ASSOCIATIONS BETWEEN STAKEHOLDER PERCEPTIONS OF SCHOOL CLIMATE AND FIDELITY OF IMPLEMENTATION OF KEY FEATURES OF THE POSITIVE BEHAVIORAL INTERVENTIONS AND SUPPORTS FRAMEWORK IN RURAL SCHOOLS

by

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The following individuals read and discussed the dissertation submitted by student Nathan Florin Anderson, and they evaluated the student's presentation and response to questions during the final oral examination. They found that the student passed the final oral examination.

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DEDICATION

I dedicate my efforts to those who sacrificed the most in support of the process. First of all, to my incredible wife, Tausha Dawn Anderson, I missed you every minute. You are my best friend and eternal love. To my wonderful children, Florin, Cosette, Penelope, and Clarence, I will now have time to read more books, go on more adventures, and tickle you to your hearts' content.

I am named for both of my grandfathers, Nathan H. Anderson and Florin H. Hulse, who were both lifelong educators in rural schools. Perhaps it was destiny that I also became an educator, or perhaps the culture and values set by these great men were passed down to me through my amazing parents, Kevin and Patricia Anderson. Either way, this effort in understanding, supporting, and improving the educational process I dedicate to your legacy, one which I proudly carry forward.

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ABSTRACT

School climate can be complex to measure and to change, but it is clear that it is a critical component of an effective school. One practice that has been shown to positively influence school climate is Positive Behavioral Interventions and Supports (PBIS). PBIS is a framework of evidence-based practices and its power for initiating change has been shown to come from fidelity of implementation of its key components. Although there is a lot of research on PBIS implementation, not a lot is known about implementation in rural schools and the unique challenges that setting provides. This study measures baseline levels of PBIS components, assesses the perceptions of school climate, and analyzes how those two domains are associated in rural schools prior to formal PBIS training and implementation.

In this quantitative study, the baseline data for a Randomized Controlled Trial with 40 rural schools across one state is utilized as the sample data. The Schoolwide Evaluation Tool (SET) is used to measure fidelity of PBIS implementation at each school and the Maryland Safe and Supportive Schools (MDS3) Climate Survey provides the perspectives of students, parents, and staff on school climate. Information on the relationship between these variables in the rural setting will contribute important information to researchers and implementers in rural schools.

The analysis found that although there is generally a positive perspective on school climate in these rural schools, a lack of fidelity in PBIS implementation is evident, and is associated with climate perceptions. The only PBIS component implemented to

fidelity across the schools was a strong discipline system, yet was associated with lower order and discipline. These results suggest that the punishment-heavy approaches that schools are utilizing are not producing the desired outcomes without the foundational practices of teaching and acknowledging expected behavior. In fact, clearly teaching expectations was significantly associated with improved climate perspectives of staff and parents, and having a system for acknowledging those expectations was significantly associated with improved climate perspectives of students.

I recommend that future researchers and implementers build on these findings and conclusions to better understand how to implement PBIS in rural schools. Additional research that applies similar methodologies to other demographic groups and more urban settings is needed for further comparison. Additional time points and longitudinal data will also provide more insights to the causes and impacts of PBIS on school climate in small and remote schools.

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LIST OF ABBREVIATIONS

ABA	Applied Behavior Analysis
ANOVA	Analysis of Variance
BIP	Behavior Intervention Plan
EDSCLS	Education Department School Climate Survey
EST	Ecological Systems Theory
FBA	Functional Behavior Analysis
FRPL	Free/Reduced Price Lunch
GPA	Grade Point Average
LEA	Local Education Agency
MDS3	Maryland Safe and Supportive Schools
MOU	Memorandum of Understanding
NCES	National Center for Education Statistics
PBIS	Positive Behavioral Interventions and Supports
PBS	Positive Behavior Supports
RCT	Randomized Controlled Trial
SCS	School Climate Survey
SET	School-wide Evaluation Tool
SW-PBIS	School-wide Positive Behavioral Interventions and Supports
SW-PBS	School-wide Positive Behavior Supports
USDOE	U.S. Department of Education

CHAPTER ONE: INTRODUCTION

Statement of Problem

The climate of a school, defined as the cumulative product of interactions among all stakeholders, helps to determine the outcomes that it produces. The school climate and how that climate is perceived by the staff, students, and their parents can be highly influential to the academic success and the social competence that is achieved by students attending that school (O'Brennan et al., 2014). The challenge for many schools is how to address, influence, and establish the climate of an instructional setting when it is such a complex environment. One evidence-based approach to address this challenge is to implement a framework of Positive Behavioral Interventions and Supports (PBIS). PBIS is intended to help a school take control of their climate through intentionally improving and integrating the systems, practices, and data that support desired student outcomes and support the overall organizational health and climate of a school (Bradshaw et al., 2008b; Bradshaw et al., 2009). The focus of PBIS is to create a supportive environment and prevent disruptive behavior with a multi-tiered approach, with the primary tier supporting all students, the secondary tier for students in need of targeted intervention such as group supports, and the tertiary tier for students who need increasingly intensive and individualized support often in the form of an individual support plan (Simonsen & Myers, 2014).

There are many dynamics to consider when implementing a PBIS framework in a school. For example, schools often have isolated systems and evidence-based practices

that are used around their school to address separate issues, but they do not have one framework in which they can organize and systematize the application of those systems and practices. In order to move beyond this fragmented approach, schools need to go through the process of PBIS implementation in order to address the needs of the population as a whole. To do this, schools take a look at their current climate, take an inventory of the current systems, practices, and data they are using to address their school culture, and begin to make the commitment to establish a positive school-wide framework. At that point a school can begin to account for the actions that are influencing the climate of their school (Center on Positive Behavioral Interventions and Supports, 2015).

The implementation of PBIS into a complex environment, such as a school, does not happen in a vacuum, but needs to address the current individuals, relationships, and norms that exist therein. While prior work has examined these issues in urban settings, rural schools have not been a focus on much of the research. Currently, there are gaps in what is known about the climate of rural schools and what they are doing to effectively address those issues (McDaniel et al., 2017; McDaniel et al., 2018). This may be because of the difficulty of reaching areas outside of population centers and limited access to resources, among other issues which will be examined in this review. This study will address the dearth of information on current PBIS implementation and school climate in rural schools. Providing information will enable future researchers, trainers, and implementers to better understand the status of rural schools and prepare them to address the needs more effectively.

CHAPTER TWO: LITERATURE REVIEW

Theoretical Framework

The purpose of this study is to examine the relationship between school climate characteristics and PBIS implementation status in rural settings; therefore, the review of literature will provide an exploration of school climate, the influence of PBIS on that climate, and the unique challenges for implementation in rural schools.

Ecological System Theory

Each person exists within an environmental context which shapes, molds, and determines their behavior. Understanding of this reciprocal relationship between a person and their environment is critical in breaking down the process of development. Bronfenbrenner (1979) posits that the developmental contexts should be understood ecologically in order to be able to understand developmental outcomes. This proposition is the foundation for Bronfenbrenner's theory, known as Ecological Systems Theory (EST), that each child is surrounded by complex systems that can be represented by concentric circles of influence known as the microsystem, mesosystem, exosystem, macrosystem, and chronosystem (Rudasill et al., 2018). The systems that are closest to the child have the most direct impact starting with their family and peers, extending through their social and school environments, and stretching to the cultural and societal influences across time. Each of the systems are interconnected and influence each other reciprocally so, therefore, all have an impact on the behavior and outcomes of each child (Brendtro, 2006).

School Climate

The significance of the context in which a child develops is especially important in the school microsystem. Bronfenbrenner (1979) believes the ability to influence school environments with better policy and practice "to be essential if we are to advance our basic knowledge of the contexts that shape the course of human development" (p. 848). Therefore, if a school can understand how their sociological and ecological environment functions as a complex system, variables can be manipulated at different levels in order to achieve different outcomes (Anderson, 1982). For example, a school could institute changes to impact the climate of the school. As highlighted in Figure 2.1, the significance of changes to the school microsystem increases exponentially as the influence is felt by each student, thus impacting the school in turn and all other related systems across multiple iterations (Rudasill et al., 2018).

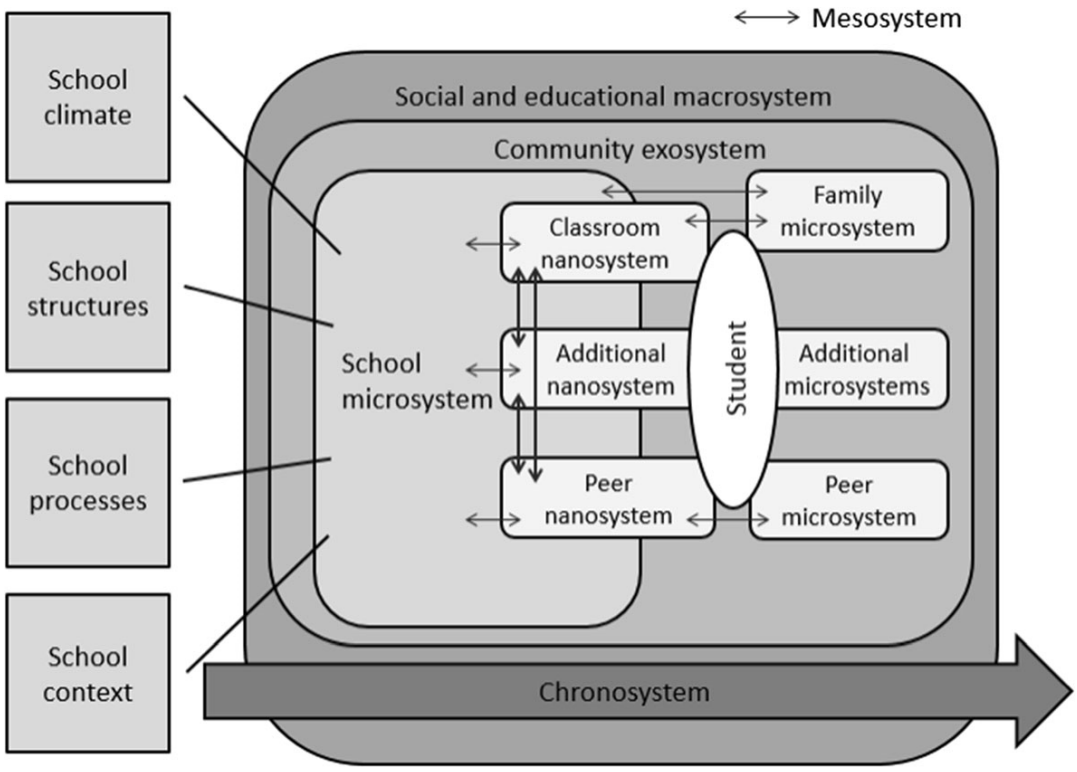

Figure 2.1 EST and School Climate

Note. From "Systems View of School Climate: A Theoretical Framework for Research", by K. M. Rudasill, K. E. Snyder, H. Levinson, and J. L. Adelson, 2018, *Educational Psychology Review*, 30(1) p. 38 (https://doi.org/10.1007/s10648-017-9401-y). Copyright 2017 by Springer Science+Business Media New York. Fair use.

Defining School Climate

Even with the appreciation of the importance of school climate, researchers and practitioners have struggled to consistently define the concept and its contributing factors (Anderson, 1982; Cohen et al., 2009; Thapa et al., 2013). The definitions often vary depending on what theoretical tradition the framework is based upon, whether that is organizational, school improvement, psychological, or from another disciplinary or philosophical tradition. (Rudasill et al., 2018). However, it is generally accepted that the conversation about the effect of school climate on student outcomes started in 1908 with a book on school management by Arthur Perry; however, empirical study did not start until the 1950s as an offshoot of the business and organizational research movements

(Cohen et al., 2009; Zullig et al. 2010). The early research culminated with the first large scale literature review by Anderson (1982). She reported a wide variety of iterations for defining school climate which were often done at different levels of analysis. Definitions included: a) characteristics of the schools and individuals; b) physical or ecological descriptions; c) organizational structure; d) cultural variables such as norms, values and beliefs; and e) academic focus.

Since then, definitions and characteristics in school climate research have begun to narrow. Haynes et al. (1997) offered a concise and enduring definition of school climate as ‘‘the quality and consistency of interpersonal interactions within the school community that influence children’s cognitive, social, and psychological development” (p. 322). More recently, definitions have begun to include levels of safety in addition to the relationships and shared vision (Cohen et al., 2009). Zullig and colleagues (2010) reviewed literature from the last 20 years and identified five common school climate domains: 1) order, safety, and discipline; 2) academic outcomes; 3) social relationships; 4) school facilities; and 5) school connectedness. Each domain includes multiple variations of conceptualization within the broad literature on this topic of climate.

Measuring School Climate

The type and means of measurement of school climate are as diverse as the definitions. Some climate assessments were identified for empirical research (Anderson, 1982), some were developed by states and local education agencies (LEAs) for measurement and improvement uses (Cohen et al., 2009), and some were developed as part of establishing a specific definition (Zullig et al., 2010). There are also multiple sources for data, including perceptions of students, staff, and stakeholders, demographics,

behavioral and safety statistics, and many others (Anderson, 1982; Cohen et al., 2009; Thapa et al., 2013).

However, there are many documented problems with the historically-produced school climate measurements. Tools that have been built by researchers or institutions are often not replicated and have limited psychometric data (Zullig et al., 2010) or limited availability (Ryberg et al., 2020). Measurement tools that have been built in-house by states or LEAs are often not scientifically sound or research proven (Cohen et al., 2009). Not only is there no information about whether they are reliable, but it is difficult to compare climate results across settings without a widely-accepted measurement standard.

In response to this confusion and need for greater clarity and validity in the area of school climate definition and measurement, as part of their Safe and Supportive Schools Model the U.S. Department of Education (USDOE) developed a valid measurement of their definition of school climate (Bradshaw et al., 2014; Ryberg et al. 2020). The resulting model consists of three interrelated domains: safety; engagement; and environment. Each domain is further broken into sub-domains (see Figure 2.2, next page). Bradshaw and colleagues (2014) validated the simplified model with a 56-item measure as part of their Maryland Safe and Supportive Schools (MDS3) Suite of Climate Surveys (Bradshaw et al., 2012). These surveys are the basis of what has been developed into the Education Department School Climate Survey (EDSCLS; National Center for Education Statistics, 2016) and was validated by Ryberg et al. (2020). The tool is readily available to all LEAs and offers a promising option for a research-based definition of school climate with a valid and freely-available measurement tool.

Significance of School Climate

Fundamentally, teaching and learning is based on relationships and as this paper has already addressed, school climate is essentially a measure of the cumulative relationships among stakeholders (O'Brennan et al., 2014). In addition to the relational benefits, a positive school climate is empirically related to safety, engaged learning and teaching, and school improvement in elementary, middle, and high schools (Thapa et al., 2013). Academic achievement, decrease in problem behaviors, and increase in well-being are significantly associated with aggregated perceptions of school climate at the school level (O'Brennan et al., 2014; Ryberg et al., 2020). Dozens of states have already recognized the benefits of nurturing a positive school climate and have begun to suggest and mandate policies for improving school culture (Cohen et al., 2009).

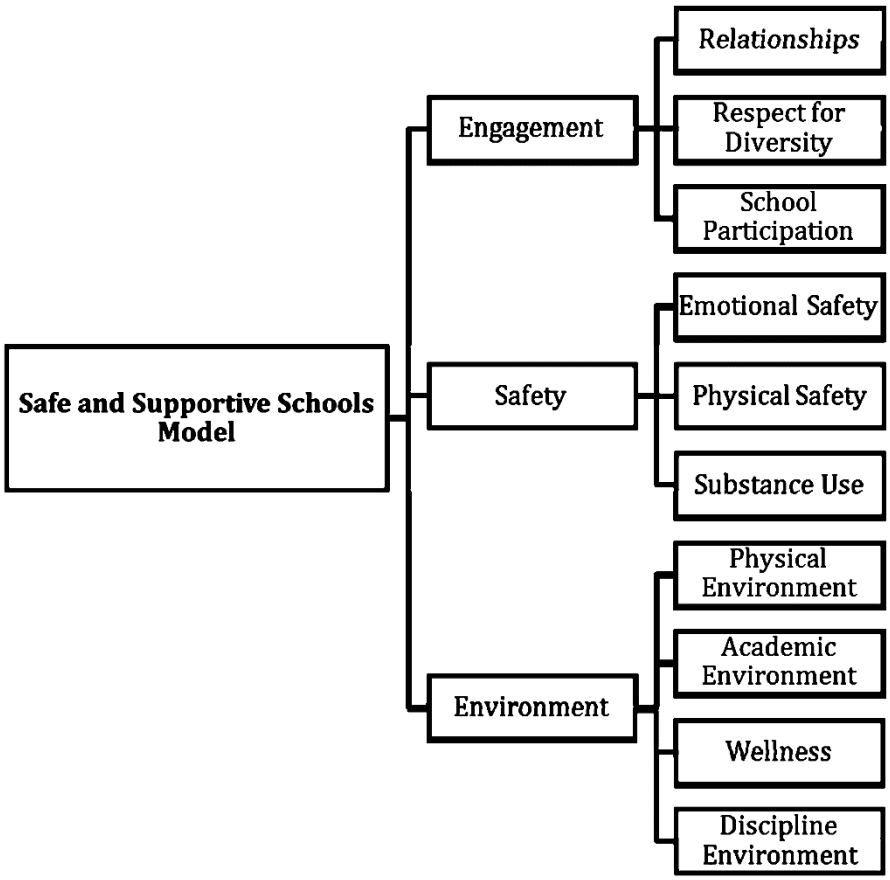

Figure 2.2 USDOE Model of School Climate

Note. From "Measuring school climate in high schools: A focus on safety, engagement, and the environment," by C. P. Bradshaw, T. E. Waasdorp, K.J. Debnam, and S. L. Johnson, 2014, *Journal of School Health*, 84(9), p. 594 (https://doi.org/10.1111/josh.12186). Copyright 2014 by the American School Health Association. Fair Use.

Positive Behavioral Interventions & Supports: Approach to Improve Climate

One approach that has been shown to be implementable and effective for schools to alter their school climate is Positive Behavioral Interventions & Supports (PBIS), which is a tiered framework for implementing strategies and supports ranging from schoolwide to selected interventions (Sugai & Horner, 2006). As will be reviewed below, PBIS improves school climate, and implementation with fidelity also improves a variety of student outcomes (Bradshaw et al., 2010). As a result, scaling has been impressive

with PBIS being implemented in over 23,000 US schools as of 2020, representing around 20% of schools nationwide (Gion et al., 2020). This section will explore the theoretical basis for PBIS and describe the fundamental elements of this evidence-based approach to creating positive school climates.

Philosophical Basis for PBIS

PBIS is based on the concept that schools can intentionally structure their systems and implement practices in order to gain their expected outcomes. Sugai et al. (2000) purported, "Schools that are safe, effective, and controlled are not accidents" (p. 94). This foundational idea in PBIS, that actions and behaviors of individuals in a community, specifically students in a school, can be effectively influenced through manipulating environmental conditions, is also a tenet of applied behavior analysis (ABA). ABA itself is rooted in the classical psychological theory of behaviorism. Researchers such as Ivan Pavlov and then John Watson pioneered the theoretical basis of the behavioral approach such as using stimuli to condition behaviors (Alberto & Troutman, 2013).

Later, B.F. Skinner (1938, 1965, 1968) built on this work with operant conditioning, which explored the functional relationship between voluntary behaviors and consequences. These principles were then applied to changing complex human behavior for the better, also known as behavior modification. Purposefully applying behavior modification to real-life settings grew in popularity, culminating in the subsequent field of study known as ABA (Alberto & Troutman, 2013). Described in seminal work by Baer et al. (1968), ABA focuses on changing socially-important behavior in a way that is observable and quantifiable and where the functional relationship between the

intervention that is applied and the resultant behavior is clear. This is often done through reinforcement and punishment of specific behaviors (Solomon et al., 2012).

Application to Organizations

This time period also saw the application of ABA principles to whole organizations rather than only individuals. The first to suggest this novel application in the 1960s, Owen Aldis (1961), framed the endeavor by explaining that the real challenge was to find a way to motivate people within an organization through rewards rather than just by punishments or being threatened with punishment. This mindset was carried over into the translation of ABA into the school setting with a focus on providing supportive environments so that students with disabilities could learn socially-appropriate behaviors and curriculum content (Horner, 2000). The process became known as Positive Behavior Supports (PBS) and was a true derivative of the ABA tradition. In one comparison of the two approaches, Carr and Sidener (2002) concluded that PBS was almost exclusively comprised of ABA techniques and values.

As implementation grew in school settings and policy adjusted, it became clear that individual student support was not the most efficient process by which to apply PBS principles. Robert Horner, one of the original proponents of utilizing PBS in schools, articulated a more comprehensive direction for schools in 2000. “The signature feature of positive behavior support has been a committed focus on fixing environments, not people…We must design schools, homes, and communities that effectively prevent problem behaviors” (p. 97). With this focused direction, researchers and implementers began making their unit of measure a whole school rather than individuals. This was combined with utilizing prevention techniques such as those found in community health

(Horner & Sugai, 2015). The marriage of the behavioral principles of PBS along with the prevention and implementation science intended for application to a whole school setting became known as PBIS and sometimes School-wide PBIS (SW-PBIS) or School-wide PBS (SW-PBS; Sugai & Horner, 2006).

Elements of PBIS

PBIS is not a scripted curriculum with a manual, but rather it is a framework that emphasizes collecting and analyzing data in order to select evidence-based practices and apply those practices that are responsive to the culture of the school and needs of the students (Gion et al., 2020). Prevention efforts are organized into a multi-tiered approach with primary (school-wide/universal), secondary (targeted/selective), and tertiary (individual/indicated) systems of support as part of the enhanced organizational structure. (Bradshaw et al., 2009).

Tiered Support

PBIS utilized a multi-tiered approach to prevention and support (see Figure 2.3). The universal tier, known as Tier 1, is meant to support all students and the goal is to successfully prevent problem behavior in at least 80% of the target population. Approximately the next 15% percent of the population is expected to need more targeted interventions that often come in the form of group supports at the Tier 2 level. These supports become increasingly intensive and individualized for the last 1-5% of the students that usually receive a functional behavior analysis (FBA) and individual behavior intervention plan (BIP) as part of a Tier 3 intervention (McDaniel et al., 2018). These percentages are according to national averages, but the framework can be applied to myriad settings to achieve these approximate percentages (Fitzgerald et al., 2015).

While the secondary and tertiary levels of support are helpful in addressing intensive behavior in students, the primary level has a focus on the overall school climate. For this reason, this study is mainly concerned with analyzing this universal tier.

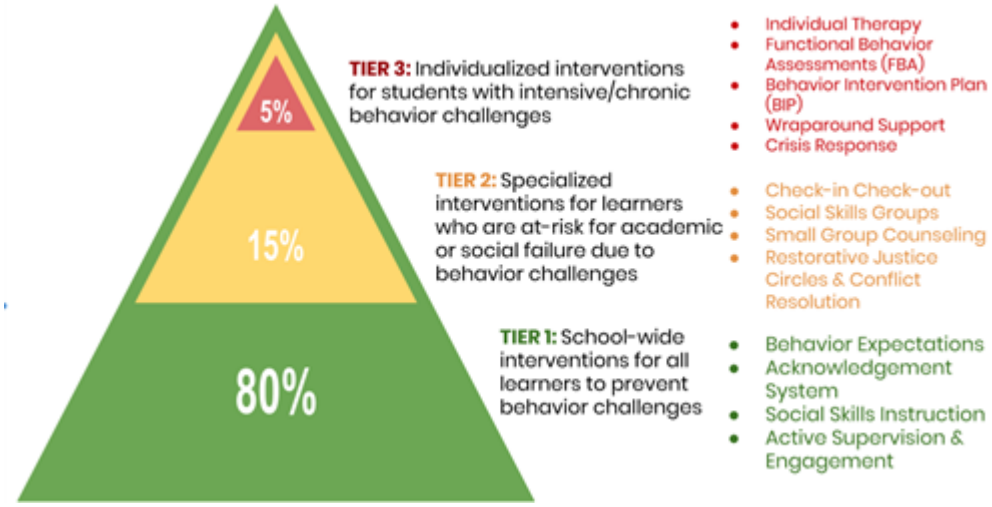

Figure 2.3 PBIS Triangle

Note. From "MTSS and PBIS," by Monterey Peninsula USD, (https://www.mpusd.net/apps/pages/index.jsp?uREC_ID=1012305&type=d&pREC_ID=1322797). Public Domain.

The primary—or universal—tier includes a focus on seven core components (i.e., key features) to prevent and address overall climate and prevent problem behaviors. These features are: (1) behavioral expectations defined; (2) behavioral expectations taught; (3) reward system for appropriate behavior; (4) clearly defined consequences for problem behavior; (5) differentiated instruction for behavior; (6) continuous collection and use of data for decision-making; and (7) universal screening for behavior support (Horner & Sugai, 2015). In addition, PBIS provides support in all settings and areas of the school (Anderson & Kincaid, 2005).

Systems, Practices, Data

Within each tier there are also embedded organizational and systems-change strategies to aid implementation and fidelity. As noted by Horner & Sugai (2015), "the likelihood that a school will implement and sustain PBIS with high fidelity depends largely on attention not just to the PBIS core features, but the 'systems' that support implementation" (p. 82). Rather than just implementing a variety of evidence-based practices independently, during implementation a representative team from the school uses data to select the practices that will address the needs of the student population and create the desired student outcomes (Sugai & Horner, 2006). These practices are embedded into systems that will make it more likely that school staff will implement the practices. The cycle continues as the team continues to analyze data to make sure that the systems are being utilized and the practices are having the desired effect. If not, the team identifies the necessary systems or practices that will result in the targeted outcomes (Horner & Sugai, 2015). Figure 2.4 (next page) represents the interdependent nature of the data, systems, and practices in order to obtain the intended outcomes of PBIS.

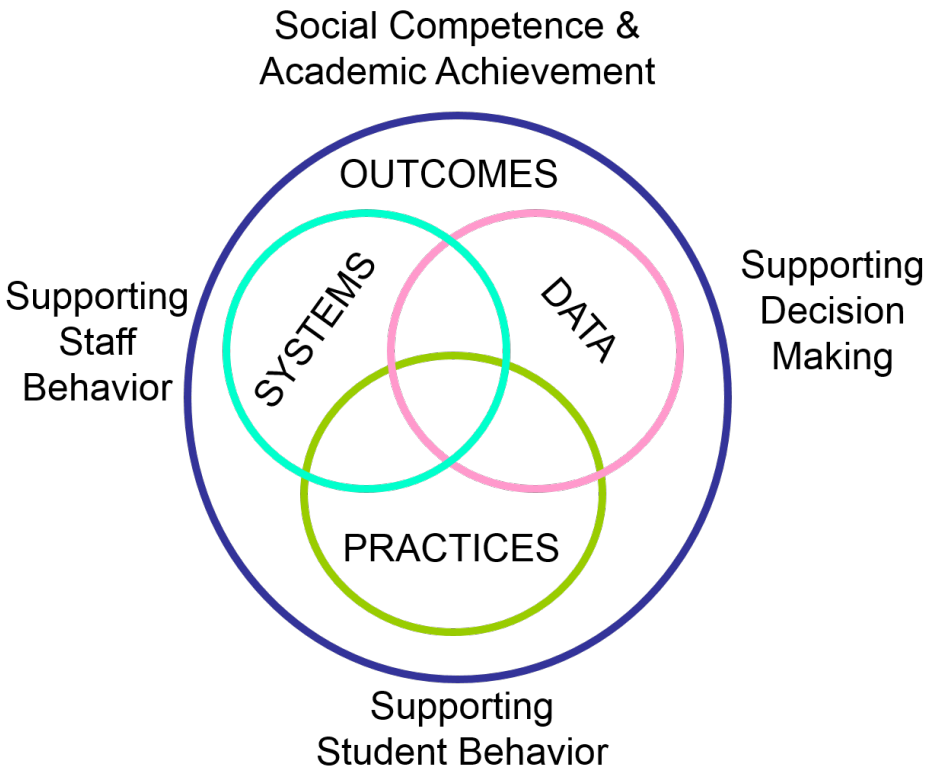

Figure 2.4 Systems, Practices, Data of PBIS

Note. From "Positive Behavioral Interventions and Supports (PBIS) Implementation Blueprint: Part 1 – Foundations and Supporting Information," by Center on Positive Behavioral Interventions and Supports, 2015, University of Oregon, p.18 (https://www.pbis.org/resource/pbis-implementation-blueprint). Public Domain.

Implementation and sustainment happen through a PBIS leadership team that is representative of the school and coordinates implementation (Sugai & Horner, 2006). A systems approach emphasizes the importance of practices, systems, and data all working effectively toward student outcomes. Data are then reviewed to see which evidence-based practices would best fit the needs of the student population. Systems are put into place to support staff in implementing those practices and more data is taken and analyzed to check for fidelity and intended outcomes (Horner & Sugai, 2015).

Measurement

Focusing on data measurement for not only student outcomes but also fidelity of implementation of the core components of PBIS is another hallmark of this systems-change approach. Outcome measurements include the traditional academic grade and testing standards as well as a focus on documenting behavior incidents in the school. Schools can then monitor data from office discipline referrals and adjust practices and systems toward better student outcomes (Irvin et al., 2006). School climate is another indicator of outcomes, measured through multiple perspectives including students, staff, and parents. It can be measured as on outcome of PBIS and there are multiple tools that have been used in relationship to PBIS, including the School Climate Survey (SCS; White et al., 2014).

At an organizational level, fidelity of implementation of PBIS is a key outcome. Fidelity can be measured in a variety of ways—for example, the Center on PBIS (2019) describes 20 different fidelity measures with a variety of applications from individual student systems all the way to the state level. As noted by Bradshaw and colleagues (2009), “the issue of program fidelity is of particular relevance for non-curricular and non-manualized school-based programs like PBIS, which are intended to be adaptable in different school contexts to address varying cultures, climates, and work attitudes” (p. 101). One of the most-commonly used measures for assessing fidelity of implementation of SW-PBIS at an organizational level is the School-wide Evaluation Tool (SET; Horner et al., 2004).

Evidence-based

In the past 20 years, research about the efficacy and effectiveness of PBIS has grown (Horner & Sugai, 2015). Amid the rapid spread of PBIS, the original developers, Rob Horner and George Sugai, have made it a priority to identify the framework as an evidence-based practice (Horner et al., 2010; Sugai & Simonsen, 2012; Horner et al., 2015). Horner et al. (2015) have produced and consistently updated a brief to document the research that identifies the PBIS framework as an evidence-based practice. Research institutes, local education authorities, and schools are encouraged to select evidence-based practices with a significant amount of research support. To increase clear communication on implementation and practices, an implementation blueprint has been developed (Center on Positive Behavioral Interventions and Supports, 2015). This blueprint is used in research design to ensure that processes are consistent and data are comparable, and the blueprint can also be used by practitioners to ensure fidelity of implementation. Fidelity implies that the intervention is being delivered how it was intended (Hill et al., 2007). Without fidelity it is likely that there will be unintended effects on the intended outcomes.

Research has been conducted across a variety of levels—including preschool and K-12 school settings (Horner & Sugai, 2015)—and at least 14 randomized controlled trials demonstrate a variety of outcomes from implementation of PBIS with fidelity, including: improved school climate (Bradshaw et al., 2009), improved perception of school safety (Horner et al., 2009), reduced discipline referrals and suspensions (Bradshaw et al., 2010; Sprague et al., 2017), and indications of better organizational health (Bradshaw et al., 2008a). Results for academic outcomes are mixed, with some

studies reporting student gains only in math, some only in reading, and some in both (Bradshaw et al., 2010; Horner et al., 2009; Oyen & Wollersheim-Shervey, 2019; Sprague et al., 2017). Research also shows that the greater the implementation fidelity the greater improvement for school climate, but the association is complex as it is likely cyclical (Bradshaw et al., 2009).

Rural Schools

When considering the implementation of an intervention at the school-wide level, it is important to address different settings. The PBIS literature clearly cites the importance of looking at PBIS implementation in different settings that are culturally and contextually significant (Knoster, 2017). One prevalent setting with unique challenges that is generally underrepresented in research is rural schools (Sheridan et al., 2017).

Defining Rural America

Though drawing a distinct line between rural and urban areas is not easy and there are multiple approaches to classifying rurality (Ratcliffe et al., 2016), the U.S. Census Bureau defines rural as anywhere that is not an urban area with 50,000 people or more (Ratcliffe, 2010). They estimate that around 20% of the U.S. population lives in rural areas. By geography, rural areas make up 95% of the land area in the United States (see Figure 2.5 next page; Ratcliffe et al., 2016).

