Investigating Relationships Among School Climate, Academic Growth, and Benchmark Achievement Within Elementary Schools in Three Divisions in Virginia: A Quantitative Study

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Abstract

Educators have a responsibility to foster a positive school climate while also ensuring that all students meet established educational benchmarks and make adequate growth. The relationship between school climate and student achievement is well-documented, but there is a gap in the literature examining the relationships among school climate, academic growth, and benchmark achievement. Accordingly, the purpose of this study was to investigate relationships among school climate, academic growth, and benchmark achievement at the elementary school level in Virginia. A nonexperimental, correlational design was used to address this research question: What are the relationships, if any, among school climate, academic growth, and benchmark achievement among fourth grade students in three school divisions in Virginia for the 2022-2023 school year? Existing data sets from 73 schools within 3 school divisions in Virginia were used: (a) the 2023 Virginia Survey of School Climate and Working Conditions, (b) fourth graders' Fall 2022 to Spring 2023 growth in reading and mathematics on the Northwest Evaluation Association Measures of Academic Progress assessment, and (c) fourth graders' mean performance on the 2023 Virginia Standards of Learning assessments in reading and mathematics. A correlational analysis was conducted to examine the relationships among these variables. Results were analyzed, and there were 12 findings. The most significant finding was a stronger positive relationship between school climate and benchmark achievement in reading and mathematics than between school climate and academic growth in either subject. This study contributes to the body of research on school climate and benchmark achievement by addressing relationships among school climate, academic growth, and benchmark achievement.

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General Audience Abstract

Educators have a responsibility to foster a positive school climate while also ensuring that all students meet established educational benchmarks and make adequate growth. The relationship between school climate and student achievement is well-documented, but there is a gap in the literature examining the relationships among school climate, academic growth, and benchmark achievement. Accordingly, the purpose of this study was to investigate relationships among school climate, academic growth, and benchmark achievement at the elementary school level in Virginia. A nonexperimental, correlational design was used to address this research question: What are the relationships, if any, among school climate, academic growth, and benchmark achievement among fourth grade students in three school divisions in Virginia for the 2022-2023 school year? Existing data sets from 73 schools within 3 school divisions in Virginia were used: (a) the 2023 Virginia Survey of School Climate and Working Conditions, (b) fourth graders' Fall 2022 to Spring 2023 growth in reading and mathematics on the Northwest Evaluation Association Measures of Academic Progress assessment, and (c) fourth graders' mean performance on the 2023 Virginia Standards of Learning assessments in reading and mathematics. A correlational analysis was conducted to examine the relationships among these variables. Results were analyzed, and there were 12 findings. The most significant finding was a stronger positive relationship between school climate and benchmark achievement in reading and mathematics than between school climate and academic growth in either subject.

DEDICATION

I have not reached this point in both my professional and educational career without significant sacrifice – both personal sacrifice and my family's sacrifice on my behalf. Therefore, this writing is dedicated to my family, without whose encouragement, support, and sacrifice I would not have reached this milestone. I love you all with everything that I have.

Ben, I thank you for your unwavering love and support, and for putting up with a 4:45am alarm on most workdays. We both know that I could not have done this without you, especially during the summer of 2023 (enough said about that). From extra kid pick-ups during the week, to allowing me the time I needed to write on the weekends, to being my sounding board and shoulder to cry on, you have always been my rock. I am so grateful to do this life with you!

My sweet Presley, Benjamin, and Mary Emma, you are the most precious gifts of my life. I want you to know that you can do anything in your life as long as you do it with love in your heart! I pray that you choose a career path that makes you jump out of bed with excitement to greet the day like I do (on most days, anyway).

Mom and Dad, thank you for inspiring within me a love of learning and for raising me to believe I could do anything to which I set my mind. Your logistical and emotional support during the past three years, all the way from Pennsylvania, included everything from Zooming to brainstorming dissertation topics with me at the very beginning (thanks, Mom!), to rearranging your plans so that you could come down to Virginia to support our family for several days at a time, to fielding frantic phone calls during my job change, and everything in between. I wish everyone in the world could have parents like you, and I am so glad that you are mine.

To all of the amazing students and colleagues with whom I have had the pleasure of working over the last 21 years – thank you for teaching me surely more than I taught you.

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I want to acknowledge that without the strength, wisdom, perseverance, and opportunity granted to me by God and God alone, I would not have accomplished this lifelong goal. I experienced some dark and difficult times during the past three years, and the Lord carried me through. A very worn post-it on which Jeremiah 29:11 is written is affixed to my desk: “For I know the plans I have for you,” declares the Lord, “plans to prosper you and not to harm you, plans to give you hope and a future.” May we all remember God’s goodness and love for us in times of trial as well as times of joy.

I have been very, very blessed in my career to work beside some very caring colleagues. I had Sunday “meetings” with my favorite custodian when I was writing, teachers checked in to ensure I was engaging in self-care (I wasn’t), an instructional coach held me in “the crying corner” on more than one occasion, and my superintendent showed his faith in me by lovingly voluntelling me to undertake the biggest and ultimately most rewarding challenge of my career. I was supported in small and big ways by my community, and I am so thankful for each of you.

I am eternally grateful to Dr. Carol A. Mullen, my doctoral advisor and committee chair. I would not be at this point in my journey as a researcher and writer without your encouragement and guidance. Thank you for the inordinate amount of time you spent reviewing my work, giving me feedback, and supporting me toward this goal and the completion of my doctoral degree.

To my committee members, Dr. Jodie Brinkmann, Dr. Carol Cash, Dr. Molly Sullivan and Dr. Ted Price (prior to his retirement), thank you for your guidance and your continuous belief in me. Your feedback made me think, question, and reflect, all of which undoubtedly strengthened me as a researcher and writer. I am truly grateful for the time that you spent with me during this process.

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Chapter 1: Introduction to the Study

Overview of the Study

The topic of this research was school climate and its relationship with student achievement. The purpose of this study was to investigate relationships among school climate, academic growth, and benchmark achievement at the elementary school level in Virginia. The relationship between a positive school climate and student achievement has been well-documented in research (O'Malley et al., 2015; Ryberg et al., 2020; Wang et al., 2014). Though research has demonstrated that school climate is a factor in student achievement, the studies reviewed used benchmark data as the measure of student achievement. Most of this research does not include academic growth across one school year as a measure of student achievement. The data analysis for this study focused on the relationship between staff perceptions of school climate and academic growth, compared with the relationship between staff perceptions of school climate and benchmark achievement. The relationships between academic growth and benchmark achievement in both reading and mathematics were examined. Results may help educators and researchers have a more comprehensive understanding of the relationships among school climate, academic growth, and benchmark achievement.

A nonexperimental, correlational design was used to address this research question: What are the relationships, if any, among school climate, academic growth, and benchmark achievement among fourth grade students in three school divisions in Virginia for the 2022-2023 school year? Data from the 2022-2023 school year on staff perceptions of school climate, academic growth during one school year, and benchmark achievement data were obtained from elementary schools in Virginia that administered the Northwest Evaluation Association (NWEA) Measures of Academic Progress (MAP) assessments in reading and mathematics to students in

Grade 4. The data collection, analysis, and interpretation address all facets of this research question.

Definition of Terms

The following terms are defined to ensure clarity throughout this study.

Academic achievement, or *student achievement*, is defined by the American Psychological Association as "any identifiable success in the areas of scholarship or disciplined study" (APA, 2022, para. 1). Steinmayr et al. (2014) expanded on this definition by including the idea that academic achievement is a measure that evaluates the extent to which a person has "accomplished specific goals that were the focus of activities in instructional environments" (para. 1). Academic achievement has historically been measured by students' mastery of standards or grade-level expectations (Douglas-McNab, 2013); however, academic achievement should be considered as a multi-faceted construct (Steinmayr et al., 2014).

Academic growth refers to the increase in knowledge and application of skills achieved by a student over a designated period of time. For this study, *NWEA MAP growth* measures refer to students' individual growth relative to their respective starting points (NWEA, 2022). The terms *academic growth* and *NWEA MAP growth* are used synonymously.

Benchmark achievement is calculated by comparing a student's performance on an assessment to the expected grade-level cut score, or benchmark (Herman et al., 2010). Benchmark testing generates categories of students who "meet" or "do not meet" grade level standards. For the purpose of this study, mean scores on Virginia Standards of Learning (SOL) assessments were used as the measure of benchmark achievement.

School climate is defined by the National School Climate Center (NSCC, 2021) as the "quality and character of school life" (para. 3) that arises from patterns within stakeholders'

respective experiences of school life. A positive school climate supports students in developing the skills necessary for a "productive, contributing, and satisfying life in a democratic society" (para. 4).

Statement of the Problem

Academic achievement in the United States is declining (National Assessment of Educational Progress [NAEP], 2022). During the 2022 administration of the NAEP assessment, the average Grade 4 reading and mathematics scores declined. The average reading and mathematics scores were lower than all previous assessment years since 2005. While multiple studies have established a positive relationship between staff perceptions of school climate and academic achievement (Capp et al., 2020; Hoy & Hannum, 1997; Johnson & Stevens, 2006; Spilt et al., 2012; Sweetland & Hoy, 2000), the relationship between school climate and academic achievement cannot be fully understood without examining academic growth as an element of academic achievement.

Significance of the Study

The positive relationship between school climate and academic achievement is well-established (Capp et al., 2020; Chirkina & Khavenson, 2018; Dias & Barroso, 2020; Jones & Schindler, 2016; MacNeil et al., 2009; Maxwell et al., 2017; NSCC, 2021; Schweig et al., 2019; Sherblom et al., 2006; Wang & Degol, 2016). However, most studies reviewed used benchmark achievement as the singular measure of academic achievement. Of the studies that did examine academic growth in some capacity, no studies were found that examined the relationship between school climate and academic growth in the same academic year or compared the academic growth with benchmark achievement within the same schools. This study investigated the relationships among school climate, academic growth, and benchmark achievement within

the same schools. The strength and direction of the identified relationships were compared. Weak positive relationships between school climate and academic growth in mathematics and reading were determined. Moderate positive relationships between school climate and benchmark achievement in mathematics and reading were determined. These results underscore the need for school and division leaders to continually monitor school climate to ensure that positive school climates are fostered and maintained. Other relationships, and the lack thereof, uncovered by this study yielded information that may help educators and policymakers better understand the potential mismatch between academic growth and benchmark achievement in reading.

Purpose and Justification of the Study

The purpose of this study was to investigate relationships among school climate, academic growth, and benchmark achievement at the elementary school level in Virginia. The positive relationship between school climate and academic achievement is documented within the literature (Capp et al., 2020; Chirkina & Khavenson, 2018; Dias & Barroso, 2020; Jones & Schindler, 2016; MacNeil et al., 2009; Maxwell et al., 2017; Schweig et al., 2019; Sherblom et al., 2006; Wang & Degol, 2016). However, in the studies reviewed, most measured academic achievement against a benchmark and did not account for academic growth. There is a gap in the literature reviewed regarding the potential relationship between school climate and academic growth. The literature also lacks comparisons of the relationship between school climate and academic growth with school climate and benchmark achievement.

Research Question

The following research question was aimed at assisting the researcher in investigating relationships among school climate, academic growth, and benchmark achievement at the

elementary school level in Virginia: What are the relationships, if any, among school climate, academic growth, and benchmark achievement among fourth grade students in three school divisions in Virginia for the 2022-2023 school year?

Conceptual Framework

The research question for this study was derived from the literature reviewed. Although the positive relationship between school climate and academic achievement is well-established (NSCC, 2021), most studies reviewed used benchmark achievement as the measure of academic achievement. Of the reviewed studies that did examine academic growth, none examined the relationship between school climate and academic growth within the same academic year, nor did they compare academic growth with benchmark achievement within the same school. This gap in the literature revealed the importance of investigating the relationship between school climate and academic growth so that the relationship may be more fully understood.

Regoniel (2015) defined conceptual framework as the researcher's explanation of a phenomenon based on a synthesis of the existing literature, stating that it is one's "map in pursuing the investigation" that guides the course of the study (para. 4). Specifically, the conceptual framework portrays how the variables within the study are related to one another. Figure 1 depicts the conceptual framework for the current study.

Figure 1

Conceptual Framework for the Relationships Among Staff Perceptions of School Climate, Student Academic Growth, and Student Benchmark Achievement (Thompson, 2023)

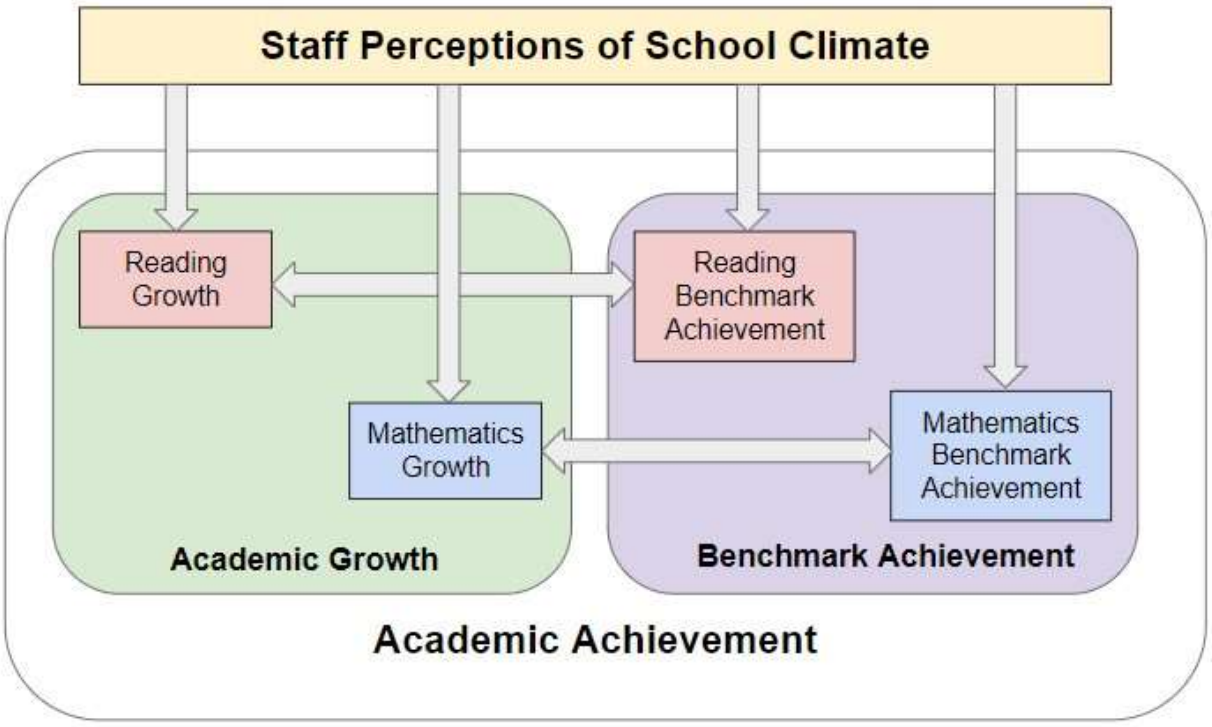


Figure 1 illustrates the relationships among staff perceptions of school climate, academic growth, and benchmark achievement. The conceptual framework for this study depicts academic growth (green) and benchmark achievement (purple) as measures of academic achievement. The vertical arrows depict the potential relationships between staff perceptions of school climate and academic growth in reading and mathematics, and the potential relationships between staff perceptions of school climate and benchmark achievement in reading and mathematics. The horizontal arrows depict the relationship between academic growth and benchmark achievement in reading and mathematics.

Researcher Positionality

This study stems from my work as the elementary principal of an urban Title I school. After teaching third grade for 3 years during the time in which third graders were required to take five SOL assessments, I transitioned into a mathematics specialist role for 6 years. I served 4 years as an assistant principal and 7 as the principal at the same school. In my 17 years at that school, I witnessed students make academic growth that is not always evident through a benchmark assessment, such as an SOL assessment. For example, in Spring 2022, my school's raw pass rate on the combined third and fourth grade SOL assessments in mathematics was 60%. On the surface, this percentage could indicate that our school was a poorly performing school. However, on the NWEA MAP School Conditional Growth Index (CGI), which describes grade-level growth in standard deviations above the normed mean, our third and fourth grade mathematics conditional growth indices were 1.90 and 1.48, respectively. This means that our students experienced growth in mathematics that was between 1.5 and 2.0 standard deviations above the normed mean. Expected growth would have resulted in a CGI of 0.0. My school's academic growth in mathematics was reflected in the NWEA MAP assessment but was not evident in our benchmark achievement on the mathematics SOL assessments.

Our staff perceptions of school climate as quantified by the 2022 Virginia School Survey of Climate and Working Conditions (VSSCWC) were consistently more positive than our school division average and much higher than the state average. If one were to plot a point to indicate the relationship between our school climate and academic growth and plot another point to indicate the relationship between our school climate and benchmark achievement, the two plotted points would be in different locations. By their very nature, benchmark achievement scores cannot report growth. Therefore, examining benchmark achievement alone will never inform a school administrator whether the students who were already very high performing made

adequate growth throughout the school year. As educators, we have all had students who could pass an SOL or other benchmark achievement assessment on the first day of school; however, are these students simply "floating" along throughout the year and doing well on assessments simply because they came in already knowing the information, or are they actually making expected academic growth? Benchmark achievement will always be high in schools that serve large populations of children who begin the school year with high achievement. Studies correlating this benchmark achievement with school climate may indicate a stronger relationship than actually exists.

The study is closely related to my work as an elementary school principal, thereby necessitating that I constantly check my biases as I conducted this research. My biases are derived from my experiences and practice; however, this research was conducted from a scholarly perspective. It is my hope that this study deepens practitioners' and researchers' understanding of the relationships among school climate, academic growth, and benchmark achievement so that the identified relationships may help educators make better instructional decisions and more wisely allocate their resources.

Assumptions, Limitations, and Delimitations

The assumptions inherent in this study were related to the quality, quantity, and availability of existing data. One assumption was that existing data were accurate measures of the variables. It was also assumed that the VSSCWC accurately measured staff perceptions of school climate, and staff members who completed the survey did so with honesty and active engagement. The researcher expected that the NWEA MAP assessments accurately measured students' academic growth in reading and mathematics, and students who participated in the assessments gave their best effort on the assessments. There was an assumption that the resulting

data were a valid measure of each student's academic growth in each subject. The researcher also expected that SOL assessments accurately measured students' benchmark achievement in reading and mathematics. Like the assumption made for academic growth, the researcher assumed that students who participated in these assessments gave their best effort, and the resulting data were a valid measure of their benchmark achievement in each subject.

The limitations of a study articulate the constraints within the design and implementation of the study (Jansen, 2022). This study's limitations centered around two issues: causality and generalizability. Because correlation does not imply causation, causality cannot be inferred, no matter how strong the correlation (Bhandari, 2022). Generalizing the findings to all elementary schools in Virginia was an issue because schools that used the NWEA MAP assessments had access to specific growth reports that could support teachers in individualizing instruction, thereby giving them the potential to maximize students' academic growth. Schools that do not use the NWEA MAP assessments may not have the ability to monitor student growth as closely and/or may not know the specific areas on which to focus to promote greater growth, which could limit their potential to maximize academic growth. Another issue with generalizability is that this study focuses solely on VSSCWC data at the elementary level, combined with data derived solely from students in Grade 4. Therefore, the results are not generalizable to any other grade level. Finally, a limitation of this study is that other factors that may impact school climate were not considered or controlled for, such as socio-economic status of the school.

The delimitations of a study articulate the choices made by the researcher regarding the scope of the study (Jansen, 2022). One of the delimitations of this study was the sample. It consisted of schools that administered the NWEA MAP assessments in reading and mathematics to students in Grade 4 during the 2022-2023 school year, and who had a high enough response

rate characterized by 50% or more of staff participating and/or greater than ten respondents on the 2023 VSSCWC to generate reportable results. Other delimitations were the measures used to quantify staff perceptions of school climate (VSSCWC), student academic growth (NWEA MAP assessments in reading and mathematics), and student benchmark achievement (SOL assessments in reading and mathematics). Additionally, because the Commonwealth of Virginia did not administer the VSSCWC to elementary students this year, student perceptions of school climate were not able to be included. Another delimitation of this study was the time span of the data collection, which occurred in 2023 following IRB relative to the 2022-2023 school year.

Organization of the Study

This dissertation is organized into five chapters. Chapter 1 provides an overview of the study, including the statement of the problem, the significance of the study, and the purpose and justification of the study. Also included in the first chapter is the research question and conceptual framework of the study, along with the definitions of terminology used throughout the study. Assumptions, limitations, and delimitations are also discussed in Chapter 1. Chapter 2 synthesizes the relevant literature on school climate theory, the domains and dimensions of school climate, measurement of school climate, and the relationship between perceptions of school climate and student achievement. The review of the literature supported the well-established relationship between school climate and academic achievement, but also uncovered a gap in the literature: examining the relationships that may exist among school climate, academic growth, and benchmark achievement. Chapter 3 outlines the methodology for the study, including the research design and justification, data sources, and site and sample selection. The third chapter also includes a description of the data collection and gathering procedures, data treatment and management, and the data analysis techniques. Chapter 4 outlines the results and

provides an analysis of the correlations derived from the data and comparisons on those correlations. Chapter 5 reviews the results, and discusses the findings, conclusions, and recommendations for further research.

Chapter 2: Review of the Literature

Purpose and Significance of the Literature Review

This literature review examines the research on students' and teachers' perceptions of school climate and their relationship to student achievement. Throughout the literature, school climate has been shown to be predictive of student outcomes in a variety of areas, including academics and behavior (Capp et al., 2020; Dias & Barroso, 2020; Wang & Degol, 2016). Specifically, there is empirical evidence confirming that a positive school climate positively affects students' academic achievement (Chirkina & Khavenson, 2018; MacNeil et al., 2009; Maxwell et al., 2017; Schweig et al., 2019; Sherblom et al., 2006). One study asserted that the quality of a school's climate may be the single most predictive factor of student achievement (Jones & Shindler, 2016).

The impact of COVID-19 on the mental health of students, families, and school staff is documented (Eugene et al., 2022). Zamorro et al. (2022) documented the increase in teachers' stated consideration of leaving the profession as a result of the pandemic. In their review of literature, Mullen et al. (2021) analyzed multiple studies that link teacher resilience with positive school climate, which can impact teachers' ability to persevere through adversity like the pandemic. Specifically, their analysis determined that in addition to being supportive and streamlining the workload of teachers, school leaders can cultivate teacher resilience through the creation of a positive climate characterized by inclusive and collaborative leadership. In their qualitative research on veteran teacher retention in Virginia, Shields and Mullen (2020) found that school climate is a contextual factor that influenced teachers' resilience.

This literature review includes a history of organizational climate theory and school climate theory (Anderson, 1982; Chirkina & Khavenson, 2018; Zullig et al., 2010), including a

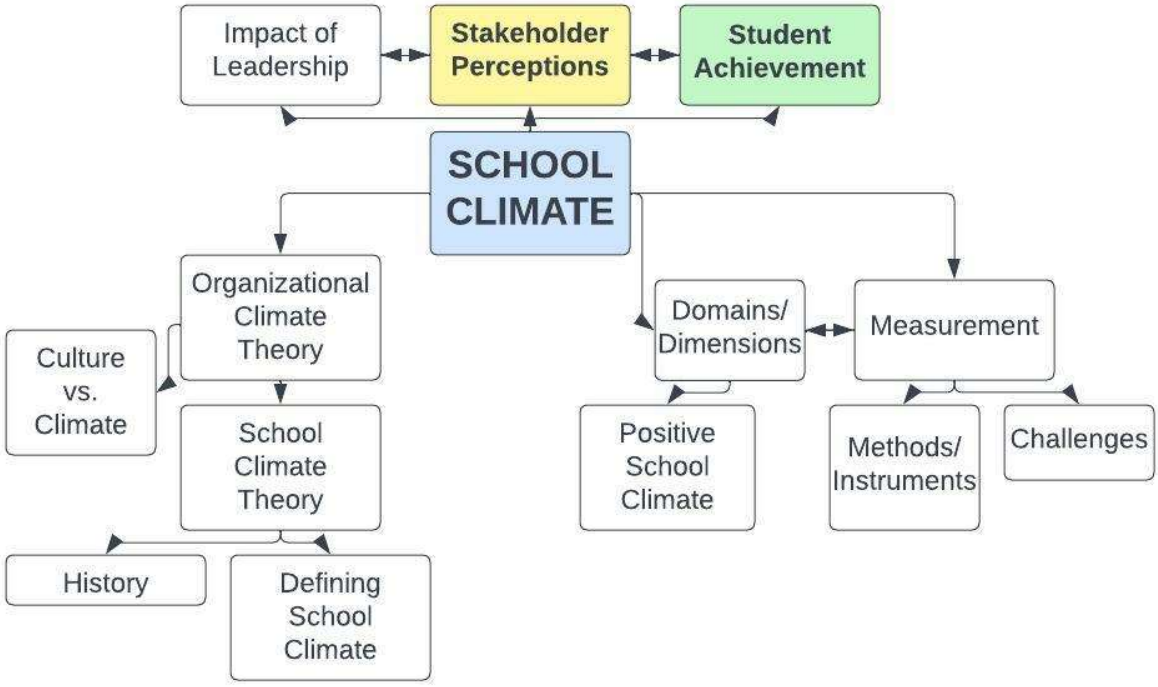
comparison between school climate and school culture (Gruenert & Whitaker, 2015). School climate domains and dimensions are clarified and defined based on the literature (Thapa et al., 2013; Wang & Degol, 2016; Zullig et al., 2010), and methods and challenges of measuring school climate are presented (Anderson, 2018; Hoy & Hannum, 1997; Lee et al., 2017; Lewno-Dumdie et al., 2020; Maxwell et al., 2017; Ramelow et al., 2015; Schweig, 2019; Thapa et al., 2013; Wang & Degol, 2016; Wong et al., 2021). The relationship among students' perceptions of school climate, teachers' perceptions of school climate, and student achievement was examined (Barile et al., 2012; Bottiani et al., 2020, Capp et al., 2020; Johnson & Stevens, 2006; Maxwell et al., 2017; O'Malley et al., 2015; Sanders et al., 2018), as well as the impact of leadership on school climate (Cohen et al., 2009; Goleman, 2006; Muijs & Harris, 2007; Smith & Shouppe, 2018; Smith, 2020).

Search Process

EBSCOhost was used to procure research. Google Scholar was used for articles unavailable through EBSCOhost, and Google was also employed as a search engine to obtain supporting data, definitions, and information. The search for sources occurred from January 22, 2022, through December 28, 2023. Search terms were: school climate, school culture, organizational climate, school climate dimension, school climate definition, school climate domain, student achievement, academic achievement, academic performance, perception of school climate, and school leadership. Initially, search criteria included articles and books no older than 10 years, but the search was extended to include relevant historical information and seminal studies and works. Figure 2 shows relationships between the topics that arose during the course of the review of literature.

Figure 2

Relationships Between Research Topics for Literature Review (Thompson, 2023)



Inclusion and Exclusion of Sources

High quality academic journals, books, and dissertations were reviewed, using the parameters of full text and peer-reviewed journals. The following search terms and combinations of search terms yielded the results noted in parentheses.

- "School culture or school climate" and "student achievement or academic achievement or academic performance" (5,506)
- "School culture or school climate" and "student achievement" (1,605)
- "School culture" (1,482)
- "School climate dimension" (658)
- "School climate definition" (4)
- "School climate domain" (153)

- “Perceptions of school climate” (399)
- “Perceptions of school climate” and “student achievement or academic achievement” (35)
- “School leadership” and “school climate” (248)
- “Academic growth” and “school climate” (14)
- “COVID” and “school climate” (1,154)

The first six bullets yielded roughly 9,408 results, of which 894 titles and abstracts were reviewed. The search results were narrowed to 116 sources, including books, reports, journal articles, literature reviews, and empirical studies, which were critically read and reviewed. Of those 116 sources, 90 sources are included in this literature review. This same type of drill-down research cycle was followed for the various subheadings within this literature review, with the review of many titles and abstracts, followed by critical review and determination of relevance for inclusion. Additionally, several recent, relevant articles, such as Berkowitz et al.’s (2017) synthesis of existing studies on stakeholders’ perceptions of school climate, were reviewed to obtain additional articles for potential inclusion. There are 54 empirical studies included in the references for this review.

School Climate Versus School Culture

School climate and school culture are often used as synonymous terms by educators. However, research shows that while they are interrelated, the concepts of climate and culture differ significantly from one another. According to Hoy (1990), climate and culture are complex terms which cannot be easily defined. Climate is generally viewed from a psychological standpoint, while the definition of culture is derived from an anthropological perspective (McKinley, 2022). Stolp and Smith (1995) defined climate as the shared perceptions of the

people in a group or organization, while the culture is the embodiment of the beliefs, values, and assumptions of the organization that provide its identity. More colloquially, Gruenert and Whitaker (2015) characterized climate as the group's attitude while culture is the group's personality and identity. Similar to Stolp and Smith (1995), Gruenert and Whitaker (2015) contended that the climate is based on the perceptions of the group while the culture is based on the values and beliefs of the group. The National School Climate Center (NSCC; 2021) defined school climate as the "quality and character of school life" (para. 3) and characterizes school climate as arising from patterns within stakeholders' respective experiences of school life. Though climate and culture are related, it is important for educators to understand the difference between the two terms.

Climate can be described as the mood of the group (Gruenert, 2008). Thus, school climate is "flexible and easy to change," while school culture "takes many years to evolve" (Gruenert, 2008, p. 58). School climate is a building block of school culture (Kane et al., 2016). Because of its inherent flexibility and ability to change, and its nature as a building block of school culture, school climate can be the leverage point through which to change the culture over a longer period of time: incremental daily changes in the mood can eventually become part of the identity, or culture, of the group (Gruenert, 2008).

Organizational Climate Theory

Select Historical Studies of Organizational Climate

The theory and study of organizational climate provide the background for school climate theory (Anderson, 1982; Chirkina & Khavenson, 2018; Zullig et al., 2010); therefore, it is important to understand the conception of organizational climate. Conducted in the late 1920s, one of the first studies of organizational climate found that workers changed their behavior based

on their interactions with their colleagues and supervisors (Chirkina & Khavenson, 2018). Schneider et al. (2011) and Kundu (2007) both cited Lewin et al.'s (1939) study of interactions between boys and their leaders and the resulting behaviors and attitudes as a *social climate*, the earliest reference to organizational climate. Lewin et al.'s 1939 study found that the behaviors and attitudes of the boys in the study were related to the behavior of the leaders.

From the 1950s to the 1960s, the idea of 'climate' began to be applied to business and industry, and a growing body of research helped to further define and identify facets of organizational climate. Argyris (1958) studied employees' behaviors and their relationship to modern industry practices, after which he comprehensively defined climate in terms of "formal organizational policies, employee needs, values, and personalities" (Kundu, 2007, p. 100). McGregor (1960) found that managerial climate, including the relationships between managers and subordinates, determines employee behavior.

