Pepperdine University

Graduate School of Education and Psychology

DOES CULTURE EAT POVERTY FOR BREAKFAST? EXPLORING THE ROLE OF ENGAGEMENT FOR ACHIEVEMENT IN U.S. SCHOOLS

A dissertation submitted in partial satisfaction

of the requirements for the degree of

Doctor of Education in Organizational Leadership

by

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June, 2021

Paul Sparks, Ph.D. – Dissertation Chairperson

This dissertation, written by

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under the guidance of a Faculty Committee and approved by its members, has been submitted to and accepted by the Graduate Faculty in partial fulfillment of the requirements for the degree of

DOCTOR OF EDUCATION

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DEDICATION

This dissertation is dedicated to my family and friends. Your support has made everything possible, and I love you.

VITA

Education/Certifications

Ed.D. in progress—Organizational Leadership, Pepperdine University, Los Angeles, CA, 2021
M.Ed.—Educational Technology Leadership, Lamar University, Beaumont, TX, 2011
B.A.—English with Journalism Minor, Texas State University, San Marcos, TX, 1999
Certified Principal and Teacher
Studied Spanish Abroad—*Intensa*, *Barrio Escalante*, San Jose, Costa Rica

Administrative and Leadership Experience

Co-founder and CEO of Gold Standard Grades, LLC, New Braunfels, TX, 2020

- Invented and developed ad hoc, user-friendly standards-based grade book and report card system to track student learning data and increase equity in school grading systems
- Established method to translate learning data into reports that teachers, administrators, and parents can effectively utilize
- Use Agile development process to continuously improve product
- Serve as Gold Standard brand ambassador
- Encourage diversity of thought and background to make our team stronger

Founder and Owner, ReflectPlanDo Consulting, New Braunfels, TX, 2019

- Apply the Reflect > Plan > Do cycle—an ongoing process of considering needs, strategizing, acting, and repeating
- Use interpersonal skills to complement technical skills and make difficult topics more approachable
- Build visualizations to help communicate complex data to state and federal lawmakers
- Use data and change management expertise to help leaders develop and systemically execute their organization's data strategy
- Conduct quantitative and qualitative research to answer questions and solve problems
- Manage and automate data in my secure operational data store
- Use analytics and visualizations to give context to data and increase understanding

Senior Manager of Data and Accountability, San Marcos CISD, San Marcos, TX, 2017

- Led the research development team at San Marcos CISD, which entailed disaggregating student data by various student groups and marginalized populations
- Created evergreen interactive dashboards to make data useful for educators
- Built and automated an operational data store to support systemic data culture
- Conducted research and produced reports to assist district leadership
- Served as project manager and designer for an Ed-Fi operational data store implementation
- Prepared regular federal, state and local education policy updates and briefing documents for administrators
- Developed and delivered training sessions and presentations at professional conferences
- Developed and implemented systemic data strategy by hearing and responding to people's needs

Director of Innovative Programs, Data and Accountability, San Marcos CISD, San Marcos, TX, 2016

- Focused on teamwork and relationship-building to realize district goals
- Managed multi-million-dollar budget, negotiated purchases, and coordinated adoption and purchase of instructional materials for school district
- Implemented changes to make placement less biased against economically disadvantaged and English-learning students while serving as interim director of Gifted and Talented Education
- Developed the San Marcos Instructional Model: Reflect-Plan-Do
- Co-chaired District Technology Committee
- Coordinated instructional technology and libraries
- Conducted research and reported data to support district initiatives
- Served on Bond Steering Committee

Principal Intern, New Braunfels High School, New Braunfels, TX, 2015

- Designed and implemented NBISD New Teacher Academy
- Chaired New Braunfels High School Technology Leaders Group
- Member of New Braunfels High School Campus Improvement Committee and School of Choice Campus Improvement Committee
- Developed deeper understanding of school finance and non-curricular operations

Technology Curriculum Integration Specialist, New Braunfels ISD, New Braunfels, TX, 2010

- Served as a friendly liaison among Curriculum and Instruction, Technology, campus administrators, teachers and outside curriculum providers to ensure coherent execution of district initiatives
- Worked collaboratively with and provided insights to curriculum specialists, principals and teachers in the planning, implementation and evaluation of instructional technology throughout the district
- Developed and implemented innovative, comprehensive staff development, supporting and modeling 21st century instruction
- Evaluated effectiveness of short- and long-range plans, policies and procedures for the integration of technology into the instructional program
- Continuously learned and integrated new things
- Member of TEC21 Committee, Assistive Technology Committee, Professional Development Planning Committee, District Technology Committee and Project Based Learning Cohort One

Assistant Manager, Enterprise Rent a Car, Austin, TX, 1999-2002

- Cultivated relationships with colleagues, businesses and community leaders
- Monitored and motivated full-time employees
- Consistently one of the top salespeople in region

Operations Supervisor, Schlitterbahn Waterpark and Resort, New Braunfels, TX, 1995-1999

- Fostered a fun working environment
- Oversaw head guards, lifeguards, and ground maintenance staff
- Collaborated with other supervisors and managers
- Conducted employment interviews and orientation

Other Experience

High School Yearbook and English Teacher—New Braunfels High School, New Braunfels, TX, 2007-2010

- Employed engaging student-centered, project based learning to help students meaningfully meet local and state curriculum objectives
- Created assignments utilizing student use of Web 2.0
- Increased yearbook profits and ad sales revenue

High School Yearbook and English Teacher—Travis High School, Austin, TX, 2003-2007

- Encouraged students to be creative and thoughtful
- Sat on Travis Re-design Committee and Pathways & Majors Subcommittee
- Upgraded Travis High School Publications Department to fully digital equipment

Middle School Language Arts Teacher and Coach—Marble Falls Middle School, Marble Falls, TX, 2002-2003

- Fostered a fun learning environment
- Taught 7th Grade Language Arts in a team environment
- Coached Girls Volleyball, Basketball, and Track

Canvasser—Texas Campaign for the Environment, Austin, TX, Summer 2002.

- Made friends while learning about various environmental dangers
- Solicited donations and letters in support of computer recycling program

References

References available upon request

ABSTRACT

How does culture eat poverty for breakfast? Most high-poverty schools do not do well, but some consistently out-perform even the most-affluent schools. Leaders frequently attribute these schools' extraordinary academic performance to culture (Marquez, 2019; Morath, 2019) but do not explain what is meant by culture or how high-poverty schools should shape it to improve academic performance.

Research around student engagement, hidden culture, drivers of beliefs and actions, and motivation provides the backdrop for this study. Student engagement, a construct that attempts to explain persistence in school, is the energy that results from motivation and drives growth (Fredricks, Ye, et al., 2019; M.-T. Wang & Degol, 2014). Basic underlying assumptions are an unseen level of culture (Schein & Schein, 2017) that drive beliefs and behavior (Argyris, 1976; Caesar & Caesar, 2006; Senge et al., 1994; Tompkins & Rhodes, 2012). The underlying assumption that intrinsic motivation creates energy that drives growth and that dissatisfaction depresses that energy characterizes a culture of engagement. A culture of engagement is characterized by systemic intrinsic motivators that increase satisfaction (Herzberg, 2011) and systemic maintenance factors that minimize dissatisfaction (Herzberg, 2011). Engagement culture provides the conditions for student growth and improved academic performance. Identifying and quantifying these systemic factors can help leaders systemically improve student experiences and outcomes.

This dissertation identifies specific characteristics of a culture of engagement that correlate with academic achievement in high-poverty schools. Newly-available assessment and culture data serve as variables to test relationships among underlying assumptions about motivation and academic performance in high-poverty schools.

Chapter One: Study Introduction

Why are some high-poverty schools successful when most are not (Texas Education Agency [TEA], 2019c)? With over half of the nation's students receiving free or reduced lunch—up from 32% in 1989—it is a question with implications for the future of the United States (Suitts, 2015). "Schools in the South and across the nation face the real danger of becoming entrenched, inadequately funded educational systems that enlarge the division in America between haves and have-nots and endanger the entire nation's prospects" (Suitts, 2013, p. 13). The have-nots are disproportionately represented by Black, Native American, and Latinx children (Annie E. Casey Foundation, 2020; García, 2020). Three explanations are commonly used to explain poverty (Budge & Parrett, 2018). The first two—the personal-individual perspective and the culture of poverty perspective—largely blame the impoverished for being poor, citing a deficiency within people or their culture. The third, called the structural-institutional perspective, focuses on the systems of oppression and discrimination that have restricted opportunities for poor Americans. The structural-institutional perspective acknowledges that systemic interventions could possibly help the poor (Budge & Parrett, 2018). It is not just a question of fairness. In addition to access to material resources, school poverty experts Kathleen Budge and William Parrett (2018) suggested poverty has implications for health, hunger, brain development, stable housing, trauma, safety, continuous education, literacy, social network development, and cultural experiences.

The 2019 Texas school ratings show that students in affluent schools—those with less than 20% of students receiving free or reduced lunch—do better than students in high-poverty schools—those with 80% or more students receiving free or reduced lunch. Not even one low-poverty campus got an overall F rating in Texas in 2019; one low-poverty campus got a D, and

eight got a C that year. The vast majority—79.4%—got an A. In contrast, only 10.5% of high-poverty campuses earned an A rating that year; 51.5% got an overall C, D, or F rating (TEA, 2019c). Texas' commissioner of education attributes some high-poverty campuses' remarkable success to culture (Morath, 2019). He is not alone. The poverty/achievement problem has been at the center of educational reform since the 1960s when school culture surveys were introduced (M.-T. Wang & Degol, 2016). The U.S. Department of Education (USDoE), citing the impact of school climate on student achievement, provides schools with free instruments to analyze their culture (U.S. Department of Education, n.d.-b; U.S. Department of Education, 2018b) and has a school climate transformation grant program (U.S. Department of Education, 2019a). The Effective Schools Framework says school culture is one of the five essential levers to improve academic performance (TEA, 2019m), and culture & climate is one of the accepted categories in locally-developed accountability systems in Texas (Hendrick, 2019). The notion that culture leads to success aligns with the ethos commonly found in thriving businesses. Successful business leaders understand the "dominant role" that culture plays "in exemplary performance" (Deal & Peterson, 2016, p. 2). Peter Drucker put it more simply: "Culture eats strategy for breakfast" (as cited in Deal & Peterson, 2016, p. 1).

The idea that a positive culture can overcome the academic obstacles to learning created by poverty offers hope. While school leaders cannot control their students' poverty level, they can shape the school culture. In the complex educational system, the issue is identifying which aspects of culture are relevant for student success. Frequently school culture is operationalized by how well-behaved and quiet its students are (Marquez, 2019), not the "shared webbing of beliefs, informal folkways, and traditions that infuse work with meaning, passion, and purpose" (Deal & Peterson, 2016, p. 2). TEA designed a guide called the Effective Schools Framework

(ESF) to help schools identified in need of support based on academic performance (Education Service Center Region XIII [ESC 13], n.d.; TEA, 2019m). The ESF says schools must have five things to perform well: (a) strong school leadership and planning; (b) effective, well-supported teachers; (c) positive school culture; (d) high-quality curriculum; and (e) effective instruction (TEA, 2019m). The ESF training includes an exemplar rubric for gauging school culture. The categories include arrival, dress code, hall transitions, common spaces, and check-out dismissal. According to the rubric, in an exemplary school, 95% of students enter quietly, 100% of students are seated or moving with permission upon arrival, and 100% of shirts are tucked in. Hallways are silent during transitions; students walk in a straight line with hands to self; spaces are clean; students are not running or touching one another; and students respond immediately to clap or instruction (Marquez, 2019). TEA's (2019n) ESF guide says schools should "promote positive school culture" ("District Commitments" section) and use climate surveys to "measure progress on student and staff experiences ("Compelling and Aligned Vision" section)." However, it does not precisely say what schools should be measuring and progressing toward. The language mirrors the first part of Deal & Peterson's definition, but the purpose does not match. Tradition is a way to coerce students, not inspire; rituals and celebrations reward students who model ideal behavior (TEA, 2019n).

Multiple researchers have attempted to link some aspect of school culture to student success, but no single pattern emerges to consistently explain academic outcomes (Hernandez & Zamora, 2018; MacNeil et al., 2009; Zamora & Hernandez, 2016). Identifying academic results attributable to a school's culture is difficult because multiple motivation types can result in academic performance sufficient for a school to receive a good accountability score, if not deep and lasting learning. The standardized tests that are the basis of school accountability scores

typically measure a “level and type of learning” achievable by positive extrinsic motivation (Schlechty, 2011, p. 17). Context is likely the key (Jung et al., 2009; Lam et al., 2012; Marsh et al., 2012), and schools with high numbers of disadvantaged students, who typically arrive less motivated and underprepared as a result of their poverty, should work to motivate students (Ng et al., 2018) purposefully.

The way schools attempt to motivate students is essential—engagement results from intrinsic motivation, which stems from work satisfaction (Goleman, 2011). Authentic engagement's measurable effects are similar to the effects of strategic compliance on standardized tests (Fredricks, Ye, et al., 2019; Schlechty, 2011). Even though these cognitively and emotionally disengaged “robo-students” are just “going through the motions” (Fredricks, M.-T. Wang et al., 2016, p. 6; Fredricks, Ye, et al., 2019, p. 39), they are externally motivated to perform well. Perhaps it is due to home expectations or the desire to get an A, but they do not retain the material. A school full of strategically-compliant students—common in high-performing schools (Fredricks, Ye, et al., 2019)—would have the same standardized test results as a school full of engaged students (Fredricks, Ye, et al., 2019; Schlechty, 2011). Controlling environments lead to another, more insidious type of motivation—negative extrinsic motivation (Fredricks, Ye, et al., 2019; Goleman, 2011)—and can result in disengagement (Fredricks, Ye, et al., 2019; Goleman, 2011; Schlechty, 2011; Senge, 2006). Disengaged students withdraw (Fredricks, Ye, et al., 2019). These withdrawers either retreat or rebel in response to the controlling environment and do not even attempt superficial learning. This withdrawal is not a symptom of not being motivated to learn but rather a reaction to a teacher's requirements (Schlechty, 2011).

The assumptions embedded in a high-poverty school's culture about motivating students explain how culture might eat poverty for breakfast. Assumptions develop into beliefs and drive behavior (Argyris, 1976; Caesar & Caesar, 2006; Senge et al., 1994; Tompkins & Rhodes, 2012). Herzberg's (1974, 2011) research on organizational motivators and dissatisfiers informed variable selection.

Problem Statement

The problem is that it is unclear why some high-poverty schools consistently out-perform even the most-affluent schools. High-poverty schools typically graduate fewer students (Audas & Willms, 2001), post inferior academic performance (Swaby & Cai, 2019; TEA, 2018a, 2019e), and prepare fewer students to complete college (TEA, 2019d) than their low-poverty counterparts. These schools are predominately composed of racial and ethnic minorities (Mordechay et al., 2019; Berliner, 2009). If the achievement is related to culture, as TEA Commissioner Morath (2019) has said, then what is meant by culture and how schools should shape it to manifest improved academic performance is the next problem to solve (Marquez, 2019; TEA, 2019n).

Purpose of Research

The purpose of this cross-sectional study is to clarify, elaborate on, and explore relationships among school culture, student engagement, and academic success in high-poverty schools.

Research Questions

Which characteristics of a culture of engagement correlate with academic achievement in high-poverty schools?

Research Question 1. How much do culture construct scores indicating intrinsic motivation and minimal dissatisfaction, discipline data indicating non-coercive motivation styles, and extracurricular participation explain a campus' academic growth?

Research Question 2. How much do culture construct scores indicating intrinsic motivation and minimal dissatisfaction, discipline data indicating non-coercive motivation styles, and extracurricular participation rates explain a campus' relative academic performance?

Methodological Approach. This non-experimental, correlational (Creswell & Creswell, 2018), cross-sectional study measures the relationships among culture, contextual, and academic performance data from Dallas Independent School District (DISD) using publicly-available data from 174 schools from the 2018-2019 school year (DISD, 2020a, 2020b, 2020f, 2020g).

Assumptions. The following assumptions were accepted for this study:

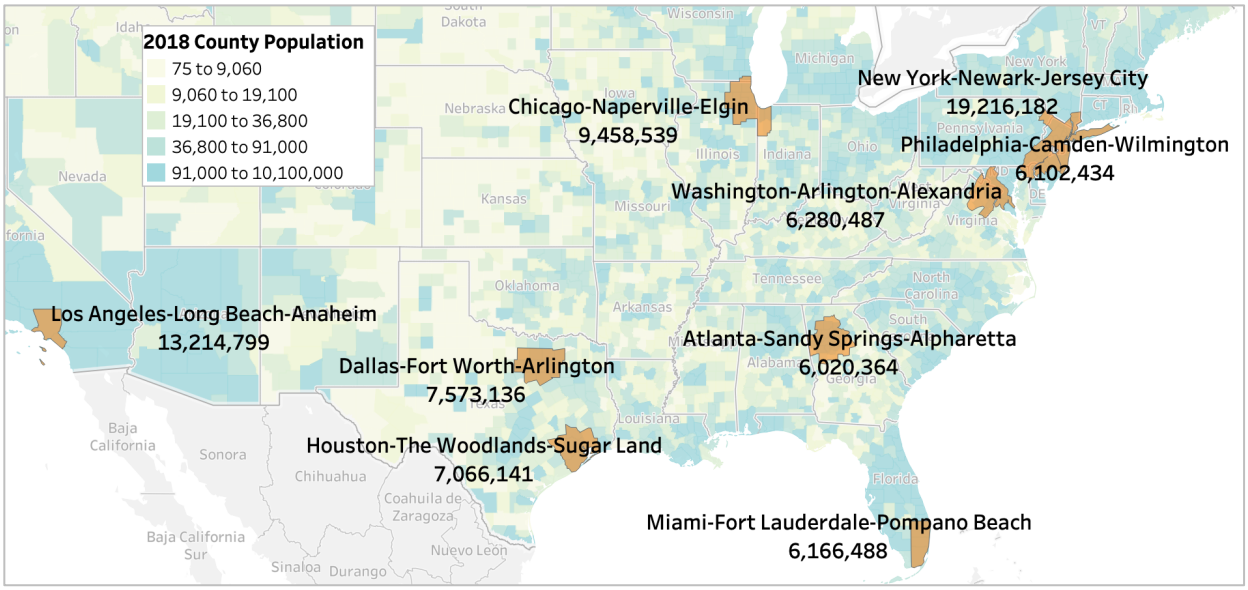
1. The sample is representative of the total population of high-poverty, urban (see Figure 1), public school campuses that do not explicitly exist to serve institutionalized or alternate-education students.
2. Parent, student, and teacher respondents to DISD culture surveys truthfully replied to the prompts.

Delimitations. The study includes only those organizations that match the selection criteria established for the study. The selection criteria include high-poverty, non-charter public school campuses that were academically rated on their own merit in 2019 and do not explicitly exist to serve institutionalized or alternate-education students. High-poverty campuses were selected because they are the focus of the research question and disproportionately rated as Ds or Fs (TEA, 2019k). Charter campuses were omitted because they can exclude students and results may reflect admissions procedures more than school culture or student engagement. Paired and

unrated campuses were excluded because they do not have their own ratings to use as a basis for comparison. Campuses created to serve institutionalized students include residential treatment facilities, juvenile justice alternative education centers, alternative education campuses, and disciplinary campuses. They were excluded because they serve students whose extraordinary needs may play a role in academic performance. The sample comprises campuses in DISD that met selection criteria for School Year 2019.

Figure 1

Largest Metropolitan Statistical Areas in the United States



Note. Map based on 2019 resident population estimates (U.S. Census Bureau, 2019).

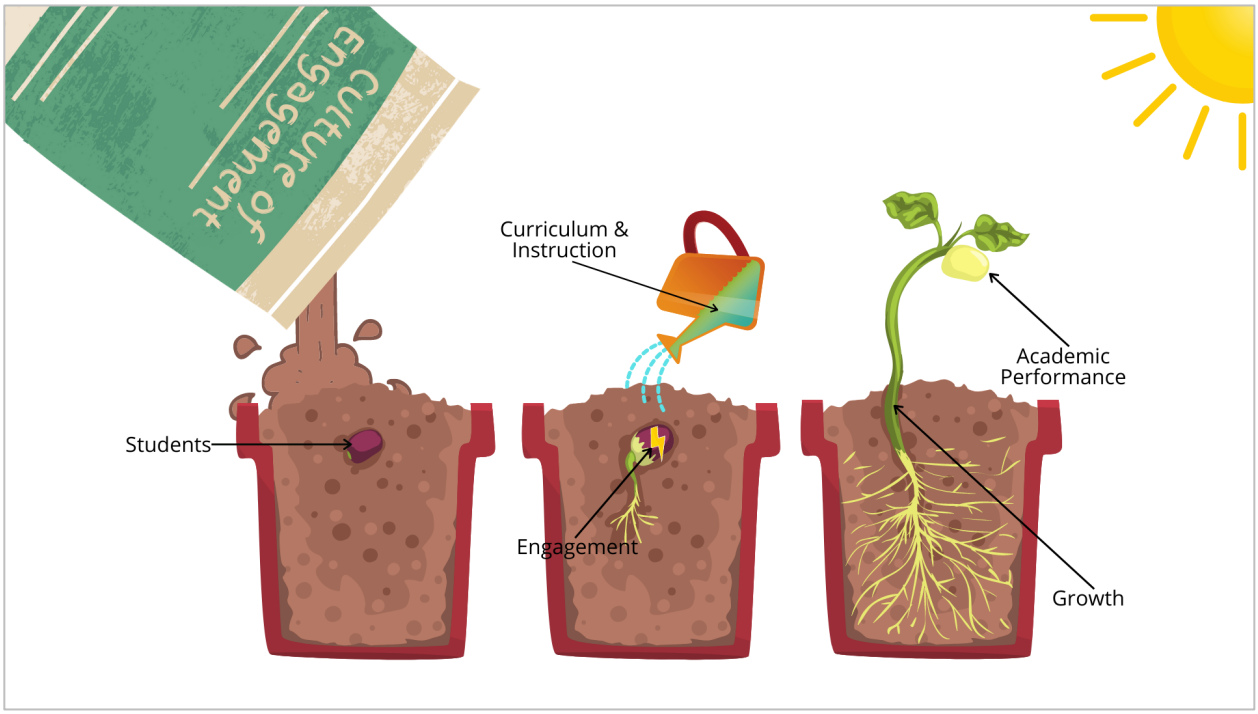
Conceptual/Theoretical Focus

The theoretical framework (see Figure 2) that guide this study is based on the understanding that underlying assumptions develop into beliefs and drive behavior (Argyris, 1976; Caesar & Caesar, 2006; Senge et al., 1994; Tompkins & Rhodes, 2012). In schools, the desired behavior is academic growth, which can be measured by academic performance. Basic underlying assumptions exist at a level of culture that is so ingrained and unseeable (Schein &

Schein, 2017) that studying it is difficult. High-poverty schools that yield robust, long-lasting learning likely share the underlying assumptions that intrinsic motivation creates energy and drives growth (Fredricks, Ye, et al., 2019; M.-T. Wang & Degol, 2014) and that mistreatment leads to dissatisfaction and disengagement (Herzberg,1974, 2011; Schanfield et al., 2019).

Figure 2

Intrinsic Motivation Creates Energy and Drives Growth



Note. A culture engagement, characterized by the shared underlying assumptions that intrinsic motivation creates energy that drives growth and that dissatisfaction depresses that energy, should provide the environment for student growth, resulting in improved academic performance.

Intrinsic Motivation Creates Energy and Drives Growth

Student engagement is "the outward manifestation of motivation" (M.-T. Wang & Degol, 2014, p. 137). It is a multidimensional construct that considers the combinations of and interplay among the many reasons students persist in school instead of addressing discrete reasons separately (Fredricks, Reschly, & Christenson, 2019a). It is typically conceptualized and studied

as an individual student behavior issue (Balfanz & Byrnes, 2019; Balfanz et al., 2007, Davis et al., 2019), but conceptualizing it as a systemic cultural issue could clarify the role of the school experience upon student success (Yazzie-Mintz & McCormick, 2012) and help identify "practical research-based strategies" to systemically grow student engagement (Fredricks, Reschly, & Christenson, 2019b, p. 375). An agreed-upon definition of culture must be established to identify how culture may impact academic performance in high-poverty schools.

Scholars who conceptualize culture as what organizations have, quantify and compare competing values among organizations (Schneider et al., 2013). This concept of culture aligns with the way researchers study climate: "shared beliefs, values, and attitudes" (M.-T. Wang & Degol, 2016, p. 316). Schneider et al. (2013) recommend integrating the two constructs (2013); culture and climate can be used interchangeably to describe feelings about experiences within an organization (Cooke & Rousseau, 1988).

The path from culture to robust learning occurs on the ladder of inference (see Figure 3). The ladder of inference, based on the work of Chris Argyris (1976), is the internal series of steps from observing data to taking action—the only two steps visible to outside observers. Steps include (a) observe data and experiences; (b) select data chosen from step one; (c) assign meanings to select data; (d) make assumptions based on the meanings; (e) draw conclusions from those assumptions; (f) adopt beliefs in light of the conclusions; and (g) take actions based on beliefs (Senge et al., 1994). Cultural norms inform the shared meanings, assumptions, and beliefs that drive action. Beliefs are the basis of data selection. When left unexamined, the ability to objectively select data based on new information is compromised (Senge et al., 1994; Tompkins & Rhodes, 2012). If the cultural assumption is that coercion is the best motivator, then coercive

behavior will occur. The cultural assumption that coercion is the best way to motivate leads to systemic compliance and disengagement, not a culture of engagement.

Figure 3

Chris Argyris' Ladder of Inference

Note. The ladder of inference comprises the invisible, internal steps between observation & action. Beliefs are reinforced when they are the basis of data selection (Argyris, 1976; Senge et al., 1994; Tompkins & Rhodes, 2012).

Public Education Operates Under a Culture of Systemic Compliance, not Engagement

A culture of engagement is contrary to the norm in public education. Public education is a machine bureaucracy characterized by top-down decision-making and a large technostructure tracking compliance with standards and measures (Harry Mintzberg as cited in Bolman & Deal, 2017). The assumption that the only way to get results is to coerce compliance permeates the education system. TEA's (2020f) mission includes monitoring for state and federal compliance as well as administering assessments, operating the accountability system, and collecting public

school data. At the local level, even though engagement is a function of the environment (Hofkens & Ruzek, 2019), students are frequently blamed for the lack of motivation (Fredricks, Reschly, & Christenson, 2019b) and coerced into compliance.

TEA Collects Diverse Data and Implements A-F Accountability System

The passage of Texas' House Bill 22 (HB22) added to the abundance of data generated for TEA (TEA, 2017c). HB22 authorized school districts to develop and implement Local Accountability Systems (LAS) to supplement TEA's A-F accountability ratings. DISD's LAS domains (TEA, 2019r) provide a new source of valid, reliable campus culture data from parent, student, and faculty surveys and engagement data based on extracurricular participation. Panorama built the student survey (DISD, 2019a, 2019b), and its categories include pedagogical effectiveness, classroom climate, rigorous expectations, classroom engagement, and teacher-student relationships. Teacher survey categories (DISD, 2020c) include Beliefs & Priorities, Feedback & Support, Culture & Environment, College-Going Culture, Teacher to Teacher Trust, Teacher to Principal Trust. Parent survey (DISD, 2020d) categories include Academic orientation—My child learns, Academic orientation—Promotes college, Academic orientation—Satisfied direction, School communication—Informs on progress, School communication—Responds to concerns, School communication—Comfortable interacting, School environment—Respectful environment, School environment—Safe environment, School environment—Welcomes involvement, School environment—Maintenance, cleanliness.

DISD uses extracurricular participation as a measure of student engagement. This variable may contribute to our understanding of the role of non-academic school activities in fostering student motivation. "Because the bodies of research on academic and extracurricular activities are largely separate, it is valuable to compare the two domains of engagement… Particularly intriguing is the idea that extracurricular activities or peer relations fostered by those

activities might help academic engagement" (Juvonen et al., 2012, p. 398). Leadership expert Frederick Herzberg would not agree the extracurricular activities help academic engagement. In his article about employee motivation, he argues that "off-hour recreation programs" do not motivate people to work (Herzberg, 2011, p. 33-34).

Definitions

To explain how culture may impact high-poverty schools' academic performance, it is necessary to understand how ingrained beliefs about motivation systemically influence actions. The level of culture (Schein & Schein, 2017) that drives behavior is basic underlying assumptions (Argyris, 1976; Senge et al., 1994; Tompkins & Rhodes, 2012). A school that operates under the assumption that it is the school's responsibility to engage students—and that the best way to do that is intrinsic motivation—has a culture of engagement. Since basic underlying assumptions are unseeable (Schein & Schein, 2017), they must be uncovered to be studied. They can be revealed by studying relationships among parts in a system (Senge, 2000).

Basic Underlying Assumptions. The invisible, implicit beliefs within a culture (Schein & Schein, 2017). Studying relationships among the parts of a system can uncover underlying assumptions (Bertalanffy, 1969; Senge, 2000).

Culture. "Shared webbing of beliefs, informal folkways, and traditions that infuse work with meaning, passion, and purpose" (Deal & Peterson, 2016, p. 2). Affected by the maintenance factors that minimize dissatisfaction and intrinsic motivators that increase satisfaction in an organization (Herzberg, 2011). Comprises three levels: artifacts, espoused beliefs and values, and basic underlying assumptions (Schein & Schein, 2017). Frequently operationalized in schools by how well-behaved and quiet the students are (Marquez, 2019).

Engagement Culture. Shared underlying assumption in a school that intrinsic motivation creates energy that drives growth and that dissatisfaction depresses that energy.