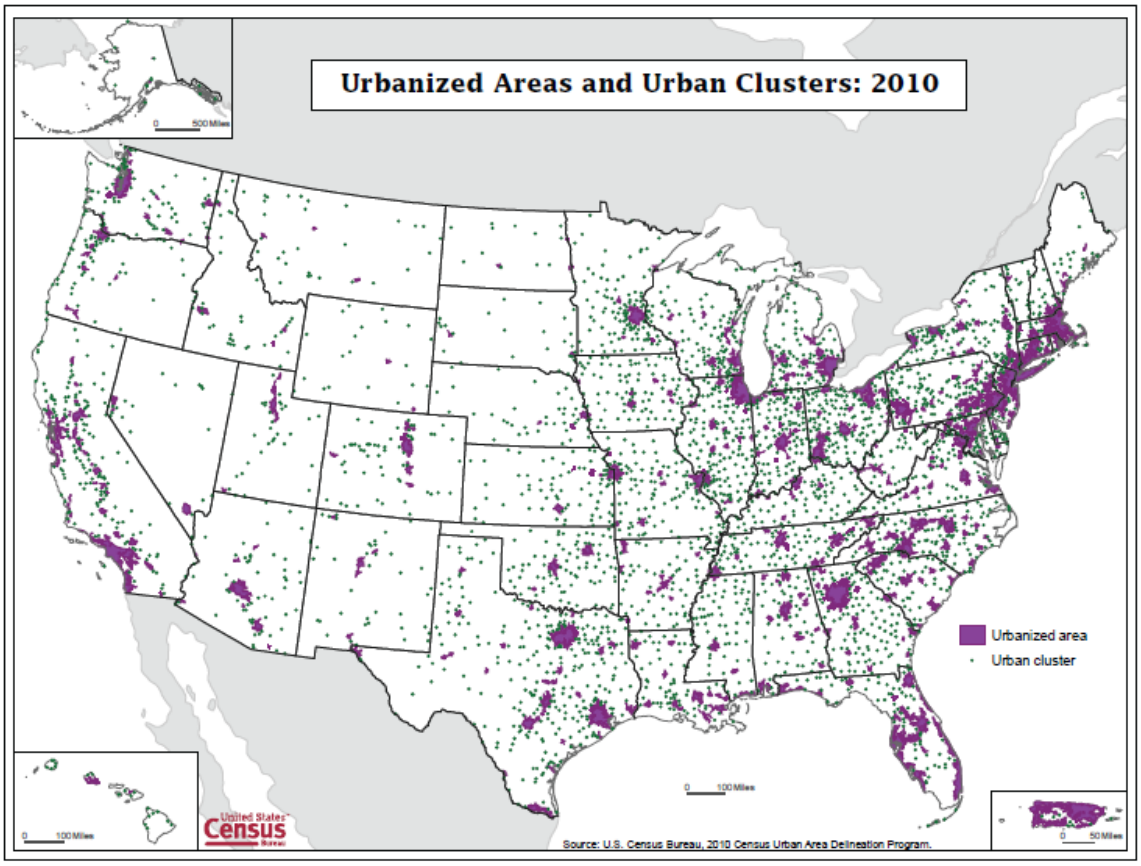

Figure 2.5 Urbanized Areas and Urban Clusters

Note. From "Defining rural at the U.S. Census Bureau (ACSGEO-1)," by M. Ratcliffe, C. Burd, K. Holder, & A. Fields, 2016, U.S. Census Bureau, p. 5 (https://www2.census.gov/geo/pdfs/reference/ua/Defining_Rural.pdf). Public Domain.

The Economic Research Service at the U.S. Department of Agriculture (2019) found that the population in rural areas in the last 10 years has been steadily declining, while the population in urban areas is increasing. Nevertheless, many Americans still live in rural areas. Additionally, residents of rural areas often face specific risk factors, such as poverty. Poverty rates are highest in rural areas, with an increasing gap in poverty between rural and urban areas. Furthermore, employment has decreased in rural America while in more urban communities, employment has increased (U.S. Department of Agriculture, 2019).

Unique Challenges of Rural Schools

Nationwide, approximately 55 million children and adolescents attend public K-12 schools, and one out of every seven of those students attends school in a rural district. Further considering attendance at rural schools that are part of larger districts that include a range of rural and urban or suburban schools, one in every five students attend a rural school (Showalter et al., 2019). Rural schools experience a variety of challenges that can impact operations and outcomes.

Supporting education in rural settings comes with challenges and barriers that are unique compared to schools in urban areas. Rural schools are less likely to have access to resources (Steed et al., 2013). For example, rural schools experience teacher shortages, especially in the area of special education (Sindelar et al., 2018). Rural schools are relatively more costly to operate (Showalter et al., 2019). Salaries and access to professional development for educators in rural schools is inadequate. Lack of funding for qualified personnel and infrastructure as well as poverty and attendance issues of students are common barriers for rural schools (McDaniel & Bloomfield, 2020; Robbie, 2021).

Rural schools also serve students in communities with a variety of risk factors, including higher rates of adverse childhood experiences, higher rates of food insecurity, and decreased access to child care (Child Welfare Information Gateway, 2018). Even with fewer resources, rural schools often need to provide stronger prevention and mental health support because these schools often function as the de facto health care provider in these more isolated communities (Fitzgerald et al., 2014) and a higher percentage of

children from rural areas have mental health needs than those from urban areas (Sheridan et al., 2017).

Challenges to Implementation of PBIS

The geographic and financial realities of rural schools leave them with some difficult barriers to implementing innovations or programs. Oyen & Wollersheim-Shervey (2019) observed that "rural environments present challenges such as large geographic service areas, lack of sufficient and qualified professionals, as well as the distance between behavioral consultants and students who need the interventions (e.g., school psychologists)" (p. 391). The result of these challenges to PBIS implementation is that rural regions are not only underrepresented in the PBIS literature, but also in overall implementation compared to other schools (McDaniel & Bloomfield, 2020).

PBIS Impact on Climate

PBIS is a framework that utilizes school-wide prevention practices for all students, as well as principles of applied behavior analysis for targeted and indicated support to specific students, with one goal being the creation of a positive school climate (Oyen & Wollersheim-Shervey, 2019). The multi-tiered approach aims to prevent problem behavior and improve the school climate through the implementation and improvement of systems, practices, and data approaches (Pas et al., 2015). In randomized controlled trials, PBIS has been shown to significantly improve perceptions of school climate (Bradshaw et al. 2008b, Bradshaw et al., 2009). Further research has shown that PBIS lessens violence and discipline problems (Anderson & Kincaid, 2005; Sugai et al., 2000).

PBIS in Rural Schools

While many studies have examined PBIS effectiveness—in terms of student and organizational outcomes—most have been conducted with urban schools (Horner et al., 2010), which leaves a gap in the literature about whether these outcomes also occur in rural settings. Although some prior research has included rural schools, it is rare that the research focuses solely on rural schools or that the research is experimental, randomized, or peer-reviewed (Oyen & Wollersheim-Shervey, 2019). Much of the research only focuses on one age range of students or is a small case study of a few schools with successful implementation (Fitzgerald et al., 2014; Oyen & Wollersheim-Shervey, 2019; Steed et al., 2013). The limited amount of literature suggests that rural schools can effectively implement PBIS and reap the benefit of improved school climate, but empirical evidence is needed on these relationships in rural schools.

Rationale for the Current Work

As noted above, PBIS is an evidence-based practice with research demonstrating benefits for school climate and other outcomes (Horner et al., 2015). However, with little of that research having specifically considered rural settings, it is important to further understand whether the relationships between school-wide practices and climate are also evident in those settings. Furthermore, specific exploration of climate in rural schools is important for understanding the needs, challenges, and resources of schools in these settings. As noted by Oyen and Wollersheim-Shervey (2019), “discovering ways to understand the use of universal prevention systems in rural schools is vital due to increased student need as well as professional shortages in education settings” (p. 388).

There is a need to understand the relationship between a school climate and the PBIS practices that are taking place in the school before formal implementation takes place. The current study will examine climate data gathered from multiple stakeholders (school staff, students, and parents) at 40 rural schools during the spring of the 2018-19 school year, prior to the implementation of PBIS. Associations between climate and the extent of PBIS implementation will be examined.

The information the current study provides will also be important for future researchers and implementers alike as it will provide a summary of the climate and PBIS practices they are likely to observe in typical rural schools prior to implementation. This will enable them to better predict the common needs of rural schools and aide in the effective customization and delivery of the content and technical assistance.

Research Questions

The following research questions will be addressed.

1. What are the levels of PBIS implementation existing in a sample of 40 rural schools, prior to formal initiation of implementation efforts?
2. What are the perceptions of school climate among staff, students, and parents in a sample of 40 rural schools?
3. How do perceptions of school climate vary by the extent (degree of fidelity) of PBIS implementation in rural schools, prior to the initiation of formal implementation efforts?

CHAPTER THREE: METHODS

Design

The present study uses data collected at baseline of a randomized controlled trial (RCT) studying how to effectively support PBIS implementation in rural schools. These preliminary quantitative baseline data measure the presence of PBIS components as well as perceptions of school climate prior to formal training. Prior research has established a relationship between these variables in urban settings (Bradshaw et al., 2009), but thus far almost no work has examined the relationship in rural settings. Providing information on the relationship between these variables in the rural setting will contribute important baseline data to the field and enable researchers and implementers to address the needs of rural schools more effectively, including the RCT mentioned above.

Sample

The sample consisted of 40 rural public K-12 schools in the state of Idaho that were willing to participate in data collection as part of an RCT and receive formal PBIS training. To qualify for participation, schools needed to be in rural areas or townships according to the National Center for Education Statistics (NCES; Geverdt, 2015). A minimum enrollment of at least 100 students per school was utilized as an inclusion criterion for power calculations and schools who were currently implementing PBIS were not eligible. The principal of each eligible school was sent an informational packet with an invitational video. Project staff members then followed up on the initial contact with personalized outreach to each principal at least two times.

Principals of interested schools were required to fill out an application and identify a team that would lead the implementation process. The team was to be representative of the school and consist of an administrator, a PBIS coach (which could not be the administrator), and three additional staff members. The application also included a letter of interest from the administrator, a letter of interest from the coach, the coach's resume, a coach self-evaluation, and two coach recommendation forms filled out by the administrator and one other educator.

At the end of the recruitment process, 40 schools joined the project and signed a memorandum of understanding (MOU) to participate in the Spring of 2019. The sample represents all six regions of the state as well as 25 different school districts and three public charter schools. Of the 40 schools there are 22 elementary schools including different combinations of K-6, one K-8 school, six middle/junior high schools, two junior/senior high schools (6-12), four high schools, and five K-12 schools. The schools were then blocked into similar pairs using their demographics and one school from each pair was randomized to opposite conditions, either control or treatment. Special care was taken to block schools from the same district to avoid contamination of conditions. Table 3.1 describes the demographics of the 40 schools by condition.

Table 3.1 School-Level Demographic of 40 Participating Schools

	Intervention Schools (n=20)			Control Schools (n=20)			
	Mean (SD)	Min	Max	Mean (SD)	Min	Max	t
Number of students at each school	334.2 (184.9)	94	681	363.4 (173.2)	161	780	0.51
Number of classroom teachers at each school	17.9 (7.9)	6	36	19.6 (6.1)	12	32	0.79
Percentage of students at school eligible for free/reduced-priced meals	46.0 (19.0)	17.1	91.8	51.0 (16.7)	28.3	92.6	
	#	%		#	%		χ^2 (df)
Percentage of students eligible for free/reduced-priced meals							.456 (2)
<40% students eligible	8	40%		6	30%		
40-60% students eligible	8	40%		9	45%		
>60% students eligible	4	20%		5	25%		
Remoteness (all schools within rural/township locale)							.452 (2)
Fringe	3	15%		4	20%		
Distant	8	40%		9	45%		
Remote	9	45%		7	35%		
School level based on grades served							.743 (3)
Elementary only (grade 6 or lower)	11	55%		11	55%		
Elementary/middle (K to grade 8)	1	5%		0	0%		
Middle school (grade 6 to grade 8)	2	10%		4	20%		
Middle/high (grade 7 to grade 12)	1	5%		1	5%		
High school only (grade 9 to grade 12)	2	10%		2	10%		
All grades (K to grade 12)	3	15%		2	10%		

Note: Data source is the 2018-19 Common Core of Data, National Center for Education Statistics

Measures

Validated measurement tools were selected for this study and will be described hereafter. The Schoolwide Evaluation Tool (SET; Horner et al., 2004) was identified as an appropriate measure of the extent of implementation (fidelity) of existing PBIS components in each school at baseline. The Maryland Safe and Supportive Schools (MDS3) Suite of Climate Surveys (Bradshaw et al., 2012; Bradshaw et al., 2014) was selected to measure each school's climate.

SET

The SET is an observational measure that is completed by an evaluator who takes a tour of the school and completes a standardized data collection form. The evaluator follows a protocol for touring the school building and documenting evidence of whether expectations are posted, and other indications of fidelity to the key features of PBIS. Artifacts provided by the school are coded to document whether systems and practices are in place. The evaluator conducts short interviews with an administrator, 10 random

staff, and 15 randomly-selected students. All information gathered is then reviewed, scores (0-2) are applied for each item, and a percentage is calculated for each category as well as an overall score. The whole process takes place over a two- to three-hour period.

The SET is coded within 7 categories, including five areas that mirror the areas of focus of PBIS, and two that pertain to leadership support: (1) behavioral expectations defined; (2) expectations taught; (3) on-going system for rewarding behavioral expectations; (4) system for responding to behavioral violations; (5) monitoring and decision making; (6) management; and (7) district level support. Each category is broken into sub-categories that are measured according to the rubric guide and assigned a score between 0 and 2. The score of each category is added up over the total possible and given a percentage. These 7 percentages are averaged for an overall implementation score (Horner et al., 2004).

The SET has high internal consistency (Cronbach's alpha = .96), high re-test reliability (97.3%), and high inter-rater reliability (99%; Horner et al., 2004). Horner et al. (2004) also found that the SET has a high construct validity as it is correlated positively and significantly with validated measures of PBIS ($r = .75$, $p \leq .01$). The SET has been utilized in a number of research studies (Bradshaw et al., 2009; Oyen & Wollersheim-Shervey, 2019).

Climate Survey

This project used climate surveys from the Maryland Safe and Supportive Schools (MDS3) Suite of Climate Surveys (Bradshaw et al., 2012), hereafter referred to as the Climate Survey(s), which have been validated (Bradshaw et al., 2014). The three-category model (environment, engagement, and safety), and many of the specific items in

these surveys have subsequently been used by the Education Department School Climate Survey (EDSCLS) model (Ryberg, 2020), which is now freely-available to researchers and practitioners. Prior work using these surveys shows high internal consistency and reliability with each category and subcategory with Cronbach's alpha above .70 for all scales and subscales (Bradshaw et al., 2014; National Center for Education Statistics, 2015).

The Climate Surveys for this project included 45 questions within three domains: environment, engagement, and safety. The environment category consists of 12 questions focusing on two sub-categories: (1) support services/resources; (2) and physical environment. The engagement category has 25 questions in 4 sub-categories: (1) culture of fairness/equity; (2) parent involvement; (3) academic emphasis; and (4) school connectedness. The last category is safety, which has 8 questions in two sub-categories: (1) order & discipline; and (2) physical safety/bullying prevention. Slightly different versions of the survey exist for the three key stakeholder groups of staff, students, and parents. This study will present detailed information about the alignment of wording at an item level, and will examine psychometrics separately for each of the three stakeholder groups in this project.

Procedures

SET

The SET was completed by a team of 6 outside evaluators at each of the 40 schools across the state within a period of 6 weeks. In order to prepare the outside evaluators, one of the authors of the tool provided a one-hour virtual orientation to the tool for all of the evaluators. Then this same author led a practical training by walking the

evaluators through the evaluation process at three different pilot schools: an elementary, a middle, and a high school where best practices, interview procedures, and scoring were all taught, practiced, and discussed. The evaluators then conducted SET evaluations across all 40 schools. Coders were masked to the intervention condition of the school. SET data collection visits were conducted in March and April of 2019. Inter-rater reliability was confirmed through double-collection by two independent observers at 42.5% of schools. The average interobserver agreement by item across the 17 schools was 97.3% (range = 89.3%-100%).

Climate Survey

The Climate Surveys were programmed in Qualtrics with multiple sets of surveys for each school (staff, student, parent), and links were sent electronically via email to each school's administrator and PBIS coach to coordinate collection among students and parents. The student surveys were facilitated by staff at each school, who scheduled time for survey completion in each school's computer lab or classroom. Administrators sent surveys to parents through email, newsletters, and/or posting an anonymous link on websites. The student and parent versions of the survey were both anonymous, and were estimated to take 15 minutes to complete. Surveys were also sent to all school staff members (administrative, certified, classified) with customized emails and contained a few items in addition to the climate scale and were estimated to take 25 minutes. Schools that recorded a 70% survey response rate among staff were offered a $200 Amazon gift card. The survey window stayed open for 3 weeks in April 2019, with 3 reminder emails sent to each school on a weekly basis.

Planned Analyses

SET

Data from the SET will be analyzed to reveal the existence of PBIS characteristics at schools before implementation. First, overall scores will be tabulated, ranked, and compared against demographic indicators (level, size, region, and district) to assess patterns. Scores will then be analyzed at the sub-category level. Specifically, each sub-category total will be averaged across schools to identify areas that were stronger or weaker in general.

Climate Survey

The Climate Survey scores will be examined across schools to understand baseline climate in rural schools. The sub categories will be analyzed to ascertain the strengths and weaknesses of climate characteristics. Correlations and visual plotting of means and measures of variation will compare the average responses of staff, students, and parents across each school. Regression analysis will be done to account for differences in demographic characteristics of schools.

Associations between PBIS Features and Climate

Scores on the SET will be compared to the Climate Survey in order to examine bivariate relationships. The subscales of each measure will be used to understand the independent contributions of the elements of the SET on all the aspects of the school climate. Regression analysis will be used to quantify the strength of the relationship between these two variables, while controlling for the other elements of the SET.

CHAPTER 4: RESULTS

The SET (Horner et al., 2004) was conducted for all 40 schools in the project and versions of the MDS3 Suite of Climate Surveys (Bradshaw et al., 2012; Bradshaw et al., 2014) were given to students, parents, and staff members from the 40 schools. The data were tabulated and analyzed using IBM SPSS Statistics (Version 28). It is important to note that the sample consists of schools who self-selected PBIS training and support.

Measurement of PBIS Features using the SET

In order to measure the PBIS items that were in place prior to implementation, trained observers visited each school to perform observations, conduct interviews, and analyze permanent products.

SET Interobserver Agreement

In order to measure the interobserver agreement of the SET scores, measurements at 17 of the 40 schools were conducted by two trained observers participated in the process and independently scored the SET on individual instruments. Interobserver agreement was calculated on an item by item comparison, in accordance with the reliability study of the tool (Horner et al., 2004). The number of items that agreed between observers was divided by the total number of items (28) then multiplied by 100 to create a percentage of agreement. The average interobserver agreement by item across the 17 schools was 97.3% (range = 89.3%-100%).

SET Items

Each school was individually scored on 28 items and given a score of 0 (Not Implemented), 1 (Partially Implemented), or 2 (Fully Implemented) according to the SET rubric. Table 4.1 lists the average score and standard deviation on each item across all 40 schools. The table shows the items that contribute to each subscale as well as the range for each item and subscale.

In this sample of rural schools, the items that rate the behavioral violation systems were generally high. Agreement between staff and administration on how behavior violations and emergency situations should be handled were especially high with an average mean of 1.87 (SD = .40) and 1.82 (SD = .39) respectively. The schools also had high scores in relation to the organization of the behavior team highlighted by the team being representative of the staff (M = 1.85, SD = .53).

Table 4.1 Means of SET Items, Subscales, and Total Scores with Standard Deviation and Range

		N	Mean	SD	Range
1	Documentation of Expectations	40	1.18	.87	0-2
2	Expectations Posted	40	.38	.67	0-2
	Expectations Defined	40	1.55	1.28	0-4
3	System for Teaching Expectations	40	.78	.73	0-2
4	Staff Teach Expectations to Students	40	1.08	.73	0-2
5	Team Reviews Program with Staff	40	.45	.78	0-2
6	Students Know School Expectations	40	.20	.56	0-2
7	Staff Know School Expectations	40	.30	.56	0-2
	Expectations Taught	40	2.80	2.22	0-10
8	Documented Student Reward System	40	.80	.72	0-2
9	Students Receive Rewards	40	1.05	.90	0-2
10	Staff Deliver Rewards	40	.68	.83	0-2
	Reward System	40	2.53	2.11	0-6
11	System for Handling and Documenting Behavior Violations	40	1.45	.78	0-2
12	Agreement on Violations Handled by Staff vs. Admin	40	1.87	.40	0-2
13	Documented Crisis Plan Posted Around School	40	1.60	.63	0-2
14	Staff and Admin Agree on How to Handle Emergencies	40	1.82	.39	0-2
	Violation System	40	6.75	1.24	0-8
15	Discipline Referral Form Includes Key Categories	40	1.47	.78	0-2
16	System for Collecting & Summarizing Data Clearly Defined	40	1.33	.73	0-2
17	Team Provides Discipline Data Reports to Staff	40	.65	.77	0-2
18	Team Uses Data for Decision Making	40	.30	.69	0-2
	Monitoring and Evaluation	40	3.75	1.97	0-8
19	Behavior Support is a Priority at the School	40	1.57	.81	0-2
20	Behavior Support Team is Known to Staff	40	1.08	.83	0-2
21	Team is Representative of the Staff	40	1.85	.53	0-2
22	Team Lead is Clearly Identified by the Team	40	1.62	.71	0-2
23	Administrator is an Active Member of the Team	40	1.60	.74	0-2
24	Team Meetings Occur At Least Monthly	40	.65	.86	0-2
25	Administrator Reports Team Progress to Staff	40	.23	.58	0-2
26	Team Uses an Action Plan with Specific Goals	40	.00	.00	0-2
	Management	40	8.60	2.58	0-16
27	School Budget Allocates Funds for Behavior Support	40	1.60	.81	0-2
28	School Can Identify External Support	40	1.40	.93	0-2
	District Support	40	3.00	1.20	0-4
	TOTAL	40	28.98	7.26	0-56

Note: Scoring for the SET involves assigning a value of 0, 1, or 2 for each of the 28 items (0 = not implemented, 1 = partially implemented, 2 = fully implemented)

Data indicated some patterns of low scoring items in the sample as well. Items related to the defining and teaching of school-wide behavioral expectations were generally low. Students did not know the expectations (M = .20, SD = .56) and neither did teachers (M = .30, SD = .56). Though it was reported that schools generally had systems to collect and organize data (M = 1.33, SD = .73) school teams were not using data for decision making (M = .30, SD =.69). The item measuring the use of an action plan by their behavioral team to work towards specific goals was the only item where M

= 0 (SD = .00) indicating that no schools in the sample were using an action plan as part of their behavior systems prior to implementation.

SET Subscales and Total Score

As part of the SET scoring guide, subscale totals are calculated as percentages of possible points which enables easy comparison between the subscales. Table 4.2 lists the mean percentage of each subscale. The total score for each school, also labeled as the SET Summary Score, is calculated as the mean of the subscale percentages.

Table 4.2 Subscale Percent Scores and Summary Score for School-wide Evaluation Tool (SET) for All Schools

	N	Mean	SD	Kurtosis	Skew
Expectations Defined (2 items)	40	.39	.32	-.96	.23
Expectation Taught (5 items)	40	.28	.22	.43	.92
Reward System (3 items)	40	.42	.35	-1.44	.10
Violation System (4 items)	40	.84	.15	-.13	-.87
Monitoring and Evaluation (4 items)	40	.47	.25	.07	.18
Management (8 items)	40	.54	.16	1.64	-.57
District Support (2 items)	40	.75	.30	-.34	-.75
SET Summary Score	40	.53	.13	.97	-.08

Note: Scoring for the SET involves assigning a value of 0, 1, or 2 for each of the 28 items
(0 = not implemented, 1 = partially implemented, 2 = fully implemented)
Subscale summary scores are calculated as a percentage of possible points for each of the seven key features
Total summary score is the mean of the seven subscale scores

The authors of the tool suggest .80 as the threshold for fidelity of implementation for the SET summary score (Horner et al., 2004). Mercer and colleagues (2017) suggested more recently that .80 on the subscale 'Expectations Taught' should be added as a qualifier of full implementation because behavior was unlikely to change without explicit teaching in combination with a high average in the rest of the subscales. One school in the sample met the requirement of .80 fidelity on the SET summary score (.87), but did not meet .80 on the Expectations Taught subscale (.60).

The SET summary score for the sample was well below implementation fidelity (M = .53, SD = .13). The summary score was buoyed by high implementation of Violations Systems (M = .84, SD = .15) and District Support (M = .75, SD = .30). The

subscale that scored the lowest was also the subscale that Mercer and colleagues (2017) highlighted as the foundational piece of implementation: Expectations Taught (M = .28, SD = .22). Contributing to this low mean was the related subscale, Expectations Defined (M =.39, SD = .32), because in order to teach expectations, they first must be defined.

Distribution of SET Subscales and Total Score

Data were graphed in histograms overlaid with normal distribution curves to check for unique characteristics of the subscale scores and the total score. Visual analysis of the graphs of the subscales and total score provided more information on the patterns of PBIS implementation of the sample prior to formal training and implementation.

Visual analysis of the graph of scores for Expectations Defined (Figure 4.1) revealed a bimodal distribution. The data showed that a significant amount of schools did not have any expectations formally defined which caused the bimodal distribution as well as a platykurtic distribution. Scores for Expectations Taught (Figure 4.2) were positively skewed indicating that most schools did not have systems for explicitly teaching behavioral expectations to students.

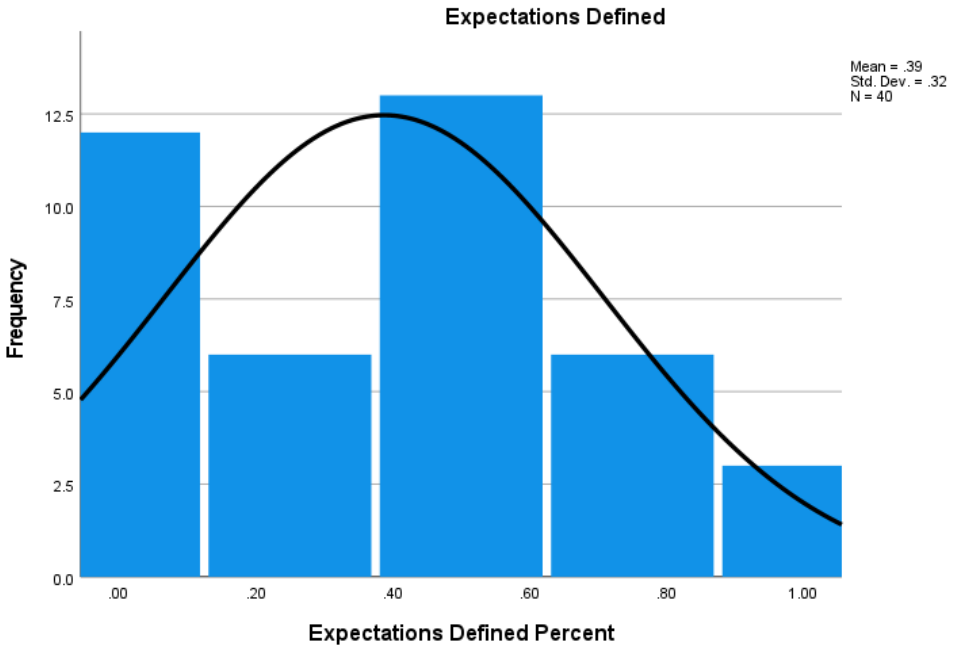

Figure 4.1 Distribution of Expectations Defined

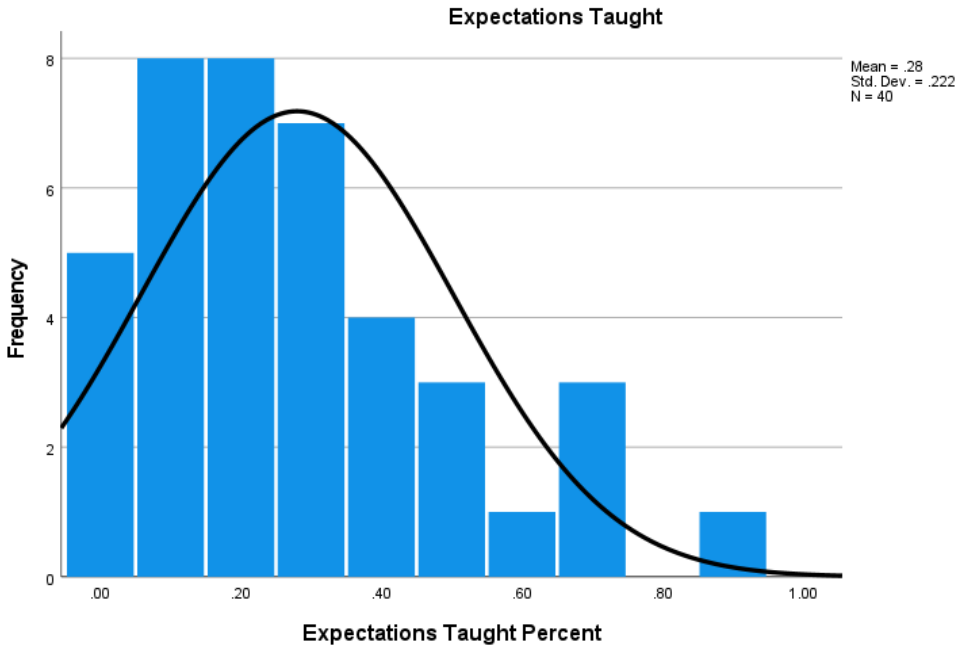

Figure 4.2 Distribution of Expectations Taught

The histograms revealed further patterns of implementation of PBIS systems in the sample of rural schools prior to formal training. A large minority of schools (12 of 40) did not have a Reward System (Figure 4.3) to acknowledge positive behavior and the

data overall was platykurtic with the flat distribution representing a high amount of variability within the subscale. The measures of the subscale Violation System (Figure 4.4) was negatively skewed with the majority of schools scoring over the .80 threshold and no schools scoring below .50 fidelity. These results reveal that most schools had a robust system for responding to problem behavior.

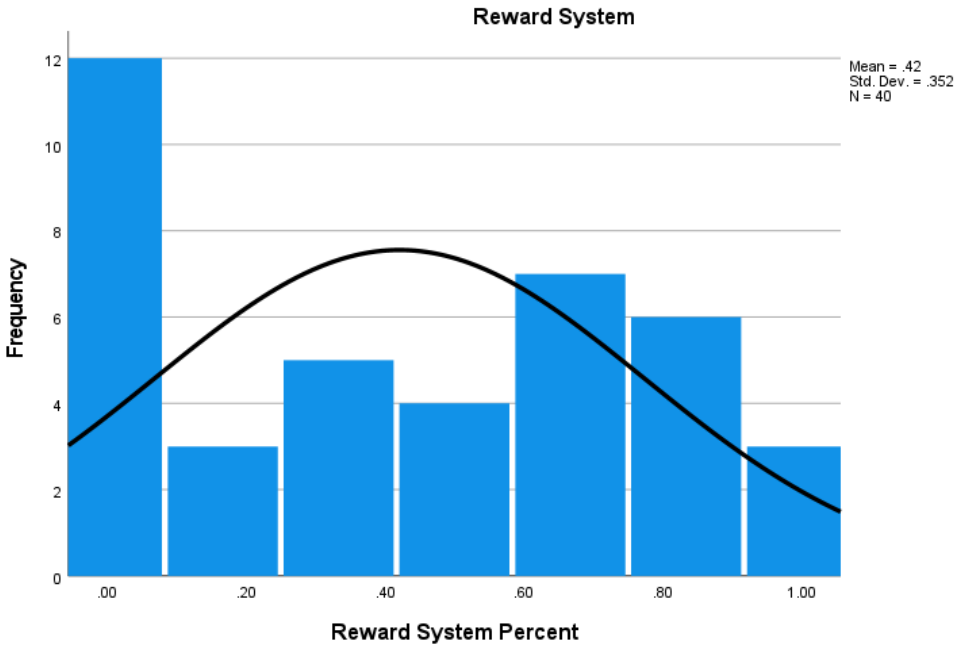

Figure 4.3 Distribution of Reward System

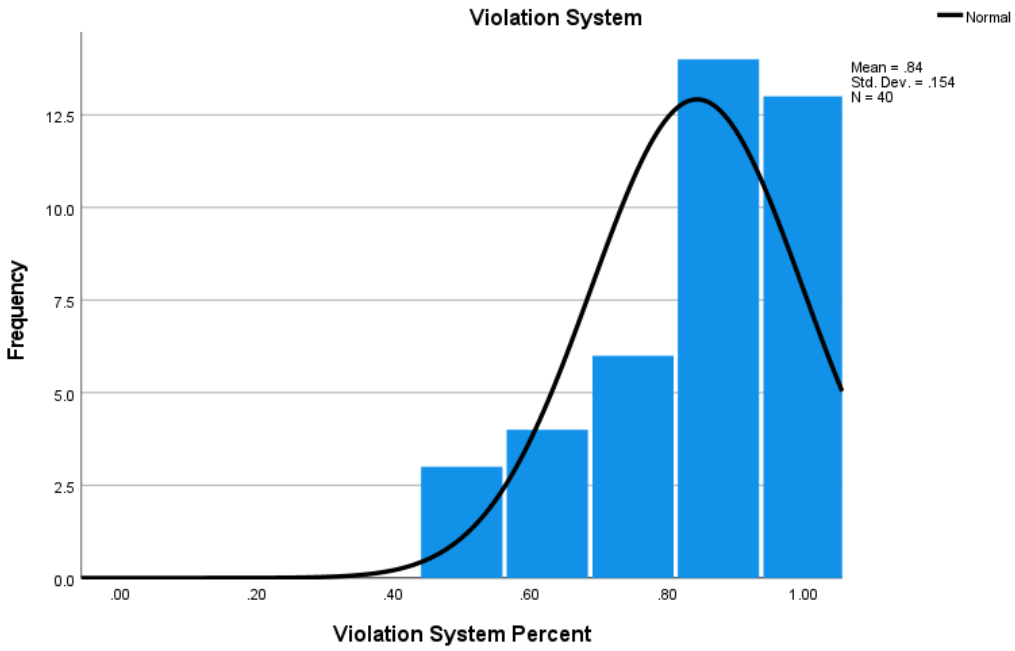

Figure 4.4 Distribution of Violation System

The ability of schools to collect and use behavior data as represented by the Monitoring and Evaluating subscale (Figure 4.5) was the most normally distributed of the subscales. The Management (Figure 4.6) subscale was highly leptokurtic, showing that the scores were clustered around the mean, and had some interesting gaps in the distribution. The graph for District Support (Figure 4.7) was negatively skewed and showed that almost all schools had some degree of external support for PBIS implementation. The graph for the SET Summary Score (Figure 4.8) for each school in the sample revealed a symmetrical distribution, but one that clustered around the mean of .53 (SD = .14).

