated confidence influencing student behavior in the classroom.

Although there was not a significant difference between the two groups, the means of the three subscales and composite scores were higher for participants in the high fidelity group. The means of both groups were relatively strong on all three subscales and overall measure of self-efficacy.

Research Question 2

The second research question was, "What, if any, relationship exists between classroom-level and teacher-level variables and elementary teachers' perception of self-efficacy in schools implementing PBIS?" Three questions from the survey measured

classroom level variables. Teachers rated themselves on PBIS practices, use of their classroom acknowledgement system, teaching/reteaching behavioral expectations, and use of office discipline referrals over the last month. Teacher-level variables were the number of years the teacher had taught in their current building and their number of years as an educator. The researcher used multiple regression analysis to explain the relationship among the independent variables of the three classroom level practices and two teacher demographics, and the dependent variable of TSE measured as the total efficacy score on the TSES.

Results showed that the five variables accounted for 5.2% of the variance in TSE, collectively, $F(5,25) = 1.332, p = .283$. The unique, individual contributions of the variables showed that the number of years working in their current building ($\beta=.121, t=.493, p=.626$), years of educational experience ($\beta=.275, t=1.200, p=.241$), use of a class wide acknowledgement system ($\beta=-.166, t=-.623, p=.539$), teaching/reteaching behavioral expectations ($\beta=-.380, t=-1.973, p=.06$), and use of office discipline referrals ($\beta=.023, t=.119, p=.901$) did not significantly contribute to TSE. Table 6 provides a summary of regression coefficients for each independent variable.

Table 6.*Regressions Explaining Teacher Self-Efficacy*

Independent Variable	β	t	p
Years in current school	.121	.493	.626
Years in education	.275	1.200	.241
Classroom Acknowledgement System	-.166	-.623	.539
Taught or retaught rules/expectations	-.380	-1.973	.060
Number of office discipline referrals	.023	.119	.901

Summary

This study sought to answer two research questions designed to understand the effect of PBIS implementation fidelity on TSE. Thirty-one teachers from 27 elementary schools across Pennsylvania completed an online survey to gather information regarding teacher demographics, PBIS implementation practices, and TSE. Data analysis used descriptive statistics, t -test of independent samples, and multiple regression to answer the study's research questions.

Results did not show a significant difference between elementary teachers' perceptions of self-efficacy in schools implementing PBIS with a high level of fidelity compared to teachers in schools implementing PBIS with a low level of fidelity in answer

to the study's first research question. The answer to the second research question indicated that a significant relationship did not exist between classroom-level and teacher-level variables and elementary teachers' perception of self-efficacy in schools implementing PBIS.

Chapter 5 will present the final summary of the study. Topics discussed comprise major findings, limitations, and recommendations for future research. Finally, the researcher will share concluding remarks and reflections.

Chapter 5: Discussion

Introduction

Teacher shortages have risen nationally and across the commonwealth of Pennsylvania for several years (Cross, 2017; PaTTAN, 2022). The current Secretary of Education has described teacher shortages in Pennsylvania as ‘critical’ and as having reached ‘dire proportions’ (PDE, 2022). Enrollment in teacher preparation programs has declined by 65% since 2009 (Saunders et al., 2018) and teacher attrition rates that have shown 50% leave their schools within 4.8 years of hire (Platt et al., 2019) both factors that contribute to teacher shortages in Pennsylvania. The COVID-19 pandemic was an additional factor that has exacerbated critical staffing shortages across the Commonwealth with increased absences attributed to burnout, the need to quarantine due to covid exposures and positive tests, and the decision to leave the field (Jotkoff, 2022).

Sutcher et al. (2016) recommended focusing on keeping current teachers in the classroom to reduce teacher attrition in half and eliminate teacher shortages. The current literature has connected teacher attrition to burnout (Maslach et al., 2001). A meta-analysis of 11 studies found that a negative relationship existed between TSE and teacher burnout (Brown, 2012). This suggests that improving TSE could be a way to decrease burnout and attrition, ultimately improving teacher shortages. One strategy that has the potential to positively affect TSE is implementation of PBIS.