Ladder of Inference. The series of steps from observing data to taking action (the only two steps visible to outside observers) and based on the work of Chris Argyris.

Steps include (a) observe data and experiences; (b) select data chosen from step one; (c) assign meanings to select data; (d) make assumptions based on the meanings; (e) draw conclusions from those assumptions; (f) adopt beliefs in light of the conclusions; and (g) take actions based on beliefs (Senge et al., 1994). The path from culture to robust learning occurs on the ladder of inference, with cultural norms informing the shared meanings, assumptions, and beliefs that drive behavior.

Maintenance. Processes/factors that drive dissatisfaction and disengagement in an organization and are largely linked to the climate and meeting of basic human needs. Also known as hygiene factors (Herzberg, 2011). Contrast with motivation.

Motivation. Processes/factors that drive someone to take action (Yazzie-Mintz & McCormick, 2012). Two types are considered in this study: intrinsic and negative extrinsic (stick/Kick in the A**[KITA]); positive extrinsic (carrot) is not.

Student Engagement. "The outward manifestation of motivation" (M.-T. Wang & Degol, 2014, p. 137). It is a multidimensional construct that considers the combinations of and interplay among the many reasons students persist in school instead of addressing discrete reasons separately (Fredricks, Reschly, & Christenson, 2019a). Engagement is the energy that results from motivation and drives growth (M.-T. Wang & Degol, 2014).

System. The connections among parts of a whole. Relationships between the parts define their function (Bertalanffy, 1969), and studying these relationships unveils the hidden assumptions operating in a culture (Senge, 2000).

Significance of the Study

Actual Components of School Culture That Garner Academic Success in High-Poverty Schools Have not Been Identified

There is a lack of operational components of positive school culture that yield academic performance in high-poverty schools, and identifying elements of student engagement may help schools better support the most impoverished students who do not arrive motivated to learn (Hernandez & Zamora, 2018; Zamora & Hernandez, 2016). The effects of motivation-type and resulting behavior on academic performance should be studied in the context of high-poverty schools. Effects of low student engagement vary depending on economic status. More affluent students are less likely to drop out of school but will not have robust, lasting learning (Fredricks, Ye, et al., 2019).

This Study Identifies Components of Student Engagement Culture

This study aims to establish a definition of student engagement culture and its components that can be identified at a system level. Schools need systemwide indicators to guide intervention decisions, specifically focused on alterable variables (Reschly & Christenson, 2012). There is no agreed-upon definition of school culture, what it comprises, or how its components "interact to shape student outcomes" (Thapa et al., 2013; M.-T. Wang & Degol, 2016, p. 343). Even though school culture is a "multidimensional construct," many researchers only study one or two domains or an overall score, "making it difficult to determine which domains, dimensions, or combinations of dimensions have the most influence on different types of student outcomes" (M.-T. Wang & Degol, 2016, p. 338). There is a notable lack of

quantitative data to support interventions used to improve student engagement (Fredricks, Reschly, & Christenson, 2019a). The passage of Texas' HB22 and DISD's subsequent implementation of an LAS increased available culture, engagement, and performance data and made this widespread study of student engagement culture possible.

Chapter Summary

The proposal is organized into three chapters, a bibliography, and appendices. This study aims to explore how some poor schools consistently motivate students to outperform their affluent counterparts. Even though culture is largely hidden (Schein & Schein, 2017) and can be expensive to uncover (Jung et al., 2009), previous research guides the identification of relevant, measurable dimensions. Evidence of intrinsic motivation indicates academic performance in high-poverty schools. More-affluent students likely benefit from motivation to do well at home—either intrinsically or in the form of positive coercion. Both would yield acceptable academic performance. Disengaged students coerced into strategic compliance perform well enough academically to pass classes and tests. A hallmark question of the strategically compliant student is, "Will this be on the test?" (Schlechty, 2011. pp. 17-19). Identifying systemic student engagement elements may help schools better support the most impoverished students who do not arrive at school motivated to succeed (Hernandez & Zamora, 2018; Zamora & Hernandez, 2016). When the underlying belief is that intrinsic motivation is the best way to get students to learn, a school has a culture of engagement that yields growth and academic performance. Compliance culture is widespread in public education, but it has not yielded results (National Center for Education Statistics [NCES], 2020a; Wexler, 2018).

Chapter Two explores current, related literature dealing with systemic expectations and motivation practices within schools, engagement culture, and the role of academic achievement measures in school accountability in Texas. Chapter Three presents the research design and

methodology of the study. The selection of relevant variables, methods for gathering data, and the determination of the sample selected for study—including considerations for human subjects protection—are described. The study concludes with a bibliography and appendices.

Identifying characteristics of a culture of engagement in high-poverty schools that correlates with positive academic outcomes can guide school practices and encourage systemic practices that empower students.

Chapter Two: Theoretical/Conceptual Foundation

High poverty schools are typically low-performing compared with their low-poverty counterparts (Audas & Willms, 2001; Swaby & Cai, 2019; TEA, 2018a, 2019d, 2019e), but not always. Culture is cited as the cause for these exceptional high-poverty, high-performing campuses (Marquez, 2019; Morath, 2019), but what is meant by culture and how high-poverty schools should shape it to improve academic performance needs to be solved. Perspectives regarding the significance of culture; who is responsible for motivating students; how student engagement translates to robust, lasting learning; how coercion to comply leads to disengagement; and how school structures foster compliance were examined to explain how culture could correlate with academic success. Data resulting from Texas' recently-overhauled school accountability system made this study possible.

Engagement Culture Leads to Robust, Lasting Learning

Leadership literature defines culture as a "shared webbing of beliefs, informal folkways, and traditions that infuse work with meaning, passion, and purpose" (Deal & Peterson, 2016, p. 2) and suggests that culture comprises three levels: artifacts, espoused beliefs and values, and basic underlying assumptions (Schein & Schein, 2017). Assumptions drive beliefs and behavior (Argyris, 1976; Senge et al., 1994; Tompkins & Rhodes, 2012), and assumptions about how to motivate students can lead to students who are genuinely engaged or lead to students who are just complying. Motivation is a product of maintenance factors that minimize dissatisfaction and intrinsic motivators that increase satisfaction in an organization (Herzberg, 2011). Since student engagement is the result of intrinsic motivation (M.-T. Wang & Degol, 2014) and cannot be coerced (Schlechty, 2011; Senge, 2006), cultures that value coercion foster compliance at best and potentially noncompliance, apathy, and disengagement. Schools that value positive coercion

can positively affect academic performance measures, but schools that value intrinsic motivation foster engagement (Schlechty, 2011; Senge, 2006).

Compliance is a Poor Motivator That is Common in Public Schools

Educators, including those at TEA, frequently operationalize school culture by how well-behaved and quiet students are (Marquez, 2019). Compliance is a common feature in the school system—and not just for students. As funding for public education grew throughout the 20th century, so did expectations. Standards and measures were developed to measure compliance, and the data gathered are used to inform lawmakers and policymakers (TEA, n.d.-b). The effect of all this compliance has been to drive teachers from the profession (Erichsen & Reynolds, 2019) and have been most acutely damaging to high-poverty schools (García & Weiss, 2019) where F ratings are more likely (TEA, 2018a, 2019e; Swaby & Cai, 2019); morale is difficult to sustain (Erichsen & Reynolds, 2019); and struggling students are viewed as troublemakers (Nichols & Dawson, 2012).

Newly-Available Accountability System Data Make The Study Possible

The data gathered by TEA can be used to explore the relationships among basic underlying assumptions about motivation and their effects on academic performance in high poverty schools. It includes discipline data; demographic data; culture data from students, teachers, and parents; precise measures of academic achievement; nuanced performance measures. Much of the academic performance and culture data are new due to Texas' HB22, which passed in 2017. Since these data are widely available, they can be used as a systemic measure of student engagement and guide intervention decisions.

Systemic Expectations and Motivation

Failure to Motivate

There is a motivation problem in our schools, and many blame the students (Fredricks, Reschly, & Christenson, 2019b). Rather than engaging students in "authentic problem-solving tasks" (Guskey & Bailey, 2001, p. 10) that require understanding, application, analysis, evaluation, and creation (Anderson & Krathwohl, 2001), students are coerced into compliance. Schools use detention, suspension, expulsion, and even criminal court in an attempt to influence students (TEA, 2019i, 2020a). These coercive actions align with leadership ideas from the early 1900s. By the 1930s, leadership paradigms shifted from the dominant boss inducing "obedience" to two-way influence between leaders and followers within an organization (Northouse, 2019, p. 2). The paradigm applied to school leadership, too. Contemporary education research noted the need for educators to influence students to stay in school by adapting to meet its students' needs and interests. "Holding power," as demonstrated by the graduation rate, was the fair way to judge a school (Allen & McKay, 1930, p. 18).

School Funding as Equalizer

At the time, funding and expectations for schools were relatively low. A 30-40% graduation rate in "the best schools in the best communities" was considered excellent (Allen & McKay, 1930, p. 18). In the 1930s, students in Texas were only compelled to attend 100 days per year (TEA, 2004), and most of the funding came from state and local sources. In 1936, $56,948,659 in education expenditures were reported statewide—only 1.6% came from the Federal Government. Sixty-three percent came from the state, 35.4% came from local sources (State Board of Education, 1937). Local contributions were voluntary until the Gilmer-Akin law passed in 1949 (TEA, 2004) to make funding more equitable among schools. Texas was growing and becoming more urban, creating disparities in wealth among local school districts (San

Antonio Independent School Dist. v. Rodriguez, 1973). The same law established TEA; reorganized the State Board of Education to have 21 elected members instead of nine appointed by the governor; created the Commissioner of Education position; established a statewide minimum salary schedule for teachers; and created funding based on "economic index" (TEA, 2004, p. 25).

Funding and Expectations Grow

Funding and expectations for schools continued to grow. In 1954, Brown v. Board of Education banned racial segregation in public schools nationwide. The same year, the Texas Permanent School Fund expanded when Texas got clear title to coastal lands and proceeds from the sale or rental of them. In 1958, in response to the Cold War, the National Defense Education Act brought funds for math, science, and modern foreign language education. In 1961, the State Board was authorized to invest the Permanent School Fund in the stock market, and the Federal Vocational Education Act expanded to include office and health professions. In 1964 the federal Head Start was established, and Laredo UCSD began Texas' first bilingual program. Bilingual programs were mandated statewide in 1973 (TEA, 2004). In 1965, the U.S. Congress passed the Elementary and Secondary Education Act (ESEA), the "largest-ever appropriation to education" (TEA, 2004, p. 26). Title I provides additional money from the Federal Government for at-risk students and campuses with high percentages of at-risk students (NCES, n.d.). School districts are held accountable for meeting the needs of at-risk students (TEA, 2019h). Title funding is provided to local school districts via their state education agencies, not directly through the federal government (NCES, n.d.). In 1967, in response to the increasing complexity, the Texas Legislature called for the creation of Education Service Centers to "provide services" to local school districts (TEA, n,d.-a).

Inequity Persists and Academic Performance Measures Begin

Even with state and federal money supporting local schools, the services provided to students in different school districts varied immensely based on local wealth (Hansard, 2016; San Antonio Independent School Dist. v. Rodriguez, 1973). Districts with more expensive property values earned more from property taxes, the source of local school district funding (Chingos & Blagg, 2017; Elsaadi, 2015). Governor Connally's Committee on Public School Education released *The Challenge and the Chance* report in 1969. Citing the complex system of school finance, it recommended major changes in public education (San Antonio Independent School Dist. v. Rodriguez, 1973; TEA, 2004) in response to the disparity. The report kicked off a decades-long series of court cases and legislative actions at the state and federal level (Elsaadi, 2015; Hansard, 2016; TEA, 2004). These cases highlight central issues that continue to play a role for schools attempting to motivate students: local versus state versus federal control, finger-pointing at all levels, taxation and distribution of funds, haves versus have-nots, a multi-billion-dollar education budget, and equitable access for all children. The USDoE was established in 1979. The same year, Texas made "major increases in state funding" and established standardized tests in math, reading, and writing to be given to all third, fifth, and ninth graders (TEA, 2004, p. 29).

High-Stakes Accountability

Texas school accountability based on student achievement on state-created, standardized tests had been born, and a statewide curriculum was mandated in 1981 (TEA, 2004). Texas was ahead of its time. *A Nation at Risk* was published by the National Commission for Excellence in Education in 1983. The report said that U.S. education institutions were "eroded by a rising tide of mediocrity that threatens our very future as a Nation and a people" and called for "more

rigorous and measurable standards," a "nationwide (but not Federal)" system of standardized achievement tests, "indicators of academic achievement," and "qualified" teachers (U.S. National Commission on Excellence in Education, 1983, pp. 23-33). Rights of the "individual learner" were prominent in the report (U.S. National Commission on Excellence in Education, 1983, p. 4) and were captured in the names of the federal act that sought to realize some of the report's recommendations: No Child Left Behind (NCLB).

Compliance Culture

Compliance continued to dominate all levels of education. Texas education was restructured toward standardization in 1995 with the passage of Senate Bill 1 (Texas Legislative Council, 1995). George W. Bush, who was serving his first year as governor, signed the bill into law. SB1 mandated statewide curriculum, graduation requirements, and performance standards; district and campus planning committees; penalties for principals who are not evaluated regularly; school choice for students attending "low-performing" schools; and expanded the state testing program. More national reports came out and were used to justify the nationwide expansion of standardized learning and testing. Standardization was becoming a nationwide phenomenon. Bush signed NCLB into law in his first year in office as president in 2001. It codified "challenging" state learning standards measured by rigorous standardized assessments (U.S. Department of Education, 2002) and cited a need for "highly qualified teachers," implying that teachers were responsible for the so-called mediocrity.

Standards-Based Reformers. The American Diploma Project network was formed to develop the learning standards. The network, comprised of national standards-based reform groups Achieve, Inc., The Education Trust, and Thomas B. Fordham Foundation and funded by the William and Flora Hewlett Foundation, worked with education and business leaders in

Indiana, Kentucky, Massachusetts, Nevada, and Texas "to identify the English and mathematics knowledge and skills needed for success in both college and work" (American Diploma Project, 2004, p. 4) released a report called *Ready or Not: Creating a High School Diploma That Counts* in 2004. The report laid out workplace tasks, postsecondary assignments, English and mathematics benchmarks, and a "common core of fundamental literacy and numeracy—what high school graduates must know and be able to do to be fully prepared to succeed in credit-bearing college courses or in high-growth, highly skilled occupations" (American Diploma Project, 2004, p. 21).

Achieve, Inc., along with new partners, produced a similar report four years later*: Benchmarking for Success: Ensuring U.S. Students Receive a World-Class Education*. This report, produced by the National Governors Association (NGA) and Council of Chief State School Officers (CCSSO, 2008), recommended that states "hold schools and systems accountable through monitoring, interventions, and support to ensure consistently high performance" (p. 30). It said, "comparisons of student performance" facilitated by "streamlined assessment strategies" and enabling the development of instruction aligned to "international best practices" were critical. States should look to other countries for ideas to improve instruction in deficit areas as diagnosed on standardized achievement tests of attainment of common core standards (NGA & CCSSO, 2008, p. 7). In April 2009, NGA and CCSSO commenced the Common Core State Standards Initiative (2019).

Effects of Compliance Culture. Organizational expert Henry Mintzberg mapped out five parts of an organization's structure and explored the significance of each part's relative size. The five parts are the strategic apex, middle tier, operating core, technostructure, and support staff. The strategic apex contains top leadership. The operating core is front-line workers who

perform the basic work. A simple organization like a mom and pop store would only have these two parts. Larger organizations have a middle tier between these two parts called the middle line. It comprises middle and lower-level managers who supervise and support the operating core. The technostructure is made up of people keeping track of standards and measures throughout the organization, and the support staff facilitates the work of others (Bolman & Deal, 2017; Lunenburg, 2017).

With a standardized curriculum and measures in place nationwide, schools could be held accountable by a large technostructure measuring results and monitoring compliance. The USDoE gives the National Assessment of Educational Progress (NAEP) every two years to measure math and reading progress among American students. The results are published in a series of reports called the Nation's Report Card, most recently in October 2020. It is "rigorous and highly reliable," and the scores have been stagnant for over a decade (Wexler, 2018). National math scores have remained the same since 2009, and reading scores have remained the same since 1998 (NCES, 2020a; Wexler, 2018). Twelfth-grade reading scores are now 12 points lower than in 1992; math is the same as in 2005 (NCES, 2020a). Texas' NAEP trends have mirrored national trends (TEA, 2019t). The NAEP is not the only test. The Every Student Succeeds Act (ESSA) requires all third through eighth graders to be tested annually in math and reading, plus at least once in high school; science must be administered at least once in grades 3-8 and once in high school (U.S. Department of Education, 2017). Texas requires annual reading and math exams for all students in grades 3-8; writing exams for all students in grades 4 and 7; science exams for all students in grades 5 and 8; social studies exams for all students in grade 8, and end of course exams for students taking Algebra I, English I, English II, Biology, and United States History (TEA, 2019h).

A common response to the large technostructure and widespread testing is narrowing the scope of classroom instruction to what is tested (Nichols & Dawson, 2012; Wexler, 2018). In response to the measures, schools are narrowing the scope of instruction. Seventy-one percent of districts restricted curriculum offerings in response to NCLB. The number jumps to 97% when looking at campuses with at least 75% high-poverty students (Rentner et al., 2006, p. 96). "Organizations often operate within narrow mandates that impede comprehensive problem solving" (Weimer & Vining, 2017, p. 179). Education is a complex, bureaucratic system attempting to function within these narrow mandates, and not all bureaucracies are the same. Mintzberg used his organizational frames to illustrate two different types: professional bureaucracies and machine bureaucracies. Schools have traditionally had a "professional bureaucracy" structure characterized by relatively small technostructures and middle lines and relatively large operating core. A professional bureaucracy "responds slowly to external change," with the professionals who comprise the operating core viewing initiatives as "an annoying distraction" (Bolman & Deal, 2017, p. 80). The introduction of common achievement standards and accountability based primarily on common assessments in public education over the last two decades is akin to a "machine bureaucracy" structure, which is characterized by relatively a large technostructure and middle line and decisions being handed down from the powerful strategic apex (Bolman & Deal, 2017, p. 79). Motivating the operating core is difficult when procedures are standardized and creativity limited in favor of uniformity and consistency; teachers are not fast-food employees, able to be replaced by a worker with no experience or education. The effect can be seen in teacher turnover (García & Weiss, 2019) and declining interest in the profession (García & Weiss, 2019; TEA, 2018d). Enrollment in teacher preparation programs dropped by 37.8% between School Year 2009 and School Year 2016 (García & Weiss, 2019). The number

of high school seniors interested in majoring in education has dropped. For the first time, less than half of parents would encourage their children to go into the teaching profession (TEA, 2018d).

High-Poverty Campus Teacher Retention and Recruitment

Forcing a machine bureaucracy structure onto a professional bureaucracy has a particularly insidious effect on high-poverty schools (García & Weiss, 2019). Struggling students are frequently blamed or "cast as problem students" in schools over-exaggerating the importance of tests (Nichols & Dawson, 2012, p. 471). In their study of the effects of school culture and high-stakes accountability on teachers, Ryan et al. (2017) found that school climate "was a significant predictor" of both attrition and migration types of teacher turnover (p. 7). A "vicious cycle of poor performance, teacher dissatisfaction, and desire to leave the school" may result in "ongoing issues with student performance" (Erichsen & Reynolds, 2019, p. 13). Feelings of respect and being heard and commitment to educating students may help teachers "sustain their morale when working in a struggling school or district" (Erichsen & Reynolds, 2019, p. 3). Since high-poverty schools are more likely to get Fs than their low-poverty counterparts (Swaby & Cai, 2019; TEA, 2018a, 2019e), recruitment is more difficult. The very thing that school accountability was designed to fix—equity—is worsened by it.

There is a place for accountability as a means to monitor results, but not as a motivator. Monitoring leads to predictability and status quo. It is the domain of *managers* seeking order. Intrinsic motivation energizes people. It is the domain of *leaders* seeking progress (Kotter, 2012). One example of intrinsic motivation inspiring education was the United States' response to *Sputnik* in 1957. The Soviet Union's successful launch of the first artificial satellite into orbit started the Space Race between the U.S.S.R. and the U.S. (National Aeronautics and Space

Administration [NASA], n.d.) and a massive focus on science, math, and foreign language education in the United States. In response, Congress passed the National Defense Education Act which authorized over $1 billion (Smithsonian National Museum of American History Behring Center, n.d.) to fund "America's progress," saying "the very survival of our free country…may depend in large part upon the education we provide for our young people now" (U.S. Congress House Committee on Education and Labor, 1958, p 2).

Engagement Culture

A school's academic success is highly correlated with how impoverished its students are (Audas & Willms, 2001; Swaby & Cai, 2019; TEA, 2018a, 2019d, 2019e). However, some poor schools do well. TEA Commissioner Mike Morath credits culture (2019), a position that echoes successful business leaders (Deal & Peterson, 2016; Peter Drucker as cited in Deal & Peterson, 2016). Although organizational culture is widely accepted as essential for achieving sustainable success (Deal & Peterson, 2016; Jung et al., 2009; Kotter & Heskett, 1992; U.S. Department of Education, 2019), what is meant by culture varies (Jung et al., 2009) and identifying culture qualities to improve academic performance is elusive (M.-T. Wang & Degol, 2016).

A school's culture is frequently characterized by how well-behaved and quiet its students are, but culture is something that a school has, not just behavior. Conceptualizing culture as something that organizations have aligns with the way researchers study climate: "shared beliefs, values, and attitudes" (M.-T. Wang & Degol, 2016, p. 316). Climate and culture are similar constructs that concern embedded organizational structures and behavioral norms (Cooke & Rousseau, 1988). The two constructs can be used interchangeably to describe feelings about experiences within an organization (Cooke & Rousseau, 1988; Schneider et al., 2013) and can be integrated (Schneider et al., 2013). Deal and Peterson's definition of culture as the "shared

webbing of beliefs, informal folkways, and traditions that infuse work with meaning, passion, and purpose" (2016, p. 2) guides this study.

Analyzing Culture

The idea that a positive culture can overcome the obstacles to learning created by poverty is deceptively simple since the level of culture that informs beliefs and drives behavior (Argyris as cited in Tompkins & Rhodes, 2012, p. 85) is so ingrained that it is unseeable (Schein & Schein, 2017). Schein and Schein (2017) identified three culture levels: artifacts, espoused beliefs and values, and basic underlying assumptions. *Artifacts* are the seeable parts of culture, like informational signs and forms. *Espoused beliefs and values* are what members of a culture say they stand for. *Basic underlying assumptions* are the invisible, implicit beliefs shared among members.

Scholars rely upon the two seeable levels of culture to study it. The uniqueness of a group's artifacts can signal its basic underlying assumptions. Espoused beliefs and values are quantified and used to compare culture among organizations (Schneider et al., 2013). These quantitative methods are easier to use and less expensive (Jung et al., 2009). Still, espoused beliefs and values are sometimes aspirational and do not necessarily align with the underlying assumptions that inform beliefs and drive behavior (Schein & Schein, 2017). Studying relationships within an organization could help discern between the aspirational and the actual values espoused by members and unveil the basic underlying assumptions (Senge, 2000).

Systems, Culture, & Student Engagement

A system is the connections among its parts. Relationships between the parts define their function (Bertalanffy, 1969), and studying these relationships unveils the hidden assumptions operating in schools (Senge, 2000). These basic underlying assumptions represent a level of

culture that is ingrained and unseeable (Schein & Schein, 2017), inform beliefs, and drive behavior (Argyris as cited in Tompkins & Rhodes, 2012). In contrast, schools frequently try to bypass culture and beliefs by relying upon extrinsic motivation to drive behavior (Herzberg, 2011; Schlechty, 2011). The best possible response to this approach is compliance. Compliance can be good but not great. Genuinely compliant faculty and students would do what is expected of them and be highly productive, but, even if it were possible to coerce everyone in the school system into compliance, they would lack the kind of commitment that leads to robust, lasting learning (Schlechty, 2011; Senge, 2006). The kind of commitment that leads to robust, lasting, systemwide learning is student engagement (Schlechty, 2011) and can only be achieved by addressing culture.

Culture is Complex

School leader Arthur Perry cited the importance of school culture for learning in 1908. Almost 50 years later, the Organizational Climate Descriptive Questionnaire was developed and enabled the first quantitative studies of school climate. After 50 years of empirical study, there is no scholarly agreement on what culture means or what it comprises (M.-T. Wang & Degol, 2016). In recent years, the impact of school culture has become more pressing. In response to school shootings, the Federal Commission on School Safety was created (DeVos et al., 2018). In their final report, they recommended a "positive school climate where students feel connected to, rather than isolated from, their teachers and fellow students," character education programs with an emphasis on "relationship building" and "intrinsic motivation," and using culture surveys to "guide the selection of evidence-based interventions" (p. 19). Even before the formation and recommendations of the safety commission, the federal government recognized the importance of school climate for student outcomes. The USDoE created the ED School Climate Survey tool

in 2014 to help schools gather climate data in three areas: engagement, safety, and environment (U.S. Department of Education, 2019).

Multiple studies have attempted to link some aspect of school culture to student success, but individual factors do not consistently explain academic outcomes across contexts in the complex school system (Hernandez & Zamora, 2018; MacNeil et al., 2009; Zamora & Hernandez, 2016). In complex systems, "cause and effect are not closely related in time and space" (Senge, 2006, p. 63). Since the link between engagement and its causes are not as straightforward as the link between coerced behavior and the coercion that cause it, many teachers and administrators do not see their role in student engagement. Instead, they blame students for not being engaged (Schlechty, 2011). Chris Argyris' ladder of inference clarifies the steps between observation and action. Humans select data from the pool of all observable data; in step three, meaning is attached; in step four, assumptions are made based those meanings; in step five, conclusions are drawn; in step six, beliefs are formed; and in step seven, action is taken. Eventually, the selection of data in step two is informed by the beliefs in step six, instead of all available data, strengthening beliefs and limiting new conclusions (Argyris, as cited in Senge et al., 1994; Tompkins & Rhodes, 2012).

Student Engagement Culture

The emerging metaconstruct student engagement (Fredricks, Ye, et al., 2019) complements and clarifies the complexity of school culture research since it examines the combinations of and interplay among the many reasons students persist in school, instead of addressing individual reasons separately (Fredricks, Reschly, & Christenson, 2019a). Student engagement is a "strong predictor of educational outcomes" (M.-T. Wang & Degol, 2014, pp. 138) and is described as the energy that results from motivation. This energy directs behavior,

cognition, and emotion (M.-T. Wang & Degol, 2014). Although student engagement indicators are typically conceptualized as individual-level measures of observable student behaviors, student engagement can be conceptualized as cultural, systemic measures of "the student experience" (Yazzie-Mintz & McCormick, 2012, p. 748). These systemic indicators could be measured and provide guidance for teachers and administrators (Mishook et al., 2008).

Table 1

The Effects of Leadership Style on Culture and Performance

Leadership Style	Culture	Result
Coercive/Pacesetting (Goleman, 2011)	Compliance based on extrinsic motivation. KITA or positive (Herzberg, 2011).	Status quo (best case scenario, assuming genuine compliance; could also lead to culture of apathy and negative results)
Authoritative/Affiliative (Goleman, 2011)	Engagement based in intrinsic motivation (Herzberg, 2011).	Mobilize people toward a vision (Goleman, 2011), transformation (Senge, 2006).

The Impact of Leadership Style

Leadership style affects an organization's culture (see Table 1). Leadership scholar Daniel Goleman identified six drivers of climate, including flexibility, responsibility, standards, rewards, clarity, and commitment and compared the effects of various leadership styles on each driver. He found that the coercive (i.e., "Do what I tell you.") and pacesetting (i.e., "Do as I do, now.") leadership styles had the most negative effect on organizational culture. The coercive leadership style is common in schools (Schlechty, 2011, p. 17). In contrast, authoritative (i.e., "Come with me.") and affiliative (i.e., "People come first.") had the most positive effect on

organizational culture (Goleman, 2011, pp. 10-15). Teachers and administrators tend to use coercion and blame students for not being engaged (Schlechty, 2011).

Extrinsic vs. Intrinsic Motivation

Culture can be conceptualized as a motivation spectrum with compliance and engagement at either end (Goleman, 2011; Herzberg, 2011; Senge, 2006). In a compliance culture, characterized by either positive or negative extrinsic motivation, everyone complies and does what they are supposed to do. Still, there is no systemic, robust, lasting learning—the pot has no dirt. Engagement culture—the dirt in the pot—is characterized by intrinsic motivation. People do what they are supposed to do because they want to with resulting high performance. One-third of results can be attributed to culture (Goleman, 2011). Evidence of adherence to strategy—curriculum and instruction—can be present even when engagement—the spark of energy—is absent.

How Culture Eats Strategy for Breakfast

Various motivation styles create different student learning outcomes (see Table 2). Each school likely has a combination of motivation styles being implemented by various stakeholders. Parents paying a student for good report card grades represents positive extrinsic motivation (carrot). The same student may have one teacher who uses punishment to motivate (stick coercion) and another who uses classroom culture to drive engagement and commitment to learning. Faculty may work in a department headed by someone committed to a positive culture, report to a positively coercive assistant principal, and have a building principal who relies upon negative coercion for motivation. A culture of engagement is the systemwide "shared webbing of beliefs, informal folkways, and traditions that infuse work with meaning, passion, and purpose"

(Deal & Peterson, 2016, p. 2), elicits engagement, and results in learning. It is important to note that a school's culture involves everyone in the building, not just students.