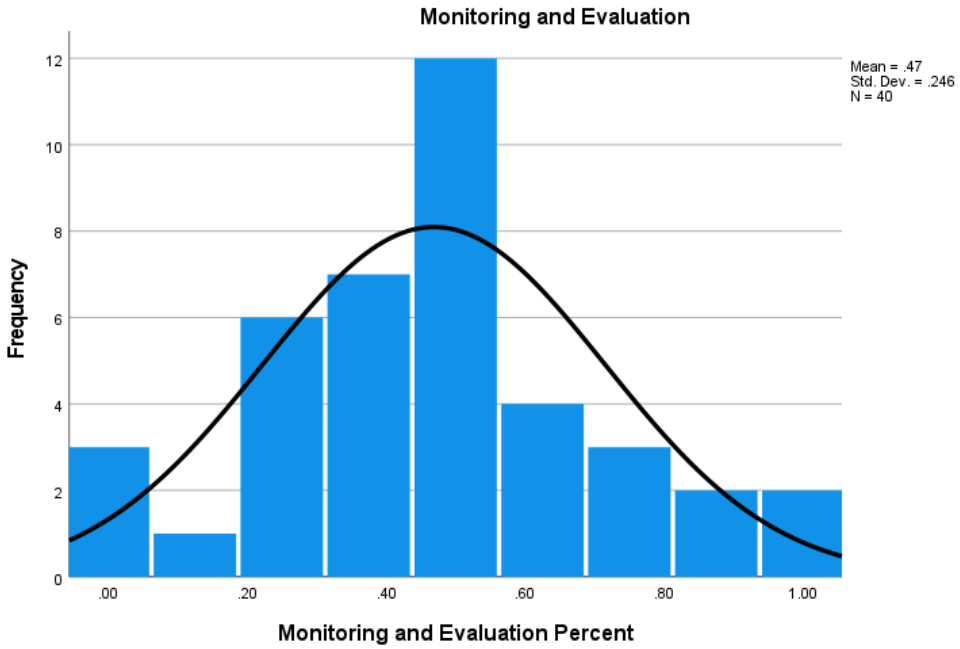

Figure 4.5 Distribution of Monitoring and Evaluation

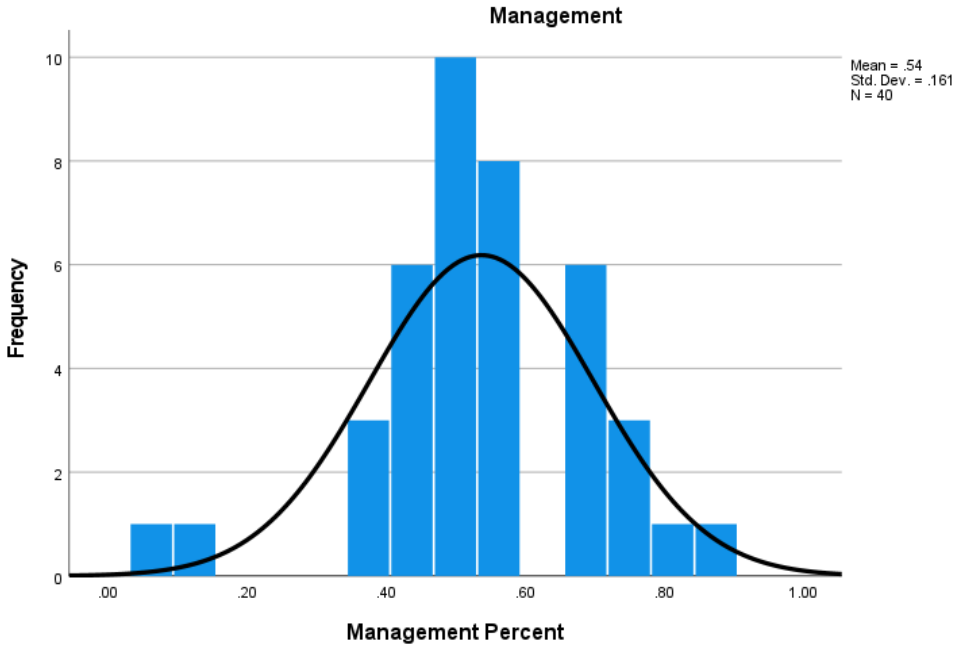

Figure 4.6 Distribution of Management

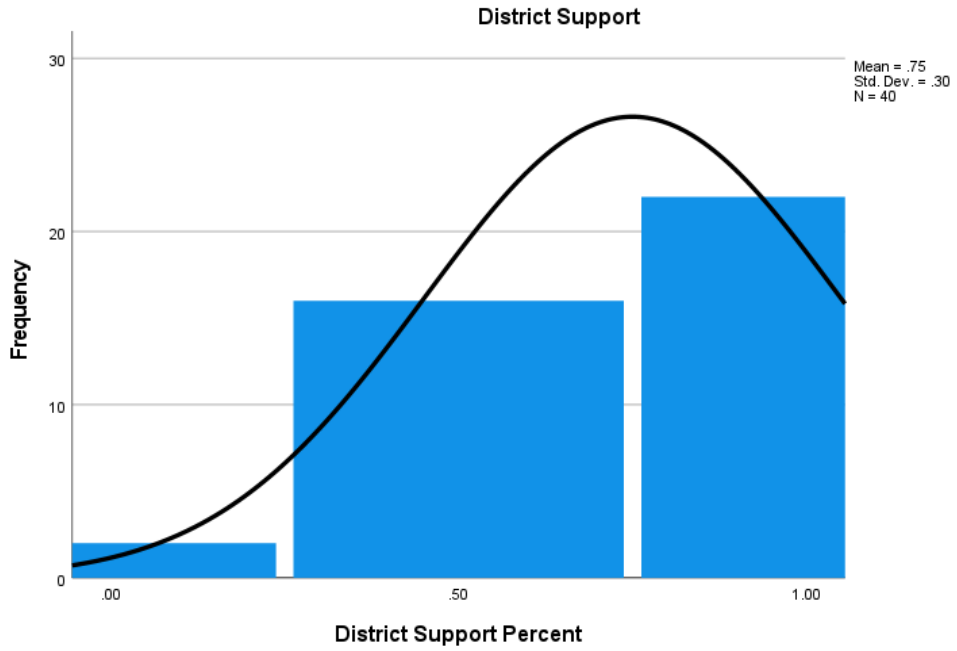

Figure 4.7 Distribution of District Support

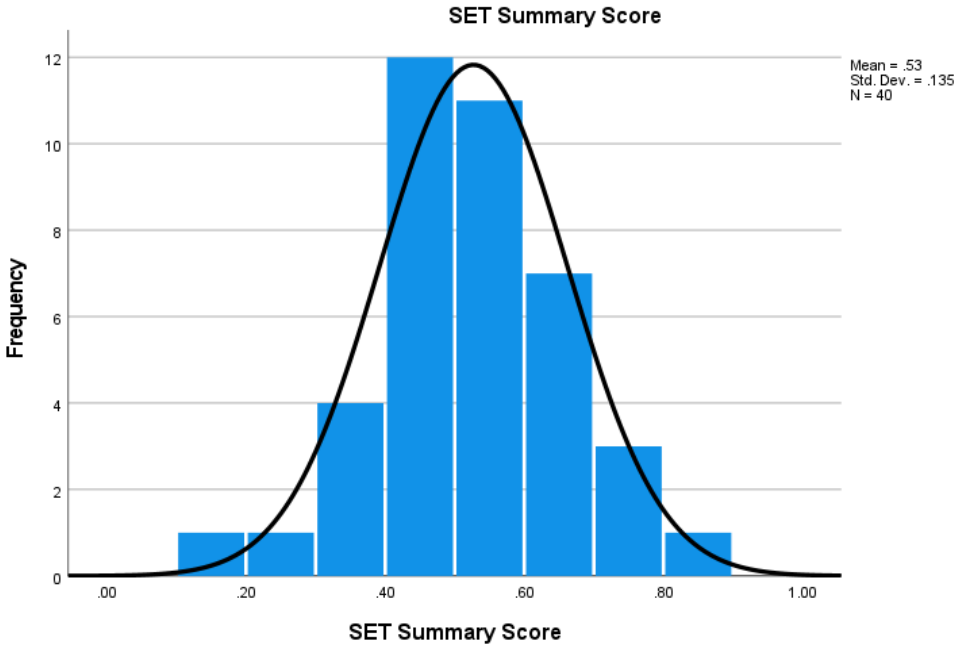

Figure 4.8 Distribution of SET Summary Score

Elementary vs Secondary SET Scores

Within the sample of 40 schools, 22 schools were purely composed of elementary grades and 18 schools contained some or all secondary grades as part of their organization. Secondary and elementary schools have vastly different challenges. Secondary schools are generally considered more challenging contexts in which to implement PBIS with fidelity (McIntosh et al., 2018). For comparison, data were compared between elementary and secondary groups in order to measure any significant differences in PBIS characteristics present prior to formal implementation.

Table 4.3 Subscale Percent Score for School-wide Evaluation Tool (SET) by Level

	All Elementary Schools			Schools with Secondary				
	N	Mean	SD	N	Mean	SD	F	p
Expectations Defined (2 items)	22	.38	.31	18	.40	.34	0.073	.789
Expectation Taught (5 items)	22	.26	.20	18	.31	.25	0.427	.517
Reward System (3 items)	22	.55	.34	18	.26	.30	8.161	**.007**
Violation System (4 items)	22	.85	.15	18	.84	.16	0.016	.900
Monitoring and Evaluation (4 items)	22	.47	.28	18	.47	.21	0.006	.937
Management (8 items)	22	.55	.18	18	.52	.13	0.215	.646
District Support (2 items)	22	.80	.30	18	.69	.30	1.129	.295
SET Summary Score	22	.55	.15	18	.50	.11	1.431	.239

Subscale summary scores are calculated as a percentage of possible points for each of the seven key features
Total summary score is the mean of the seven subscale scores

The data indicate that there was no significant difference between the SET Summary Score for schools only composed of elementary grades and the schools that were composed of all or some secondary grades. Statistical significance was measured as $p < .05$. There was one subscale that had a statistically significant difference of means between the elementary and secondary groups and that was the Reward System subscale, $F(1,38) = 8.161$, $p = .007$. This result suggests that the only meaningful difference between the implementation of PBIS elements at elementary schools and secondary schools prior to formal training is that elementary are much more likely to use a formal reward system.

Measurement of Perceptions of School Climate

Versions of the MDS3 Suite of Climate Surveys were sent to all 40 schools in the sample to measure the perceptions of school climate. Students, parents, and staff at each school were asked to take a version of the survey that was designed to measure safety, engagement, and environment at their school from their outlook. The items in the surveys are organized into nine scales including (1) Student Expectations, (2) Academic Emphasis, (3) Connectedness, (4) Family Involvement, (5) Order and Discipline, (6) Fairness, (7) School Resources, (8) Physical Disorder, and (9) Safety and Violence. Though the scales are the same between the survey versions for each of the stakeholder groups, some of the items that compose them are directly parallel to the other surveys and some are specific to that stakeholder group.

Student Climate Survey

Schools were given the prerogative to administer the student survey in the way that worked best for them. Schools were instructed to give the survey to students from 3rd to 12th grade. For the student Climate Survey, there were 6,610 students that took the survey across 37 schools. The number of students who took the survey at each school ranged from 19 to 501 (M = 178.7, SD = 127.0).

Of the student respondents represented in Table 4.4, there was an even split between the genders. The respondents' grade levels clustered around 5th grade, the majority of students identified as white, and most of the students reported that they got mostly A's for academic grades. The students generally believed that their parents had graduated from college but the second most common answer was 'not sure/don't know/prefer not to answer'.

Table 4.4 Demographics Characteristics of Student Climate Survey Respondents in 2019

	N	*%*
Gender		
Male	3285	49.7%
Female	3301	49.9%
(response missing)	24	0.4%
Grade		
3	257	3.9%
4	976	14.8%
5	1536	23.2%
6	1002	15.2%
7	715	10.8%
8	641	9.7%
9	378	5.7%
10	376	5.7%
11	481	7.3%
12	211	3.2%
(response missing)	37	0.6%
Race/ethnicity		
White	4817	72.9%
Not white	1702	25.7%
(response missing)	91	1.4%
Grades on last report card		
Mostly A's	3115	47.1%
Mostly B's	1565	23.7%
Mostly C's	546	8.3%
Mostly D's	156	2.4%
Mostly F's	97	1.5%
(response missing)	28	0.4%
How far did mother go in school?		
Did not graduate from high school	433	6.6%
Graduated from high school	996	15.1%
Attended some college	738	11.2%
Graduated from college	2091	31.6%
Not sure/don't know/would rather not answer	1612	24.4%
(response missing)	740	11.2%
How far did father go in school?		
Did not graduate from high school	452	6.8%
Graduated from high school	1064	16.1%
Attended some college	571	8.6%
Graduated from college	1910	28.9%
Not sure/don't know/would rather not answer	1863	28.2%
(response missing)	750	11.3%

Note: Total number of students responding = 6,610, within 37 schools. Number of student respondents at each school ranged from 19 to 501; Mean number per school = 178.7, standard deviation = 127.0.

Student Climate Survey Items and Scales

Each item on the student Climate Survey (Table 4.5) was scored on a Likert scale where '0' meant strongly disagree and '3' equaled strongly agree. The Physical Disorder scale is the only scale that measures a negatively stated concept, so a low score on that scale would be considered desirable. The positively stated items in that scale were reverse coded in order to match the scale score. Each scale was made of between five and fifteen component items that were averaged in order to create each scale score.

Items in the Academic Emphasis scale had the highest mean ($M = 2.45$, $SD = .50$). The six items in the scale were the six highest scoring items of the survey. The measures of skew and kurtosis where negatively skewed and leptokurtic indicating that students felt that there was a strong academic emphasis at their school. Several of the items showed that students perceived strong encouragement and belief from their teachers including 'My teachers always want me to do my best' ($M = 2.51$, $SD = 0.65$), 'My teachers believe that I can do well in school' ($M = 2.43$, $SD = 0.65$), and 'Teachers believe all students can do well if they try' ($M = 2.43$, $SD = 0.68$). Students reflected the same emphasis by responding positively to 'I believe I can do well in school' ($M = 2.34$, $SD = 0.75$) and to 'It is important to finish high school' ($M = 2.66$, $SD = 0.61$), the highest scoring item of the survey.

Other high scoring items across the survey represented an eclectic collection of perceptions. The only three items outside of Academic Emphasis that had a $M \geq 2.30$ were 'At this school, students of all races are treated fairly' ($M = 2.34$, $SD = .82$), 'If I do something bad at school, my parent(s) or guardian(s) usually hear about it' ($M = 2.31$, $SD = 0.75$), and 'At this school, staff get along well' ($M = 2.30$, $SD = 0.71$). In general, the

means of almost all the items represented agreement to positive statements about the climate of the schools.

Table 4.5 Items-level Survey Responses and Psychometric Characteristics for Student Survey Scales and Component Items

		N	Mean	SD	Kurtosis	Skew	α[1]
	Student Expectations Scale	6,576	2.02	0.66	0.05	-0.61	.836
1	My teachers make me feel good about myself	6,561	2.12	0.73	0.77	-0.74	.618
2	My teachers tell me when I do a good job	6,545	2.14	0.75	0.33	-0.68	.497
3	I enjoy learning at this school	6,527	2.00	0.89	-0.15	-0.70	.743
4	I like coming to school	6,525	1.73	0.98	-0.85	-0.37	.643
5	I like this school	6,465	2.11	0.91	0.03	-0.88	.704
	Academic Emphasis Scale	6,561	2.45	0.50	2.43	-1.21	.837
1	My teachers believe that I can do well in school	6,534	2.43	0.65	1.47	-1.06	.699
2	I believe I can do well in school	6,529	2.34	0.75	1.06	-1.10	.555
3	My teachers encourage me to work hard in my classes	6,512	2.35	0.72	0.89	-0.99	.670
4	My teachers always want me to do my best	6,515	2.51	0.65	2.03	-1.32	.708
5	It is important to finish high school	6,493	2.66	0.61	4.74	-2.05	.408
6	Teachers believe all students can do well if they try	6,510	2.43	0.68	1.45	-1.14	.646
	Connectedness Scale	6,570	2.03	0.60	0.39	-0.59	.935
1	At this school, I feel like I belong	6,510	1.97	0.89	-0.27	-0.64	.721
2	At this school, I feel close to people	6,500	2.00	0.86	-0.18	-0.64	.591
3	At this school, I feel like I am part of this school	6,498	2.01	0.91	-0.38	-0.65	.738
4	At this school, students like one another	6,486	1.80	0.86	-0.38	0.44	.652
5	At this school, students help one another	6,483	1.97	0.82	0.05	-0.62	.711
6	At this school, students trust one another	6,519	1.79	0.84	-0.34	-0.40	.686
7	At this school, students respect one another	6,511	1.71	0.86	-0.53	-0.29	.688
8	At this school, my teachers care about me	6,506	2.24	0.79	0.76	-0.99	.725
9	At this school, my teachers notice when I am not there	6,487	2.15	0.82	0.20	-0.81	.610
10	At this school, my teachers listen to me when I have something to say	6,479	2.16	0.80	0.40	-0.84	.693
11	At this school, teachers respect the students	6,533	2.26	0.77	0.73	-0.95	.697
12	At this school, students trust the teachers	6,504	2.08	0.84	-0.11	-0.69	.736
13	At this school, students respect the teachers	6,514	1.90	0.87	-0.42	-0.47	.635
14	At this school, staff get along well	6,470	2.30	0.71	1.26	-0.97	.566
15	Students and staff feel pride in this school	6,488	2.17	0.81	0.48	-0.88	.709
	Family Involvement Scale	6398	1.83	0.44	0.78	0.55	.758
1	My parent(s) or guardian(s) feels welcome at this school	6,340	2.03	0.77	0.72	-0.92	.568
2	If I do something bad at school, my parent(s) or guardian(s) hears about it	6,328	2.31	0.75	1.05	-1.06	.353
3	When I do something good at school, my parent(s) or guardian(s) usually hears about it	6,326	1.85	0.99	-0.91	-0.42	.581
4	The school tries to involve parents or guardians	6,298	1.98	0.85	-0.22	-0.59	.629
5	Parents or guardians often come to my school to help out	6,295	1.49	0.99	-1.02	0.01	.511
	Order and Discipline Scale	6,406	1.84	0.52	0.35	-0.42	.788
1	It is easy for teachers at my school to control the students	6,356	1.66	0.84	-0.48	-0.25	.439
2	*Students disobey the rules	6,343	1.39	0.85	-0.57	0.15	.249
3	Students listen to the teachers	6,332	1.84	0.77	0.13	-0.51	.606
4	Teachers can handle students who disrupt class	6,345	1.98	0.84	-0.02	-0.64	.509
5	There are clear rules about student behavior	6,329	2.27	0.76	0.76	-0.96	.545
6	*Misbehaving students get away with it	6,296	1.76	0.98	-0.93	-0.31	.354
7	Students get along well with each other	6,336	1.83	0.81	-0.01	-0.54	.519
8	Students are rewarded for positive behavior	6,339	1.77	0.94	-0.75	-0.34	.504
9	Everyone knows what the school rules are	6,352	2.10	0.84	-0.02	-0.73	.528
	Fairness Scale	6,229	1.86	0.66	0.09	-0.47	.861
1	At this school, students of all races are treated fairly	6,193	2.34	0.82	0.98	-1.21	.535
2	At this school, all students are treated equally, regardless of whether their parents are rich or poor	6,192	2.14	0.92	-0.13	-0.86	.592
3	At this school, boys and girls are treated equally	6,172	2.09	0.93	-0.24	-0.80	.585
4	The school provides instructional materials that reflect my culture, ethnicity, and identity	6,046	1.91	0.89	-0.34	-0.58	.611
5	My teachers ask me about my culture and what it means to me	6,091	1.33	0.95	-0.88	0.22	.605
6	My teachers highlight things about my culture in class that have made me feel proud	6,071	1.44	0.97	-0.97	0.09	.656
7	My teachers provide opportunities for me to learn about the points-of-view of people from different races and cultures	6,085	1.90	0.91	-0.40	-0.59	.668
8	My teachers encourage me to do assignments or reports on people from diverse races and cultures	6,071	1.71	0.96	-0.85	-0.29	.613
	School Resources Scale	6,215	1.99	0.66	0.36	-0.64	.836
1	The school has programs to deal with violence and conflict between students	6,136	1.85	0.93	-0.64	-0.44	.543
2	Teachers at this school help students with their problems	6,159	2.12	0.84	0.21	-0.81	.729
3	Students who need help for their problems are able to get help through school	6,144	2.03	0.99	-0.43	-0.78	.720
4	There is someone at school who I can talk to about personal problems	6,153	1.96	0.84	-0.10	-0.59	.555
5	Students have enough school supplies	6,151	1.92	0.89	-0.26	-0.62	.541
6	The school provides adequate health services for students	6,102	2.08	0.85	0.10	-0.77	.599
	Physical Disorder Scale	6,127	1.09	0.58	0.15	0.35	.705
1	There are often broken windows, doors, or desks in this school	6,107	0.82	0.92	-0.12	0.91	.355
2	*The bathrooms in this school are clean	6,082	1.26	1.02	-1.01	0.31	.558
3	*The school is usually clean and well-maintained	6,072	1.25	0.91	-0.57	0.43	.626
4	*The temperature in this school is comfortable all year round	6,081	0.91	0.79	0.55	0.81	.470
5	Vandalism of school property is a problem at this school	6,024	1.32	0.97	-0.91	0.26	.151
6	*This school has a bright and pleasant appearance	6,037	1.00	0.87	-0.09	0.69	.552
	Safety and Violence Scale	6,121	2.06	0.72	0.10	-0.66	.864
1	I feel safe at this school	6,087	2.16	0.85	0.34	-0.92	.709
2	I feel safe going to and from this school	6,070	2.23	0.80	0.79	-1.00	.666
3	Students at this school try to stop bullying	6,058	1.79	0.97	-0.81	-0.39	.651
4	Adults at this school try to stop bullying	6,066	2.17	0.90	0.17	-0.95	.698
5	Adults are doing enough to stop/prevent bullying	6,057	1.93	0.97	-0.72	-0.55	.707

Note: Response options are 0 = strongly disagree, 1 = disagree, 2 = agree, 3 = strongly agree.

* Item is reverse-scored before creating scaled score.

1. Alpha is coefficient alpha for subscale scores, or item-to-total coefficient for each item, within subscales.

There were three items that showed average disagreement to positively stated items as represented by M < 1.50. Two of the items were from the Fairness scale and centered around how teachers include the culture of their students in the content and instruction of the classroom; 'My teachers ask me about my culture and what it means to me' (M = 1.33, SD = 0.95) and 'My teachers highlight things about my culture in class that have made me feel proud' (M = 1.44, SD = 0.97). Within the eight items on the student Fairness scale, the three items that address the fair treatment between student groups all scored a mean above two, but the five questions that measure the inclusion of different races or cultures in the curriculum all scored below two. Students also generally disagreed with the item 'Parents or guardians often come to my school to help out' (M = 1.49, SD = 0.99).

Though none of the scales represented an average negative perception, the three that stood out as the lowest rated were Family Involvement (M = 1.83, SD = 0.44), Order and Discipline (M = 1.84, SD = 0.52), and Fairness (M = 1.86, SD = 0.66).

Scale Reliability of the Student Climate Survey

It is generally accepted that Cronbach's alpha is a good estimate of reliability for multi-item scales. The rule of thumb is that alphas at .70 and above indicate good reliability and predictive ability (Nunnally, 1975). Each scale on the student Climate Survey meets and exceeds the minimum threshold (Table 4.5).

Parent Climate Survey

Schools were sent a generic link to the parent version of the Climate Survey. The schools were asked to send the link to parents of students at their school through their usual effective means of communication with a request for them to participate in the

survey. There were 1,611 respondents across 39 schools with an average of 41.3 parents responding per school (SD = 32.9).

The respondents were predominantly female (85.2%) but were responding as the parent of a fair mix of male and female students at 50.6% and 45.3% respectively. Most of the parents had graduated from college or had an advanced degree (55%). These parents represented students that were mostly white (85.4%), got mostly A's (65.2%), and attended a variety of different grade levels from K-12.

Table 4.6 Demographics Characteristics of Parent Climate Survey Respondents in 2019

	N	%
Information about parent respondent		
Parent gender		
Male	192	11.9
Female	1373	85.2
Prefer not to answer	38	2.4
(response missing)	8	.5
Parent highest level of education		
Did not finish high school	22	1.4
Graduated from high school or equivalent (GED)	222	13.8
Some college	474	29.4
Graduated from college	690	42.8
Completed an advanced degree (e.g. Masters, PhD, MD, JD)	197	12.2
(response missing)	6	.4
Information about the student being described by parent		
Student gender		
Male	815	50.6
Female	729	45.3
Prefer not to answer	51	3.2
(response missing)	16	1.0
Student race/ethnicity		
White	1376	85.4
Not white	138	8.6
Prefer not to answer	96	6.0
(response missing)	1	.1
Student's grades on last report card		
Mostly A's	1050	65.2
Mostly B's	342	21.2
Mostly C's	139	8.6
Mostly D's	32	2.0
Mostly F's	11	.7
(response missing)	37	2.3
Student grade in school		
K	143	8.9
1	161	10.0
2	179	11.1
3	142	8.8
4	145	9.0
5	133	8.3
6	124	7.7
7	143	8.9
8	136	8.4
9	65	4.0
10	85	5.3
11	74	4.6
12	54	3.4
(response missing)	27	1.7

Note: Total number of parents responding = 1611, within 39 schools. Number of parent respondents at each school ranged from 12 to 159; Mean number per school = 41.3, standard deviation = 32.9

Parent Climate Survey Items and Scales

Similar to the student Climate Survey, each item on the parent Climate Survey (Table 4.7) was also scored on a Likert scale where zero meant strongly disagree and 3 equaled strongly agree with the only exception being the Physical Disorder which is negatively stated. This makes items in that scale more desirable if they are low because any positively stated items in that scale were reverse coded in order to match the scale. Each scale was made of between two and thirteen component items that were averaged in order to create each scale score.

Table 4.7 Item-level Survey Responses and Psychometric Characteristics for Parent Survey Scales and Component Items

		N	Mean	SD	Kurtosis	Skew	α[1]
	Student Expectations Scale	1611	2.80	0.35	1.69	-1.60	.551
1	It is important for my child to attend school every day	1611	2.72	0.49	2.07	-1.55	.411
2	It is important for my child to try hard in school	1607	2.88	0.33	4.44	-2.45	.411
	Academic Emphasis Scale	1610	2.12	0.67	0.55	-0.71	.862
1	This school sets high standards for academic performance	1604	2.04	0.77	0.28	-0.64	.784
2	Teachers set high standards for academic performance	1607	2.11	0.75	0.52	-0.70	.813
3	Teachers believe that all students can do well if they try	1594	2.23	0.73	0.53	-0.79	.625
	Connectedness Scale	1605	2.18	0.76	0.52	0.90	.812
1	At this school, my child feels he or she belongs	1602	2.20	0.83	0.38	-0.92	.683
2	At this school, adults really care about my child	1600	2.16	0.82	0.30	-0.84	.683
	Family Involvement Scale	1609	2.07	0.65	-0.11	-0.47	.951
1	I feel welcome at this school	1607	2.26	0.75	0.53	-0.86	.760
2	If my child does something bad at school, I hear about it from the school	1570	2.02	0.77	0.29	-0.62	.619
3	When my child does something good at school, I usually hear about it from the school	1600	1.61	0.88	-0.70	-0.08	.728
4	This school tries to involve parents and guardians	1599	1.97	0.83	-0.32	-0.48	.833
5	The school encourages me to be an active partner in educating my child	1597	2.03	0.82	-0.20	-0.55	.800
6	I feel comfortable talking to someone at this school about my child's behavior	1599	2.20	0.80	0.52	-0.90	.797
7	I have enough opportunity to talk with the teachers about my child's progress or problems	1601	2.10	0.82	0.00	-0.69	.780
8	The school tries to schedule meetings at times that are convenient for parents and guardians	1593	2.23	0.75	0.69	-0.86	.717
9	If my child is having a problem at school, I know who I can talk to	1595	2.14	0.85	0.08	-0.81	.808
10	I have the opportunity to join an organized parent group, such as the PTA/PTO	1574	2.05	0.87	-0.04	-0.73	.591
11	The school responds to my phone calls, messages, or e-mails	1587	2.30	0.70	1.13	-0.93	.752
12	This school allows input and welcomes parents' or guardians' suggestions	1573	1.94	0.87	-0.33	-0.55	.827
13	I would recommend this school to other parents	1584	2.07	0.89	0.01	-0.82	.802
	Order and Discipline Scale	1578	1.89	0.61	0.26	-0.48	.793
1	There is an orderly environment for learning	1570	2.08	0.72	0.72	-0.68	.649
2	There are clearly defined rules and expectations for student's behavior	1574	2.10	0.74	0.48	-0.67	.636
3	*Misbehaving students get away with it	1539	1.47	0.82	-0.56	-0.29	.566
4	Students are rewarded for positive behavior	1555	1.90	0.77	-0.05	-0.43	.652
	Fairness Scale	1578	2.11	0.66	0.36	-0.59	.907
1	At this school, students of all races are treated fairly	1552	2.28	0.71	0.92	-0.89	.715
2	This school promotes academic success for all students	1566	2.16	0.77	0.31	-0.74	.809
3	This school enforces school rules equally for my child and all other children	1555	1.96	0.88	-0.15	-0.66	.789
4	This school treats all students with respect	1552	2.07	0.81	0.41	-0.79	.827
5	The school provides instructional materials that reflect my child's culture, ethnicity, and identity	1513	2.08	0.71	0.86	-0.70	.700
	School Resources Scale	1577	1.72	0.60	0.13	-0.11	.877
1	This school has enough programs that address conflict among students	1513	1.65	0.79	-0.38	-0.17	.621
2	Students have enough school supplies	1561	1.95	0.73	0.42	-0.55	.523
3	The school provides adequate health services for students	1516	1.81	0.78	-0.01	-0.45	.669
4	This school provides quality activities that meet my child's interests, such as sports, clubs, and music	1556	1.79	0.82	-0.31	-0.36	.646
5	This school has quality programs for my child's talents, gifts, or special needs	1538	1.66	0.81	-0.39	-0.24	.724
6	My child has enough after-school programs to improve academic performance	1512	1.60	0.82	-0.45	-0.21	.655
7	This school has enough programs that address students' emotional and social development	1519	1.55	0.83	-0.52	-0.15	.730
	Physical Disorder Scale	1562	0.76	0.52	0.08	0.27	.785
1	There are a lot of broken windows, doors, or desks at this school	1533	0.69	0.64	1.09	0.71	.622
2	*The school building is clean and well-maintained	1552	0.74	0.66	1.01	0.72	.624
3	Vandalism of school property is a problem at this school	1538	0.69	0.63	0.70	0.62	.514
4	*The school has a bright and pleasant appearance	1543	0.88	0.71	0.16	0.50	.610
	Safety and Violence Scale	1558	1.98	0.65	0.25	-0.45	.858
1	My child is safe at this school	1553	2.16	0.71	1.00	-0.78	.710
2	My child is safe going to and from this school	1551	2.23	0.63	1.17	-0.63	.580
3	Adults at this school try to stop bullying	1523	1.86	0.85	-0.11	-0.60	.787
4	Adults are doing enough to stop/prevent bullying.	1498	1.63	0.86	-0.55	-0.28	.764

Note: Response options are 0 = strongly disagree, 1 = disagree, 2 = agree, 3 = strongly agree.

* Item is reverse-scored before creating scaled score.

1. Alpha is coefficient alpha for subscale scores, or item-to-total coefficient for each item, within subscales.

By far the highest rated scale was Student Expectations (M = 2.80, SD = 0.35).

The items represented the parents' expectations for the attendance (M = 2.72, SD = 0.49)

and the effort (M = 2.88, SD = 0.33) of their student. This scale was highly skewed and leptokurtic centered around ‘strongly agree’.

Two more strongly positive perspectives were represented by the negatively stated items ‘There are a lot of broken windows, doors, or desks at this school’ and ‘Vandalism of school property is a problem at this school’ which both come from the Physical Disorder scale. Parents felt that there were not a lot of broken windows (M = 0.69, SD = 0.64) and that vandalism was not a problem (M = 0.69, SD = 0.63).

Two other positively rated items of note were ‘This school responds to my phone calls, messages, or e-mails’ (M = 2.30, SD = 0.70) and ‘At this school, students of all races are treated fairly’ (M = 2.28, SD = 0.71). These two items do not appear to be related to each other or the other highly related items that were reported above. However, the latter item is similar to the item measuring perspectives on fairness of treatment to all students from the student Climate Survey that was also rated highly.