Research in the 1960s and 1970s centered around further defining organizational climate as a concept, and identifying dimensions contained within it. Both Georgopoulos (1965) and Forehand and Gilmer (1964) characterized organizational climate as a set of characteristics that describe the organization itself, differentiate it from other institutions, endure for a period of years, and affect the comportment of individuals within the organization. Georgopoulos (1965) further offered that organizational climate consists of normative attitudes and behavioral standards. Litwin and Stringer (1966) identified six dimensions of organizational climate - structure, responsibility, reward, risk, warmth, and support. In their conceptualization of organizational culture, Katz and Kahn (1978) included terms like norms, values, roles, climate, culture, subculture, collective feelings and beliefs, atmosphere, taboos, folkways, and mores.

While studies still focused on individual-oriented psychology, important strides were made in developing and defining the concept of organizational climate.

Research in the late 1960s began to trend away from individual-oriented psychology and more toward group-oriented organizational psychology, though the field continues to develop today (Schneider et al., 2011). The roles of leadership and the larger social system within the organization and their impact on organizational effectiveness became a focus of the research, leading Ashforth (1985) to contend that individual perceptions are not as important as shared perceptions within the organization. Glick (1985) asserted that the unit of analysis within organizational climate research was the organization itself as opposed to the individual. He argued climate survey items needed to assess functioning at the organizational level, and data need to be aggregated using the organization as the unit of analysis, so that climate research reflected more than individual-level attitudes (Schneider et al., 2011, p. 377). Glick's work pushed more recent climate research to focus on climate as "a property of the unit—it is the organization's climate, not the individual's" (Schneider et al., 2011, p. 378).

Defining Organizational Climate

Researchers distinguished three key components of organizational climate. First, climate is comprised of the subjective perceptions of the stakeholders (Cohen et al., 2009; Halpin & Croft, 1963; Welsh, 2000). Second, climate is a theoretical concept, meaning that the concept cannot be directly observed or measured (Chirkina & Khavenson, 2018). Third, an organization's climate endures over time (Forehand & Gilmer, 1964; Hoy, 1990). The complexities within each of the first two aforementioned components have led to a great deal of research that explores some of the issues inherent within organizational climate research.

Issues in Organizational Climate Research

Statistical Issues in Data Aggregation. Schneider (1975) and Schneider and Reichers (1983) contended that employees' perceptions of their work environment and work itself can be aggregated to represent the climate of the organization; however, more recently, there has been disagreement about whether the perceptions and attitudes of individuals could be aggregated to have meaning at the organizational level (Ashkanasy et al., 2000). Schneider et al. (2011) presented the idea of consensus within the organization as being central to the conceptualization of its organizational climate. Kozlowski and Klein (2000) articulated the necessity of survey items specifically focusing on the organizational environment as a whole, as opposed to items focusing on the experience of the individual. Schneider et al. explained that the survey items should frame the unit of study (individual versus organization), so that data may be aggregated and attributed back to that unit of study.

Strategic Research on Organizational Climate. Another issue in organizational climate research is the vast number of dimensions that can be studied. Schneider (1975) offered that the validity of organizational climate research could be improved by focusing on the strategic outcomes of the organization. Many subsequent studies adopted this framework, resulting in research on climate for innovation, climates for various organizational processes, climate for fairness, climate for burnout, climate for ethics, climate for diversity, climate for industrial relations, and climate for sexual harassment (Schneider et al., 2011).

School Climate Theory

History of the Study of School Climate

The study of school climate has continued to evolve since its inception in the early 1900s. The first publication dedicated to the study of school climate was Arthur C. Perry's 1908 book, *The Management of a City School*, in which he articulated the importance of fostering a positive

climate to promote positive interactions between stakeholders aimed at ensuring a successfully functioning and productive school environment. Studies in the 1920s around manager and subordinate relationships, and their influence on productivity, caused educational researchers to begin to consider school climate as its own area of research (Chirkina & Khavenson, 2018).

The first research studies of school climate emerged in the 1950s (Cohen et al., 2009). During that time, researchers began to think of a school as a specific type of organization (Chirkina & Khavenson, 2018). Instruments that were previously used to measure organizational climate were modified to study climate within schools (Halpin & Croft, 1963). Researchers focused on studying the social interactions between school staff as well as the administrative actions of school principals (Chirkina & Khavenson, 2018).

The research of James Coleman significantly affected the course of school climate research in the 1960s (Chirkina & Khavenson, 2018). Coleman's 1966 study found that the characteristics of a student's family had a greater influence on the student's educational outcomes than any school factor. As a result, research regarding student achievement shifted away from investigating school climate as a factor and focused instead on family and individual characteristics (Chirkina & Khavenson, 2018).

The focus of research again shifted in part due to a study by Coleman et al. (1982). It was concluded that students at private schools achieved greater academic gains than students at public schools as a result of the school climate at private schools. This study caused researchers to reconsider the impact of school climate on students' academic achievement (Kreft, 1993). In the 1990s, school climate was largely analyzed at the individual classroom and teacher level (Zullig et al., 2010).

Definition of School Climate

A common definition of school climate has not been achieved (Cohen et al., 2009; Hoy, 1990; Johnson & Stevens, 2005; NSCC, 2012; Thapa et al., 2013; Wang & Degol, 2016; Zullig et al., 2010). Some researchers have defined school climate using objective characteristics, while others have focused on characteristics that are subjectively perceived by stakeholders. Still others combine both objective and subjective characteristics in their proposed definitions of school climate (Cohen et al., 2009; Zullig et al., 2010). Without a singular definition of school climate, the onus is on the researcher to characterize school climate as "concrete and fitted" versus "more abstract and theoretical" (Wang & Degol, 2016, p. 316). The multiple definitions for school climate have been a barrier to the research process (Hoy & Hannum, 1997; Lee et al., 2017; Maxwell et al., 2017; Ramelow et al., 2015; Thapa et al., 2013; Wang & Degol, 2016). Thapa et al. contended that the comprehensive literature reviews by Anderson (1982) and Freiberg (1999) are still applicable in the present day. Both publications highlight the fact that the multiplicity of definitions as well as models that addressed different facets of a multidimensional concept have impeded school climate research.

Relationships and Sense of Belonging. Positive interpersonal relationships and a sense of belonging are inherent in definitions of school climate (Bear et al., 2016). Some researchers characterize school climate as an esprit de corps (Perry, 1908), or a "common spirit existing in the members of a group and inspiring enthusiasm, devotion, and strong regard for the honor of the group" (*Merriam Webster*, 2022). Similarly, Freiberg (1999) referred to school climate as the "heart and soul of a school" (p. 11) and it is "that essence…that leads a child, a teacher, an administrator, a staff member to love the school" (p. 11). Chirkina and Khavenson (2018) defined school climate as an "invisible element of school life that is felt by all participants" (p.

134). In summary, school climate definitions "tend to be verifiable intuitively rather than empirically" (Anderson, 1982, p. 369).

Norms and Values. Other definitions of school climate focus on the relationships, norms, and values within the school. In their 1963 book, Halpin and Croft defined school climate as a combination of each individual's perception of his work, his role within interpersonal relations, and the roles of others with interpersonal relations. Hoy (1990) described school climate as a wide term characterized by teachers' perceptions of their work environment, and that it "is influenced by the formal organization, informal organization, personalities of participants, and the leadership of the school" (p. 151). Hoy further asserted that school climate consists of internal characteristics that influence the behavior of stakeholders and differentiate one school from another. Welsh (2000) stated that school climate involves norms, values, and mindsets that influence relationships and perceptions of relationships and processes within the school setting. Taking a step further by Cohen et al. (2009), who contended that people's perceptions of the norms, values, and relationships serve to shape and change the school climate, and that school climate "is based on the quality and character of school life" (p. 182).

Collective Experience. Inherent in the concept of school climate is the idea of collective experience. Cohen et al. (2009) asserted that school "is a group phenomenon that is larger than any one person's experience" (p. 180). Similarly, Thapa et al. (2013) defined school climate as reflecting the social, emotional, civic, ethical, and academic experiences of students, school personnel, and parents. In his 1979 article, Nwankwo referred to climate as the general "we-feeling, group subculture, or interactive life of the school" (p. 268). Wang and Degol (2016) stated that school climate encompasses essentially every facet of the school experience, the

parameters of which must be more well-articulated so that the impact of aspects of school climate on students can be better understood.

School Climate Domains and Dimensions

Issues in Defining School Climate Domains and Dimensions

There is disagreement in the literature about the terminology of domains and dimensions of school climate, as well as which aspects of school climate are considered a domain versus a dimension, and how many of each exist. In their respective reviews of literature, Freiberg (1999) and Cohen (2006) identified five common domains of school climate: order and safety, learning outcomes, relationships, physical environment, and school connectedness. Cohen et al. (2009) contended that nearly all scholars in the field recognize these four major domains that influence school climate: safety, relationships, teaching and learning, and the external environment. Thapa et al. (2013) and National School Climate Center (NSCC, 2012) listed five dimensions of school climate, and aspects of each (see Table 1). However, Zullig et al. (2010) categorized some of these same historically common aspects of school climate into five domains and domain variations (see Table 2). After reviewing 327 sources of literature, Wang and Degol (2016) categorized aspects of school culture into four domains and multiple dimensions of those domains (see Table 3). Lewno-Dumdie et al. (2020) asserted that even when similar domains are used, they may be named differently across studies. Researchers do agree that school climate is multidimensional, but there is little consensus around the number of domains and exactly what is encompassed by each (Wang & Degol, 2016).

Table 1

Dimensions of School Climate and Aspects of Each Dimension

Dimensions	Aspects

Safety	Rules and norms Physical safety Social-emotional safety
Relationship	Respect for diversity School connectedness/engagement Social support Leadership Students' race/ethnicity and their perceptions of school climate
Teaching and Learning	Social, emotional, ethical, and civic learning Service learning Support for academic learning Support for professional relationships Teachers' and students' perceptions of school climate
Institutional Environment	Physical surroundings Resources Supplies
School Improvement Process	[N/A]

Note. This table articulates the domains of school climate and associated aspects of those domains as named by the National School Climate Council (2012) and Thapa et al. (2013).

Table 2

Domains of School Climate and Domain Variations

Domains	Domain Variations
Order, Safety, and Discipline	Perceived safety Respect for peers and authority Knowledge and fairness of disciplinary policies Presence of gangs
Academic Outcomes	Accomplishments and recognition Sense of academic futility Academic norms Academic instruction Overall satisfaction with classes Future and present evaluations of performance
Social Relationships	Teacher-student relationships Interpersonal relationships

	Student-peer relationships Helpfulness of school staff
School Facilities	School temperature Classroom arrangement Ambient noise School, classroom, and grounds condition School decorations
School Connectedness	Excited, enthusiastic, and engaged learners Feelings about school Students feel valued for their input

Note. This table articulates the domains of school climate and associated domain variations as named by Zullig et al. (2010).

Table 3

Domains of School Climate and Associated Dimensions

Domains	Dimensions
Academic	Teaching and learning Leadership Professional development
Community	Quality of relationships Connectedness Professional development
Safety	Social and emotional safety Physical safety Discipline and order
Institutional Environment	Environmental adequacy Structural organization Availability of resources

Note. This table articulates the domains of school climate and associated dimensions as named by Wang and Degol (2016).

Synthesis of Terminology and Content

Though defining school climate is complex, there are common domains and dimensions present in literature (Zullig et al., 2011). Table 4 provides a synthesis of the terminology used and school climate domains/dimensions identified in several important studies on school climate. When a domain/dimension was not present within one of the given studies, it was listed as 'N/A' in the table. A review of these studies indicates that domain is the most commonly used term for the broader aspects of school climate. This synthesis also shows that there are five common domains of school climate: safety, academics, relationships, environment, and school connectedness. School improvement was listed as a stand-alone domain in only one piece of literature, though it is possible that school improvement is a dimension of one or more of the main domains identified.

Table 4

Terminology and Domains of Various Studies on School Climate

Terminology Used	Freiberg (1999) and Cohen (2006)	Cohen et al. (2009)	NSCC (2012)	Zullig et al. (2010)	Wang and Degol (2016)
Safety	Order, safety, discipline	Safety	Safety	Order, safety, discipline	Safety
Academics	Academic outcomes	Teaching and learning	Teaching and learning	Academic outcomes	Academic
Relationships	Social relationships	Relationships	Relationships	Social relationships	Community
Environment	School facilities	External environment	Institutional environment	School facilities	Institutional environment
School Improvement	N/A	N/A	School improvement	N/A	N/A

Note. This table synthesizes the categories of terminology used for each domain of school climate theory.

Domains and Dimensions of School Climate

Safety. The safety domain includes elements of order, safety, and discipline present within school climate (Wang & Degol, 2016; Zullig et al., 2010). Wang and Degol specifically highlighted the importance of both physical and emotional security experienced by students and staff, including the degree to which order and discipline are present. Cohen et al. (2009) further included the norms and rules within the school as part of physical safety.

Academics. Academic climate refers to the ways in which teaching and learning are supported within the school (Wang & Degol, 2016). This includes leadership and professional development for staff, in addition to academic outcomes for students. The NSCC (2012) included social, emotional, civic, and ethical education, along with service learning. Cohen et al. (2009) named instructional quality and opportunities for learning as being of paramount importance, with Thapa et al. (2013) considering this dimension as one of the most significant.

Relationships. Nwankwo (1979) asserted that the nature of interactions and interpersonal relationships within an organization determines the level of dysfunction of that organization. In terms of school climate, Zullig et al. (2010) considered not only the interactions and interpersonal relationships, but also the quality of those relationships, the resulting connectedness between stakeholders, the respect for diversity, and partnerships among stakeholders. Thapa et al. (2013) further defined relationships to include social support, respect for diversity, and awareness of racial and ethnic differences.

Environment. This dimension includes the physical aspects of the school, including physical space, aesthetics, cleanliness, size, materials, and resources (Cohen et al., 2009). Thapa et al. (2013) include the layout of the building and use of resources as impactful features of the physical environment. Wang and Degol (2016) characterized this domain as the “adequacy” (p.

325) of the school setting, including the maintenance and facilities as well as the availability of resources.

School Connectedness. There appears to be less agreement among researchers that school connectedness is a main domain of school climate, with only Freiberg (1999), Cohen (2006), and Zullig et al. (2010) including it as a central domain in their research. School connectedness is characterized by stakeholders having positive feelings about school, and learners being excited and engaged. (Zullig et al, 2010). Students who experience connectedness to school feel that their input is valued (Zullig et al., 2010).

School Improvement. School improvement processes were included less frequently than the other school climate domains (Lewno-Dumdie, 2020). The NSCC (2012) indicated that the successful implementation of school reform programs is contingent upon school climate. Specifically, the NSCC stated that school climate includes the processes of school improvement. They asserted that schools with higher relational trust yield greater positive changes in student achievement, the result of the relationship between school climate and school improvement efforts.

Measuring School Climate

School climate research is an outgrowth of research of organizational climate (Anderson, 1982; Cohen et al., 2009; Thapa et al., 2013). The measurement tools initially used in studies of school climate were derived from tools used in organizational climate research (Anderson, 1982; Chirkina & Khavenson, 2018). Kundu (2007) posited that initial studies of organizational climate were based on the theory that shared perceptions of stakeholders could be measured and aggregated to conceptualize an organization's climate. The evaluation of school climate enables the researcher to better understand the various dimensions of school life (Cohen et al., 2009),

which helps direct and support reform efforts. The measurement of school climate has become an essential component of assessing school leadership and improving schools (Schweig, 2019). School climate surveys allow school leaders to assess the current condition of the school, and longitudinal school climate data may be examined to identify progress or regression within specific areas of the climate (Schweig, 2019).

Methods and Instruments of Measurement

There are several common methods by which school climate may be measured. School climate is most often assessed through survey data (Lewno-Dumdie et al., 2020; Schweig, 2019; Wang & Degol, 2016). Interviews, focus groups, and observational ratings or reports are other commonly employed methods of measurement (Wang & Degol, 2016). The earliest instruments designed to measure school climate echo those employed in organizational climate research (Anderson, 1982). As the field expanded, the creation of scientifically-based school climate measurement instruments perpetuated a strong research base (Cohen et al., 2009). Hoy (1990) stated that the Organizational Climate Description Questionnaire provided the basis for conceptualizing and measuring school climate for nearly 25 years.

There are many instruments available that measure school climate at the K-12 level in the present day. In partnership with the United States Department of Education, the National Center on Safe and Supportive Learning Environments (NCSSLE; n.d.) has amassed a list of school climate measurement tools that they have vetted and determined to be valid and reliable. Some of these measures expand beyond what Zullig et al. (2010) called the “historically common” (p. 142) school climate domains. These instruments measure those common domains: San Diego Effective Schools Student Survey, National Educational Longitudinal Study, California School

Climate and Safety Survey, National Association of Secondary School Principals Comprehensive Assessment of School Environments, and School Development Program.

Challenges in Measuring School Climate

School climate has proven challenging to accurately measure (Anderson, 1982; Hoy & Hannum, 1997; Lee et al., 2017; Maxwell et al., 2017; Ramelow et al., 2015; Thapa et al., 2013; Wang & Degol, 2015; Wong et al., 2021). Anderson (1982) depicts this issue as whether or not researchers are "hunting the same beast" (p. 376) as they attempt to measure school climate. Issues in measuring school climate include the lack of a common definition of school climate (Thapa et al., 2013), variance in theoretical approach (Lewno-Dumdie et al., 2020), lack of longitudinal data and assumption of invariance of longitudinal data (Wong et al., 2021), multi-dimensionality of the concept (Schweig, 2019; Wang & Degol, 2016), inconsistency in the unit of analysis (Anderson, 1982; Schweig, 2019), lack of valid and reliable measurement tools (Cohen et al., 2009), availability of assessments (Ryberg et al., 2020), and causal inference (Wang & Degol, 2016). All of these issues produce inconsistent results regarding the measurement and effect of climate (Anderson, 1982; Wong et al., 2021).

Multiplicity of Definitions of School Climate. In her 1982 review of literature, Anderson called for a more precise definition of school climate, stating that the definitions of school climate within the literature were "verifiable intuitively rather than empirically" (p. 369). Thapa et al. (2013) reminded the reader that the measurement of school climate is influenced by the researcher's definition of school climate, and further state that the inconsistent measurement of school climate stems from a lack of consensus around the definition of the construct. Moreover, many researchers have expressed that the multiple definitions for school climate have

been a barrier to research (Hoy & Hannum, 1997; Lee et al., 2017; Maxwell et al., 2017; Ramelow et al., 2015; Thapa et al., 2013; Wang & Degol, 2016).

Variance in Theoretical Approach. Lewno-Dumdie et al. (2020) asserted that there is variance in the theoretical approaches used to measure school climate that ultimately leads to a variance in results. They claimed that if the theoretical structure used within most peer-reviewed studies is the same, then, akin to Anderson's (1982) analogy, researchers are "hunting roughly the same beast" (Lewno-Dumdie et al., 2020, p. 3). Lewno-Dumdie et al. further contended that if the theoretical structures differ, it is essential to evaluate each measure for reliability and validity.

Assumption of Longitudinal Measurement Invariance. Longitudinal measurement invariance within the measurement of school climate means that the measurement tool is evaluating the same construct in the same way at each measurement point in time (Millsap & Cham, 2012). Most evaluations of changes in school climate assume longitudinal measurement invariance (Schweig, 2019). However, Schweig asserts that if this assumption is incorrect, comparing the data from school climate surveys longitudinally may yield incorrect inferences regarding changes in school climate over time, which could lead to ineffective decision making. According to Thapa et al. (2013), few studies include the investigation of school changes that take place over time, an understanding of which is essential when designing school improvement efforts.

Shared Method Variance. Wang and Degol (2016) declared shared method variance as an issue for much of the research around school climate due to the reliance upon student perceptions of school climate as a predictor of student reports of behavior and well-being. They asserted that the use of a singular source, such as the student's self-report of perceptions, to

provide information on both the independent variable (school climate) and dependent variables (student outcomes) may lead to the distortion of data and lean analyses toward significant findings when they may not actually be statistically significant. Even considering the issue of shared method variance, Wang and Degol acknowledged that student perceptions are an important consideration for school climate reform. Because student perceptions of school climate are positively associated with student outcomes, school climate reform can only achieve the desired outcome if student perceptions of school climate have also changed. According to Wang and Degol, it is still necessary to triangulate student perceptions with additional school climate measures, including attendance, discipline referral data, and teacher ratings.

Multi-Dimensionality of School Climate. In his 1958 study, Argyris concluded that investigating human behavior in schools requires "ordering and conceptualizing a buzzing confusion of simultaneously existing, multilevel, mutually interacting variables" (p. 501). The clustering nature of survey data across domains makes it more challenging to determine relationships between specific domains and outcomes (Wang & Degol, 2016). In their 2020 study, Lewno-Dumdie et al. asserted that despite the number of available school climate measures, there is a lack of clarity around the domains evaluated by these measures. Similarly, Thapa et al. (2013) contended that most studies on school climate do not incorporate multilevel or hierarchical frameworks, which is necessary for teasing apart the effect of each domain. Anderson (1982) and Zullig et al. (2015) also proposed defining the multi-dimensionality of school climate as a way to focus reform efforts. Schweig (2019) suggested using Multilevel Confirmatory Factorial Analysis, which offers a hierarchical structure in which factor models may be tested within groups, between groups, and/or both at the same time.

Unit of Analysis. There is some debate around the unit of analysis within school climate surveys. In his review of literature, Sirotnik (1980) contended that though there is concern around identifying the unit of analysis during the study phase, the practice of researchers continues to involve performing regression analyses across individual respondents who are nested within the grouping factors that are being investigated. Sirotnik discussed three approaches to determining the unit of analysis, all of which stem from an attempt to determine which quality of what object is the assessment intending to measure. If the quality is fundamental to the group or organization as the object, a between-individuals analysis, averaging all responses, will provide a single measure for the entire organization. If the quality is considered fundamental to the individual as the object, an analysis within individuals is most relevant. A total analysis could be used only when a between individuals or within individuals analysis was not important.

In her 1982 analysis of the literature, Anderson built on Sirotnik's (1980) work, and articulated four different sets of analysis units:

1. "Individual outcome = individual's perception of context + individual's background variables
2. Individual outcome = average perception of context + individual's background variables
3. Individual outcome = average perception of context + grouped background variables
4. Grouped outcome = average perception of context + grouped background variables" (p. 386)

The determination of the unit of analysis is dependent upon how the researcher intends for the treatment to be provided. Anderson (1982) posed the question as to whether students receive the treatment based on individual need, or whether entire classes or schools receive the treatment.

No matter the choice of analysis unit, Sirotnik warned against generalizing about the data across levels of analysis, which Anderson claimed is commonly done in school climate research, due to the potential for misrepresentation and misinterpretation of the data. Taking the mean of student or teacher responses to the school level does not take into account sampling error, which Schweig (2019) reminded can lead to incorrect inferences about experiences at the school level.

Lack of Reliable and Valid Assessment Tools. Over 100 instruments exist that can be used to measure K-12 school climate and its effect on stakeholders (Chrikina & Khavenson, 2018); however, school leaders do not always use school climate assessments with established psychometrics (Cohen et al., 2009). Reliable and valid instruments must meet two criteria: assess many or all of the domains that most researchers agree influence school climate and engage the 7 main stakeholders within school communities - faculty, students, and families. Cohen et al. (2009) also contended that the majority of school climate assessment tools have not been created in a "scientifically sound manner" (p. 196).

Availability of Assessments. School climate assessments that have established psychometrics are not always available to the public, which may contribute to the aforementioned problem of the continued use of assessments by school leaders that are not reliable and/or valid. The NCSSLE's (n.d.) compendium consists of 23 school climate measurement tools that include a student component. Of those 23 tools, 16 are protected by copyright or not easily accessible by the public and eight are available for a fee. The compendium includes only six surveys that are free and available to the public. The Education Department School Climate Surveys (EDSCLS) is the only one of six free and available surveys that encompasses all of the domains represented in literature (Ryberg et al., 2020).

Causal Inference. Correlation does not imply causation, yet the correlational design of much of the research on school climate seeks to establish cause and effect relationships between school climate and student outcomes (Wang & Degol, 2016). Though random assignment of students to schools is not contextually possible, which would be necessary for a true experimental research design, Wang and Degol asserted that there are methods that may be employed in correlational research that can strengthen the causal inference, including controlling for confounding variables, replicating research using different samples and across different settings, and engaging in longitudinal studies. While these methods still do not prove a causal relationship between school climate and student outcomes, their use can bolster the inference that improvements in school climate may lead to improvements in student outcomes. Wang and Degol also implored researchers to construct more rigorous research models and analytic design as well as remain judicious in their interpretation and presentation of findings.

Implications and Recommendations. Thapa et al. (2013) recommended that school climate be assessed using both reliable and valid instruments, that these instruments be employed with all stakeholders of the organization, including students, families, school staff, and community members, and that data are gathered from all stakeholders across school climate domains. In their 2015 article detailing a revised version of The School Climate Measure, Zullig et al. also concurred that a school's climate can only be accurately assessed through multidimensional measures. Lewno-Dumdie et al. (2020) contended that the unit of analysis should take place at the school-level so that reform efforts may be applied directly to school-level areas of concern.

School Climate and Student Achievement

Relationship Between School Climate and Student Achievement

All stakeholders, including school leaders, school staff, families, students, school systems, and the greater community, should be concerned about improving student achievement (Sherblom et al., 2006). Attempts to associate school climate with student achievement date back to the late 1970s, when Brookover and his colleagues (1978) completed their landmark study of the relationship between school climate and student achievement. They used multiple regression to analyze the variance in achievement scores of fourth graders and determine the proportion of that variance that was explained by school climate when socioeconomic status and ethnicity were controlled. Their results indicated school climate was as effective or more effective in predicting student achievement than socioeconomic status or ethnicity.

Throughout the literature, school climate has been shown to be predictive of student outcomes in a variety of areas, including academic and behavioral (Capp et al., 2020; Dias & Barroso, 2020; Wang & Degol, 2016). Specifically, there is empirical evidence confirming that a positive school climate positively affects students' academic achievement (Chirkina & Khavenson, 2018; MacNeil et al., 2009; Maxwell et al., 2017; Schweig et al., 2019; Sherblom et al., 2006), with one study professing that the quality of a school's climate may be the single most predictive factor of student achievement (Jones & Shindler, 2016).

To Cohen et al. (2009), it is "common sense" that school climate affects a child's academic achievement, because academic achievement should increase when a child feels "safe, cared for, appropriately supported, and lovingly 'pushed' to learn" (p. 186). Wang and Degol (2016) articulated the following factors as essential to a positive school climate and the associated greater academic achievement: high academic standards, effective leadership, goal orientation, strong teacher-student relationships, regular communication between families and

the school, and placing value in diversity. All of these elements contribute to a positive school culture, creating an environment that is motivating for students (Wang & Degol, 2016).

Two meta-analyses of published research regarding the relationship between school climate and student achievement provide insights into the vast body of literature. Berkowitz et al. (2017) reviewed and synthesized 78 published research articles and determined that not only did a positive school climate predict higher academic achievement, but it also mitigated the negative effects of several risk factors on academic achievement, including lower socioeconomic status. Wang and Degol (2016) conducted a review of the literature and determined that the relationship between a positive school climate and higher academic achievement is further influenced by high academic expectations and strong student-teacher relationships.

Perception of School Climate

Multiple studies have shown that a positive perception of school climate is associated with higher academic achievement (O'Malley et al., 2015; Ryberg et al., 2020; Wang et al., 2014). School climate, however, is multidimensional and relies upon the collective perceptions of stakeholders; thus, school climate is subjectively defined by the individual rather than an objectively identified construct (Ryberg, 2020). Anderson (2019) asserted that perceptions of a school may well influence its success or failure, and Burns and Martin (2010) found that external observers nearly immediately assessed the climate of a school environment based on the people occupying the space.

Perceptions of school climate may vary drastically between and within different stakeholder groups within the community (Thapa et al., 2013; Wang & Degol, 2016; Zullig et al., 2010). In a study of over 10,000 community members within 60 schools in the United States, Smith (2020) found that there were significant factors that impacted the perceptions of

stakeholders including their role (teacher, student, parent), the level of school (elementary, middle, high), and the ages of the students. He also found that self-reported perceptions of school climate were not impacted by gender or size of school. It may be unclear to the administrator how best to balance the differences in reported perceptions from different stakeholder groups (Bottiani et al., 2020).

Students' Perceptions of School Climate. Multiple research studies have linked students' perceptions of school climate with higher student academic achievement (Barile et al., 2012; Bottiani et al., 2020; Bryan et al., 2012; Dunn & Harris, 1998; McCoy et al., 2013; Morin et al., 2014; Niehaus et al., 2012; O'Malley et al., 2015; Sanders et al., 2018). Much of the school climate research in the past 20 years has focused on students' perceptions of school climate (Capp et al., 2020). In their 2017 comprehensive review of the literature on school climate, Berkowitz et al. found that over 64% of studies completed from 2000 to 2017 considered students' perceptions of school climate to the exclusion of other stakeholders.

Students' Perceptions of School Climate and Student Achievement. Many studies have investigated the relationship between students' perceptions of school climate and student achievement (Barile et al., 2012; Bryan et al., 2012; McCoy et al., 2013; Niehaus et al., 2012; Sanders et al., 2018). In their 2018 study, Sanders et al. examined whether school climate has a different association with academic achievement among students who are at-risk as compared to their peers, with the intent to draw conclusions around the ability of school climate to reduce or widen existing achievement gaps. The study explored the effects of school climate and disability/ELL status on reading and mathematics achievement at varying school levels (elementary, middle, and high school). The findings were not statistically significant for English-language learners at any level (elementary mathematics: $\beta = 1.71$, n.s., ES = 0.07; elementary

reading: $\beta = 4.18$, n.s., ES = 0.18; middle school mathematics: $\beta = 1.43$, n.s., ES = 0.07; middle school reading: $\beta = 0.97$, $p > 0.05$, ES = 0.04). However, the interaction between students' perceived climate and disability status were statistically significant (elementary mathematics: $\beta = 2.46$, $p < .001$, ES=0.03; elementary reading: $\beta = 13.21$, $p < .001$, ES = 0.56; middle school mathematics: $\beta = 23.01$, $p < .001$, ES = 1.05; middle school reading: $\beta = 21.88$, $p < .001$, ES = 0.95). The link between students' perceptions of school climate and academic achievement for students with disabilities was approximately twice as strong as compared to their peers without disabilities. Sanders et al. suggested that if school climate could improve from the lowest to the highest possible levels, the achievement gap between students with disabilities and students without disabilities could be significantly reduced.

Niehaus et al. (2012) analyzed the relationship between students' perceptions of school connectedness and academic outcomes in sixth graders living in poverty. Student participants completed a survey measuring school connectedness that was adapted from several sources: the National Educational Longitudinal Study, the Need Satisfaction Scale, and the Scale of Caring Adult Relationships in School. Academic outcomes were quantified through students' grade point average, number of absences, and number of discipline referrals. While the study found that students' perceptions of school support showed a general decline as the school year progressed, the students who reported either growth or less of a decline on the school connectedness survey demonstrated higher academic achievement.

In another study on school connectedness, Bryan et al. (2012) investigated the effects of school bonding on high school students' academic achievement in mathematics. They found that the relationship between students not liking school was negatively correlated with mathematics achievement ($R = -.44$, $p < .001$). The researchers also found the indirect effect of students'

attachment to teachers and school commitment behaviors influencing their achievement by mitigating absences and other negative school behaviors.