Table 2

How Culture Eats Poverty for Breakfast

Goal	Motivation Style	Response (best-case)	Outcome
Students Learning	Carrot Coercion	Genuine Compliance (Schlechty, 2011; Senge; 2006)	Meet Expectations (Schlechty, 2011; Senge; 2006)
Students Learning	Stick Coercion	Noncompliance and Apathy (Schlechty, 2011; Senge; 2006)	Defy Expectations (Schlechty, 2011; Senge; 2006)
Students Learning	Address Culture and Beliefs	Engagement (Schlechty, 2011; Senge; 2006)	Robust, Lasting Learning (Schlecty, 2011)

Framework for Student Engagement Culture

The motivation spectrum has some similar ideas that are integral to the concept of engagement culture that are worth clarifying, specifically the difference between motivation and engagement and the mechanism with which engagement leads to positive academic performance. Engagement is the energy that results from intrinsic motivation and drives growth (Herzberg, 2011; M.-T. Wang & Degol, 2014). Culture comprises the maintenance factors that minimize dissatisfaction and intrinsic motivators that increase satisfaction in an organization. Motivators include achievement, recognition for achievement, the work itself, responsibility, and growth or advancement. Maintenance factors include company policy and administration, supervision, interpersonal relationships, working conditions, salary, status, and security. The factors that most contributed to extreme dissatisfaction at work were company policy and administration, supervision, and supervisor relationship. These three factors characterized over 60% of

dissatisfying events (Herzberg, 2011). Motivation is the processes/factors that drive a person to take action (Yazzie-Mintz & McCormick, 2012). It is a component of engagement culture. Strategy is the plan and execution for implementing curriculum and instruction. The combination of strategy and engagement culture leads to growth and increased academic performance.

Haves and Have-Nots

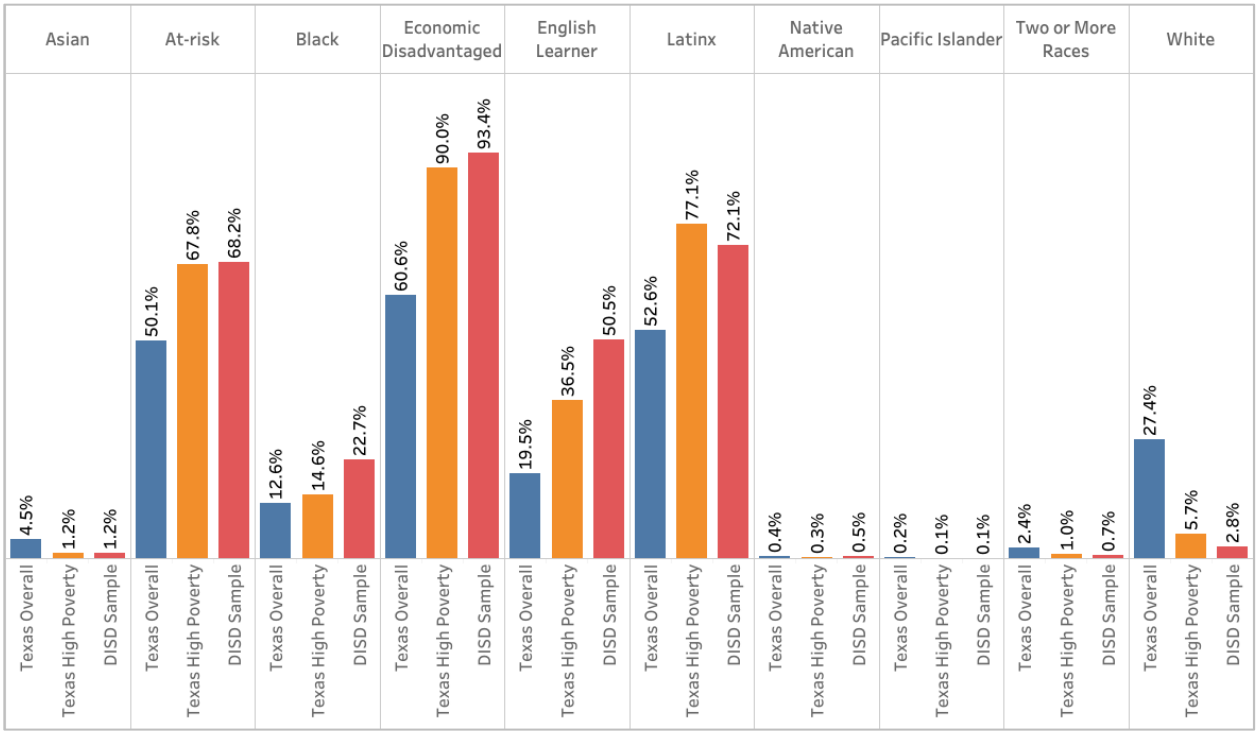
Effects of disengagement vary depending on economic status. More affluent students are less likely to drop out of school but do not have robust, lasting learning (Fredricks, Ye, et al., 2019; Schlechty, 2011). Disengagement on high-poverty, high-minority, urban campuses has disastrous consequences including more dropouts and less postsecondary readiness (Fredricks, Reschly, & Christenson, 2019a). Poverty is more than a number. It has implications for access to material resources, health, hunger, brain development, stable housing, trauma, safety, continuous education, literacy, social network development, and cultural experiences (Budge & Parrett, 2018).

Metropolitan DISD. A sample of 174 high poverty campuses (113,304 students) in DISD was used to conduct the study of the effects of engagement culture on academic performance in high poverty schools. DISD's student body comprises 69.6% Latinx students, 22.0% Black students, 5.6% White students, 1.3% Asian students, 0.8% students of two or more races, 0.5% Native American students, and 0.1% Pacific Islander students. Forty-five percent of DISD's students are English Learners (TEA, 2019c). DISD was selected because of its large size, the availability of valid and reliable engagement culture data for each campus, and the demographic makeup of its high-poverty campuses, which are similar to the demographics of Texas' high-poverty campuses (see Figure 4) and other United States metropolitan school

districts (see Figure 6) which tend to have schools with high poverty rates (Mordechay & Orfield, 2017).

Figure 4

Demographic Makeup for all Texas Schools, High-poverty Texas Schools, and High-poverty DISD Schools



Note. Researcher aggregated campus level accountability summary data (TEA, 2019c) to provide a comparison of demographics between the sample population and the entire state.

Dallas is the ninth largest city in the United States with a population of 1,343,565 (White, 2019). It is the principal city of the fourth largest metropolitan statistical area, Dallas-Arlington-Fort Worth, that has a population of 7,573,136. The other top five metropolitan statistical areas and their 2019 population estimates include New York-Newark-Jersey City, NY-NJ-PA—19,216,182; Los Angeles-Long Beach-Anaheim, CA—7,573,136; Chicago-Naperville-Elgin, IL-IN-WI—9,458,539; and Houston-The Woodlands-Sugar Land, TX—7,066,141 (U.S. Census Bureau, 2019). The poverty rate for children under 18 in the metroplex is 15%; for Dallas it is

28% (Census Reporter, 2019). At below 45%, home ownership rates are about 20% lower in Dallas compared with Texas and the rest of the United States. They are down from about 60% in 1960. Texas and the rest of the United States' rates have stayed about the same for the same timeframe (Dallas Area Habitat for Humanity, 2015).

Variables

Role of Variables. The *causes* and *effects* of school culture are "deeply interconnected" (Thapa et al., 2013, p. 359), and there is no agreed-upon way to treat components of engagement (Appleton et al., 2008). For example, extracurricular participation can be viewed as an indicator of engagement or a facilitator of engagement, depending on the context (Reschly & Christenson, 2012). Analyzing voluntary participation may clarify the role of non-academic school activities in fostering student motivation. Academic engagement and extracurricular activity engagement research "are largely separate" and should be compared. "Particularly intriguing is the idea that extracurricular activities or peer relations fostered by those activities might help academic engagement" (Juvonen et al., 2012, p. 398). From a business perspective, employee motivation expert Frederick Herzberg (2011) argues that "off-hour recreation programs" do not motivate people to work (p. 33-34).

Selection of Variables. Herzberg's research on intrinsic motivators and maintenance factors informed independent variable selection. Intrinsic motivators increase satisfaction and include achievement, recognition for achievement, the work itself, responsibility, and growth or advancement among others. Maintenance factors decrease dissatisfaction and include company policy and administration, supervision, interpersonal relationships, working conditions, salary, status, and security among others (Herzberg, 1974, 2011). Variables for the study come from

staff, student, and parent culture surveys; aggregate school discipline records; and extracurricular participation rate data.

DISD conducts annual staff, student, and parent culture surveys. Respondents rate how much they agree or disagree with each statement using a five-point Likert scale. Results are reported as percent positive, based on the rate of respondents who selected *strongly agree* or *agree* for each item (DISD, 2020b).

Campus Staff Survey Data. DISD's biannual faculty and staff survey uses 42 items to anonymously measure perceptions of culture in six categories: beliefs and priorities, positive culture and environment, culture of feedback and support, college-going culture, teacher-teacher trust, and teacher-principal trust. The survey was created using research conducted by the Chicago Consortium on School Research and overseen by DISD Evaluation and Assessment staff. It has been in place since 2012 and is reviewed annually for relevance (DISD, 2020b). Staff survey items from the spring 2019 administration that relate to motivator factors and maintenance dissatisfaction-avoidance factors (Herzberg, 1974, 2011) were used as independent variables in stage one of the hierarchical regression analysis (see Table 3).

Parent/Guardian Survey Data. DISD surveys parents and guardians each spring. The administration—conducted via internet and phone by an outside vendor—continues until adequate sample size is achieved. It has been in place since 2013 (DISD, 2020b). There are 10 survey items:

1. I am satisfied with the direction and the success of my child's school.
2. I am satisfied with the school's maintenance and cleanliness.
3. I believe what my child learned this year is what he or she needed to learn to be ready for the next grade.

4. I feel comfortable interacting with school personnel (teachers and administrators).
5. My child's school has a respectful learning environment.
6. My child's school has a safe learning environment.
7. My child's school informs me about my child's grades and learning progress throughout the year.
8. My child's school responds to my concerns in a timely manner.
9. My child's school stresses the importance of preparing for/attending college after high school
10. My child's school welcomes parent involvement and engagement (DISD, 2020d)

Since only overall composite scores of positive results were available for each campus, they are used as an indicator of the maintenance factor company policy and administration (DISD, 2020d; Herzberg, 2011).

Student Survey Data. DISD campus testing coordinators survey students about their classroom experience each spring. Third through twelfth-grade students are randomly selected from a pool of qualified students based on attendance, length of course enrollment, language skills, and mainstream environment to rate a maximum of two teachers separately. A minimum sample size of 10 is required for inclusion. Results are compiled by the vendor who aggregates school-level results. The instrument—developed by Panorama Education and the Harvard Graduate School of Education—is used in hundreds of school districts (DISD, 2020b). Only overall composite scores of positive results were available for each campus, so they were used as indicators of engagement culture.

Extracurricular Participation Data. DISD measures the rate of students who participate in at least one activity for a certain number of hours. Eligible activities include UIL sports,

courses that require regular participation outside class (minimally about an hour per week), and clubs, such as Destination Imagination; chess; debate; robotics; visual, performance, or musical art; etc. (DISD, 2020b).

Table 3

Select DISD Staff Survey Items and Corresponding Motivation Factor Category

Survey Item [a]	Herzberg Factor Category [b]
How similar are your school's priorities to what you think they should be?	Maintenance: company policy and administration
It's OK in this school to discuss feelings, worries, and frustrations with the principal	Maintenance: supervision
I trust the principal at his or her word	Maintenance: supervision
The principal looks out for the personal welfare of the faculty members	Maintenance: supervision
I have the support I need from campus leadership to do my job well	Maintenance: company policy and administration
I believe I work in an environment of support and respect	Maintenance: work conditions
I usually look forward to working each day at this school.	Maintenance: work conditions
Teachers in this school trust each other	Maintenance: peer relationships
It's OK in this school to discuss feelings, worries, and frustrations with the principal	Maintenance: peer relationships
Teachers expect most students in this school to go to college	Motivator: achievement
I have sufficient opportunities and encouragement to develop my leadership potential	Motivator: advancement
I am satisfied with the recognition I receive for doing a good job	Motivator: recognition
The principal has confidence in the expertise of the teachers	Motivator: responsibility

[a] Teacher climate survey items (DISD, 2020c); [b] corresponding category (Herzberg, 2011).

Discretionary Discipline Rate Calculation. The discretionary discipline rate is the number of discretionary removals (G21) divided by the total number of removals (A03) on a campus (TEA, 2020a; see Appendix A). Discretionary removals are removals for violations of the student code of conduct that are not required by state law or implemented by a teacher under Senate Bill 1 (1995; TEA, 2019j; see Appendix B). No campuses from the sample and only one campus from the population had teachers permanently remove students for disrupting class in School Year 2019 (TEA, 2019i), so these numbers are not included in the discretionary discipline rate.

Population Discipline Rate Calculation. The population discipline rate is the number of students who were removed from class at least once (A02) during School Year 2019 divided by the number of students who ever attended class for more than two hours per day (A01) that year.

Multilevel Variables. School climate researchers must define, design, and operationalize variables to distinguish between which reflect the culture and which reflect the context and appropriately aggregate demographic data to draw appropriate conclusions. Level two school-level data is not the same as level one individual student-level data (Marsh et al., 2012). Since the research is on the role of school culture and context on academic performance, the study uses aggregate student data at the campus level for analysis.

Accountability System

HB22 passed in 2017 and significantly redesigned Texas school accountability. Developed and implemented at the same time as the federal ESSA, Texas's HB22 created letter grades for rating campuses and districts; changed framework from four indices to three domains; aligned state accountability with ESSA; and established Local Accountability Systems (TEA, 2018b). TEA implemented HB22 using a system of letter grades for campuses and districts called A-F Accountability (A-F; TEA, 2018a) beginning in School Year 2017-2018 and using

baseline data from School Year 2017. TEA describes the significance of each letter grade: A = Exemplary Performance; B = Recognized Performance; C = Acceptable Performance; D = In Need of Improvement; F = Unacceptable Performance (TEA, 2018a). Two school districts were allowed by TEA to implement LAS in 2018-2019 (TEA, 2019o): Snyder ISD with 2,656 students (TEA, 2019q) and DISD with 155,030 students (TEA, 2019f). Because of its size, high poverty level, and use of climate surveys and extracurricular participation as a valid and reliable indicator of student engagement, DISD A-F data can contribute to current understandings about the role of student engagement culture on academic performance. The relative precision of this new accountability system over older ones, the introduction of performance measures based on the relative wealth of a school's students, and the creation of Local Accountability Systems—which include valid and reliable measures of school culture—make this more-precise study of the links between culture and academic performance in high-poverty schools possible.

Precision

A-F is more precise. Understanding the school accountability system in Texas requires understanding the State of Texas Assessments of Academic Readiness (STAAR) testing program (TEA, 2019b), which is the primary basis for accountability scores. STAAR has four pass labels: Did not meet, Approaches Grade Level, Meets Grade Level, and Masters Grade Level. Did not meet means the student failed. The other three labels indicate some level of passing. *Approaches* means a student is slightly below grade level in her understanding of the subject and will likely require extra help in the next grade (TEA, n.d.-c). *Meets* means a student has a grade-level understanding of the subject, will not need much help in the next grade (TEA, n.d.-c), and has a "60% chance of completing one year of college without remediation" (TEA, 2018c, p. 1). *Masters* means a student has an advanced understanding of the subject, is "well prepared to take

on more challenging material" (TEA, n.d.-c), and has a "75% chance of completing one year of college without remediation" (TEA, 2018c, p. 1).

Before HB22 overhauled the accountability system, no overall number or letter grades were assigned to schools. Campuses and districts were rated as either *met standard* or *improvement required*, based on meeting criteria in three of four indexes (TEA, 2017b). Of 8,757 campuses, 7,830 met standard in 2017 (Culwell & Carney, 2017, p. 15), the old accountability system's last year. It is worth noting that of the 371 campuses rated "improvement required," 91% had at least 60% economically disadvantaged students (Culwell & Carney, 2017, pp. 16-19). The threshold to achieve the highest possible rating was easier in the old system. Schools with 60% of students at the passing at the *approaches* level met criteria for Index 1. Index 2 calculations let schools double-dip by counting students who exceeded progress twice. This double-dipping means that a few high-achievers could mask low growth by low performers. Index 3 was predicated on economically disadvantaged students' academic performance and the two lowest-performing student groups from the prior year meeting a relatively low benchmark score. Index 4, called postsecondary readiness, was based on passing STAAR at the meets level, dropout and graduation rates, graduation plan rates, and a postsecondary readiness component that could be met by passing certain advanced academic or career pathway courses (TEA, 2017b). Since the criteria to achieve the highest possible rating was easier, correlating positive outcomes with specific culture constructs was less meaningful.

A-F Accountability combined components of the old Indexes 1 and 4 into Domain I: Student Achievement. Instead of getting credit based on the percent of students at the *approaches* pass level, the calculation is based on the average number of students at each pass level. The resulting number highly correlates (.982) with the *meets grade level* pass rate (TEA,

2019g), which TEA wanted to use for the Domain I calculation (TEA, 2018c) but could not since HB22 required inclusion of the *masters grade level* pass rate, too (HB22, 2017). Using the *meets* pass level aligns with the Texas Higher Education Coordinating Board's 60x30 initiative (TEA, 2018c; Texas Higher Education Coordinating Board, n.d.). For high schools, Domain I also includes graduation rate and College, Career, and Military Readiness (CCMR). Achieving CCMR is more rigorous than achieving postsecondary readiness in the old system. Regular education students can no longer just pass high school courses to qualify; SAT, ACT, IB AP, and Accuplacer test scores must indicate college readiness. To be deemed career-ready, students must earn an approved certification. Students taking college courses in high school can earn the distinction, too. It is a more accurate measure than the old system, because each student only counts once: A few high-performers cannot rack up extra points and conceal low-performers.

The same is true for A-F's Domain II, Part A: Student Growth indicator (TEA, 2019h). It measures scale score growth from 2018 math and reading STAAR tests to the matched 2019 math and reading STAAR tests. "Matched" means the student had a score in the prior year on the same test—for example, third-grade math to fourth-grade math or English I to English II. The accountability system awards one point for each matched student and subject whose scale score growth meets or exceeds expected growth in reading or math. Half-points are awarded for students who maintained their STAAR pass level but did not achieve a full year of growth. The ability to grow students is a good measure of a school's effectiveness. Still, the growth measure has some shortcomings for measuring high schools' effectiveness because the only two STAAR tests that measure growth in high schools are Algebra I and English II (TEA, 2019h). Since Algebra I is widely available to be taken in middle school by students who excel in math (U.S.

Department of Education, 2018a), frequently the students taking Algebra I in high school struggle with math (Clotfelter et al., 2012) and may skew high school math growth measures.

Relative Performance Measures

Even though most of the A-F domains were present in the index system, Domain II, Part B: Relative Performance is new (Culwell & Carney, 2017). Relative performance is derived by comparing a campus's Domain I score—sans graduation rate—with its expected score based on the historical performance of campuses with similar rates of poverty. The state used quadratic regression analysis of rates of economically disadvantaged students against academic performance using 2017 data to establish the basis of comparison (TEA, 2019g). Domain II, Part B data (TEA, 2019c) provides a way to compare how well a school did relative to its poverty level, unlike Domain I, which is based on absolute performance (TEA, 2019h). Since schools only need 60% of students at the meets pass level to make an A in Domain I and campus performance is highly correlated with campus poverty rate, Domain II, Part B provides a way to compare student performance across campuses regardless of the poverty level.

Local Accountability System

HB22 established the Local Accountability System in an effort to create an avenue for accountability ratings to reflect local values relating to student outcomes (TEA, 2019s). It is optional, and schools must go through a rigorous process with TEA to have their plans approved. LAS can count for up to 50% of a campus' overall accountability score (TEA, 2020d) but does not completely replace state accountability (Hendrick, 2019). Only campuses that would have received an A, B, or C under the state accountability system can use LAS. Campuses with a D or F are rated with the standard A-F accountability system (TEA, 2020d). Districts interested in participating in local accountability must commit to a 3-5 year process that may be expensive.

Even though there is no direct charge for participating, developing a district-wide system in such a way that meets requirements for validity and reliability may be expensive (TEA, 2020d). LAS is a system of domains, components, and weights. Schools can have up to five domains (Hendrick, 2019), subdivided into ten components (TEA, 2020d). Each component is weighted between 5% and 60%; the component weights add up to 100% of the LAS. Domains must be in one of these five categories: academics, culture and climate, co-curricular, future-ready learning, or locally-created, but districts have more flexibility when creating the components that comprise each domain. DISD, one of the two school districts in Texas to use LAS in 2019, had domains called academics, culture and climate, and locally created: student engagement (Hendrick, 2019). The academics domain was worth 60% of the LAS score and had one component: school effectiveness index (SEI), DISD's locally-developed system. The culture and climate domain was worth 20% of the LAS score and had two equally-weighted components: campus staff engagement and support and parent/guardian satisfaction. The locally created: student engagement domain was worth 20% of the LAS score and had two equally-weighted components: student classroom experience and co- and extra-curricular activity (DISD, 2020b).

Reporting

Academic performance data are not the only information the legislature and TEA require "to perform their legally authorized functions in overseeing public education" (TEA, n.d.-b, para. 6). Districts are responsible for reporting school data to TEA in a series of electronic submissions throughout the year, as mandated by the Texas Education Code. Through these Public Education Information Management System (PEIMS) submissions, the state gathers all non-test accountability data (TEA, 2019h). PEIMS categories include organizational, budget, actual financial, staff, student demographic, program participation, school leaver, student attendance, course completion, and discipline (TEA, n.d.-b).

Discipline

Schools must report any time students are removed from "their regular classroom program" as a disciplinary action. Reportable removals include students sentenced to In-School Suspension (ISS), Out-of-School Suspension (OSS), Expulsion, Juvenile Justice Alternative Education Programs (JJAEP), or Disciplinary Alternative Education Programs (DAEP; TEA, 2020a). The data are compiled for each school year and published as the Campus Level Annual Discipline Summary (TEA, 2019i). The Campus Level Annual Discipline Summary shows the various incident, student, and action counts regarding student removal from class for disciplinary reasons. *Incident* refers to an event that generates a discipline record. *Student* refers to a student who was disciplined in response to an incident, not the victim. One incident can involve multiple students. *Action* refers to the outcome, usually punishment; all actions on the Annual Discipline Summary are related to removal from class. One student in one incident can have multiple actions (TEA, 2020a). For example, a student may be sent to ISS for the rest of the day following an incident then sent to DAEP for ten days starting the next day. The ISS and DAEP would be two actions resulting from the same incident for one student. This study utilizes discretionary removal data as an indicator of negative coercion being used as a motivator. Texas law requires removing students for certain behaviors (Senate Bill 133, 1997), and the rate of mandatory removals would not necessarily be a function of coercive school culture.

The annual discipline summary includes the number of times students were removed solely for violating the local student code of conduct even though it was not required by law and the number of times students were permanently removed by teachers for disrupting class. The provision allowing teachers to remove students for disrupting class passed in 1995 as part of a restructuring of public education in Texas (Texas Legislative Council). The provision title is

sometimes used as a verb, as in "I want to chapter 37 a student" (Texas Classroom Teachers Association, 2014, p. 1), but it is rarely invoked. In School Year 2019, only eight non-charter campuses in Texas had students permanently removed by teachers (TEA, 2019i). Even though the law changed in 2019 to protect teachers who implemented it (Senate Bill 1451, 2019), even fewer campuses had students permanently removed by teachers in School Year 2020 (TEA, 2020e). A discretionary discipline rate can be calculated by dividing the number of discretionary removals by the total number of removals. The report also includes the number of students who were disciplined at least once during the year, regardless of how many times, and the number of students who ever attended class for more than two hours per day that school year, regardless of entry or withdrawal date (TEA, 2020a). This number can be higher than the campus enrollment number because campus enrollment only includes students enrolled on the snapshot date. A population discipline rate can be calculated by dividing the number of students who were disciplined by the number of students ever enrolled on campus that school year.

Records and Fields

A-F Accountability. Accountability system used to evaluate the academic performance of Texas public schools (TEA, 2019h). Campuses and districts are assigned five letter grades: Overall; Domain One Student Performance; Domain Two, Part A Student Growth; Domain Two, Part B Relative Performance; and Domain Three Closing the Gaps. Domain three aligns with ESSA (TEA, 2019g).

A-F Letter Grades. Ratings assigned to local districts and campuses as part of Texas' school accountability system. A = Exemplary Performance; B = Recognized Performance; C = Acceptable Performance; D = In Need of Improvement; F = Unacceptable Performance (TEA, 2018a).

Accountability Subset. Students whose academic performance counts in accountability ratings for their school. Based on enrollment on the fall snapshot date of the accountability year. For Accountability Year 2019, fall snapshot was October 26, 2018 (TEA, 2017a).

Accountability Year. The year that corresponds with the school year reflected in accountability ratings. Accountability Year 2019 purportedly rates school performance for School Year 2019, even though some indicators come from School Year 2018 data.

Basic Underlying Assumptions. The invisible, implicit beliefs within a culture (Schein & Schein, 2017). Studying relationships among the parts of a system can uncover underlying assumptions (Bertalanffy, 1969; Senge, 2000).

Carrot Motivation. Positive extrinsic motivation used to coerce behavior. Can yield results, including genuine compliance, as long as rewards keep coming (Herzberg, 2011), but not long-lasting learning (Schlechty, 2011).

CCMR. College, Career, and Military Readiness. One measure of high school performance in the A-F accountability system. Based on the rate of seniors deemed ready for postsecondary success in one of the three areas. State CCMR is based on graduates; federal CCMR is based on the cohort (TEA, 2019h).

Cohort. Group of students who start high school in the same year and should graduate four school years later. Students remain in the same cohort even if they are retained, advance grade levels, or do not graduate (TEA, 2019h). Cohort 2019 is the group of students who started ninth grade in the fall of 2015 and should have graduated in spring 2019.

Culture. "Shared webbing of beliefs, informal folkways, and traditions that infuse work with meaning, passion, and purpose" (Deal & Peterson, 2016, p. 2). Affected by the maintenance factors that minimize dissatisfaction and intrinsic motivators that increase satisfaction in an

organization (Herzberg, 2011). Comprises three levels: artifacts, espoused beliefs and values, and basic underlying assumptions (Schein & Schein, 2017). Frequently operationalized in schools by how well-behaved and quiet the students are (Marquez, 2019).

DISD. School district in Texas with 155,030 students in School Year 2019, 86.2% of whom were economically disadvantaged (TEA, 2019f).

Dissatisfaction Avoidance Factors. See maintenance factors.

DoE/USDoE. U.S. Department of Education

Economically disadvantaged. Rate of students eligible to receive free or reduced-cost meals or are eligible for other public assistance as reported on snapshot (TEA, 2019h).

Engagement. The energy that results from motivation and drives growth (M.-T. Wang & Degol, 2014). A culture of engagement will have maintenance factors that minimize dissatisfaction and intrinsic motivators that increase satisfaction in an organization (Herzberg, 2011).

Engagement Culture. A shared underlying assumption in a school that intrinsic motivation creates energy and drives growth.

ESC. Education Service Center. One of 20 regional centers created to support local school districts and "promote compliance with state laws and rules" (TEA, n.d.-a, "Service Areas" section).

ESF. Effective Schools Framework. TEA's guide for underperforming schools. Says schools must have a positive school culture to perform well (TEA, 2019m).

ESSA. Every Student Succeeds Act. 2015 reauthorization of the federal Elementary and Secondary Schools Act of 1965 to provide "all children significant opportunity to receive a fair, equitable, and high-quality education, and to close educational achievement gaps" (Every

Student Succeeds Act, 2015, "Statement of Purpose" section). Increased flexibility at the state and local levels by removing federal mandates in NCLB (Congressional Research Service, 2013). Did not remove the requirement to close achievement gaps among student groups but let states submit plans for approval by the USDoE.

HB22. Texas House Bill 22. Significant accountability redesign passed in 2017 by Texas' 85th Legislature with implementation beginning in School Year 2018. Created letter grades for rating campuses and districts; changed framework from four indices to three domains; aligned state accountability with ESSA; and established Local Accountability Systems (TEA, 2018b).

High-poverty. Schools in which 80% to 100% of students are economically disadvantaged (TEA, 2019e).

KITA. Kick in the A**. Negative physical or mental extrinsic motivation used to coerce behavior (Herzberg, 2011). Also known as stick motivation.

Ladder of Inference. The series of steps from observing data to taking action (the only two steps visible to outside observers) and based on the work of Chris Argyris. Steps include (a) observe data and experiences; (b) select data chosen from step one; (c) assign meanings to select data; (d) make assumptions based on the meanings; (e) draw conclusions from those assumptions; (f) adopt beliefs in light of the conclusions; and (g) take actions based on beliefs (Senge et al., 1994). The path from culture to robust learning occurs on the ladder of inference, with cultural norms informing the shared meanings, assumptions, and beliefs that drive behavior.

Local Accountability Systems. LAS. Provision of HB22, which allows LEAs to develop local accountability measures for their campuses to be used for up to half of a campus's rating. Requires prior approval from TEA (TEA, 2019h). Two school districts were approved for accountability year 2019: DISD and Snyder ISD (TEA, 2019o).

Low-poverty. Schools in which less than 20% of students are economically disadvantaged (TEA, 2019e).

Maintenance. Processes/factors that drive dissatisfaction and disengagement in an organization and are largely linked to the climate and meeting of basic human needs. Also known as hygiene factors (Herzberg, 2011). Guide selection of extracurricular activities and discipline rates for use as independent variables. Contrast with motivators.