In the parent Climate Survey, no items or scales were rated, on average, in the lower half of the scale, as represented by $M < 1.50$ when positively stated or $M > 1.50$ when negatively stated. The lowest rated item was a negatively stated item, ‘Misbehaving students get away with it’, had a mean of 1.47 (SD = .82). The other two lowest rated items came from the lowest rated scale, School Resources (M = 1.72, SD = 0.60). These two items asked parents to rate their perspectives on the adequacy of the after-school programs to address academic performance (M = 1.60, SD = 0.82) and social/emotional development of students (M = 1.55, SD = 0.83).

Scale Reliability of the Parent Climate Survey

Each scale in the parent Climate Survey (Table 4.7) met the minimum expectation of reliability as represented by Cronbach's alpha (.70) that was mentioned above except the Student Expectations scale ($\alpha = .551$). This is likely because the scale only consists of two items, thus minimizing the statistical utility of the coefficient alpha for assessing reliability of the scale. However, much can still be gained from the analysis of the particular scale by examining individual items and analyzing their importance to the results.

Staff Climate Survey

The emails of staff at each school – including classified and support staff – were obtained and used to distribute the staff survey by Qualtrics. This allowed for a complete staff perspective on climate and was not limited just to the perspectives of the teachers. Other staff members included, but were not limited to administrators, custodians, paraprofessionals, and cafeteria staff. Individualized emails were sent through Qualtrics to all the staff members with a personalized link to the staff version of the survey. A generic link was also sent to the school to allow any staff that did not have consistent access to their email to take the survey. There was a check put in place to make sure each staff member could only take the survey once. Schools were encouraged to meet a goal of 70% participation by staff on the survey, and nine of the forty schools attained that response rate. Across the 40 schools, a total of 681 staff completed the survey, out of 1214 staff who were eligible and invited to participate (response rate of 56.1%). The average number of staff members participating per school was 17 (SD = 8).

The vast majority of staff respondents were female (83.3%) and identified themselves as teachers in the building (62.7%). There was a symmetrical distribution of respondents by age group centered around 41-50 years of age (32.3%).

Table 4.8 Demographic Characteristics of Staff Climate Survey Respondents in 2019

	N	*%*
Gender		
Male	94	13.8%
Female	567	83.3%
Prefer not to answer	13	1.9%
(response missing)	7	1.0%
Age		
20-30 years	82	12.0%
31-40 years	145	21.3%
41-50 years	220	32.3%
51-60 years	160	23.5%
> 60 years	56	8.2%
Prefer not to answer	17	2.5%
(response missing)	1	0.1%
School role		
Teacher	427	62.7%
Other role	248	36.4%
(response missing)	6	.9%

Note: Total number of staff = 681, within 40 schools. Mean number of staff per school = 17.0, standard deviation = 8.0.

Staff Climate Survey Items and Scales

In addition to the versions given to the students and parents, the staff version of the Climate Survey (Table 4.9) was organized in a similar manner. Each item was ranked on a Likert scale where zero was strongly disagree and 3 equaled strongly agree. The Physical Disorder scale was inversely comparable to the other scales (i.e., lower scores are more desirable). Each scale was made of between two and fourteen component items that were averaged in order to create each scale score.

The highest scale in the staff Climate Survey was Student Expectations that had a mean of 2.46 (SD = .49). This is the same scale that scored highest in the parents' version of the survey showing that staff and parents were similar in their emphasis on student expectations. The item "Teachers at this school feel responsible for their students' academic success" from this scale was the highest scoring item in the survey (M = 2.56, SD = 0.55) and the other item in the scale, 'This school does a good job educating students' (M = 2.36, SD = 0.55) also scored well compared to the rest of the survey. Though not in the Student Expectations scale, another item that scored high from the Connectedness scale represented a similar concept with the statement 'At this school – teachers/staff care about students' (M = 2.52, SD = 0.51).

There were other notable high scoring items in the staff version of the Climate Survey. In another similarity to the parent version of the survey, staff on average disagreed with the negatively worded statement 'There are a lot of broken windows, doors, or desks at this school' (M = 0.47, SD = 0.67) representing a positive view of the physical order of the school. Staff also responded positively to the statement 'Parents and guardians are welcome at this school' resulting in a mean of 2.44 (SD = 0.55).

The only item that had a mean that represented average disagreement was the item 'This school has programs that address substance use among students' (M = 1.37, SD = 0.69). Because of the wording of the statement, it is unclear if the staff also believed that such a program was necessary and/or if there was a substance problem that needed to be addressed, but it may have been implied by some respondents. There is a similar unknown for the item 'This school has programs that address violence and conflict between students' which also was also rated relatively low (M = 1.61, SD =

0.70). Whether or not there is an explicit need for these programs implied in the responses, it is clear that staff perceive a lack of school resources.

Represented by the two items listed above, the School Resources scale was the lowest rated scale in the staff survey (M = 1.78, SD = 0.44). This scale had a similarly low mean to the School Resources scale from the parents Climate Survey (M= 1.72, SD = .60) that was also the lowest scale in its respective version.

The two lowest rated items outside of the School Resources scale indicated that staff are concerned about the enforcement of school rules. 'The school rules are consistently enforced' item and the 'Student discipline and behavior problems are handled effectively' item had means of 1.68 (SD = 0.81) and 1.71 (SD = .74) respectively. Both of these items came from the Order and Discipline scale that was the second lowest rated scale in the survey (M = 1.91, SD = 0.51).

Table 4.9 Items-level Survey and Psychometric Characteristics for Staff Survey Scales and Component Items

		N	Mean	SD	Kurtosis	Skew	α[1]
	Student Expectations Scale	678	2.46	0.49	0.20	-0.49	.720
1	Teachers at this school feel responsible for their students' academic success	677	2.56	0.55	0.27	-0.83	.563
2	This school does a good job educating students	677	2.36	0.55	-0.49	-0.14	.563
	Academic Emphasis Scale	678	2.27	0.50	-0.13	-0.31	.761
1	Teachers at this school encourage students to take challenging classes	662	2.11	0.60	0.23	-0.17	.549
2	Teachers at this school set high standards for their teaching	676	2.34	0.61	-0.44	-0.37	.666
3	Adults at this school believe that all students can do well if they try	676	2.36	0.61	0.01	-0.51	.564
	Connectedness Scale	678	2.19	0.47	-0.09	-0.28	.930
1	At this school - I feel like I belong	677	2.30	0.68	0.40	-0.71	.726
2	At this school - Students get along well with each other	673	2.00	0.49	1.51	-0.08	.437
3	At this school - Students feel that adults are 'on their side'	674	2.05	0.53	1.29	-0.12	.507
4	At this school - My ideas are listened to and used	672	2.02	0.73	0.46	-0.57	.720
5	At this school - Teachers/staff care about students	675	2.52	0.51	-1.63	-0.22	.610
6	At this school - Students get along well with adults	674	2.16	0.52	0.24	0.19	.543
7	At this school - I feel satisfied with the recognition I get for doing a good job	676	2.03	0.77	0.26	-0.62	.700
8	At this school - This school inspires me to do the very best at my job	677	2.22	0.72	0.36	-0.68	.697
9	At this school - The staff get along well	677	2.17	0.67	0.59	-0.57	.754
10	At this school - There is a feeling of trust and confidence among the staff	676	1.97	0.78	-0.30	-0.40	.789
11	At this school - The staff are willing to help each other out	678	2.34	0.65	0.47	-0.71	.730
12	At this school - The staff respect each other	678	2.19	0.70	0.06	-0.54	.783
13	People at this school care about me as a person	676	2.30	0.64	0.79	-0.68	.701
14	The people who work at this school feel pride in the school and its students	675	2.33	0.63	0.10	-0.54	.658
	Family Involvement Scale	675	2.14	0.46	-0.07	0.01	.790
1	Parents and guardians are welcome at this school	675	2.44	0.55	-0.27	-0.35	.543
2	If a student does something bad at school, their parents or guardians are informed	671	2.15	0.61	0.23	-0.25	.581
3	When a student does something good at school, their parents or guardians are usually informed	667	1.80	0.67	-0.36	0.01	.628
4	This school tries to involve parents and guardians	672	2.21	0.62	0.50	-0.40	.681
5	I have enough opportunity to talk with parents and guardians about students' progress or problems	662	2.08	0.66	0.62	-0.46	.427
	Order and Discipline Scale	675	1.91	0.51	0.05	0.08	.842
1	There is an orderly atmosphere for learning	670	2.12	0.58	0.87	-0.24	.628
2	The school rules are consistently enforced	670	1.68	0.81	-0.42	-0.19	.723
3	Teachers can handle students who disrupt class	667	1.93	0.56	0.96	-0.29	.501
4	Rules and expectations for students' behavior are clearly communicated	669	2.00	0.75	-0.22	-0.38	.679
5	Student discipline and behavior problems are handled effectively	666	1.71	0.74	-0.07	-0.30	.727
6	Students are rewarded for positive behavior	669	2.00	0.66	0.09	-0.26	.483
	Fairness Scale	674	2.12	0.52	0.54	-0.29	.849
1	At this school, all students are treated equally, regardless of whether their parents are rich or poor	672	2.26	0.75	0.76	-0.93	.586
2	This school encourages all students to enroll in challenging courses regardless of their race, ethnicity, or nationality	655	2.18	0.64	0.60	-0.46	.636
3	This school provides instructional materials that reflect students' culture, ethnicity and identity	657	1.88	0.66	0.30	-0.30	.626
4	This school fosters an appreciation of student diversity and respect for each other	669	2.14	0.59	0.93	-0.30	.745
5	This school emphasizes showing respect for all students' cultural beliefs and practices	671	2.16	0.62	0.43	-0.34	.734
	School Resources Scale	663	1.78	0.44	0.39	0.05	.767
1	This school has programs that address violence and conflict between students	659	1.61	0.70	-0.30	0.07	.503
2	The adults at this school feel responsible for students' social and emotional development	659	2.03	0.59	0.23	-0.10	.426
3	*My ability to do my job is limited by inadequate supplies or materials	659	1.78	0.78	0.00	-0.47	.220
4	This school provides students with healthy food choices	656	1.95	0.76	0.09	-0.48	.487
5	This school provides adequate health services for students	654	1.65	0.74	-0.23	-0.17	.543
6	This school has programs/services to help students with suspected emotional or behavioral problems	658	1.71	0.75	-0.13	-0.30	.603
7	This school has programs/services to help students with suspected learning disabilities	661	2.12	0.62	2.07	-0.70	.509
8	This school has programs that address substance use among students	641	1.37	0.69	-0.18	0.09	.488
	Physical Disorder Scale	637	0.85	0.45	-0.11	0.21	.714
1	There are a lot of broken windows, doors, or desks at this school	636	0.47	0.67	1.10	1.28	.397
2	*The school building is clean and well-maintained	635	0.82	0.82	0.57	0.94	.543
3	*The temperature in this school is comfortable all year round	637	1.28	0.87	-0.57	0.29	.444
4	Vandalism of school property is a problem at this school	636	0.76	0.75	0.24	0.76	.258
5	*This school has a bright and pleasant appearance	636	1.00	0.79	0.31	0.66	.604
6	*I know what to do if there is an emergency at my school	637	0.79	0.59	1.98	0.60	.343
7	*This school is a supportive and inviting environment to work in	633	0.79	0.65	1.32	0.69	.393
	Safety and Violence Scale	636	1.94	0.49	1.09	-0.41	.611
1	I feel safe at this school	636	2.36	0.64	1.24	-0.85	.307
2	Adults at this school are doing enough to stop/prevent bullying	630	1.68	0.68	0.11	-0.35	.468
3	I have effective strategies for handling a bullying situation	630	1.77	0.63	0.41	-0.37	.496

Note: Response options are 0 = strongly disagree, 1 = disagree, 2 = agree, 3 = strongly agree.

* Item is reverse-scored before creating scaled score.

1. Alpha is coefficient alpha for subscale scores, or item-to-total coefficient for each item, within subscales.

Scale Reliability of the Staff Climate Survey

The only scale that did not meet the .70 standard of reliability using Cronbach's alpha was the Safety and Violence scale ($\alpha = .611$). This lower score may exist because the first item, 'I feel safe at this school' asks about the safety of the staff member where the other two items are focused on staff's ability to support student safety. This may have been rectified if the first item had asked staff to rate their perception of student safety at the school as the other versions of the survey do. Though that item differs, the scale overall seems to be measuring a similar outcome with similar means to the Safety and Violence scales from the student and parent versions of the Climate Survey.

Comparison Between Stakeholder Groups

In order to understand the similarities and differences between the perceptions of the stakeholder groups, I compared the means of each of the nine scales of the MDS3 Climate Surveys by group. I then charted the outcomes of each scale by stakeholder group to identify trends. Data for students, parents, and staff were then aggregated at the school level in order to enable statistical comparison of components across the stakeholder groups.

General Level Stakeholder Scales

Looking at the general level of the school-level scale means by stakeholder group, there are trends that provide information on stakeholder perceptions of the climate at the school. The rating of the Likert scale on the survey indicated a two to represent 'agree' and three to represent 'strongly agree'. Therefore, any mean above two indicates a strong level of agreement by that group.

Staff were asked to rate the level of student expectations among staff, parents rated their own level of student expectations, and students were asked to rate items that measured how they felt about the school and how staff felt about them as part of the Student Expectations scale (Figure 4.9). Even without clear parallels between the statements, the data indicate that there was a high level of expectations as each group had a mean greater than two. Parents' ratings of the expectations for their students was close to an average of three indicating strong agreement that students needed to attend and try hard in school.

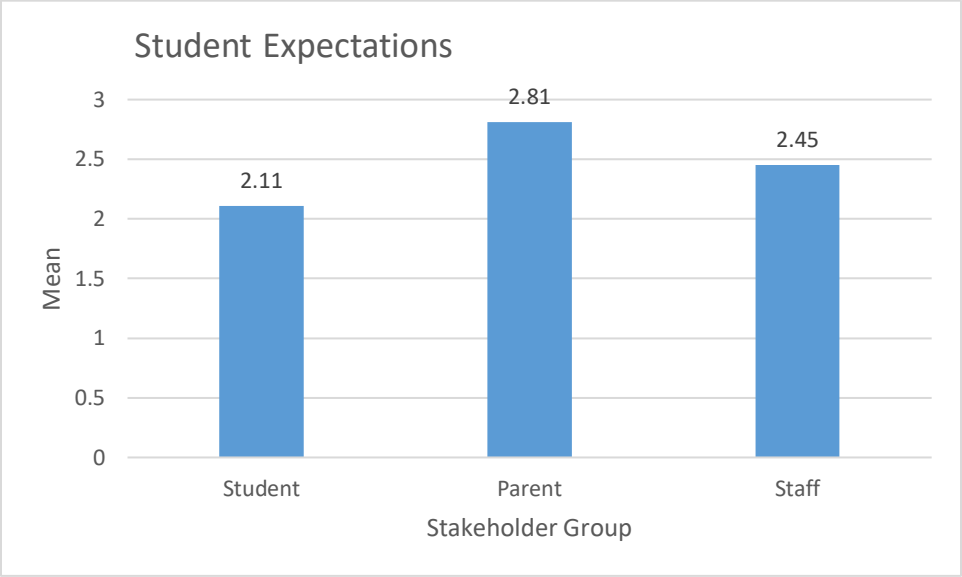

Figure 4.9 Student Expectations School-level Scale by Stakeholder Group

Similarly, the emphasis placed on academics by the school and the feeling of connectedness at the school was also perceived as high. The mean of each group was greater than two for the school-level Academic Emphasis scale (Figure 4.10). Students responded that they felt the importance and the encouragement with a mean that was slightly closer to 'strongly agree'. Each group also responded positively on the

Connectedness scale (Figure 4.11) as the mean for each group was above the 'agree' level on the scoring labels.

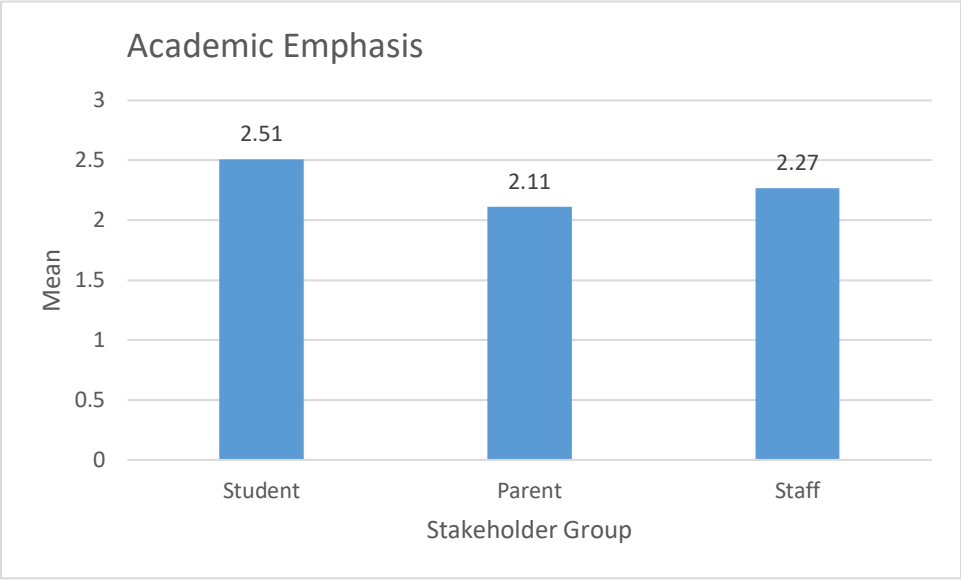

Figure 4.10 Academic Emphasis School-level Scale by Stakeholder Group

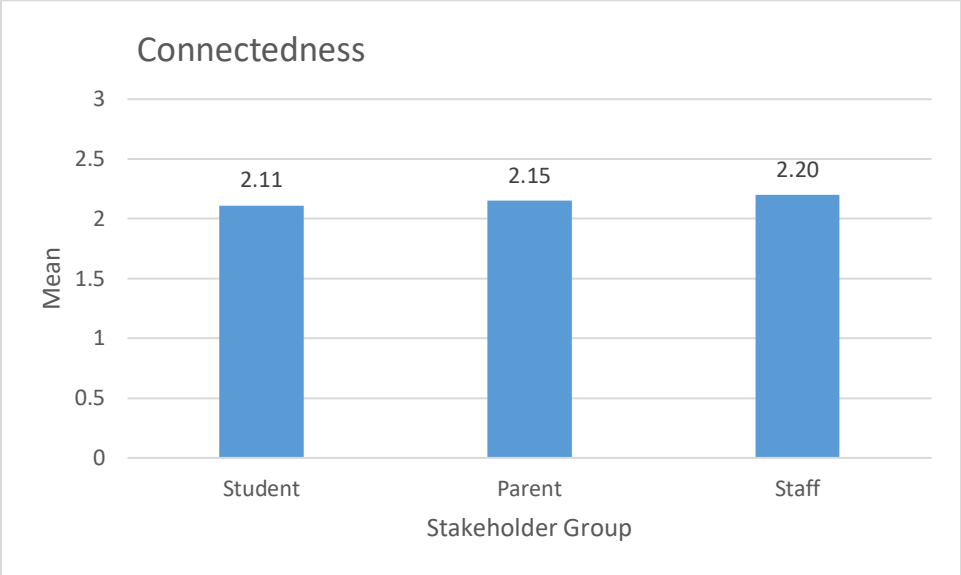

Figure 4.11 Connectedness School-level Scale by Stakeholder Group

Student perspectives on the inclusion of families in the learning process was measured with a mean that dropped below the threshold of two on the Family

Involvement scale (Figure 4.12). The means for parents and staff were near and a little above two, respectively.

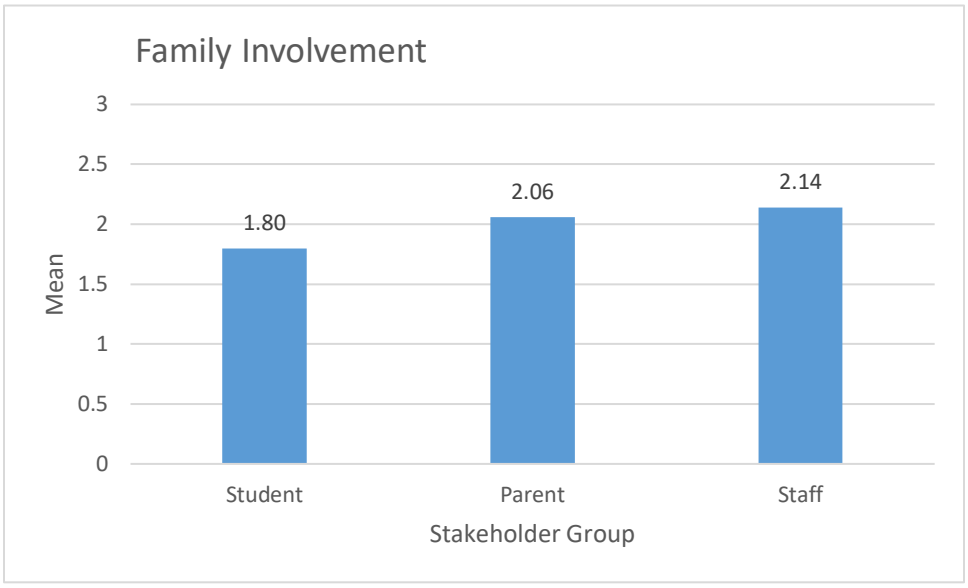

Figure 4.12 Family Involvement School-level Scale by Stakeholder Group

The perceptions of the organization and consistency of the school environment were measured by Order and Discipline (Figure 4.13). The Order and Discipline scale measured the perceptions of all three groups, with all showing a mean just below the threshold of two. This scale was the only scale that had $M < 2$ across all three stakeholder groups.

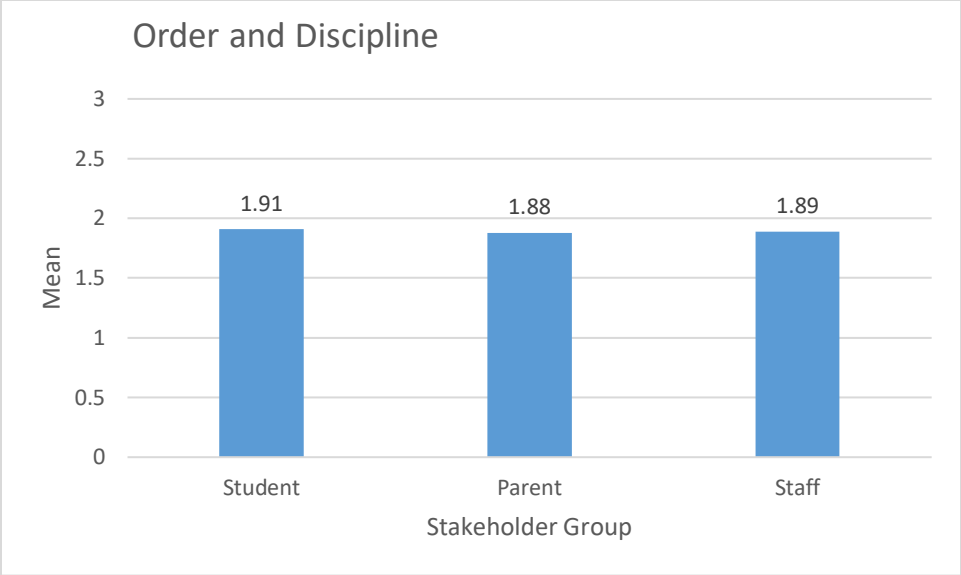

Figure 4.13 Order and Discipline School-level Scale by Stakeholder Group

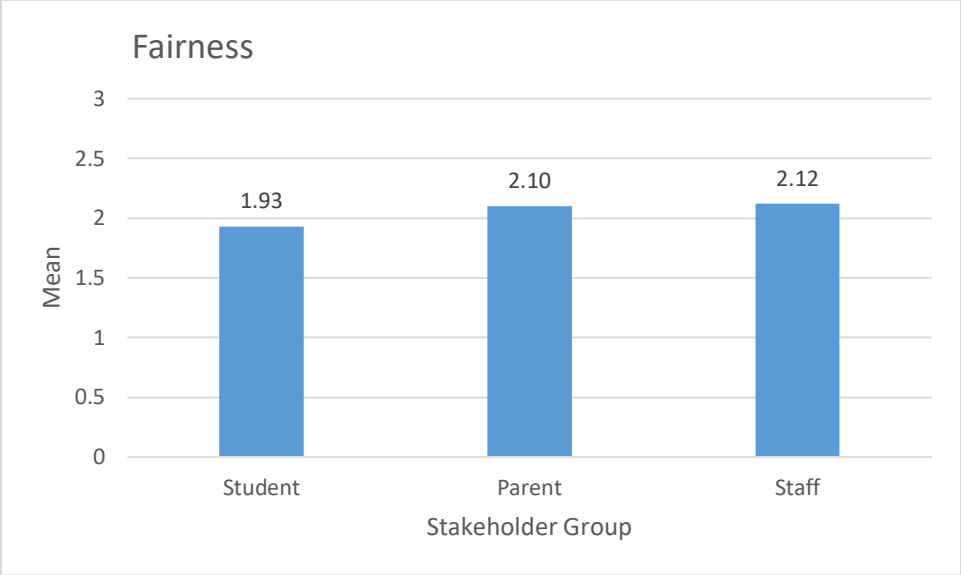

Figure 4.14 Fairness School-level Scale by Stakeholder Group

The Fairness scale (Figure 4.14) represented the perception of the equality with which students were treated. The perception of the fairness of the treatment of students and the inclusion of cultural content in the curriculum was rated $M < 2$ by the students, but was rated $M > 2$ by both parents and staff. The data suggest that adults were positive about the fair treatment of students.

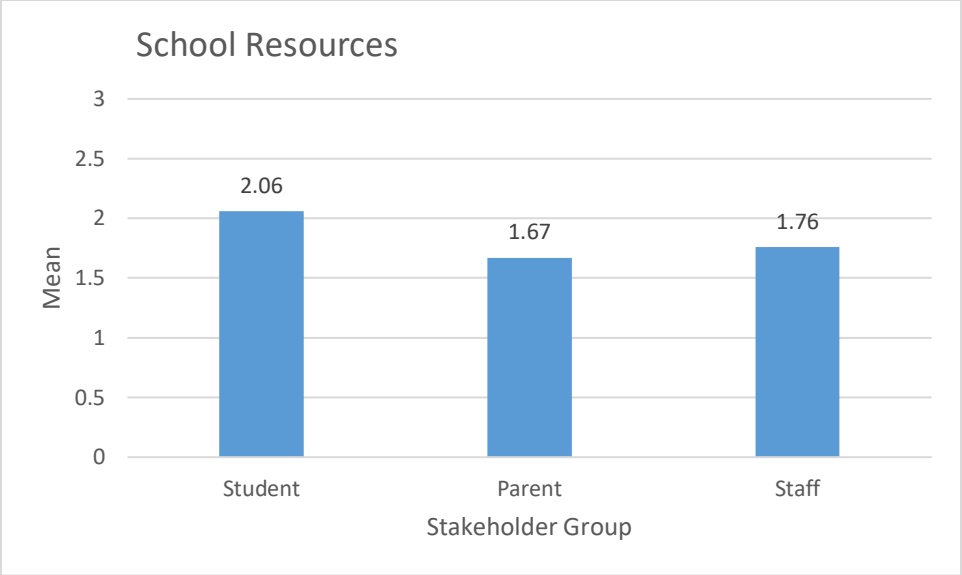

Figure 4.15 School Resources School-level Scale by Stakeholder Group

The perception of the availability of School Resources (Figure 4.15) for students had the two lowest scores across all the scales and stakeholder groups. Parents and staff rated School Resources well below $M < 2$. The students, on the other hand, were more positive and rated the same scale with a mean over 2. The data suggests that the adults did not identify adequate programs, support, and supplies to benefit the students.

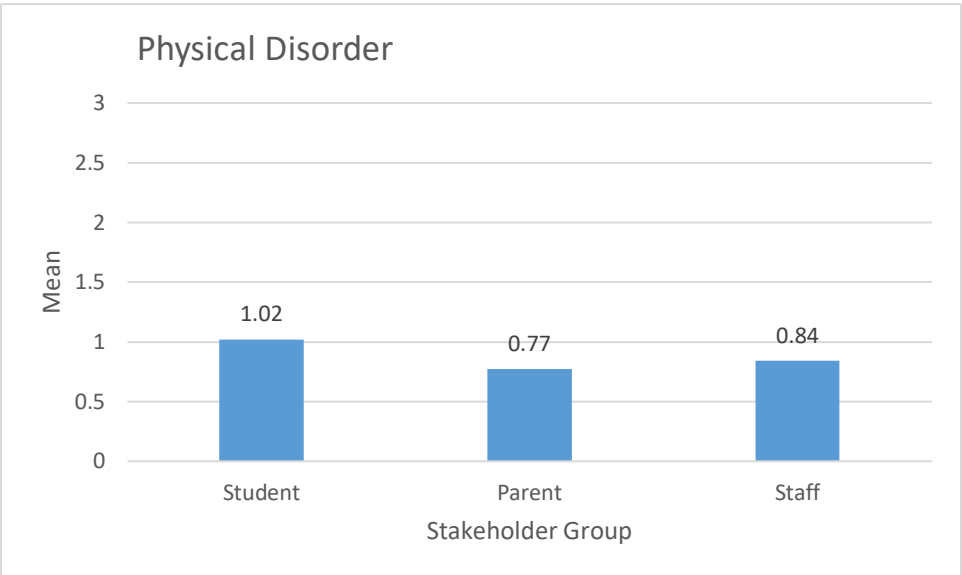

Figure 4.16 Physical Disorder School-level Scale by Stakeholder Group

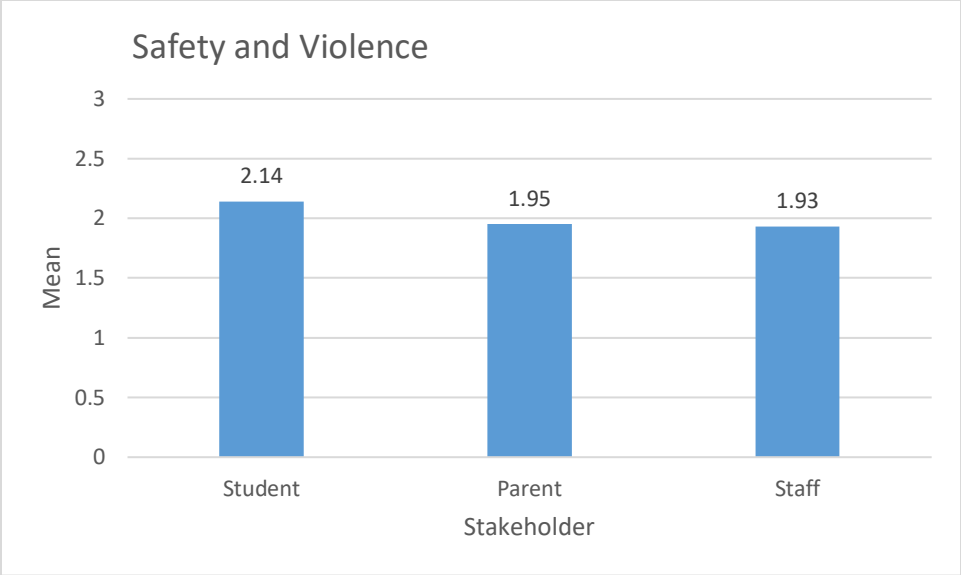

Figure 4.17 Safety and Violence School-level Scale by Stakeholder Group

Since it is measuring levels of disorder, the Physical Disorder (Figure 4.16) scale has an inverse interpretation compared to the rest of the scales, where lower scores indicate a strong climate. Parents and staff had means that would translate to $M > 2$ on the other scales and students were just off of that threshold.

Students did have the only mean rating of perceived safety over two on the Safety and Violence scale (Figure 4.17). Parents and staff both had a mean slightly under two. The scale asked questions about the safety of students and the ability of staff to mitigate bullying.

ANOVA Between Scales by Stakeholder Group

I then conducted an ANOVA (Analysis of Variance) to compare the perspectives of students, parents, and staff that were captured in (Table 4.10). I also computed the Games-Howell post-hoc test to measure the differences between the stakeholder groups. Games-Howell was chosen as the post-hoc test because it does not assume equal variances and sample sizes as do other post-hoc tests such as Tukey's HSD. Differences

in means are considered highly statistically significant when the p-value is below .005. Of the nine scales that exist in the MDS3 Climate Survey, seven scales varied to a degree that is considered statistically significant ($p < .05$). The two scales that did not vary statistically were Connectedness, $F(2,113) = 0.91$, $p = .404$, and Order and Discipline, $F(2,113) = 0.18$, $p = .835$. This indicates that the stakeholder groups at each school were generally in agreement on their perceptions of Connectedness and Order and Discipline, but had differing perspectives on the other scales.

The confirmation of statistical difference of these seven scales highlights some patterns between the stakeholder groups. Students agreed that there was a strong Academic Emphasis, $F(2,113) = 23.61$, $p < .001$, at their schools. The Tukey post-hoc test showed that the student rating was significantly higher than parents ($p < .001$) and parents were significantly higher than staff ($p = .046$). Students also rated School Resources $F(2,113) = 29.12$, $p < .001$, and Safety and Violence, $F(2,113) = 7.53$, $p < .001$, the highest out of any of the stakeholder groups of each school. Using the post-hoc Games-Howell test, student differences were highly significant for School Resources between parents ($p < .001$) and staff ($p < .001$). The same was true for Safety and Violence when relating to parents ($p = .009$), and staff ($p = .002$), respectively.