Barile et al. (2012) investigated the longitudinal relationship between students' perceptions of school climate as measured through student assessments of teacher-student relationships and public high school students' achievement in mathematics. They found that teacher evaluation policies that involved student input were associated with more positive classroom climate ($\beta = .43$, $p < .01$). Additionally, school policies of assigning higher-performing students to higher-performing teachers had a negative correlation with students' perceptions of classroom climate ($\beta = -.33$, $p < .01$).

Many other studies have found a positive relationship between various elements of school climate and academic achievement. In their 2013 study, McCoy et al. examined neighborhood crime and school climate as potential predictors of academic achievement. Although the results of the study indicated that schools with higher neighborhood crime experienced decreased academic achievement, McCoy et al. found that school climate seemed to mitigate this negative association. While a higher neighborhood crime rate predicted a decrease in feelings of safety, it did not predict a decrease in academic rigor and thus academic achievement. In their 2015 study on school climate, family structure, and academic achievement, O'Malley et al. found that students who demonstrated more positive perceptions of school climate had higher self-reported grade-point averages. Similarly, Morin et al. (2014) found that classroom climate does predict students' achievement in mathematics. Dincer's 2021 study of middle schoolers' perceptions of school climate showed that there were medium-level correlations ($p < .001$, $R = .39$) between school climate perceptions and students' school motivation.

Teachers' Perceptions of School Climate. Capp et al. (2020) reported that the majority of the research studies on school climate within the last 20 years have focused on students' perceptions of school climate, leaving out the perceptions of teachers and other school staff. Capp et al. contend that, in order to achieve an accurate picture of a school's climate, the perceptions of all staff working in schools must be taken into consideration, because these are the individuals who contribute to the school climate. In their comprehensive review of school climate literature, Berkowitz et al. (2017) noted that only 13% of the studies reviewed included the perceptions of teachers. Maxwell et al. (2017) asserted that while empirical evidence has confirmed the positive relationship between school climate and students' academic achievement, the impact of staff perceptions on school climate and student achievement is less clear. Johnson and Stevens (2006) pointed out the need for further study of the relationship between teachers' perceptions of school climate and students' academic achievement.

Studies Associating Teachers' Perceptions of School Climate with Student Achievement. Johnson and Stevens (2006) examined the relationship between the aggregate of teachers' perceptions of school climate and the aggregate of the school's student achievement. A statistically significant, positive relationship was found between the two variables, with a 0.30 loading of school climate on student achievement, which accounted for 9% of the variance in student achievement. This indicates that school climate should be considered when analyzing student achievement. The researchers also investigated the community context variables that may mediate the school climate/academic achievement relationship and found that schools in higher socioeconomic status communities experienced a greater influence of climate on achievement than schools in lower socioeconomic status communities.

In their 2020 study, Capp et al. analyzed the staff-focused dimensions of school climate and the relationship between those dimensions and student outcomes. Approximately 54,000 school staff members participated in the survey, with teachers comprising the majority (38,205, approximately 71%). Regression models were used to explore the relationships between school climate and student outcomes, and the results were that negative teacher perceptions of school climate were associated with higher levels of student risk, while positive perceptions predicted greater student well-being. Of particular note, staff members' perceptions of climate appear to be greatly influenced by the school's response to discipline ($\beta = -.455$, $p < .001$) and the existence of supportive relationships between staff members ($\beta = 2.171$, $p < .001$) (Capp et al., 2020).

Hoy and Hannum (1997) used a health metaphor to measure essential aspects of school climate and examine the relationship between those elements and student achievement in middle schoolers. Staff from a sample of 86 middle schools completed the Organizational Health Inventory for Middle Schools, which consists of 45 items that measure aspects of school climate. These results were then correlated with students' performance on the New Jersey Eighth Grade Early Warning Test, which measures students' achievement in reading, mathematics, and writing. The study found that most dimensions of school climate were positively associated with student achievement.

In their 2007 study, Hughes and Kwok examined the influence of teacher-student relationships and teacher-parent relationships on students' reading achievement in the primary grades. The researchers posited that the quality of teachers' relationships with students mitigates any negative influence derived from a student's socioeconomic status. Students' academic achievement was measured using the Woodcock-Johnson III, teachers' perceptions of the teacher-student relationship were assessed using the Teacher Relationship Inventory, and

teachers' perceptions of the teacher-parent relationship were determined using an instrument adapted from the Parent-Teacher Involvement Questionnaire–Teacher Report. The researchers found that students experienced greater academic gains when the teacher perceived a positive teacher-student and teacher-parent relationship.

Hamre and Pianta (2005) analyzed the relationship between instructional and emotional support and students' risk of school failure. Current first graders were identified as at-risk based on demographics and classroom functional issues reported by their former Kindergarten teachers. Student academic achievement was measured by the Woodcock-Johnson Psychoeducational Battery-Revised (WJ-R), and teachers' perceptions of student-teacher relationships were assessed using the Student-Teacher Relationship Scale. The researchers found that high-risk students in classrooms characterized by high instructional and emotional support demonstrated achievement and student-teacher relationships equal to their lower-risk peers.

In their 2012 study, Spilt et al. investigated the association between student-teacher relationships and elementary students' academic achievement. Using the Network of Relationships Inventory, teachers reported their provision of social support that characterized their relationships with children along a scale of warmth to conflict. The WJ-III and Universal Nonverbal Intelligence test was used to assess students' academic growth. The researchers found that boys in classrooms with teachers scoring low on warmth experienced lower academic gains than girls. Additionally, conflict was associated with lower academic growth.

Sweetland and Hoy (2000) examined the relationship between teacher empowerment and school climate, as well as the relationship between teacher empowerment and school effectiveness as measured by academic achievement. The study used the Organizational Climate Description Questionnaire, Revised Middle and the Organizational Health Inventory to measure

teachers' perceptions of school climate. Teacher empowerment was measured through a survey, and students' reading and mathematics achievement was measured using New Jersey's Eighth Grade Early Warning Test. The study found that teacher empowerment was related to higher levels of effectiveness (i.e., student achievement).

Students' and Teachers' Perceptions of School Climate. Maxwell et al. (2017) asserted that there is a dearth of research that includes both students' and teachers' perceptions of school climate relative to students' academic achievement. Berkowitz et al. (2017) performed a comprehensive review of school climate studies and found only 6% of the studies that qualified for their review engaged both students' and teachers' perceptions of school climate. In their review of literature, Wang and Degol (2016) found that only 17% of the research studies on school climate engaged with more than one stakeholder group. Among the few multi-informant studies that do exist, even fewer employ a standardized, national measurement of student achievement (Maxwell et al., 2017). Utilizing data from both students and teachers adds completeness to the assessment and increases the validity of the assessment of the school's climate (Konold et al., 2018).

Individual perceptions of school climate by students and teachers are likely to differ as a function of their role within the school (Konold et al., 2018; Wang & Degol, 2016). Students' perceptions of school climate may be tied more closely to their individual experiences while teachers' perceptions capture the entire classroom experience (Wang & Degol, 2016). Konold et al. contended that students' perceptions may encompass individual experiences in the classroom as well as experiences beyond the classroom, such as interactions during unstructured situations, thereby causing variation between the students' and teachers' perceptions. Additionally, school climate ratings obtained from both students and teachers have increased the validity of school

climate assessments because when the variance due to trait influences, school-level participant influences, and individual participant influences was removed, ratings by each stakeholder group were similar (Konold et al., 2018).

Studies Associating Students' and Teachers' Perceptions of School Climate with Student Achievement. The research of Jones and Shindler (2016) found a positive relationship (R = .7) between school climate and student academic achievement. They administered the Alliance for the Study of School Climate Assessment Instrument (SCAI) to both students and teachers and correlated the results with student achievement at the school-level as measured by the California State Performance Index and Similar School Rating scores. The study reached multiple conclusions. First, the positive perceptions of school climate decreased as students move up from elementary school. Second, the study confirmed that student achievement was highly correlated with the mean school climate as measured by the SCAI. A third conclusion identified was that while achievement was correlated to all eight SCAI indicators, the highest correlation coefficient (R = .9) was between school climate and classroom discipline practices. The eight indicators also tended to be highly interrelated, suggesting the potential for interdependence between them. The researchers also found that when they controlled for socioeconomic status, the correlation between SCAI scores and achievement scores was even greater. Finally, Jones and Shindler discovered that the experience of climate within each building varied according to the academic level of the student group, with students in lower-level classes experiencing reduced quality school climates.

Maxwell et al. (2017) engaged in multilevel modeling with both students' and teachers' perceptions of school climate and the effect of these perceptions on students' achievement. Students' perceptions of school climate were measured by the School Climate and School

Identification Measurement of Scales-Student and their academic performance was assessed using results from the National Assessment Plan-Literacy and Numeracy. Teachers' perceptions of school climate were measured using the School Climate and School Identification Measurement of Scales-Staff. The researchers found that students' performance in mathematics and writing were significantly explained by students' perceptions of school climate. Performance on the mathematics, writing, and reading assessments were predicted by staff perceptions of school climate while controlling for students' responses.

In a rare study in which parents' perceptions of school climate were also investigated, Sherblom et al. (2006) examined fourth grade students' performance in mathematics and third grade students' performance in reading as a function of stakeholders' perceptions of school climate. Students' achievement data came from the results of the 2003 Missouri Assessment Program, and surveys that are administered yearly to stakeholders through the Caring School Community program yielded the perceptions of school climate by stakeholder groups (students, teachers, and parents). The results of the study confirmed the positive relationship between students' perceptions of school climate and their achievement in mathematics and reading. Further, the teachers' perceptions of school climate as being positive showed a strong correlation to students' academic achievement in mathematics ($R = .61$, $p < .01$) and reading ($R = .68$, $p < .01$). Interestingly, the parent survey was not correlated with proficiency in either area.

Benner et al. (2008) found that school climate influenced students' engagement, which, in turn, influenced students' academic achievement. In 2012, Swanson et al. investigated elements of school climate and their impact on student achievement, concluding that student-teacher relationships as reported by both children and teachers significantly mediated the relationship between cumulative home risk and student achievement. Košir and Tement (2014)

explored the reciprocal relationship between teacher-student relationships and academic achievement, finding that students who perceive a higher degree of support by their teacher at the beginning of the year show greater academic achievement by the end of the year. Catalano et al. (2004) theorized that school bonding in middle and high school was imperative to healthy development, and his research team determined that school bonding in the eighth grade was associated with higher academic achievement during that year. In their 2012 study of classroom emotional climate, student engagement, and academic achievement, Reyes et al. found a positive relationship between climate and grades in fifth and sixth graders that was mediated by student engagement, meaning that student engagement was the mechanism through which climate and grades were related.

Variance Between Students' and Teachers' Perceptions of School Climate. Mitchell et al. (2010) engaged in a study of the relationship between students' and teachers' perceptions of school climate and their effect on "academic emphasis" (p. 271). They hypothesized that teachers' perceptions would derive from school-level characteristics and students' perceptions would be based on classroom-level characteristics; however, the study results were the opposite of their hypotheses, showing that a greater number of school characteristics showed significant association with students' perceptions and a greater number of classroom characteristics showed significant association with teachers' perceptions. The researchers also found that students' and teachers' ratings of the overall climate were not associated with one another, and that an inverse relationship existed between student and teacher ratings of the academic climate. This may be due to students rating academic climate based on their own actions while teachers may have rated academic climate based on perceptions of the entire student body.

Challenges in Determining the Relationship Between Climate and Achievement

Researchers admit that the field is still learning exactly why positive school climate predicts students' academic achievement (Cohen et al., 2009; Hoy & Hannum, 1997). Hoy and Hannum discussed school climate as a broad construct that often combines studies involving the physical environment, emotional environment, learning environment, school leadership, and relationship climate. Sanders et al. (2018) wrote that it is this nebulosity of definition that allows school climate to be an integrated, inclusive concept, while the lack of a clear definition also makes it difficult to understand exactly how it relates to student achievement. This at least partially leads to a dearth of causal evidence linking school climate with academic achievement (Sanders et al., 2018).

Other questions have arisen within the literature that highlight the challenge in determining the relationship between school climate and student achievement. Konold et al. (2018) questioned the specific aspects of school climate that are associated with academic achievement as well as the mechanism that supports the relationship between the two. Wang and Degol (2016) proposed that future research should identify the multiple dimensions of school climate and identify exactly which of those dimensions are associated with students' academic achievement. Similarly, Jones and Shindler (2016) suggested a more contextual view of school climate, finding that there was a relationship between various dimensions of school climate across most schools. Hoy and Hannum (1997) questioned whether school climate improves student achievement, or high student achievement produces a more positive climate, positing their interdependence.

Research Showing a Lack of Climate-Achievement Relationship

Though they do not appear to be numerous, studies have failed to demonstrate a relationship between school climate and academic achievement. In their 1994 examination of

school influences on students' perceptions of school climate as measured by the Quality of School Life scale, Mok and McDonald found only 2%-3% variance of the means between schools, while much greater variance was found within schools. Phillips (1997) found that students' mathematics achievement and attendance were both positively correlated with a school-wide emphasis on academic success, while school climate was not correlated with either. In their 1998 examination of classroom climate and student achievement, Dunn and Harris did not find a statistically significant relationship between the two, as R-squared values never accounted for more than 8.2% of the variance; however, they emphasized the limited nature of the findings due to lack of generalizability. Wang et al. (2014) investigated the relationship between school climate, peer victimization, and academic achievement, finding that both peer victimization and poorer perception of school climate were negatively associated with grade-point average (R = -.21, $p < .001$; R = -.33, $p < 0.001$, respectively), and school climate was not a moderating factor.

Impact of Leadership on School Climate

School Leaders' Influence on School Climate

Research has demonstrated that the school leader can affect change on the climate of an organization, as well as the norms of behavior, both explicit and implicit (Cohen et al., 2009; Goleman, 2006; Muijs & Harris, 2007; Smith & Shouppe, 2018; Smith, 2020). After the classroom teacher, the building-level leader has the most influence on student learning (Wallace Foundation, 2006). Principal leadership indirectly impacts academic performance through school culture and climate (MacNeil et al., 2009). Of the five key practices as identified by the Wallace Foundation (2013), one focused on developing a climate that fosters improved academic

achievement, and they contend that principals with high climate ratings have developed a caring, trusting environment.

Individuals' perceptions of their school climate influence their attitudes, behaviors, and, ultimately, group norms (Loukas, 2007). In their study on stakeholders' perceptions of school climate, Smith et al. (2020) found that communities are looking to school leaders to implement changes that will positively influence school climate. They concluded that it was of supreme importance for school leaders to observe and consider the perceived school climate of the major stakeholder groups within the school. Engaging stakeholders in positive ways was correlated with movement toward achieving other organizational goals, such as improving student achievement ($R = .585$, $p < .01$).

Educational leaders, including principals, superintendents, state departments of education, and national level leaders, across the United States have indicated that school climate is an area of primary focus for them (Cohen et al., 2009). Dias and Barroso (2020) found that school leaders see themselves as the main promoters of a positive school climate. Principals must be aware of their ability to use positive influence to affect positive changes within their school climate (Smith et al., 2020). Smith and Shouppe (2018) found a statistically significant relationship between school climate and academic achievement (reading: $R^2 = .819$, $p < .001$; mathematics: $R^2 = .259$, $p < .001$). The results of this study underscore the need for school leaders to keep school climate at the center of their work. Lee and Smith (1999) argued, however, that fostering a positive school climate in and of itself is not enough to increase student achievement; the school culture must also emphasize academic excellence.

Characteristics of the School Leader that Increase Influence

There is a strong relationship between a principal's ability to influence stakeholders and foster a positive school climate (Smith et al., 2020). The literature reviewed by the researcher indicates several key factors affecting a leader's influence on school climate. Matthews and Brown (1976) found that the effectiveness of school leadership hinges upon the acceptance of teachers. Ellis (1988) contended that the trust and respect demonstrated by the principal correlates with teachers' morale and commitment as well as students' achievement.

Teachers' perceptions of school climate are also influenced by a school leader's demonstration of emotional intelligence (Anderson, 2019). Leadership behaviors exhibited by leaders with high emotional intelligence include engaging in trusting and caring relationships as well as empathetic social interactions with stakeholders (Goleman, 2006). Anderson (2019) contended that the literature suggests that leaders who have demonstrated high emotional intelligence may be "more competent to influence, inspire, intellectually stimulate, and develop their staff to promote a culture of sustained educational success" (p. 41). The results of this study supported this assertion that the absolute value of a principal's Emotional Management of Others and Emotional Self Control were the most important predictors for school climate.

Sherblom et al. (2006) posited that when principals communicate a strong, clear, and shared vision with their faculty, fostering openness and inclusivity, the result is a positive school climate. Smith et al. (2020) found a correlation between principals balancing high expectations for teachers with providing support toward a common goal with more positive school climates, and Ozgenel (2020) determined that there is a correlation ($R = .610$, $p < .01$) between school effectiveness and supportive principal behaviors. Students' academic achievement is strongly correlated with leadership support, teachers' sense of a learning community, and positive school climate (Sherblom et al., 2006). Openness, authenticity, and approachability add credibility, and

credibility increases principal influence (Smith et al., 2020). Smith et al. also found that a consistent delivery of "encouraging, persuasive, and efficacious messages" (p. 13) positively affected motivation and feelings of self-efficacy among others.

In their study examining the relationship between principal influence and facets of organizational climate, Smith et al. (2020) found that almost one-quarter of the variance in institutional vulnerability was attributable to principal influence and students' socioeconomic status. Principal influence made a statistically significant contribution to the variance, though socioeconomic status was the largest contributor to that variance. One implication of this study is that principals who effectively apply their influence may be more likely to inspire teachers to rise to meet the challenges presented by students coming from an economically disadvantaged background.

Distributed Leadership

Research indicates that distributed leadership can foster changes in school climate (Chen, 2018; Leithwood et al., 2009; Stronge et al., 2008). In his 2018 review of literature, Chen found that research on comprehensive school reform cites distributed leadership as a key factor in making changes in both instruction and school climate. Chen contends that it is still unknown how the distribution of leadership combined with other school factors may affect this change.

Leithwood et al. (2009) stated that the distribution of leadership beyond the principal alone is believed to have a greater ability to foster school climate change. They asserted that the diversity of skills offered by other leaders within the school, in addition to that of the principal, to affect change. Chen (2018) argued that without alignment of views and behaviors between principal and teacher leaders, distribution of leadership has little effect on climate change. Leader-teacher consistency was related to teachers' trust in leaders and a collective sense of

responsibility for change. Enabling transformation in teaching, learning, and overall climate by the principal can be achieved through distributing leadership to teacher leaders within the building (Stronge et al., 2008).

Conclusion

This literature review examined the research on students' and teachers' perceptions of school climate and the relationship between those perceptions and student academic achievement. Existing literature confirms empirically that school climate has been shown to predict student outcomes in a variety of areas, and that a positive school climate has a positive effect on student academic achievement. School climate is often measured through stakeholder perceptions, and there may be variance between and within the stakeholder groups. The studies in this review indicated that students' positive perceptions of school climate were associated with higher student academic achievement. While Berkowitz et al. (2017) found there are fewer existing studies examining the association between teachers' perceptions of school climate and student academic achievement, those included in this review demonstrated a positive association between teachers' perceptions of school climate and increased student achievement. There are even fewer research studies that examine the associations between both students' and teachers' perceptions of school climate and student academic achievement.

In their comprehensive review of school climate studies, Berkowitz et al., (2017) found that only 6% of the studies that qualified for their review took into account both students' and teachers' perceptions of school climate. The relative dearth of empirical studies involving both students' and teachers' perceptions of school climate and their relationship with student achievement is an area for further study. In light of the COVID-19 pandemic, another area for

further study would be comparing pre- and post-pandemic assessments of school climate to determine the pandemic's effect on teachers' and students' perceptions of climate.

Chapter 3: Methodology

The purpose of this study was to investigate relationships among school climate, academic growth, and benchmark achievement at the elementary school level in Virginia. This chapter addresses the research question, design, and justification. An explanation is provided of the procedures for conducting this study, including the instruments to be used to quantify each of the study variables (school climate, academic growth, benchmark achievement). Additionally, the sample population and procedures used for data collection and management are discussed, along with the data analysis techniques.

Limited Literature

The positive relationship between school climate and academic achievement is documented within the literature (Capp et al., 2020; Chirkina & Khavenson, 2018; Dias & Barroso, 2020; Jones & Schindler, 2016; MacNeil et al., 2009; Maxwell et al., 2017; Schweig et al., 2019; Sherblom et al., 2006; Wang & Degol, 2016). However, most studies reviewed used benchmark achievement as the singular measure of academic achievement. Of the studies that did examine academic growth in some capacity, none examined the relationship between school climate and academic growth within the same academic year, nor did they compare the academic growth with benchmark achievement within the same schools. There is a gap in the literature reviewed regarding the potential relationships among school climate, academic growth, and benchmark achievement.

Research Design and Justification

Quantitative research involves collecting, analyzing, and interpreting numerical data to generalize it across groups of people or to explain a particular phenomenon (Creswell & Creswell, 2018). In a nonexperimental study that focuses on measuring associations between two

or more variables, a correlational design is most appropriate (Creswell & Creswell, 2018; Howell, 2011). A quantitative correlational design was selected for this study to investigate the association between two variables. The researcher measured the association between school staff members' perceptions of school climate as quantified by the 2023 Virginia Survey of School Climate and Working Conditions (VSSCWC) and student academic growth as quantified by fourth graders' Fall 2022 to Spring 2023 growth in reading and mathematics on the NWEA MAP assessments. This study also measured the association between school staff members' perceptions of school climate as quantified by the VSSCWC and benchmark academic achievement as quantified by fourth graders' scores in reading and mathematics on the 2023 Virginia Standards of Learning (SOL) assessments. The associations between academic growth in reading and benchmark achievement in reading, academic growth and benchmark achievement in mathematics, academic growth in mathematics and reading, and benchmark achievement in mathematics and reading were all explored.

While research demonstrates the positive relationship between staff perceptions of school climate and academic achievement (Capp et al., 2020; Hoy & Hannum, 1997; Johnson & Stevens, 2006; Spilt et al., 2012; Sweetland & Hoy, 2000), the measures of academic achievement used in the studies do not account for student growth; rather, the data used to quantify academic achievement compare students' performance to a benchmark. The existing research lacks the additional aspect of academic growth, an element of academic achievement that may affect and be affected by school climate. Table 5 shows the possible combinations of school climate, academic growth, and benchmark achievement measures.

Table 5

Combinations of Variables Created by Thompson (2023)

Combinations	Variables		
	School Climate Measure	Growth Measure	Benchmark Achievement Measure
Combination 1	High School Climate	High Growth	High Achievement
Combination 2	High School Climate	High Growth	Low Achievement
Combination 3	High School Climate	Low Growth	High Achievement
Combination 4	High School Climate	Low Growth	Low Achievement
Combination 5	Low School Climate	High Growth	High Achievement
Combination 6	Low School Climate	High Growth	Low Achievement
Combination 7	Low School Climate	Low Growth	High Achievement
Combination 8	Low School Climate	Low Growth	Low Achievement

Note. This table was created by the researcher Thompson (2023).

This study sought to provide a more nuanced and complete understanding of the relationship between school climate and overarching academic achievement by examining the element of student growth. Additionally, understanding the relationships among school climate, academic growth, and benchmark achievement may help educators and educational leaders understand which element to prioritize, which could lead to higher overall academic achievement.

A correlational design was used to examine the relationships among school climate, academic growth, and benchmark achievement. Correlation does not imply causation; however, correlation does provide information on the strength and direction of relationships between variables (Creswell & Creswell, 2018). Correlational relationships can provide information that may guide future research (Howell, 2011; Trochim, n.d.).

Research Question

The research question for this study was: What are the relationships, if any, among school climate, academic growth, and benchmark achievement among fourth grade students in three school divisions in Virginia for the 2022-2023 school year? This research question assisted the researcher in understanding the relationships among school climate, academic growth, and benchmark achievement at the elementary school level in Virginia. Understanding the relationships among staff perceptions of school climate, academic growth, and benchmark achievement may assist education leaders in making decisions related to the school environment and instructional practices.

Nonexperimental Design

A nonexperimental research design involves the measurement of variables as they naturally occur; there is no manipulation of an independent variable (Howell, 2011; Trochim, n.d.). The data used in this study were collected by the school division and the VDOE as part of their regular operating procedures during the 2022-2023 school year. From these data, three intact groups were determined. The first intact group was composed of all staff members from an included school who completed the VSSCWC. The second intact group consisted of all students in Grade 4 from an included school for whom the school division had Fall 2022 and Spring 2023 NWEA MAP data. The third intact group was comprised of all students in Grade 4 from an included school who participated in the Spring 2023 reading and/or mathematics assessments. The school climate data were correlated with academic growth data and benchmark achievement data to better quantify the relationships, if any exist, among the variables.

Data Sources

Measure of School Climate – Virginia Survey of School Climate and Working Conditions

The Virginia Department of Education partners with the Virginia Department of Criminal Justice Services, in collaboration with the University of Virginia and Virginia Polytechnic Institute and State University, to administer the Virginia Survey of School Climate and Working Conditions (VSSCWC) during a school-selected survey administration window between January 9 and February 24, 2023 (VDOE, 2022c). This survey provides school and school division leaders with a tool to "monitor and ensure all students and staff have access to a healthy and positive environment in which to learn, work, interact, and grow" (VDOE, 2021, para. 1). The VSSCWC measures school climate across three surveys: students, classroom instructors, and staff. The student survey was not administered to students in Grade 4 during the 2022-2023 school year, so this survey did not have results available for inclusion in this study. The VSSCWC was selected as the measure of school climate because it is administered annually as part of general school operations, the completion of which would therefore not be an additional burden to school divisions or staff.

The VSSCWC measures three aspects of school climate: Teaching and Learning, School Supports, and Safety. Each of these sections is comprised of multiple questions that together make up a measure for that aspect of school climate. There is also a Summary section that includes the overarching statement, "My school is a good place to work and learn." For this question, participants select a response from the following list: *strongly disagree, disagree, slightly disagree, slightly agree, agree,* or *strongly agree*. Additional demographic information is also collected from each participant. Responses to the VSSCWC are communicated to schools and divisions in a School Summary Feedback Report in which the score is the mean of participants' responses to all of the questions mapped to a particular aspect of school climate.

Measure of Academic Growth – Northwest Evaluation Association Measure of Academic Progress Assessment

The Northwest Evaluation Association (NWEA) Measure of Academic Progress (MAP) assessment measures achievement and growth for students in grades K-12 in reading, mathematics, language usage, and science (NWEA, 2022). The reading and mathematics tests are computer-adaptive, nationally normed, and may be administered one to three times per year, calculating growth between the fall, winter, and spring terms. NWEA MAP growth assessments report a measure of student achievement and growth using Rasch Unit (RIT) scale. This scale is an equal-interval scale that ranges from 100 to 350 (NWEA, 2022). The NWEA MAP assessment was selected as the measure of academic growth because it is administered multiple times per year as a part of general school operations within many school divisions in Virginia, and the data would be easily obtained.

The NWEA MAP assessments were nationally normed in 2020, with the previous norming in 2015 (NWEA, 2022). Samples were taken from students in grades K-12, including between 3.6 and 5.5 million test scores from between 500,000 and 700,000 students within more than 24,500 public schools across the United States to ensure that the norms represented the population of public schools. The 2020 NWEA MAP growth norms study determined the common rate of academic growth for students at the 50th percentile of achievement status. The student growth norms tables provide the means and standard deviations for each grade level in each subject for fall-to-winter, winter-to-spring, and fall-to-spring (NWEA 2022).

Measure of Benchmark Achievement – Virginia Standards of Learning Assessments

The Virginia SOL assessments establish “minimum expectations for what students should know and be able to do at the end of each course in English, mathematics, science, history/social

studies, and other subjects" (VDOE, 2022b, para. 5). Depending on students' grade level and the secondary courses they take during the year, students in grades 3-12 will engage in two to four SOL assessments each year. Students in Grade 4 take a reading and a math SOL test; students may also take a Virginia Studies SOL test depending upon the configuration of grade levels within the school division, but this is not standardized across Virginia. The SOL assessment was selected as the measure of benchmark achievement because it is administered in Virginia school divisions as part of general school operations, and the data would be easily obtained.

The institution of yearly SOL testing began in 1998, with students in Grades 3, 5, 8, and high school each taking five assessments. The results of these 1998 assessments helped the Commonwealth to establish proficiency standards for students in each subject (VDOE, 2013). In 2021, the Virginia General Assembly passed legislation requiring the implementation of "through-year" or "growth" assessments in reading and mathematics for students in Grades 3-8 (VDOE, 2022b). With the institution of these growth assessments, reported SOL pass rates now include a combination of academic growth and academic achievement against a benchmark cut score. Therefore, this study used the mean SOL scores in reading and mathematics on a scale of 0-600 as a measure of benchmark achievement rather than the reported SOL pass rates that included growth.

Sample and Site Selection

This study focused on the academic growth and benchmark achievement of solely fourth grade students in Virginia for several reasons. First, students in kindergarten through fifth grade are generally considered to be at the elementary level (USAHello, n.d.). However, SOL testing begins in Grade 3, thereby limiting the potential sample of elementary students to those in third through fifth grades. Second, as third grade is the first year of standardized testing for students in

Virginia, students' lack of experience with this type of testing could skew their results on the SOL assessment, thereby skewing the results of this study. Therefore, data from students in third grade were not included in this study. Third, several school divisions in Virginia are structured such that students in fifth grade attend an upper elementary or middle school. Capp et al. (2020) found that staff members' perceptions of school climate decline as they move from the elementary level to the middle and high school level. Thus, there could be a difference between the perceptions of school climate of fifth grade teachers at elementary schools and fifth grade teachers at upper elementary or middle schools that could skew the results of this study. Therefore, data from students in fifth grade were not included in this study. Of the elementary grades, the only grade level left to include in the study was fourth grade.

The site selection for this study followed an elimination method based on two phases of response from Virginia school systems. There are 131 school division in Virginia, within which there are 1,528 public elementary schools (National Center for Education Statistics, n.d.). For the first phase of selection, an e-mail (Appendix B) was sent to all 131 school division testing coordinators, or division personnel in a similar position, within each school division following the approval of the prospectus examination in April 2023. All school divisions that responded and indicated that the school division administered the NWEA MAP assessments in reading and mathematics to students in Grade 4 in Fall 2022 and Spring 2023 were considered for inclusion in the study. Schools who did not administer the NWEA MAP assessments in both reading and mathematics to students in Grade 4 in Fall 2022 and Spring 2023 were eliminated from inclusion in this study.

As of May 8, 2023, 63 of the 131 school divisions in Virginia responded to the initial e-mail by the researcher, a response rate of 48%. Of the divisions that responded, six indicated that

they administered the Fall 2022 and Spring 2023 NWEA MAP to students in Grade 4 in both reading and mathematics. For the second phase of site selection, a research request was submitted to three of the six school divisions who responded affirmatively about their use of the NWEA MAP assessment. The other three school divisions did not respond to requests for their research request application and/or the application was not able to be located on their school division website and was thus unable to be submitted. These three school divisions were eliminated from the study. The submitted research requests included the provision of the NWEA MAP Student Growth Summary Report for Fall 2022 to Spring 2023 in reading and mathematics for students in Grade 4. The researcher followed all school division-specific research request processes. Virginia elementary schools from which the following data were furnished were included in the sample:

- NWEA MAP Student Growth Summary Report (Fall 2022 to Spring 2023) in reading for all students in Grade 4
- NWEA MAP Student Growth Summary Report (Fall 2022 to Spring 2023) in mathematics for all students in Grade 4

Schools from which incomplete data were received or no data provided were excluded from the sample. The sample consisted of 73 elementary schools within 3 school divisions in Virginia. The student enrollment of schools within the sample ranged from 95 to 950 students. Table 6 shows the distribution of school enrollment within the sample.