Motivation. Processes/factors that drive someone to take action (Yazzie-Mintz & McCormick, 2012). Two types are considered in this study: intrinsic and negative extrinsic (stick/KITA); positive extrinsic (carrot) is not.

Motivators. Intrinsic rewards that increase satisfaction in an organization. Include achievement, recognition for achievement, the work itself, responsibility, and growth or advancement. Guide selection of teacher survey items for use as independent variables. Contrast with maintenance factors (Herzberg, 2011).

NCLB. No Child Left Behind Act. 2001 reauthorization of the federal Elementary and Secondary Schools Act of 1965 with the purpose of "increasing the accountability of public school systems and individual public schools for improving achievement outcomes of all students, especially the disadvantaged" (para. 2). NCLB "initiated a major expansion of federal influence upon several aspects of public K-12 education" (Congressional Research Service, 2013, para. 2).

PEIMS. Public Education Information Management System. The mechanism for TEA and Texas legislature to gather non-STAAR accountability data (TEA, 2019h) for categories including organizational, budget, actual financial, staff, student demographic, program participation, school leaver, student attendance, course completion, and discipline (TEA, n.d.-b).

School Year 2019. Range of 171 instructional days that began August 20, 2018, and ended May 29, 2019, for the participant campuses in DISD (Davis, 2017).

SEA. State educational agency (Congressional Research Service, 2013).

Snapshot. The day at the end of October when enrollment data is established each school year. Enrollment data include the number of students and their membership in student groups. Snapshot for accountability year 2019 was October 26, 2018 (TEA, 2017a).

STAAR. State of Texas Assessments of Academic Readiness. Standardized tests given to Texas students each year to assess academic performance in math and reading for grades 3-8; writing in grades 4 and 7; science in grades 5 and 8; social studies in grade 8; Algebra I; English I; English II; Biology; and United States History (TEA, 2019a). Results serve as the primary measure of performance in the A-F accountability system (TEA, 2019p).

Stick Motivation. See KITA.

Student Engagement. "The outward manifestation of motivation" (M.-T. Wang & Degol, 2014, p. 137). It is a multidimensional construct that considers the combinations of and interplay among the many reasons students persist in school, instead of addressing discrete reasons separately (Fredricks, Reschly, & Christenson, 2019a)

System. The connections among parts of a whole. Relationships between the parts define their function (Bertalanffy, 1969), and studying these relationships unveils the hidden assumptions operating in a culture (Senge, 2000).

TEA. Texas Education Agency. Texas' SEA.

Chapter Summation

What's in the Bag?

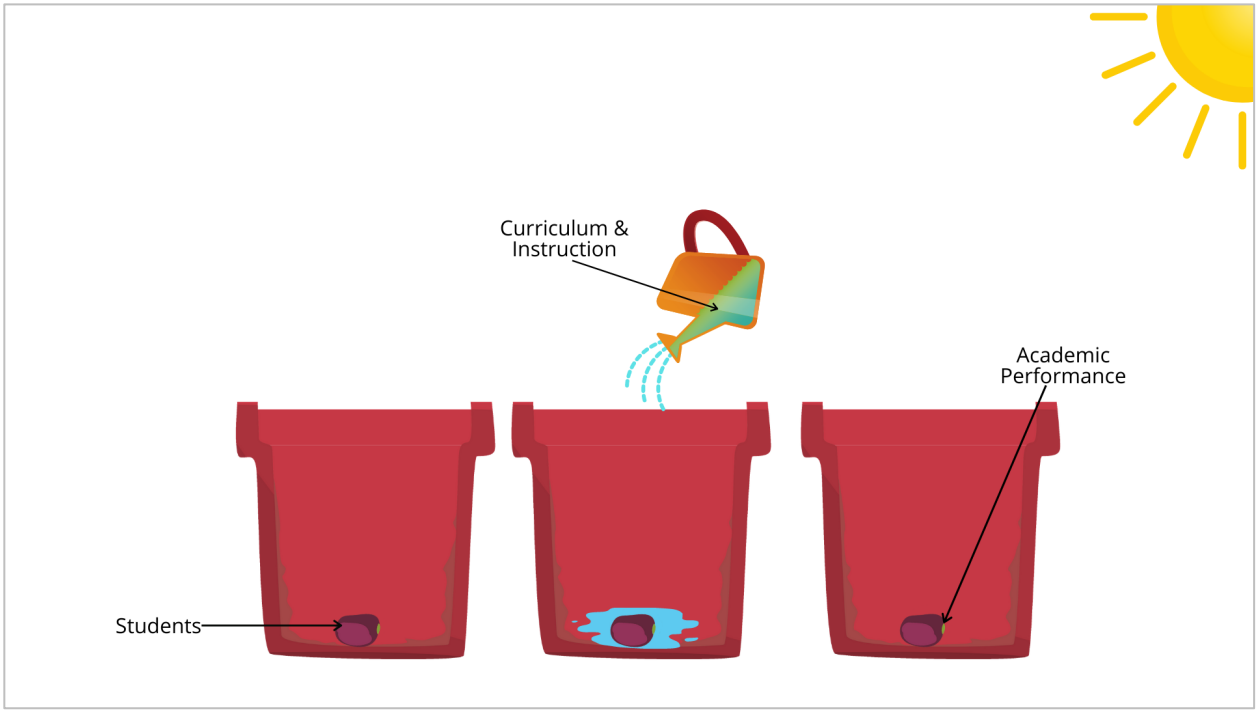
A culture of engagement operates under the basic underlying assumption that the best way to motivate is by increasing satisfaction and decreasing dissatisfaction, not by coercion into

compliance. In response to calls for increased rigor and standardization in the 1980s and 1990s, the structure of education has shifted from a professional bureaucracy with primarily local control to a machine bureaucracy with centralized control at the state and federal level. The response to these increased measures and standardization has been to fundamentally change the context of schools to focus on skills measured on annual standardized tests (Nichols & Dawson, 2012). Since results are more correlated with campus poverty level (TEA, 2019e), the changes are more exaggerated in high-poverty schools, almost all of which limited offerings in response to NCLB (Rentner et al., 2006). The net result is a compliance culture that relies on extrinsic motivation to get students to master narrow testing standards. It has not worked. Test scores in reading and math have stagnated over the last decades and student engagement in a school day dedicated to test prep in a system that blames them for poor outcomes is low.

There are some bright spots. Some poor schools consistently outperform their affluent counterparts. These high-poverty schools motivate students in a way that leads to academic success. Even though culture is largely hidden (Schein & Schein, 2017) and can be expensive to uncover (Jung et al., 2009), previous research guides the identification of relevant, measurable dimensions (see Figure 5). Evidence of intrinsic motivation indicate academic performance in high-poverty schools. More-affluent students likely benefit from motivation to do well at home—either intrinsically or in the form of positive coercion would yield acceptable academic outcomes. Identifying elements of student engagement may help schools better support the most impoverished students who do not come to school motivated to learn (Hernandez & Zamora, 2018; Zamora & Hernandez, 2016)

Figure 5

Unmotivated, Dissatisfied Students do not Grow



Note. A culture of engagement will have maintenance factors that minimize dissatisfaction and intrinsic motivators that increase satisfaction in an organization (Herzberg, 2011).

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Chapter Three: Methods

The problem is that it is unclear why some high-poverty schools consistently out-perform even the most-affluent schools. Evidence of a culture of engagement, characterized by the shared underlying assumption in a school that intrinsic motivation creates energy and drives growth, should be present in high-performing, high-poverty schools. The type of motivation is critical and frequently gotten wrong in education: it must be intrinsic, not extrinsic. Over the past several decades, compliance culture—from the classroom to the USDoE—has flourished in education. As a result, schools spend more time attempting to coerce students into learning instead of tapping into their natural curiosity and intrinsic motivation to learn. The assumption that students and schools must be coerced into compliance has become so ingrained into the education landscape that it is practically invisible. Understandings about different levels of culture—both seen and unseen—and conceptualizing the multidimensional construct of student engagement as a systems issue can help uncover the insidious effect of compliance culture on student growth. The very nature of the tests used to measure academic performance and rate schools induces compliance frenzy and narrows classroom focus from robust learning to test-prep (Schlechty, 2011).

This study aims to identify which characteristics of a culture of engagement correlate with academic achievement in high-poverty schools. To understand the role culture plays in the academic success of high-poverty schools, relationships among underlying assumptions about motivation and academic performance were explored with the following research questions.

Research Questions and Null Hypotheses

Research Question 1. How much do culture construct scores indicating intrinsic motivation and minimal dissatisfaction, discipline data indicating non-coercive motivation styles, and extracurricular participation explain a campus' academic growth?

Null Hypothesis 1. Engagement culture is not related to academic growth in high-poverty schools.

Research Question 2. How much do culture construct scores indicating intrinsic motivation and minimal dissatisfaction, discipline data indicating non-coercive motivation styles, and extracurricular participation rates explain a campus' relative academic performance?

Null Hypothesis 2. Engagement culture is not related to relative academic performance in high-poverty schools.

Research Design

This non-experimental, correlational (Creswell & Creswell, 2018), cross-sectional study was selected to measure the relationships among culture, motivation, and academic performance data from DISD using publicly-available, campus-level data from 174 schools from the 2018-2019 school year. Evidence of high intrinsic motivation and low compliance motivation within these relationships would indicate the presence of engagement culture (Goleman, 2011; Schlechty, 2011; and Senge, 2006) and should correlate with academic performance and growth (Herzberg, 2011; M.-T. Wang & Degol, 2014).

Numerous instruments explore and diagnose culture, usually with the hope of improving outcomes. Jung et al. (2009) reviewed 48 with measurable results and varying levels of reliability, validity, and purpose. The most common are self-report questionnaires that use Likert scales, Q-methodologies, and ipsative measures to gather data (Jung et al., 2009). These quantitative methods are easier to use, more affordable, and thus more scalable than their qualitative counterparts, but they limit findings to those conceptualized by the model and are "rejected" by some researchers in lieu of approaches that "allow for the detailed and meaningful analysis and examination of underlying values, beliefs, and assumptions" (Jung et al., 2009, pp.

1092-1093). Systems theory says that studying relationships among the parts of a system can uncover underlying assumptions (Bertalanffy, 1969; Senge, 2000).

With the passage of HB22, a new source of valid, reliable campus culture and engagement data and more-precise academic performance data recently became publicly available. They include nuanced academic performance indicators, relative performance data based on economic context, a student school culture survey, parent school culture survey, teacher school culture survey, and extracurricular participation components. The quantitative study seeks to conceptualize student engagement as a cultural issue and identify systemic measures that provide "a window through which the student experience can be understood" (Yazzie-Mintz & McCormick, 2012, p. 748). Identifying and quantifying these systemic factors would help leaders systemically improve student experiences and outcomes. The study identifies indicators of three key student engagement culture features, focusing on culture perceptions, campus demographic makeup, and underlying beliefs about motivation. Data mining and hierarchical multiple regression analysis techniques were applied to explore which features, individually or combined, correlate with academic performance and growth in high poverty schools.

A mixed methods approach combining the qualitative analysis of cultural artifacts with the quantitative analysis of academic performance was considered. However, it was not selected as good of a fit because they would not identify systemic measures. Regression and correlation analyses are similar, but regression analysis generates more information and provides a more intuitive understanding of the relationships between variables (Urdan, 2010). Hierarchical multiple regression analysis was used to ascertain how much variance in the dependent variable can be explained by separate independent variables (Laerd Statistics, n.d.-a). Using a software

data analysis package like SPSS increases the amount of information generated over more basic spreadsheet software like Excel.

Sources of Data

Data Come From Publicly-Available Datasets

Data to answer both research questions for this study come from publicly-available datasets available from TEA and DISD regarding School Year 2019 (see Table 4).

Table 4

Data Come from TEA and DISD

TEA	DISD
Domain II: Academic Growth whole points awarded	Select staff engagement and support survey items percent positive
Domain II: Relative Performance STAAR-only scale scores	Overall composite rates of positive results from parent surveys
Discretionary discipline rates	Overall composite rates of positive results from student surveys
Population discipline rates	
Extracurricular participation rates	

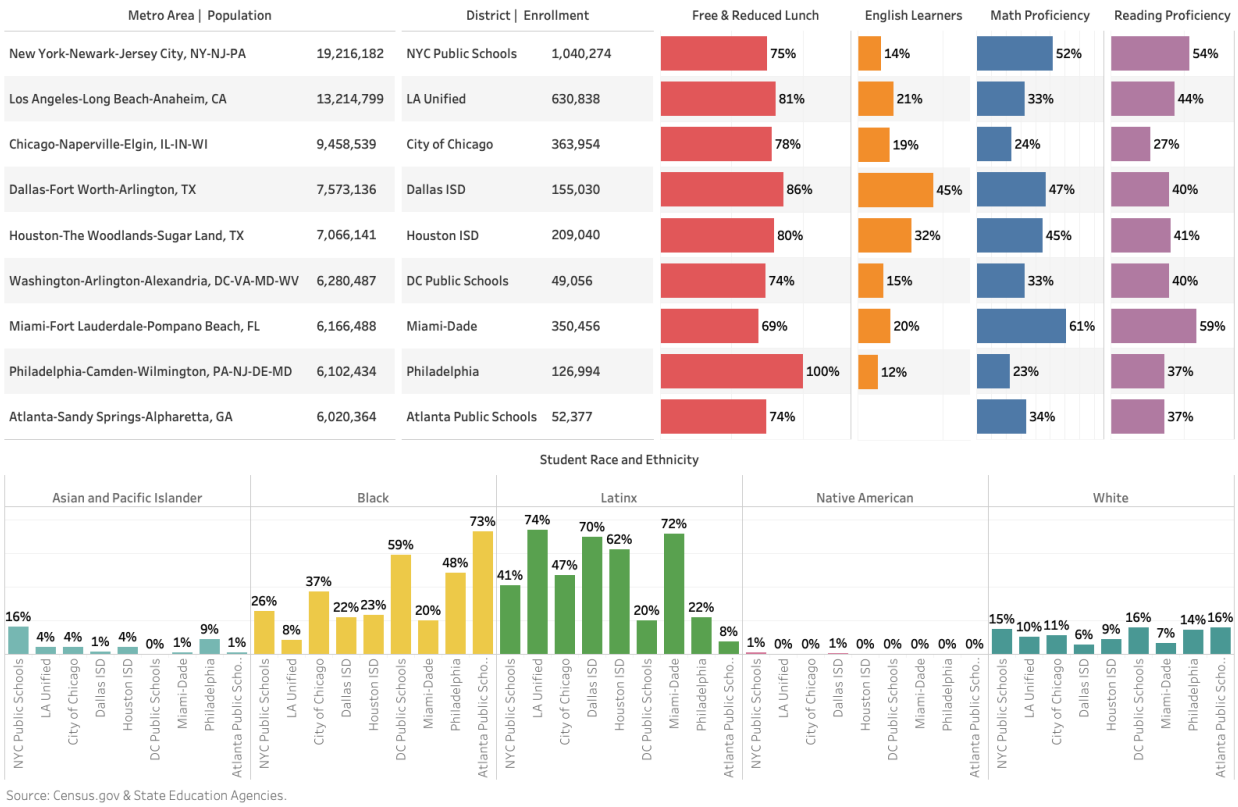
Target Population is Urban, High-Poverty Public School Campuses

The target population is urban, high-poverty public school campuses. High poverty schools are overwhelmingly concentrated in metropolitan areas (see Figure 6) which include the urban core and surrounding suburbs (Mordechay & Orfield, 2017). Public school districts in the principal cities of the United States' nine largest metropolitan statistical areas have at least 69% of students receiving free or reduced lunch and almost exclusively serve non-White students. The sample is situated in the principal city in the fourth largest metropolitan statistical area. It

comprises high-poverty public school campuses in DISD in School Year 2019.

Figure 6

2019 School Demographics in Nine Largest U.S. Metropolitan Statistical Areas



Note. California Department of Education, 2019; District of Columbia Public Schools, 2019; Florida Department of Education, 2019a, 2019b, 2019c; Georgia Department of Education, 2019a, 2019b, 2019c; Illinois State Board of Education, 2019; New York State Education Department, 2019; The School District of Philadelphia, 2019; TEA, 2019c; U.S. Census Bureau, 2019, U.S. Department of Education, 2020.

The Sample is Representative of the Target Population

The representative sample comprises a subset of 174 campuses (113,304 students) in DISD. DISD was selected because of its large size, the availability of valid and reliable engagement culture data for each campus, and the demographic makeup of its high-poverty campuses, which are similar to the demographics of other urban, high-poverty campuses in the United States. The vast majority of DISD's campuses are situated in locales that meet NCES

criteria for *City-Large* (see Table 5). This means they are "inside an urbanized area and inside a principal city with population of 250,000 or more" (Geverdt, 2018, p. 6). The only exceptions are two *Rural-Fringe* elementary schools, six *Suburban-Large* elementary schools, and one *Suburban-Large* middle school comprising 8,418 students. Even with names that include the words "suburban" and "rural," these are not small-town schools. *Rural-Fringe* locales are less than five miles from an urbanized area, and *Suburban-Large* locales are technically outside a principal city but inside an urbanized area with a population of 250,000 or more. There are 129 elementary schools, 29 middle schools, and 16 high schools in the sample.

Table 5

DISD Campus Types

NCES Description	School Type	Number
City: Large	Elementary	121
City: Large	Middle	28
City: Large	Senior High	16
Rural: Fringe	Elementary	2
Suburb: Large	Elementary	6
Suburb: Large	Middle	1

Note. Researcher aggregated NCES campus type data (TEA, 2019l) to clarify context of the study.

Extent of Data

Aggregate Campus-Level Data Come From TEA and DISD. School climate researchers must define, design, and operationalize variables to distinguish between which reflect culture and which reflect context and appropriately aggregate demographic data to draw appropriate conclusions. Level two school level data is not the same as level one individual student level data (Marsh et al., 2012). Since the research is on the role of school culture and

context on academic performance, the study uses aggregate student data to the campus level for analysis.

A subset of academic performance and PEIMS data from TEA were analyzed. Academic performance data are collected annually via the STAAR to guide instructional decisions and provide data for the A-F accountability system. Results are released annually. PEIMS data enable oversight of LEAs by TEA and lawmakers. Multiple campus-level, aggregate reports are released annually, including the Campus Level Annual Discipline Summary and Campus Demographic Makeup.

Campus Level Annual Discipline Summary. The Campus Level Annual Discipline Summary shows various incident, student, and action counts regarding students being removed from class for disciplinary reasons. Removal data were used in this study to indicate negative coercion being used as a motivator. Texas law requires the removal of students for certain behaviors (Texas Senate Bill 133, 1997), and the rate of mandatory removals would not necessarily be a function of coercive school culture.

In School Year 2019, 93% (2,142 of 2,292) of the campuses in the population had at least one discretionary placement (TEA, 2019i). Eighty-eight percent (153 of 174) of the sample campuses had at least one discretionary placement. Of those, 88 (51%) had so few discretionary placements that the numbers were masked to protect student privacy. Those campuses, along with the campuses with no discretionary removals, were labeled as "low/no discretionary removals" for analysis. Of the 65 sample campuses not labeled as "low/no discretionary removals," 25 are elementary schools, 27 are middle schools, and 13 are high schools, and rates range from 1.3% to 48.5% (TEA, 2019i). Since middle schools and high schools have more students, it is not surprising that a higher rate of them had discretionary removals. More

surprising is that three high schools and two middle schools are labeled as low/no discretionary removals. This means that very few to no students were ever removed from class for disciplinary reasons, even for part of the day (TEA, 2020a).

As part of the Local Accountability System, DISD gathers culture and engagement data for each campus annually. Culture data come from staff, parent/guardian, and student surveys. Campus staff responds to surveys twice each year; parent and student surveys are conducted once each year in the spring. Engagement is based on the rate of extracurricular participation on a campus. Aggregate overall results are published on TEA's Accountability website, but more detailed results to include category and item-level results must be obtained from DISD.

Data Collection Strategies and Procedures

Three categories of data are included in this study: academic performance, demographic, and engagement culture, all aggregated at the campus level and from School Year 2019. A subset of academic performance and demographic data comes from TEA, and engagement culture data come from DISD and TEA. They include results from teacher, student, and parent culture surveys, extracurricular participation, and discipline data. The multistage procedure used to select participant campuses in DISD is detailed in this paper's Participants section. Data collection consists of four steps: (a) gather public datasets from school-year 2018-2019 from TEA and DISD; (b) clean and upload data into a relational database using the county-district-campus number as the key; (c) remove campuses that were not academically rated on their own merit in 2019 or explicitly exist to serve institutionalized or alternate-education students; and (d) compile data into tables with campuses and relevant variables.

Gathering Datasets

Data-gathering began in winter 2019 as potential data from School Year 2019 became available. Most of the accountability and demographic data are available directly from TEA's

website (TEA, 2019c, 2019d, 2019f, 2019k, 2019l, 2020a), as are the campus discipline data (TEA, 2019i). Although published by TEA, the geographic coordinates come from the ArcGIS datasets website (TEA, 2020b). The non-discipline campus engagement data come from DISD and were obtained via public information requests from DISD and TEA.

CCMR data for Accountability Year 2019 come from School Year 2018 and were omitted. Some measurements were drastically changed under the A-F accountability system, most notably the method for demonstrating postsecondary readiness. In the old accountability system, career readiness was determined by the rate of students who completed a coherent sequence of courses toward a career. *Coherent sequence* was a locally-controlled measure and left determinations about feasible, local post-high school careers to school boards and district administrators. Under A-F, *coherent sequence* was replaced by College, Career, and Military readiness. CCMR is the rate of graduates who demonstrate college, career, or military readiness by meeting one of multiple criteria. *Coherent sequence* is not one of them. It is also a lagging indicator, meaning CCMR scores come from the prior school year. Since Texas passed HB22 in summer 2017 after most seniors had already graduated that year, schools were rated based on a measure that did not exist when they were still in attendance. CCMR factors into all three domains of A-F for high schools and districts and, as such, makes a big impact. Since the data for this study come from accountability year 2019, which includes CCMR data from School Year 2018, the first full year of implementation, CCMR data are omitted (TEA, 2019g).

Preparing Data in Relational Database

Campus data from the multiple sources must be joined before it can be used. Data for this study were uploaded to a local instance of SQL Server and prepared using Microsoft SQL Server Management Studio 2018 (SSMS). Much of the data come from datasets with hundreds of

columns with unintuitive names. The first step in preparing the data is writing a query to give columns recognizable names. The process for this research included pasting the data dictionary into Excel, inserting a column for shortened-but-understandable names, meticulously typing them in, inserting columns for the other necessary code, copying the whole table and pasting it into a code editor, removing extra spaces created by Excel, then copying and pasting that text into SSMS. Once the table was imported in its original form, the query (see Appendix C) was run and used to generate a table for the data. Sometimes a data file must be opened in Excel before uploading into the database, which creates different issues, such as disappearing leading zeroes and grade ranges automatically converted to dates with no way to fix them. Once the file is uploaded and its columns renamed, the issues created by Excel must be addressed. The nine-digit county-district-campus number (CDC) that serves as the join key sometimes has a leading zero, so it is important to ensure joins account for this to avoid data loss. To overcome grade ranges that are converted to dates, a dataset that includes a school level field (TEA, 2019l) and bypasses the need for grade range was used.

Tools Used

Microsoft SQL Server Management System, Tableau, and SPSS Were Used to Clean and Analyze Data

Data were joined and stored using Microsoft SSMS, visualized using Tableau, and statistically tested using SPSS Statistics. The variables were stored in an SSMS database and connected to Tableau and SPSS for data analysis. Once Tableau was connected with the data, the researcher ensured that each data type is correctly identified within the software. Tableau automatically divides the fields into *dimensions* and *measures* based on their type. Measures comprise interval and ratio level numbers. Dimensions comprise nominal and ordinal level categorical data, including text and dates. Tableau enables analysts to easily manipulate the

shape, color, size, detail, and aggregation level of the fields and immediately visualize the relationships among the fields, including statistical information such as correlation coefficient, probability, and frequency (Record, 2017; Villa, 2017).

Human Subjects Considerations

There are minimal risks to the study sample. One benefit of using secondary data is the protection of human subjects (Pajo, 2018). The data used for this study are publicly-released, aggregated datasets, and there are no direct participants. Pepperdine's Graduate and Professional Schools Institutional Review Board classified the study as *non-human subject research* (see Appendix D). The data are masked to protect individual students. Since the study involves contextual variables that include poverty-level and race, care was taken not to disparage these groups. There is an inherent risk that correlation among certain demographic variables and academic performance could be inappropriately used to support racist or classist claims. To mitigate the risks, the findings section of the paper includes clarifications.

Researcher Bias

The researcher has worked in public education for two decades, almost exclusively in high-poverty schools. She has spent her career supporting at-risk students, either directly as a classroom teacher or indirectly as a district-level administrator and consultant. Her experience includes teaching, coaching, district-level research and data analysis project management, accountability system consulting, and building visualizations to help a lobbyist client communicate complex school data to state and federal lawmakers. Her passion for supporting the most underprivileged students comes from the full awareness that she has never had to struggle and an appreciation for supportive parents and grandparents who did. Her mother lost everything in eighth grade when a hurricane destroyed her home, and insurance refused to cover the

damage. It was the love and support of teachers who helped that eighth-grader realize her goals, including graduating from college and becoming a teacher.

The researcher has experienced the bureaucratic technostructure that increases dissatisfaction and has first-hand experience of the power of engagement over coercion. Administrators obsess over data, refusing to acknowledge that some important things—perhaps the most important things—are not quantifiable. Teachers quickly resort to coercion, in the form of treats and discipline, in response to demanding administrators. State and federal government, in their efforts to help students, make matters worse when they inflict adherence to standards and measures on the system. The effect is a dissatisfying workplace that drives teachers from the profession and turns schools into conveyor belts.

The researcher expects to see a relationship between engagement culture and academic performance in high-poverty schools. These issues were mitigated by having a reviewer examine the data, analysis, and interpretations.

Proposed Analysis

Select Predictor Variables Using Tableau

The study utilizes large datasets collected by TEA and DISD as variables in a hierarchical multiple regression analysis. Once the variables were combined into a single table in Microsoft SQL Server Management Studio, a scatterplot of the sample campuses was generated in Tableau for ad hoc analysis, with the goals of becoming familiar with the data, visualizing abnormalities (University of California Los Angeles: Statistical Consulting Group [UCLA], n.d.-a), and identifying promising independent variables for inclusion. Reducing the number of independent variables is beneficial because it increases scientific parsimony, improves generalizability, and maximizes the contribution of individual variables by decreasing overlap (Stevens, 2002). The ratio of sample size to the number of independent variables (*n/k* ratio) should be large to

minimize "shrinkage in predictive power" (Stevens, 2002, p. 88). An *n/k* ratio of 15:1 is typically sufficient for cross-validation. This would achieve a less than .05 loss in predictive power and high probability (.90), based on a squared population multiple correlation (ρ^2) of .50 (Stevens, 2002, p. 143). With a sample size of 174 campuses, the max number of independent variables per regression should be 11. Depending on the analysis in Tableau and the tests of assumptions in SPSS, the number of independent variables was even smaller.

Each scatterplot has one independent variable and one dependent variable. The researcher looked for visual evidence of abnormalities, interference from data ceilings and floors, and redundancy. Campus level (i.e., elementary, middle, high school) and other variables may moderate outcomes, so those were segregated for additional analysis using Tableau's marks pane and other chart types (e.g., cross tab, histogram) as appropriate. The process was repeated for each independent and dependent variable combination. The worksheets were saved and referenced during analysis in SPSS.

Ensure Appropriateness of Selected Statistical Test

Eight assumptions must be met in order to conduct hierarchical multiple regression analysis: (a) continuous dependent variable; (b) multiple continuous or nominal independent variables (Laerd Statistics, n.d.-a); (c) independence of residuals; (d) linearity; (e) homoscedasticity of residuals; (f) no multicollinearity; (g) no unusual data including outliers, high leverage observations, and highly influential points; and (h) normally distributed residuals (Laerd Statistics, n.d.-a; UCLA, n.d.-b). The assumptions were tested on both of the dependent variables and their independent variables as part of the analysis in SPSS.

The first two assumptions—continuous dependent variable and multiple continuous or nominal independent variables—dictated the selection of the statistical test. The third

assumption, independence of residuals, was assessed by a Durbin-Watson statistic. A value near two indicates the independence of residuals (Laerd Statistics, n.d.-b). The fourth assumption, linearity, refers to the presence of linear relationships between the dependent variable and all independent variables and between the dependent variable and each independent variable. To make this determination, new variables must be generated, including studentized residuals and the unstandardized predicted values (Laerd Statistics, n.d.-a). To test for a linear relationship between all independent variables collectively and the dependent variable, a scatterplot of the studentized residuals against the unstandardized predicted values was created. To test for a linear relationship between individual independent variables and the dependent variable, partial regression plots between continuous independent variables and the dependent variable were created (Laerd Statistics, n.d.-b). A visual inspection of the scatterplot of the studentized residuals against the unstandardized predicted values used to test assumption four was again used to test assumption five, homoscedasticity of residuals. Homoscedasticity refers to the scatter of the plotted points. The distance from the regression line should be relatively uniform along the x-axis. If the plot shows heteroscedasticity, possible options include data transformation in SPSS (Laerd Statistics, n.d.-b, n.d.-c) and omitting variables that contribute to the wavering distance from the regression line. Tableau was useful for identifying problematic datapoints. To test assumption six, no multicollinearity, Pearson correlations among the independent variables must be 0.7 or smaller, and the Tolerance on the coefficients must be 0.1 or larger. Where there is multicollinearity present, the problematic variables were omitted (Laerd Statistics, n.d.-b). There are three parts to assumption seven, no unusual data: outliers, high leverage observations, and highly influential points. Casewise diagnostics and the generated-variable studentized deleted residuals were used to detect outliers. Both should have an absolute value lower than three. The

generated-variable leverage values are troublesome if they are greater than 0.2. Cases in which the generated-variable Cook's distance is greater than one were noted as that indicates influential points. Influential datapoints can be removed from the sample (Laerd Statistics, n.d.-b). Assumption eight, normally distributed residuals, were tested using probability plots. The first included a histogram with a superimposed normal curve and a P-P plot of the regression standardized residual dependent variable. The second was a Normal Q-Q plot of the studentized residuals (Laerd Statistics, n.d.-a, n.d.-b). The P-P plot is more sensitive to differences in the middle of the curve, and the Q-Q plot is more sensitive to tail differences (SAS Institute, Inc., 1999; UCLA, n.d.-c). As long as there are no "drastic deviations" from the normality line on the plots, normality or errors is assumed (Statistics Solutions, n.d.). Selected independent variables do not meet the assumptions necessary to conduct multiple regression analysis were omitted and replaced with alternates. Potential alternates included overall construct scores from the teacher climate survey; responses on the teacher climate survey; overall teacher, parent, and student survey scores; and extracurricular spending.