Students reliably had the lowest rating on several scales as well. Students had the lowest rating of Family Involvement, $F(2,113) = 25.01$, $p < .001$, that was highly significant when compared to parents at $p < .001$ and staff at $p < .001$. Students also had the worst rating of Physical Disorder, $F(2,113) = 10.78$, $p < .001$. When compared to parents ($p < .001$) and staff ($p = .003$) through the post-hoc test, the differences were also highly significant, showing that students had higher perceptions of disorder than did

parents or staff. Student had the lowest scores on the Fairness scale and the ANOVA showed that the difference was significant $F(2,113) = 6.21$, $p = .003$. The Games-Howell test also showed a significant difference when comparing the student score to the parents ($p = .026$) and staff scores ($p = .001$).

Parents at each school had the most positive perception of Student Expectations $F(2,113) = 105.80$, $p < .001$. Parents were significantly higher than staff ($p < .001$), and Staff were significantly higher than students ($p < .001$). This was one of only two scales – along with Student Expectations – that showed statistical differences that were highly significant between all three groups. In all of the other scales, the differences between parents and staff were not highly significant.

Table 4.10 Scale-level Summary for School-level Climate Survey Scales by Stakeholder Group

	Student (N = 37)		Parent (N = 39)		Staff (N = 40)		F	p	p-values for Post-hoc comparisons: Student vs Parent	Student vs Staff	Parent vs Staff
	Mean	SD	Mean	SD	Mean	SD					
Student Expectations	2.11	.26	2.81	.08	2.45	.25	105.80	**<.001**	**<.001**	**<.001**	**<.001**
Academic Emphasis	2.51	.16	2.11	.32	2.27	.24	23.61	**<.001**	**<.001**	**<.001**	**.046**
Connectedness	2.11	.25	2.15	.31	2.20	.24	0.91	.404	.842	.316	.737
Family Involvement	1.80	.13	2.06	.29	2.14	.19	25.01	**<.001**	**<.001**	**<.001**	.329
Order and Discipline	1.91	.22	1.88	.29	1.89	.24	0.18	.835	.830	.894	.984
Fairness	1.93	.23	2.10	.30	2.12	.22	6.21	**.003**	**.026**	**.001**	.892
School Resources	2.06	.26	1.67	.23	1.76	.19	29.12	**<.001**	**<.001**	**<.001**	.150
Physical Disorder	1.02	.22	0.77	.26	0.84	.25	10.78	**<.001**	**<.001**	**.003**	.446
Safety and Violence	2.14	.28	1.95	.26	1.93	.26	7.53	**<.001**	**.009**	**.002**	.938

Note: Response options are 0 = strongly disagree, 1 = disagree, 2 = agree, 3 = strongly agree.
One-way ANOVA accounted for difference in number of schools.
Post-hoc test applied was the Games-Howell Test

Comparison Between Parallel Items

I ran another ANOVA on the items that were parallel across versions of the surveys in order to identify the items that were statistically different between the groups at the school level (Table 4.11). Of the 26 items that had direct parallels from the other stakeholder surveys, eight items had a parallel in only one of the other surveys. For the 18

items with parallels across all three groups, another Games-Howell post-hoc test was calculated to measure differences between each of the three groups. Because of how the questions were worded, there were no parallel items within the Student Expectations scale. I again used $p \leq .05$ as the standard for statistical significance. In the analysis of the 26 items, 18 showed significant differences between the means of the perceptions of the different stakeholder groups.

Table 4.11 Item-level Summary for Selected Climate Survey Items That Are Parallel Across Stakeholder Groups

	Student (N = 37)		Parent (N = 39)		Staff (N = 40)		F	p	p-values for Post-hoc comparisons		
									Student vs Parent	Student vs Staff	Parent vs Staff
	Mean	*SD*	Mean	*SD*	Mean	*SD*					
Academic Emphasis											
Teachers at this school set high standards for their teaching	N/A	*N/A*	2.09	*0.33*	2.33	*0.30*	11.45	**.001**	-	-	-
Teachers believe that all students can do well if they try	2.50	*0.20*	2.24	*0.28*	2.40	*0.25*	10.09	**<.001**	**<.001**	**.028**	.124
Connectedness											
At this school, I feel like I belong	2.05	*0.26*	2.20	*0.30*	2.30	*0.30*	7.95	**<.001**	.181	**<.001**	.075
At this school, teachers care about their students	2.34	*0.30*	2.14	*0.36*	2.53	*0.20*	17.52	**<.001**	**.031**	**.004**	**<.001**
Family Involvement											
Parents and guardians are welcome at this school	2.27	*0.24*	2.22	*0.28*	2.43	*0.20*	8.20	**<.001**	.662	**.006**	**<.001**
If a student does something bad at school, their parents or guardians are informed	2.33	*0.14*	2.01	*0.24*	2.15	*0.22*	23.10	**<.001**	**<.001**	**<.001**	**.033**
When a student does something good at school, their parents or guardians are usually informed	1.92	*0.30*	1.61	*0.30*	1.80	*0.28*	11.70	**<.001**	**<.001**	.151	**.009**
This school tries to involve parents and guardians	2.05	*0.28*	1.96	*0.37*	2.20	*0.28*	6.19	**.003**	.433	.050	**.004**
Order and Discipline											
There is an orderly atmosphere for learning	N/A	*N/A*	2.06	*0.34*	2.11	*0.24*	0.72	.399	-	-	-
There are clearly defined rules and expectations for students' behavior	2.34	*0.24*	2.10	*0.29*	1.97	*0.37*	13.88	**<.001**	**<.001**	**<.001**	.216
*Misbehaving students get away with it	1.84	*0.31*	1.44	*0.31*	N/A	*N/A*	29.64	**<.001**	-	-	-
Students are rewarded for positive behavior	1.83	*0.32*	1.90	*0.31*	1.95	*0.33*	1.30	.277	.676	.257	.714
Fairness											
Students of all races are treated fairly	2.40	*0.21*	2.30	*0.30*	N/A	*N/A*	3.11	.082	-	-	-
This school provides instructional materials that reflect students' culture, ethnicity and identity	1.96	*0.21*	2.07	*0.27*	1.89	*0.24*	5.60	**.005**	.125	.355	**.007**
School Resources											
This school has programs that address violence and conflict between students	1.90	*0.27*	1.59	*0.31*	1.58	*0.27*	15.17	**<.001**	**<.001**	**<.001**	.998
Students have enough school supplies	2.04	*0.27*	1.95	*0.24*	N/A	*N/A*	2.06	.156	-	-	-
School provides adequate health services for students	1.98	*0.32*	1.78	*0.32*	1.61	*0.35*	12.17	**<.001**	**.018**	**<.001**	.073
Physical Disorder											
There are often broken windows, doors, or desks in this school	0.74	*0.30*	0.69	*0.25*	0.48	*0.31*	9.10	**<.001**	.658	**<.001**	**.004**
*The school is usually clean and well-maintained	0.86	*0.23*	0.78	*0.30*	0.83	*0.45*	0.55	.579	.391	.944	.804
*The temperature in this school is comfortable all year round	1.24	*0.31*	N/A	*N/A*	1.26	*0.40*	0.54	.817	-	-	-
Vandalism of school property is a problem at this school	1.18	*0.30*	0.68	*0.20*	0.70	*0.35*	34.47	**<.001**	**<.001**	**<.001**	.955
*This school has a bright and pleasant appearance	0.94	*0.30*	0.92	*0.37*	1.00	*0.48*	0.45	.638	.989	.744	.699
Safety and Violence											
Feel safe at this school	2.23	*0.26*	2.14	*0.29*	2.34	*0.29*	5.01	**.008**	.365	.176	**.008**
Feel safe going to and from this school	2.30	*0.21*	2.23	*0.24*	N/A	*N/A*	1.22	.273	-	-	-
Adults try to stop bullying	2.26	*0.32*	1.82	*0.32*	N/A	*N/A*	35.02	**<.001**	-	-	-
Adults are doing enough to stop or prevent bullying	2.04	*0.34*	1.60	*0.31*	1.68	*0.29*	22.01	**<.001**	**<.001**	**<.001**	.430

Note: Response options are 0 = strongly disagree, 1 = disagree, 2 = agree, 3 = strongly agree.
* Item is reverse-scored before creating scaled score.
One-way ANOVA accounted for difference in number of schools
Post-hoc test applied was Games-Howell Test

The means between stakeholder groups for all the parallel items in Academic Emphasis, Connectedness, and Family Involvement all differed to a degree that was

statistically significant ($p \leq .05$). Within the Academic Emphasis scale, staff were more optimistic about the standards they set for their teaching when compared against the parents' perspective of the standards the teachers set $F(1,77) = 11.45$, $p = .001$. Students felt that teachers believed in them $F(2,113) = 1.09$, $p < .001$, as the Games-Howell post-hoc test revealed that scores significantly higher overall than among parents ($p < .001$) and even the staff themselves ($p = .028$). Staff were more favorable than other stakeholders when rating the feelings of Connectedness at each school. There were strong feelings of belonging among the staff $F(2,113) = 7.95$, $p < .001$, and they reported feeling significantly stronger in belonging than did students, $p < .001$. All of the groups generally agreed that staff cared about the students $F(2,113) = 17.52$, $p < .001$. Staff agreed with that statement more than students ($p = .004$), and students significantly more than parents ($p = .031$).

Parents had the lowest rating of every parallel item in the Family Involvement scale by a significant margin. Staff agreed that the school tried to welcome parents/guardians at school ($F(2,113) = 8.20$, $p < .001$) at a significantly higher rate than the parents ($p < .001$) and students ($p = .006$). There was a similar pattern when the groups rated the phrase 'This school tries to involve parents and guardians', $F(2,113) = 6.19$, $p = .003$. Staff felt much more strongly than the parents ($p = .004$). The stakeholder groups were asked about the communication from school to home. All three groups agreed that parents are notified when students do something bad as each of their means was above two. However, there were differences between each of the groups, $F(2,113) = 23.10$, $p < .001$. Students endorsed it more strongly about it than staff ($p < .001$) and staff endorsed it more than parents ($p < .001$). When it came to reporting good news to

parents/guardians, each of the means was less than two. There were again differences between the groups ($F(2,113) = 11.70$, $p < .001$) as parents were less likely than staff ($p = .009$) and students ($p < .001$) to think that good news came home effectively. However, all the stakeholders agreed it was more likely that parents/guardians would be contacted for bad behaviors than for good behaviors.

When the stakeholders were asked about Order and Discipline, two of the items were viewed similarly by the stakeholder groups, but two of the items had significant differences. Students felt that the rules and expectations were better defined ($F(2,113) = 13.88$, $p < .001$) than did parents ($p < .001$) and staff ($p < .001$). Students and parents also disagreed about whether students got away with misbehavior, $F(1,77) = 11.45$, $p = .001$. While there were no significant differences between the stakeholder groups for the item titled 'Students are rewarded for positive behavior', it was one of the few items where each of the stakeholder groups had a mean lower than 2.

In the Fairness scale, the only statistical difference appeared when the survey asked about how well instructional materials reflected the culture, ethnicity, and identify of the students, $F(2,113) = 5.60$, $p = .005$. The difference was one of the few differences between parents and staff ($p = .007$).

Student had much more positive views of the resources offered to them, as measured by the School Resources scale. Students felt that there were more programs to address conflict between students, $F(2,113) = 15.17$, $p < .001$, than did the parents ($p < .001$) and staff ($p < .001$). The same pattern was true when the groups were asked about adequate health services for students. Students felt they were more adequate $F(2,113) = 12.17$, $p < .001$ than did parents ($p = .018$) and staff ($p < .001$). It should be noted that

both of these items showed average ratings < 2 by all three groups of stakeholders, so although there were differences between them, the absolute mean scores were on the lower end of the possible range, relative to means for other items.

The Physical Disorder scale asked stakeholder groups to rate the level of disorder they observed at the school. Stakeholders generally agreed that the schools were well taken care of, but there was a difference in the answers by the groups, for two items. For the item that asked about broken objects at the school, $F(2,113) = 9.10$, $p < .001$, staff were much less likely to agree that it was an issue, relative to students ($p < .001$) and parents ($p = .004$). Students were more likely to agree that vandalism was a problem at their school, $F(2,113) = 34.47$, $p < .001$, relative to parents ($p < .001$) or staff ($p < .001$).

In the Safety and Violence scale, overall difference between groups was evident $F(2,113) = 5.01$, $p = .008$, and the Games-Howell post-hoc test revealed that the difference was that parents felt less safe than staff ($p = .008$). When asked whether adults tried to stop bullying, students were more likely to agree than were parents, $F(1,77) = 11.45$, $p = .001$. All three groups were asked whether efforts to stop bullying were enough $F(2,113) = 22.01$, $p < .001$ and students agreed more than parents ($p < .001$) or staff ($p < .001$).

Factors Contributing to Perceptions of Climate

It is important to recognize that the data from the individual responses can pose some unique challenges because all of those data are nested inside unique individual circumstances and schools (Peugh, 2010). In order to truly understand the results of the Climate Surveys, I performed a multi-variable, multi-level linear regression to determine

what demographic factors of the schools and the individuals were contributing to the outcomes. Stata (Version 17) statistical software was used for the regression analysis.

I examined how the demographics of the stakeholders and the schools they represented each influenced the mean while controlling for all other factors. I computed the analysis for each scale under all three stakeholder surveys; students, parents, and staff. The school characteristics included in the model were: school poverty (as measured by percentage of students eligible for Free/Reduced Price Lunch; FRPL), locale in relation to larger population centers (to account for different types of remoteness among rural settings), and school level. Characteristics of the different stakeholder groups were selected for inclusion of the analysis depending on their theoretical importance and their contribution to the model. Individual demographics were different between the stakeholders because of the unique circumstances of the groups. Because of the large amount of analysis, Alpha was set at $p < .05$ for determining statistical significance.

Regression Results for Scales of Student Climate Survey

I examined the influence of the demographics of students and the schools they represented on the nine scales of the student Climate Survey. Included in the model were the three school characteristics that were kept included in models across all three stakeholder groups (school poverty, locale, and school level) as well available information on characteristics of the individual stakeholders, including gender, race/ethnicity, and grade.

Table 4.12 Summary of Multi-Variable Multi-Level Regression Model Predicting Student Perceptions of Student Expectations Climate Scale in 2019

Variables	Adjusted margin	95% CI	Regression results coefficient	SE	*p*
SCHOOL CHARACTERISTICS					
School poverty					
FRPL <40% (referent)	2.12	2.05, 2.20	-	-	-
FRPL 40-60%	2.03	1.97, 2.10	-.091	.050	.068
FRPL >60%	1.97	1.88, 2.06	-.157	.060	**.009**
Locale					
Fringe (referent)	2.02	1.92, 2.13	-	-	-
Remote	2.06	1.99, 2.12	.033	.061	.590
Distant	2.04	1.97, 2.11	.013	.064	.844
School level					
Elementary/middle (referent)	2.18	2.12, 2.24	-	-	-
Middle/high	1.94	1.86, 2.03	-.240	.054	**<.001**
High school only	1.85	1.73, 1.98	-.329	.076	**<.001**
All grades	2.08	1.96, 2.01	-.099	.073	.175
STUDENT CHARACTERISTICS					
Gender					
Male (referent)	2.00	1.95, 2.04	-	-	-
Female	2.09	2.05, 2.14	.099	.015	**<.001**
Race/ethnicity					
Non-Hispanic White (referent)	2.05	2.01, 2.09	-	-	-
Student of color	2.03	1.98, 2.08	-.183	.018	.317
Grade (continuous)	-	-	-.055	.006	**<.001**

Note: Adjusted margin represents the average score on the climate survey subscale (scores ranging from 0 to 3) for each group, controlling for all other variables in the model.
FRPL = Free/Reduced-Priced Lunch, used as a proxy for community-level poverty.
N = 6,446 students in grades 3 to 12, within 37 schools.
Bold denotes significance at $p \leq .05$

Considering the impact of student and school characteristics on the student perceptions of Student Expectations, there were several areas of significance (Table 4.12). Schools with higher levels of student poverty (FRPL > 60%) rated Student Expectations significantly lower than schools experiencing less poverty ($\gamma = -.157$, $p = .009$). Students from secondary schools had a significantly lower perception of Student Expectations when compared to elementary schools. Schools that were some combination of middle and high schools had a mean .24 points lower than elementary schools ($\gamma = -.240$, $p < .001$) and high schools were .35 points lower ($\gamma = -.329$, $p < .001$), when

holding the other factors constant. Schools that were K-12 in composition did not show the same significance ($\gamma = -.099$, $p = .175$), perhaps because they contained both elementary and secondary grades. Grade level was a continuous variable, and showed a significant linear trend ($\gamma = -.055$, $p < .001$), with perceived Student Expectation scores decreasing as grade increased (i.e., lowest expectations among students in more advanced grades up through grade 12). Those who identified as female scored significantly higher than males in the model ($\gamma = .099$, $p < .001$) in relation to the amount of Student Expectations that they perceived.

Table 4.13 Summary of Multi-Variable Multi-Level Regression Model Predicting Student Perceptions of Academic Emphasis Climate Scale in 2019

Variables	Adjusted margin	95% CI	coefficient	SE	*p*
SCHOOL CHARACTERISTICS					
School poverty					
FRPL <40% (referent)	2.51	2.46, 2.56	-	-	-
FRPL 40-60%	2.46	2.42, 2.51	-.048	.032	.135
FRPL >60%	2.43	2.37, 2.48	-.085	.039	**.029**
Locale					
Fringe (referent)	2.47	2.40, 2.53	-	-	-
Remote	2.48	2.44, 2.52	.011	.039	.785
Distant	2.46	2.42, 2.51	.005	.041	.907
School level					
Elementary/middle (referent)	2.54	2.50, 2.59	-	-	-
Middle/high	2.42	2.37, 2.48	-.122	.036	**.001**
High school only	2.35	2.27, 2.44	-.190	.051	**<.001**
All grades	2.47	2.39, 2.55	-.075	.048	.119
STUDENT CHARACTERISTICS					
Gender					
Male (referent)	2.44	2.42, 2.47	-	-	-
Female	2.49	2.47, 2.52	.050	.012	**<.001**
Race/ethnicity					
Non-Hispanic White (referent)	2.49	2.46, 2.51	-	-	-
Student of color	2.42	2.39, 2.46	-.063	.014	**<.001**
Grade (continuous)	-	-	-.038	.005	**<.001**

Note: Adjusted margin represents the average score on the climate survey subscale (scores ranging from 0 to 3) for each group, controlling for all other variables in the model.
FRPL = Free/Reduced-Priced Lunch, used as a proxy for community-level poverty.
N = 6,432 students in grades 3 to 12, within 37 schools.
Bold denotes significance at $p \leq .05$

The differences that were observed in the Students Expectations scale were similar to those in the Academic Emphasis scale (Table 4.13). Students at schools with high levels of poverty again scored significantly lower on academic emphasis ($\gamma = -.085$, $p = .029$). Students at middle/high ($\gamma = -.122$, $p \leq .001$) and high school only ($\gamma = -.190$, $p < .001$) levels were again lower than schools that were some mix of elementary only and elementary/middle grade levels. Schools that represented all grade levels again split the middle and did not show a significant difference ($\gamma = -.075$, $p = .119$). The decreases in

mean scale score represented in each continuous grade level were again significant (γ = -.038, p < .001) and females also perceived higher Academic Emphasis (γ = .050, p < .001). The main difference between the results of the two scales is that students of color perceived a lower emphasis on academics when compared to white respondents (γ = -.063, p < .001).

Table 4.14 Summary of Multi-Variable Multi-Level Regression Model Predicting Student Perceptions of Connectedness Climate Scale in 2019

Variables	Adjusted margin	95% CI	coefficient	SE	*p*
SCHOOL CHARACTERISTICS					
School poverty					
FRPL <40% (referent)	2.17	2.10, 2.23	-	-	-
FRPL 40-60%	2.04	1.98, 2.10	-.128	.043	**.003**
FRPL >60%	1.94	1.87, 2.02	-.224	.052	**<.001**
Locale					
Fringe (referent)	2.03	1.94, 2.12	-	-	-
Remote	2.08	2.03, 2.14	.057	.053	.288
Distant	2.03	1.97, 2.09	.003	.056	.956
School level					
Elementary/middle (referent)	2.19	2.14, 2.24	-	-	-
Middle/high	1.96	1.89, 2.04	-.229	.047	**<.001**
High school only	1.86	1.75, 1.97	-.329	.066	**<.001**
All grades	2.05	1.95, 2.16	-.137	.064	**.032**
STUDENT CHARACTERISTICS					
Gender					
Male (referent)	2.05	2.01, 2.09	-	-	-
Female	2.06	2.02, 2.10	.012	.013	.357
Race/ethnicity					
Non-Hispanic White (referent)	2.06	2.02, 2.10	-	-	-
Student of color	2.04	2.00, 2.08	-.020	.016	.210
Grade (continuous)	-	-	-.056	.006	**<.001**

Note: Adjusted margin represents the average score on the climate survey subscale (scores ranging from 0 to 3) for each group, controlling for all other variables in the model.
FRPL = Free/Reduced-Priced Lunch, used as a proxy for community-level poverty.
N = 6,442 students in grades 3 to 12, within 37 schools.
Bold denotes significance at p ≤ .05

On the Connectedness scale (Table 4.14), there was a significant difference in scores for schools with higher percentages of students qualifying for FRPL. When compared to respondents from schools with less than 40% of students with FRPL,

students at schools with moderate poverty (FRPL 40-60%) and higher poverty (FRPL > 60%) perceived significantly lower feelings of connection at their school (γ = -.128, p = .003; γ = -.224, p < .001). There was again a difference that was significantly lower at the school level for middle/high schools (γ = -.229, p < .001) and the high schools (γ = -.329, p < .001) as well as for continuous differences between grade levels (γ = -.056, p < .001).

Table 4.15 Summary of Multi-Variable Multi-Level Regression Model Predicting Student Perceptions of Family Involvement Climate Scale in 2019

Variables	Adjusted margin	95% CI	coefficient	SE	*p*
SCHOOL CHARACTERISTICS					
School poverty					
FRPL <40% (referent)	1.82	1.78, 1.85	-	-	-
FRPL 40-60%	1.81	1.78, 1.84	-.005	.024	.845
FRPL >60%	1.85	1.81, 2.89	.036	.029	.208
Locale					
Fringe (referent)	1.83	1.78, 1.88	-	-	-
Remote	1.81	1.78, 1.84	-.021	.029	.477
Distant	1.84	1.81, 1.87	.011	.031	.724
School level					
Elementary/middle (referent)	1.80	1.76, 1.83	-	-	-
Middle/high	1.84	1.80, 1.88	.045	.027	.091
High school only	1.90	1.84, 1.96	.105	.040	**.008**
All grades	1.74	1.68, 1.80	-.056	.037	.132
STUDENT CHARACTERISTICS					
Gender					
Male (referent)	1.85	1.83, 1.87	-	-	-
Female	1.79	1.77, 1.81	-.059	.011	**<.001**
Race/ethnicity					
Non-Hispanic White (referent)	1.82	1.80, 1.84	-	-	-
Student of color	1.83	1.80, 1.86	.011	.013	.371
Grade (continuous)	-	-	.037	.005	**<.001**

Note: Adjusted margin represents the average score on the climate survey subscale (scores ranging from 0 to 3) for each group, controlling for all other variables in the model.
FRPL = Free/Reduced-Priced Lunch, used as a proxy for community-level poverty.
N = 6,270 students in grades 3 to 12, within 37 schools.
Bold denotes significance at p ≤ .05

Student perceptions of Family Involvement (Table 4.15) did not differ significantly by any school characteristics, other than the high schools scoring

significantly higher on the measure (γ =.105, $p = .008$). This is the only scale that was rated more strongly at schools with higher grade levels. Males perceived a significantly higher level of involvement by their families than did females, who had an adjusted mean .06 points lower (γ = -.059, $p < .001$). This was one of two scales (with Physical Disorder) that demonstrated a significant difference between genders. The difference between individual grades was again significant, but for this scale each grade level increase had a higher perception of Family Involvement than the lower grade (γ = .037, $p < .001$). Family Involvement was the only scale where students at each grade level had more positive perceptions as grade levels increased.

Table 4.16 Summary of Multi-Variable Multi-Level Regression Model Predicting Student Perceptions of Order and Discipline Climate Scale in 2019

Variables	Adjusted margin	95% CI	coefficient	SE	*p*
SCHOOL CHARACTERISTICS					
School poverty					
FRPL <40% (referent)	1.92	1.86, 1.98	-	-	-
FRPL 40-60%	1.86	1.81, 1.91	-.064	.040	.115
FRPL >60%	1.78	1.71, 1.86	-.139	.049	**.005**
Locale					
Fringe (referent)	1.83	1.75, 1.92	-	-	-
Remote	1.89	1.84, 1.94	.054	.050	.279
Distant	1.84	1.78, 1.89	.002	.052	.969
School level					
Elementary/middle (referent)	1.99	1.94, 2.04	-	-	-
Middle/high	1.78	1.71, 1.85	-.213	.044	**<.001**
High school only	1.64	1.54, 1.74	-.348	.061	**<.001**
All grades	1.91	1.81, 2.01	-.084	.059	.155
STUDENT CHARACTERISTICS					
Gender					
Male (referent)	1.85	1.82, 1.89	-	-	-
Female	1.87	1.83, 1.90	.017	.012	.163
Race/ethnicity					
Non-Hispanic White (referent)	1.86	1.83, 1.90	-	-	-
Student of color	1.86	1.82, 1.90	-.007	.014	.633
Grade (continuous)	-	-	-.034	.005	**<.001**

Note: Adjusted margin represents the average score on the climate survey subscale (scores ranging from 0 to 3) for each group, controlling for all other variables in the model.
FRPL = Free/Reduced-Priced Lunch, used as a proxy for community-level poverty.
N = 6,279 2 students in grades 3 to 12, within 37 schools.
Bold denotes significance at $p \leq .05$

There were differences in adjusted means in the Order & Discipline scale (Table 4.16) for schools with a higher rate of poverty. These differences were significant for higher-poverty schools ($\gamma = -.139$, $p = .005$) relative to the lowest-poverty schools. The differences by school level were significant, with lower average Order and Discipline scores at middle/high schools ($\gamma = -.213$, $p < .001$) and high schools ($\gamma = -.348$, $p < .001$), relative to elementary schools. Consistent with that result, scores declined as student grade level increased ($\gamma = -.034$, $p < .001$).

Table 4.17 Summary of Multi-Variable Multi-Level Regression Model Predicting Student Perceptions of Fairness Climate Scale in 2019

Variables	Adjusted margin	95% CI	coefficient	SE	*p*
SCHOOL CHARACTERISTICS					
School poverty					
FRPL <40% (referent)	1.93	1.87, 1.99	-	-	-
FRPL 40-60%	1.85	1.79, 1.91	-.080	.044	.070
FRPL >60%	1.85	1.78, 1.93	-.077	.053	.145
Locale					
Fringe (referent)	1.86	1.77, 1.95	-	-	-
Remote	1.89	1.83, 1.94	.024	.053	.652
Distant	1.87	1.81, 1.93	.004	.056	.949
School level					
Elementary/middle (referent)	2.01	1.95, 2.06	-	-	-
Middle/high	1.77	1.70, 1.84	-.236	.048	**<.001**
High school only	1.67	1.56, 1.79	-.331	.069	**<.001**
All grades	1.96	1.85, 2.07	-.048	.065	.461
STUDENT CHARACTERISTICS					
Gender					
Male (referent)	1.88	1.85, 1.92	-	-	-
Female	1.87	1.83, 1.91	-.019	.016	.235
Race/ethnicity					
Non-Hispanic White (referent)	1.89	1.86, 1.93	-	-	-
Student of color	1.82	1.78, 1.87	-.071	.019	**<.001**
Grade (continuous)	-	-	-.042	.007	**<.001**

Note: Adjusted margin represents the average score on the climate survey subscale (scores ranging from 0 to 3) for each group, controlling for all other variables in the model.
FRPL = Free/Reduced-Priced Lunch, used as a proxy for community-level poverty.
N = 6,103 students in grades 3 to 12, within 37 schools.
Bold denotes significance at $p \leq .05$

Student perception of Fairness (Table 4.17) at their schools had the familiar significant differences for middle/high schools ($\gamma = -.236$, $p < .001$) and high schools ($\gamma = -.236$, $p < .001$) indicating that students at rural schools with higher grade levels perceived their school as being less fair. This pattern was again consistent with differences between each grade level ($\gamma = -.042$, $p < .001$). The unique difference for the Fairness scale was that students of color had a lower perception of Fairness ($\gamma = -.071$, p

< .001). This could be because the scale contained items that asked students whether they felt their culture/ethnicity/race were represented in the curriculum.

Table 4.18 Summary of Multi-Variable Multi-Level Regression Model Predicting Student Perceptions of School Resources Climate Scale in 2019

Variables	Adjusted margin	95% CI	coefficient	SE	*p*
SCHOOL CHARACTERISTICS					
School poverty					
FRPL <40% (referent)	2.06	2.00, 2.12	-	-	-
FRPL 40-60%	1.99	1.98, 2.05	-.067	.043	.123
FRPL >60%	1.94	1.87, 2.02	-.117	.052	**.025**
Locale					
Fringe (referent)	1.96	1.87, 2.05	-	-	-
Remote	2.04	1.99, 2.10	.080	.053	.130
Distant	1.97	1.91, 2.03	.004	.055	.938
School level					
Elementary/middle (referent)	2.13	2.07, 2.18	-	-	-
Middle/high	1.90	1.83, 1.97	-.227	.048	**<.001**
High school only	1.79	1.68, 1.90	-.335	.067	**<.001**
All grades	2.10	1.99, 2.21	-.025	.064	.696
STUDENT CHARACTERISTICS					
Gender					
Male (referent)	2.02	1.98, 2.05	-	-	-
Female	1.96	1.92, 2.01	.013	.015	.398
Race/ethnicity					
Non-Hispanic White (referent)	1.89	1.86, 1.93	-	-	-
Student of color	1.82	1.78, 1.87	-.054	.019	**.004**
Grade (continuous)	-	-	-.062	.007	**<.001**

Note: Adjusted margin represents the average score on the climate survey subscale (scores ranging from 0 to 3) for each group, controlling for all other variables in the model.
FRPL = Free/Reduced-Priced Lunch, used as a proxy for community-level poverty.
N = 6,089 students in grades 3 to 12, within 37 schools.
Bold denotes significance at $p \leq .05$

The same three demographic characteristics that showed significant differences on many other scales were also evident for the School Resources scale. Students at middle/high schools ($\gamma = -.227$, $p < .001$) and high schools ($\gamma = -.335$, $p < .001$) perceived the level of school resources as lower than did students at elementary/middle schools, but students at K-12 schools did not significantly differ ($\gamma = -.025$, $p = .696$). Students of

color again reported perception that were significantly lower ($\gamma = -.054$, $p = .004$) relative to students that identified as white, and each grade level increase showed a significantly lower score ($\gamma = -.062$, $p < .001$). Students from schools with higher levels of poverty also reported a lower perception of school resources ($\gamma = -.117$, $p = .025$). However, schools that were more remote did not report perceptions of school resources that were significantly lower even though that might have been suspected. This could be because students were unaware of the amount of resources from schools that were nearer to population centers.

Table 4.19 Summary of Multi-Variable Multi-Level Regression Model Predicting Student Perceptions of Physical Disorder Climate Scale in 2019

Variables	Adjusted margin	95% CI	coefficient	SE	*p*
SCHOOL CHARACTERISTICS					
School poverty					
FRPL <40% (referent)	1.01	0.91, 1.10	-	-	-
FRPL 40-60%	1.08	0.99, 1.16	.070	.063	.270
FRPL >60%	1.13	1.02, 1.25	.126	.078	.105
Locale					
Fringe (referent)	1.06	0.93, 1.19	-	-	-
Remote	1.08	1.00, 1.17	.025	.079	.751
Distant	1.05	0.97, 1.14	-.005	.082	.951
School level					
Elementary/middle (referent)	0.99	0.91, 1.06	-	-	-
Middle/high	1.12	1.00, 1.23	.132	.069	.055
High school only	1.25	1.09, 1.41	.263	.093	**.005**
All grades	0.96	0.80, 1.12	-.027	.091	.766
STUDENT CHARACTERISTICS					
Gender					
Male (referent)	1.10	1.05, 1.16	-	-	-
Female	1.03	0.98, 1.09	-.068	.014	**<.001**
Race/ethnicity					
Non-Hispanic White (referent)	1.06	1.00, 1.11	-	-	-
Student of color	1.09	1.04, 1.15	.035	.017	**.036**
Grade (continuous)	-	-	.035	.006	**<.001**

Note: Adjusted margin represents the average score on the climate survey subscale (scores ranging from 0 to 3) for each group, controlling for all other variables in the model.
FRPL = Free/Reduced-Priced Lunch, used as a proxy for community-level poverty.
N = 6,003 students in grades 3 to 12, within 37 schools.
Bold denotes significance at $p \leq .05$

The Physical Disorder scale measured the disorder perceived in the school setting, where lower scores indicate more order and a more desirable outcome. Students from higher-grade level schools perceived more disorder when compared to the schools with lower grade levels, with high schools differing significantly from elementary schools ($\gamma = .263$, $p = .005$). Scores increased with each grade level ($\gamma = .035$, $p < .001$). There was also a statistically significant difference between genders and as females perceived less

Physical Disorder (γ = -.068, p < .001) than did males, and non-Hispanic white students perceived less disorder than did students of color (γ = .035, p = .036).