Table 6

Total School Enrollment Within the Sample

	0-249 Students	250-499 Students	500-749 Students	750-1,000 Students

N count	5	25	35	13
Percentage of Sample	6.8%	27.4%	47.9%	17.8%

The percentage of students within the economically disadvantaged membership group in each school ranged from 3.1% to 82.7%. Table 7 describes the distribution of schools in the sample based on the percentage of enrollment within the economically disadvantaged membership group.

Table 7

Economically Disadvantaged Membership Group Represented Within the Sample

Variable	0-24.9%	25.0-49.9%	50.0-74.9%	75.0-100%
N	40	22	7	4
Percentage of Sample	54.8%	30.0%	9.6%	5.5%

Data Collection and Gathering Procedures

Virginia Polytechnic Institute and State University requires completion of the Instructional Review Board (IRB) Collaborative Institutional Training Initiative courses prior to educational research being conducted (completed by the researcher on September 9, 2021; see Appendix E). Following the approval of the prospectus examination on April 10, 2023, permission to conduct the study using existing data was requested using the Existing Data Research Proposal from Virginia Polytechnic Institute and State University's IRB. Permission to conduct study #23-436 was provided by Virginia Polytechnic Institute and State University's IRB on April 20, 2023 (Appendix F).

The data were collected in two phases, one from each entity that was providing the existing data. For the first phase, the researcher contacted each of the three school divisions in which the research was approved to request the NWEA MAP Student Growth Summary Report for each elementary school within each division. The data were received from August 2023 - September 2023 and provided as a .pdf report that contained the Conditional Growth Index (CGI) of each elementary school. The CGI for each subject at each school was entered into a Microsoft Excel spreadsheet as the data point for academic growth for each school.

For the second phase, the researcher contacted the VDOE to request the following data for each elementary school within of the three participation school divisions:

- Item-Level Report for the 2023 Virginia School Survey of Climate and Working Conditions: Classroom Instructors
- Item-Level Report for the 2023 Virginia School Survey of Climate and Working Conditions: Staff
- Individual scores for all students in Grade 4 on the Spring 2023 4th Grade Mathematics SOL assessment
- Individual scores for all students in Grade 4 on the Spring 2023 4th Grade Reading SOL assessment

Once the request was submitted, the VDOE processed the request and provided the data to the researcher in a Microsoft Excel spreadsheet. These data sets were received between September 28 and November 13, 2023. The SOL data from the VDOE were placed into a Microsoft Excel spreadsheet by school, and the researcher examined each data set for scores of "0," which were deleted from the data set. A score of 0 is reported due to parent refusal of testing, student refusal of testing, student cheated on the test, or student did not take the test. The mean was then

calculated for each data set for each school, resulting in mean SOL scores in reading and mathematics for each school as the data point for benchmark achievement for each school. The VSSCWC data from the VDOE were placed into a Microsoft Excel spreadsheet organized by school, and the researcher combined the responses to the selected question from both the Classroom Instructor version and the Staff version of the survey to calculate a mean response for that item as the data point for school climate for each school.

Data Treatment and Management

All data received from school divisions and the VDOE were compiled into separate folders in the Virginia Tech Google Drive. Results from the e-mail regarding NWEA MAP administration were tracked in a Microsoft Excel spreadsheet, so the researcher knew from which divisions to request NWEA MAP data. Receipt of NWEA MAP data by school was tracked in a Microsoft Excel spreadsheet, after which the sample was finalized based on the completeness of required school-based data sets. Following the identification of the sample, data for each school were compiled into a Microsoft Excel spreadsheet that identified the variables being investigated. For school climate, this data point was the mean of the classroom instructor and staff survey results on the VSSCWC. For academic growth, these data points were the School Conditional Growth Index measure from the Student Growth Summary Report by NWEA MAP in reading and mathematics for students in Grade 4. The mean reading and mathematics Virginia SOL assessment results for students in Grade 4 were the data points for benchmark achievement. Following the compilation of the data by school, all school names were changed to an alphanumeric code, after which all data were uploaded into the secure IBM Statistical Package for Social Science (SPSS) platform purchased through Virginia Tech for statistical analysis.

Data Analysis Techniques

Northwest Evaluation Association Measures of Academic Progress Assessments

One of the measures of growth provided on the NWEA MAP Student Growth Summary Report is the School Conditional Growth Index (CGI; NWEA, 2022). This standardized measure compares the average growth of students within one grade level at one school with students at other U.S. schools within that same grade level (NWEA, 2022). The CGI expresses student growth in standard deviation units above or below the growth norms, with a score of zero indicating the same amount of growth as the growth norm, a score of 1.0 indicating that the growth is one standard deviation above the growth norm, and a score of -1.0 indicating that the growth is one standard deviation below the growth norm. The CGI for fourth graders for each school in both reading and mathematics was used as part of the correlational analysis (NWEA, 2022).

Virginia Standards of Learning Assessments

For each participating school, the individual student scores on the Spring 2023 SOL assessment results were separated by subject area. A mean assessment score was computed for each school within each subject area. Mean SOL assessment scores in reading and mathematics were used as part of the correlational analysis.

Virginia Survey of School Climate and Working Conditions

There are two versions of the VSSCWC, a "classroom instructors version" (Appendix C) and a "staff version" (Appendix D). Each version consists of three overarching sections (Teaching and Learning, Student Support, and Safety) comprised of 3-13. The statement, "Overall, my school is a good place to work and learn," is common to both versions of the survey in the summary section and was used as the measure of staff perception of school climate.

The responses on this item from both surveys were combined, and the mean calculated from the data set was used as the measure for school climate for each included school.

Correlation

Pearson correlation coefficients were computed for the combinations of variables as articulated in Table 8. The Pearson correlation coefficient was selected as the method of correlation for this study because it describes the linear relationship between two quantitative variables in terms of strength and direction (Creswell & Creswell, 2018; Turney, 2022). In other words, when one variable is positive, the other variable is positive. The relationships between school climate as quantified by the VSSCWC and academic growth in reading and mathematics as quantified by the NWEA MAP assessment were determined. The relationships between school climate as quantified by the VSSCWC and benchmark achievement in reading and mathematics as quantified by the mean SOL score in both subject areas were determined. The relationships between academic growth in reading and benchmark achievement in reading, academic growth in mathematics and benchmark achievement in mathematics, academic growth in mathematics and reading, and benchmark achievement in mathematics and reading were all determined. Each correlation was tested for significance at the .05 level, and the analysis was completed using SPSS. Turney (2022) qualify correlations from 0-.3 as weak positive relationships, from .3-.5 as moderate positive relationships, and greater than .5 as strong positive relationships.

Table 8

Combinations of Variables for Correlation Coefficients

Combination	Variable Combinations	
Combination 1	School Climate	Academic Growth in Reading

Combination 2	School Climate	Academic Growth in Mathematics
Combination 3	School Climate	Benchmark Achievement in Reading
Combination 4	School Climate	Benchmark Achievement in Mathematics
Combination 5	Academic Growth in Reading	Benchmark Achievement in Reading
Combination 6	Academic Growth in Mathematics	Benchmark Achievement in Mathematics
Combination 7	Academic Growth in Mathematics	Academic Growth in Reading
Combination 8	Benchmark achievement in Mathematics	Benchmark Achievement in Reading

Summary

A nonexperimental, correlational research design was used to investigate the relationships among school climate, academic growth, and benchmark achievement within the same school. The VSSCWC data were used to quantify staff perceptions of school climate, NWEA MAP assessment data in reading and mathematics were used to quantify academic growth, and Virginia SOL assessment data were used to quantify benchmark achievement in both subjects. The data collection occurred in two phases: school divisions and VDOE. All schools for which all three data sets were complete were included in the sample.

Separate data sets were imported into SPSS to compute descriptive statistics for the sample, after which data sets were combined to determine the Pearson correlation coefficient for each pair of variables: school climate (VSSCWC) and student growth in reading (NWEA MAP), school climate (VSSCWC) and student growth in mathematics (NWEA MAP), school climate (VSSCWC) and benchmark achievement in reading (SOL), school climate (VSSCWC) and

benchmark achievement in mathematics (SOL), academic growth in reading (NWEA MAP) and benchmark achievement in reading (SOL), academic growth in mathematics (NWEA MAP) and benchmark achievement in mathematics (SOL), academic growth in mathematics (NWEA MAP) and academic growth in reading (NWEA MAP), and benchmark achievement in mathematics (SOL) and benchmark achievement in reading (SOL). Relationships among variables were compared to determine their relative strength and direction.

Chapter 4: Data Analysis and Results

This nonexperimental, correlational research design was used to investigate this research question: What are the relationships, if any, among school climate, academic growth, and benchmark achievement among fourth grade students in three school divisions in Virginia for the 2022-2023 school year? Existing school climate data for 73 elementary schools within 3 school divisions in Virginia, and academic growth data and benchmark achievement data for students in Grade 4 within those 73 elementary schools were used for this purpose. The school climate data and benchmark achievement data for school year 2022-2023 were procured through the Virginia Department of Education (VDOE). Permission to conduct research was provided by the three school divisions, and the academic growth data for the school year 2022-2023 were procured through each division.

The school climate data were provided by the VDOE as two Microsoft Excel spreadsheets: Classroom Instructor version and Staff version for each of the three school divisions participating in the study. The data were separated by school. The responses to the question "Overall, my school is a good place to work and learn" from each version of the survey were combined and a mean response for that item was calculated. This mean response was used as the data point for school climate for each school.

The benchmark achievement data were provided by the VDOE as a Microsoft Excel file and contained individual reading and mathematics scores on the SOL assessment for students in each elementary school within the three participating school divisions. The researcher examined each data set for scores of "0," which were deleted from the data set. The mean was then calculated for each data set for each school, resulting in mean SOL scores in reading and mathematics for each school as the data point for benchmark achievement for each school.

The academic growth data were reported by the school divisions in the form of a .pdf of the Student Growth Support Report for each elementary school by subject area. This report included multiple grade levels' data. The CGI measure for students in Grade 4 in each subject were extracted from the reports and entered into a Microsoft Excel spreadsheet.

All five variables were matched with each school and entered into a Microsoft Excel spreadsheet (Appendix G). The names of the schools were changed to protect the identity of the school and school division. Following the matching of the data, statistics were completed for the entire data set as seen in Table 9. Pearson correlation coefficients were computed for the combinations of variables listed in Table 8. This chapter articulates the findings for each phase of data collection and analysis.

Table 9

Descriptive Statistics for VSSCWC, MAP Assessments, and SOL Assessments

Variable	N Count	Minimum	Maximum	Mean	Std. Dev.
VSSCWC	73	3.44	5.65	4.9819	0.40761
MAP Mathematics	73	-2.72	4.05	0.0207	1.17763
MAP Reading	73	-1.93	1.59	-0.3729	0.83457
SOL Mathematics	73	372.05	514.21	440.9146	25.74232
SOL Reading	73	374.08	487.67	442.6865	21.99114

Results from the Study

Table 10 displays the Pearson correlation coefficient calculated between each variable in the study.

Table 10

Correlations Between Variables

Variable		School Climate (VSSCWC)	Mathematics Growth (MAP)	Reading Growth (MAP)	Mathematics Benchmark (SOL)	Reading Benchmark (SOL)
School Climate (VSSCWC)	Pearson Correlation	1	.241*	.284*	.340**	.358**
	Sig. (2-tailed)		.040	.015	.003	.002
	N	73	73	73	73	73
Mathematics Growth (MAP)	Pearson Correlation	.241*	1	.506**	.301**	.208
	Sig. (2-tailed)	.040		<.001	.010	.077
	N	73	73	73	73	73
Reading Growth (MAP)	Pearson Correlation	.284*	.506**	1	.139	.113
	Sig. (2-tailed)	.015	<0.001		.240	.342
	N	73	73	73	73	73
Mathematics Benchmark (SOL)	Pearson Correlation	.340**	.301**	.139	1	.907**
	Sig. (2-tailed)	.003	.010	.240		<.001
	N	73	73	73	73	73
Reading Benchmark (SOL)	Pearson Correlation	.358**	.208	.113	.907**	1
	Sig.	.002	.077	.342	<0.001	

(2-tailed)					
N	73	73	73	73	73

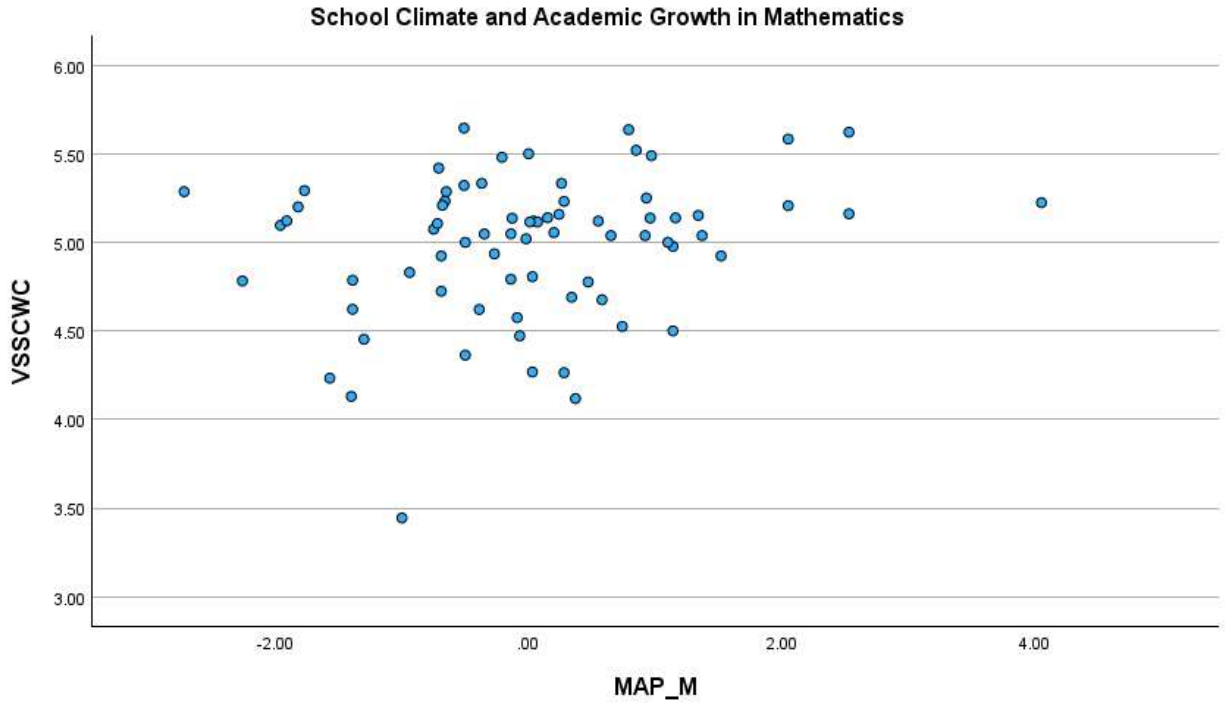
*. Correlation is significant at the .05 level (2-tailed).
**. Correlation is significant at the .01 level (2-tailed).

Result 1 and Analysis

There was a weak positive relationship between school climate and academic growth in mathematics. The Pearson correlation coefficient found between the VSSCWC and MAP mathematics assessment was .241, and the correlation was found to be statistically significant with a p-value of .040 (r = .241, p = .040). A correlation of .241 indicates a weak positive relationship between school climate and academic growth in mathematics (Turney, 2022). Figure 3 displays a scatterplot with academic growth in mathematics (MAP) on the x-axis and school climate (VSSCWC) on the y-axis. The plot illustrates the positive relationship.

Figure 3

School Climate (VSSCWC) and Academic Growth (MAP) in Mathematics

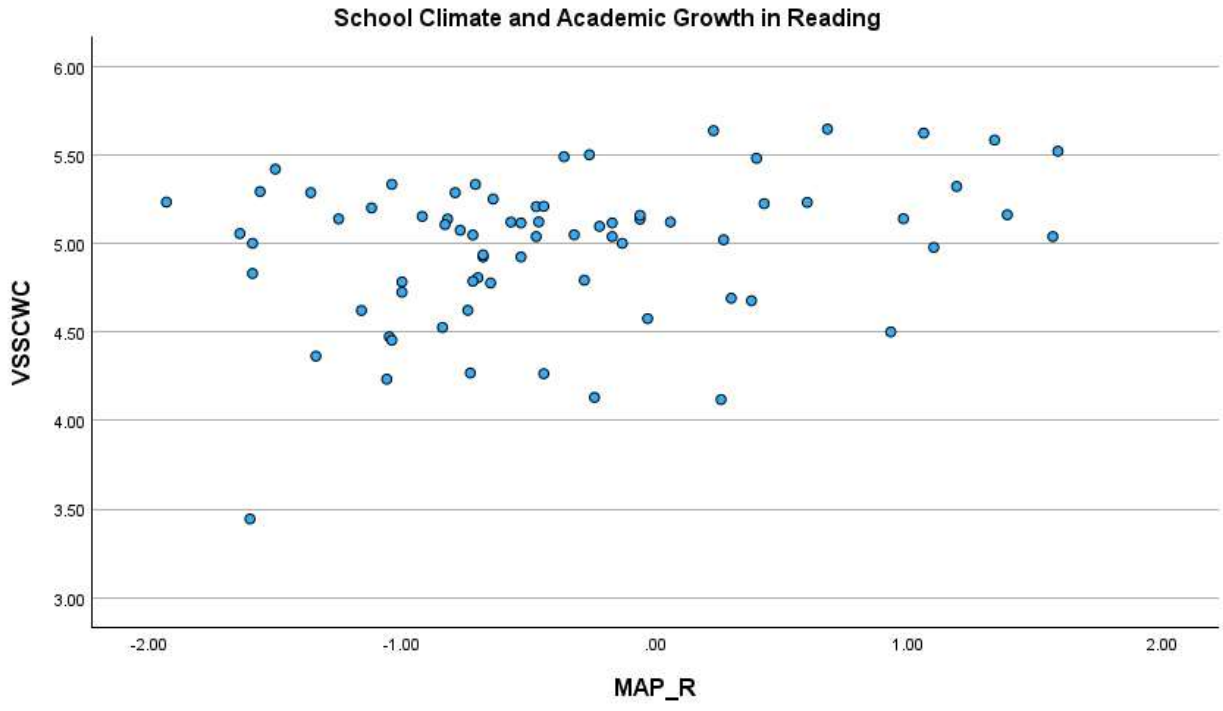


Result 2 and Analysis

There was a weak positive relationship between school climate and academic growth in reading. The Pearson correlation coefficient found between the VSSCWC and MAP reading assessment was .284, and the correlation was found to be statistically significant with a p-value of .015 ($r = .284$, $p = .015$). A correlation of .284 indicates a weak positive relationship between school climate and academic growth in reading (Turney, 2022). Figure 4 displays a scatterplot with academic growth in reading (MAP) on the x-axis and school climate (VSSCWC) on the y-axis. The plot shows a weak positive relationship.

Figure 4

School Climate (VSSCWC) and Academic Growth (MAP) in Reading

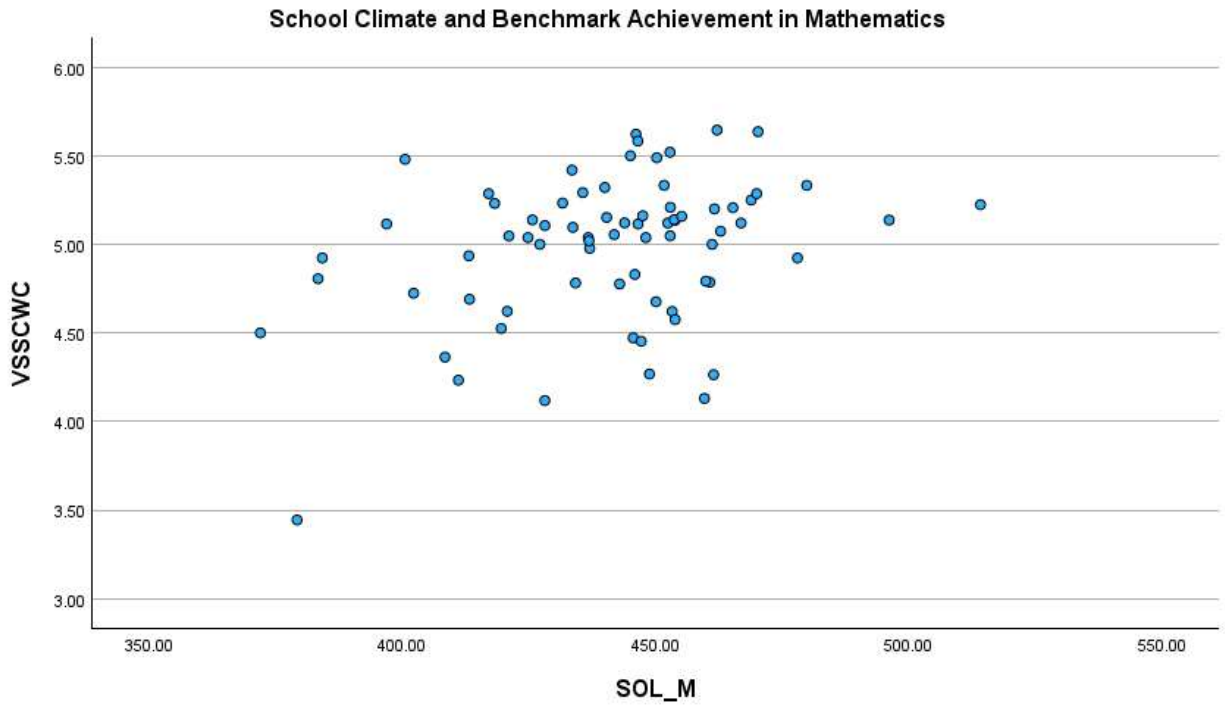


Result 3 and Analysis

There was a moderate positive relationship between school climate and benchmark achievement in mathematics. The Pearson correlation coefficient found between the VSSCWC and SOL mathematics assessment was .340, and the correlation was found to be statistically significant with a p-value of .003 (r = .340, p = .003). A correlation of .340 indicates a moderate positive relationship between school climate and benchmark achievement in mathematics (Turney, 2022). Figure 5 displays a scatterplot with benchmark achievement in mathematics (SOL) on the x-axis and school climate (VSSCWC) on the y-axis. The plot shows a moderate positive relationship.

Figure 5

School Climate (VSSCWC) and Benchmark Achievement (SOL) in Mathematics

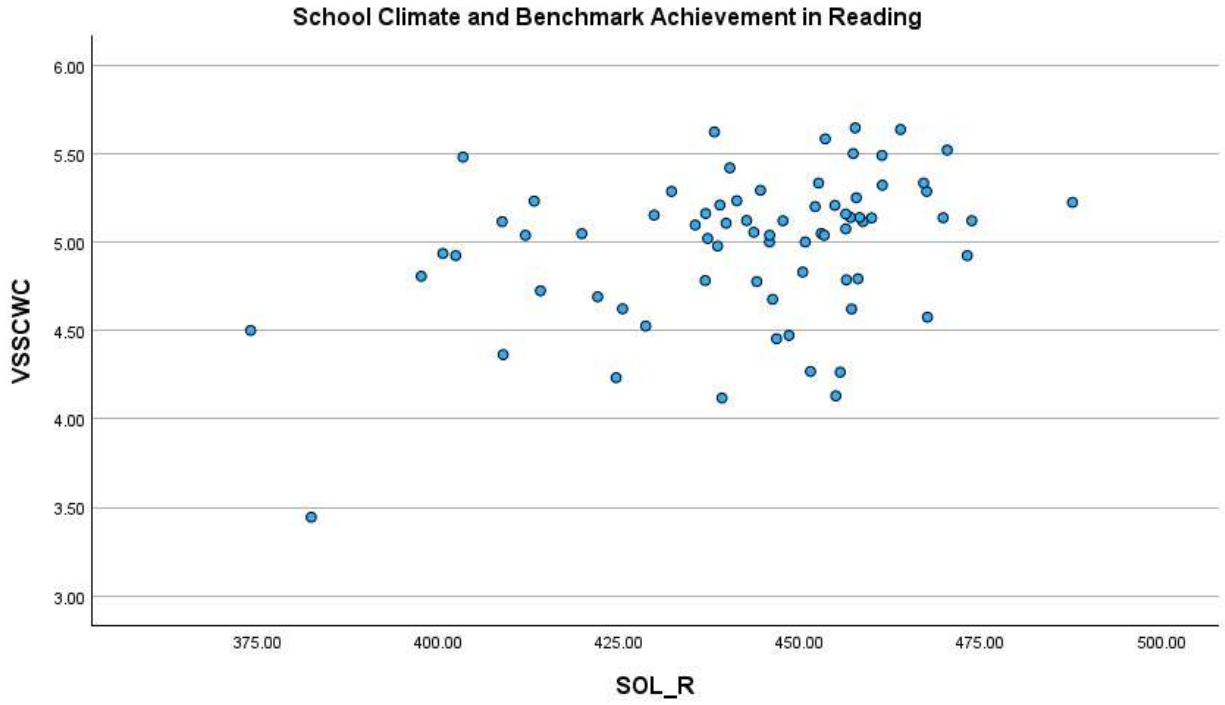


Result 4 and Analysis

There was a moderate positive relationship between school climate and benchmark achievement in reading. The Pearson correlation coefficient found between the VSSCWC and SOL reading assessment was .358, and the correlation was found to be statistically significant with a p-value of .002 (r = .358, p = .002). A correlation of .358 indicates a moderate positive relationship between school climate and benchmark achievement in reading (Turney, 2022). Figure 6 displays a scatterplot with benchmark achievement in reading (SOL) on the x-axis and school climate (VSSCWC) on the y-axis. The plot shows a moderate positive relationship.

Figure 6

School Climate (VSSCWC) and Benchmark Achievement (SOL) in Reading



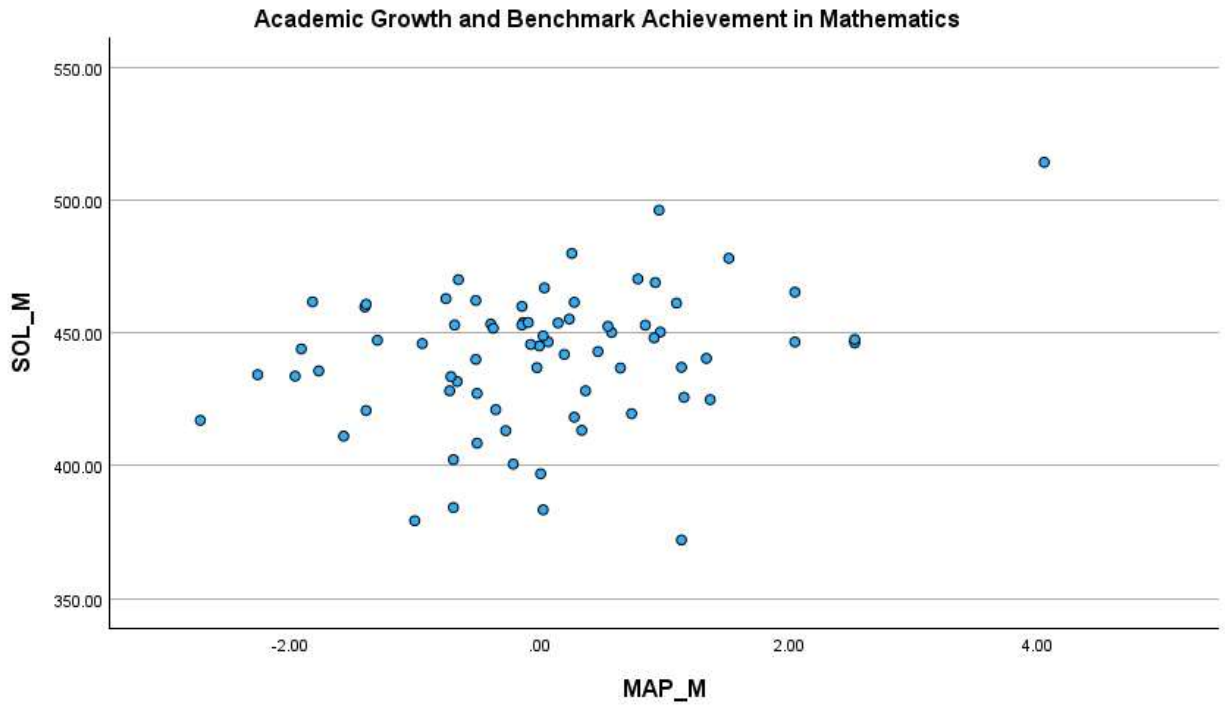
Result 5 and Analysis

There was a moderate positive relationship between academic growth in mathematics and benchmark achievement in mathematics. The Pearson correlation coefficient found between the

MAP mathematics assessment and SOL mathematics assessment was .301, and the correlation was found to be statistically significant with a p-value of .010 (r = .301, p = .010). A correlation of .301 indicates a moderate positive relationship between academic growth and benchmark achievement in mathematics (Turney, 2022). Figure 7 displays a scatterplot with academic growth in mathematics (MAP) on the x-axis and benchmark achievement in mathematics (SOL) on the y-axis. The plot shows a moderate positive relationship.