Analyze Relationships Among Variables in Stages

SPSS was used to conduct hierarchical multiple regression analyses of selected independent variables in order to determine to what extent their presence explains extra variation in each dependent variable (Crawson, 2020; Laerd Statistics n.d.-a). By entering the independent variables in stages and in a specific order determined by the researcher, the increment in variation at each stage can be measured. It is shown as the change in R^2 between models (Crawson, 2020; Laerd Statistics, n.d.-a).

Predictor Variables Indicate Motivation Styles and Dissatisfiers. The pool of independent variables started out the same for both research questions (see Appendix E). They

included select campus staff engagement and support spring 2019 survey items; overall composite scores of positive results from spring 2019 parent surveys for each campus (DISD, 2020d); overall composite scores of positive results from spring 2019 student surveys for each campus (DISD, 2019a, 2019b); campus discretionary discipline rates from School Year 2019 campus population discipline rates from School Year 2019; and campus extracurricular participation rates from School Year 2019. Herzberg's research on intrinsic motivators and maintenance factors informed independent variable selection. Intrinsic motivators increase satisfaction and include achievement, recognition for achievement, the work itself, responsibility, and growth or advancement among others. Maintenance factors decrease dissatisfaction and include company policy and administration, supervision, interpersonal relationships, working conditions, salary, status, and security among others (Herzberg, 1974, 2011).

Alternate independent variables were to be used if the originals did not meet the assumptions of multiple regression analysis: overall construct scores from the teacher climate survey; category level scores on the teacher climate survey; overall teacher, parent, and student survey scores; and extracurricular spending.

Outcome Variables Indicate Academic Growth and Relative Performance. Two analyses were run, one for each dependent variable. The first dependent variable is the number of whole points awarded in Domain II: Academic Growth in accountability year 2019. The second dependent variable is the STAAR-only Domain II: Relative Performance scale score from accountability year 2019. Relative performance scores from the 16 participating high schools were calculated by the researcher using TEA's methodology for campuses without CCMR.

Means to Ensure Study Validity

This cross-sectional, applied research study uses aggregate student-level data to explore relationships among academic performance, campus demographic factors, and perceptions of

school culture. School culture researchers combining individual-level and school-level data must address methodological issues inherent to combining multilevel data to ensure interpretations are valid (Marsh et al., 2012).

Ecological Fallacy

One potential issue is ecological fallacy. Ecological fallacy occurs when researchers infer group-level data to individuals within the group and can cause Type I errors. Three conditions must be present to establish ecological fallacy: (a) the use of population data; (b) inferred to individuals; and (c) results that contradict findings from individual data (Idrovo, 2011). Ecological fallacy is impossible in this study because it has a contextual focus, and inferences about effects on individuals are not attempted. The unit of data for all analyses are the campus level.

Aggregate Level of Data

Another potential issue comes from treating aggregate data about students' perceptions of self as contextual data. Applied researchers studying school climate should limit individual-level aggregate data to perceptions about the school, not perceptions about themselves (Marsh et al., 2012). One arguable exception is the student survey questions under the construct of classroom engagement because they specifically ask about student eagerness, excitement, interest, and focus and seem to measure "individual student difference" (Marsh et al., 2012, p. 218). However, these questions are not asked with the intent of having students "rate themselves" (Marsh et al., 2012, p. 218), and the phrasing of each of the five questions makes it clear that the intent is for the students to rate how engaging the class is:

> (a) In this class, how eager are you to participate?; (b) When you are not in class, how often do you talk about ideas from class?; (c) How often do you get so focused on class

activities that you lose track of time?; (d) How excited are you about going to this class?; and (e) Overall, how interested are you in this class? (DISD, 2019a, p. 5)

Model Validity was Ensured

The researcher used the filter case function in SPSS to do random data splitting and cross-validation of the results. The data were randomly split in half, and the prediction equation derived from the sample was applied to each half (Stevens, 2002).

Sample Size and Reliability

About "15 subjects per predictor are needed for a reliable regression equation…that will cross-validate well" (Stevens, 2002, p. 143). Based on this general rule and the accompanying table (p. 145), the sample size of 174 campuses will accommodate 11 independent variables. In general, working with a smaller number of variables is preferred (Stevens, 2002). The researcher used "substantive knowledge" (Stevens, 2002, p. 93) of the area under study, augmented with data visualized in Tableau, to narrow the set of independent variables.

Limitations

Reliance Upon Data Collected by Others. Even though it was deemed valid and reliable by TEA, the researcher did not have any control over the collection of survey data. Factors that may have influenced responses, including a desire to have a high accountability score, are unknowable by the researcher.

The primary benefits of using these secondary data are the availability of large amounts of information that would be impossible for the researcher to collect otherwise; time and cost savings (Pajo, 2018); and timeliness. The dependent variable data are from the most recent administration of Texas' A-F school accountability system and corresponding data from the same school year. Some secondary data sources employ dubious research methodologies that

may yield inappropriate findings (Pajo, 2018), but TEA and DISD have stringent data collection guidelines. The disadvantages of using secondary data—including construct uncertainty and unknowable measurement error (Pajo, 2018)—are mitigated. The institutional use of the data closely aligns with the current research purposes, and validity and reliability studies, including the number of participants, are available.

Growth Measures Have Limited Value. Although theoretically this is a good measure, as a result of the need for matched tests, the growth score excludes all third-grade tests (the first time students are tested), English I tests (no growth measure possible because it measures reading and writing and eighth-grade reading only measures reading), or tests of students who transitioned from a Spanish-language test to an English-language test. Another problem is that many high-achieving students take Algebra I (the only STAAR mathematics test offered at high school) in eighth grade, with the outcome that many high schools' growth score data are skewed because only non-high-achieving math students and English II scores are included in the calculation.

Plan for Reporting Findings

The extent to which independent variables explain extra variation for the dependent variable in each research question is reported in three phases and include Tableau visualizations and SPSS reports (Laerd Statistics, n.d.-a): The first phase evaluates the regression model by showing the order in which the variables were included (Laerd Statistics, n.d.-a). Each step represents the addition of variables. The second determines how well the model fits the data, i.e., explains the dependent variable. This is demonstrated by the coefficient of determination, R^2; the change in R^2 values at each phase; the statistical significance of the R^2 changes, significant F change; and the statistical significance of the entire model using an analysis of variance (Laerd Statistics, n.d.-a). The third phase reports on the coefficients of the final model, which show the

change in the dependent variable based on a one-unit change in an independent variable (Grande, 2016; Laerd Statistics, n.d.-a). For each phase, significant findings and important trends are highlighted first, followed by tables and charts showing all results.

Chapter Summation

Public data sets released by TEA and DISD were analyzed to determine if there is a relationship between a culture of engagement—characterized by minimizing dissatisfaction and valuing intrinsic motivation over coercion—and academic outcomes in high-poverty schools. The target population is urban, high-poverty public school campuses, and the sample population is high-poverty campuses in DISD. The sample population has similar demographics to the target population (see Figure 6). The gathered data were cleaned and assembled in a Microsoft SQL Server database, mined and visualized using Tableau, and analyzed using SPSS.

Predictor variables in this non-experimental, cross-sectional study represented three categories: intrinsic motivation and minimal dissatisfaction; non-coercive motivation styles; and extracurricular participation. The two dependent variables are measures of academic outcomes: year to year growth and relative academic performance. The effect sizes among the three different independent variable categories were determined using hierarchical multiple regression analysis. They were tested in three stages: (a) culture construct scores indicating intrinsic motivation and minimal dissatisfaction; (b) discipline data indicating non-coercive motivations styles; and (c) extracurricular participation rates. The difference in effect size on each of the dependent variables is reported between each stage. Before analysis in SPSS, data mining was performed in Tableau to ensure independent variables are appropriate and to determine if separate tests should be run for elementary and secondary campuses.

The researcher took steps to ensure study validity, including avoiding ecological fallacy, using the same level of aggregate data for each variable, conducting tests to ensure model

validity, using appropriate sample size, and recognizing limitations. Findings are reported in three phases: (a) evaluation of the regression models; (b) model fit; and (c) changes in effect size between each stage of variables.

Chapter Four: Findings

The study examined which characteristics of a culture of engagement— the shared underlying assumption in a school that intrinsic motivation creates energy that drives growth and that dissatisfaction depresses that energy—correlate with academic achievement in high-poverty schools. To understand the role culture plays in the academic success of high-poverty schools, relationships among underlying assumptions about motivation and academic performance were explored with the following research questions:

1. How much do culture construct scores indicating intrinsic motivation and minimal dissatisfaction, discipline data indicating non-coercive motivation styles, and extracurricular participation explain a campus' academic growth?
2. How much do culture construct scores indicating intrinsic motivation and minimal dissatisfaction, discipline data indicating non-coercive motivation styles, and extracurricular participation rates explain a campus' relative academic performance?

The chapter is organized first by data screening then by addressing each research question in three phases: (a) regression model evaluation; (b) model fit; and (c) model coefficients. Significant findings and important trends for each question are highlighted first.

Data Screening

Public data from school year 2019 were obtained from TEA and Dallas Independent School District for this analysis. They include aggregate campus demographic data; state academic accountability outcome measures including student growth and relative academic performance; discipline action and student counts; staff engagement and support survey items and categories; overall composite rates of positive responses from parent and student climate surveys; and extracurricular participation figures.

Outcome Variables Calculated

Full Year Growth. Full-year growth was based on the number of matched math and reading assessments demonstrating scale score improvement greater than or equal to the expected scale score improvement for one year of growth, regardless of pass level, as established by TEA. Half-points, allowed in the Texas accountability system for partial growth, were excluded. To determine the full-year growth rate, the number of full points awarded was divided by the number of matched tests.

STAAR-Only Relative-Performance Scores. Relative performance was determined by comparing a school's STAAR-only academic performance raw score and comparing it with a school's expected STAAR-only academic performance score, as determined by its rate of economically disadvantaged students. This calculation was done automatically for elementary and middle schools as part of the accountability system, but the 16 high school relative performance scores had to be recalculated to omit CCMR rates and scaled using TEA methodology for high school campuses without graduates.

Addressing Masked Data in State Discipline Report

Data from two fields on the discipline report are used to calculate discipline population rate and discretionary removal rate. *Discipline population* (A02) is the count of students who were removed from class at least once in 2018-2019. Discretionary *reason incident count* (G21) is the number of removals that were discretionary, i.e., not required by law (TEA, 2020a). Discipline fields with one to nine records for a single campus mask the exact number to protect student identities. Due to this masking, the discipline populations of 70 sample schools were masked, and the discretionary reason incident counts of 88 schools were masked. Excluding the masked data would limit the sample size considerably and skew the findings because schools

with the smallest numbers of discipline records (>0 and <10) would be completely left out of the calculations. To remedy the issue, a worst-case-scenario approach was taken for the campuses with masked data, therefore a value of 9 was used as the numerator when calculating discipline population rate and discretionary removal rate for the masked campuses. This resulted in rates of discipline populations on masked campuses between .81% and 4.33% and discretionary removal rates on masked campuses between 12% and 100%.

Variables Assessed for Inclusion

Before any statistical analysis could be conducted, consideration of the variables was undertaken with two main goals: (a) limiting the independent variables to 11 or fewer to maintain predictive power based on the sample size of 174 campuses while keeping at least one variable for each of the proposed steps and (b) understanding relationships among the variables. The two goals were addressed in tandem using a Pearson Product-Moment Correlation (see Table 6) and examining residual values created during Multiple Regression Analysis among potential variables in SPSS and visualizations in Tableau (see Table 6).

Preliminary analyses showed the relationships among variables to be linear, which is an assumption of Pearson Product-Moment Correlation. Other assumptions include normally distributed variables and no outliers. Not all variables were normally distributed, as assessed by visual inspection of histograms. The relative academic performance dependent variable was not normally distributed. This was acceptable, because the Pearson test is "somewhat robust to deviations from normality" (Laerd Statistics, n.d.-d, p. 12). Two outliers were removed, but others made no appreciable difference in the results.

Table 6

Pearson Correlations for Main Study Variables

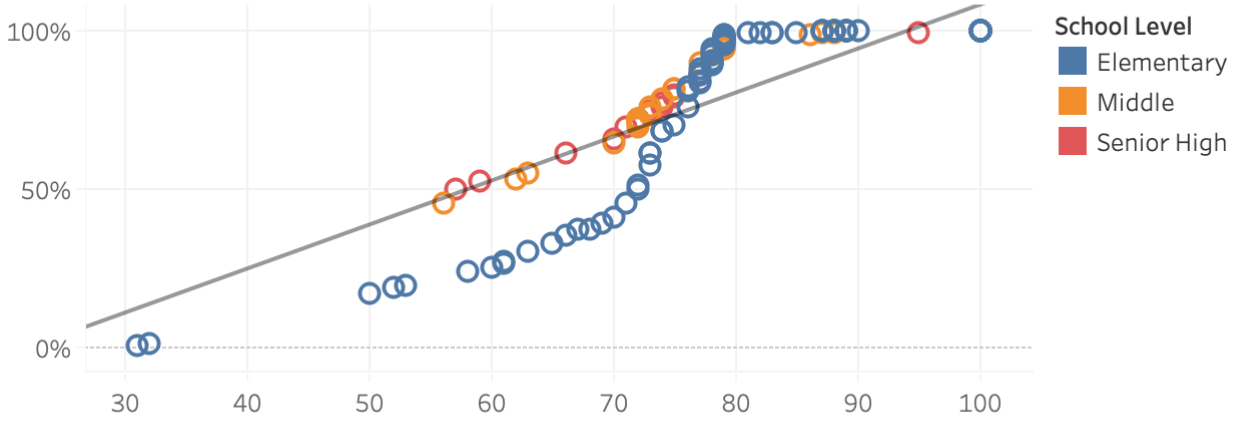
	Growth	RP	STAAR	Parent	Student	Staff	mot19	mot25	mot30	mot42	hyg4	hyg8	hyg13	hyg14	hyg37	hyg38	hyg43	hyg44	hyg46	BP	C	FS	PCE	T-P	T-T	DR	DPop
RP	.572**																										
STAAR	.635**	.888**																									
Parent	.382**	.517**	.591**																								
Student	.505**	.438**	.527**	.520**																							
Staff	.424**	.462**	.525**	.352**	.586**																						
mot19	.368**	.380**	.463**	.273**	.503**	.920**																					
mot25	.375**	.437**	.493**	.297**	.540**	.936**	.893**																				
mot30	.515**	.552**	.607**	.515**	.662**	.848**	.747**	.765**																			
mot42	.321**	.362**	.422**	.241**	.439**	.894**	.845**	.869**	.676**																		
hyg4	.312**	.310**	.392**	.250**	.465**	.907**	.907**	.868**	.718**	.846**																	
hyg8	.391**	.432**	.494**	.347**	.531**	.941**	.884**	.867**	.781**	.859**	.902**																
hyg13	.362**	.410**	.492**	.388**	.542**	.897**	.880**	.838**	.741**	.815**	.889**	.881**															
hyg14	.343**	.382**	.449**	.320**	.482**	.928**	.915**	.857**	.736**	.855**	.915**	.911**	.929**														
hyg37	.359**	.408**	.434**	.288**	.493**	.779**	.639**	.695**	.678**	.555**	.566**	.643**	.587**	.643**													
hyg38	.333**	.419**	.443**	.247**	.445**	.753**	.622**	.673**	.632**	.561**	.555**	.615**	.573**	.641**	.921**												
hyg43	.262**	.285**	.346**	.200**	.417**	.882**	.831**	.851**	.629**	.924**	.851**	.839**	.830**	.863**	.560**	.557**											
hyg44	.293**	.336**	.401**	.209**	.422**	.876**	.828**	.854**	.662**	.913**	.841**	.823**	.822**	.842**	.576**	.596**	.935**										
hyg46	.260**	.317**	.387**	.216**	.431**	.898**	.838**	.856**	.676**	.921**	.855**	.848**	.844**	.863**	.574**	.571**	.933**	.937**									
BP	.382**	.386**	.458**	.328**	.534**	.953**	.903**	.882**	.795**	.876**	.948**	.967**	.898**	.921**	.622**	.591**	.859**	.834**	.864**								
C	.508**	.537**	.585**	.462**	.675**	.885**	.768**	.780**	.950**	.703**	.727**	.810**	.750**	.763**	.747**	.699**	.659**	.672**	.701**	.819**							
FS	.391**	.411**	.465**	.282**	.543**	.957**	.887**	.959**	.763**	.882**	.882**	.894**	.849**	.877**	.715**	.689**	.869**	.855**	.870**	.905**	.787**						
PCE	.436**	.479**	.544**	.389**	.576**	.955**	.939**	.884**	.817**	.839**	.910**	.936**	.935**	.948**	.665**	.635**	.836**	.817**	.849**	.946**	.832**	.896**					
T-P	.298**	.335**	.403**	.226**	.453**	.928**	.867**	.892**	.697**	.962**	.889**	.884**	.859**	.891**	.595**	.590**	.966**	.958**	.978**	.903**	.721**	.908**	.877**				
T-T	.326**	.404**	.437**	.272**	.451**	.773**	.628**	.685**	.648**	.561**	.561**	.633**	.575**	.639**	.968**	.957**	.561**	.588**	.583**	.610**	.727**	.698**	.645**	.598**			
DPop	-.419**	-.332**	-.446**	-.568**	-.643**	-.395**	-.348**	-.338**	-.527**	-.252**	-.285**	-.349**	-.386**	-.341**	-.375**	-.317**	-.228**	-.253**	-.259**	-.339**	-.509**	-.334**	-.412**	-.258**	-.347**	-.339**	
EC	.226**	.236**	.317**	.268**	.261**	.382**	.371**	.367**	.361**	.317**	.388**	.383**	.329**	.371**	.355**	.297**	.283**	.251**	.249**	.382**	.341**	.372**	.382**	.312**	.306**	0.136	-.199**

Note. N=172, RP = Relative Academic Performance, BP = Beliefs and Priorities, C = College Going Culture, FS = Feedback & Support, PCE = Positive Culture & Environment, T-P = Teacher-Principal Trust, T-T = Teacher-Teacher Trust, DPop = Discipline Population, ** = statistically significant at the 0.01 level, * = statistically significant at the 0.05 level.

Extracurricular Participation. Fifty-three of the participating campuses have an extracurricular participation rate of 100%, creating a ceiling effect (see Figure 7). The high numbers imply that extracurricular participation is a required part of the schedule in elementary schools and likely not the result of engagement. Since extracurricular participation may foster student engagement (Juvonen et al., 2012), required participation is still a relevant indicator. As a result of the high numbers and DISD's LAS scaling methodology, elementary and middle school campuses with an extracurricular participation rate of 99.9% received an extracurricular participation scale score of 90. Those with 99.8% participation got an 89. Extracurricular scale score was used for the analysis, since it eliminated the ceiling, but the relevance of the correlations based on methodology that creates a scale score drop of 10 points because of one student's extracurricular participation is dubious.

Figure 7

High Extracurricular Participation Rates Create a Ceiling Effect



X-Axis: EC Participation Scale
Y-Axis: EC Participation Percent

Two Outliers Removed. Two outlier datapoints, as determined by Casewise Diagnostics, had standardized residuals less than -3. They disproportionately affected the findings (Pennsylvania State University: Eberly College of Science, 2018) and were removed

from the dataset, reducing the analyzed sample to 172. Both were elementary schools. The two elementary campuses had the lowest growth scores in the sample, and average to exceptional culture scores.

Lanier had sizeable drops in math performance in school year 2019 which affected its growth rate. Specifically, fourth grade math went from 59% in 2018 to 40% in 2019 at the meets grade level pass rate. From a cohort perspective, 54% of third graders at the meets grade level pass rate in 2018 down to 40% at meets in fourth grade in 2019 (TEA, 2019c). Even with the drops in performance, they were still above average and so showed decent relative performance scores. In contrast with their low growth scores, the Lanier staff's overall positive rate was about one point higher than the district average at 78.4. They have consistently had a relatively high college-going culture score when compared against their other staff construct scores.

Holland had drops in performance, both in reading and math. The rate of passing math and reading tests for all students dropped from 33% in 2018 to 26% in 2019. The most dramatic drop in the meets grade level pass rate was third grade math, which went from 61% in 2018 to 43% in 2019 and fourth grade reading, which went from 41% in 2018 to 25% in 2019 (TEA, 2019c). Their drops in performance were enough to affect their relative performance scores, which dropped from an 84 to a 78. In extreme contrast with their growth scores, the Holland staff's overall positive rate was 97, which puts them in a tie for seventh highest staff overall positive rate out of the district's 227 campuses.

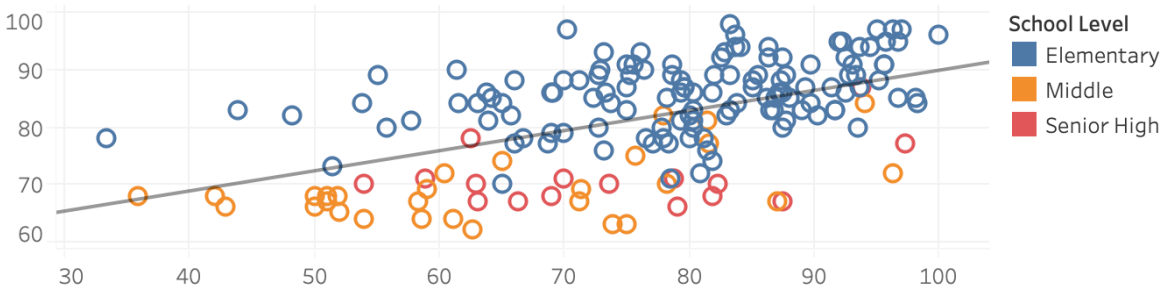
Notable Findings

Multicollinearity Expected Within Survey Constructs. In hierarchical regression analysis, each included independent variable must have a linear relationship with the dependent variable for that particular test but not have multicollinearity among other included independent

variables. Multicollinearity is present when correlation coefficients (*r* values) between individual independent variables are close to 1 or -1. Correlation coefficients between -0.7 and 0.7 are acceptable. Since many of the staff survey variables measure the same construct, it was not surprising to see high levels of multicollinearity. This helped with the reduction of variables.

Figure 8

Teacher Satisfaction and Student Percent Positive are Strongly Correlated

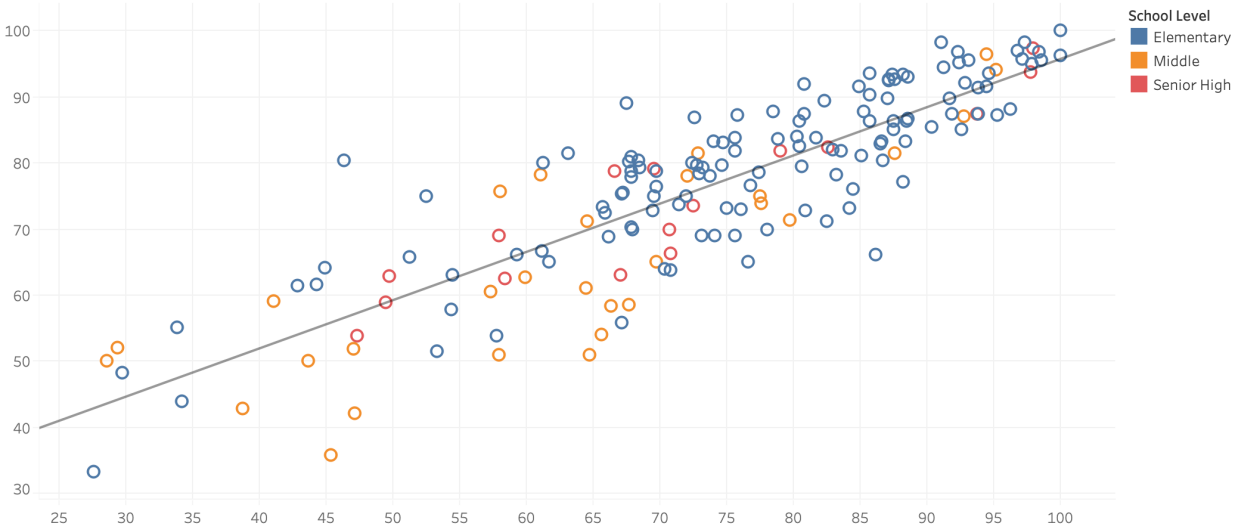


Note. $r(145) = .54$, $p < .001$.

Teacher Satisfaction Connects to Trust and Student Satisfaction. Teacher satisfaction is strongly correlated with a positive student culture and trust among colleagues. Hyg13 asked teachers how much they agreed with this statement: **"**I usually look forward to working each day at this school." It is part of the Positive Culture and Environment category and is strongly correlated with student percent positive. $R(145) = .54$, $p < .001$ (see Figure 8). Teacher satisfaction statistically explains 29% of the variability in student perceptions of school culture. Teacher satisfaction is very highly correlated with teacher-principal trust $r(145) = .86$, $p < .001$ (see Figure 9). Teacher -principal trust statistically explains 74% of the variability in teacher satisfaction, meaning 74% of the reason that a campus' teachers look forward to coming to work can be linked to the campus' rate of teacher-principal trust.

Figure 9

Teacher Satisfaction is Very Highly Correlated with Teacher-Principal Trust



Note. $r(145) = .86$, $p < .001$.

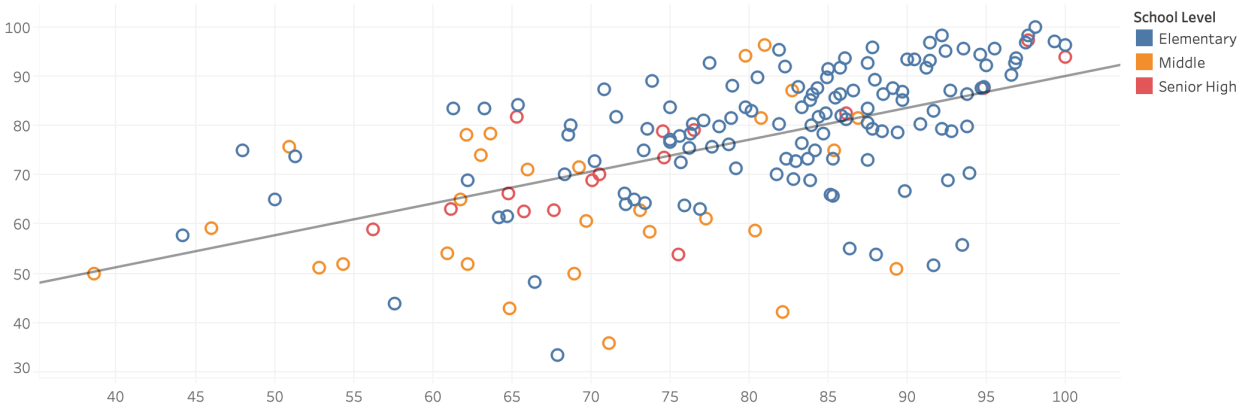
The teacher-principal trust category comprised seven items:

1. The principal has confidence in the expertise of the teachers.
2. I trust the principal at his or her word.
3. It's OK in this school to discuss feelings, worries, and frustrations with the principal.
4. The principal takes a personal interest in the professional development of teachers.
5. The principal looks out for the personal welfare of the faculty members.
6. The principal places the needs of children ahead of personal and political interests.
7. The principal at this school is an effective manager who makes the school run smoothly. (DISD, 2020c)

Though not as highly correlated as principal-principal trust, teacher-teacher trust is also strongly correlated with teacher satisfaction. $r(145) = .58$, $p < .001$ (see Figure 10). Teacher - teacher trust statistically explains 33% of the variability in teacher satisfaction.