One way to improve teacher retention is through the creation of productive school environments that include supportive working conditions, administrative support, and opportunities for collaborative planning and professional development (Sutcher et al.,

2016). Implementation of the PBIS framework focuses on prevention and reduction of teacher demands to reduce stress and create a more pleasant work environment (McCarthy, 2019). The current literature provided several examples supporting a possible connection between the implementation of the PBIS framework and improvement in TSE (Herman et al., 2018; McCarthy, 2019). The current study sought to expand upon the current literature by investigating the possible relationship between TSE and PBIS implementation fidelity in elementary schools in Pennsylvania by answering the two research questions:

1. Is there a significant difference between elementary teachers' perceptions of self-efficacy in schools implementing PBIS with fidelity and matched comparison schools?
2. What, if any, relationship exists between classroom-level and teacher-level variables and elementary teachers' perception of self-efficacy in schools implementing PBIS?

This chapter includes the research summary, findings, limitations, implications for practice, and recommendations.

Interpretation of Findings

The purpose of this quantitative study was to understand elementary teachers' perception of efficacy as related to the level of implementation fidelity of PBIS. The identified population for the study consisted of elementary classroom teachers working in schools that implemented the PBIS framework for a minimum of 3 academic years and completed PAPBS Network fidelity measures. Thirty-one teachers from a total of 27

elementary schools across Pennsylvania completed an online survey that included 24 items designed to measure TSE and additional questions regarding teacher demographics and classroom level PBIS practices. Data from the survey were used to place participants in either low or high-fidelity groups in preparation for data analysis. A combination of descriptive statistics, a *t*-test for independent samples and multiple regression were employed to answer the study's two research questions.

Research Question 1

Is there a significant difference between elementary teachers' perceptions of self-efficacy in schools implementing PBIS with fidelity and matched comparison schools?

Participants completed 24 items on the online survey from the Teacher Sense of Efficacy Scale (TSES). The TSES measured TSE in three domains student engagement, instructional engagement, and classroom management resulting in scores in each domain along with a total efficacy score. An independent samples *t*-test compared the means of the low and high-fidelity groups for the three subscale domains and total scale score.

Participants in the low and high-fidelity groups rated themselves similarly on all scales measured. The *t*-test revealed no significance difference in the teacher's ratings between the two groups. While there was not a significant difference in the means for the two groups, teachers in the high-fidelity group rated themselves slightly higher than their peers in the low fidelity group, which could indicate an area for future research centered on understanding the feelings and experiences of teachers employed in high implementing schools.

Research Question 2

What, if any, relationship exists between classroom-level and teacher-level variables and elementary teachers' perception of self-efficacy in schools implementing PBIS?

Participants answered three questions on the survey to collect data on classroom level PBIS practices. These data along with demographic data about years of experience and the number of years in their current school served as independent variables to determine what if any relationship existed among the identified variables and TSE. The unique, individual contributions of the variables did not significantly contribute to TSE.

Conclusions

The means for both groups, on all measures of TSE, were relatively high. This was an unexpected finding from the study. Teachers in schools implementing PBIS with both a high and low level of fidelity indicated that they were able to positively influence student engagement, instructional engagement, and student behavior in their classrooms. Group demographics indicated that most participants were more experienced teachers with over 11 years of teaching experience (11-15 years, 19% and >16, 61%).

Previous research made the connection between classroom experiences, centered on classroom management strategies and PBIS implementation. These studies found that positive classroom experiences lead to increased teacher efficacy beliefs (Bellezza, 2015; Medina, 2017). A more recent study by Meyers (2021) evaluated the influence of PBIS implementation on job satisfaction and TSE. A moderate, positive relationship was found between teachers' perception of PBIS implementation and TSE, but this

relationship did not reach a level of significance ($p = .056$). Unlike the present study, participants were primarily less experienced teachers with 0-5 (64%) years of teaching experience. Both this and the current study found that teachers working in schools had a strong TSE feelings. These feelings may be attributed to PBIS implementation rather than level of teaching experience since similar results were found in two separate studies that skewed toward novice and experienced teachers, respectively.

The current study did not find that the teacher or classroom level variables measured contributed significantly to TSE. Studies of teacher and school practices related to PBIS have previously shown that, taken together, school- and teacher-variables positively affected TSE (Ross et al., 2012; Ross & Horner, 2007). The current study focused on classroom-level variables related to PBIS implementation while the earlier study focused on school-level variables that included improved teaming structures, opportunities for collaboration, and positive interactions between adults and children. The narrower focus of the current study on classroom variables may have contributed to the differences in the findings of this study.