Table 4.20 Summary of Multi-Variable Multi-Level Regression Model Predicting Student Perceptions of Safety and Violence Climate Scale in 2019

Variables	Adjusted margin	95% CI	coefficient	SE	*p*
SCHOOL CHARACTERISTICS					
School poverty					
FRPL <40% (referent)	2.16	2.08, 2.24	-	-	-
FRPL 40-60%	2.08	2.01, 2.15	-.081	.055	.144
FRPL >60%	1.97	1.87, 2.06	-.197	.067	**.003**
Locale					
Fringe (referent)	2.07	1.96, 2.18	-	-	-
Remote	2.11	2.04, 2.18	.045	.068	.509
Distant	2.04	1.96, 2.11	-.033	.071	.642
School level					
Elementary/middle (referent)	2.21	2.14, 2.28	-	-	-
Middle/high	1.97	1.88, 2.07	-.239	.060	**<.001**
High school only	1.88	1.74, 2.02	-.328	.084	**<.001**
All grades	2.16	2.02, 2.30	-.053	.081	.511
STUDENT CHARACTERISTICS					
Gender					
Male (referent)	2.08	2.03, 2.13	-	-	-
Female	2.08	2.03, 2.13	.004	.017	.803
Race/ethnicity					
Non-Hispanic White (referent)	2.08	2.04, 2.13	-	-	-
Student of color	2.07	2.01, 2.12	-.016	.021	.432
Grade (continuous)	-	-	-.058	.008	**<.001**

Note: Adjusted margin represents the average score on the climate survey subscale (scores ranging from 0 to 3) for each group, controlling for all other variables in the model.
FRPL = Free/Reduced-Priced Lunch, used as a proxy for community-level poverty.
N = 5,996 students in grades 3 to 12, within 37 schools.
Bold denotes significance at p ≤ .05

When rating of Safety and Violence within the school setting, students at higher-poverty schools (FRPL >60%) scored significantly lower than lower-poverty schools (FRPL <40%; γ = -.197, p = .003). The only other variables that exhibited a significant difference were the usual school level and grade level indicators. Students from middle/high schools (γ = -.239, p < .001) and high schools (γ = -.328, p < .001) perceived

a less safe environment than the elementary/middle schools. Higher student grade levels had significantly lower perceptions of safety as well ($\gamma = -.058$, $p < .001$).

Regression Results for Scales of Parent Climate Survey

Next, I considered how the characteristics of parents statistically influenced their perceptions of school climate in each of the scales. School poverty, locale, and school level were again used as covariates to account for differences in school characteristics. The model included some of the characteristics the parents reported about their student, such as the gender, race/ethnicity, academic marks, and grade level of their child. The model also included some characteristics of the parents themselves: parent gender and education level.

Table 4.21 Summary of Multi-Variable Multi-Level Linear Regression Model Predicting Parent Perceptions on the Student Expectations Climate Scale in 2019

Variables	Adjusted margin	95% CI	Regression results coefficient	SE	*p*
SCHOOL CHARACTERISTICS					
School poverty					
FRPL <40% (referent)	2.80	2.75, 2.84	-	-	-
FRPL 40-60%	2.80	2.77, 2.84	.005	.029	.875
FRPL >60%	2.86	2.81, 2.91	.057	.035	.103
Locale					
Fringe (referent)	2.80	2.75, 2.86	-	-	-
Remote	2.82	2.79, 2.85	.016	.031	.611
Distant	2.80	2.76, 2.84	-.002	.035	.964
School level					
Elementary/middle (referent)	2.82	2.79, 2.86	-	-	-
Middle/high	2.81	2.76, 2.87	-.012	.035	.743
High school only	2.75	2.67, 2.82	-.074	.046	.109
All grades	2.84	2.76, 2.91	.013	.044	.770
THEIR CHILD'S CHARACTERISTICS					
Gender					
Male (referent)	2.81	2.79, 2.84	-	-	-
Female	2.82	2.79, 2.85	.002	.018	.912
Prefer not to answer	2.70	2.57, 2.83	-.111	.068	.100
Race/ethnicity					
Non-Hispanic White (referent)	2.81	2.79, 2.84	-	-	-
Student of color	2.86	2.81, 2.93	.054	.031	.086
Prefer not to answer	2.72	2.64, 2.80	-.093	.040	**.020**
Student academic marks					
Mostly A's (referent)	2.81	2.78, 2.83	-	-	-
Mostly B's	2.81	2.77, 2.85	.004	.022	.846
Mostly C's	2.84	2.78, 2.90	.037	.032	.251
Mostly D's	2.81	2.69, 2.93	.005	.063	.935
Mostly F's	2.88	2.67, 3.09	.073	.109	.503
Grade (continuous)	-	-	.000	.004	.952
PARENT CHARACTERISTICS					
Parent gender					
Male (referent)	2.79	2.74, 2.84	-	-	-
Female	2.82	2.79, 2.84	.023	.027	.393
Prefer not to answer	2.77	2.62, 2.91	-.023	.079	.769
Parent education level					
Did not finish HS (referent)	2.77	2.61, 2.92	-	-	-
Finished HS	2.79	2.74, 2.84	.025	.080	.755
Some college	2.80	2.77, 2.83	.035	.079	.657
Graduated college	2.81	2.79, 2.84	.049	.078	.529
Advanced degree	2.86	2.81, 2.91	.095	.082	.243

Note: Adjusted margin represents the average score on the climate survey scale (scores ranging from 0 to 3) for each group, controlling for all other variables in the model.
FRPL = Free/Reduced-Priced Lunch, used as a proxy for community-level poverty.
N = *1*,533 parents across 39 schools.
Bold denotes significance at $p \leq .05$

The Student Expectations scale (Table 4.21) showed the fewest statistically significant differences across different parent characteristics. The only characteristic that showed any statistical significance was that parents who preferred not to answer the question about the race/ethnicity of their student reported lower expectations as compared to those who reported their child's race/ethnicity as non-Hispanic white (γ = -.093, p = .020). The significance is likely due to the very small number of parents that selected the alternative and will therefore not be reported consistently in future scales. These results represent a remarkably similar level of expectations that parents have for their students regardless of the differences among characteristics of parents who responded to the survey.

Table 4.22 Summary of Multi-Variable Multi-Level Linear Regression Model Predicting Parent Perceptions on the Academic Emphasis Climate Scale in 2019

			Regression results		
Variables	Adjusted margin	95% CI	coefficient	SE	*p*
SCHOOL CHARACTERISTICS					
School poverty					
FRPL <40% (referent)	2.20	2.08, 2.32	-	-	-
FRPL 40-60%	2.17	2.08, 2.27	-.024	.079	.759
FRPL >60%	1.96	1.82, 2.09	-.242	.095	**.011**
Locale					
Fringe (referent)	2.21	2.06, 2.35	-	-	-
Remote	2.17	2.08, 2.27	-.032	.088	.719
Distant	2.03	1.92, 2.13	-.177	.094	.060
School level					
Elementary/middle (referent)	2.17	2.09, 2.26	-	-	-
Middle/high	2.08	1.93, 2.22	-.099	.088	.260
High school only	1.91	1.71, 2.11	-.265	.115	**.021**
All grades	2.40	2.20, 2.60	.226	.114	**.047**
THEIR CHILD'S CHARACTERISTICS					
Gender					
Male (referent)	2.16	2.09, 2.23	-	-	-
Female	2.14	2.07, 2.21	-.020	.030	.517
Prefer not to answer	1.84	1.61, 2.06	-.321	.113	**.005**
Race/ethnicity					
Non-Hispanic White (referent)	2.14	2.08, 2.21	-	-	-
Student of color	2.27	2.16, 2.38	.124	.053	**.019**
Prefer not to answer	1.85	1.71, 1.99	-.297	.067	**<.001**
Student academic marks					
Mostly A's (referent)	2.21	2.14, 2.27	-	-	-
Mostly B's	2.10	2.02, 2.19	-.104	.037	**.005**
Mostly C's	1.91	1.80, 2.03	-.294	.054	**<.001**
Mostly D's	1.52	1.31, 1.73	-.684	.105	**<.001**
Mostly F's	1.32	0.96, 1.68	-.891	.182	**<.001**
Grade (continuous)	-	-	-.029	.007	**<.001**
PARENT CHARACTERISTICS					
Parent gender					
Male (referent)	2.15	2.05, 2.25	-	-	-
Female	2.14	2.08, 2.21	-.004	.046	.926
Prefer not to answer	1.87	1.62, 2.12	-.276	.132	**.037**
Parent education level					
Did not finish HS (referent)	1.74	1.48, 2.00	-	-	-
Finished HS	2.14	2.05, 2.24	.407	.135	**.003**
Some college	2.14	2.06, 2.22	.400	.132	**.002**
Graduated college	2.13	2.06, 2.20	.395	.131	**.003**
Advanced degree	2.20	2.10, 2.30	.458	.137	**.001**

Note: Adjusted margin represents the average score on the climate survey scale (scores ranging from 0 to 3) for each group, controlling for all other variables in the model.
FRPL = Free/Reduced-Priced Lunch, used as a proxy for community-level poverty.
N = *1*,532 parents across 39 schools.
Bold denotes significance at $p \leq .05$

Parents who had students in schools with high levels of poverty ($\gamma = -.242$, $p = .011$) or in high schools ($\gamma = -.265$, $p = .021$) perceived significantly lower Academic Emphasis (Table 4.22). On the other hand, parents with students in K-12 schools

perceived significantly higher Academic Emphasis ($\gamma = .226$, $p = .047$). Respondents that identified as parents of students of color reported significantly higher Academic Emphasis ($\gamma = .124$, $p = .019$). Perceptions of Academic Emphasis consistently decreased at a significant rate as the academic achievement of the respondents' student decreased and as the student grew older ($\gamma = -.029$, $p < .001$). There was a significant jump in Academic Emphasis between parents who did not finish high school and parents who graduated high school ($\gamma = .407$, $p = .003$) and then stayed at a similar level among parents who had completed some ($\gamma = .400$, $p = .002$) or all of a college degree ($\gamma = .395$, $p = .003$). There was another jump in Academic Emphasis if the parent had attained an advanced degree ($\gamma = .458$, $p = .001$).

Table 4.23 Summary of Multi-Variable Multi-Level Linear Regression Model Predicting Parent Perceptions on the Connectedness Climate Scale in 2019

			Regression results		
Variables	Adjusted margin	95% CI	coefficient	SE	*p*
SCHOOL CHARACTERISTICS					
School poverty					
FRPL <40% (referent)	2.27	2.15, 2.40	-	-	-
FRPL 40-60%	2.17	2.07, 2.27	-.106	.081	.193
FRPL >60%	2.05	1.91, 2.18	-.229	.098	**.019**
Locale					
Fringe (referent)	2.26	2.11, 2.41	-	-	-
Remote	2.18	2.08, 2.28	-.081	.091	.375
Distant	2.10	1.99, 2.21	-.159	.097	.102
School level					
Elementary/middle (referent)	2.19	2.10, 2.28	-	-	-
Middle/high	2.10	1.95, 2.25	-.090	.092	.330
High school only	2.05	1.85, 2.26	-.143	.120	.234
All grades	2.40	2.20, 2.61	.211	.118	.074
THEIR CHILD'S CHARACTERISTICS					
Gender					
Male (referent)	2.19	2.12, 2.27	-	-	-
Female	2.19	2.11, 2.26	-.009	.034	.794
Prefer not to answer	1.70	1.45, 1.95	-.491	.128	**<.001**
Race/ethnicity					
Non-Hispanic White (referent)	2.19	2.12, 2.25	-	-	-
Student of color	2.24	2.12, 2.37	.056	.060	.350
Prefer not to answer	1.89	1.73, 2.04	-.300	.076	**<.001**
Student academic marks					
Mostly A's (referent)	2.29	2.22, 2.36	-	-	-
Mostly B's	2.08	2.00, 2.17	-.207	.041	**<.001**
Mostly C's	1.81	1.68, 1.93	-.483	.061	**<.001**
Mostly D's	1.37	1.14, 1.61	-.917	.118	**<.001**
Mostly F's	0.79	0.38, 1.19	-1.504	.206	**<.001**
Grade (continuous)	-	-	-.036	.008	**<.001**
PARENT CHARACTERISTICS					
Parent gender					
Male (referent)	2.20	2.09, 2.31	-	-	-
Female	2.18	2.11, 2.24	-.019	.052	.711
Prefer not to answer	2.02	1.74, 2.30	-.176	.150	.240
Parent education level					
Did not finish HS (referent)	1.81	1.51, 2.10	-	-	-
Finished HS	2.11	2.01, 2.21	.304	.152	**.045**
Some college	2.17	2.09, 2.25	.364	.149	**.014**
Graduated college	2.18	2.11, 2.26	.379	.148	**.011**
Advanced degree	2.27	2.16, 2.38	.467	.155	**.003**

Note: Adjusted margin represents the average score on the climate survey scale (scores ranging from 0 to 3) for each group, controlling for all other variables in the model.
FRPL = Free/Reduced-Priced Lunch, used as a proxy for community-level poverty.
N = *1*,530 parents across 39 schools.
Bold denotes significance at $p \leq .05$

Perceptions of Connectedness by parents (Table 4.23), as measured by the Climate Survey, were impacted by the amount of poverty at the school, student academic

achievement and grade level, and parent education level. If the parent had students at a school with FRPL > 60%, they felt significantly less connection at the school ($\gamma = -.229$, $p = .019$). There was also significantly less Connectedness observed by parents who had students in older grade levels ($\gamma = -.036$, $p < .001$) and as the grade point average (GPA) of the student decreased. Perceptions of Connectedness were significantly higher among parents who attained higher educational levels, with a significant difference among parents with advanced degrees, relative to those who did not graduate from high school ($\gamma = .467$, $p = .003$).

Table 4.24 Summary of Multi-Variable Multi-Level Linear Regression Model Predicting Parent Perceptions on the Family Involvement Climate Scale in 2019

			Regression results		
Variables	Adjusted margin	95% CI	coefficient	SE	*p*
SCHOOL CHARACTERISTICS					
School poverty					
FRPL <40% (referent)	2.13	2.02, 2.25	-	-	-
FRPL 40-60%	2.11	2.02, 2.20	-.024	.076	.752
FRPL >60%	1.93	1.81, 2.06	-.202	.091	**.027**
Locale					
Fringe (referent)	2.18	2.04, 2.32	-	-	-
Remote	2.09	2.00, 2.18	-.091	.085	.287
Distant	2.00	1.89, 2.10	-.185	.091	**.042**
School level					
Elementary/middle (referent)	2.12	2.03, 2.20	-	-	-
Middle/high	1.97	1.84, 2.11	-.143	.085	.091
High school only	1.90	1.71, 2.09	-.218	.111	.050
All grades	2.38	2.18, 2.57	.258	.110	**.018**
THEIR CHILD'S CHARACTERISTICS					
Gender					
Male (referent)	2.08	2.02, 2.15	-	-	-
Female	2.11	2.04, 2.17	.024	.029	.416
Prefer not to answer	1.74	1.53, 1.96	-.337	.111	**.002**
Race/ethnicity					
Non-Hispanic White (referent)	2.08	2.02, 2.15	-	-	-
Student of color	2.17	2.06, 2.28	.089	.052	.084
Prefer not to answer	1.91	1.77, 2.04	-.177	.066	**.007**
Student academic marks					
Mostly A's (referent)	2.15	2.09, 2.21	-	-	-
Mostly B's	2.03	1.95, 2.11	-.123	.036	**.001**
Mostly C's	1.87	1.76, 1.98	-.279	.053	**<.001**
Mostly D's	1.58	1.38, 1.78	-.570	.102	**<.001**
Mostly F's	1.31	0.96, 1.66	-.844	.178	**<.001**
Grade (continuous)	-	-	-.020	.007	**.005**
PARENT CHARACTERISTICS					
Parent gender					
Male (referent)	2.11	2.01, 2.21	-	-	-
Female	2.09	2.03, 2.15	-.021	.045	.632
Prefer not to answer	1.73	1.49, 1.97	-.381	.129	**.003**
Parent education level					
Did not finish HS (referent)	1.87	1.62, 2.13	-	-	-
Finished HS	2.08	1.99, 2.17	.208	.131	.112
Some college	2.05	1.98, 2.13	.181	.128	.158
Graduated college	2.09	2.02, 2.16	.219	.128	.087
Advanced degree	2.15	2.05, 2.24	.273	.134	**.041**

Note: Adjusted margin represents the average score on the climate survey scale (scores ranging from 0 to 3) for each group, controlling for all other variables in the model.
FRPL = Free/Reduced-Priced Lunch, used as a proxy for community-level poverty.
N = *1,*532 parents across 39 schools.
Bold denotes significance at $p \leq .05$

Parent perceptions of Family Involvement (Table 4.24) varied by school level. Parents at schools with high levels of FRPL (γ = -.202, p = .027) or that were distant from population centers (γ = -.185, p = .042) reported a lower level of Family Involvement.

Schools that consisted of K-12 grade levels reported higher levels of parent involvement ($\gamma = .258$, $p = .018$). Similar to most of the other scales, student GPA levels were significantly related to the Family Involvement scale and reliably decreased with lower levels of academic outcomes and for older students ($\gamma = -.020$, $p = .005$). Contrary to conventional wisdom, parental perception of Family Involvement did significantly differ by parental educational attainment, except for higher perceptions among parents who had obtained advanced degrees ($\gamma = .273$, $p = .041$).

Table 4.25 Summary of Multi-Variable Multi-Level Linear Regression Model Predicting Parent Perceptions on the Order and Discipline Climate Scale in 2019

			Regression results		
Variables	Adjusted margin	95% CI	coefficient	SE	*p*
SCHOOL CHARACTERISTICS					
School poverty					
FRPL <40% (referent)	1.92	1.80, 2.03	-	-	-
FRPL 40-60%	1.95	1.86, 2.04	.031	.077	.684
FRPL >60%	1.74	1.61, 1.87	-.178	.093	.055
Locale					
Fringe (referent)	2.02	1.88, 2.17	-	-	-
Remote	1.89	1.80, 1.99	-.131	.086	.130
Distant	1.81	1.71, 1.92	-.209	.092	**.023**
School level					
Elementary/middle (referent)	1.94	1.86, 2.02	-	-	-
Middle/high	1.83	1.69, 1.97	-.107	.086	.210
High school only	1.67	1.48, 1.87	-.267	.112	**.017**
All grades	2.14	1.94, 2.33	.198	.111	.073
THEIR CHILD'S CHARACTERISTICS					
Gender					
Male (referent)	1.91	1.84, 1.98	-	-	-
Female	1.90	1.83, 1.97	-.009	.028	.751
Prefer not to answer	1.73	1.52, 1.94	-.179	.108	.098
Race/ethnicity					
Non-Hispanic White (referent)	1.91	1.85, 1.97	-	-	-
Student of color	1.95	1.84, 2.06	.042	.050	.393
Prefer not to answer	1.69	1.56, 1.82	-.218	.063	**.001**
Student academic marks					
Mostly A's (referent)	1.94	1.88, 2.01	-	-	-
Mostly B's	1.90	1.82, 1.98	-.045	.035	.198
Mostly C's	1.72	1.62, 1.83	-.216	.051	**<.001**
Mostly D's	1.50	1.30, 1.69	-.445	.098	**<.001**
Mostly F's	1.46	1.11, 1.82	-.476	.180	**<.001**
Grade (continuous)	-	-	-.027	.007	**<.001**
PARENT CHARACTERISTICS					
Parent gender					
Male (referent)	1.97	1.88, 2.07	-	-	-
Female	1.90	1.84, 1.96	-.076	.043	.079
Prefer not to answer	1.58	1.34, 1.81	-.399	.125	**.001**
Parent education level					
Did not finish HS (referent)	1.66	1.41, 1.91	-	-	-
Finished HS	1.87	1.78, 1.96	.208	.129	.108
Some college	1.87	1.80, 1.95	.212	.126	.093
Graduated college	1.93	1.86, 2.00	.267	.126	**.034**
Advanced degree	1.93	1.84, 2.03	.272	.131	**.038**

Note: Adjusted margin represents the average score on the climate survey scale (scores ranging from 0 to 3) for each group, controlling for all other variables in the model.
FRPL = Free/Reduced-Priced Lunch, used as a proxy for community-level poverty.
N = *1*,502 parents across 39 schools.
Bold denotes significance at p ≤ .05

Exploring demographic differences in parent perceptions of Order & Discipline at the school level (Table 4.25) also revealed several significant variations. Parents of

students at the high school level ($\gamma = -.267$, $p = .017$) and at schools distant from population centers ($\gamma = -.209$, $p = .023$) had lower perceptions of Order & Discipline. There were also worse perceptions of Order & Discipline reported by parents of students at higher grade levels ($\gamma = -.027$, $p < .001$) and of students that got mostly Cs or lower. Parents who graduated college ($\gamma = .267$, $p = .034$) or reached an advanced degree ($\gamma = .272$, $p = .038$) had better perceptions of Order & Discipline at their child's school.

Table 4.26 Summary of Multi-Variable Multi-Level Linear Regression Model Predicting Parent Perceptions on the Fairness Climate Scale in 2019

			Regression results		
Variables	Adjusted margin	95% CI	coefficient	SE	*p*
SCHOOL CHARACTERISTICS					
School poverty					
FRPL <40% (referent)	2.17	2.06, 2.29	-	-	-
FRPL 40-60%	2.16	2.07, 2.25	-.012	.075	.870
FRPL >60%	1.92	1.80, 2.05	-.250	.090	**.006**
Locale					
Fringe (referent)	2.20	2.06, 2.34	-	-	-
Remote	2.13	2.04, 2.22	-.072	.084	.390
Distant	2.04	1.94, 2.14	-.157	.090	.079
School level					
Elementary/middle (referent)	2.13	2.05, 2.21	-	-	-
Middle/high	2.07	1.93, 2.21	-.063	.084	.458
High school only	1.94	1.75, 2.12	-.196	.110	.076
All grades	2.40	2.21, 2.59	.266	.108	**.014**
THEIR CHILD'S CHARACTERISTICS					
Gender					
Male (referent)	2.12	2.05, 2.18	-	-	-
Female	2.13	2.06, 2.20	.012	.030	.703
Prefer not to answer	1.92	1.70, 2.15	-.196	.116	.091
Race/ethnicity					
Non-Hispanic White (referent)	2.14	2.08, 2.21	-	-	-
Student of color	2.05	1.94, 2.16	-.098	.053	.067
Prefer not to answer	1.82	1.68, 1.96	-.321	.068	**<.001**
Student academic marks					
Mostly A's (referent)	2.17	2.11, 2.24	-	-	-
Mostly B's	2.08	2.00, 2,16	-.095	.037	**.011**
Mostly C's	1.97	1.85, 2.08	-.208	.055	**<.001**
Mostly D's	1.60	1.39, 1.81	-.575	.105	**<.001**
Mostly F's	1.45	1.07, 1.83	-.727	.193	**<.001**
Grade (continuous)	-	-	-.034	.007	**<.001**
PARENT CHARACTERISTICS					
Parent gender					
Male (referent)	2.16	2.06, 2.26	-	-	-
Female	2.13	2.06, 2.19	-.039	.046	.408
Prefer not to answer	1.60	1.35, 1.86	-.559	.134	**<.001**
Parent education level					
Did not finish HS (referent)	1.88	1.61, 2.14	-	-	-
Finished HS	2.08	1.98, 2.17	.202	.138	.145
Some college	2.09	2.02, 2.17	.218	.135	.107
Graduated college	2.14	2.07, 2.21	.264	.135	.050
Advanced degree	2.16	2.07, 2.26	.288	.141	**.041**

Note: Adjusted margin represents the average score on the climate survey scale (scores ranging from 0 to 3) for each group, controlling for all other variables in the model.
FRPL = Free/Reduced-Priced Lunch, used as a proxy for community-level poverty.
N = *1*,502 parents across 39 schools.
Bold denotes significance at $p \leq .05$

The way in which parents perceived Fairness at the school also varied by demographic characteristics (Table 4.26). When the school that their student attended was higher in poverty, parents rated Fairness at the school significantly lower (γ = -.250,

p = .006). When the school included grades K-12, they rated Fairness significantly higher compared to the other grade distributions (γ = .266, p = .014). Parents also had different perspectives on Fairness depending on the grade level and academic performance of their student. As the grade level increased, parents ranked Fairness at the school lower (γ = -.034, p < .001) and for every level the GPA of the student decreased, the rating of Fairness decreased significantly. In relation to parent education level, the rating of Fairness was significantly higher among parents who had an advanced degree (γ = .288, p = .041), relative to those with lower educational attainment.

Table 4.27 Summary of Multi-Variable Multi-Level Linear Regression Model Predicting Parent Perceptions on the School Resources Climate Scale in 2019

Variables	Adjusted margin	95% CI	Regression results coefficient	SE	*p*
SCHOOL CHARACTERISTICS					
School poverty					
FRPL <40% (referent)	1.74	1.63, 1.85	-	-	-
FRPL 40-60%	1.74	1.66, 1.83	.001	.072	.990
FRPL >60%	1.60	1.48, 1.72	-.145	.087	.095
Locale					
Fringe (referent)	1.83	1.69, 1.96	-	-	-
Remote	1.76	1.67, 1.84	-.073	.081	.368
Distant	1.56	1.46, 1.65	-.272	.086	**.002**
School level					
Elementary/middle (referent)	1.67	1.59, 1.75	-	-	-
Middle/high	1.73	1.60, 1.86	.060	.082	.463
High school only	1.72	1.53, 1.90	.048	.107	.650
All grades	1.94	1.76, 2.13	.275	.105	**.009**
THEIR CHILD'S CHARACTERISTICS					
Gender					
Male (referent)	1.72	1.65, 1.78	-	-	-
Female	1.72	1.66, 1.79	.005	.030	.864
Prefer not to answer	1.48	1.26, 1.71	-.234	.113	**.038**
Race/ethnicity					
Non-Hispanic White (referent)	1.72	1.66, 1.78	-	-	-
Student of color	1.68	1.58, 1.79	-.040	.052	.442
Prefer not to answer	1.61	1.47, 1.74	-.115	.066	.083
Student academic marks					
Mostly A's (referent)	1.77	1.70, 1.83	-	-	-
Mostly B's	1.68	1.60, 1.76	-.082	.036	**.022**
Mostly C's	1.54	1.43, 1.64	-.229	.053	**<.001**
Mostly D's	1.33	1.13, 1.54	-.431	.102	**<.001**
Mostly F's	0.99	0.62, 1.36	-.775	.188	**<.001**
Grade (continuous)	-	-	-.018	.007	**.010**
PARENT CHARACTERISTICS					
Parent gender					
Male (referent)	1.83	1.73, 1.93	-	-	-
Female	1.70	1.65, 1.76	-.127	.045	**.005**
Prefer not to answer	1.46	1.22, 1.71	-.369	.130	**.005**
Parent education level					
Did not finish HS (referent)	1.84	1.58, 2.11	-	-	-
Finished HS	1.77	1.68, 1.86	-.074	.138	.593
Some college	1.72	1.65, 1.79	-.121	.135	.372
Graduated college	1.69	1.63, 1.76	-.148	.135	.274
Advanced degree	1.68	1.59, 1.78	-.158	.140	.259

Note: Adjusted margin represents the average score on the climate survey scale (scores ranging from 0 to 3) for each group, controlling for all other variables in the model.
FRPL = Free/Reduced-Priced Lunch, used as a proxy for community-level poverty.
N = *1*,502 parents across 39 schools.
Bold denotes significance at $p \leq .05$

The patterns of perceived School Resources varied depending on the characteristics of parents who took the survey (Table 4.27). Parents at geographically

distant schools rated School Resources significantly lower than their peers at schools near to urban areas—that is, at rural fringe schools (γ = -.272, p = .002). Parents of students at K-12 schools rated the resources at the school significantly higher than parents of students at elementary schools (γ = .275, p = .009). Again, as student academic marks decreased so did parents' perceptions of the School Resources scale. Further, as student grade level decreased so did their parents' ratings of resources (γ = -.018, p = .010), which is similar to other scales. In this scale the education level did not have an impact of ratings of School Resources, however this was the only scale where the gender of the parent taking the survey was different: female parents rated School Resources significantly lower than male parents (γ = -.127, p = .005).

Table 4.28 Summary of Multi-Variable Multi-Level Linear Regression Model Predicting Parent Perceptions on the Physical Disorder Climate Scale in 2019

			Regression results		
Variables	Adjusted margin	95% CI	coefficient	SE	*p*
SCHOOL CHARACTERISTICS					
School poverty					
FRPL <40% (referent)	0.69	0.56, 0.82	-	-	-
FRPL 40-60%	0.79	0.69, 0.89	.096	.084	.257
FRPL >60%	0.81	0.67, 0.95	.118	.102	.246
Locale					
Fringe (referent)	0.61	0.45, 0.77	-	-	-
Remote	0.80	0.69, 0.90	.183	.096	.055
Distant	0.83	0.72, 0.94	.217	.101	**.031**
School level					
Elementary/middle (referent)	0.76	0.67, 0.85	-	-	-
Middle/high	0.77	0.62, 0.92	.012	.092	.898
High school only	0.94	0.73, 1.15	.179	.121	.137
All grades	0.53	0.32, 0.74	-.227	.120	.059
THEIR CHILD'S CHARACTERISTICS					
Gender					
Male (referent)	0.77	0.70, 0.84	-	-	-
Female	0.75	0.68, 0.82	-.018	.024	.468
Prefer not to answer	0.88	0.70, 1.07	.116	.093	.210
Race/ethnicity					
Non-Hispanic White (referent)	0.76	0.69, 0.83	-	-	-
Student of color	0.74	0.63, 0.84	-.027	.043	.525
Prefer not to answer	0.82	0.70, 0.94	.054	.055	.328
Student academic marks					
Mostly A's (referent)	0.75	0.68, 0.82	-	-	-
Mostly B's	0.75	0.67, 0.84	.003	.030	.924
Mostly C's	0.85	0.75, 0.95	.100	.044	**.024**
Mostly D's	0.83	0.66, 1.00	.078	.084	.351
Mostly F's	0.89	0.58, 1.20	.136	.155	.378
Grade (continuous)	-	-	.002	.006	.704
PARENT CHARACTERISTICS					
Parent gender					
Male (referent)	0.78	0.69, 0.88	-	-	-
Female	0.76	0.69, 0.83	-.024	.038	.528
Prefer not to answer	0.83	0.62, 1.03	.043	.107	.688
Parent education level					
Did not finish HS (referent)	0.88	0.66, 1.11	-	-	-
Finished HS	0.72	0.63, 0.81	-.162	.114	.153
Some college	0.79	0.71, 0.86	-.096	.111	.387
Graduated college	0.75	0.68, 0.83	-.128	.111	.249
Advanced degree	0.78	0.69, 0.87	-.103	.116	.375

Note: Adjusted margin represents the average score on the climate survey scale (scores ranging from 0 to 3) for each group, controlling for all other variables in the model.
FRPL = Free/Reduced-Priced Lunch, used as a proxy for community-level poverty.
N = *1*,489 parents across 39 schools.
Bold denotes significance at $p \leq .05$

There were not many categories that showed a significant difference in Physical Disorder (Table 4.28). Most parents had similar perspective on the physical status of the

schools in this scale. Parents with students at distant schools had worse perspectives on the Physical Disorder of the school compared to schools that were closer to cities (γ = .217, p = .031). There was also a jump in negative perspectives from parents with students who received mostly C grades (γ = .100, p = .024), but, oddly, that pattern was not repeated with the other academic grades.

Table 4.29 Summary of Multi-Variable Multi-Level Linear Regression Model Predicting Parent Perceptions on the Safety and Violence Climate Scale in 2019

			Regression results		
Variables	Adjusted margin	95% CI	coefficient	SE	*p*
SCHOOL CHARACTERISTICS					
School poverty					
FRPL <40% (referent)	2.06	1.94, 2.18	-	-	-
FRPL 40-60%	2.01	1.92, 2.10	-.053	.078	.501
FRPL >60%	1.82	1.68, 1.96	-.242	.101	**.016**
Locale					
Fringe (referent)	2.07	1.92, 2.21	-	-	-
Remote	1.98	1.89, 2.08	-.085	.087	.332
Distant	1.92	1.81, 2.04	-.145	.099	.143
School level					
Elementary/middle (referent)	2.02	1.93, 2.11	-	-	-
Middle/high	1.88	1.74, 2.02	-.138	.094	.141
High school only	1.86	1.65, 2.06	-.159	.125	.204
All grades	2.20	2.00, 2.40	.182	.115	.112
THEIR CHILD'S CHARACTERISTICS					
Gender					
Male (referent)	2.00	1.93, 2.07	-	-	-
Female	1.98	1.91, 2.05	-.023	.031	.455
Prefer not to answer	1.88	1.64, 2.11	-.122	.122	.306
Race/ethnicity					
Non-Hispanic White (referent)	2.00	1.94, 2.06	-	-	-
Student of color	2.01	1.90, 2.13	.017	.055	.757
Prefer not to answer	1.75	1.61, 1.90	-.244	.071	**.001**
Student academic marks					
Mostly A's (referent)	2.03	1.96, 2.09	-	-	-
Mostly B's	1.98	1.89, 2.06	-.051	.038	.184
Mostly C's	1.83	1.72, 1.95	-.194	.056	**.001**
Mostly D's	1.56	1.35, 1.78	-.465	.108	**<.001**
Mostly F's	1.53	1.14, 1.92	-.498	.199	**.012**
Grade (continuous)	-	-	-.012	.007	.118
PARENT CHARACTERISTICS					
Parent gender					
Male (referent)	2.05	1.95, 2.15	-	-	-
Female	1.99	1.93, 2.05	-.063	.049	.193
Prefer not to answer	1.61	1.36, 1.87	-.437	.138	**.002**
Parent education level					
Did not finish HS (referent)	1.71	1.43, 1.99	-	-	-
Finished HS	1.90	1.81, 2.00	.190	.146	.193
Some college	1.96	1.88, 2.04	.247	.143	.084
Graduated college	2.02	1.95, 2.09	.310	.143	**.030**
Advanced degree	2.04	1.94, 2.14	.328	.148	**.027**

Note: Adjusted margin represents the average score on the climate survey scale (scores ranging from 0 to 3) for each group, controlling for all other variables in the model.
FRPL = Free/Reduced-Priced Lunch, used as a proxy for community-level poverty.
N = 1,489 parents across 39 schools.
Bold denotes significance at $p \leq .05$

The levels of safety and the absence of violence was rated by parents in the Safety and Violence scale (Table 4.29). Parents of students attending schools with high poverty

rated safety significantly lower than did parents at schools with less poverty (γ = -.242, p = .016). Parents who reported that their students held a C average in GPA or lower had lower perceptions of the safety level of the school. On the other hand, parents with a college degree (γ = .310, p = .030) or an advanced degree (γ = .328, p = .027) had more favorable perceptions of the Safety & Violence scale.