Figure 10

Teacher Satisfaction is Strongly Correlated with Teacher-Teacher Trust

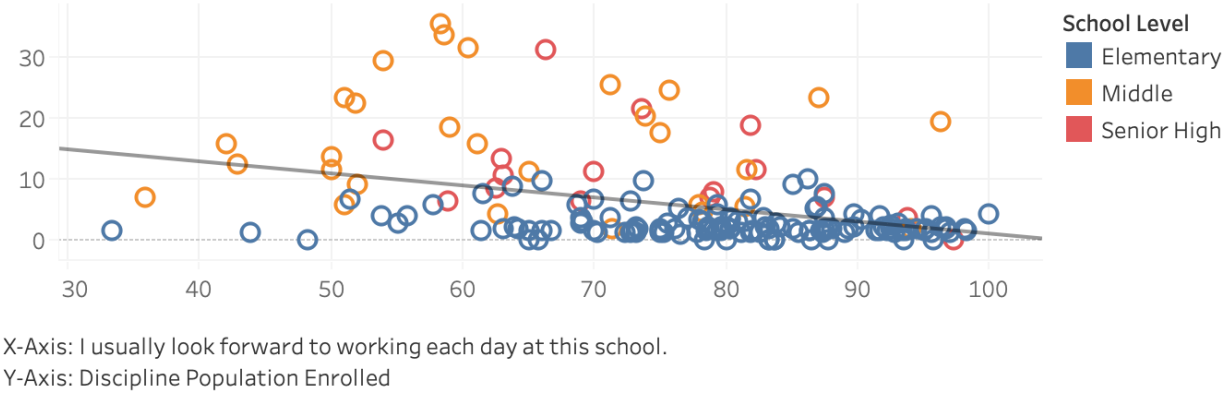


Note. $r(145) = .58$, $p <. 001$.

Teacher satisfaction is moderately correlated with lower unique student removal rates $r(145) = -.39$, $p < .001$ (see Figure 11). Teacher satisfaction statistically explained 15% of the variability in student removal rates.

Figure 11

Teacher Satisfaction is Moderately Correlated with Rates of Students with Disciplinary Removals

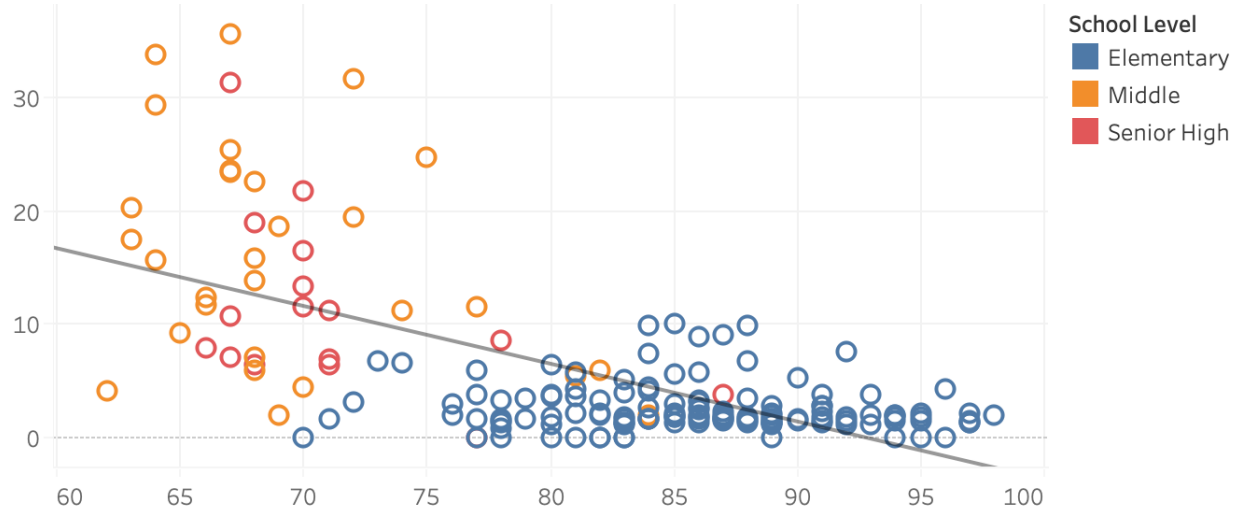


Note. $r(145) = .39$, $p < .001$. The downward slope indicates that the more a campus' teachers look forward to work, the less its students are removed from class for disciplinary reasons.

Discipline Population. Discipline population is one of two discipline measures proposed to gauge non-coercive motivation styles. The other was discretionary removals. It was expected that both measures would have a negative correlation with dependent variables, as indicated by a downward sloping regression line (see Figure 11**,** Figure 12**,** Figure 13**,** and Figure 14). Only discipline population has the expected correlation. Discretionary removals have a positive, though weak, correlation with both dependent variables and all of the independent variables besides discipline population (see Table 6). Smaller discipline populations are strongly correlated with student satisfaction $r(145) = -.64$, $p < .001$ (see Figure 12), parent satisfaction $r(145) = -.57$, $p < .001$ (see Figure 13), and the belief that most students will attend college $r(145) = -.53$, $p < .001$ (see Figure 14).

Figure 12

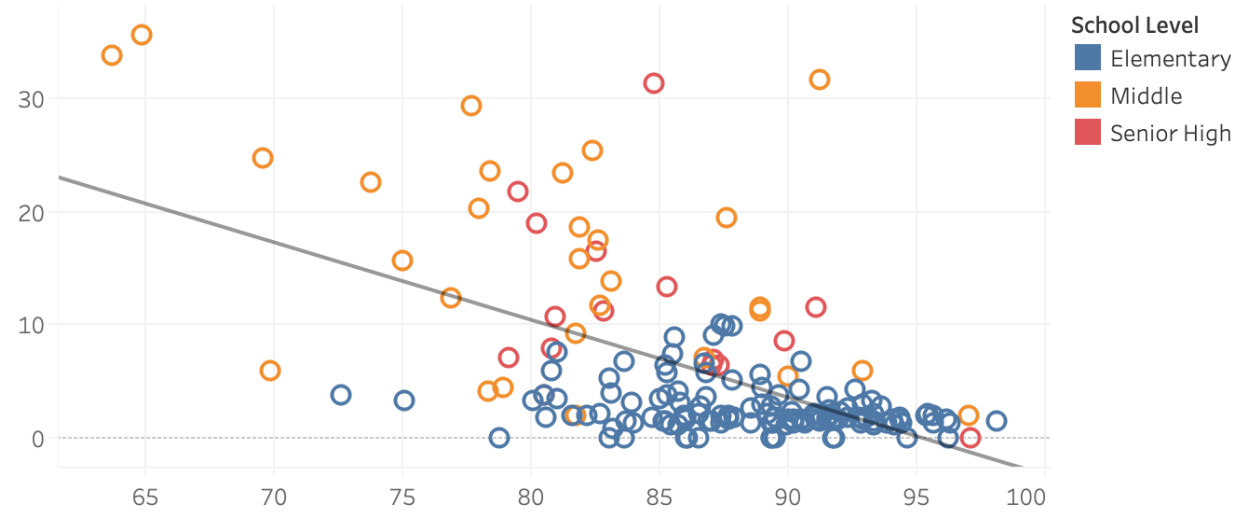
Rates of Students with Disciplinary Removals are Strongly Correlated with Student Satisfaction



Note. $r(145) = -.64$, $p < .001$.

Figure 13

Rates of Students with Disciplinary Removals are Strongly Correlated with Parent Satisfaction

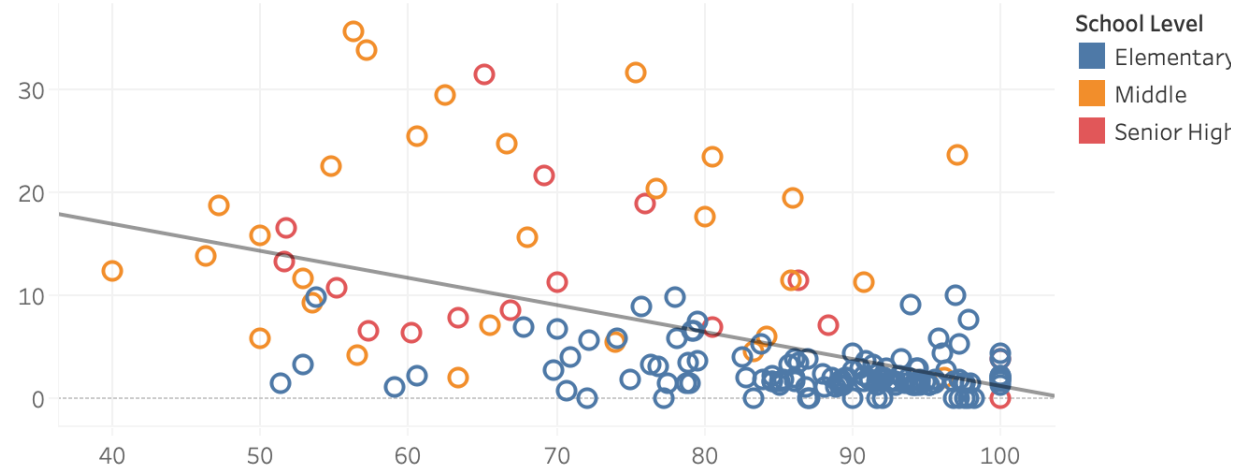


X-Axis: Parent Percent Positive
Y-Axis: Discipline Population Enrolled

Note. $r(145) = -.57$, $p < .001$.

Figure 14

Rates of Students with Disciplinary Removals are Strongly Correlated with the Belief that Most Students will Attend College



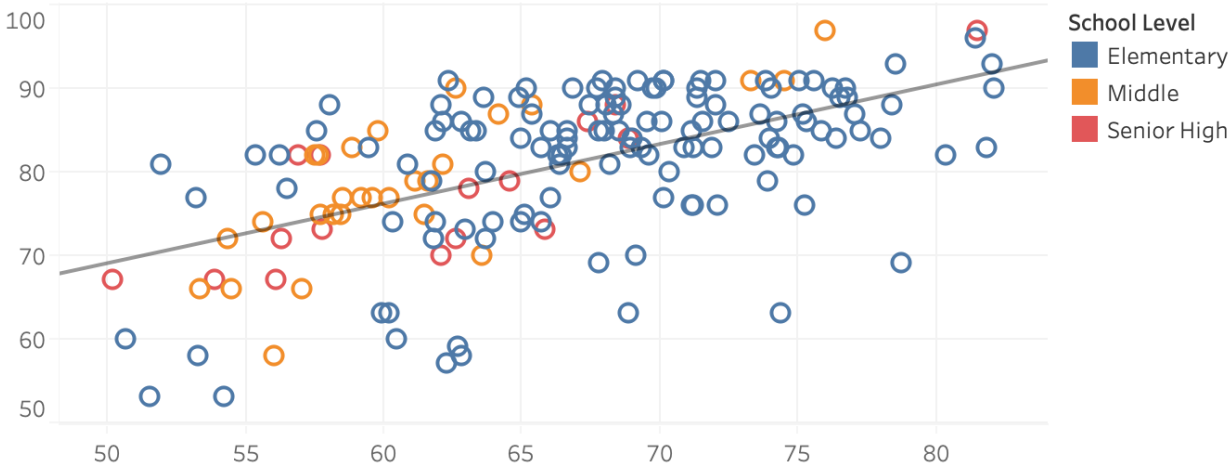
X-Axis: Teachers expect most students in this school to go to college.
Y-Axis: Discipline Population Enrolled

Note. $r(145) = -.53$, $p < .001$.

High Academic Performance Does not Necessarily Indicate Growth. Although it seems that the two dependent variables—student growth and relative academic performance—would be almost perfectly correlated, they are not, $r(145) = .57$, $p < .001$ (see Figure 15). A correlation coefficient with an absolute value between .50 and .99 is strong; between .30 and .49 is moderate; and between .10 and .20 is weak (Cohen, 1988). Correlation coefficients can be positive or negative, depending on the slope of the line. Annual student growth statistically explains 33% of the variability in relative academic performance. Growth is arguably a better indicator that a school is making a difference in student outcomes, because it is based on the longitudinal analysis of individual student performance and shows how much students have developed in one year. Academic performance is based on the cross-sectional analysis of student performance and is not explicitly linked to learning in the current school year.

Figure 15

Academic Growth and Relative Academic Performance are Strongly, but not Perfectly, Correlated



Note. $r(145) = .57$, $p < .001$.

Research Question One

How much do culture construct scores indicating intrinsic motivation and minimal dissatisfaction, discipline data indicating non-coercive motivation styles, and extracurricular participation explain a campus' academic growth?

Null Hypothesis: Engagement culture is not related to academic growth in high-poverty schools.

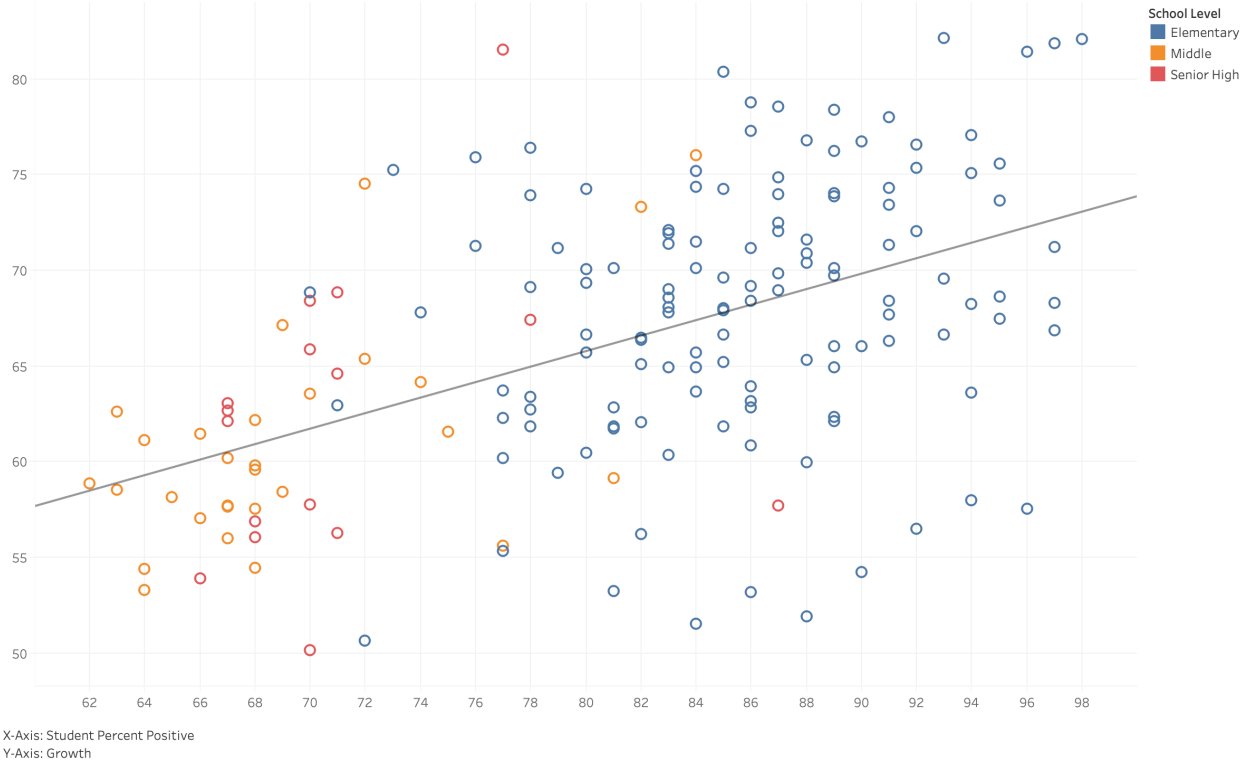
Significant Findings and Important Trends

There was a statistically significant relationship between factors of engagement culture and academic growth in high-poverty schools. Therefore, we can reject the null hypothesis.

Strong Correlation Between Student Satisfaction and Academic Growth. Student satisfaction is strongly correlated with academic growth, $r(145) = .51$, $p < .001$ (see Figure 16).

Figure 16

Student Satisfaction and Academic Growth are Strongly Correlated

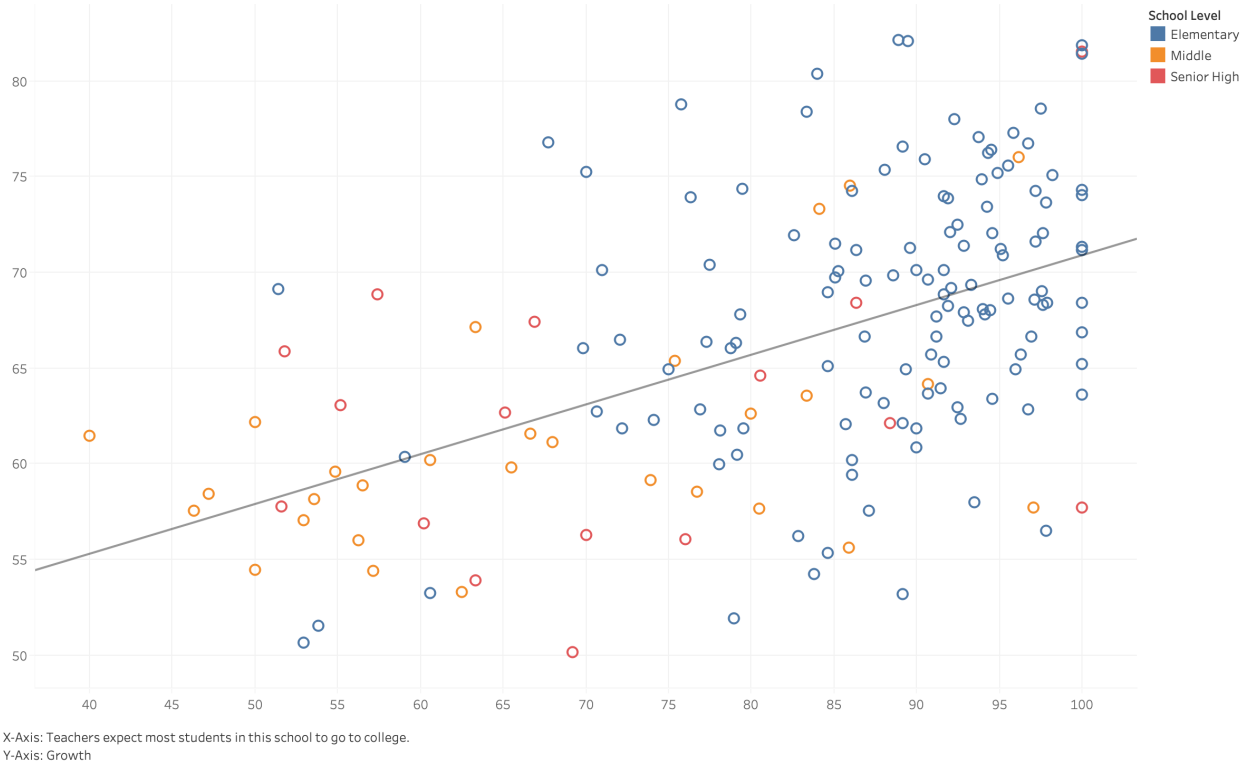


Note. $r(145) = .51$, $p < .001$.

Strong Correlation Between Teacher Belief that Students will Attend College and Growth. The belief among teachers that students will attend college is strongly correlated with academic growth, $r(145) = .52$, $p < .001$ (see Figure 17).

Figure 17

Teacher Belief that Students will Attend College and Academic Growth are Strongly Correlated

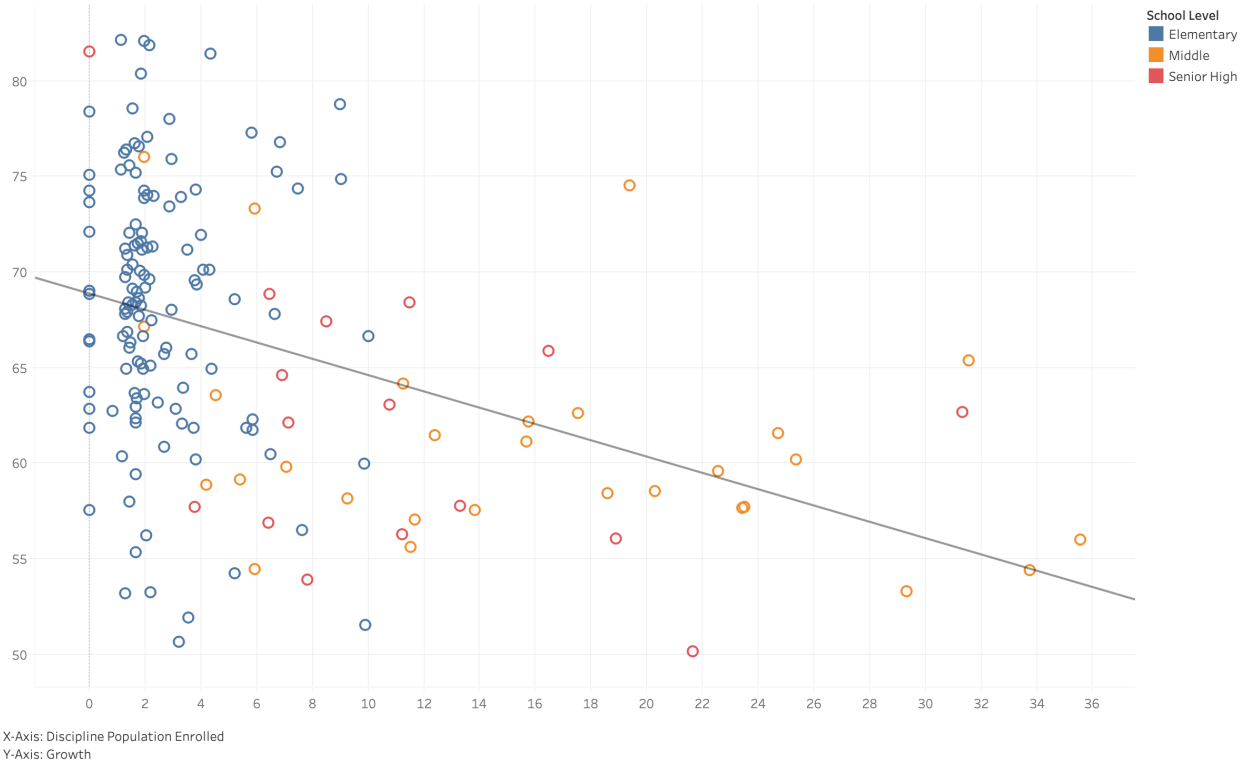


Note. $r(145) = .52$, $p < .001$.

Moderate Correlation Between Discipline Population and Growth. There is a moderate correlation between the percentage of students removed from class and growth, $r(145) = -.42$, $p < .001$ (see Figure 18). The downward slope was expected.

Figure 18

Smaller Discipline Population and Academic Growth are Moderately Correlated



Note. $r(145) = -.42$, $p < .001$.

Moderate Correlation Between Positive Culture and Environment and Growth. There is a moderate correlation between the staff category "positive culture and environment and growth, $r(145) = .44$, $p < .001$ (see Figure 19).

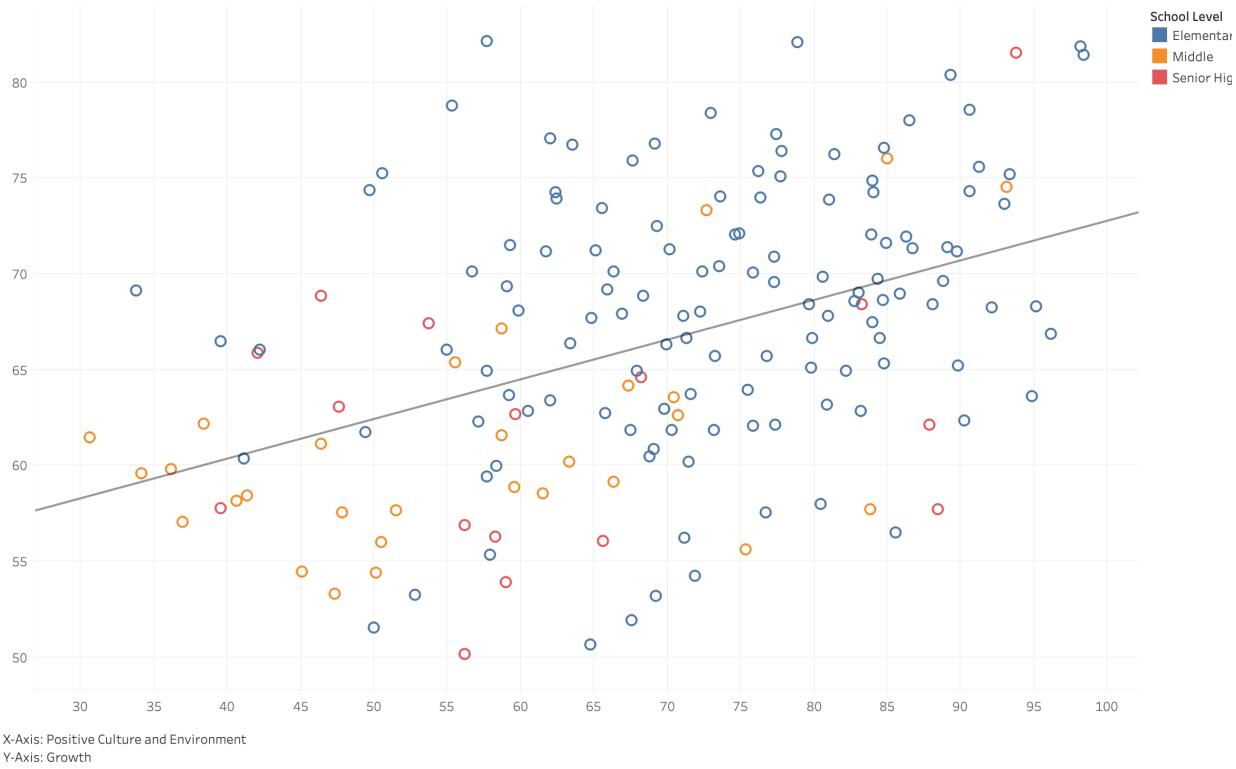
Hierarchical Multiple Regression Analysis of Research Question One

Regression Model Evaluation. Multiple hierarchical regression compares various multiple linear regression models with combinations of the same independent variables against a dependent variable. The initial inspection of data limited the study to five independent variables to go with the dependent variable academic growth: parent percent positive, student percent positive, belief among teachers that students will attend college (mot_30), rate of enrolled

students ever removed from class for discipline reasons (dpop_rate_enr), and extracurricular participation scale score. Most potential independent variables were ruled out due to multicollinearity or weak relationships with the dependent variable.

Figure 19

Positive Culture and Environment and Growth are Moderately Correlated



Note. $r(145) = .44$, $p < .001$.

This study compared three models (see Table 7). The first model represented culture construct scores indicating intrinsic motivation and minimal dissatisfaction in included the independent variables parent percent positive, student percent positive, and mot_30. The second model added discipline data indicating non-coercive motivation styles, dpop_rate_enr. The third model added extracurricular participation scale score.

Table 7

Each Step in the Hierarchical Regression Analysis Represents the Addition of Variables

Model	Variables Entered
1	parent percent positive, student percent positive, mot_30
2	parent percent positive, student percent positive, mot_30, dpop_rate_enr
3	parent percent positive, student percent positive, mot_30, dpop_rate_enr, extracurricular participation scale

Assumptions were Met. The eight assumptions of multiple regression analysis were met for research question one. All variables are continuous. There was independence of residuals as determined by a Durbin-Watson statistic of 1.814. As determined by visual inspection of a scatter plot of studentized residuals by unstandardized predicted values, there was linearity between the dependent variable and all independent variables and homoscedasticity. There was no multicollinearity as there were no correlations larger .7 among independent variables, and the Tolerance coefficients were all greater than 0.1. The model had no outliers as determined by Casewise Diagnostics and inspection of studentized deleted residuals. High leverage datapoints are ones with extreme x-values (Pennsylvania State University: Eberly College of Science, 2018). Leverage values lower than 0.2 are generally considered "safe" and between 0.2 and 0.5 "risky" but not necessarily dangerous (Laerd Statistics, n.d.-b, p. 13). There were no leverage values above .2. There were no influential data points as determined by Cook's Distance values all below 1 (Laerd Statistics, n.d.-b). A P-P plot and a Q-Q plot each indicated normally distributed residuals.

Model Fit. Even though each of the models was statistically significant, neither the addition of discipline data indicating non-coercive motivation styles (Model 2) nor the addition

of extracurricular participation (Model 3) led to a statistically significant increase in R^2. A hierarchical multiple regression was run to determine if the addition of discipline data indicating non-coercive motivation styles and then of extracurricular participation improved the prediction of the year growth rate over and above culture construct scores indicating intrinsic motivation and minimal dissatisfaction alone. See Table 8 for full details on each regression model. Model fit is demonstrated by the coefficient of determination, R^2; the change in R^2 values at each phase; the statistical significance of the R^2 changes, significant F change; and the statistical significance of the entire model using an analysis of variance (Laerd Statistics, n.d.-a).

Model Coefficients. Model coefficients show the change in the dependent variable based on a one-unit change in an independent variable (Grande, 2016; Laerd Statistics, n.d.-a, pp. 8, 11). The initial model of culture construct scores indicating intrinsic motivation and minimal dissatisfaction (Model 1) was statistically significant, $R^2 = .319$, $F(3, 168) = 26.239$, $p < .001$, adjusted $R^2 = .307$. The second model of culture construct scores indicating intrinsic motivation and minimal dissatisfaction and discipline data indicating non-coercive motivation styles (Model 2) was statistically significant, $R^2 = .323$, $F(4, 167) = 19.887$, $p < .001$, adjusted $R^2 = .306$. The full model of culture construct scores indicating intrinsic motivation and minimal dissatisfaction, discipline data indicating non-coercive motivation styles, and extracurricular participation to explain academic growth (Model 3) was statistically significant, $R^2 = .324$, $F(5, 166) = 15.885$, $p < .001$, adjusted $R^2 = .303$ (see Table 8).