Figure 7

Academic Growth (MAP) and Benchmark Achievement (SOL) in Mathematics



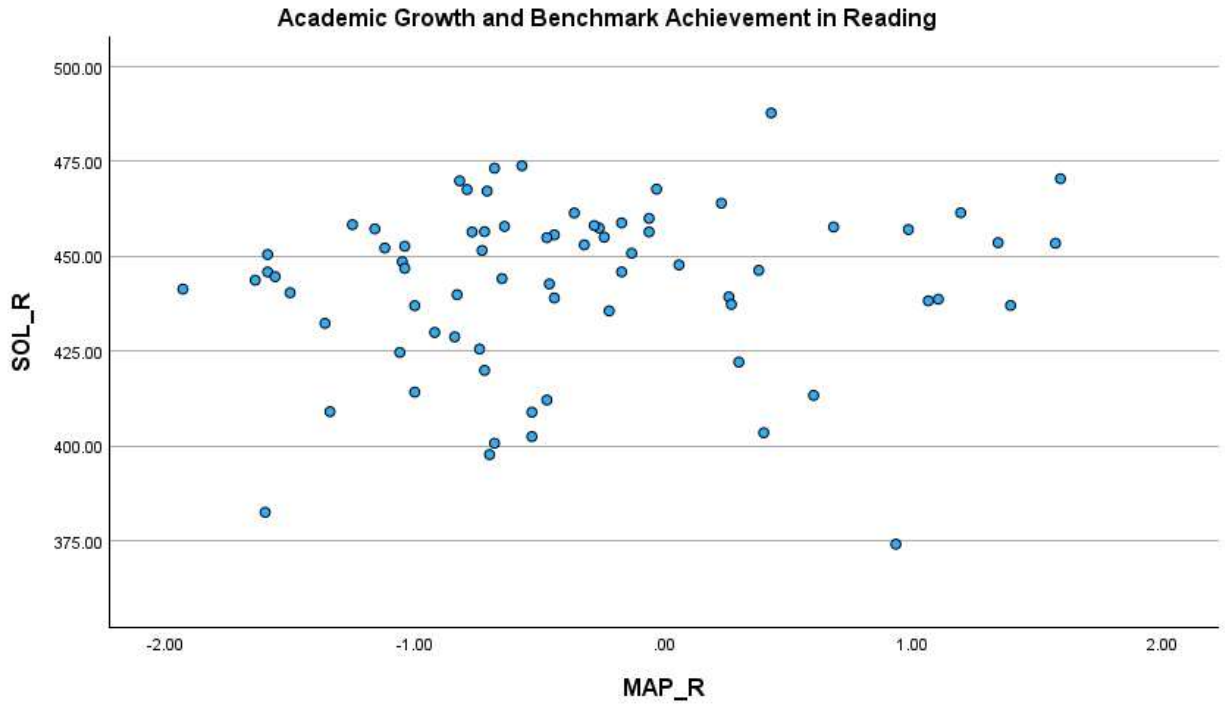
Result 6 and Analysis

There appeared not to be a relationship between academic growth in reading and benchmark achievement in reading. The Pearson correlation coefficient found between the MAP reading assessment and SOL reading assessment was .113, and the correlation was not found to be statistically significant (r = .113, p = .342). Therefore, while a correlation of .113 would

indicate a weak positive relationship (Turney, 2022), the lack of statistical significance of the result makes it difficult to conclude that there is a relationship between the two variables. Figure 8 displays a scatterplot with academic growth in reading (MAP) on the x-axis and benchmark achievement in reading (SOL) on the y-axis.

Figure 8

Academic Growth (MAP) and Benchmark Achievement (SOL) in Reading



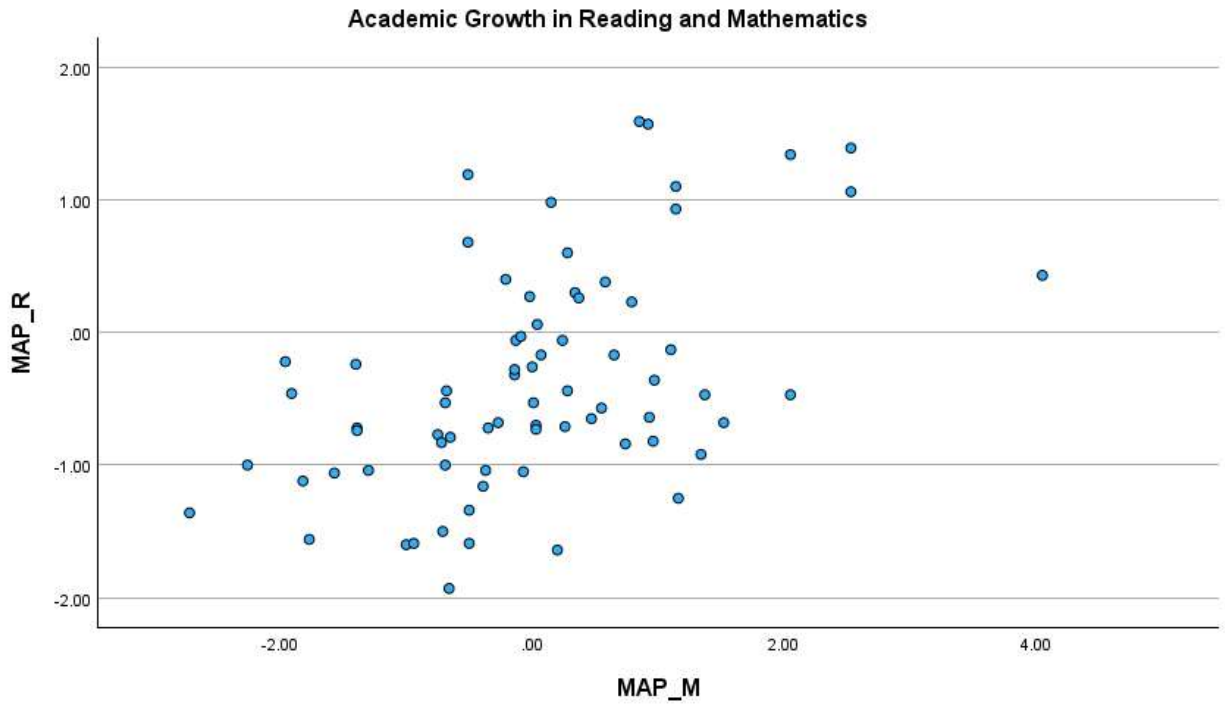
Result 7 and Analysis

There was a moderate positive relationship between academic growth in mathematics and academic growth in reading. The Pearson correlation coefficient found between the MAP mathematics assessment and the MAP reading assessment was .506, and the correlation was found to be statistically significant ($r = .506$, $p < .001$). A correlation of .506 indicates a moderate positive relationship between academic growth in mathematics and reading (Turney, 2022). Figure 9 displays a scatterplot with academic growth in mathematics (MAP) on the x-axis and

academic growth in reading (MAP) on the y-axis. The plot shows a moderate positive relationship.

Figure 9

Academic Growth (MAP) in Reading and Mathematics



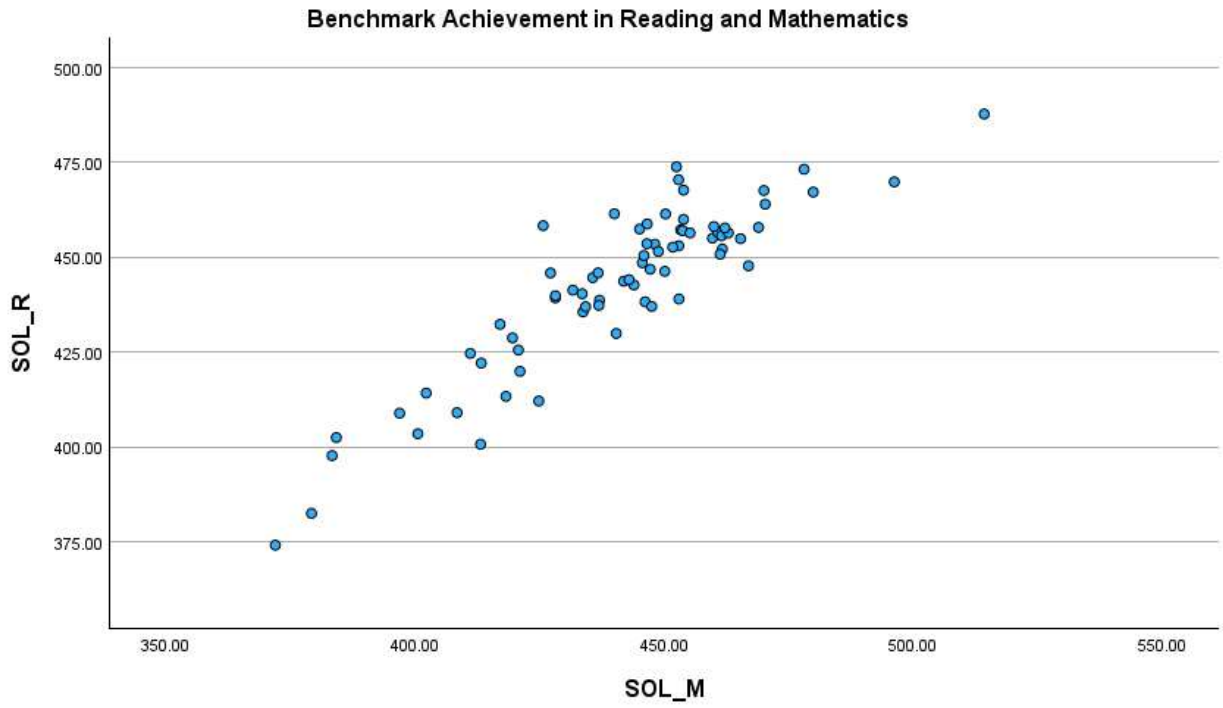
Result 8 and Analysis

There was a strong positive relationship between benchmark achievement in mathematics and benchmark achievement in reading. The Pearson correlation coefficient found between the SOL mathematics assessment and the SOL reading assessment was .907, and the correlation was found to be statistically significant ($r = .907$, $p < .001$). A correlation of .907 indicates a strong positive relationship between benchmark achievement in mathematics and reading (Turney, 2022). Figure 10 displays a scatterplot with benchmark achievement in mathematics (SOL) on

the x-axis and benchmark achievement in reading (SOL) on the y-axis. The plot shows a strong positive relationship.

Figure 10

Benchmark Achievement (SOL) in Reading and Mathematics



Comparison of the Relationships

This study sought to compare the strength and direction of the relationships among school climate, academic growth, and benchmark achievement. Comparing the correlation between variables can help better articulate the nature of the existing relationships. Understanding the nature of the relationships may help school leaders and policymakers better allocate resources and supports within elementary schools.

Result 9 and Analysis

The correlation between school climate and academic growth in mathematics was .241 (r = .241, p = .040). The correlation between school climate and benchmark achievement in

mathematics was .340 (r = .340, p = .003). There was a stronger positive relationship between school climate and benchmark achievement than between school climate and academic growth in mathematics.

Result 10 and Analysis

The correlation between school climate and academic growth in reading was .284 (r = .284, p = .015). The correlation between school climate and benchmark achievement in mathematics was 0.358 (r = .358, p = .002). There was a stronger positive relationship between school climate and benchmark achievement than between school climate and academic growth in reading.

Result 11 and Analysis

The correlation between school climate and academic growth in mathematics was .241 (r = .241, p = .040). The correlation between school climate and academic growth in reading was 0.284 (r = .284, p = .015). There was a stronger positive relationship between school climate and academic growth in reading than between school climate and academic growth in mathematics.

Result 12 and Analysis

The correlation between school climate and benchmark achievement in mathematics was .340 (r = .340, p = .003). The correlation between school climate and benchmark achievement in reading was .358 (r = .284, p = .002). There was a stronger positive relationship between school climate and benchmark achievement in reading than between school climate and benchmark achievement in mathematics.

Result 13 and Analysis

The correlation between academic growth and benchmark achievement in mathematics was .301 ($r = .301$, $p = .01$). The correlation between academic growth and benchmark achievement in reading was .113 ($r = .113$, $p = .342$), and this correlation was not statistically significant. There was a stronger positive relationship between academic growth and benchmark achievement in mathematics than academic growth and benchmark achievement in reading.

Result 14 and Analysis

The correlation between academic growth in mathematics and reading was .506 ($r = .506$, $p < .01$). The correlation between benchmark achievement in mathematics and reading was .907 ($r = .907$, $p < .001$). There was a stronger positive relationship between benchmark achievement in mathematics and reading than between academic growth in mathematics and reading.

Summary

The analysis of school climate, academic growth, and benchmark achievement data demonstrated relationships of varying strengths. Weak positive relationships were found between school climate and academic growth in mathematics, and school climate and academic growth in reading. Moderate positive relationships were found between school climate and benchmark achievement in mathematics, and school climate and benchmark achievement in reading. The relationships between school climate and benchmark achievement in both subject areas were stronger than the relationships between school climate and academic growth in both subject areas. There was a moderate positive relationship between academic growth and benchmark achievement in mathematics; however, there appears not to be a relationship between academic growth in reading and benchmark achievement in reading.

When comparing the relationships between school climate and individual subjects, school climate had a consistently stronger correlation with benchmark achievement than with academic

growth. The relationships between school climate and academic growth or benchmark achievement were consistently stronger between school climate and reading than school climate and mathematics. The comparison of the relationship between academic growth and benchmark achievement in mathematics versus reading indicated a stronger positive relationship in mathematics. Finally, there was a stronger positive relationship between benchmark achievement in mathematics and reading than academic growth in mathematics and reading.

Chapter 5: Discussion and Implications

The purpose of this study was to investigate relationships among school climate, academic growth, and benchmark achievement at the elementary school level in Virginia. School climate was quantified by the Virginia Survey of School Climate and Working Conditions (VSSCWC), academic growth was quantified by the Northwest Evaluation Association Measures of Academic Progress (MAP) in reading and mathematics, and benchmark achievement was quantified by the Virginia Standards of Learning (SOL) assessment in reading and mathematics. Correlations between school climate and academic growth, school climate and benchmark achievement, academic growth and benchmark achievement, academic growth in both subjects, and benchmark achievement in both subjects were examined to determine the strength of each relationship and compared as part of the analysis.

Research Question

The following research question was developed based on a review of the current literature about school climate and the limited literature about the relationships among school climate, academic growth, and benchmark achievement: What are the relationships, if any, among school climate, academic growth, and benchmark achievement among fourth grade students in three school divisions in Virginia for the 2022-2023 school year?

Review of Findings

1. There was a weak positive relationship between school climate and academic growth in mathematics.
2. There was a weak positive relationship between school climate and academic growth in reading.

3. There was a moderate positive relationship between school climate and benchmark achievement in mathematics.
4. There was a moderate positive relationship between school climate and benchmark achievement in reading.
5. There was a moderate positive relationship between academic growth in mathematics and benchmark achievement in mathematics.
6. There was no relationship between academic growth in reading and benchmark achievement in reading.
7. There was a moderate positive relationship between academic growth in mathematics and academic growth in reading.
8. There was a strong positive relationship between benchmark achievement in mathematics and benchmark achievement in reading.
9. There was a stronger positive relationship between school climate and benchmark achievement in mathematics than school climate and academic growth in mathematics.
10. There was a stronger positive relationship between school climate and benchmark achievement in reading than between school climate and academic growth in reading.
11. There was a stronger positive relationship between school climate and academic growth in reading than between school climate and academic growth in mathematics.
12. There was a stronger positive relationship between school climate and benchmark achievement in reading than between school climate and benchmark achievement in mathematics.

13. There was a stronger positive relationship between academic growth and benchmark achievement in mathematics than academic growth and benchmark achievement in reading.
14. There was a stronger positive relationship between benchmark achievement in mathematics and reading than between academic growth in mathematics and reading.

Discussion of Findings

The data were collected from 73 elementary schools within 3 different school divisions within Virginia. Results from the VSSCWC, NWEA MAP assessments in reading and mathematics, and SOL assessments in reading and mathematics were used to investigate the possible relationships among school climate, academic achievement, and benchmark achievement. Pearson correlation coefficients were calculated to investigate these possible relationships, and to compare their strength and direction. These findings may provide a more nuanced understanding of the relationships among school climate, academic growth, and benchmark achievement.

Finding 1

There was a weak positive relationship between school climate and academic growth in both mathematics and reading (Table 10).

In this study, the relationship between school climate (VSSCWC) and academic growth in mathematics (MAP) was best characterized as weak ($r = .241$, $p = .040$). The relationship between school climate (VSSCWC) and academic growth in reading (MAP) was similarly weak ($r = .284$, $p = .015$). Therefore, school climate does not appear to be strongly related to academic growth in either subject. No research reviewed investigated the relationship between school climate and academic growth in either subject area. This finding serves to build a

foundation of educational research that examines the relationships between school climate and academic growth in mathematics and reading.

Finding 2

There was a moderate positive relationship between school climate and benchmark achievement in both mathematics and reading (Table 10).

There was a moderate positive relationship between school climate (VSSCWC) and benchmark achievement in mathematics (SOL), $r = .340$, $p = .003$. A moderate positive relationship between school climate (VSSCWC) and benchmark achievement in reading (SOL) was also determined ($r = .358$, $p = .002$). This finding supports previous research that found a positive correlation between school climate and student achievement, most typically reported using measures of benchmark achievement (Capp et al., 2020; Chirkina & Khavenson, 2018; Dias & Barroso, 2020; Jones & Schindler, 2016; MacNeil et al., 2009; Maxwell et al., 2017; Schweig et al., 2019; Sherblom et al., 2006; Wang & Degol, 2016).

Finding 3

There was a moderate positive relationship between academic growth in mathematics and benchmark achievement in mathematics (Table 10).

The relationship between academic growth in mathematics (MAP) and benchmark achievement in mathematics (SOL) was moderate and positive ($r = .301$, $p = .010$). This relationship is to be expected, as the greater growth students exhibit in their knowledge of mathematics, the more likely they are to perform well on a benchmark assessment. The moderate nature of this relationship is likely because a student has the ability to demonstrate academic growth on the MAP assessment as the difficulty level of the mathematics content increases while

still failing to demonstrate proficiency with grade level mathematics content on the SOL assessment.

Finding 4

There was no relationship between academic growth in reading and benchmark achievement in reading (Table 10).

No statistically significant relationship was found between academic growth in reading (MAP) and benchmark achievement in reading (SOL), $r = .113$, $p = .342$. This lack of relationship could be attributed to the readability of the SOL assessment as compared to the MAP assessment. The MAP assessment presents different passages of different Lexile reading levels with the goal of determining an overall Lexile range for each student, thereby making the assessment accessible to students of all reading levels (NWEA MAP, 2022). In contrast, the SOL assessment is a benchmark assessment that is written at a readability level for each respective grade level, and each version of the assessment is reviewed by Virginia teachers, administrators, and content specialists to ensure that these assessments accurately and reliably assess students' knowledge (VDOE, 2022a). The inaccessibility of a reading passage that is far above a student's reading level would lead to poor performance on the SOL assessment in reading as compared to the potential for a student to show academic growth on the reading MAP assessment as they gain more literacy skills over the course of a school year.

Finding 5

There was a moderate positive relationship between academic growth in mathematics and academic growth in reading (Table 10).

A Pearson correlation of r = .506 ($p < .001$) was found between academic growth in mathematics and academic growth in reading, both measured by the MAP assessment. Little et

al. (2021) found that differences in growth rates were greater in early elementary school for reading than for mathematics, but students showed more individual differences in growth in mathematics than reading in third through fifth grades. This demonstrated difference in subject area-specific growth may explain the moderate positive correlation found in this study of students in Grade 4. Additionally, Grimm (2008) found that students who are proficient readers tend to be proficient in mathematics. This could explain why there was a moderate but not strong relationship between academic growth in both subject areas.

Finding 6

There was a strong positive relationship between benchmark achievement in mathematics and benchmark achievement in reading (Table 10).

A very strong relationship ($r = .907$, $p < .001$) was found between benchmark achievement in mathematics and benchmark achievement in reading, both of which were measured by the SOL assessment. Students' successful performance on the reading SOL assessment indicates that they can successfully decode and comprehend academic content written at a fourth grade reading level. The readability of a mathematics assessment can impact students' performance, especially students who are already struggling (Walkington et al., 2018). Thus, the readability of the mathematics SOL assessment could potentially impact students' performance on the assessment. Additionally, Grimm (2008) found that reading comprehension was a positive significant predictor of mathematics achievement; thus, proficient performance on the reading SOL assessment would be associated with proficient performance on the mathematics SOL assessment.

Finding 7

There was a stronger positive relationship between school climate and benchmark achievement in mathematics than school climate and academic growth in mathematics (Table 10).

There was a stronger positive relationship between school climate and benchmark achievement ($r = .340$, $p = .003$) than school climate and academic growth ($r = .241$, $p = .040$) in mathematics, as measured by the VSSCWC, SOL assessment, and MAP assessment, respectively. The moderate positive correlation between school climate and benchmark achievement in mathematics was previously documented by Sherblom at el. (2006) and Smith and Shouppe (2018). No research reviewed articulated the relationship between school climate and academic growth in mathematics. The stronger positive relationship between school climate and benchmark achievement in mathematics aligns with the existing literature. This finding serves to address gaps in the literature regarding relationships among school climate, academic growth, and benchmark achievement.

Finding 8

There was a stronger positive relationship between school climate and benchmark achievement in reading than between school climate and academic growth in reading (Table 10).

There was a stronger positive relationship between school climate and benchmark achievement ($r = .358$, $p = .002$) than school climate and academic growth in reading ($r = .284$, $p = .015$), as measured by the VSSCWC, SOL assessment, and MAP assessment, respectively. The moderate positive correlation between school climate and benchmark achievement in reading was previously documented by Sherblom at el. (2006) and Smith and Shouppe (2018). No research reviewed articulated the relationship between school climate and academic growth in

reading. The stronger positive relationship between school climate and benchmark achievement in reading aligns with the existing literature. This finding serves to fill in the gaps in the literature regarding relationships among school climate, academic growth, and benchmark achievement.

Finding 9

There was a stronger positive relationship between school climate and academic growth in reading than between school climate and academic growth in mathematics (Table 10).

There was a stronger positive relationship between school climate and academic growth in reading ($r = .284$, $p = .015$) than between school climate and academic growth in mathematics ($r = .241$, $p = .040$), as measured by the VSSCWC and MAP assessment. No research reviewed articulated the relationship between school climate and academic growth in either subject area. This finding serves to fill in the gaps in the literature regarding relationships among school climate and academic growth.

Finding 10

There was a stronger positive relationship between school climate and benchmark achievement in reading than between school climate and benchmark achievement in mathematics (Table 10).

There was a stronger positive relationship between school climate and benchmark achievement in reading ($r = .358$, $p = .002$) than between school climate and benchmark achievement in mathematics ($r = .340$, $p = .003$), as measured by the VSSCWC and SOL assessment, respectively. The moderate positive correlation between school climate and benchmark achievement in reading and mathematics were previously demonstrated by Sherblom et al. (2006) and Smith and Shouppe (2018). Smith and Shouppe documented that the

relationships were stronger between school climate and benchmark achievement in reading than in mathematics, which is confirmed by this study.

Finding 11

There was a stronger positive relationship between academic growth and benchmark achievement in mathematics than academic growth and benchmark achievement in reading (Table 10).

There was a stronger positive relationship between academic growth and benchmark achievement in mathematics ($r = .301$, $p = .01$) than academic growth and benchmark achievement in reading ($r = .113$, $p = .342$), as measured by the MAP and SOL assessments, respectively. No literature reviewed compared the strength and direction of these relationships. This finding serves to fill in the gaps in the literature regarding the strength and direction of the relationship between academic growth and benchmark achievement in mathematics as compared to academic growth and benchmark achievement in reading.

Within the subject of mathematics, a student could demonstrate academic growth on the MAP assessment as the difficulty level of the mathematics content increases while still potentially failing to demonstrate proficiency with grade level mathematics content on the SOL assessment. The stronger relationship between academic growth and benchmark achievement in mathematics may be explained by Parker Waller & Flood's 2016 finding that mathematics content tends to transcend barriers like reading level and English language level, especially among struggling students. Thus, a student who is not yet reading with grade-level proficiency or is not yet a proficient English-speaker still has the potential to perform well on a grade level mathematics benchmark assessment in addition to showing academic growth in mathematics.

Finding 12

There was a stronger positive relationship between benchmark achievement in mathematics and reading than between academic growth in mathematics and reading (Table 10).

There was a stronger positive relationship between benchmark achievement in mathematics and reading ($r = .907$, $p < .001$) than between academic growth in mathematics and reading ($r = .506$, $p < .01$), as measured by the SOL and MAP assessments. The comparatively stronger relationship between benchmark achievement in mathematics and reading may be explained by the readability factor of the assessment (Walkington et al., 2018) and the fact that students who are proficient readers tend to be proficient in mathematics (Grimm, 2008). No literature reviewed compared the strength and direction of the relationship between benchmark achievement in both subject areas with the relationship between academic growth in both subject areas. This finding provides added information that school climate and benchmark achievement have a stronger relationship than school climate and academic growth, relationships that had not previously been compared.

Practitioner Implications

The positive relationship between school climate and benchmark achievement is well-documented in previous research (Capp et al., 2020; Chirkina & Khavenson, 2018; Dias & Barroso, 2020; Jones & Schindler, 2016; MacNeil et al., 2009; Maxwell et al., 2017; Schweig et al., 2019; Sherblom et al., 2006; Wang & Degol, 2016). The current study's results support these publications. It is thus incumbent upon school leaders to ensure that their school workplaces are positive. Likewise, educators of all levels must work to create a positive environment within their locus of control, whether that is at the classroom-level, the school-level, or the division-level.

One implication of this study is that school leaders should continually monitor school climate in order to make timely changes to support a positive school climate. Finding 2 reveals the moderate positive relationship between school climate and benchmark achievement in mathematics and reading. Given this relationship, it is imperative for school leaders to foster and maintain a positive school climate. Additionally, school leaders should plan and implement professional learning for staff to support them in creating positive classroom climates using the analysis of school climate data.

Schools and school leaders should seek ways to promote a growth mindset among teachers and students regarding the mastery of mathematics content. School climate and both academic growth and benchmark achievement in reading are more strongly positively correlated than school climate and academic growth and benchmark achievement in mathematics (Findings 9 and 10). Finding 5 indicated a moderate positive relationship between academic growth in mathematics and academic growth in reading. Intentionally encouraging a growth mindset specifically around learning mathematics may stimulate academic growth in this subject area.

The lack of a strong relationship between academic growth and benchmark achievement should cause practitioners to consider eliminating the assessment of academic growth. There was no relationship between academic growth and benchmark achievement in reading (Finding 4), and only a moderate positive relationship between academic growth and benchmark achievement in mathematics (Finding 3). There was a stronger positive relationship between school climate and benchmark achievement in both reading and mathematics than between school climate and academic growth (Findings 7 and 8). The stronger positive relationship between academic growth and benchmark achievement in mathematics articulated in Finding 11, and the overall stronger positive relationship between benchmark achievement in both subjects, as opposed to

academic growth in both subjects (Finding 12), indicate that it may not be necessary to assess both benchmark achievement and academic growth. Since the assessment of benchmark achievement is required, and there is little relationship between benchmark achievement and academic growth, practitioners should consider eliminating the use of academic growth assessments.

Finding 6 indicated a strong positive relationship between benchmark achievement in mathematics and benchmark achievement in reading. Thus, school leaders should ensure that students are performing at or above grade level in reading by the end of Grade 4 to make certain that they have the literacy skills necessary to access the text on the Grade 4 Mathematics SOL and other end-of-year benchmark assessments. While reading at or above grade level does not guarantee performing well on the Grade 4 Mathematics SOL assessment, a student's ability to read the text on a mathematics assessment does eliminate a potential barrier to their performance.

Policy Implications

Policymakers at the local, state, and federal levels should require the administration of staff school climate surveys. The results of this study substantiated those of existing studies that also found a positive relationship between school climate and student achievement as measured by benchmark achievement (Capp et al., 2020; Chirkina & Khavenson, 2018; Dias & Barroso, 2020; Jones & Schindler, 2016; MacNeil et al., 2009; Maxwell et al., 2017; Schweig et al., 2019; Sherblom et al., 2006; Wang & Degol, 2016). The results of school climate surveys should be monitored by policymakers at all levels to ensure that proper supports are allocated to schools and school divisions. Additionally, given the relationship between school climate and student achievement articulated in Finding 2, policymakers could consider using school climate as a measure of state and federal accountability.

A dearth of research had examined the relationship between school climate and academic growth at the time of this study. While this study did not find a statistically significant relationship between the two variables, other findings do have implications for policymakers. Finding 4 revealed no statistically significant relationship between academic growth and benchmark achievement in reading. It would make sense that there would be a positive relationship between academic growth and benchmark achievement in that as students become stronger readers, they are more likely to score well on a benchmark assessment. The lack of any relationship between these variables, as articulated in Finding 4, indicates a potential mismatch between skills that indicate growth versus what is being tested on benchmark assessments, and this should be further explored by policymakers.

Conclusion

This study contributes to the existing research on the relationships between school climate and benchmark achievement, and it is one of a few that has examined the relationships between school climate and academic growth. Some of the findings served to substantiate existing research, while others filled in gaps in the literature.

Finding 1 indicated that there was a weak positive relationship between school climate and academic growth in mathematics, and school climate and academic growth in reading. This positive relationship was stronger in reading, though the relationship is still characterized as weak overall. Finding 2, the existence of a positive relationship between school climate and benchmark achievement in both mathematics and reading, was anticipated, and is supported by the review of literature (Capp et al., 2020; Chirkina & Khavenson, 2018; Dias & Barroso, 2020; Jones & Schindler, 2016; MacNeil et al., 2009; Maxwell et al., 2017; Schweig et al., 2019; Sherblom et al., 2006; Wang & Degol, 2016).

Some of the findings seemed counterintuitive while others were clearly related. Finding 3 revealed a moderate positive relationship between academic growth in mathematics and benchmark achievement in mathematics; however, Finding 4 found no relationship between academic growth in reading and benchmark achievement in reading. It is curious that there was a relationship between academic growth and benchmark achievement in one subject, but not the other. Finding 5 showed a moderate positive relationship between academic growth in mathematics and academic growth in reading, and Finding 6 indicated a strong positive relationship between benchmark achievement in mathematics and benchmark achievement in reading.

Comparing the strength and direction of the relationships revealed similar patterns. School climate was consistently more strongly and positively related to benchmark achievement in both subjects than academic growth, as indicated in Findings 7 and 8. The positive relationship between school climate and both academic growth (Finding 9) and benchmark achievement (Finding 10) was stronger in reading than in mathematics.

When comparing the strength and direction of the relationships between academic growth and benchmark achievement within subjects, Finding 11 revealed a stronger positive relationship between academic growth and benchmark achievement in mathematics than academic growth and benchmark achievement in reading. However, when comparing the relationship between benchmark achievement in both subjects and the relationship between academic growth in both subjects, Finding 12 indicated a stronger positive relationship in benchmark achievement than academic growth.

Recommendations for Further Research

Educational research on the relationships among school climate, academic growth, and benchmark achievement is lacking. While this study contributes to that body of research, further research is necessary to ensure that these relationships and their implications are fully understood. One recommendation involves investigating the relationship between other elements of the VSSCWC and academic growth. This study used only one question from the VSSCWC, a question that yielded an overall measure of school climate. The investigation of the relationship between other questions on the VSSCWC and academic growth may yield a different understanding of the strength of the relationship between school climate and academic growth.

Another area for further research is investigating the relationships among school climate, academic growth, and benchmark achievement using other instruments designed to measure one or more of these variables. While this study substantiates the existing data regarding the documented positive relationship between school climate and benchmark achievement (Capp et al., 2020; Chirkina & Khavenson, 2018; Dias & Barroso, 2020; Jones & Schindler, 2016; MacNeil et al., 2009; Maxwell et al., 2017; Schweig et al., 2019; Sherblom et al., 2006; Wang & Degol, 2016), further study would benefit from more data to better understand these relationships. The use of different instruments to measure each of these variables would further add to the body of research.

Finally, this study should be replicated with a more diverse sample. Of the 73 schools included in this study, 58 of them were within the same school division. Many of these schools report similar student demographics. Thus, a more diverse sample may reveal nuances in the relationship between school climate and academic growth. In addition to engaging a more diverse sample, researchers are encouraged to include other grade levels and schools beyond the Commonwealth of Virginia.

References

Anderson, C. J. (2019). A leader's emotional self-control and management of others impacts a school's climate. *Journal of Invitational Theory and Practice, 25*, 39-57.