Regression Results for Scales of Staff Climate Survey

The Climate Survey was also given to staff members across the 40 schools and teachers, administrators, and certified staff rated items in each of the scales. Again, a series of regression models were computed to analyze how perceptions of school climate varied by staff demographics. The same demographic indicators of school poverty, school locale, and school level were included in the model, as was done for prior models with the other two stakeholders. For the staff demographics, models also accounted for staff gender, role, and (as a continuous variable) years in education. The two categories for the Role category are teacher, as compared to non-teachers – which includes administrators and certified staff.

Perceptions of climate did not vary much among several of the demographic categories. For example, none of the scales showed a difference between the responses of staff from schools with different poverty levels. For the staff characteristics, there was only one scale that had a significant difference between staff roles at the school and only one scale that showed significant difference between staff of different levels of experience in education.

Table 4.30 Summary of Multi-Variable Multi-Level Linear Regression Model Predicting Staff Perceptions on the Student Expectations Climate Scale in 2019

			Regression results		
Variables	Adjusted margin	95% CI	coefficient	SE	*p*
SCHOOL CHARACTERISTICS					
School poverty					
FRPL <40% (referent)	2.46	2.34, 2.58	-	-	-
FRPL 40-60%	2.51	2.42, 2.60	.052	.077	.499
FRPL >60%	2.35	2.22, 2.48	-.107	.093	.249
Locale					
Fringe (referent)	2.58	2.43, 2.72	-	-	-
Remote	2.46	2.37, 2.55	-.117	.087	.177
Distant	2.39	2.29, 2.50	-.187	.092	**.043**
School level					
Elementary/middle (referent)	2.50	2.42, 2.58	-	-	-
Middle/high	2.38	2.25, 2.51	-.115	.082	.159
High school only	2.19	1.99, 2.39	-.308	.111	**.006**
All grades	2.60	2.40, 2.80	.105	.113	.352
STAFF CHARACTERISTICS					
Gender					
Male (referent)	2.40	2.29, 2.51	-	-	-
Female	2.47	2.41, 2.54	.074	.054	.170
Prefer not to answer	2.18	1.90, 2.46	-.217	.148	.142
Role					
Non-teacher	2.45	2.37, 2.52	-	-	-
Teacher	2.47	2.40, 2.53	.018	.038	.632
Years in Education (continuous)	-	-	.001	.002	.476

Note: Adjusted margin represents the average score on the climate survey scale (scores ranging from 0 to 3) for each group, controlling for all other variables in the model.
FRPL = Free/Reduced-Priced Lunch, used as a proxy for community-level poverty.
N = 658 staff within 40 schools.
Bold denotes significance at $p \leq .05$

There were differences on the Student Expectations scale (Table 4.30) by only two demographic characteristics. Staff in schools that were distant from population centers had significantly lower ratings of student expectations than did staff from more centralized schools ($\gamma = -.187$, $p = .043$). Staff at high schools also reported significantly lower expectations than did staff from elementary schools ($\gamma = -.308$, $p = .006$).

Table 4.31 Summary of Multi-Variable Multi-Level Linear Regression Model Predicting Staff Perceptions on the Academic Emphasis Climate Scale in 2019

			Regression results		
Variables	Adjusted margin	95% CI	coefficient	SE	*p*
SCHOOL CHARACTERISTICS					
School poverty					
FRPL <40% (referent)	2.30	2.18, 2.42	-	-	-
FRPL 40-60%	2.31	2.22, 2.40	.009	.077	.908
FRPL >60%	2.15	2.02, 2.28	-.145	.093	.117
Locale					
Fringe (referent)	2.40	2.26, 2.54	-	-	-
Remote	2.25	2.15, 2.34	-.154	.086	.074
Distant	2.22	2.11, 2.32	-.180	.092	.050
School level					
Elementary/middle (referent)	2.28	2.20, 2.35	-	-	-
Middle/high	2.24	2.10, 2.37	-.037	.081	.645
High school only	2.09	1.89, 2.29	-.188	.111	.090
All grades	2.43	2.23, 2.63	.156	.113	.166
STAFF CHARACTERISTICS					
Gender					
Male (referent)	2.30	2.18, 2.41	-	-	-
Female	2.27	2.20, 2.33	-.030	.057	.601
Prefer not to answer	2.05	1.76, 2.35	-.242	.154	.117
Role					
Non-teacher	2.27	2.19, 2.35	-	-	-
Teacher	2.27	2.20, 2.33	-.006	.039	.876
Years in Education (continuous)	-	-	.000	.002	.851

Note: Adjusted margin represents the average score on the climate survey scale (scores ranging from 0 to 3) for each group, controlling for all other variables in the model.
FRPL = Free/Reduced-Priced Lunch, used as a proxy for community-level poverty.
N = 658 staff within 40 schools.
Bold denotes significance at $p \leq .05$

The staff perceptions of Academic Emphasis also did not show any statistically significant variability between the respondents from different types of schools (Table 4.31).

Table 4.32 Summary of Multi-Variable Multi-Level Linear Regression Model Predicting Staff Perceptions on the Connectedness Climate Scale in 2019

			Regression results		
Variables	Adjusted margin	95% CI	coefficient	SE	*p*
SCHOOL CHARACTERISTICS					
School poverty					
FRPL <40% (referent)	2.09	1.99, 2.19	-	-	-
FRPL 40-60%	2.13	2.05, 2.20	.037	.062	.551
FRPL >60%	2.03	1.92, 2.13	-.062	.075	.409
Locale					
Fringe (referent)	2.18	2.07, 2.30	-	-	-
Remote	2.09	2.01, 2.16	-.095	.070	.174
Distant	2.05	1.97, 2.14	-.128	.074	.084
School level					
Elementary/middle (referent)	2.09	2.03, 2.15	-	-	-
Middle/high	2.09	1.98, 2.20	-.003	.066	.968
High school only	1.96	1.80, 2.12	-.131	.089	.142
All grades	2.25	2.09, 2.42	.166	.091	.068
STAFF CHARACTERISTICS					
Gender					
Male (referent)	2.12	2.03, 2.21	-	-	-
Female	2.09	2.04, 2.14	-.033	.044	.453
Prefer not to answer	2.15	1.93, 2.38	.031	.120	.796
Role					
Non-teacher	2.10	2.04, 2.17	-	-	-
Teacher	2.09	2.04, 2.14	-.015	.030	.615
Years in Education (continuous)	-	-	-002	.002	.246

Note: Adjusted margin represents the average score on the climate survey scale (scores ranging from 0 to 3) for each group, controlling for all other variables in the model.
FRPL = Free/Reduced-Priced Lunch, used as a proxy for community-level poverty.
N = 658 staff within 40 schools.
Bold denotes significance at $p \leq .05$

The model did not show any significant difference in perceptions of Connectedness by school or staff demographic characteristics (Table 4.32).

Table 4.33 Summary of Multi-Variable Multi-Level Linear Regression Model Predicting Staff Perceptions on the Family Involvement Climate Scale in 2019

			Regression results		
Variables	Adjusted margin	95% CI	coefficient	SE	*p*
SCHOOL CHARACTERISTICS					
School poverty					
FRPL <40% (referent)	2.11	2.04, 2.19	-	-	-
FRPL 40-60%	2.16	2.11, 2.21	.046	.048	.336
FRPL >60%	2.11	2.03, 2.18	-.007	.056	.898
Locale					
Fringe (referent)	2.31	2.23, 2.39	-	-	-
Remote	2.07	2.01, 2.12	-.244	.049	**<.001**
Distant	2.13	2.06, 2.19	-.185	.054	**.001**
School level					
Elementary/middle (referent)	2.17	2.12, 2.21	-	-	-
Middle/high	2.06	1.98, 2.14	-.108	.049	**.026**
High school only	1.93	1.81, 2.06	-.231	.068	**.001**
All grades	2.28	2.16, 2.41	.116	.072	.104
STAFF CHARACTERISTICS					
Gender					
Male (referent)	2.21	2.11, 2.30	-	-	-
Female	2.12	2.08, 2.16	-.087	.053	.099
Prefer not to answer	2.22	1.95, 2.49	.010	.142	.944
Role					
Non-teacher	2.17	2.11, 2.22	-	-	-
Teacher	2.12	2.08, 2.16	-.045	.036	.215
Years in Education (continuous)	-	-	.000	.002	.823

Note: Adjusted margin represents the average score on the climate survey scale (scores ranging from 0 to 3) for each group, controlling for all other variables in the model.
FRPL = Free/Reduced-Priced Lunch, used as a proxy for community-level poverty.
N = 655 staff within 40 schools.
Bold denotes significance at $p \leq .05$

There were some statistically significant differences between the responses about Family Involvement from staff at different types of schools (Table 4.33). Perceptions of family involvement were lower among staff at schools that were remote ($\gamma = -.244$, $p < .001$) or distant ($\gamma = -.185$, $p = .001$), relative to rural fringe schools. Staff at middle schools scored Family Involvement lower than did staff at elementary schools ($\gamma = -.108$,

p = .026) and high schools also rated it lower (γ = -.231, p = .001). Perceptions did not differ significantly by staff characteristics.

Table 4.34 Summary of Multi-Variable Multi-Level Linear Regression Model Predicting Staff Perceptions on the Order and Discipline Climate Scale in 2019

			Regression results		
Variables	Adjusted margin	95% CI	coefficient	SE	*p*
SCHOOL CHARACTERISTICS					
School poverty					
FRPL <40% (referent)	1.73	1.63, 1.82	-	-	-
FRPL 40-60%	1.77	1.71, 1.84	.046	.061	.450
FRPL >60%	1.73	1.64, 1.83	.005	.072	.940
Locale					
Fringe (referent)	1.95	1.85, 2.07	-	-	-
Remote	1.70	1.62, 1.77	-.261	.066	**<.001**
Distant	1.71	1.63, 1.79	-.246	.071	**.001**
School level					
Elementary/middle (referent)	1.79	1.73, 1.85	-	-	-
Middle/high	1.68	1.58, 1.79	-.107	.063	.090
High school only	1.50	1.34, 1.66	-.287	.087	**.001**
All grades	1.90	1.74, 2.06	.111	.089	.213
STAFF CHARACTERISTICS					
Gender					
Male (referent)	1.87	1.77, 1.97	-	-	-
Female	1.74	1.69, 1.78	-.135	.051	**.008**
Prefer not to answer	1.70	1.44, 1.95	-.176	.138	.202
Role					
Non-teacher	1.79	1.73, 1.86	-	-	-
Teacher	1.73	1.68, 1.78	-.063	.035	.075
Years in Education (continuous)	-	-	-.003	.002	.081

Note: Adjusted margin represents the average score on the climate survey scale (scores ranging from 0 to 3) for each group, controlling for all other variables in the model.
FRPL = Free/Reduced-Priced Lunch, used as a proxy for community-level poverty.
N = 655 staff within 40 schools.
Bold denotes significance at p ≤ .05

Staff ratings on the Order and Discipline scale varied significantly among several groups (Table 4.34). Remote schools (γ = -.261, p < .001) and even more distant schools (γ = -.246, p = .001) had perceptions that were both significantly lower than among staff at fringe schools. Both middle and high school staff ranked the Order and Discipline lower than elementary staff, but only the difference between high schools and elementary

schools was significant (γ = -.287, p = .001) while the middle school difference was not (γ = -.107, p = .090). Interestingly, female staff had a lower perception of Order and Discipline at the school than did male staff (γ = -.135, p = .008).

Table 4.35 Summary of Multi-Variable Multi-Level Linear Regression Model Predicting Staff Perceptions on the Fairness Climate Scale in 2019

			Regression results		
Variables	Adjusted margin	95% CI	coefficient	SE	*p*
SCHOOL CHARACTERISTICS					
School poverty					
FRPL <40% (referent)	2.09	1.98, 2.19	-	-	-
FRPL 40-60%	2.15	2.07, 2.22	.061	.067	.367
FRPL >60%	2.14	2.04, 2.25	.060	.080	.456
Locale					
Fringe (referent)	2.21	2.09, 2.33	-	-	-
Remote	2.10	2.01, 2.18	-.106	.073	.148
Distant	2.12	2.03, 2.22	-.082	.079	.296
School level					
Elementary/middle (referent)	2.16	2.09, 2.23	-	-	-
Middle/high	2.01	1.90, 2.13	-.147	.070	**.035**
High school only	1.88	1.71, 2.06	-.281	.097	**.004**
All grades	2.38	2.21, 2.56	.220	.099	**.027**
STAFF CHARACTERISTICS					
Gender					
Male (referent)	2.21	2.10, 2.32	-	-	-
Female	2.12	2.07, 2.17	-.087	.059	.140
Prefer not to answer	2.02	1.73, 2.32	-.183	.159	.250
Role					
Non-teacher	2.13	2.06, 2.20	-	-	-
Teacher	2.13	2.07, 2.19	.004	.041	.914
Years in Education (continuous)	-	-	-.007	.002	**.001**

Note: Adjusted margin represents the average score on the climate survey scale (scores ranging from 0 to 3) for each group, controlling for all other variables in the model.
FRPL = Free/Reduced-Priced Lunch, used as a proxy for community-level poverty.
N = 655 staff within 40 schools.
Bold denotes significance at p ≤ .05

Staff perceptions about Fairness at their school differed by several demographic variables (Table 4.35). Relative to staff at elementary schools, perceptions of fairness were lower among staff at middle schools (γ = -.147, p = .035) and at high schools (γ = -.281, p = .004). Fairness was higher among staff at K-12 schools (γ = .238, p = .027),

relative to elementary schools. It was also evident that more experienced teachers also perceived lower Fairness at their schools. The more experienced the teacher was, the less fairness they observed (γ = -.007, p = .001).

Table 4.36 Summary of Multi-Variable Multi-Level Linear Regression Model Predicting Staff Perceptions on the School Resources Climate Scale in 2019

			Regression results		
Variables	Adjusted margin	95% CI	coefficient	SE	*p*
SCHOOL CHARACTERISTICS					
School poverty					
FRPL <40% (referent)	1.75	1.65, 1.84	-	-	-
FRPL 40-60%	1.77	1.70, 1.84	.027	.061	.661
FRPL >60%	1.82	1.73, 1.92	.077	.073	.293
Locale					
Fringe (referent)	1.88	1.77, 1.99	-	-	-
Remote	1.77	1.70, 1.85	-.108	.067	.109
Distant	1.73	1.65, 1.81	-.153	.072	**.035**
School level					
Elementary/middle (referent)	1.79	1.73, 1.85	-	-	-
Middle/high	1.72	1.61, 1.82	-.074	.064	.249
High school only	1.56	1.40, 1.71	-.231	.088	**.009**
All grades	2.03	1.87, 2.19	.242	.090	**.007**
STAFF CHARACTERISTICS					
Gender					
Male (referent)	1.94	1.84, 2.03	-	-	-
Female	1.75	1.70, 1.80	-.184	.049	**<.001**
Prefer not to answer	1.89	1.65, 2.14	-.044	.131	.739
Role					
Non-teacher	1.85	1.78, 1.91	-	-	-
Teacher	1.74	1.69, 1.79	-.106	.034	**.002**
Years in Education (continuous)	-	-	-.003	.002	.138

Note: Adjusted margin represents the average score on the climate survey scale (scores ranging from 0 to 3) for each group, controlling for all other variables in the model.
FRPL = Free/Reduced-Priced Lunch, used as a proxy for community-level poverty.
N = 645 staff within 40 schools.
Bold denotes significance at p ≤ .05

The perception of School Resources (Table 4.36) by staff members showed several differences. At the school level, staff that work at schools distant from cities (γ = -.153, p = .035) and at high schools (γ = -.231, p = .009) both had more negative

perceptions of the availability of School Resources than their peers at rural fringe schools (i.e., those closer to urban areas). Staff from K-12 schools had more positive perceptions ($\gamma = .242$, $p = .007$), relative to those at elementary schools. At the individual level, female staff members rated School Resources lower than did males ($\gamma = -.184$, $p < .001$) as did teachers when compared to non-teaching staff ($\gamma = -.106$, $p = .002$).

Table 4.37 Summary of Multi-Variable Multi-Level Linear Regression Model Predicting Staff Perceptions on the Physical Disorder Climate Scale in 2019

			Regression results		
Variables	Adjusted margin	95% CI	coefficient	SE	*p*
SCHOOL CHARACTERISTICS					
School poverty					
FRPL <40% (referent)	0.94	0.84, 1.04	-	-	-
FRPL 40-60%	0.87	0.79, 0.94	-.074	.065	.255
FRPL >60%	0.96	0.85, 1.07	.016	.078	.838
Locale					
Fringe (referent)	0.82	0.69, 0.94	-	-	-
Remote	0.92	0.84, 1.00	.102	.074	.168
Distant	0.94	0.85, 1.03	.127	.078	.104
School level					
Elementary/middle (referent)	0.92	0.85, 0.99	-	-	-
Middle/high	0.90	0.78, 1.01	-.027	.069	.696
High school only	0.95	0.79, 1.12	.032	.092	.729
All grades	0.78	0.61, 0.95	-.142	.094	.130
STAFF CHARACTERISTICS					
Gender					
Male (referent)	0.91	0.83, 0.99	-	-	-
Female	0.90	0.85, 0.96	-.006	.039	.874
Prefer not to answer	0.91	0.70, 1.11	-.002	.107	.987
Role					
Non-teacher	0.88	0.82, 0.94	-	-	-
Teacher	0.92	0.86, 0.97	.035	.027	.188
Years in Education (continuous)	-	-	.001	.001	.589

Note: Adjusted margin represents the average score on the climate survey scale (scores ranging from 0 to 3) for each group, controlling for all other variables in the model.
FRPL = Free/Reduced-Priced Lunch, used as a proxy for community-level poverty.
N = 620 staff within 40 schools.
Bold denotes significance at $p \leq .05$

Perceptions of Physical Disorder in schools were very similar regardless of the demographics of the respondents or their school. There were no statistically significant differences by gender, role, or experience of the staff members. Staff members from all different types of schools with different demographics and locations had similar responses to the survey items.

Table 4.38 Summary of Multi-Variable Multi-Level Linear Regression Model Predicting Staff Perceptions on the Safety and Violence Climate Scale in 2019

			Regression results		
Variables	Adjusted margin	95% CI	coefficient	SE	*p*
SCHOOL CHARACTERISTICS					
School poverty					
FRPL <40% (referent)	1.96	1.83, 2.10	-	-	-
FRPL 40-60%	2.04	1.94, 2.14	.080	.085	.347
FRPL >60%	2.03	1.89, 2.17	.067	.102	.516
Locale					
Fringe (referent)	2.17	2.01, 2.33	-	-	-
Remote	1.97	1.86, 2.07	-.200	.096	**.037**
Distant	2.01	1.89, 2.12	-.162	.102	.112
School level					
Elementary/middle (referent)	2.04	1.96, 2.13	-	-	-
Middle/high	1.98	1.83, 2.13	-.065	.090	.471
High school only	1.90	1.68, 2.12	-.146	.122	.232
All grades	2.08	1.86, 2.30	.036	.125	.774
STAFF CHARACTERISTICS					
Gender					
Male (referent)	2.15	2.03, 2.27	-	-	-
Female	1.99	1.93, 2.06	-.154	.061	**.011**
Prefer not to answer	2.34	2.02, 2.65	.188	.167	.261
Role					
Non-teacher	1.99	1.91, 2.08	-	-	-
Teacher	2.04	1.97, 2.11	.045	.042	.278
Years in Education (continuous)	-	-	.002	.002	.425

Note: Adjusted margin represents the average score on the climate survey scale (scores ranging from 0 to 3) for each group, controlling for all other variables in the model.
FRPL = Free/Reduced-Priced Lunch, used as a proxy for community-level poverty.
N = 619 staff within 40 schools.
Bold denotes significance at $p \leq .05$

There were some measured differences between staff perceptions of Safety & Violence (Table 4.38), but the differences between elementary schools and secondary schools were not significant. Staff members from schools identified as remote (γ = -.200, p = .037) perceived lower levels of safety of their schools, relative to rural fringe schools. Female staff also perceived less safety and more violence than did male staff respondents (γ = -.154, p = .011).

Ability of SET Scores to Predict Stakeholder Perceptions of Climate

As schools work to improve their practice or encounter challenges, they naturally implement evidence-based practices. The core of PBIS is an intentional collection of evidence-based practices that work together in a framework to improve school climate and student outcomes (Horner et al., 2015). Research indicates that a high level of fidelity in PBIS implementation is important for producing the intended benefits (Horner et al., 2004; Mercer et al., 2017).

Prior to implementation, each school had varying levels of implementation of the different elements of PBIS. The critical elements of PBIS are measured by the subscales of the Schoolwide Evaluation Tool (SET; Horner et al., 2004) which was administered to each of the 40 schools in the project at baseline. In order to understand the relationship between the implementation level of PBIS elements and the stakeholder perceptions of school climate before formal training and implementation, I calculated a series of multi-variable, multi-level linear regression to predict each of the nine Climate Survey outcomes across each of the three groups (27 models total). In each model, the demographic variables explored above were included as covariates. And, in addition, the seven SET subscales were included as key predictor variables.

The influences of the implementation of the PBIS implementation fidelity (as represented by the seven SET subscale scores) are reported below, without the full multivariable adjusted model results, for two reasons. First, seven SET subscales were a relatively high number of additional factors to include in the regression model and I did not want to dilute the significance of the demographic variables, especially when analyzing the stakeholder groups with fewer respondents. Second, demographics are variables that schools have no choice in while the levels of PBIS implementation are directly determined by the schools. Consequently, the tables below present the summary statistics (coefficient, standard error of the coefficient, and p-value) in tables below, but it is important to note that these results are, indeed, from fully-adjusted regression models that account for all important school, parent, student, and staff demographic characteristics, as appropriate for each stakeholder group.

Regression Results Examining Associations between SET Subscales and Student Climate Survey Scales

I compared the association between each of the SET subscales and each of the Climate Survey scales for over 6,000 student respondents at rural schools (Table 4.39). I considered $p < .05$ to represent significance because of the sample size and the direct comparison of only the seven SET subscales with the nine Climate Survey scales. The statistical model revealed a strong pattern of significance in the data.

The majority of the results in the SET subscale titled Expectations Defined were statistically associated with the Climate Survey scales. When schools had higher scores on the Expectations Defined subscale, student perceptions of school climate were lower. The only exception was for Family Involvement which was opposite ($\gamma = .148$, $p = .028$),

indicating that higher levels of defining expectations were associated with higher perceptions of family involvement.

There was also an evident pattern of significant results for the SET subscale labeled as Reward System, which measures the level of formal acknowledgement at each school, and the effect was in the hypothesized direction. When the fidelity of implementation of a formal Reward System was higher, students had significantly higher ratings of school climate in the majority of the Climate Survey scales. The only exception was Family Involvement, which had an opposite result ($\gamma = -.137$, $p = .010$).

Table 4.39 Summary of Results from Nine Multi-Level Linear Regression Models Examining Associations between SET Subscales as Predictors of Student Perceptions on the Climate Scale in 2019

	Variables						
Regression Results	Exp. Defined	Exp. Taught	Reward System	Violation System	Monitor & Eval	Manage-ment	District Support
Climate Scales							
Student Expectations							
coefficient	-.279	.082	.238	.341	.060	.105	.105
SE	.148	.233	.116	.288	.200	.320	.143
p	.059	.725	**.040**	.237	.764	.742	.462
Academic Emphasis							
coefficient	-.210	.015	.149	.311	-.001	.116	.101
SE	.090	.144	.071	.177	.125	.197	.088
p	**.020**	.918	**.037**	.079	.991	.557	.251
Connectedness							
coefficient	-.315	.138	.241	.342	.035	-.078	.106
SE	.145	.228	.114	.282	.195	.314	.140
p	**.029**	.544	**.034**	.225	.857	.804	.448
Family Involvement							
coefficient	.148	-.084	-.137	-.261	-.049	-.028	-.060
SE	.067	.108	.053	.133	.095	.147	.066
p	**.028**	.436	**.010**	.050	.605	.851	.362
Order and Discipline							
coefficient	-.199	.087	.205	.307	.065	-.047	.047
SE	.126	.199	.099	.246	.171	.275	.122
p	.116	.663	**.039**	.213	.704	.865	.701
Fairness							
coefficient	-.264	.233	.163	.211	.090	-.069	.000
SE	.134	.212	.106	.263	.184	.292	.130
p	**.049**	.271	.123	.422	.625	.813	.997
School Resources							
coefficient	-.300	.176	.300	.512	-.032	-.151	.081
SE	.147	.232	.116	.287	.200	.319	.143
p	**.041**	.447	**.009**	.075	.874	.637	.568
Physical Disorder							
coefficient	.174	.011	-.185	-.356	-.005	.069	-.063
SE	.011	.208	.104	.258	.179	.287	.128
p	.188	.958	.076	.168	.979	.810	.621
Safety and Violence							
coefficient	-.355	.214	.237	.335	.035	-.136	.091
SE	.159	.251	.125	.312	.217	.346	.155
p	**.026**	.395	.059	.282	.872	.695	.557

Note: Adjusted margin represents the average score on the climate survey scale (scores ranging from 0 to 3) for each group, controlling for all other variables in the model.
N = 6,576 students in grades 3 to 12, within 37 schools.
Bold denotes significance at $p \leq .05$

Outside of Expectations Defined and Reward System, no other SET subscales were significantly associated with student perceptions of school climate as measured by the Climate Survey.

These data indicate that schools that focus on defining their behavioral expectations have students that have a more negative perspective on school climate. However, when schools implement an acknowledgement system, students have a much more positive perspective on multiple aspects of the school. The only caveat to that is that perceptions of Family Involvement are opposite on both counts.

Regression Results Examining Associations between SET Subscales and Parent Climate Survey Scales

I also compared the same SET subscales to the parent responses on the Climate Survey (Table 4.40). Parents are not in the school setting as often so it was unclear what impact PBIS implementation levels might have on their perceptions of the school climate, especially before PBIS was a concerted effort at the school. Two areas of school effort did stand out in the results which suggests that parents are influenced by school efforts to impact the learning environment.

Just as with the students, the Expectations Defined subscale of the SET was negatively associated with parental perceptions of school climate. Schools that focused on strongly defining expectations, had significantly lower ratings in the majority of the parent Climate Survey scales.

There was also a SET subscale that had a pattern of positive association with school climate, but for the parents it was the Expectations Taught subscale. When schools showed the ability to teach the expectations at a high level, not just label and define them, parents perceived higher levels of Connectedness ($\gamma = .593$, $p = .038$), Family Involvement ($\gamma = .640$, $p = .013$), Order and Discipline ($\gamma = .544$, $p = .043$), and School Resources ($\gamma = .617$, $p = .001$).

Table 4.40 Summary of Results from Nine Multi-Level Linear Regression Models Examining Associations between SET Subscales as Predictors of Parent Perceptions on the Climate Scale in 2019

	Variables						
Regression Results	Exp. Defined	Exp. Taught	Reward System	Violation System	Monitor & Eval	Manage-ment	District Support
Climate Scales							
Student Expectations							
coefficient	.053	.054	.070	.007	-.016	-.024	-.053
SE	.047	.075	.035	.089	.054	.080	.042
p	.259	.427	**.048**	.934	.769	.763	.209
Academic Emphasis							
coefficient	-.361	.542	.112	-.013	-.261	.034	.117
SE	.197	.299	.151	.359	.224	.357	.170
p	.067	.069	.456	.971	.245	.923	.491
Connectedness							
coefficient	-.494	.593	.152	-.037	-.344	.071	.095
SE	.187	.285	.143	.341	.213	.336	.162
p	**.008**	**.038**	.287	.913	.107	.833	.558
Family Involvement							
coefficient	-.428	.640	.197	-.131	-.355	.119	.107
SE	.169	.257	.129	.309	.193	.305	.146
p	**.011**	**.013**	.128	.672	.065	.697	.466
Order and Discipline							
coefficient	-.351	.544	.156	-.102	-.242	.033	.115
SE	.177	.269	.136	.323	.202	.321	.153
p	**.048**	**.043**	.251	.752	.230	.917	.455
Fairness							
coefficient	-.287	.508	.127	-.043	-.309	.048	.062
SE	.190	.288	.145	.345	.216	.343	.164
p	.131	.077	.380	.900	.153	.889	.704
School Resources							
coefficient	-.370	.617	.135	-.336	-.262	.058	.212
SE	.123	.188	.093	.225	.140	.217	.107
p	**.003**	**.001**	.148	.135	.061	.789	**.046**
Physical Disorder							
coefficient	.132	-.186	-.183	-.001	.376	-.177	-.124
SE	.154	.234	.118	.281	.176	.281	.134
p	.393	.427	.121	.998	**.033**	.528	.353
Safety and Violence							
coefficient	-.357	.465	.079	-.186	-.228	.076	.144
SE	.162	.246	.123	.295	.184	.290	.140
p	**.027**	.059	.523	.529	.214	.793	.303

Note: Adjusted margin represents the average score on the climate survey scale (scores ranging from 0 to 3) for each group, controlling for all other variables in the model.
FRPL = Free/Reduced-Priced Lunch, used as a proxy for community-level poverty.
N = 1,611 parents within 39 schools.
Bold denotes significance at $p \leq .05$

Across the other 45 comparisons in the other SET subscales, there were only three that measured as significant and none of them represented an observable pattern. These

results suggest that when schools prioritize the teaching of behavior, parents notice a difference in how the school feels.

Regression Results Examining Associations between SET Subscales and Staff Climate Survey Scales

Lastly, the SET subscales were compared to the staff Climate Survey scales in the multi-variable regression model (Table 4.41). Just as with the other stakeholders, a strong and similar pattern arose in the staff data.

Staff also had a pattern of negative association between Expectations Defined on the SET and perceptions of climate. Specifically, when schools scored higher on the fidelity with which expectations were defined and rules were established, staff had significantly lower perceptions on three Climate Survey subscales: Student Expectation (γ = -.265, p = .036), Academic Emphasis (γ = -.300, p = .012), and Connectedness (γ = -.218, p = .029).

Among staff, there was even a stronger relationship between Expectations Taught and climate perspectives, which is a similar pattern to the parent responses. Schools that invested in teaching the expectations to students had staff that had significantly higher perspectives of Student Expectations (γ = .405, p = .042), Academic Emphasis (γ = .527, p = .005), Connectedness (γ = .375, p = .017), and Order and Discipline (γ = .411, p = .025).

Table 4.41 Summary of Results from Nine Multi-Level Linear Regression Models Examining Associations between SET Subscales as Predictors of Staff Perceptions on the Climate Scale in 2019

	Variables						
Regression Results	Exp. Defined	Exp. Taught	Reward System	Violation System	Monitor & Eval	Manage-ment	District Support
Climate Scales							
Student Expectations							
coefficient	-.265	.405	.093	.560	-.048	-.114	.097
SE	.127	.199	.096	.248	.149	.242	.111
p	**.036**	**.042**	.334	**.024**	.746	.636	.380
Academic Emphasis							
coefficient	-.300	.527	.028	.429	-.080	-.240	.116
SE	.120	.190	.090	.237	.142	.228	.105
p	**.012**	**.005**	.754	.070	.572	.294	.269
Connectedness							
coefficient	-.218	.375	-.037	.105	-.112	.186	.116
SE	.100	.157	.075	.196	.117	.190	.087
p	**.029**	**.017**	.622	.590	.340	.329	.185
Family Involvement							
coefficient	.014	.127	.161	.152	-.099	.158	-.006
SE	.096	.153	.071	.192	.115	.181	.085
p	.884	.405	**.023**	.429	.390	.383	.948
Order and Discipline							
coefficient	-.162	.411	.069	.033	-.054	.160	.100
SE	.117	.183	.088	.229	.137	.222	.102
p	.165	**.025**	.437	.886	.696	.471	.327
Fairness							
coefficient	-.061	.353	.054	-.078	-.028	.189	-.091
SE	.127	.199	.095	.249	.149	.240	.111
p	.628	.077	.567	.756	.850	.432	.412
School Resources							
coefficient	-.059	.327	.088	-.052	-.181	.228	-.044
SE	.109	.171	.081	.213	.127	.205	.095
p	.585	.056	.278	.806	.155	.267	.639
Physical Disorder							
coefficient	.052	-.211	-.023	.017	.116	-.004	-.143
SE	.105	.164	.080	.204	.122	.200	.092
p	.622	.200	.771	.935	.339	.985	.119
Safety and Violence							
coefficient	-.025	.379	-.019	.137	-.112	.168	.139
SE	.136	.214	.102	.267	.159	.258	.119
p	.855	.077	.853	.608	.483	.514	.245

Note: Adjusted margin represents the average score on the climate survey scale (scores ranging from 0 to 3) for each group, controlling for all other variables in the model.
N = 678 parents within 40 schools.
Bold denotes significance at $p \leq .05$

CHAPTER 5: DISCUSSION

Answering the Research Questions

This dissertation explores the level of implementation of PBIS components and perceptions of climate among stakeholders at rural schools that have committed to be trained in the implementation of PBIS. I also examined how the degree of fidelity of PBIS implementation influences those perceptions of school climate prior to formal implementation for the same sample.