Table 8

Hierarchical Regression Results for Academic Growth

	B	95% CI for *B*		*SE B*	β	R^2	ΔR^2
		LL	*UL*				
Step 1						.32***	.32***
Constant	26.96***	13.10	40.82	7.02			
Parent_Pct_Pos	0.12	-0.07	0.30	0.09	0.09		
Student_Survey_Pct	0.21**	0.07	0.35	0.07	0.26		
Mot30_Pct_Pos	0.15**	0.06	0.24	0.04	0.29		
Step 2						.32***	.00
Constant	32.81***	14.30	51.31	9.37			
Parent_Pct_Pos	0.09	-0.11	0.28	0.10	0.07		
Student_Survey_Pct	0.18*	0.03	0.33	0.08	0.23		
Mot30_Pct_Pos	0.14**	0.06	0.23	0.04	0.28		
Dpop_Rate_Enr	-0.09	-0.26	0.09	0.09	-0.08		
Step 3						.32***	.00
Constant	32.33***	13.68	50.98	9.45			
Parent_Pct_Pos	0.08	-0.12	0.28	0.10	0.07		
Student_Survey_Pct	0.18*	0.03	0.33	0.08	0.22		
Mot30_Pct_Pos	0.14**	0.05	0.23	0.05	0.27		
Dpop_Rate_Enr	-0.09	-0.27	0.09	0.09	-0.09		
Ec Scale	0.02	-0.05	0.09	0.04	0.03		

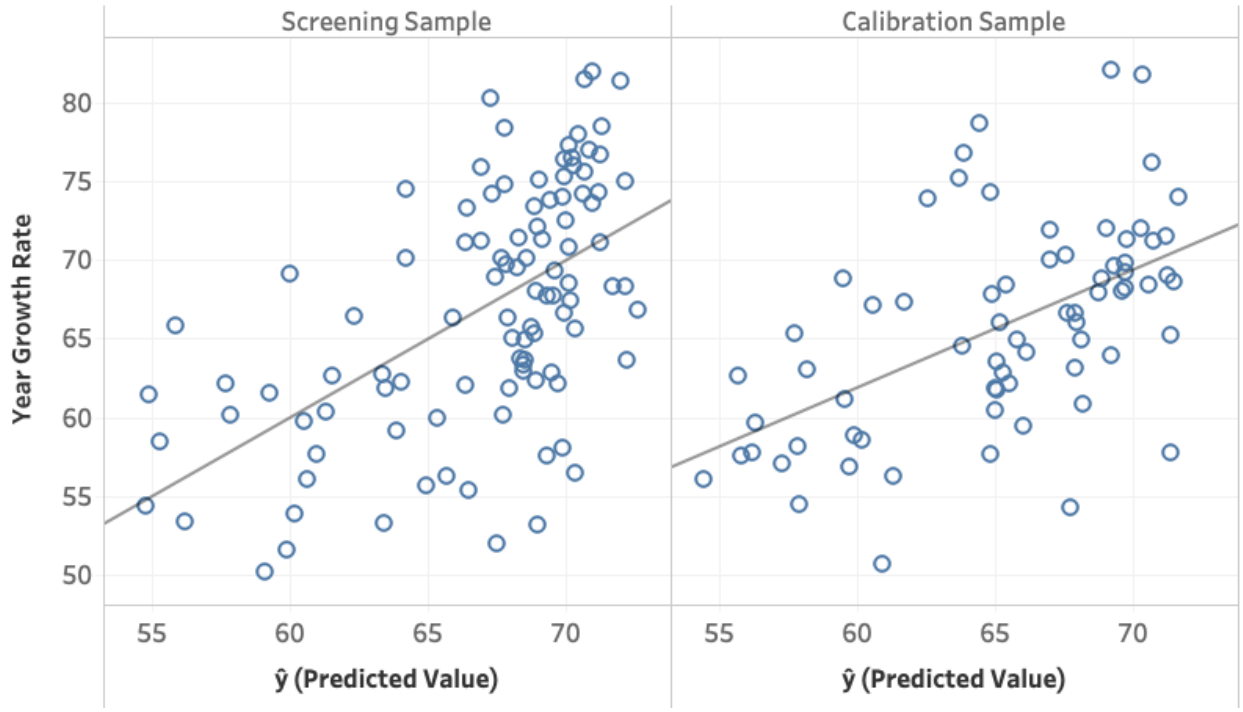
Note. CI = confidence interval; *LL* = lower limit; *UL* = upper limit; EC = Extracurricular/ Cocurricular Participation; DPop = Discipline Population; Mot30 = "Teachers expect most students in this school to go to college;" *$p < .05$. ** $p < .01$. *** $p < .001$.

Model Validity. Data splitting was used to test model validity. Data splitting entails randomly splitting the data into two groups called the screening and calibration samples, creating a regression equation based on the screening sample, and applying the newly created equation to the calibration sample (Hill, 2015; Stevens, 2002). The sample was randomly divided into approximately half using the select function in SPSS. The division created two groups: the screening sample with 102 members and the calibration sample with 70 members. Hierarchical regression analysis using the same model as the analysis of research question one was run on the screening sample, resulting in a second set of unstandardized coefficients.

The new set of unstandardized coefficients for each independent variable (b) was plugged in, along with the constant (a), and the given value of the independent variables (x) into the regression equation $\hat{y} = a + (b_1x_1) + (b_2x_2) + (b_3x_3) + (b_4x_4) + (b_5x_5)$ to calculate the predicted value of each independent variable ($\hat{y}$) for the complete dataset (Hill, 2015; Stevens, 2002; Urdan, 2010). The new predicted variables were correlated against the actual dependent variables for each part of the split and the correlation coefficients compared. The new predicted variables were strongly correlated for each group: screening sample, $r = .57$, $p < .001$; calibration sample, $r = .54$, $p < .001$. There was model validity (see Figure 20).

Figure 20

There was Model Validity



Note. The predicted dependent variables were strongly correlated with the growth rate for each group: screening sample, $r = .57$, $p < .001$; calibration sample, $r = .54$, $p < .001$. $\hat{y} = 41.706 + (-.039*\text{parent\_pct\_pos}) + (.102*\text{student\_survey\_pct}) + (.195*\text{mot30\_pct\_pos}) + (-.186*\text{dpop\_rate\_enr}) + (.054*\text{extracurricular\_participation\_scale})$.

Research Question Two

How much do culture construct scores indicating intrinsic motivation and minimal dissatisfaction, discipline data indicating non-coercive motivation styles, and extracurricular participation rates explain a campus' relative academic performance?

Null Hypothesis: Engagement culture is not related to relative academic performance in high-poverty schools.

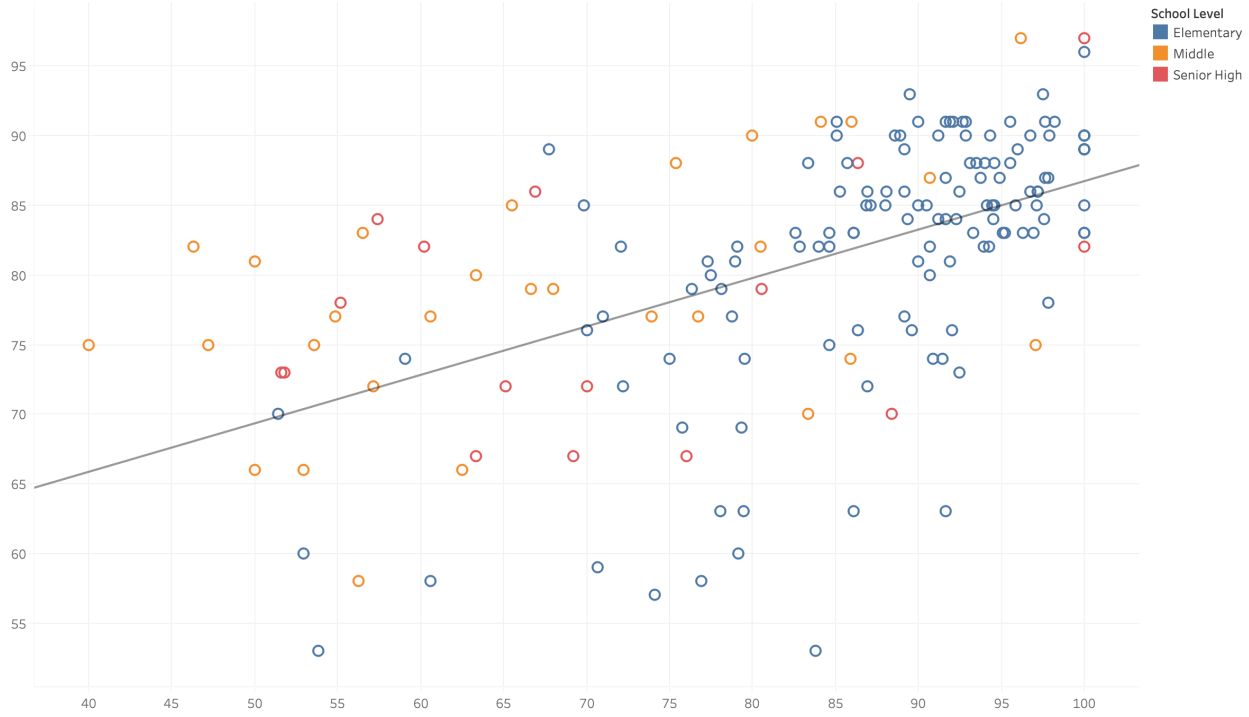
Significant Findings and Important Trends

There was a statistically significant relationship between factors of engagement culture and relative academic performance in high-poverty schools. Therefore, we can reject the null hypothesis.

Strong Correlation Between Teacher Belief that Students will Attend College and Relative Academic Performance. The belief among teachers that students will attend college is strongly correlated with relative academic performance, $r(145) = .55$, $p < .001$ (see Figure 21).

Figure 21

Teacher Belief that Students will Attend College and Relative Academic Performance are Strongly Correlated



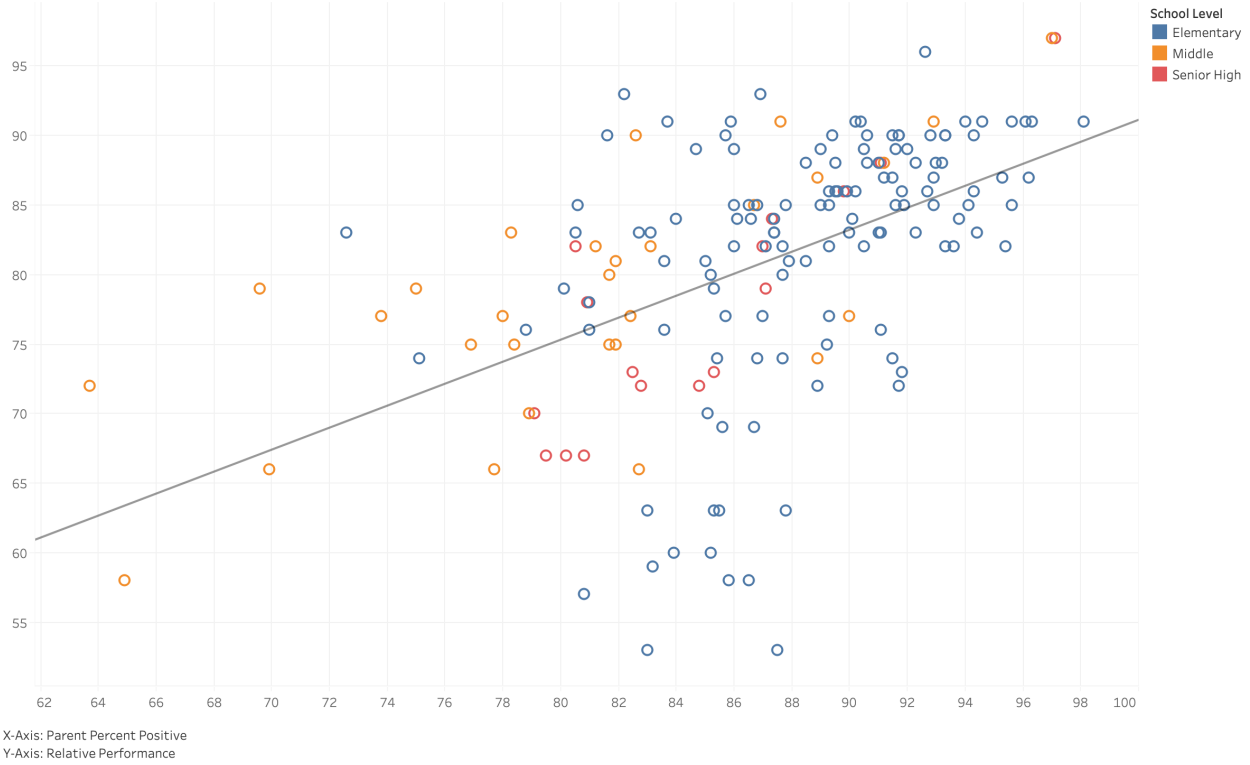
Note. $r(145) = .55$, $p < .001$.

Strong Correlation Between Parent Satisfaction and Relative Academic Performance. Parent satisfaction has a stronger relationship with relative academic performance

than growth. Parent satisfaction is strongly correlated with relative academic performance, $r(145) = .52$, $p < .001$, (see Figure 22).

Figure 22

Parent Satisfaction is Strongly Correlated with Relative Academic Performance



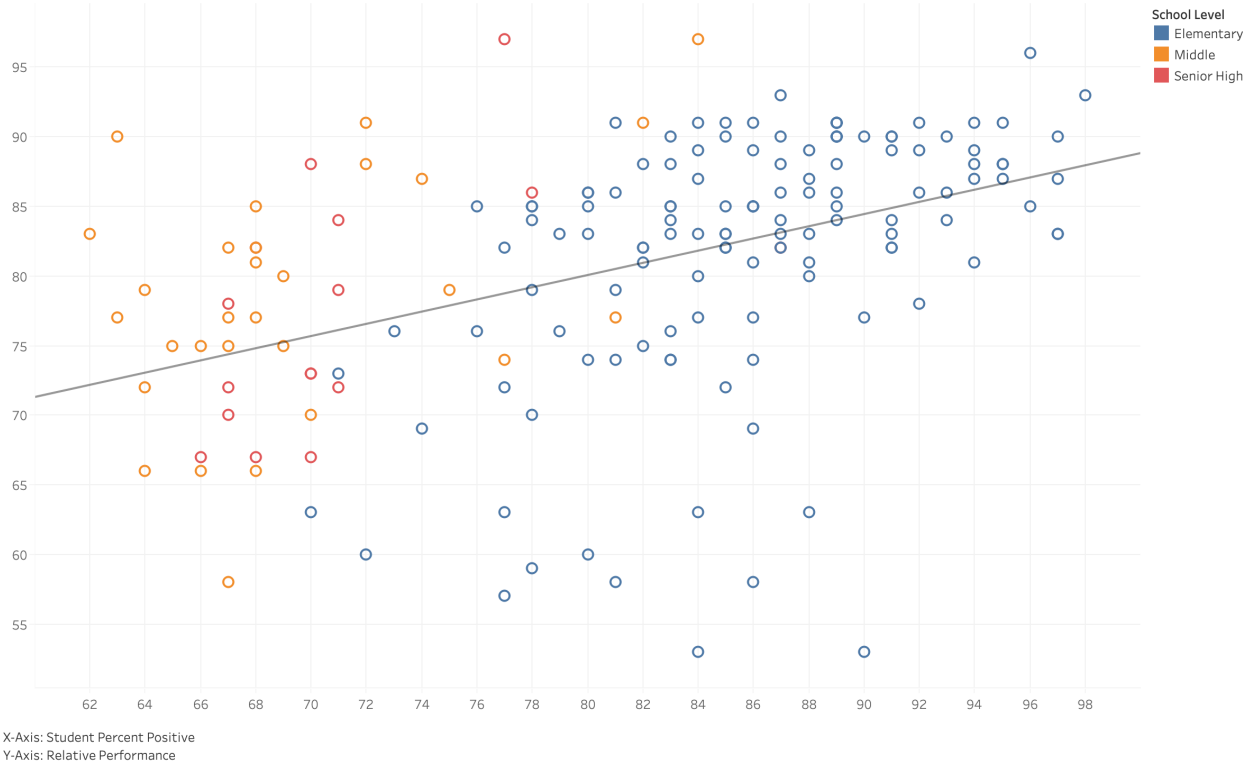
Note. $r(145) = .52$, $p < .001$.

Moderate Correlation Between Satisfaction and Relative Academic Performance.

Student percent positive is moderately correlated with relative academic performance, $r(145) = .44$, $p < .001$ (see Figure 23).

Figure 23

Student Satisfaction and Relative Academic Performance are Moderately Correlated

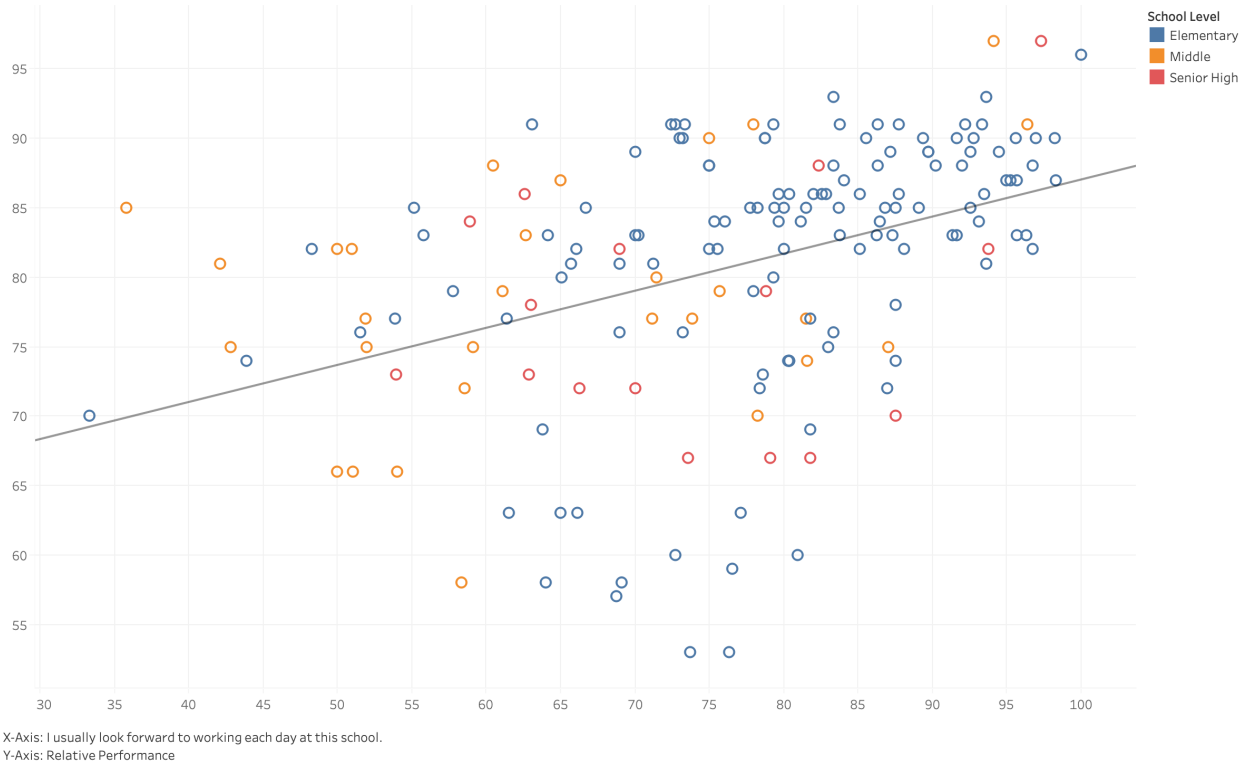


Note. $r(145) = .44$, $p < .001$.

"I usually look forward to working each day at this school" is moderately correlated with relative academic performance, $r(145) = .41$, $p < .001$ (see Figure 24).

Figure 24

Teacher Enjoyment of School is Moderately Correlated with Relative Academic Performance

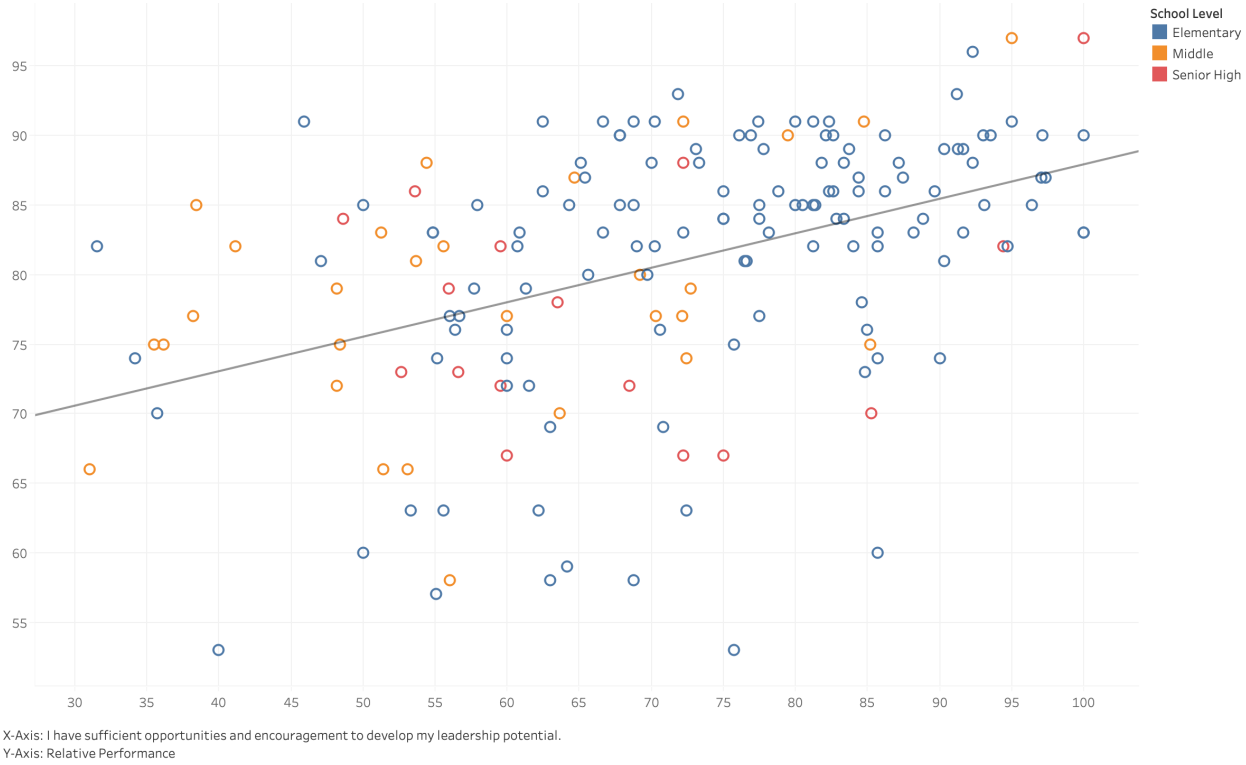


Note. $r(145) = .41$, $p < .001$.

Moderate Correlation Between Leadership Development Opportunities and Relative Academic Performance. **"**I have sufficient opportunities and encouragement to develop my leadership potential" is moderately correlated with relative academic performance, $r(145) = .44$, $p < .001$ (see Figure 25).

Figure 25

Leadership Development Opportunity is Moderately Correlated with Relative Academic Performance

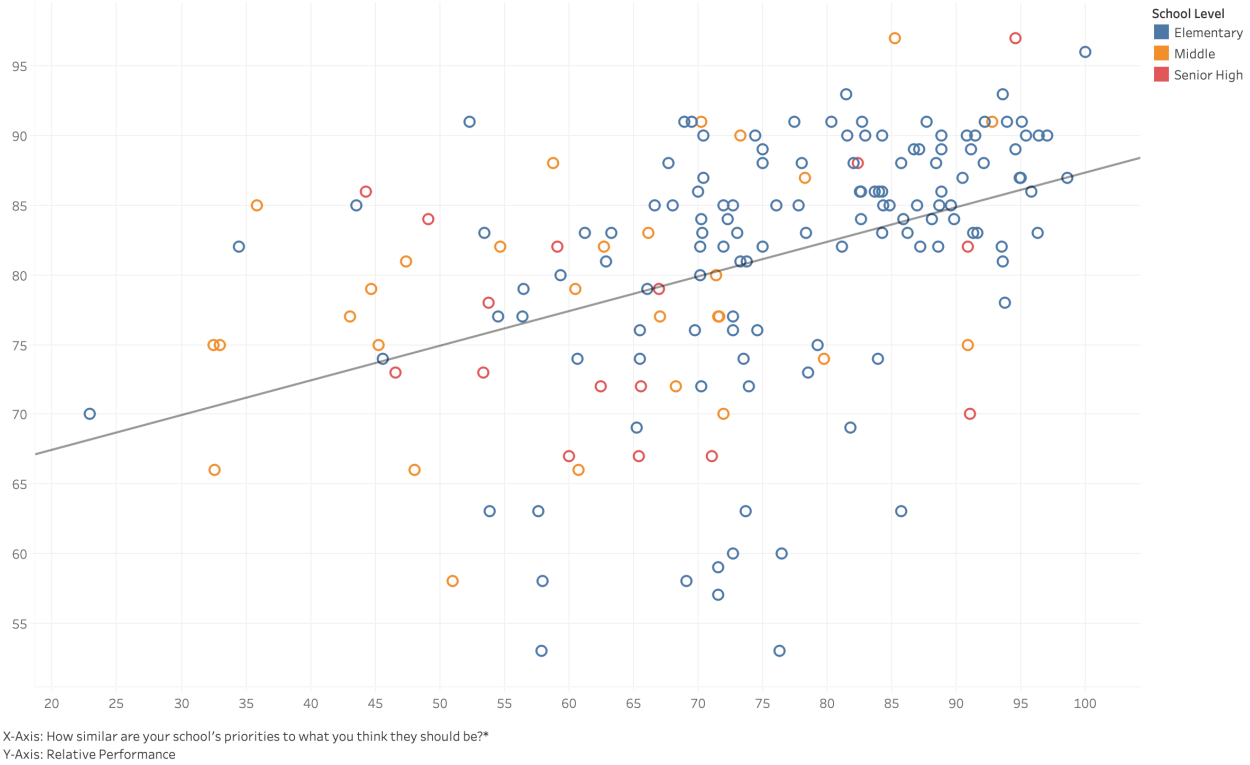


Note. $r(145) = .44$, $p < .001$.

Moderate Correlation Between Matching Priorities and Relative Academic Performance. Responses to the question, "How similar are your school's priorities to what you think they should be?" are moderately correlated with relative academic performance, $r(145) = .43$, $p < .001$ (see Figure 26).

Figure 26

Teacher-School Priority Alignment is Moderately Correlated with Relative Academic Performance

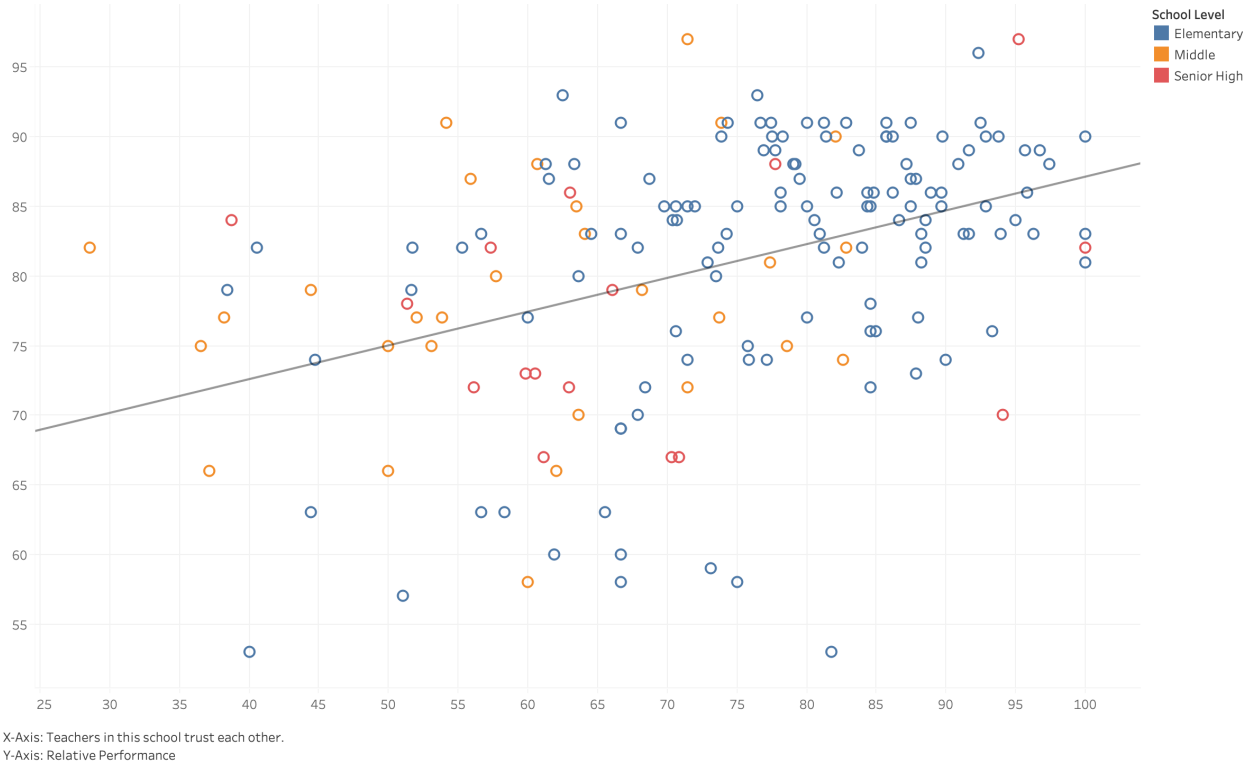


Note. $r(145) = .43$, $p < .001$.