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/10.2307/1170423

Argyris, C. (1958). Some problems in conceptualizing organizational climate: A case study of a bank. *Administrative Science Quarterly, 2*(4)*,* 501-520. https://doi.org/10.2307/2390797

Ashforth, B. E. (1985). Climate formation: Issues and extensions. *Academy of Management Review, 10*(4), 837-837. https://doi.org/10.2307/258051

Ashkanasy, N. M., Wilderom, C. P., & Peterson, M. F. (2000). *Handbook of organizational culture and climate.* Sage.

Barile, J. P., Donohue, D. K., Anthony, E. R., Baker, A. M., Weaver, S. R., & Henrich, C. C. (2012). Teacher–student relationship climate and school outcomes: Implications for educational policy initiatives. *Journal of Youth and Adolescence, 41*(3), 256–267. https://doi.org/10.1007/s10964-011-9652-8

Bear, G., Yang, C., Harris, A., Mantz, L., Hearn, S., & Boyer, D. (2016). *Technical manual for the Delaware school survey: Scales of school climate; bullying victimization; student engagement; positive, punitive, and social emotional learning techniques; and social and emotional competencies.* University of Delaware and Delaware Department of Education. https://wh1.oet.udel.edu/pbs/wp-content/uploads/2011/12/Delaware-School-Survey-Technical-Manual-Fall-2016.pdf

Benner, A. D., Graham, S., & Mistry, R. S. (2008). Discerning direct and mediated effects of

ecological structures and processes on adolescents' educational outcomes. *Developmental Psychology, 44*(3), 840-854. https://doi.org/10.1037/0012-1649.44.3.840

Berkowitz, R., Moore, H., Astor, R. A., & Benbenishty, R. (2017). A research synthesis of the associations between socioeconomic background, inequality, school climate, and academic achievement. *Review of Educational Research, 87*(2), 425-269. https://doi.org/10.3102/0034654316669821

Bhandari, P. (2022). *Correlation vs. causation: Difference, design, and examples*. Scribbr. https://www.scribbr.com/methodology/correlation-vs-causation/

Bottiani, J. H., Lindstrom Johnson, S. McDaniel, H. L., & Bradshaw, C. P. (2020). Triangulating school climate: Areas of convergence and divergence across multiple levels and perspectives, *American Journal of Community Psychology, 65*(3-4), 423-436. https://doi.org/10.1002/ajcp.12410

Brookover, W. B., Schweitzer, J. H., Schneider, J. M., Beady, C. H., Flood, P. K., & Wisenbaker, J. M. (1978). Elementary school climate and school achievement. *American Educational Research Journal, 15*(2), 301-318. https://doi.org/10.3102/00028312015002301

Bryan, J., Moore-Thomas, C., Gaenzle, S., Kim, J., Lin, C. H., & Na, G. (2012). The effects of school bonding on high school seniors' academic achievement. *Journal of Counseling & Development, 90*(4), 467–480. https://doi.org/10.1002/j.1556-6676.2012.00058.x

Burns, G. J., & Martin, B. N. (2010). Examination of the effectiveness of male and female educational leaders who made use of the invitational leadership style of leadership. *Journal of Invitational Theory and Practice, 16*, 30-56. https://doi.org/10.26522/jitp.v16i.3783

Capp, G., Astor, R. A., & Gilreath, T. (2020). School staff members in California: How perceptions of school climate are related to perceptions of student risk and well-being. *Journal of the Society for Social Work and Research, 11*(3), 415-442. https://doi.org/10.1086/710974

Catalano, R. F., Haggerty, K. P., Oesterle, S., Fleming, C. B., & Hawkins J. D. (2004). The importance of bonding to school for healthy development: Findings from the social development research group. *Journal of School Health, 74*(7), 252-261. https://doi.org/10.1111/j.1746-1561.2004.tb08281.x

Chen, S. (2018). Influence of functional and relational perspectives of distributed leadership on instructional change and school climate. *The Elementary School Journal, 119*(2), 298-326. https://doi.org/10.1086/700279

Chirkina, T. A., & Khavenson, T. E. (2018). School climate: A history of the concept and approaches to defining and measuring it on PISA questionnaires. *Russian Education & Society, 60*(2), 133-160. https://doi.org/10.1080/10609393.2018.1451189

Cohen, J. (2006). Social, emotional, ethical, and academic education: Creating a climate of learning, participation in democracy, and well-being. *Harvard Educational Review, 76*(2), 201-237. https://doi.org/10.17763/haer.76.2.j44854x1524644vn

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

Coleman, J. S., Campbell, E. Q., Hobson, C. F., McPartland, J., & Mood, A. M. (1966).

Equality of Educational Opportunity (Summary Report). U.S. Department of Health, Education, and Welfare, Office of Education. https://files.eric.ed.gov/fulltext/ED012275.pdf

Coleman, J. S., Hoffer, T., & Kilgore, S. (1982). Cognitive outcomes in public and private schools. *Sociology of Education, 55*(2), 65-76. https://doi.org/10.2307/2112288

Creswell, J. W. & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). Sage.

Dias, D., & Barroso, R. (2020, June). *When it rains while the sun is shining: School climate as an echo of the (future) social climate* [Paper presentation]. International Conference on Education and New Developments 2020, 344-348. https://doi.org/10.36315/2020end073

Dincer, B. (2021). Investigating school climate perceptions and school motivations of middle school students. *International Journal of Educational Methodology, 7*(2), 361-372. https://doi.org/10.12973/ijem.7.2.361

Douglas-McNab, E. (2013, February 22). Achievement vs. growth: What K-12 talent managers need to know. *Education Week.* https://www.edweek.org/leadership/opinion-achievement-vs-growth-what-k-12-talent-managers-need-to-know/2013/02

Dunn, R. J., & Harris, L. G. (1998). Organizational dimensions of climate and the impact on school achievement. *Journal of Instructional Psychology, 25*(2), 100-114.

Ellis, T. (1988). School climate. *National Association of Elementary School Principals, 4*(2), 1-5.

Eugene, D. R., Blalock, C., Robinson, E. D., & Crutchfield, J. (2022). The moderating effect of COVID-19 stress on school racial climate and parent and child mental well-being.

Children and Youth Services Review, 139, 1-10. https://doi.org/10.1016/j.childyouth.2022.106572

Forehand, G. A., & Gilmer, B. V. H. (1964). Environmental variation in studies of organizational behavior. *Organizational Behavior, 62*(6), 361-382. https://doi.org/10.1037/h0045960

Freiberg, H. J. (1999). School climate: Measuring, improving and sustaining healthy learning *environments.* Falmer Press.

Georgopoulos, B. (1965). Normative structure variables and organizational behavior. *Human Relations, 18*(2), 155-169. https://doi.org/10.1177/001872676501800205

Glick, W. H. (1985). Conceptualizing and measuring organizational and psychological climate: Pitfalls in multilevel research. *Academic of Management Review, 10*(3), 601-616. https://doi.org/10.2307/258140

Goleman, D. (2006). The socially intelligent leader. *Educational Leadership, 64*(1), 76-81. http://www.ascd.org/publications/educationalleadership/sept06/vol64/num01/toc.aspx

Grimm, K.J. (2008). Longitudinal associations between reading and mathematics achievement. *Developmental Neuropsychology, 33*(3), 410-426. https://doi.org/10.1080/87565640801982486

Gruenert, S. (2008). School culture, school climate: They are not the same thing. *Principal,* 56-59. https://www.naesp.org/sites/default/files/resources/2/Principal/2008/M-Ap56.pdf

Gruenert, S. & Whitaker, T. (2015). *School culture rewired: How to define, assess, and transform it.* ASCD.

Halpin, A. W., & Croft, D. B. (1963). *The organizational climate of schools.* Midwest Administration Center of the University of Chicago.

Hamre, B. K., & Pianta, R. C. (2005). Can instructional and emotional support in the first-grade classroom make a difference for children at risk of school failure? *Child Development, 76*(5), 949–967. https://doi.org/10.1111/j.1467-8624.2005.00889.x

Herman, J. L., Osmundson, E., & Dietel, R. (2010). *Benchmark assessments for improved learning* (AACC Policy Brief). Assessment and Accountability Comprehensive Center. https://files.eric.ed.gov/fulltext/ED524108.pdf

Howell, D. C. (2011). *Statistical methods for psychology* (8th ed.). Wadsworth.

Hoy, W. K. (1990). Organizational climate and culture: A conceptual analysis of the school workplace. *Journal of Educational and Psychological Consultation, 1*(2), 149–168. https://doi.org/10.1207/s1532768xjepc0102_4

Hoy, W. K., & Hannum, J. W. (1997). Middle school climate: An empirical assessment of organizational health and student achievement, *Educational Administration Quarterly, 33*(3), 290-311. https://doi.org/10.1177/0013161X97033003003

Hughes, J., & Kwok, O. M. (2007). Influence of student-teacher and parent teacher relationships on lower achieving readers' engagement and achievement in the primary grades. *Journal of Educational Psychology, 99*(1), 39–51. https://doi.org/10.1037/0022-0663.99.1.39

Jansen, D. (2022). *Research limitations and delimitations.* Grad Coach. https://gradcoach.com/research-limitations-vs-delimitations/#:~:text=Limitations%20reflect%20the%20shortcomings%20of%20your%20study%2C%20based%20on%20practical,research%20aims%20and%20research%20questions

Johnson, B., & Stevens, J. J. (2006). Student achievement and elementary teachers' perceptions

of school climate. *Learning Environments Research, 9*(2), 111-122. https://doi.org/10.1007/s10984-006-9007-7

Jones, A., & Shindler, J. (2016). Exploring the school climate–student achievement connection: Making sense of why the first precedes the second. *Educational Leadership and Administration: Teaching and Program Development*, *27*, 35-51.

Kane, L., Hoff, N., Cathcart, A., Heifner, A., Palmon, S., & Peterson, R. L. (2016, February). *School climate and culture* [Strategy brief]. Student Engagement Project, University of Nebraska-Lincoln and the Nebraska Department of Education. https://k12engagement.unl.edu/strategy-briefs/School%20Climate%20&%20Culture%202-6-16%20.pdf

Katz, D., & Kahn, R. L. (1978). *The social psychology of organizations.* New York: Wiley.

Konold, T., Cornell, D., Jia, Y., & Malone, M. (2018). School climate, student engagement, and academic achievement: A latent variable, multilevel multi-informant examination. *AERA Open, 4*(4), 1-17. https://doi.org/10.1177/2332858418815661

Košir, K., & Tement, S. (2014). Teacher–student relationship and academic achievement: A cross-lagged longitudinal study on three different age groups. *European Journal of Psychology of Education, 29*(3), 409–428. https://doi.org/10.1007/s10212-013-0205-2

Kozlowski, S. W. J., & Klein, K. J. (2000). A multilevel approach to theory and research in organizations: Contextual, temporal, and emergent processes. In Klein, K. J., & Kozlowski, S. W. J., Eds., *Multilevel theory, research, and methods in organizations: Foundations, extensions, and new directions.* Jossey-Bass.

Kreft, I. G. G. (1990). Using multilevel analysis to assess school effectiveness: A study of Dutch

secondary schools. *Sociology of Education, 66*(2), 104-129. https://doi.org/10.2307/2112796

Kundu, K. (2007). Development of the conceptual framework of organizational climate. *Vidyasagar University Journal of Commerce, 12*, 99-108. http://inet.vidyasagar.ac.in:8080/jspui/handle/123456789/964

Lee, E., Reynolds, K. J., Subasic, E., Bromhead, D., Lin, H., & Marinov, V. (2017). Development of a dual school climate and school identification measure-student (SCASIM-St). *Contemporary Educational Psychology, 49*, 91-106. https://doi.org/10.1016/j.cedpsych.2017.01.003

Lee, V. E., & Smith, J. B. (1999). Social support and achievement for young adolescents in Chicago: The role of school academic press. *American Educational Research Journal,* 36(4)*,* 907-945. https://doi.org/10.3102/00028312036004907

Leithwood, K., Mascall, B., & Strauss, T. (2009). *Distributed leadership according to the evidence.* Routledge.

Lewin, K., Lippitt, R., & White, R. K. (1939). Patterns of aggressive behavior in experimentally created "social climates." *The Journal of Social Psychology, 10*(2), 271-299. https://doi.org/10.1080/00224545.1939.9713366

Lewno-Dumdie, B. M., Mason, B. A., Hajovsky, D. B., & Villeneuve, E. F. (2020). Student-report measures of school climate: A dimensional review. *School Mental Health, 12*(1), 1-21. https://doi.org/10.1007/s12310-019-09340-2

Little, C. W., Lonigan, C. J., & Phillips, B. M. (2021). Differential patterns of growth in reading and math skills during elementary school. *Journal of Educational Psychology, 113*(3), 462-476. https://doi.org/10.1037/edu0000635

Likert, R., & Bowers, D. G. (1969). Organizational theory and human resource accounting. *American Psychologist, 24*(6), 585–592. https://doi.org/10.1037/h0028020

Litwin, G., & Stringer, T. (1968). *Motivation and organizational climate.* Harvard University Press.

Loukas, A. (2007). What is school climate? *Leadership Compass, 5*(1). http://www.naesp.org/resources/2/Leadership_Compass/2007/LC2007v5n1a4.pdf

MacNeil, A. J., Prater, D. L., & Busch, S. (2009). The effects of school culture and climate on student achievement. *International Journal of Leadership in Education, 12*(1), 73-84. https://doi.org/10.1080/13603120701576241

Matthews, K. M., & Brown, C. L. (1976). The principal's influence on student achievement. *National Association of Secondary School Principals, 67*(11), 1-15. https://doi.org/10.1177/019263657606040201

Maxwell, S., Reynolds, K. J., Lee, E., Subasic, E., & Bromhead, D. (2017). The impact of school climate and school identification on academic achievement: Multilevel modeling with student and teacher data. *Frontiers in Psychology, 8*, Article 2069, 1-21. https://doi.org/10.3389.fpsyg.2017.02069.

McCoy, D. C., Roy, A. L., & Sirkman, G. M. (2013). Neighborhood crime and school climate as predictors of elementary school academic quality: A cross-lagged panel analysis. *American Journal of Community Psychology, 52*(1-2), 128–140. https://doi.org/10.1007/s10464-013-9583-5

McGregor, D. (1960). *The human side of enterprise.* McGraw-Hill.

McKinley, D. (2022). *The distinction between school climate and school culture.* INcompassing

Education. https://incompassinged.com/2017/06/01/climate-and-culture-in-schools-from-toxic-to-positive/

Merriam-Webster. (n.d.). Esprit de corps. In *Merriam-Webster.com dictionary.* Retrieved February 16, 2022, from https://www.merriam-webster.com/

Millsap, R. E., & Cham, H. (2012). Investigating factorial invariance in longitudinal data. In B. Laursen, T. D. Little, & N. A. Card (Eds.), *Handbook of developmental research methods* (109-127). Guilford Press.

Mitchell, M. M., Bradshaw, C. P., & Leaf, P. J. (2010). Student and teacher perceptions of school climate: A multilevel exploration of patterns of discrepancy. *Journal of School Health, 80*(6), 271-279. https://doi.org/10.1111/j.1746-1561.2010.00501.x

Mok, M. M., & McDonald, R. P. (1994). Quality of school life: A scale to measure student experience or school climate? *Educational and Psychological Measurement, 54*(2), 483-495. https://doi.org/10.1177/0013164403251317

Morin, A. J., Marsh, H. W., Nagengast, B., & Scalas, L. F. (2014). Doubly latent multilevel analyses of classroom climate: An illustration. *Journal of Experimental Education, 82*(2), 143–167. https://doi.org/10.1080/00220973.2013.769412

Muijs, D., & Harris, A. (2007). Teacher leadership in (in)action. Three case studies of contrasting schools. *Educational Management Administration & Leadership, 35*(1), 111-134. https://doi.org/10.1177/1741143207071387

Mullen, C. A., Shields, L. B., & Tienken, C. H. (2021). Developing teacher resilience and resilient school cultures. *AASA Journal of Scholarship & Practice, 18*(1), 8-24. https://www.aasa.org/uploadedFiles/Publications/JSPSpring2021.FINAL.docx.pdf

National Assessment of Educational Progress (2022). *NAEP report card: 2022 NAEP*

mathematics assessment. NAEP. https://www.nationsreportcard.gov/highlights/mathematics/2022/

National Assessment of Educational Progress (2022). *NAEP report card: 2022 NAEP reading assessment.* NAEP. https://www.nationsreportcard.gov/highlights/reading/2022/

National Center for Education Statistics (n.d.). *Search for public schools.* https://nces.ed.gov/

National Center on Safe and Supportive Learning Environments (n.d.). *School climate survey compendium: K-12 survey.* https://safesupportivelearning.ed.gov/school-climate-survey-compendium-k-12-surveys

National School Climate Center (2012, August). *School climate research summary: August 2012.* http://www.schoolclimate.org

National School Climate Center (2021). *What is school climate and why is it important?* https://schoolclimate.org/school-climate

Niehaus, K., Rudasill, K. M., & Rakes, C. R. (2012). A longitudinal study of school connectedness and academic outcomes across sixth grade. *Journal of School Psychology, 50*(4)*,* 443–460. https://doi.org/10.1016/j.jsp.2012.03.002

Nwankwo, J. I. (1979). The school climate as a factor in students' conflict in Nigeria. *Educational Studies, 10*(3), 267-279. https://doi.org/10.1207/s15326993es1003_3

NWEA MAP (2022). *Map growth.* NWEA. https://www.nwea.org/map-growth/#:~:text=MAP%20Growth%20is%20the%20most,above%20or%20below%20grade%20level.

NWEA MAP (2022). *What is a Lexile score?* NWEA. https://connection.nwea.org/s/article/Lexile-RIT-to-Reading-Scores?language=en_US

O'Malley, M., Wright, A., Renshaw, T. L., & Eklund, K. (2014). School climate, family

structure, and academic achievement: A study of moderation effects. *School Psychology Quarterly, 30*(1), 142-157. https://doi.org/10.1037/spq0000076

Ozgenel, M. (2020). An organizational factor predicting school effectiveness: School climate. *International Journal of Psychology and Educational Studies, 7*(1), 38-50. https://doi.org/10.17220/ijpes.2020.01.004

Parker Waller, P., & Flood, C.T. (2016). Mathematics as a universal language: Transcending cultural lines. *Journal for Multicultural Education, 10*(3), 294-306. https://doi.org/10.1108/JME-01-2016-0004

Perry, A. C. (1908). *The management of a city school.* McGraw-Hill.

Phillips, M. (1997). What makes schools effective? A comparison of the relationships of communitarian climate and academic climate to mathematics achievement and attendance during middle school. *American Educational Research Journal, 34*(4), 633-662. https://doi.org/10.2307/1163352

Ramelow, D., Currie, D., & Felder-Puid, R. (2015). The assessment of school climate: Review and appraisal of published student-report measures. *Journal of Psychoeducational Assessment, 33*(8), 731-743. https://doi.org/10.1177/0734282915584852

Regoniel, P. (2015, January 25). *Conceptual framework: A step-by-step guide on how to make one.* Simply Educate. https://simplyeducate.me/2015/01/05/conceptual-framework-guide

Reyes, M. R., Brackett, M. A., Rivers, S. E., White, M., & Salovey, P. (2012). Classroom emotional climate, student engagement, and academic achievement. *Journal of Educational Psychology, 104*(3)*,* 700–712. https://doi.org/10.1037/a002726

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. *American Educational Research Association, 6*(3), 1-21. https://doi.org/10.1177/2332858420948024

Sanders, S. M., Durbin, J. M., Anderson, B. G., Fogarty, L. M., Giraldo-Garcia, R. J., & Voight, A. (2018). Does a rising school climate lift all boats? Differential associations of perceived climate and achievement for students with disabilities and limited English proficiency. *School Psychology International, 39*(6), 646-662. https://doi.org/10.1177/0143034318810319

Schneider, B. (1975). Organizational climates: An essay. *Personnel Psychology, 28*(4), 447-449. https://doi.org/10.1111/j.1744-6570.1975.tb01386.x

Schneider, B., Ehrhart, M. G., & Macey, W. H. (2011). Perspectives on organizational climate and culture. In S. Zedek (Ed.), *APA handbook of industrial and organizational psychology, Vol 1. Building and developing the organization* (pp. 373-414). American Psychological Association. https://doi.org/10.1037/12169-000

Schneider, B., & Reichers, A. E. (1983). On the etiology of climates. *Personnel Psychology, 36*(1), 19-39. https://doi.org/10.1111/j.1744-6570.1983.tb00500.x

Schweig, J. D. (2019). Getting better all the time? An illustrative investigation of multilevel longitudinal measurement invariance based on school climate surveys. *Educational Measurement: Issues and Practice, 38*(3), 65-74. https://doi.org/10.1111/emip.12281

Sherblom, S. A., Marshall, J. C., & Sherblom, J. C. (2006). The relationship between school climate and math and reading achievement. *Journal of Research in Character Education, 4*(1-2), 19-31.

Shields, L. B., & Mullen, C. A. (2020). *Veteran teacher resilience: Why do they stay?* Springer.

Sirotnik, K. A. (1980). Psychometric implications of the unit-of-analysis problem (with examples from the measurement of organizational climate). *Journal of Educational Measurement, 17*(4), 245-282. https://doi.org/10.1111/j.1745-3984.1980.tb00831.x

Smith, K. H. (2020). Perceptions of school climate: Views of teachers, students, and parents. *Journal of Invitational Theory and Practice, 26*, 5-20. https://doi.org/10.26522/jitp.v26i.3460

Smith, P. A., Escobedo, P., & Kearney, W. S. (2020). Principal influence: A catalyst for positive school climate. *International Journal of Education Policy and Leadership, 16*(5), 1-16. https://doi.org/10.22230/ijepl.2020v16n5a961

Smith, T., & Shouppe, G. (2018). Is there a relationship between schools' climate ratings and student performance data? *National Teacher Education Journal, 11*(1), 15-21.

Spilt, J. L., Hughes, J. N., Wu, J. Y., & Kwok, O. M. (2012). Dynamics of teacher– student relationships: Stability and change across elementary school and the influence on children's academic success. *Child Development, 83*(4)*,* 1180–1195. https://doi.org/10.1111/j.1467-8624.2012.01761.x

Steinmayr, R., Meibner, A., Weidinger, A. F., & Wirthwein, L. (2014). *Academic achievement.* Oxford Bibliographies. https://doi.org/10.1093/OBO/9780199756810-0108

Stolp, S., & Smith, S. C. (1995). *Transforming school culture: stories, symbols, values, and the leader's role.* Eugene, OR: ERIC Clearinghouse on Educational Management.

Stronge, J., Richard, H., & Catano, N. (2008). *Qualities of effective principals.* ASCD.

Swanson, J., Valiente, C., & Lemery-Chalfant, K. (2012). Predicting academic achievement from

cumulative home risk: The mediating roles of effortful control, academic relationships, and school avoidance, *Merrill-Palmer Quarterly, 58*(3), 375-408. https://doi.org/10.1353/mpq.2012.0014

Sweetland, S. R., & Hoy, W. K. (2000). School characteristics and educational outcomes: Toward an organizational model of student achievement in middle schools. *Educational Administration Quarterly, 36*(5), 703-729. https://doi.org/10.1177/00131610021969173

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

Trochim, W. M. K. (n.d.). *The research methods knowledge base*. Conjointly. https://conjointly.com/kb/

Turney, S. (2022). *Pearson correlation coefficient (r): Guide and examples.* Scribbr. https://www.scribbr.com/statistics/pearson-correlation-coefficient/#:~:text=When%20should%20I%20use%20the,(4)%20have%20no%20outliers

USAHello (n.d.). *What are the U.S. educational levels?* https://usahello.org/education/children/grade-levels/#gref

Virginia Department of Education. (2015). *Frequently asked questions about SOL testing.* https://www.doe.virginia.gov/home/showpublisheddocument/21109/63807125023918391

Virginia Department of Education. (2021). *Virginia school survey of climate and working conditions school summary feedback report.* https://www.doe.virginia.gov/programs-services/school-operations-support-services/school-climate-working-conditions

Virginia Department of Education. (2013). *Historical overview of the standards of learning program.*https://www.doe.virginia.gov/home/showpublisheddocument/1466/637947310184070000

Virginia Department of Education. (2022a). *SOL assessment committees.* https://www.doe.virginia.gov/teaching-learning-assessment/student-assessment/virginia-sol-assessment-program/sol-assessment-committees

Virginia Department of Education. (2022b). *Virginia SOL assessment program.* https://www.doe.virginia.gov/teaching-learning-assessment/student-assessment/virginia-sol-assessment-program

Virginia Department of Education. (2022c, August 26). *2023 Virginia school survey of climate and working conditions: Superintendent's memo #191-22.* https://doe.virginia.gov/administrators/superintendents_memos/2022/191-22.pdf

Walkington, C., Clinton, V., & Shivraj, P. (2018). How readability factors are differentially associated with performance for students of different backgrounds when solving mathematics word problems. *American Educational Research Journal, 55*(2), 362-414. https://doi.org/10.3102/0002831217737028

Wallace Foundation, The. (2006). *Leadership for learning: Making the connections among state, district and school policies and practices.* https://www.wallacefoundation.org/knowledge-center/Documents/Wallace-Perspective-Leadership-for-Learning.pdf

Wallace Foundation, The. (2013). *The school principal as leader: Guiding schools to better teaching and learning.* https://www.wallacefoundation.org/knowledge-center/pages/overview-the-school-principal-as-leader.aspx

Wang, M. T., & Degol, J. L. (2016). School climate: A review of the construct, measurement,

and impact on student outcomes. *Educational Psychology Review, 28*(2), 315-352. https://doi.org/10.1007/s10648-015-9319-1

Wang, W., Vaillancourt, T., Brittain, H. L., McDougall, P., Krysman, A., Smith, D., Cunningham, C. E., Haltigan, J. D., & Hymel, S. (2014). School climate, peer victimization, and academic achievement: Results from a multi-informant study. *School Psychology Quarterly, 29*(3), 360-377. https://doi.org/10.1037/spq0000084

Welsh, W. N. (2000). The effects of school climate on school disorder. *Annals of the American Academy of Political and Social Science, 567*(1), 88-107. https://doi.org/10.1177/000271620056700107

Wong, M. D., Kulwant, K. D., Jackson, N. J., Runger, D., & Dudovitz, R. N. (2021). The longitudinal relationship of school climate with adolescent social and emotional health. *BMC Public Health, 21*, Article 207, 1-8. https://doi.org/10.1186/s12889-021-10245-6

Zamarro, G., Camp, A., Fuchsman, D., & McGee, J. B. (2022). Understanding how Covid-19 has changed teachers' chances of remaining in the classroom. *Sinquefield Center for Applied Economic Research Working Paper No 22-01.* http://dx.doi.org/10.2139/ssrn.4047354

Zullig, K. J., Collins, R., Ghani, N., Hunter, A. A., Patton, J. M., Huebner, E. S., & Zhang, J. (2015). Preliminary development of a revised version of the school climate measure. *Psychological Assessment, 27*(3), 1072-1081. https://doi.org/10.1037/pas0000070

Zullig, K. J., Huebner, E. C., & Patton, J. M. (2011). Relationships among school climate domains and school satisfaction. *Psychology in the Schools, 48*(2), 133-145. https://doi.org/10.1002/pits.20532

Zullig, K. J., Koopman, T. M.. & Patton, J. M. (2010). School climate: Historical review,

instrument development, and school assessment. *Journal of Psychoeducational Assessment, 28*(2), 139-152. https://doi.org/10.1177/0734282909344205

Appendix A

Salient Literature Reviewed

This appendix lists the most salient research from the literature review that investigates the relationship between perceptions of school climate and academic achievement. Color-coding delineates the main themes that emerged during the review. Light green signifies research investigating the relationships between school climate and achievement. Blue specifies research on the dimensions of school climate. Purple denotes the definition of school climate in research. Orange indicates research that contains information about measuring school climate. Salmon signifies research regarding perceptions of school climate.