The following research questions were examined:

1. What are the levels of PBIS implementation existing in this sample of schools, prior to formal initiation of implementation efforts?
2. What are the perceptions of school climate among staff, students, and parents in a sample of 40 rural schools?
3. How do perceptions of school climate vary by the extent (degree of fidelity) of PBIS implementation in rural schools, prior to the initiation of formal implementation efforts?

For purposes of this discussion, it is important to point out that this sample is composed of schools that had volunteered to start receiving training and implementing PBIS within the next year as part of a research project. In order to join the project, they had to demonstrate that they were committed to the process by establishing a school-level PBIS team. Thus, the 40 schools included here may or may not be representative of all rural settings across the state of Idaho, or across the United States nationally.

Contributions to Collective Understanding

The interpretations of the data can provide long term benefits to multiple parties and fill a hole in the literature regarding PBIS in rural schools. Understanding the characteristics of rural schools who have committed to implement PBIS will be useful for researchers and implementers. This analysis may be used to inform their interactions with school leadership, to guide planning for instruction, and to even identify schools that could benefit from PBIS. It could help implementers support individual schools by identifying whether their characteristics are similar to other rural schools, and what strengths or challenges are likely to exist.

Understanding the associations at baseline—that is, prior to training—between partial or informal implementation of PBIS, and school climate, will be beneficial for both internal and external support. Facilitators and coaches will be able to understand the complex interactions between the typical efforts of a school and concurrent climate characteristics. The results will also inform considerations about the extent of implementation fidelity in a sample of rural schools, and clarify the value of certain components of PBIS.

Interpreting the Results for Research Question 1

Existing Level of PBIS Implementation Prior to Formal Support

The data from this sample indicate that rural schools that had identified the need for PBIS were missing key components of PBIS – as measured by the SET (Bradshaw et al., 2010; Bradshaw et al., 2008b) – that would have a large influence on successful outcomes. Instead of providing clear explanation and feedback for expected behavior, these schools consistently exhibited an approach that centered on punishment. There was

also a deficiency in being able to monitor behavioral data and make informed decisions to respond effectively to changes in environment, student population, and behavioral outcomes.

Schools Not Teaching or Acknowledging Behavioral Expectations

Specifically, the participating schools were not defining or teaching clear behavioral expectations for their students. These systems are represented by the first two SET subscales and are vital, as they are the foundation on which the rest of the systems are built. Each subsequent system, such as rewarding for expected behavior, providing consistent consequences for behavioral violations, and monitoring levels of behavior will be confusing and ineffective without a thorough and foundational understanding of the shared expectations for the school. It is suggested that successful implementation cannot be achieved without teaching expectations to a high degree of fidelity (80%; Mercer, 2017) no matter the level of implementation of the subsequent systems.

Providing intended reinforcement for those expectations was also happening at a low rate overall, with 30% of schools exhibiting no measurable evidence of an acknowledgement/reward system. The level of implementation for a system to reward expected behavior was significantly lower at the secondary level compared to elementary level schools. This was the only significant difference in the SET subscales between elementary and secondary schools.

Schools are Punishment-Heavy

The one SET subscale that showed widespread implementation at baseline was the violation system. No school received below a 50% score for the Violation System subscale. This is evidence of a longstanding critique of our school systems, that they are

overly focused on punishment (Massar et al., 2015). With that negative bent, it is likely that foundational relationships would be quickly eroded and could negatively impact the outcomes of the school (Cook et al., 2017). In fact, there is evidence that an approach based on punishment and void of the foundational systems mentioned above is likely to increase levels of problem behavior (Massar et al., 2015). These results show that the current state of rural schools in the sample is counterproductive to the instructional approach touted by the developers of PBIS (Horner & Sugai, 2015).

Schools in this study showed a lack of systems for utilizing data for decision making (Monitoring and Evaluation), managing the implementation team (Management), and obtaining resources for maintenance (District Support). It is likely that both the Management and District Support subscales were artificially high. Management contained items that measured the organization of a representative team and prioritizing behavior support while District Support asked about identifying external support. These items were prerequisites of participation in the project but are also part of the measurement of these two scales and were among the highest scoring items. These factors were impossible to mitigate as participation had to be confirmed before the data could be collected. It is also impossible to rate the impact of the project requirements on the subscales because of a lack of measurement prior to participation.

Fidelity is Key

Overall, there are a reasonable number of the key features of PBIS occurring within these schools prior to formal implementation, as the mean overall SET implementation score was 53%. Mean subscales scores ranged between 28% and 84%, indicating substantial variation in each domain. There was also a wide range of scores on

individual SET items, and only one item not being observed across any schools (i.e., "Team uses an action plan with specific goals"). PBIS is composed of many best practices and practical solutions so it is not unlikely that many features would be implemented naturally and practically at these schools to address needs. PBIS implementation and the evidence-based practices that make up PBIS have become more prevalent across the country (Gion et al., 2020), so it is also likely that schools in the sample have been naturally following best practices from other schools. However, the components of PBIS are meant to work in concert with each other with an emphasis placed on utilizing the continuum of supports across the framework (Mercer et al., 2017). Research has shown that the beneficial impact of PBIS is maximized when fidelity of implementation is sufficient (Horner et al., 2004).

These data show that the schools in the sample were making efforts to implement best practices in the way they knew or what was available to them. However, the schools were not implementing key features of PBIS with fidelity, and they did not have the structure to produce their desired outcomes.

These results are consistent with the barriers that have been perceived for PBIS in rural schools. The distance from PBIS and training or coaching create a lack of access to professional development and lead to inaccurate views around prevention and discipline overall. The lack of funding and personnel make it difficult to improve fidelity and effectiveness (McDaniel & Bloomfield, 2020).

Interpreting the Results for Research Question 2

Perceptions of School Climate in a Sample of Rural Schools

School climate is a complex concept to define and measure (Anderson, 1982; Cohen et al., 2009; Thapa et al., 2013). The MDS3 Suite of Climate Surveys (Bradshaw et al., 2012) is a well-established and recommended tool to measure school climate among three different stakeholder groups; students, parents, and staff.

Positive Perceptions of School Climate

The Climate Surveys indicate that rural schools have a positive climate overall. There was general agreement across stakeholders from the rural schools in the sample indicating that perceptions of school climate are consistently high, although some dimensions were stronger than others. In the 0-3 Likert scale used as a response option for all three stakeholder surveys, a two on an item indicated ‘agree’. Across all schools and all surveys, the average score per item was greater than two. Additionally, each stakeholder group had an average score per item over two. No scales had averages below the midpoint of the possible range (i.e., 1.5).

The highest average scores across stakeholder group were for the Student Expectations and Academic Emphasis climate scales. The lowest two scales relative to the other scales were ratings of Order and Discipline at the school and perceptions of the School Resources. Order and Discipline was the lowest scale across all three stakeholder groups, which represents a need. Considering the consistently high levels of Violation Systems as measured in the SET results, it is apparent that this need is not being met through punishment alone.

Variability in Perceptions Between Stakeholder Groups

Most of the scales showed statistically significant differences among students, parents, and staff. Although the ratings were generally high, some stakeholder groups reliably scored statistically higher than others. Students had the highest perceptions of Academic Emphasis at their schools. Parents had by far the highest Student Expectations. Staff had generally high ratings across all scales, particularly about the extent of Family Involvement at their child's school, when compared to the other groups.

Statistically significant differences between stakeholder perceptions of individual items on the Climate Surveys were also evident. One interesting distinction was that staff felt that they made efforts to invite parents into the schools and be involved, but parent perception showed that they did not feel as welcomed into the learning environment.

Demographic Differences in Perceptions of School Climate

The demographic characteristics of the individuals taking the Climate Survey and the demographics of the school they represented had a statistically significant impact on many of their responses. The demographics that had an impact changed depending on which scale was being measured and varied by which stakeholder group the individual belonged to, but there were patterns that emerged.

Demographic Differences in Student Perspectives

Student perceptions of climate varied by their demographics and the characteristics of their school. As students increase in grade level their ratings of school climate became significantly lower, except in their rating of Family Involvement which was higher the older they got. The same patterns were seen when comparing elementary schools to middle and high schools. Among students attending schools with higher rates

of poverty, students were more likely to rate the school climate lower on the majority of the scales. For example, students from schools with more poverty had worse perspectives on Student Expectations, Connectedness, Order and Discipline, School Resources, and Order and Safety. Females and males responded different on four of the nine scales and students of color responded differently than non-Hispanic white students on four of the nine scales as well. The only demographic characteristic that wasn't associated with climate perceptions was the ruralness of the school: students from fringe, remote, and distant schools all had similar perspectives on school climate when controlling for all the other factors.

Demographic Differences in Parent Perspectives

Parents also responded differently based on their demographics, although for fewer climate dimensions than the students. There were statistical differences in some of the climate scales for some of the demographics including poverty (five of nine climate scales), locale (four of nine climate scales), and school level (three of nine climate scales). When there was a difference, schools with more poverty, schools further from population centers, and secondary schools all had lower parent ratings of school climate.

The demographics that consistently showed a pattern of differences in parents' climate perceptions were: student grade level, student academic achievement, and parent education level. Parents of older students gave lower scores on the climate scales. If the parents reported that their student got mostly A's on their report card the parents had a relatively good perspectives on the school climate, but as the reported student GPA decreased, so did the parents' opinions. Climate ratings also varied by parent education, such that among parents who had more education, especially when they had graduated

college or attained an advanced degree, they generally had a more favorable opinion on the school climate.

However, climate perspectives of parents did not vary by several of the demographic variables that were assessed on the surveys. The gender of the parent responding and the gender of their child was not associated with their answers to the survey. The race of the student was associated with responses on only one of the Climate Survey scales. When parents reported that their child was a student of color, they had a higher perspective on Academic Emphasis than parents of non-Hispanic white students. For parents, none of the demographic influences had any bearing on their opinions of Student Expectations.

Demographic Differences in Staff Perspectives

Among staff, there were generally few demographic differences in patterns of climate perceptions, but some patterns were noted. The more rural the school was, the more likely the teacher was to rate the climate lower for most of the scales. The same pattern was observed with staff at secondary schools as compared to those at elementary schools, where teachers at secondary schools reported lower climate scores.

However, the role of the teacher and the experience level of the teacher was minimally associated with climate, as each of these demographic categories was significantly associated with one climate scale each. Interestingly, the only demographic variable not associated at all with climate was the level of poverty at the school. Staff members at schools with high rates of poverty have statistically similar perspectives on the climate as do staff at schools with wealthier students. Two climate scales did not vary at all by demographic differences and those scales were Connectedness and Physical

Disorder. That means that teachers in rural schools generally feel the same about the quality of relationships and the physical organization at the school no matter their role, race/ethnicity, gender, nor the location and other characteristics of their schools.

Demographic Differences between Stakeholder Groups

In some cases, the patterns of demographic differences on the Climate Survey scores were similar across the stakeholder groups, but in other cases, they were drastically different. For example, across all three stakeholder groups, the grade level was consistently associated with differences on the climate scales, such that climate outcomes were worse in secondary schools relative to elementary schools. Contrarily, while many climate scales varied among students and parents at schools with higher poverty, relative to lower poverty, the same pattern was not evident among staff. In yet another discrepant pattern, the most consistent demographic difference in staff perceptions was by locale, with rural remote schools faring worse than rural fringe schools; however, this pattern was not noted at all among students.

Interpreting the Results for Research Question 3

The relationship between a school's efforts to improve climate and the resulting perceptions of climate by a variety of stakeholders is important to understand. It could help a school decide on what practices to utilize to get the greatest impact. It could also help a school diagnose what some of the issues might be and how to address those issues effectively. In this work, I explored associations between the key features of PBIS as measured by the SET subscales, with climate scales that measured perceptions among students, parents, and school staff. The results produced some revealing patterns that may be useful for rural schools that have not yet initiated PBIS training and implementation.

How the PBIS Elements Relate to School Climate

Across all three stakeholder groups, schools that focused on defining their expectations (through documentation and posting) scored reliably worse on the Climate Survey. The multi-level regression used to analyze these data controlled for all of the other variables as part of the model.

There were, on the other hand, two elements of PBIS that did have a significant influence on climate perspectives for schools that had not yet gone through training. When a school scored well on the Rewards System subscale, students had consistently higher perceptions of school climate. Six of the nine climate scales were significantly higher.

Among schools that scored higher on Expectations Taught, parents and school staff reported significantly higher perceptions of school climate across multiple scales. There were some other relationships between other SET Subscales and Climate Survey scales that were significant, but none of them constituted a meaningful or consistent pattern.

Prior research has mainly focused on longitudinal studies, but a few studies have reported details about the baseline data as part of their analysis. Bradshaw and colleagues (2009) concluded that implementation of disjointed PBIS components at baseline, when taken alone, would have little effect on school climate. They determined that a synergy of implementation of the core elements at a high level would be necessary to create a favorable school climate. This was somewhat inconsistent with the findings of this study as there were some associations between perceptions of school climate and a few of the PBIS components.

Bradshaw and colleagues (2009) did find an association between PBIS training and Academic Emphasis and Resource Influence after PBIS training. This was consistent with the results of the current study as there were positive associations between the Reward System component of PBIS and student perceptions of Academic Emphasis and School Resources. There were also positive associations from Expectations Taught to staff perceptions of Academic Emphasis and parent perceptions of School Resources. Horner and colleagues (2009) found statistically significant outcomes showing that schools implementing PBIS were perceived as being more safe environments. While the Safety and Violence scale did not have any significant associations to PBIS components, the related scale of Order and Discipline did have some significant associations.

Conclusions

A goal of this dissertation is to report on the status of PBIS elements and school climate in rural schools prior to PBIS training and implementation. A significant portion of the results section is dedicated to presenting descriptive data and exploring patterns of differences. The data suggest that most of the schools in this sample were making efforts to implement practices that are in common with PBIS, but the lack of fidelity is apparent in the associations with climate perceptions. A generally positive perspective on school climate was reported by students, parents, and staff at these rural schools. This is even true amongst these schools that are motivated to implement PBIS. The lowest rated areas of climate across all stakeholders showed a need to improve the order and discipline of the schools as well as resources available to students. This result may also provide insight into why the schools volunteered to participate in PBIS training.

This research indicates that many schools are relying on punishment to change behavior, but that is not having the desired effect on changing school climate. All of the schools had implemented discipline systems at a very high level especially in relation to other preventative and proactive practices. However, the data shows that heavy discipline is not having the desired effect, especially in the absence of teaching and acknowledging expected behavior ahead of time. As an analogy, this approach would be like heavily testing students on academic content they haven't been taught and applying strict consequences to the report card. It is evident that instead, schools should be focused on the two practices that have been shown to move the needle in relation to school climate: teaching expected behavior and acknowledging those behaviors consistently.

Limitations

As is the case with any real-world research, a limitation of this work is that the sample was self-selected by volunteering to participate in PBIS training. This makes it impossible to generalize broadly and to draw conclusions across all rural schools. There is no comparison to urban schools, so the conclusions may not generalize to schools with a wider variety of demographics or in non-rural settings. An additional limitation is that these analyses use only quantitative data, which does not include the nuance and depth that can be provided with the addition of qualitative input. The measures, although of high quality, are measuring extremely complex social constructs pertaining to human interaction and organizational activities.

Recommendations for Future Research

This study found that defining expectations was negatively associated with most measures of school climate. It also found that teaching and acknowledging expectations

tended to be positively associated with measures of school climate. Though it cannot be determined with the current scope of analysis, one possible interpretation is indicative of a common anecdote in PBIS circles; that schools write a few words on a paper and slap them up on the wall and when nothing changes they tell you PBIS doesn't work, when in fact they weren't really doing PBIS. My recommendation is that future research explore the relationship schools with highly defined expectations and low levels and teaching/acknowledging expectations have to school climate outcomes.

While these analyses used cross-sectional data, the incorporation of additional time points and longitudinal data would be beneficial. I recommended that researchers and implementers build on the findings and conclusions offered here to better understand how to scale PBIS to rural schools. Understanding the unique circumstances of small and remote schools will help inform what support and training will be most effective and productive.

Finally, applying a similar methodology utilized in this study to other demographic groups such as suburban and urban schools will help give more context and meaning to the results found here. Specifically, analyzing current levels of implementation of PBIS elements along with school climate perspectives from multiple stakeholders—and then exploring relationships between the two constructs, will provide crucial insights into areas of need, and opportunities for educators to create a better learning environment for all their stakeholders.

REFERENCES

Alberto, P., & Troutman, A. C. (2013). *Applied behavior analysis for teachers*. Upper Saddle River, NJ: Pearson.

Aldis, O. (1961). Of pigeons and men. *Harvard Business Review*, *39*(4), 59-63. http://pzacad.pitzer.edu/~jlewis/Sakai%20articles/Of%20Pigeons%20and%20men%20-%20Aldis%20(1961).PDF

Anderson, C. S. (1982). The search for school climate: A review of the research. *Review of Educational Research*, *52*(3), 368-420. https://doi.org/10.3102/00346543052003368

Anderson, C. M., & Kincaid, D. (2005). Applying behavior analysis to school violence and discipline problems: Schoolwide positive behavior support. *The BehaviorAnalyst*, *28*(1), 49-63. https://dx.doi.org/10.1007%2FBF03392103

Baer, D. M., Wolf, M. M., & Risley, T. R. (1968). Some current dimensions of applied behavior analysis. *Journal of Applied Behavior Analysis*, *1*(1), 91-97. https://dx.doi.org/10.1901%2Fjaba.1968.1-91

Bradshaw, C., Koth, C., Bevans, K., Ialongo, N., & Leaf, P. (2008a). The impact of School-Wide Positive Behavioral Interventions and Supports (PBIS) on the organizational health of elementary schools. *School Psychology Quarterly, 23*(4), 462-473. https://doi.org/10.1037/a0012883

Bradshaw, C. P., Koth, C. W., Thornton, L. A., & Leaf, P. J. (2009). Altering school climate through school-wide positive behavioral interventions and supports: Findings from a group-randomized effectiveness trial. *Prevention Science*, *10*(2), 100. https://doi.org/10.1007/s11121-008-0114-9

Bradshaw, C. P., Mitchell, M. M., & Leaf, P. J. (2010). Examining the effects of school-wide positive behavioral interventions and supports on student outcomes: Results from a randomized controlled effectiveness trial in elementary schools. *Journal of Positive Behavior Interventions, 12*(3), 133-148. https://doi.org/10.1177/1098300709334798

Bradshaw, C. P., Pas, E. T., Bloom, J., Barrett, S., Hershfeldt, P., Alexander, A., ... & Leaf, P. J. (2012). A state-wide partnership to promote safe and supportive schools: The PBIS Maryland initiative. *Administration and Policy in Mental Health and Mental Health Services Research*, *39*(4), 225-237. https://doi.org/10.1007/s10488-011-0384-6

Bradshaw, C. P., Reinke, W. M., Brown, L. D., Bevans, K. B., & Leaf, P. J. (2008b). Implementation of school-wide positive behavioral interventions and supports (PBIS) in elementary schools: Observations from a randomized trial. *Education and Treatment of Children*, *31*(1), 1-26. https://doi.org/10.1353/etc.0.0025

Bradshaw, C. P., Waasdorp, T. E., Debnam, K. J., & Johnson, S. L. (2014). Measuring school climate in high schools: A focus on safety, engagement, and the environment. *Journal of School Health*, *84*(9), 593-604. https://doi.org/10.1111/josh.12186

Brendtro, L. K. (2006). The vision of Urie Bronfenbrenner: Adults who are crazy about kids. *Reclaiming Children & Youth: The Journal of Strength-based Interventions*, *15*(3), 162–166. https://www.researchgate.net/publication/234721190_The_Vision_of_Urie_Bronfenbrenner_Ad ults_Who_Are_Crazy_about_Kids

Bronfenbrenner, U. (1979). Contexts of child rearing: Problems and prospects. *American Psychologist*, *34*(10), 844–850. https://doi.org/10.1037/0003-066X.34.10.844

Carr, J. E., & Sidener, T. M. (2002). On the relation between applied behavior analysis and positive behavioral support. *The Behavior Analyst*, *25*(2), 245-253. https://dx.doi.org/10.1007%2FBF03392062

Center on Positive Behavioral Interventions and Supports (2015). *Positive Behavioral Interventions and Supports (PBIS) Implementation Blueprint: Part 1 – Foundations and Supporting Information*. University of Oregon. https://www.pbis.org/resource/pbis-implementation-blueprint

Child Welfare Information Gateway. (2018). *Rural child welfare practice.* Washington, DC: U.S. Department of Health and Human Services, Children's Bureau. https://www.childwelfare.gov/pubs/issue-briefs/rural/

Cohen, J., McCabe, L., Michelli, N. M., & Pickeral, T. (2009). School climate: Research, policy, practice, and teacher education. *Teachers College Record*, *111*(1), 180-213. http://dx.doi.org/10.1177/016146810911100108

Cook, C. R., Grady, E. A., Long, A. C., Renshaw, T., Codding, R. S., Fiat, A., & Larson, M. (2017). Evaluating the impact of increasing general education teachers' ratio of positive-to-negative interactions on students' classroom behavior. *Journal of Positive Behavior Interventions*, *19*(2), 67-77. https://doi.org/10.1177/1098300716679137

Fitzgerald, C. B., Geraci, L. M., & Swanson, M. (2014). Scaling up in rural schools using positive behavioral interventions and supports. *Rural Special Education Quarterly*, *33*(1), 18-22. https://doi.org/10.1177/875687051503400404

Geverdt, D. E. (2015). Education Demographic and Geographic Estimates Program (EDGE): Locale Boundaries User's Manual. NCES 2016-012. *National Center for Education Statistics*. https://nces.ed.gov/programs/edge/docs/NCES_LOCALE_USERSMANUAL_2016012.pdf

Gion, C., George, H. P., Nese, R., Kato, M. M., Massar, M., & McIntosh, K. (2020). School-wide positive behavioral interventions and supports. In A. L. Reschly, A. J. Pohl, & S. L. Christenson (Eds.), *Student Engagement* (pp. 171-183). Springer. https://doi.org/10.1007/978-3-030-37285-9_10

Haynes, N. M., Emmons, C., & Ben-Avie, M. (1997). School climate as a factor in student adjustment and achievement. *Journal of Educational and Psychological Consultation*, *8*(3), 321-329. https://doi.org/10.1207/s1532768xjepc0803_4

Hill, L. G., Maucione, K., & Hood, B. K. (2007). A focused approach to assessing program fidelity. *Prevention Science*, *8*(1), 25-34. https://doi.org/10.1007/s11121-006-0051-4

Horner, R. H. (2000). Positive behavior supports. *Focus on Autism and Other Developmental Disabilities*, *15*(2), 97-105. https://doi.org/10.1207/s1532768xjepc0803_4

Horner, R. H., Todd, A. W., Lewis-Palmer, T., Irvin, L. K., Sugai, G., & Boland, J. B. (2004). The school-wide evaluation tool (SET) a research instrument for assessing school-wide positive behavior support. *Journal of Positive BehaviorInterventions*, *6*(1), 3-12. https://doi.org/10.1177/10983007040060010201

Horner, R. H., & Sugai, G. (2015). School-wide PBIS: An example of applied behavior analysis implemented at a scale of social importance. *Behavior Analysis in Practice, 8*(1), 80-85. https://doi.org/10.1007/s40617-015-0045-4

Horner, R. H., Sugai, G. H., & Anderson, C. M. (2010). Examining the evidence base for schoolwide positive behavior support. *Exceptional Children, 42*(8), 1-14. https://www.pbis.org/resource/examining-the-evidence-base-for-school-wide-positive-behavior-support

Horner, R.H., Sugai, G., and Lewis, T. (2015). *Is school-wide positive behavior support an evidence-based practice?* (Rev. ed. 2020). Center on Positive Behavioral Interventions and Supports, University of Oregon. https://www.pbis.org/resource/is-school-wide-positive-behavior-support-an-evidence-based-practice

Horner, R., Sugai, G., Smolkowski, K., Todd, A., Nakasato, J., & Esperanza, J. (2009). A randomized control trial of School-wide Positive Behavior Support in elementary schools. *Journal of Positive Behavior Interventions, 11*(3), 113-144. https://doi.org/10.1177/1098300709332067

Irvin, L. K., Horner, R. H., Ingram, K., Todd, A. W., Sugai, G., Sampson, N. K., & Boland, J. B. (2006). Using office discipline referral data for decision making about student behavior in elementary and middle schools: An empirical evaluation of validity. *Journal of Positive Behavior Interventions*, *8*(1), 10-23. https://doi.org/10.1177/10983007060080010301

Knoster, T. (2017). Commentary: Evolution of positive behavior support and future directions. *Journal of Positive Behavior Interventions, 20*(1), 23–26. https://doi.org/10.1177/1098300717735056

Massar, M. M., McIntosh, K., & Eliason, B. M. (2015). Do Out-of-School Suspensions Prevent Future Exclusionary Discipline? *Technical Assistance Center on Positive Behavioral Interventions and Supports*. https://www.pbis.org/resource/do-out-of-school-suspensions-prevent-future-exclusionary-discipline

McDaniel, S.C., & Bloomfield, B. (2020). *PBIS in rural America: Addressing barriers and building on strengths*. Eugene, OR: Center on PBIS, University of Oregon. https://www.pbis.org/resource/pbis-in-rural-america-addressing-barriers-and-building-on-strengths

McDaniel, S. C., Kim, S., & Guyotte, K. W. (2017). Perceptions of Implementing Positive Behavior Interventions and Supports in High-Need School Contexts through the Voice of Local Stakeholders. *Journal of At-Risk Issues*, *20*(2), 35-44. https://files.eric.ed.gov/fulltext/EJ1175692.pdf

McDaniel, S., Kim, S., Kwon, D., & Choi, Y. J. (2018). Stakeholder perceptions of contextual factors related to PBIS implementation in high need schools. *Journal of Children and Poverty*, *24*(2), 109-122. https://doi.org/10.1080/10796126.2018.1518777

McIntosh, K., Mercer, S. H., Nese, R. N. T., Strickland-Cohen, M. K., Kittelman, A., Hoselton, R., & Horner, R. H. (2018). Factors Predicting Sustained Implementation of a Universal Behavior Support Framework. *Educational Researcher*, *47*(5), 307–316. https://doi.org/10.3102/0013189X18776975

Mercer, S. H., McIntosh, K., & Hoselton, R. (2017). Comparability of fidelity measures for assessing tier 1 school-wide positive behavioral interventions and supports. *Journal of Positive Behavior Interventions*, *19*(4), 195-204. http://dx.doi.org/10.1177/1098300717693384

National Center for Education Statistics. (2015). ED School Climate Surveys (EDSCLS): National benchmark study 2016. *Appendix D. EDSCLS Pilot Test 2015 Report (ED575971)*. https://safesupportivelearning.ed.gov/sites/default/files/Appendix_D_2015_EDSCLS_Pilot_Test_Report%20%281%29.pdf

National Center for Education Statistics. (2016). *Education Department School Climate Survey* (EDSCLS). https://safesupportivelearning.ed.gov/edscls/administration

Nunnally, J. C. (1975). Psychometric theory—25 years ago and now. *Educational Researcher*, *4*(10), 7-21. https://doi.org/10.3102/0013189X004010007

O'Brennan, L. M., Bradshaw, C. P., & Furlong, M. J. (2014). Influence of classroom and school climate on teacher perceptions of student problem behavior. *School Mental Health*, *6*(2), 125-136. https://doi.org/10.1007/s12310-014-9118-8

Oyen, K. A., & Wollersheim-Shervey, S. (2019). An examination of critical features of positive frameworks: Impact in rural environments for school-based practitioners. *Contemporary School Psychology*, *23*(4), 388-400. https://doi.org/10.1007/S40688-018-0198-6

Pas, E. T., Waasdorp, T. E., & Bradshaw, C. P. (2015). Examining contextual influences on classroom-based implementation of positive behavior support strategies: Findings from a randomized controlled effectiveness trial. *Prevention Science*, *16*(8), 1096-1106. https://doi.org/10.1007/s11121-014-0492-0

Peugh, J. L. (2010). A practical guide to multilevel modeling. *Journal of school psychology*, *48*(1), 85-112. https://doi.org/10.1016/j.jsp.2009.09.002

Ratcliffe, M. (2010). *A century of delineating a changing landscape: The Census Bureau's urban and rural classification, 1910 to 2010*. Geography Division, U.S. Census Bureau. https://www2.census.gov/geo/pdfs/reference/ua/Century_of_Defining_Urban.pdf

Ratcliffe, M., Burd, C., Holder, K., & Fields, A. (2016). *Defining rural at the U.S. Census Bureau* (ACSGEO-1). U.S. Census Bureau. https://www2.census.gov/geo/pdfs/reference/ua/Defining_Rural.pdf

Robbie, K., Van Lone, J., Kern, L., & George, H. P. (2021). *Using a PBIS framework: Working smarter, not harder in rural schools.* Center on PBIS, University of Oregon. https://www.pbis.org/resource/using-a-pbis-framework-working-smarter-not-harder-in-rural-schools

Rudasill, K. M., Snyder, K. E., Levinson, H., & Adelson, J. L. (2018). Systems view of school climate: A theoretical framework for research. *Educational Psychology Review*, *30*(1), 35-60. https://doi.org/10.1007/s10648-017-9401-y

Ryberg, R., Her, S., Temkin, D., Madill, R., Kelley, C., Thompson, J., & Gabriel, A. (2020). Measuring school climate: Validating the Education Department School Climate Survey in a sample of urban middle and high school students. *AERA Open*, *6*(3). https://doi.org/10.1177/2332858420948024

Sheridan, S., Dynarski, M., & Bovaird, J. (2017). *Studying educational effectiveness in rural settings: A guide for researchers*. Decision Information Resources, Inc. https://files.eric.ed.gov/fulltext/ED573515.pdf

Showalter, D., Hartman, S. L., Johnson, J., & Klein, B. (2019). *Why rural matters 2018-2019: The time is now.* Rural School and Community Trust.http://www.ruraledu.org/WhyRuralMatters.pdf

Simonsen, B., & Myers, D. (2014). *Classwide positive behavior interventions and supports: A guide to proactive classroom management.* Guilford Publications.

Sindelar, P. T., Pua, D. J., Fisher, T., Peyton, D. J., Brownell, M. T., & Mason-Williams, L. (2018). The demand for special education teachers in rural schools revisited: An update on progress. *Rural Special Education Quarterly, 37*(1), 12–20. https://doi.org/10.1177/8756870517749247

Skinner, B. F. (1938). *The behavior of organisms: an experimental analysis*. Appleton-Century.

Skinner, B. F. (1965). *Science and human behavior* (No. 92904). Simon and Schuster.

Skinner, B.F. (1968). *The technology of teaching*. Appleton-Century-Crofts. https://doi.org/10.1177/002248716801900319

Solomon, B. G., Klein, S. A., Hintze, J. M., Cressey, J. M., & Peller, S. L. (2012). A meta-analysis of school-wide positive behavior support: An exploratory study using single-case synthesis. *Psychology in the Schools*, *49*(2), 105-121. https://doi.org/10.1002/pits.20625

Sprague, J. R., Biglan, A., Rusby, J. C., Gau, J. M., & Vincent, C. G. (2017). Implementing school wide PBIS in middle schools: Results of a randomized trial. *Journal of Health Science & Education, 1*(2), 1-10. https://doi.org/10.0000/JHSE.1000109

Steed, E. A., Pomerleau, T., Muscott, H., & Rohde, L. (2013). Program-wide positive behavioral interventions and supports in rural preschools. *Rural Special Education Quarterly, 32*(1), 38-46. https://doi.org/10.1177/875687051303200106

Sugai, G., & Horner, R. R. (2006). A promising approach for expanding and sustaining school-wide positive behavior support. *School Psychology Review*, *35*(2), 245-259. https://doi.org/10.1080/02796015.2006.12087989

Sugai, G., Simonsen, B. (2012, June 19). Positive behavioral interventions and supports: History, defining features and misconceptions. https://www.pbis.org/resource/positive-behavioral-interventions-and-supports-history-defining-features-and-misconceptions

Sugai, G., Sprague, J. R., Horner, R. H., & Walker, H. M. (2000). Preventing school violence: The use of office discipline referrals to assess and monitor school-wide discipline interventions. *Journal of Emotional and Behavioral Disorders*, *8*(2), 94-101. https://doi.org/10.1177/106342660000800205

Thapa, A., Cohen, J., Guffey, S., & Higgins-D'Alessandro, A. (2013). A review of school climate research. *Review of Educational Research*, *83*(3), 357-385. https://doi.org/10.3102/0034654313483907

U. S. Department of Agriculture. (2019). *Rural America at a glance 2019 edition* (Bulletin 212). Economic Research Service Economic Information. https://www.ers.usda.gov/publications/pub-details/?pubid=95340

White, N., La Salle, T., Ashby, J. S., & Meyers, J. (2014). A brief measure of adolescent perceptions of school climate. *School Psychology Quarterly*, *29*(3), 349. https://doi.org/10.1037/spq0000075

Zullig, K. J., Koopman, T. M., Patton, J. M., & Ubbes, V. A. (2010). School climate: Historical review, instrument development, and school assessment. *Journal of Psychoeducational Assessment*, *28*(2), 139-152. https://doi.org/10.1177/0734282909344205