Results of the study did not find a significant difference in TSE between the two fidelity groups. However, an earlier study by Ross and Horner (2007) showed that the level of PBIS implementation fidelity did affect TSE with teachers implementing in middle schools (Ross & Horner, 2007). Teachers in their study, working in high implementing schools rated themselves as having less stress and significantly higher ratings of TSE. The current study had several limitations that may have played a part in results that were different than outcomes of previous research.

Limitations

There are several limitations of this study to consider before assessing its contributions to the literature. Limitations to the study include the possibility of participant bias and sample size.

Bias occurs when participants systematically respond to a survey differently from the target population (Fowler, 2014). Errors associated with bias can occur due to the process used to select participants and failure to collect answers for those selected to be in the sample. Use of purposive and snowball sampling instead of random sampling may have resulted in those who selected to take part in the study having a different experience than those who did not participate. For example, the teachers who chose to participate may have done so because they have more positive feelings towards their jobs and stronger efficacy feelings in general. Those who received the survey but were unwilling to take part may have been different from the rest of the population in ways that would have affected the survey answers. It is also possible that teachers assigned to the low fidelity group had a history of teaching in high fidelity PBIS schools in the past which could provide them with a higher level of TSE regardless of the school-wide practices within their current school.

The smallness of sample size and sampling restrictions affected the ability to generalize the results of this study to a larger population. The small number of overall participants and inequality of participants in the high and low fidelity groups both limit generalizability. Multiple factors could have attributed to the low response rate of the survey, such as the following: teacher burnout due to the Covid-19 pandemic challenges and exacerbation of teacher absences, reluctance to click on a link in an email from an

unknown sender, schools' email systems automatically blocking emails as spam from unknown senders, confidentiality concerns, and general inability to reach classroom teachers who met the study's criteria. The limitations discussed are important considerations in future research.

Implications for Practice

Improving TSE has the potential to positively affect student and teacher outcomes. Teachers with strong efficacy feelings, especially those related to classroom management, are less susceptible to exhaustion, depersonalization, and lower levels of personal accomplishment (Aloe et al., 2014). Classroom management is one of the most challenging aspects of teaching and can influence teachers' overall job satisfaction (Lee & Davis, 2014). Challenges in this area have resulted in both lowered efficacy feelings and increases in the likelihood of teachers leaving the profession (Cooper, 2019; Lee & Davis, 2014). The need to attract, prepare, and retain teachers is dire. Pennsylvania has seen a drastic reduction in enrollment in teacher preparation programs and the issuance of teacher certifications (Pennsylvania General Assembly, 2022). Implementation of the PBIS framework is one way to improve TSE by focusing on prevention of behavior problems and improving student-teacher relationships (McCarthy, 2019; Taxer et al., 2019).

Participants in the current study teach at elementary schools implementing the PBIS framework for a minimum of three academic years at various levels of fidelity. Overall, participants positively rated their efficacy feelings in the areas of student engagement, instructional engagement and classroom management. Specifically, classroom management was the highest rated subscale for the low fidelity group (mean =

7.27, $SD = .593$) and second highest for the high-fidelity group (mean = 7.50, $SD = .758$). This suggests that implementation of the PBIS, at any level of fidelity, could positively influence teachers' efficacy feelings for classroom management. Teachers consistently cite difficulty responding to student behavior and poor as reasons to leave the field (Sutcher et al., 2016). The results of the current study could provide additional rationale for superintendents and administrators to consider PBIS implementation as a strategy to retain current teachers.

Previous studies have shown that teachers working in schools implementing PBIS and who were also confident in their ability to influence classroom behaviors, also had a higher likelihood of engaging in effective instructional practices, resulting in more positive student outcomes (Herman et al., 2018). The results of the current study do not replicate those of the Herman et al. (2018) study, but they are encouraging and could help make the connection between TSE in classroom management and the possibility of improved academic outcomes. This could supply additional buy-in for districts and administrators who have concerns regarding student behavior, closing achievement gaps, and responding to education loss due to the Covid pandemic. Additionally, these results could provide encouragement for current implementers to continue working towards fidelity and sustainability.