Table A1

Literature Reviewed on the Relationship Between Perceptions of School Climate and Academic Achievement

Author(s) and Year	Purpose of Study	Methodology/ Data Source(s)/ Instrument(s)	Findings/ Themes
Chirkina & Khavenson (2018)	To provide a theoretical and empirical analysis of the concept of "school climate" Theoretical - history of the concept, approaches to defining, components of	Review of literature and research	Dimensions of climate
Zullig & Patton (2010)	Literature review of history of school climate and instruments used to measure it; To develop an instrument to measure school climate based on historical context	Preliminary analyses support the reliability and validity of the instrument	Defining school climate Measuring climate Dimensions of climate
Johnson & Stevens (2006)	To investigate the relationship between teachers' perceptions of school climate and student achievement and whether that	School-Level Environment Questionnaire (SLEQ);	School and community context variables mediated the relationship; in schools

	relationship is mediated by community and school context	structural equation modeling	in high SES communities, the influence on school climate was stronger than in lower SES community; significant positive relationship between teachers' perceptions and student achievement Climate and achievement Perceptions of climate
Cohen et al. (2009)	To examine the relationship between school-climate-related research findings and educational policy, school improvement practice, and teacher education	Historical analysis, review of literature and research, national State Dept of Ed policy scan, and a national survey of building, district, state ed leaders	Contains an analysis of lots of states' policies re: school climate Defining school climate
Dias & Barroso (2020)	Analysis of school leaders' perceptions of school climate		Defining school climate Perceptions of climate
Maxwell et al. (2017)	Multi-level model to determine effect of school climate on student achievement	Staff self-reports, student self-reports, student achievement data, SES info.	Students' perceptions of school climate significantly explain writing and math achievement, mediated by students' psychological identification with the school; staff perceptions of school climate explain students' achievement on math, writing, and reading tests Defining school climate Perceptions of climate Climate and achievement
Thapa et al. (2013)	Review focuses on five essential dimensions of school climate: safety, relationships, teaching and learning,	Review of literature and research	Dimensions of climate Climate and achievement

	institutional environment, and the school improvement process		
National School Climate Center (2012)	Review of school climate research	Review of literature and research	Dimensions of climate Climate and achievement
Ramelow et al. (2015)	Review and appraisal of school climate measures published between 2003 and 2013 in scientific journals	Review of literature and research	Measuring climate
Wang & Degol (2016)	To evaluate existing literature on school climate, to show strengths, weaknesses, and gaps in the ways researchers have approached school climate	Review of literature and research	Climate and achievement Dimensions of climate Defining school climate Measuring climate
Zullig et al. (2011)	Investigated the magnitude of the relationships between eight school climate domains and a measure of "global school satisfaction" in MS and HS students	Multiple regression analyses between domains and gender, grade, age, GPA, SES	School climate variables to students' school satisfaction did not vary across demographics Climate and achievement Dimensions of climate Defining school climate Measuring climate
Bottiani et al. (2020)	Assessed convergence and divergence between independent observant' assessments and students' perceptions of school climate at the classroom and school levels	Perception data came from the MDS3 survey, demographics, outside observations	Gender, race, grade-level, self-reported academic achievement did not explain variance in climate perceptions; gender disparities most salient Perceptions of climate
Ryberg et al. (2020)	Study sought to confirm the factor structure of the EDSCLS survey using single-level and multi-level factor analyses	Education Department School Climate Surveys (EDSCLS)	Findings paralleled the original validation study at the individual level School level - findings suggested a simpler factor structure for

			engagement and environment domain Dimensions of climate Measuring climate Perceptions of climate
Hoy & Hannum (1997)	Define school climate in terms of healthy interpersonal dynamics and then to examine the relationship of dimension of school health to student achievement	Organizational Health Inventory for middle schools (OHI-RM)	Dimensions of organizational health were significantly related to student achievement even when the SES of the schools was controlled Climate and achievement Dimensions of climate Defining school climate Measuring climate Perceptions of climate
Ozenegl (2020)	To determine whether the school climate affects school effectiveness	Quantitative relational screening model using the Organizational Description Climate Scale for Elementary Schools (OCDQ-REJ)	Climate and achievement
Lewno-Dumdie et al. (2020)	Systematic literature review of school climate measurement tools - which dimensions are identified and measured in published studies of student-reported school climate? What overlap in studies of student-reported school climate measures exist with the model dimensions?	Review of literature and research	Climate and achievement Dimensions of climate Defining school climate Measuring climate Perceptions of climate
Schweig (2019)	1. To illustrate how longitudinal measurement invariance may be investigated based on hierarchically clustered data from a school climate survey 2. To illustrate how information about longitudinal invariance may inform	Review of literature and research	Measuring climate

	investigations of change or growth		
National Center on Safe and Supportive Learning Environments (n.d.)	List of K-12 climate survey resources	N/A	Measuring climate
O'Malley et al. (2014)	Tested the hypothesis that school climate counteracts youths' home-school risk by examining the moderating effects of students' school climate perceptions on the relationship between family structure (two-parent, one-parent, foster-care, homeless) and academic performance (self-reported GPA)	Correlational	Regardless of family structure, students with more positive school climate perceptions self-reported higher GPAs; moderation effect of positive school climate perception was strongest for homeless and one-parent homes Climate and achievement Perceptions of climate
Wang et al. (2014)	School-level climate was examined in relation to self-reported peer victimization and teacher-rated academic achievement	Student records for academic achievement, student surveys, parent interviews by phone	School climate did not moderate the connection between peer victimization and GPA Climate and achievement Dimensions of climate Defining school climate Measuring climate Perceptions of climate
Zullig et al. (2015)	Sought to expand the School Climate Measure (SCM) to include student engagement and parental involvement	School Climate Measure (SCM), correlational design	Domain of positive student-teacher relationship was generally the most highly correlated with all of the other domains Preliminary support for more comprehensive version of the SCM

			Climate and achievement Dimensions of climate Defining school climate Measuring climate Perceptions of climate
Jones & Shindler (2016)	Investigated the relationship between school climate as measured by perceptions of students and teachers and student achievement on standardized tests	Alliance for the Study of School Climate Assessment (SCAI)	Positive relationship between school climate and academic achievement Climate and achievement Dimensions of climate Defining school climate Measuring climate Perceptions of climate
Sirotnik (1980)	Literature review on unit of analysis	Review of literature and research	Measuring climate
Sherblom et al. (2006)	Examined the relationship between school climate (as defined by participants' sense of psychological and sociological characteristics) and student academic achievement on standardized tests in reading and math	Survey results, MAP scores	Strong relationship between climate and academic achievement; sense of wellbeing correlated strongly to both reading and math proficiency; parent survey not strongly related to proficiency of any kind Student and staff perceptions were predictive of mathematics performance Climate and achievement Dimensions of climate Defining school climate Measuring climate Perceptions of climate
Smith & Shouppe (2018)	To determine the effect of school climate on students' academic performance in reading and math	Georgia School Climate Star Rating (SCSR), student achievement data through the Georgia	Both subjects impacted by SCSR, with reading impacted the most

		Criterion Referenced Competency Test for 3rd-8th graders	Climate and achievement Measuring climate Perceptions of climate
Konold et al. (2018)	Tested the authoritative school climate theory that schools characterized by high structure and student support have greater levels of student engagement and that these factors are associated with higher academic achievement (graduation rate, state testing)	Commitment to School scale, student achievement through Standards of Learning	Both structure and student support were associated with higher student engagement in schools; student engagement was directly associated with academic achievement and operated as an intervening factor Climate and achievement Perceptions of climate
Sanders et al. (2018)	Examined whether school climate has a differential association with academic achievement for SWD and ELs as compared to their peers	Conditions for Learning Survey (CFL), aggregate of MAP assessments across fall/winter/spring	Main effects of perceived school climate and disability status on math and reading were statistically significant controlling for race/ethnicity, gender, grade Climate and achievement Dimensions of climate Defining school climate Measuring climate Perceptions of climate
Capp et al. (2020)	Examined relationship between staff perceptions of climate and staff perceptions of student risk and well-being	California School Climate Survey (CSCS), exploratory factor analysis	Negative staff perceptions of school climate predicted higher levels of student risk, and positive perceptions predicted greater student well-being Climate and achievement

			Dimensions of climate Defining school climate Measuring climate Perceptions of climate
Dincer (2021)	Investigated middle school students' school climate and motivation differ by gender/grade/location of school, correlation between perception of school climate and school motivation	School Climate Scale (SCS), School Motivation Scale (SMS)	Medium-level correlations between school climate perceptions and school motivation Climate and achievement Dimensions of climate Defining school climate Measuring climate Perceptions of climate
Smith (2020)	Explored teachers', students', and parents' perceptions of school climate as measured by the Inviting School Survey-R (ISS-R) between factors such as gender, type of school, size of school, and student age	Inviting School Survey-R (ISS-R)	Statistically significant association with self-reported perceptions of school climate and the five factors Climate and achievement Dimensions of climate Defining school climate Measuring climate Perceptions of climate
Dunn & Harris (1998)	To examine selected factors associated with classroom climate as perceived by elementary students and to explore the relationship between those factors and student achievement	My Class Inventory (MCI)	Classrooms reducing difficulty may increase in math; classrooms increasing competition may increase in math Climate and achievement Dimensions of climate Defining school climate Measuring climate Perceptions of climate
Smith et al. (2020)	Explored the relationship between principal influence and four facets of organizational climate: institutional vulnerability,	Persuasion Index (PI), Organizational Climate Index (OCI)	Independent variables combined to form a significant portion of the variance in organizational climate

	collegial leadership, achievement press, and professional teacher behavior		Climate and achievement Dimensions of climate Defining school climate Measuring climate Perceptions of climate
Berkowitz et al. (2017)	Comprehensive review of studies dating back to 2000 that examined whether a positive climate can successfully disrupt the associations between low SES and poor academic achievement	Review of literature and research	Climate and achievement Dimensions of climate Defining school climate Measuring climate Perceptions of climate
Hughes & Kwok (2007)	Investigated associations between student background, student/teacher and parent/teacher relationships, and changes in academic achievement	Universal Nonverbal Intelligence Test, Woodcock–Johnson III (WJ-III) Tests of Achievement, 10-item scale comprising 8 items from the Conscientious scale of the Big Five Inventory and 2 items taken from the Social Competence Scale, 28 items rated on a scale of 1-5: 21 items adapted from the Parent-Teacher Involvement Questionnaire, 7 items adapted from the teacher version of the Joining scale of the Parent-Teacher Relationship Scale Latent variable structural equation modeling	Primary students' academic achievement gains are greater when student/teacher and parent/teacher relationships are supportive Climate and achievement Perceptions of climate
Spilt et al. (2012)	Investigated whether conflict and warmth were predictors of academic achievement in middle school	Modified 22 items of the child version of the Network of Relationships Inventory, Woodcock–Johnson III Tests of Achievement, 5-item Conduct Problems Scale of the Strengths	Low warmth was associated with less academic gains for boys by not for girls; as conflict increased, academic growth decreased

		and Difficulties Questionnaire, Universal Nonverbal Intelligence Test	Climate and achievement Perceptions of climate
Mitchell et al. (2010)	Examined the factors related to students' and teachers' perceptions of school climate and emphasis on academics	School Development Program School Climate Survey, Organizational Health Inventory-Elementary School Version, Effective Behavior Survey, Teacher Observation of Classroom Adaptation-Checklist, School-level disorder: student mobility rate, student-teacher ratio, principal change, and faculty turnover	School-level characteristics were more significantly related to climate ratings by students than teachers; school-level factors had greater influence than classroom factors Climate and achievement Perceptions of climate
Barile et al. (2012)	Investigated the relationship between teacher evaluation and reward policies with student achievement in mathematics and dropout rate	Items from the Educational Longitudinal Study of 2002	Teacher evaluation policies that included student input were associated with more positive classroom climate; school policies of assigning higher-performing students to higher-performing teachers had a negative correlation with students' perception of classroom climate Climate and achievement Perceptions of climate
Bryan et al. (2012)	Examined the relationship between school bonding and academic achievement in high-school seniors	Educational Longitudinal Study of 2002 (demographics, school bonding, and math achievement)	School bonding (especially attachment to school and school involvement) had significant effects on academic achievement Climate and achievement Perceptions of climate

McCoy et al. (2013)	Examined relationships between neighborhood crime and academic achievement of elementary school students	Neighborhood crime data through the City of Chicago online Crime Data portal, Student Connection Survey, Illinois Standards Achievement Tests in math and reading	High crime levels were predictive of decreased academic achievement over time, but this was mitigated by positive school climate Climate and achievement Dimensions of climate Defining school climate Measuring climate Perceptions of climate
Niehaus et al. (2012)	Examined relationships between students' perceptions of school support and academic outcomes	School connectedness measured by combination of National Educational Longitudinal Study, Need Satisfaction Scale, and Scale of Caring Adult Relationships in School; GPA	Students' perceptions of school support declined during 6th grade; less decline was correlated with higher achievement, greater decline correlated with lower achievement Climate and achievement Dimensions of climate Defining school climate Measuring climate Perceptions of climate

Appendix B

Email to Division Directors of Testing

The e-mail below was a basic preliminary data gathering tool that allowed the researcher to know from which school divisions further information requests would be necessary.

Hi, [School Division Personnel Name]!

I am in the process of determining the school divisions in Virginia from whom I will request existing data for my dissertation that will investigate the relationships between school climate, academic growth, and benchmark achievement in elementary schools (VT IRB 23-436).

Would you please let me know if your school division administered the Fall and Spring NWEA MAP assessments in reading and/or mathematics to students in Grade 4 during the 2022-2023 school year?

If your school division did administer the MAP assessments during this school year, I will submit an official request to conduct external research within your division using existing MAP data. If your school division did not administer the MAP assessments during this school year, your division will automatically be excluded from my study.

Many thanks,
Summerlyn L. Thompson
Doctoral Candidate
Virginia Polytechnic Institute and State University
434.825.4056

Appendix C

2023 Virginia Survey of School Climate and Working Conditions: Classroom Instructor Version

This survey is a review copy of the digitally-administered Virginia Survey of School Climate and Working Conditions: Classroom Instructor Version.

2023 Virginia School Survey of Climate and Working Conditions
Classroom Instructors Version

This is a review copy, not for circulation or use. The actual survey is online with formatting for easier reading. Questions are grouped around school climate and working conditions topics (in **BOLD CAPS** *below). These topics do not appear in the online survey.*

In order to access the online survey, you must enter the unique Access Code for the adult survey which was assigned to your school. Your principal, or your principal's designee, will have this Access Code for you. All classroom instructors and school staff members at the same school will have the same Access Code, so you will not be identified by this Access Code. It is important that you submit **only one completed survey** for each school at which you work. The administrators of this survey are obligated to protect your identity.

What is your Access Code for taking this survey? _____

Do you want to take the survey in English or Spanish? *Mark one.*

- ○ English
- ○ Spanish

Instructions for classroom instructors and other school staff members:

Any individual employed in Virginia's public schools may take this survey, including:

1. Classroom instructors (teachers and teacher's aides and assistants) who interact with students in classroom settings and
2. School staff members who interact with or support students external to the classroom setting.

All classroom instructors (including substitutes) and school staff members are asked to complete the survey regardless of the grade level of the students with whom they teach or interact. The purpose of the survey is to help schools create and maintain safe and supportive working environments for education professionals in Virginia's public schools.

Your individual answers to the survey are anonymous, which means that no one will know how you answered. It is important that you submit only **one completed survey** for each school at which you work.

Some of the questions differ for classroom instructors and school staff members. The survey should take about 20-25 minutes to complete.

Use the Next and Previous buttons at the bottom of the screen to go to the next or previous page.

SECTION 1: GENERAL QUESTIONS

1. You are logging in to the survey as a member of the following school: {display division and school name}. Is this correct?
   - ○ Yes
   - ○ No *[If no, provide dropdown menus for respondent to select the correct division and school.]*

2. What is your professional role at this school? *Mark one.*

[If selected, respondent will be directed to the Classroom Instructors Survey.]

- ○ Teacher, including substitute (not including Library Media, Mathematics Specialists, or Reading Specialists)
- ○ Teacher's Assistant, Teaching Assistant, Teacher's Aide, Instructional Aide, Para-educator, Para-Professional

[If selected, respondent will be directed to the Staff Survey.]

- ○ Principal, Assistant Principal, or Regional Director
- ○ Athletic and/or Student Activities Directors, Trainers or Coaches
- ○ Bus, Car, or Van Driver
- ○ Coordinator of Special Programs (e.g., ESL, Gifted Education, Special Education)
- ○ Custodial and Facilities
- ○ Library Media
- ○ Mathematics or Reading Specialist
- ○ Administrative Support Staff (e.g., secretaries and clerical staff)
- ○ Specialized Student Support Services (e.g., Counselors, Psychologists, or Social Workers)
- ○ Specialized Services for Students with Disabilities (e.g., Speech & Language, Interpreters, OT, PT, Therapeutic Recreation)
- ○ Medical and Nursing Services (e.g., school nurses, other medical staff)
- ○ Food Nutrition, School Cafeteria, or Food Service Staff
- ○ School Safety, Security, and Law Enforcement
- ○ Instructional Technology and Support
- ○ Testing and Assessment Staff
- ○ Other, please specify your professional role (no acronyms): _____

3. Do you hold a professional license related to your role in the school?

- ○ Yes
- ○ No

4. How have you provided instruction to students this year? *Mark all that apply.*

- ○ In person
- ○ Remotely from the school building
- ○ Remotely from somewhere else

SECTION II: TEACHING POSITION

Throughout this survey, the word "teacher" collectively refers to all classroom instructors (teachers and teacher's aides and assistants).

5. Indicate your primary teaching assignment as well as any secondary teaching assignments you may have.

	Primary Teaching Assignment *(Mark one.)*	Secondary Teaching Assignments *(Mark all that apply.)*
Career and technical education	○	○
Computer science	○	○
Elementary and early childhood education classroom teacher	○	○
English as a Second Language (ESL), English for Speakers of Other Languages (ESOL)	○	○
English language and literature (including composition, creative writing, journalism, reading)	○	○
Fine and performing arts (e.g., art, band, orchestra, chorus, dance, music, theater)	○	○
Foreign or world language and literature	○	○
Physical, health, and safety education	○	○
Social sciences and history (including civics, economics, geography, government, psychology, sociology)	○	○
Mathematics	○	○
Science	○	○
Special education, exceptional education, gifted education	○	○
Other		○
Please specify:		_____

6. How many years of teaching experience do you have (including the current school year)? *Mark one.*

1-3 years	4-10 years	11-20 years	More than 20 years
○	○	○	○

6.1. *(Ask only of respondents choosing "1-3 years" to question 6.)* Is this your first year in a teaching position? *Mark one.*

- ○ Yes
- ○ No
- ○ Prefer not to answer

SECTION III: TEACHING AND LEARNING ENVIRONMENT

A. TEACHER AGENCY

How strongly do you agree or disagree with the following statements about this school? *Mark one response per line.*

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
Autonomy						
7. I am trusted to make sound professional decisions about instruction.	O	O	O	O	O	O
8. I am free to be creative in my teaching approach.	O	O	O	O	O	O
9. I control how I use my scheduled class time.	O	O	O	O	O	O
10. *(Ask only of respondents choosing "Teacher" to question 2.)* I set the grading and student assessment practices in my classroom.	O	O	O	O	O	O
Respect						
11. I contribute to decisions about educational issues at my school.	O	O	O	O	O	O
12. My role as an educator is respected.	O	O	O	O	O	O
13. Current policies are improving this school.	O	O	O	O	O	O
Demands on Teacher Time						
14. My scheduled workday includes sufficient planning time.	O	O	O	O	O	O
15. My scheduled workday includes sufficient instructional time to meet the needs of my students.	O	O	O	O	O	O
16. I spend an unreasonable amount of time per **WEEK** working (e.g., grading papers, meeting with students) outside of the contracted work hours.	O	O	O	O	O	O

16.1. *(Ask only of respondents choosing "Slightly Agree", "Agree", or "Strongly Agree" to question 16.)* How many hours per **WEEK** do you spend doing work (e.g., grading papers, meeting with students) outside of contracted work hours?

0 hours	1 hour	2 hours	3 hours	4 hours	5 hours	6 hours	7 hours	8 hours	9 hours	10 hours or more
O	O	O	O	O	O	O	O	O	O	O

B. STAFF COLLEGIALITY

How strongly do you agree or disagree with the following statements about this school? *Mark one response per line.*

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
17. I trust the teachers and other adults at this school.	O	O	O	O	O	O
18. Teachers and other adults at this school treat me with respect.	O	O	O	O	O	O
19. I feel supported by teachers and other adults at this school.	O	O	O	O	O	O

C. Physical Environment

How strongly do you agree or disagree with the following statements about this school? *Mark one response per line.*

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
20. The physical environment of my classroom supports my teaching and my students' learning.	○	○	○	○	○	○
21. I have adequate space to work productively.	○	○	○	○	○	○
22. The school building is clean and comfortable.	○	○	○	○	○	○
23. I have the support I need to incorporate technology into my instruction.	○	○	○	○	○	○

D. Student Engagement

How strongly do you agree or disagree with the following statements about this school? *Mark one response per line.*

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
24. Students generally like this school.	○	○	○	○	○	○
25. Students are proud to be at this school.	○	○	○	○	○	○
26. Students come to school ready to learn.	○	○	○	○	○	○
27. Students are engaged in classroom lessons.	○	○	○	○	○	○

E. Relationships Among Students

How strongly do you agree or disagree with the following statements about this school? *Mark one response per line.*

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
28. Students at this school care about other students.	○	○	○	○	○	○
29. Students at this school get along well with other students.	○	○	○	○	○	○
30. Students at this school treat other students with respect.	○	○	○	○	○	○

F. Relationships Between Students and Adults

How strongly do you agree or disagree with the following statements about this school? *Mark one response per line.*

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
31. Adults at this school care about students.	○	○	○	○	○	○
32. Adults at this school treat students with respect.	○	○	○	○	○	○
33. Adults at this school want students to do well.	○	○	○	○	○	○
34. Adults at this school listen to what students have to say.	○	○	○	○	○	○
35. Adults at this school recognize and value each individual's cultural background.	○	○	○	○	○	○
36. Adults at this school are treated with respect by students.	○	○	○	○	○	○

G. Rigorous Instruction

The word "teacher" collectively refers to all classroom instructors (teachers and teacher's aides and assistants).

How strongly do you agree or disagree with the following statements about this school? *Mark one response per line.*

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
37. Teachers at this school expect students to use facts and evidence to support their ideas.	○	○	○	○	○	○
38. Teachers at this school want students to think about different ways to solve problems.	○	○	○	○	○	○
39. Teachers at this school encourage students to provide constructive feedback to others.	○	○	○	○	○	○
40. Teachers at this school encourage students to value and search for a diversity of opinions, perspectives, and abilities.	○	○	○	○	○	○
41. Teachers at this school often connect what students are learning to life outside the classroom.	○	○	○	○	○	○

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
42. The content taught at this school reflects multiple cultural backgrounds, ethnicities, and identities.	○	○	○	○	○	○

2023 Virginia School Survey: Classroom Instructors Version

SECTION IV: SCHOOL SUPPORTS

A. PROFESSIONAL GROWTH OPPORTUNITIES

How strongly do you agree or disagree with the following statements about this school? *Mark one response per line.*

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
43. I have sufficient resources for my professional development.	O	O	O	O	O	O
44. The professional development I receive meets my needs.	O	O	O	O	O	O
45. Professional development provides ongoing opportunities for me to work with colleagues to refine my practice.	O	O	O	O	O	O
46. I receive follow-up after professional development activities to give me additional support.	O	O	O	O	O	O
47. Professional development enhances my ability to meet student needs.	O	O	O	O	O	O

B. NEW TEACHER SUPPORTS

(Ask only if answered "1-3 years" to question 6.) **Indicate whether you received the following supports at your school.** *Mark one response per line.*

	Yes	No	Do not know
48. Formally assigned a mentor	O	O	O
49. Reduced workload	O	O	O
50. Release time to observe other teachers	O	O	O
51. Formal time to meet with mentor during school hours	O	O	O

C. Managing Student Behavior

How strongly do you agree or disagree with the following statements about this school? *Mark one response per line.*

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
52. Adults at this school understand the rules for student behavior.	O	O	O	O	O	O
53. The rules for student behavior are effective at this school.	O	O	O	O	O	O
54. We use data to evaluate and, if needed, adjust this school's student conduct policies.	O	O	O	O	O	O
55. If a student breaks a school rule, the student's behavior is addressed consistently.	O	O	O	O	O	O
56. This school's use of suspensions or expulsions to manage student behavior is effective.	O	O	O	O	O	O
57. Students know which behaviors are against school rules.	O	O	O	O	O	O
58. Students know there are consequences for breaking school rules.	O	O	O	O	O	O
59. Students are recognized for positive behavior.	O	O	O	O	O	O
60. When students are accused of doing something wrong, they get a chance to explain.	O	O	O	O	O	O
61. There are supports to help students who misbehave develop positive behavior.	O	O	O	O	O	O
62. I feel equipped to successfully handle incidents of racially motivated behaviors.	O	O	O	O	O	O
63. I feel equipped to successfully handle incidents of bullying.	O	O	O	O	O	O
64. This school's administrators support me when I have concerns about student behavior.	O	O	O	O	O	O

D. Engaging with Families

How strongly do you agree or disagree with the following statements about this school? *Mark one response per line.*

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
65. I make an effort to know my students' families.	O	O	O	O	O	O
66. This school supports my efforts to have positive relationships with students' families.	O	O	O	O	O	O
67. This school does a good job of encouraging family involvement.	O	O	O	O	O	O
68. Students' families and I share common academic expectations for their children.	O	O	O	O	O	O
69. Families at this school treat me with respect.	O	O	O	O	O	O
70. Families at this school support me when I have concerns about their child's behavior.	O	O	O	O	O	O

E. School Leadership

The word "teacher" collectively refers to all classroom instructors (teachers and teacher's aides and assistants).

How strongly do you agree or disagree with the following statements about this school? *Mark one response per line.*

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
71. I feel respected by this school's administrators.	○	○	○	○	○	○
72. I feel comfortable raising issues and concerns that are important to me with school administrators.	○	○	○	○	○	○
73. I trust this school's administrators to do what they say they will do.	○	○	○	○	○	○
74. The procedures for teacher evaluation are consistent.	○	○	○	○	○	○
75. My performance is assessed objectively.	○	○	○	○	○	○
76. I receive feedback that can help me improve my performance.	○	○	○	○	○	○
77. This school's administrators communicate a clear vision for this school.	○	○	○	○	○	○
78. This school's administrators understand how children learn.	○	○	○	○	○	○
79. This school's administrators set high expectations for all students.	○	○	○	○	○	○
80. Staff are treated fairly regardless of their race, ethnicity, or culture.	○	○	○	○	○	○
81. My school is committed to providing an inclusive environment for individuals from varied racial, ethnic, and cultural backgrounds.	○	○	○	○	○	○
82. Teachers and administrators have a shared vision for this school.	○	○	○	○	○	○

SECTION V: Safety

A. Safety Concerns

How strongly do you agree or disagree with the following statements about this school? *Mark one response per line.*

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
83. I feel safe at this school.	○	○	○	○	○	○
84. I know what to do if there is an emergency, natural disaster (such as a tornado or a flood), or a dangerous situation (such as a violent person on campus) during the school day.	○	○	○	○	○	○
85. I feel confident in my ability to direct and assist students during an emergency.	○	○	○	○	○	○
86. I have been adequately informed about the threat assessment process in my building.	○	○	○	○	○	○

B. PREVALENCE OF BULLYING

Please use this definition of bullying to answer the questions below. **Bullying means any aggressive and unwanted behavior that is intended to harm, intimidate, or humiliate the victim; involves a real or perceived power imbalance between the aggressor or aggressors and victim; and is repeated over time or causes severe emotional trauma. 'Bullying' includes cyber bullying. 'Bullying' does not include ordinary teasing, horseplay, argument, or peer conflict.**

How strongly do you agree or disagree with the following statements about this school? *Mark one response per line.*

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
87. Bullying is a problem at this school.	O	O	O	O	O	O
88. Students at this school are bullied about their race or ethnicity.	O	O	O	O	O	O
89. Students at this school are bullied about their sexual orientation.	O	O	O	O	O	O
90. Students at this school are bullied about their physical appearance.	O	O	O	O	O	O
91. Students at this school are bullied for having too little or too much money.	O	O	O	O	O	O
92. Students at this school are bullied about their disability.	O	O	O	O	O	O

How strongly do you agree or disagree with the following statements about this school? *Mark one response per line.*

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
93. Students ask for help from adults if there is a problem with another student.	O	O	O	O	O	O
94. Adults at this school take action to solve the problem when students report bullying.	O	O	O	O	O	O
95. Adults at this school bully students.	O	O	O	O	O	O

C. STUDENT AGGRESSION

Have any of the following happened to you personally at school this year? *Mark one response per line.*

	No	One Time	More than Once	Many Times
96. A student stole or damaged my personal property.	O	O	O	O
97. A student threatened to harm me.	O	O	O	O
98. A student physically attacked, pushed, or hit me.	O	O	O	O
99. A student said rude or insulting things to me.	O	O	O	O
100. A student threatened me with a weapon.	O	O	O	O

101. Are there gangs at your school? *Mark one.*

- ○ Yes
- ○ No
- ○ Do not know

101.1. *(Ask only of those that respond "Yes" to question 101.)* Have gangs caused problems at your school this year (e.g., fights, sale of drugs)? *Mark one.*

- ○ Yes
- ○ No
- ○ Do not know

D. SCHOOL RESOURCE AND SECURITY OFFICERS

Use these definitions of a School Resource Officer and School Security Officer when answering the questions below.

- A **School Resource Officer (SRO)** is employed by the Police Department and is assigned to the school to assist with matters related to safety, security, and the law.
- A **School Security Officer (SSO)** is employed by the school division for the purpose of enforcing the school's Code of Conduct by maintaining order and discipline, preventing crimes, and investigating violations of school board policies and school rules.

102. Does your school have a School Resource Officer (SRO)? *Mark one.*

- ○ Yes
- ○ No
- ○ Do not know

102.1. *(Ask only if answered "No" or "Do not know" to question 102.)* Did your school have a School Resource Officer (SRO) in previous years? *Mark one.*

- ○ Yes
- ○ No
- ○ Do not know

102.2. *(Ask only if answered "No" or "Do not know" to question 102.)* Would you feel safer if your school had an SRO? *Mark one.*

- ○ Yes
- ○ No
- ○ Do not know

How strongly do you agree or disagree with the following statements about this school? *Mark one response per line.*

(Ask only if answered "Yes" to question 102.)	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
102.3. The School Resource Officer (SRO) makes me feel safe at this school.	○	○	○	○	○	○
102.4. The School Resource Officer (SRO) makes a positive contribution to our school.	○	○	○	○	○	○

103. Does your school have a School Security Officer (SSO)? *Mark one.*
- ○ Yes
- ○ No
- ○ Do not know

103.1. *(Ask only if answered "No" or "Do not know" to question 103.)* Did your school have a School Security Officer (SSO) in previous years? *Mark one.*
- ○ Yes
- ○ No
- ○ Do not know

103.2. *(Ask only if answered "No" or "Do not know" to question 103.)* Would you feel safer if your school had an SSO? *Mark one.*
- ○ Yes
- ○ No
- ○ Do not know

How strongly do you agree or disagree with the following statements about this school? *Mark one response per line.*

(Ask only if answered "Yes" to question 103.)	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
103.3. The School Security Officer (SSO) makes me feel safe at this school.	○	○	○	○	○	○
103.4. The School Security Officer (SSO) makes a positive contribution to our school.	○	○	○	○	○	○

SECTION VI: WELL-BEING

A. BURNOUT

104. Overall, based on your definition of burnout, how would you rate your level of burnout? *(Mark one.)*
- ○ I enjoy my work. I have no symptoms of burnout.
- ○ Occasionally I am under stress, and I don't always have as much energy as I once did, but I don't feel burned out.
- ○ I am definitely burning out and have one or more symptoms of burnout, such as physical or emotional exhaustion.
- ○ The symptoms of burnout that I'm experiencing won't go away. I think about frustration at work a lot.
- ○ I feel completely burned out and often wonder if I can go on. I am at the point where I may need some changes or may need to seek some sort of help.

B. Mental Health

How often over the last 2 weeks were you bothered by the following? *Mark one response per line.*

	Not at all	Several days	More than half the days	Nearly every day
105. Feeling nervous, anxious, or on edge	○	○	○	○
106. Not being able to stop or control worrying	○	○	○	○
107. Feeling down, depressed, or hopeless	○	○	○	○
108. Having little interest or pleasure doing things	○	○	○	○

C. Support for Burnout and Mental Health

How strongly do you agree or disagree with the following statements about this school? *Mark one response per line.*

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
109. The administrators in my school care about teachers' well-being and mental health.	○	○	○	○	○	○
110. The administrators in my school take steps to reduce the stressors that impact teachers' burnout and mental health symptoms.	○	○	○	○	○	○
111. The administrators in my school provide emotional support to reduce teachers' burnout and mental health symptoms.	○	○	○	○	○	○

How strongly do you agree or disagree with the following statements about this school? *Mark one response per line.*

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
112. The administrators in my school are supportive of students' use of mental health services.	○	○	○	○	○	○
113. I am satisfied with the level of mental health services available to students in my school.	○	○	○	○	○	○
114. The administrators in my school care about students' well-being and mental health.	○	○	○	○	○	○

SECTION VII: SUMMARY

115. Overall, my school is a good place to work and learn. *(Mark one.)*
- O Strongly Disagree
- O Disagree
- O Slightly Disagree
- O Slightly Agree
- O Agree
- O Strongly Agree

116. Over the last year, how have the **working conditions for teachers** in this school changed? *(Mark one.)*
- O Become much worse
- O Become worse
- O Become slightly worse
- O Stayed about the same
- O Become slightly better
- O Become better
- O Become much better
- O I have no opinion.

117. Over the last year, how has the climate for **staff** in this school changed? *(Mark one.)*
- O Become much worse
- O Become worse
- O Become slightly worse
- O Stayed about the same
- O Become slightly better
- O Become better
- O Become much better
- O I have no opinion.

118. Over the last year, how has the overall climate for **students** in this school changed? (*Mark one.)*
- O Become much worse
- O Become worse
- O Become slightly worse
- O Stayed about the same
- O Become slightly better
- O Become better
- O Become much better
- O I have no opinion.

119. Which of the following best describes your immediate professional plans? *Mark one.*

- ○ Continue teaching at my current school
- ○ Continue teaching in this division but leave this school
- ○ Continue teaching in this state but leave this division
- ○ Continue teaching in a state other than Virginia
- ○ Continue working in education but pursue a non-teaching position
- ○ Leave education to retire**
- ○ Leave education to work in a non-education field**
- ○ Leave education for other reasons**

** The following question will only be presented to those who indicate they intent to leave the teaching profession.

Indicate your primary reason for leaving and any other reasons that influenced your decision to leave education.	Primary Reason for Leaving *(Mark one).*	Other Reasons for Leaving *(Mark all that apply).*
Retirement		
Involuntary separation or end of contract		
Taking a job more conveniently located OR moving		
Other personal life reasons (e.g., health, caring for family)		
Want or need a higher salary		
Want or need better benefits		
Dissatisfied with teaching as a career		
Inadequately prepared to be a teacher		
Lack of support from families and/or the community		
Not enough opportunities for leadership roles or professional development		
Dissatisfied with job description or assignment		
Did not have enough autonomy over classroom		
Too many intrusions on teaching time		
Dissatisfied with workplace conditions		
Dissatisfied with student discipline problems		
Dissatisfied with administration		
Dissatisfied with lack of influence over school policies and practices		

Dissatisfied with how student assessments and school accountability measures impacted teaching		
Dissatisfied with how compensation, benefits, or rewards were tied to student performance		
Use this space to document any additional reasons for leaving not addressed above.	[open text]	

SECTION VIII: CONCLUDING QUESTIONS

How strongly do you agree or disagree with the following statements about this school? *Mark one response per line.*

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
120. I have sufficient resources to meet any additional student learning needs as a result of COVID-19.	O	O	O	O	O	O
121. My division's overall response to the pandemic was appropriate given the circumstances.	O	O	O	O	O	O

122. Have the results from the 2021 Virginia School Survey of Climate and Working Conditions been made readily available to the teachers at this school? *Mark one.*
- O Yes
- O No
- O I do not know

The following questions are asked of all respondents to better understand whether groups of individuals experience school climate and working conditions differently.

123. How do you describe your gender? *Mark one.*
- O Male
- O Female
- O Non-binary
- O Prefer not to disclose

124. Is your ethnic background Hispanic or Latino? *Mark one.*
- O Yes
- O No

125. What is the best description of your race? *If you are multi-racial, mark all that apply.*
- O American Indian or Alaska Native
- O Asian
- O Black or African American
- O Native Hawaiian or Pacific Islander

- ○ White
- ○ Other Race: _____

A representative selection of health and wellness resources are provided below.
This is not an exhaustive list of local, state, and national resources that are available to you.
If you need help, contact one of these organizations or talk to a trusted adult or colleague.

[List will appear in the online version of this survey.]

Appendix D

2023 Virginia Survey of School Climate and Working Conditions: Staff Version

This survey is a review copy of the digitally-administered Virginia Survey of School Climate and Working Conditions: Staff Version.

2023 Virginia School Survey of Climate and Working Conditions
Staff Version

This is a review copy, not for circulation or use. The actual survey is online with formatting for easier reading. Questions are grouped around school climate and working conditions topics (in **BOLD CAPS** *below). These topics do not appear in the online survey.*

In order to access the online survey, you must enter the unique Access Code for the adult survey which was assigned to your school. Your principal, or your principal's designee, will have this Access Code for you. All classroom instructors and school staff members at the same school will have the same Access Code, so you will not be identified by this Access Code. It is important that you submit **only one completed survey** for each school at which you work. The administrators of this survey are obligated to protect your identity.

What is your Access Code for taking this survey? _____

Do you want to take the survey in English or Spanish? *Mark one.*

- O English
- O Spanish

Instructions for classroom instructors and other school staff members:

Any individual employed in Virginia's public schools may take this survey, including:

1. Classroom instructors (teachers and teacher's aides and assistants) who interact with students in classroom settings and
2. School staff members who interact with or support students external to the classroom setting.

All classroom instructors (including substitutes) and school staff members are asked to complete the survey regardless of the grade level of the students with whom they teach or interact. The purpose of the survey is to help schools create and maintain safe and supportive working environments for education professionals in Virginia's public schools.

Your individual answers to the survey are anonymous, which means that no one will know how you answered. It is important that you submit only **one completed survey** for each school at which you work.

Some of the questions differ for classroom instructors and school staff members. The survey should take about 20-25 minutes to complete.

Use the Next and Previous buttons at the bottom of the screen to go to the next or previous page.

SECTION I: GENERAL QUESTIONS

1. You are logging in to the survey as a member of the following school: {display division and school name}. Is this correct?
   - O Yes
   - O No *[If no, provide dropdown menus for respondent to select the correct division and school.]*

2. What is your professional role at this school? *Mark one.*

[If selected, respondent will be directed to the Classroom Instructors Survey.]

- ○ Teacher, including substitute (not including Library Media, Mathematics Specialists, or Reading Specialists)
- ○ Teacher's Assistant, Teaching Assistant, Teacher's Aide, Instructional Aide, Para-educator, Para-Professional

[If selected, respondent will be directed to the Staff Survey.]

- ○ Principal, Assistant Principal, or Regional Director
- ○ Athletic and/or Student Activities Directors, Trainers or Coaches
- ○ Bus, Car, or Van Driver
- ○ Coordinator of Special Programs (e.g., ESL, Gifted Education, Special Education)
- ○ Custodial and Facilities
- ○ Library Media
- ○ Mathematics or Reading Specialist
- ○ Administrative Support Staff (e.g., secretaries and clerical staff)
- ○ Specialized Student Support Services (e.g., Counselors, Psychologists, or Social Workers)
- ○ Specialized Services for Students with Disabilities (e.g., Speech & Language, Interpreters, OT, PT, Therapeutic Recreation)
- ○ Medical and Nursing Services (e.g., school nurses, other medical staff)
- ○ Food Nutrition, School Cafeteria, or Food Service Staff
- ○ School Safety, Security, and Law Enforcement
- ○ Instructional Technology and Support
- ○ Testing and Assessment Staff
- ○ Other, please specify your full title (no acronyms): _____

2.1. *(Ask only of respondents that choose "Specialized Student Support Services" in question 2.)* In what role do you provide specialized student support services?

- ○ Counselor
- ○ Psychologist
- ○ Social Worker
- ○ Other (Please identify your role)

3. Do you hold a professional license related to your role in the school?

- ○ Yes
- ○ No

4. How have you provided services to students this year? *Mark all that apply.*

- ○ In person
- ○ Remotely from the school building
- ○ Remotely from somewhere else

SECTION II: TEACHING AND LEARNING ENVIRONMENT

A. STAFF COLLEGIALITY AND RESPECT

How strongly do you agree or disagree with the following statements about this school? *Mark one response per line.*

	This does not apply to me	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
5. I trust the teachers and other adults at this school.	○	○	○	○	○	○	○
6. I feel supported by teachers and other adults at this school.	○	○	○	○	○	○	○
7. Teachers and other adults at this school treat me with respect.	○	○	○	○	○	○	○
8. My professional role is respected.	○	○	○	○	○	○	○
9. Current policies are improving this school.	○	○	○	○	○	○	○
10. I contribute to decisions about issues at my school.	○	○	○	○	○	○	○

B. PHYSICAL ENVIRONMENT

How strongly do you agree or disagree with the following statements about this school? *Mark one response per line.*

	This does not apply to me	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
11. The physical environment of my workspace supports my work responsibilities.	○	○	○	○	○	○	○
12. I have adequate space to work productively.	○	○	○	○	○	○	○
13. The school building is clean and comfortable.	○	○	○	○	○	○	○
14. I have the support I need to incorporate technology into my work responsibilities.	○	○	○	○	○	○	○

C. STUDENT ENGAGEMENT

How strongly do you agree or disagree with the following statements about this school? *Mark one response per line.*

	This does not apply to me	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
15. Students generally like this school.	○	○	○	○	○	○	○
16. Students are proud to be at this school.	○	○	○	○	○	○	○
17. Students come to school ready to learn.	○	○	○	○	○	○	○
18. Students are engaged in classroom lessons.	○	○	○	○	○	○	○

D. Relationships Among Students

How strongly do you agree or disagree with the following statements about this school? *Mark one response per line.*

	This does not apply to me	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
19. Students at this school care about other students.	○	○	○	○	○	○	○
20. Students at this school get along well with other students.	○	○	○	○	○	○	○
21. Students at this school treat other students with respect.	○	○	○	○	○	○	○

E. Relationships Between Students and Adults

How strongly do you agree or disagree with the following statements about this school? *Mark one response per line.*

	This does not apply to me	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
22. Adults at this school care about students.	○	○	○	○	○	○	○
23. Adults at this school treat students with respect.	○	○	○	○	○	○	○
24. Adults at this school want students to do well.	○	○	○	○	○	○	○
25. Adults at this school listen to what students have to say.	○	○	○	○	○	○	○
26. Adults at this school recognize and value each individual's cultural background.	○	○	○	○	○	○	○
27. Adults at this school are respected by students.	○	○	○	○	○	○	○
28. Adults at this school provide supports and services that reflect students' cultural backgrounds, ethnicities, and identities.	○	○	○	○	○	○	○

SECTION III: SCHOOL SUPPORTS

A. PROFESSIONAL GROWTH OPPORTUNITIES

How strongly do you agree or disagree with the following statements about this school? *Mark one response per line.*

	This does not apply to me	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
29. I have sufficient resources for professional development.	○	○	○	○	○	○	○
30. The professional development I receive meets my needs.	○	○	○	○	○	○	○
31. Professional development provides ongoing opportunities for me to work with colleagues to refine my practice.	○	○	○	○	○	○	○
32. I receive follow-up after professional development activities to give me additional support.	○	○	○	○	○	○	○
33. The professional development I receive enhances my ability to meet student needs.	○	○	○	○	○	○	○

B. Managing Student Behavior

How strongly do you agree or disagree with the following statements about this school? *Mark one response per line.*

	This does not apply to me	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
34. Adults at this school understand the rules for student behavior.	O	O	O	O	O	O	O
35. The rules for student behavior are effective at this school.	O	O	O	O	O	O	O
36. We use data to evaluate and, if needed, adjust this school's student conduct policies.	O	O	O	O	O	O	O
37. If a student breaks a school rule, the student's behavior is addressed consistently.	O	O	O	O	O	O	O
38. This school's use of suspensions or expulsions to manage student behavior is effective.	O	O	O	O	O	O	O
39. Students know which behaviors are against school rules.	O	O	O	O	O	O	O
40. Students know there are consequences for breaking school rules.	O	O	O	O	O	O	O
41. Students are recognized for positive behavior.	O	O	O	O	O	O	O
42. When students are accused of doing something wrong, they get a chance to explain.	O	O	O	O	O	O	O
43. There are supports to help students who misbehave develop positive behavior.	O	O	O	O	O	O	O
44. I feel equipped to successfully handle incidents of racially motivated behaviors.	O	O	O	O	O	O	O
45. I feel equipped to successfully handle incidents of bullying.	O	O	O	O	O	O	O
46. This school's administrators support me when I have concerns about student behavior.	O	O	O	O	O	O	O

C. Engaging with Families

How strongly do you agree or disagree with the following statements about this school? *Mark one response per line.*

	This does not apply to me	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
47. I make an effort to know students' families.	○	○	○	○	○	○	○
48. This school supports my efforts to have positive relationships with students' families.	○	○	○	○	○	○	○
49. This school does a good job of encouraging family involvement.	○	○	○	○	○	○	○
50. Students' families and I share common academic expectations for their children.	○	○	○	○	○	○	○
51. Families at this school treat me with respect.	○	○	○	○	○	○	○
52. Families at this school support me when I have concerns about their child's behavior.	○	○	○	○	○	○	○

D. School and Division Leadership

How strongly do you agree or disagree with the following statements about this school? *Mark one response per line.*

(Ask only if did not answer "Principal, Assistant Principal or Regional Director*" to question 2.)*	This does not apply to me	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
53. I feel respected by this school's administrators.	○	○	○	○	○	○	○
54. I feel comfortable raising issues and concerns that are important to me with school administrators.	○	○	○	○	○	○	○
55. I trust this school's administrators to do what they say they will do.	○	○	○	○	○	○	○
56. The procedures for staff evaluation are consistent.	○	○	○	○	○	○	○
57. My performance is assessed objectively.	○	○	○	○	○	○	○
58. I receive feedback that can help me improve my performance.	○	○	○	○	○	○	○
59. This school's administrators communicate a clear vision for this school.	○	○	○	○	○	○	○
60. This school's administrators understand how children learn.	○	○	○	○	○	○	○
61. This school's administrators set high expectations for all students.	○	○	○	○	○	○	○
62. Staff are treated fairly regardless of their race, ethnicity, or culture.	○	○	○	○	○	○	○
63. My school is committed to providing an inclusive environment for individuals from varied racial, ethnic, and cultural backgrounds.	○	○	○	○	○	○	○
64. Staff and administrators have a shared vision for this school.	○	○	○	○	○	○	○

(Ask only if answered "Principal, Assistant Principal or Regional Director*" to question 2.)*	This does not apply to me	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
53.1. I feel respected by this division's administrators.	O	O	O	O	O	O	O
54.1. I feel comfortable raising issues and concerns that are important to me with division administrators.	O	O	O	O	O	O	O
55.1. I trust this division's administrators to do what they say they will do.	O	O	O	O	O	O	O
56.1. The procedures for administrators' evaluation are consistent.	O	O	O	O	O	O	O
57.1. My performance is assessed objectively.	O	O	O	O	O	O	O
58.1. I receive feedback that can help me improve my performance.	O	O	O	O	O	O	O
59.1. This division's administrators communicate a clear vision for this school.	O	O	O	O	O	O	O
60.1. This division's administrators understand how children learn.	O	O	O	O	O	O	O
61.1. This division's administrators set high expectations for all students.	O	O	O	O	O	O	O
62.1. Staff are treated fairly regardless of their race, ethnicity, or culture.	O	O	O	O	O	O	O
63.1. My school is committed to providing an inclusive environment for individuals from varied racial, ethnic, and cultural backgrounds.	O	O	O	O	O	O	O
64.1. Staff and administrators have a shared vision for this school.	O	O	O	O	O	O	O

SECTION IV: SAFETY

A. SAFETY CONCERNS

How strongly do you agree or disagree with the following statements about this school? *Mark one response per line.*

	This does not apply to me	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
65. I feel safe at this school.	O	O	O	O	O	O	O
66. I know what to do if there is an emergency, natural disaster (such as a tornado or a flood), or a dangerous situation (such as a violent person on campus) during the school day.	O	O	O	O	O	O	O
67. I feel confident in my ability to direct and assist students during an emergency.	O	O	O	O	O	O	O
68. I have been adequately informed about the threat assessment process in my building.	O	O	O	O	O	O	O

B. Prevalence of Bullying

Please use this definition of bullying to answer the questions below. **Bullying means any aggressive and unwanted behavior that is intended to harm, intimidate, or humiliate the victim; involves a real or perceived power imbalance between the aggressor or aggressors and victim; and is repeated over time or causes severe emotional trauma. 'Bullying' includes cyber bullying. 'Bullying' does not include ordinary teasing, horseplay, argument, or peer conflict.**

How strongly do you agree or disagree with the following statements about this school? *Mark one response per line.*

	This does not apply to me	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
69. Bullying is a problem at this school.	O	O	O	O	O	O	O
70. Students at this school are bullied about their race or ethnicity.	O	O	O	O	O	O	O
71. Students at this school are bullied about their sexual orientation.	O	O	O	O	O	O	O
72. Students at this school are bullied about their physical appearance.	O	O	O	O	O	O	O
73. Students at this school are bullied for having too little or too much money.	O	O	O	O	O	O	O
74. Students at this school are bullied about their disability.	O	O	O	O	O	O	O

How strongly do you agree or disagree with the following statements about this school? *Mark one response per line.*

	This does not apply to me	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
75. Students ask for help from adults if there is a problem with another student.	O	O	O	O	O	O	O
76. Adults at this school take action to solve the problem when students report bullying.	O	O	O	O	O	O	O
77. Adults at this school bully students.	O	O	O	O	O	O	O

C. Student Aggression

Have any of the following happened to you personally at school this year? This includes school events like field trips, school dances, and sports events. *Mark one response per line.*

	No	One Time	More than Once	Many Times
78. A student stole or damaged my personal property.	O	O	O	O
79. A student threatened to harm me.	O	O	O	O
80. A student physically attacked, pushed, or hit me.	O	O	O	O
81. A student said rude or insulting things to me.	O	O	O	O
82. A student threatened me with a weapon.	O	O	O	O

83. Are there gangs at your school? *Mark one.*
- O Yes
- O No
- O Do not know

83.1. *(Asked only of those that respond "Yes" to question 83.)* Have gangs caused problems at your school this year (e.g., fights, sale of drugs)? *Mark one.*
- O Yes
- O No
- O Do not know

D. School Resource and Security Officers

Use these definitions of a School Resource Officer and School Security Officer when answering the questions below.
- A **School Resource Officer (SRO)** is employed by the Police Department and is assigned to the school to assist with matters related to safety, security, and the law.
- A **School Security Officer (SSO)** is employed by the school division for the purpose of enforcing the school's Code of Conduct by maintaining order and discipline, preventing crimes, and investigating violations of school board policies and school rules.

84. Does your school have a School Resource Officer (SRO)? *Mark one.*
- O Yes
- O No
- O Do not know

84.1. *(Ask only if answered "No" or "Do not know" to question 84.)* Did your school have a School Resource Officer (SRO) in previous years? *Mark one.*
- O Yes
- O No
- O Do not know

84.2. *(Ask only if answered "No" or "Do not know" to question 84.)* Would you feel safer if your school had an SRO? *Mark one.*
- O Yes
- O No
- O Do not know

How strongly do you agree or disagree with the following statements about this school? *Mark one response per line.*

(Ask only if answered "Yes" to question 84.)	This does not apply to me	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
84.3. The School Resource Officer (SRO) makes me feel safe at this school.	O	O	O	O	O	O	O
84.4. The School Resource Officer (SRO) makes a positive contribution to our school.	O	O	O	O	O	O	O

85. Does your school have a School Security Officer (SSO)? *Mark one.*

- O Yes
- O No
- O Do not know

85.1. *(Ask only if answered "No" or "Do not know" to question 85.)* Did your school have a School Security Officer (SSO) in previous years? *Mark one.*

- O Yes
- O No
- O Do not know

85.2. *(Ask only if answered "No" or "Do not know" to question 85.)* Would you feel safer if your school had an SSO? *Mark one.*

- O Yes
- O No
- O Do not know

How strongly do you agree or disagree with the following statements about this school? *Mark one response per line.*

(Ask only if answered "Yes" to question 85.)	This does not apply to me	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
85.3. The School Security Officer (SSO) makes me feel safe at this school.	O	O	O	O	O	O	O
85.4. The School Security Officer (SSO) makes a positive contribution to our school.	O	O	O	O	O	O	O

SECTION V: WELL-BEING

A. BURNOUT

86. Overall, based on your definition of burnout, how would you rate your level of burnout? *(Mark one.)*

- ○ I enjoy my work. I have no symptoms of burnout.
- ○ Occasionally I am under stress, and I don't always have as much energy as I once did, but I don't feel burned out.
- ○ I am definitely burning out and have one or more symptoms of burnout, such as physical or emotional exhaustion.
- ○ The symptoms of burnout that I'm experiencing won't go away. I think about frustration at work a lot.
- ○ I feel completely burned out and often wonder if I can go on. I am at the point where I may need some changes or may need to seek some sort of help.

B. MENTAL HEALTH

How often over the last 2 weeks were you bothered by the following? *Mark one response per line.*

	Not at all	Several days	More than half the days	Nearly every day
87. Feeling nervous, anxious, or on edge	○	○	○	○
88. Not being able to stop or control worrying	○	○	○	○
89. Feeling down, depressed, or hopeless	○	○	○	○
90. Having little interest or pleasure doing things	○	○	○	○

C. SUPPORT FOR BURNOUT AND MENTAL HEALTH

How strongly do you agree or disagree with the following statements about this school? *Mark one response per line.*

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
91. The administrators in my school care about staff well-being and mental health.	○	○	○	○	○	○
92. The administrators in my school take steps to reduce the stressors that impact staff burnout and mental health symptoms.	○	○	○	○	○	○
93. The administrators in my school provide emotional support to reduce staff burnout and mental health symptoms.	○	○	○	○	○	○

How strongly do you agree or disagree with the following statements about this school? *Mark one response per line.*

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
94. The administrators in my school are supportive of students' use of mental health services.	O	O	O	O	O	O
95. I am satisfied with the level of mental health services available to students in my school.	O	O	O	O	O	O
96. The administrators in my school care about students' well-being and mental health.	O	O	O	O	O	O

SECTION VI: SUMMARY

97. Overall, my school is a good place to work and learn. *(Mark one.)*
- O Strongly Disagree
- O Disagree
- O Slightly Disagree
- O Slightly Agree
- O Agree
- O Strongly Agree

98. Over the last year, how have the **working conditions for staff** in this school changed? *(Mark one.)*
- O Become much worse
- O Become worse
- O Become slightly worse
- O Stayed about the same
- O Become slightly better
- O Become better
- O Become much better
- O I have no opinion.

99. Over the last year, how has the climate **for staff** in this school changed? *(Mark one.)*
- O Become much worse
- O Become worse
- O Become slightly worse
- O Stayed about the same
- O Become slightly better
- O Become better
- O Become much better
- O I have no opinion.

100. Over the last year, how has the **overall climate for students** in this school changed? *(Mark one.)*

- O Become much worse
- O Become worse
- O Become slightly worse
- O Stayed about the same
- O Become slightly better
- O Become better
- O Become much better
- O I have no opinion.

101. Which of the following best describes your immediate professional plans? *Mark one.*

- O Continue working at my current school
- O Continue working in this division but leave this school
- O Continue working in education in this state but leave this division
- O Continue working in education but in a state other than Virginia
- O Leave education to retire
- O Leave education to work in a non-education field
- O Leave education for other reasons

** The following question will only be presented to those who indicate they intent to leave the teaching profession.

Indicate your primary reason for leaving and any other reasons that influenced your decision to leave education.	Primary Reason for Leaving *(Mark one).*	Other Reasons for Leaving *(Mark all that apply).*
Retirement		
Involuntary separation or end of contract		
Taking a job more conveniently located OR moving		
Other personal life reasons (e.g., health, caring for family)		
Want or need a higher salary		
Want or need better benefits		
Dissatisfied with current role as a career		
Inadequately prepared for current role		
Lack of support from families and/or the community		
Not enough opportunities for leadership roles or professional development		
Dissatisfied with job description or assignment		

Did not have enough autonomy over responsibilities		
Too many intrusions on time needed to perform duties		
Dissatisfied with workplace conditions		
Dissatisfied with student discipline problems		
Dissatisfied with administration		
Dissatisfied with lack of influence over school policies and practices		
Dissatisfied with how compensation, benefits, or rewards were tied to student performance		
Use this space to document any additional reasons for leaving not addressed above.	[open text]	

SECTION VII: CONCLUDING QUESTIONS

How strongly do you agree or disagree with the following statements about this school? *Mark one response per line.*

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
102. I have sufficient resources to meet any additional student needs as a result of COVID-19.	O	O	O	O	O	O
103. My division's overall response to the pandemic was appropriate given the circumstances.	O	O	O	O	O	O

104. Have the results from the 2021 Virginia School Survey of Climate and Working Conditions been made readily available to the teachers at this school?

- O Yes
- O No
- O I do not know

The following questions are asked of all respondents to better understand whether groups of individuals experience school climate and working conditions differently.

105. How do you describe your gender? *Mark one.*

- O Male
- O Female
- O Non-binary
- O Prefer not to disclose

106. Is your ethnic background Hispanic or Latino? *Mark one.*

- ○ Yes
- ○ No

107. What is the best description of your race? *If you are multi-racial, mark all that apply.*

- ○ American Indian or Alaska Native
- ○ Asian
- ○ Black or African American
- ○ Native Hawaiian or Pacific Islander
- ○ White
- ○ Other Race: _____

108. How many years have you worked in this school (including the current school year)? *Mark one.*

- ○ 1-3 years
- ○ 4-10 years
- ○ 11-20 years
- ○ More than 20 years

A representative selection of health and wellness resources are provided below.
This is not an exhaustive list of local, state, and national resources that are available to you.
If you need help, contact one of these organizations or talk to a trusted adult or colleague.

[List will appear in the online version of this survey.]

Appendix E

Certificate of CITI Program Completion

CITI PROGRAM

Completion Date 09-Sep-2021
Expiration Date 08-Sep-2024
Record ID 44936844

This is to certify that:

Summerlyn Thompson

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

Social & Behavioral Research
(Curriculum Group)
Social & Behavioral Research
(Course Learner Group)
1 - Basic Course
(Stage)

Under requirements set by:

Virginia Polytechnic Institute & State University (Virginia Tech)

CITI
Collaborative Institutional Training Initiative

Appendix F

Virginia Polytechnic Institute and State University IRB Approval 23-436

Division of Scholarly Integrity and Research Compliance
Institutional Review Board
North End Center, Suite 4120 (MC 0497)
300 Turner Street NW
Blacksburg, Virginia 24061
540/231-3732
irb@vt.edu
http://www.research.vt.edu/sirc/hrpp

VIRGINIA TECH

MEMORANDUM

DATE: April 20, 2023

TO: Carol Ann Mullen, Summerlyn Lotz Thompson

FROM: Virginia Tech Institutional Review Board (FWA00000572)

PROTOCOL TITLE: Investigating the Relationships Among School Climate, Academic Growth, and Benchmark Achievement Within Elementary Schools in Virginia: A Quantitative Study

IRB NUMBER: **23-436**

Based on the submitted project description and items listed in the Special Instructions section found on Page 2, the Virginia Tech Human Research Protection Program (HRPP) has determined that the proposed activity is not research involving human subjects as defined by HHS and FDA regulations.

Further review and approval by the Virginia Tech Human Research Protection Program (HRPP) is not required because this is not human research. This determination applies only to the activities described in the submitted project description and does not apply should any changes be made. If changes are made you must immediately submit an Amendment to the HRPP for a new determination. Your amendment must include a description of the changes and you must upload all revised documents. At that time, the HRPP will review the submission activities to confirm the original "Not Human Subjects Research" decision or to advise if a new application must be made.

If there are additional undisclosed components that you feel merit a change in this initial determination, please contact our office for a consultation.

Please be aware that receiving a "Not Human Subjects Research" Determination is not the same as IRB review and approval of the activity. You are NOT to use IRB consent forms or templates for these activities. If you have any questions, please contact the Virginia Tech HRPP office at 540-231-3732 or irb@vt.edu.

PROTOCOL INFORMATION:

Determined As: **Not Human Subjects Research**
Protocol Determination Date: **April 20, 2023**

ASSOCIATED FUNDING:

The table on the following page indicates whether grant proposals are related to this protocol, and which of the listed proposals, if any, have been compared to this protocol, if required.

Appendix G

Full Data Set From Study

Table A2 includes the full data set used in this study.

Table A2

Full Data Set from Study

School	VSSCWC	MAP Mathematics	MAP Reading	SOL Mathematics	SOL Reading
A1	5.233	-0.66	-1.93	431.71	441.275
B1	4.806	0.03	-0.7	383.431	397.667
C1	5.419	-0.71	-1.5	433.569	440.31
D1	4.525	0.74	-0.84	419.596	428.686
E1	5	-0.5	-1.59	427.226	445.784
F1	5.152	1.34	-0.92	440.408	429.847
G1	5.096	-1.96	-0.22	433.737	435.529
H1	5.2	-1.82	-1.12	461.689	452.101
I1	5.047	-0.35	-0.72	421.108	419.857
J1	5.292	-1.77	-1.56	435.703	444.547
K1	4.13	-1.4	-0.24	459.717	454.964
L1	4.782	-2.26	-1	434.262	436.905
M1	5.121	-1.91	-0.46	443.96	442.634
N1	4.786	-1.39	-0.72	460.787	456.419
O1	5.136	-0.13	-0.06	453.905	459.905
P1	5.5	0	-0.26	445.096	457.361
Q1	5.038	0.65	-0.17	436.775	445.807
R1	4.676	0.58	0.38	450.152	446.22
S1	4.622	-1.39	-0.74	420.785	425.487
T1	5.286	-2.72	-1.36	417.107	432.256
U1	5.048	-0.14	-0.32	452.952	452.942
V1	4.621	-0.39	-1.16	453.338	457.134
W1	4.472	-0.07	-1.05	445.639	448.486
X1	4.977	1.14	1.1	437.055	438.611

Y1	5.489	0.97	-0.36	450.308	461.333
Z1	4.69	0.34	0.3	413.33	422.043
A2	4.233	-1.57	-1.06	411.152	424.596
B2	4.264	0.28	-0.44	461.518	455.569
C2	4.118	0.37	0.26	428.213	439.223
D2	5.622	2.53	1.06	446.202	438.179
E2	5.333	-0.37	-1.04	451.75	452.576
F2	5.12	0.55	-0.57	452.477	473.75
G3	5.055	0.2	-1.64	441.895	443.621
H2	4.923	-0.69	-0.53	384.271	402.426
I2	5.48	-0.21	0.4	400.616	403.433
J2	4.724	-0.69	-1	402.298	414.136
K2	5.12	0.04	0.06	466.936	447.655
L2	3.444	-1	-1.6	379.293	382.461
M2	5.321	-0.51	1.19	440.034	461.379
N2	4.923	1.52	-0.68	478.082	473.12
O2	5.115	0.07	-0.17	446.613	458.714
P2	4.83	-0.94	-1.59	445.973	450.39
Q2	4.776	0.47	-0.65	442.967	444.033
R2	5.207	2.05	-0.47	465.34	454.829
S2	5.038	0.92	1.57	448.14	453.36
T2	5.138	1.16	-1.25	425.754	458.25
U2	5.137	0.96	-0.82	496.177	469.784
V2	4.453	-1.3	-1.04	447.226	446.761
X2	5.583	2.05	1.34	446.571	453.5
Y2	5.25	0.93	-0.64	468.948	457.792
Z2	5.02	-0.02	0.27	436.922	437.25
A3	5.074	-0.75	-0.77	462.9	456.329
B3	5.139	0.15	0.98	453.738	456.976
C3	5.224	4.05	0.43	514.213	487.669
D3	5.115	0.01	-0.53	396.972	408.845
E3	5.636	0.79	0.23	470.299	463.897
F3	4.268	0.03	-0.73	448.852	451.457
G3	5.106	-0.72	-0.83	428.216	439.794

H3	5.158	0.24	-0.06	455.222	456.33
I3	4.792	-0.14	-0.28	459.984	458.016
J3	5.231	0.28	0.6	418.295	413.274
K3	5.038	1.37	-0.47	424.879	412.057
L3	5.286	-0.65	-0.79	470.027	467.51
M3	5.161	2.53	1.39	447.527	436.968
N3	4.575	-0.09	-0.03	453.925	467.612
O3	5	1.1	-0.13	461.239	450.728
P3	4.363	-0.5	-1.34	408.493	408.985
Q3	5.209	-0.68	-0.44	452.982	438.938
R3	4.935	-0.27	-0.68	413.203	400.661
S3	4.5	1.14	0.93	372.048	374.083
T3	5.645	-0.51	0.68	462.209	457.637
U3	5.52	0.85	1.59	452.914	470.353
V3	5.333	0.26	-0.71	479.915	467.095