Recommendations for Further Research

Further research should continue to examine the effects of the PBIS framework on TSE. There have been very few studies that have looked at this possible connection, but those that have showed promising results. The current study was unable to support previous research findings with statistical significance but did show that the teachers in

the study had a strong sense of TSE. The potential of the use of the PBIS framework to maintain or improve TSE is important to understand as it could mitigate the effects of teacher burnout and reduce teacher attrition. Recommendations for further research include the following:

1. Sample size limited the current study. There is value in the research questions of this study, and it should be replicated utilizing techniques that could increase the size of the sample. For example, there are many conferences that focus on PBIS implementation. Researchers could use these conferences as opportunities to recruit participants and gather data to more fully answer the questions of this study.
2. Further research could extend beyond elementary teachers and focus on the perceptions of middle and high school teachers in schools implementing the PBIS framework.
3. The use of a mixed-methods, explanatory approach could enhance the ability to understand teachers' efficacy feelings in schools implementing PBIS.
4. The current study focused on individual feelings of TSE. Future research could shift and consider changes in collective self-efficacy in relation to PBIS implementation.
5. This study considered the level of PBIS implementation fidelity as an independent variable. Future research could seek to compare efficacy feelings of teachers in non-implementing compared to those in implementing schools.

Summary

The current literature supports a possible connection between the implementation of the PBIS framework and improvement in TSE (Herman et al., 2018; McCarthy, 2019). The current study sought to expand upon the current literature by investigating a possible relationship between TSE and PBIS implementation fidelity in elementary schools in Pennsylvania. The findings related to the study's two research questions did not show a significant difference between TSE for the two groups studied or a significant relationship between identified variables and TSE. However, finding that both groups had similarly strong efficacy feelings across all areas of TSE was unexpected and a possible indication that employment in schools implementing the PBIS framework to any degree could positively influence TSE. This implication could be useful in future practice to support continued implementation and provide additional buy-in for districts and administrators considering implementation.

Continued study of the effect of PBIS on TSE is a valuable endeavor. There have been few studies to support the connection between PBIS and teacher efficacy (Kelm & McIntosh, 2012; Ross et al. 2012). Recommendations for continued research described ways to expand upon the literature in this area. The framework continues to be relevant and valuable in the field of education.

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Appendix A

Teachers' Sense of Efficacy Long Form

1.	How much can you do to get through to the most difficult students?
2.	How much can you do to help your students think critically?
3.	How much can you do to control disruptive behavior in the classroom?
4.	How much can you do to motivate students who show low interest in school work?
5.	To what extent can you make your expectations clear about student behavior?
6.	How much can you do to get students to believe they can do well in school work?
7.	How well can you respond to difficult questions from your students?
8.	How well can you establish routines to keep activities running smoothly?
9.	How much can you do to help your students value learning?
10.	How much can you gauge student comprehension of what you have taught?
11.	To what extent can you craft good questions for your students?
12.	How much can you do to foster student creativity?
13.	How much can you do to get children to follow classroom rules?
14.	How much can you do to improve the understanding of a student who is failing?
15.	How much can you do to calm a student who is disruptive or noisy?
16.	How well can you establish a classroom management system with each group of students?
17.	How much can you do to adjust your lessons to the proper level for individual students?
18.	How much can you use a variety of assessment strategies?
19.	How well can you keep a few problem students from ruining an entire lesson?
20.	To what extent can you provide an alternative explanation or example when students are confused?
21.	How well can you respond to defiant students?
22.	How much can you assist families in helping their children do well in school?
23.	How well can you implement alternative strategies in your classroom?
24.	How well can you provide appropriate challenges for very capable students?

Appendix B

Permission for use of PBIS Evaluation Database

File Edit Format View Help

From: Angela [REDACTED]
Sent: Sunday, November 22, 2020 12:57 PM
To: Chanda Telleen
Cc: [REDACTED]
Subject: Re: Request

Chanda,
My sincerest apologies for not getting back to you sooner on this.
I think this sounds wonderful, and I'm excited you will be able to use it for your dissertation.
Thank you!!!

[REDACTED]

On Nov 9, 2020, at 3:08 PM, Chanda Telleen [REDACTED]

Hi Angela,

As you know I have started the dissertation process and am currently working my Chapter 2. My topic is focused on the possible effect of implementation of the PBIS framework on teachers' feelings of efficacy. Today I met with Dr. Tim Runge to discuss my study and he spoke with me about my methodology and a possible source of data. He recommended that I have access to PBIS Evaluation to sort data to identify possible schools to include in the study. I am seeking to include elementary schools, who have been implementing PBIS for 3 or more years and have submitted fidelity data in my study.

I am requesting your permission for Dr. Runge to share the access to PBIS Evaluation for this purpose.

Please let me know if you have any questions, comments, or concerns.

Thank you!

Chanda Telleen | Educational Consultant
[REDACTED]

Appendix C

Permission for use of PaTTAN Databases

From: Angela [REDACTED]
To: Chanda Telleen
Cc: [REDACTED]
Subject: Dissertation Research
Date: Wednesday, September 1, 2021 12:26:24 PM
Importance: High

Hi Chanda,

The PaTTAN, Harrisburg office is very excited about your research proposal, and possible implications for providing the Learning Environments and Engagement Initiative (LEEI) with actionable recommendations and data as to the efficacy of our work.

To that end, and in compliance with IRB requirements at Millersville University, PaTTAN, Harrisburg

will provide you access to the following data systems:

- 1) PTrak
- 2) WisdomWhere

Please let me know if there is anything else you may need to accomplish this exciting study.

Good

luck with your research!

Angela

[REDACTED]

Appendix D

Research Subject Information and Consent Form

You are being invited to participate in a study conducted by Chanda Telleen, doctoral student, Millersville/Shippensburg University and educational consultant at Pennsylvania Training and Technical Assistance Network (PaTTAN).

Disclaimer:

This study is not associated with PaTTAN, the Pennsylvania Department of Education, or Bureau of Special Education. Data will not be shared with any of these entities and will be used for dissertation research only.

Please read the following carefully and ask any questions you have before indicating your consent to participate in this study. Clicking the link to access the survey at the bottom of the page indicates that you understand the information provided below and your agreement to participate.

The survey will remain open until January 10, 2022.

Title of the Study:

Capability of Influence: The Impact of PBIS Implementation Fidelity on Elementary School Teachers' Feelings of Self-Efficacy

Purpose and Procedures:

This study seeks to gather data surrounding feelings of efficacy of elementary teachers who teach in schools implementing the Positive Behavior Interventions and Supports (PBIS) framework. PBIS is an implementation framework designed to enhance academic and social-behavioral outcomes for students and when implemented with fidelity, it can reduce behaviors that disrupt the learning process. Research has suggested that implementation of PBIS increased teacher's efficacy beliefs. The current study seeks to expand upon the existing literature by focusing on the efficacy feelings of teachers working in schools within Pennsylvania's PBIS network.

Your participation in this study will include the completion of an online survey. The survey will collect demographic data, ratings on 24 items, and questions related to PBIS implementation. The length of time to complete the survey is approximately **10 minutes**.

Additionally, you may choose to forward this email to teachers within your building so that they may also have access to the survey.

Risks and Benefits:

There are no known risks or benefits to you personally associated with participation in this study. Your responses to the survey questions will not include identifying factors such as your name or school's name. Data will be summarized and will not reflect your individual responses. Results of this study will be published in my dissertation and may

also be utilized in conferences or other presentations or publications. The findings of this study may serve to inform district administrators as they examine their current practices and determine the value of PBIS implementation on teachers' feelings of efficacy.

Compensation, Refusal, and Withdrawal:

Participants will receive no compensation. Your participation is voluntary, and you may withdraw at any time with no negative consequences.

Confidentiality

The confidentiality of the collected data will be maintained throughout the study by the researcher. Your responses will not include identifying information such as your name or school name. Data will be saved on password protected laptops.

Age:

All participants must be over the age of 18.

Contact:

In the future, you may have questions about your participation in this study. Contact the researcher if you have any questions, complaints or concerns about the research at:

Chanda Telleen
Doctoral Candidate
Millersville University
[REDACTED]

Dr. Tiffany Wright is the chair for this dissertation. She can be reached at [REDACTED] or [REDACTED].

This study has been approved by the Millersville University of Pennsylvania Institutional Review Board, Dr. Rene' Munoz, Director of Sponsored Projects and Research Administration, can be contacted with any questions at either [REDACTED] or [REDACTED], or at [REDACTED].

Consent

Consent indicates that you understand this information and agree to participate fully under the conditions stated above. You also acknowledge that you are 18 years of age or older.

Click the link below as an indication of consent and to access the teacher survey.

[I consent to the conditions of the study.](#)