Moderate Correlation Between Teacher-Teacher Trust and Relative Academic Performance. Two staff items in the category teacher-teacher trust were included in the study, and each is moderately correlated with relative academic performance. "Teachers in this school trust each other" is moderately correlated with relative academic performance, $r(145) = .41$, $p < .001$ (see Figure 27).

Figure 27

Teacher-Teacher Trust is Moderately Correlated with Relative Academic Performance

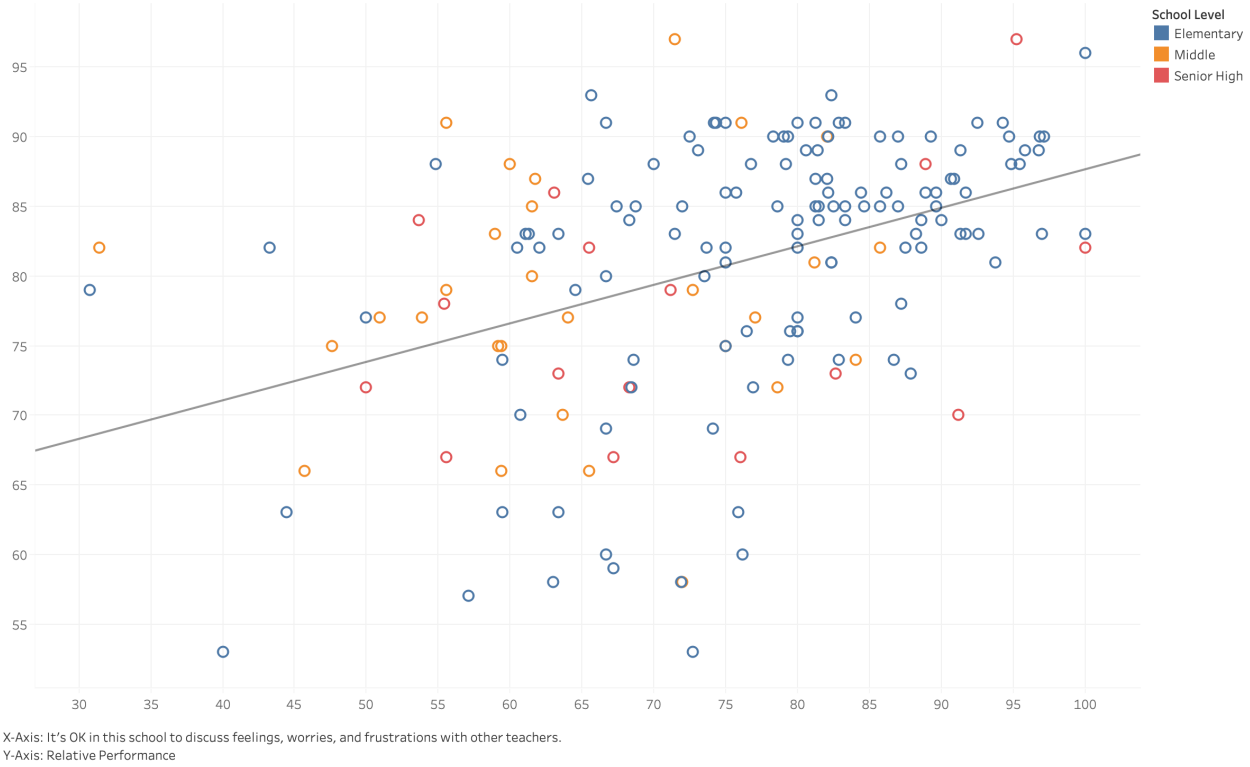


Note. $r(145) = .41$, $p < .001$.

"It's OK in this school to discuss feelings, worries, and frustrations with other teachers" is moderately correlated with relative academic performance, $r(145) = .42$, $p < .001$ (see Figure 28).

Figure 28

Teacher Tolerance of Sharing Concerns is Moderately Correlated with Relative Academic Performance



Note. $r(145) = .42$, $p < .001$.

Regression Model Evaluation

The data included in the model for Research Question Two did not meet the assumption of homoscedasticity, so hierarchical multiple regression analysis was not appropriate for analysis.

Summary

Engagement culture is the shared underlying assumption that intrinsic motivation—not coercion—creates the energy that drives growth, and that dissatisfaction depresses that energy. To understand the role engagement culture plays in the academic success of high-poverty schools, relationships among underlying assumptions about motivation and academic performance were explored with the following research questions:

1. How much do culture construct scores indicating intrinsic motivation and minimal dissatisfaction, discipline data indicating non-coercive motivation styles, and extracurricular participation explain a campus' academic growth?

2. How much do culture construct scores indicating intrinsic motivation and minimal dissatisfaction, discipline data indicating non-coercive motivation styles, and extracurricular participation rates explain a campus' relative academic performance?

After initial analysis, each research question was addressed in three phases in order to identify actual systemic components of engagement culture that correlate with academic success in high-poverty schools: (a) regression model evaluation; (b) model fit; and (c) model coefficients. The study identified actual systemic components of engagement culture that correlate with academic success in high-poverty schools, and they include the experiences of adults on campus, not just students (see Table E2).

Chapter Five: Conclusions

Introduction

Most high-poverty schools underperform on measures of academic achievement. Since over half of the nation's students receive free or reduced lunch, there are grave implications for schools across the United States (Suitts, 2015). This is not a new concern. The poverty-achievement problem has been at the center of educational reform since the 1960s when school culture surveys were introduced (M.-T. Wang & Degol, 2016). Frequently the poor are blamed for their status, but the *structural-institutional* perspective of poverty focuses on systems of oppression and discrimination that have restricted opportunities for poor Americans and says that systemic interventions could help (Budge & Parrett, 2018). Schools need systemwide indicators to guide intervention decisions, specifically focused on alterable variables (Reschly & Christenson, 2012).

Overview of the Problem

Leaders frequently attribute exceptional academic performance in high-poverty schools to culture, but they do not explain what is meant by culture or how high-poverty schools should shape it to improve academic performance (Marquez, 2019; Morath, 2019). There is no agreed-upon definition of school culture, what it comprises, or how its components "interact to shape student outcomes" (Thapa et al., 2013; M.-T. Wang & Degol, 2016, p. 343). There is a notable lack of quantitative data to support interventions used to improve student engagement (Fredricks, Reschly, & Christenson, 2019a).

The problem statement became, what is meant by culture and how high-poverty schools should shape it to manifest improved academic performance was the problem to solve. The purpose was to identify specific characteristics of a culture of engagement that correlate with academic achievement in high-poverty schools, which led to the following research questions:

1. How much do culture construct scores indicating intrinsic motivation and minimal dissatisfaction, discipline data indicating non-coercive motivation styles, and extracurricular participation explain a campus' academic growth?

2. How much do culture construct scores indicating intrinsic motivation and minimal dissatisfaction, discipline data indicating non-coercive motivation styles, and extracurricular participation rates explain a campus' relative academic performance?

Review of the Literature

A review of the literature revealed the following regarding culture, motivation, and academic achievement data.

1. Invisible Beliefs About Motivation Drive Behavior. Culture is a "shared webbing of beliefs" (Deal & Peterson, 2016, p. 2). Basic underlying assumptions are the invisible, implicit beliefs within a culture (Schein & Schein, 2017). Assumptions inform conclusions, develop into beliefs, and drive behavior (Senge et al., 1994). Even though culture is largely hidden (Schein & Schein, 2017) and can be expensive to uncover (Jung et al., 2009), previous research on motivation helped with the selection of relevant, measurable dimensions (see Figure 6). Herzberg said that organizations should intrinsically motivate and minimize dissatisfaction. Motivation factors include achievement, advancement, recognition, and responsibility. Dissatisfier or maintenance factors include company policy and administration, supervision, work conditions, and peer relationships (Herzberg, 1974, 2011).

2. Coercion is the Norm in Many High-Poverty Schools. Over the last 40 years, the structure of education has shifted from a professional bureaucracy with primarily local control to a machine bureaucracy with centralized control (Bolman & Deal, 2003) at the state and federal levels. In response, schools shifted focus to skills measured on annual standardized tests (Nichols & Dawson). The changes are most exaggerated in high-poverty schools, almost all of which

limited offerings in response to NCLB (Rentner et al., 2006, p. 96). The result is a compliance culture that relies on extrinsic motivation to get students to master narrow testing standards. It has not worked. Test scores in reading and math have stagnated over the last decades and student engagement in a school day dedicated to test prep in a system that blames them for poor outcomes is low. The more poor students a school has, the more likely it is to underperform on measures of academic performance (Audas & Willms, 2001; Swaby & Cai, 2019; TEA, 2018a; 2019d; 2019e). More-affluent students likely benefit from motivation to do well at home—either intrinsically or in the form of positive coercion would yield acceptable academic outcomes (Schlechty, 2011).

3. New Data Enabled the Study. The passage of Texas' HB22 and DISD's subsequent implementation of an LAS increased available culture, engagement, and performance data and made this widespread study of student engagement culture possible.

Methodology Used

This non-experimental, correlational (Creswell & Creswell, 2018), cross-sectional study was selected to measure the relationships among culture, contextual, and academic performance data from DISD using publicly available, campus-level data from 172 high-poverty schools from the 2018-2019 school year. Presumably, the Dallas sample schools were representative of the total population of high-poverty public school campuses in principal cities of the nine largest metropolitan areas in the United States.

Population, Data Sources, and Procedures

In order to understand how culture affects academic outcomes in high-poverty schools, "combinations of dimensions" and their "influence on different types of student outcomes" (M.-T. Wang & Degol, 2016, p. 338) were analyzed. The target population is urban, high-poverty public schools, and the sample population is urban, high-poverty public school campuses in

DISD. The sample population has similar demographics to the target population (see Figure 7). Evidence of intrinsic motivation, minimal dissatisfiers, and minimal coercion were drawn from discipline reports and aggregate responses to culture surveys on which staff, students, and parents evaluated various aspects of their relationships with others on campus. All are part of publicly available datasets produced by TEA and DISD.

Hierarchical multiple regression analysis was conducted in three stages for each research question, with the goal of reporting the difference in effect size on each of the dependent variables between each stage: (a) culture construct scores indicating intrinsic motivation and minimal dissatisfaction; (b) discipline data indicating non-coercive motivations styles; and (c) extracurricular participation rates (see Table 7). Predictor variables in this non-experimental, cross-sectional study represent intrinsic motivation, minimal dissatisfaction, and non-coercive motivation styles. The two dependent variables measured academic outcomes: year to year growth and relative academic performance. Prior to the regression analysis, variables were reduced based on the results of data mining and visualization using Microsoft SQL Server Management System and Tableau.

Limitations

It should be noted that this study did not measure cause and effect, only relationships among variables. SPSS was used to conduct hierarchical multiple regression analysis of selected independent variables in order to determine to what extent their presence explains extra variation in each dependent variable (Crawson, 2020; Laerd Statistics n.d.-a). Pearson Product-Moment Correlation was conducted to determine the strength of the relationships among the variables. It would be inappropriate to infer that the independent variables caused the dependent variable.

Confounding variables can potentially influence findings by influencing independent variables (Pajo, 2018). One confounding variable is the way school poverty is measured: free and reduced lunch eligibility. The benefit of this measure is that it is consistent in schools across all states and territories and has been since its authorization in 1966 (Hoffman, 2012). This consistency also limits its value, because eligibility is based on the national poverty average and does not account for differences in cost of living across the country (Domina et al, 2018). All of the schools included in the sample for this study are high-poverty based on the rate of students receiving free and reduced lunch. Since the goal of the study was to identify systemic data related to academic performance in high-poverty schools, the use of free and reduced lunch as a proxy for poverty is justified.

Summary of Findings

This study aims to establish a definition of student engagement culture and its components that can be identified at a system level. There are four major findings and some unexpected findings which are summarized below. Findings are based on the complete model as seen in step 3 of the analysis (see Table 8) and the Pearson correlations of the study variables (see Table 6). All will be related to the literature.

Finding One: Culture is Related to Academic Outcomes on High-Poverty Campuses

Hernandez and Zamora (2018), The U.S. Department of Education (n.d.-b), TEA (2019m), and Mike Morath (2019) were all correct that school culture correlates with academic outcomes on high-poverty campuses. Further, combining the constructs of culture and climate and conceptualizing the combination as "shared beliefs, values, and attitudes" (M.-T. Wang & Degol, 2016, p. 316) from staff, students, and parents correlated with academic growth and relative academic performance. This is important, because it establishes that high-poverty

schools that prioritize engagement culture can overcome academic obstacles faced by their students.

Finding Two: Engagement is Linked to Growth

Student percent positive is strongly correlated with growth, $r(145) = .51$, $p < .001$, and moderately correlated with relative academic performance, $r(145) = .44$, $p < .001$. Parent percent positive is moderately correlated with growth, $r(145) = .38$, $p < .001$, and strongly correlated with relative academic performance $r(145) = .52$, $p < .001$. Staff percent positive is moderately correlated with both growth, $r(145) = .42$, $p < .001$, and relative academic performance, $r(145) = .46$, $p < .001$ (see Figure F1).

Specifically, the belief among teachers that students will attend college is highly correlated with growth, $r(145) = .52$, $p < .001$ (see Figure 17) and relative academic performance, $r(145) = .55$, $p < .001$ (see Figure 21). This is important because it supports the conception of culture as a "multidimensional construct" (M.-T. Wang & Degol, 2016, p. 338) and demonstrates that student and teacher beliefs are strongly related to academic growth.

Finding Three: Engagement Culture Matters

Findings support the structural-institutional perspective of poverty that says that systemic interventions could help the poor (Budge & Parrett, 2018). Implementing intrinsically motivating, non-coercive systemic interventions in high-poverty schools (Ng et al., 2018) may contribute to improved academic outcomes. Intrinsic motivation is at the heart of engagement culture, which operates under the basic underlying assumption that the best way to motivate is by maximizing the motivation factors that increase satisfaction and minimizing the maintenance factors that increase dissatisfaction—not by coercion into compliance (Herzberg, 2011; Schlechty, 2011; Senge, 2006; M.-T. Wang & Degol, 2014).

Engagement culture in high-poverty schools correlates with academic outcomes. The rate of teachers who believed that most students would attend college, a motivator based on achievement according to Herzberg (1974, 2011), strongly correlates with both academic growth (r[145] = .52, p < .001, see Figure 17) and relative academic performance (r[145] = .55, p < .001; see Figure 21). This is important because it identifies specific, actionable factors of engagement culture that are linked with improved performance in high-poverty schools.

Finding Four: Engagement Culture Applies to Everyone

The fundamental assumption that the best way to motivate is by increasing satisfaction and decreasing dissatisfaction, not by coercion (Herzberg, 2011) is a shared underlying assumption that applies to motivation of students and staff. Engagement applies to everyone. Treating teacher motivation differently from student motivation would not indicate a true culture of engagement.

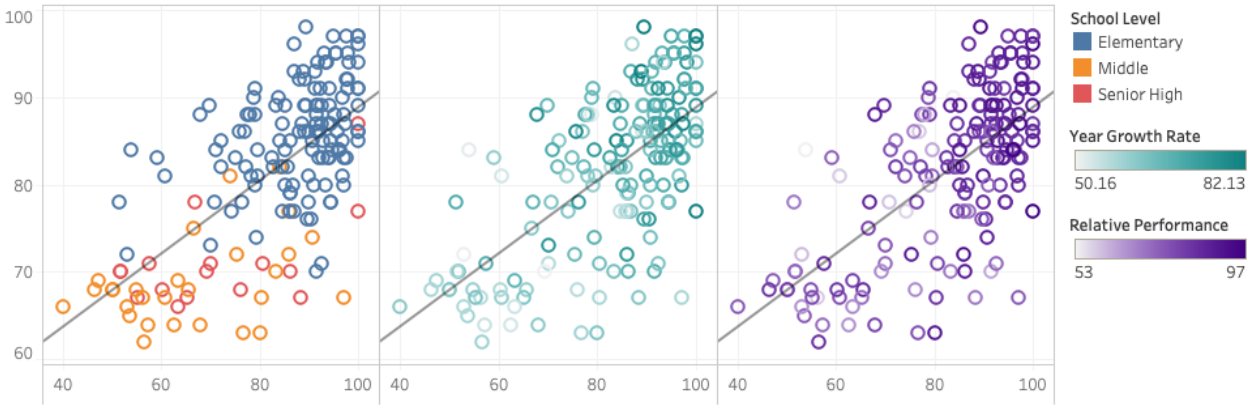
Yazzie-Mintz and McCormick were correct that conceptualizing engagement at a systems level is complex (2012). Engagement culture incorporates complex interplay among motivation and maintenance factors: Teacher and student satisfaction are strongly correlated, r(145) = .54, p <.001(see Figure 8), as are student and parent satisfaction, r(145) = .52, p <.001 (see Figure F2), student satisfaction and discipline population, r(145) = -.64, p <.001 (see Figure 12), and teacher expectation that most students will attend college and student satisfaction, r(145) = -.66, p <.001 (see Figure 29).

The hygiene factor *work conditions* (Herzberg, 1974, 2011) is represented by this survey item: “I believe I work in an environment of support and respect.” It is answered by all employees on campus as part of the *positive culture and environment* construct. As expected, it is strongly correlated with the item, “I usually look forward to working each day at this school,”

which is also representative of the hygiene factor work conditions and part of the *positive culture and environment* construct, $r(145) = .93$, $p < .001$. Employee belief that they work in an environment of support and respect is moderately correlated with both growth, $r(145) = .34$, $p < .001$, and relative academic performance, $r(145) = .38$, $p < .001$ (see Figure F3).

Figure 29

Teacher Belief that Students will Attend College, Student Satisfaction, Academic Growth, and Relative Performance are all Strongly Correlated



Note. Teacher belief that students will attend college and student satisfaction are strongly correlated, $r(145) = .66$, $p < .001$. Both are strongly correlated with growth. Student satisfaction is strongly correlated with growth and moderately correlated with relative academic performance.

Even though these two items refer only about motivators directed explicitly to teachers, "I have sufficient opportunities and encouragement to develop my leadership potential" and "The principal has confidence in the expertise of the teachers" are moderately correlated with both growth and relative performance. The former is part of the *culture of feedback and support* survey construct and represents the motivator *advancement,* and the latter is part of the *teacher-principal trust* survey construct and represents the motivator *responsibility*. They are strongly correlated with each other $r(145) = .87$, $p < .001$, and each is moderately correlated with both

growth and relative academic performance (see Figure F4). This is important because it acknowledges that the conditions in a school affect everyone, not just students. Attempting to coerce teachers into motivating students does not align with engagement culture. Teachers, the front-line employees, have better outcomes in an environment of trust and support.

Unexpected Findings

Discretionary Removal Rate. Discretionary removal rate is weakly, *positively* correlated with overall student satisfaction, indicating that the bigger the share of removals that were at the administrators' discretion, the higher student satisfaction, $r = .29$, $p < .001$. It was expected that higher discretionary removal rates would be indicative of coercive cultural norms and correlate *negatively* with student satisfaction. The worst-case scenario discretionary discipline rates applied to campuses with masked data ($n = 86$) caused the surprising result and created a ceiling effect. Analyzing the data with those 86 masked campuses removed yields a statistically significant, though weak, negative linear correlation between discretionary removal rate and overall student satisfaction, $r = .22$, $p < .05$, meaning discretionary removal rate may be an indicator of coercive cultural norms (see Figure F5).

Heteroscedasticity on Analysis Two. The data included in the model for research question two did not meet the assumption of homoscedasticity, as indicated by the cone-shaped plot of studentized residuals against unstandardized predicted values. The presence of heteroscedasticity indicates that the model will not predict values consistently and that some variables may be confounding. Data transformation is an optional solution for heteroscedasticity, but could cause issues for other tests, like creating non-normal distribution for variables with a normal distribution (Laerd Statistics, n.d.-b). Future researchers should investigate variables to

see which cause the inconsistent errors so they can be addressed. Future researchers may determine that a non-linear model fits the data better.

Conclusions

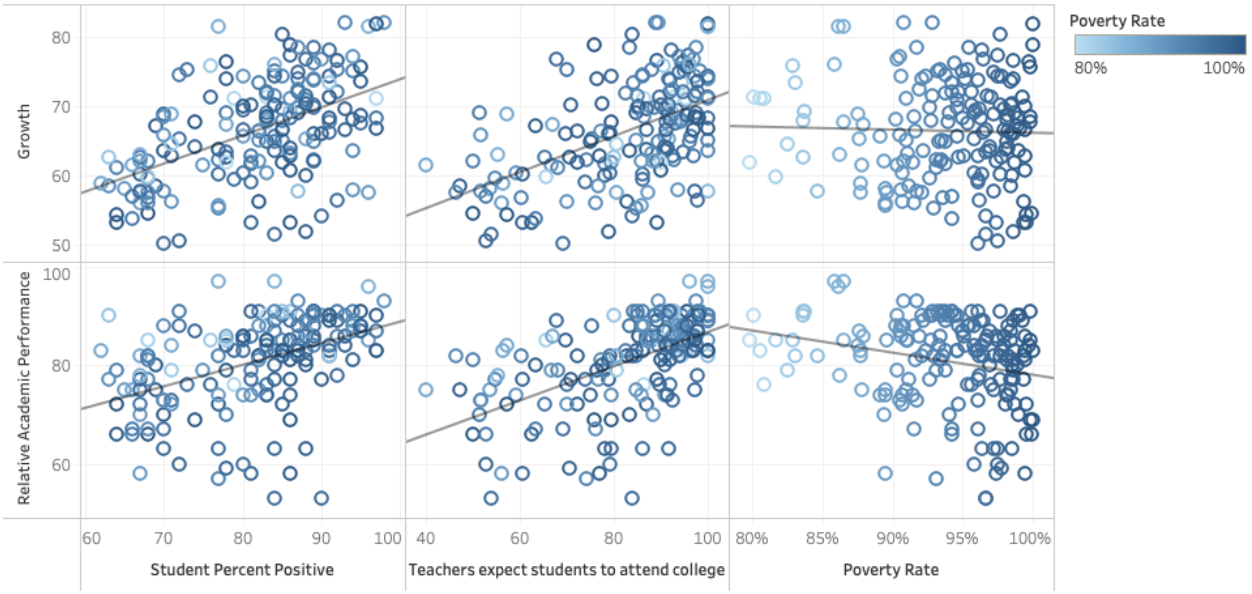
The following conclusions were made based on the research questions and the data analyzed. The best way to motivate is by increasing satisfaction and decreasing dissatisfaction, not by coercion into compliance. The shared assumption that intrinsic motivation, minimal dissatisfaction, and minimal coercion leads to engaged students. Evidence of intrinsic motivators and minimal dissatisfiers indicate academic performance in high-poverty schools.

Conclusion One: Engagement Culture Explains Academic Growth on High-Poverty Campuses

Research question one asked how much culture construct scores indicating intrinsic motivation and minimal dissatisfaction, discipline data indicating non-coercive motivation styles, and extracurricular participation explain a high-poverty school's academic growth. There was a statistically significant relationship between elements of engagement culture and academic growth in high poverty schools. Therefore, we can reject the null hypothesis and accept the alternative hypothesis (see Figure 30).

Figure 30

College Expectations and Student Satisfaction Beat Poverty



Note. Student satisfaction (r[145] = .51, p < .001) and the expectation by teachers students would attend college (r[145] = .52, p < .001) were each more strongly related to academic growth than poverty rate, which did not have a statistically significant relationship with growth on high-poverty campuses, r = -.03, p = .71. Student satisfaction (r[145] = .44, p < .001) and the expectation by teachers that students would attend college (r[145] = .55, p < .001) were each more strongly related to relative academic performance than poverty rate, r = -.23, p < .005.

Conclusion Two: Engagement Culture Explains Relative Academic Performance on High-Poverty Campuses

Research question two asked how much culture construct scores indicating intrinsic motivation and minimal dissatisfaction, discipline data indicating non-coercive motivation styles, and extracurricular participation rates explain a high poverty school's relative academic performance. There is a statistically significant relationship between elements of engagement culture and relative academic performance in high poverty schools. Therefore, we can reject the null hypothesis and accept the alternative hypothesis (see Figure F1).

Implications and Recommendations

Policy Implications

The finding that engagement culture is more strongly correlated with academic outcomes on high-poverty campuses than poverty rate justifies a shift from coercive, dissatisfying school environments to intrinsically motivating, satisfying school environments. Herzberg's (1974, 2011) motivators and dissatisfiers should inform shifts in policy on all levels to align with factors of engagement culture. Shifts must occur at every level, because each school's culture is "nested in some larger culture and can only do what the larger culture affords, tolerates, or supports" (Schein & Schein, 2017, p. 182).

Policy Recommendations

Recommendation One: Prioritize Engagement Culture Over Standardized Test Results. There is a place for accountability as a means to monitor results, but not as a motivator. As mentioned before, monitoring leads to predictability and status quo. It is the domain of *managers* seeking order. Intrinsic motivation energizes people. It is the domain of *leaders* seeking progress (Kotter, 2012). Policy at all levels should be aligned to prioritize engagement over accountability.

Classroom Level. Since engagement culture applies to everyone, even teachers with relatively high test scores should embrace motivation over coercion, including implementing non-punitive grading and non-coercive classroom discipline.

Campus Level. Building administrators should emphasize engagement culture over accountability ratings. This includes rewriting coercive discipline policies, creating a trusting environment in which teachers feel safe prioritizing engagement over test scores, engaging parents, and minimizing how frequently test scores are used to justify dissatisfying practices.

Appraisals should reflect the importance of engagement culture over narrow measures of academic performance.

District Level. District administrators and school boards should also emphasize engagement culture over accountability ratings, ensuring that district-level policies do not undercut campus initiatives to foster a culture of engagement. This includes creating a trusting environment in which principals feel safe prioritizing engagement culture over test scores, minimizing how frequently test scores are used to justify dissatisfying practices, and ensuring that leadership positions are filled by people with a proven record of building engaging cultures, instead of focusing on test scores. It takes years before school climate initiatives effect outcomes (Gerlach et al., 2018), so touted test scores could be indicative of an engagement culture implemented by a previous leader, not the person being considered for the position. Seeking applicants who embody the authoritative and affiliative leadership styles will support positive culture (Goleman, 2011; see Table 1). When setting the agenda for committee and school board meetings, care should be taken to deemphasize test results, except as required by state and federal policy.

State Level. State school accountability systems should move away from A-F rating labels for schools in order to minimize the use of test scores to justify dissatisfying practices. Reducing all that schools do to a simple letter grade contributes to dissatisfaction and coercion. The number of required announcements and postings regarding accountability ratings should be reduced as part of a shift to engagement culture. These requirements make it difficult for local schools to prioritize anything over test scores. The outsize focus on accountability ratings over engagement has contributed to the myth that schools are getting worse, even though it is the accountability culture that has justified budget cuts (Rentner et al., 2006).

Federal Level. Update Every Student Succeeds Act to allow schools to focus on engagement culture instead of skills measured on annual standardized tests, including allocating funds to bring back programs that were cut in high-poverty schools in response to the culture of accountability (Rentner et al., 2006). The goal should be minimizing the use of standardized test scores to justify dissatisfying practices.

Recommendation Two: Systemically Embed Engagement Culture. In a culture of engagement, all the brains operate under the basic underlying assumption that the best way to motivate is by increasing satisfaction and decreasing dissatisfaction—not by coercion into compliance. Leaders must empower people to realize the vision (Kotter, 2012) of engagement culture by embedding it. One of the "primary embedding mechanisms" of new culture is regularly focusing on something (Schein & Schein, 2017, p 183). The outsize focus on accountability has served to embed it into school culture. Local, state, and federal education agencies should "pay attention to, measure and control" (p. 183) engagement culture as a means to embed it in school culture. This includes addressing the visible parts of culture—artifacts and espoused beliefs (Schein & Schein, 2017)—which can be used signal basic underlying assumptions (Schneider et al., 2013) to guide systemic implementation. Leaders at all levels should conduct ongoing culture audits, then work to eliminate dissatisfying practices and artifacts and increase satisfiers and motivators, embedding engagement culture.

Classroom Level. Students should not be blamed for low engagement. Teachers should work to foster engagement culture by increasing intrinsic motivation and minimizing dissatisfiers. The expectation by teachers that students will attend college was strongly correlated with both academic growth and relative academic performance in high-poverty schools, so teachers those settings should examine personal biases that might lead them to the assumption

that most students would not attend college. Teachers should also be equipped with information about financial aid and other programs available to support impoverished college students to mitigate assumptions about ability to pay for college.

Campus Level. Campus administrators should remove artifacts and messages that imply low-levels achievement are expected. For example, posters that say, "Stay in school" should be replaced with posters that say, "Which college will you attend?" or some other message that presumes college attendance. Sound hiring decisions can help embed engagement culture. The college counselor should believe most students will attend college and not use poverty as a basis for recommendations. An assistant principal who embraces law and order discipline will harm attempts at embedding engagement culture. Discipline policies should be rewritten to embrace restorative discipline. Campus leaders should remember that engagement applies to everyone, not just students. Attempting to coerce teachers into engaging students will not yield engagement culture. Instead remember that satisfied teachers have satisfied students, and work to increase teacher satisfaction. This should include establishing trust; providing opportunities for advancement; giving teachers a say in agenda setting; and being supportive, respectful and recognizing teacher expertise.

District Level. Embedding engagement culture at schools will require district support. This includes hiring campus and district leaders who are committed to engagement culture, rewriting discipline policies to embrace restorative discipline and minimize coercive practices such as removal from class, including teachers with diverse perspectives on key decision-making committees, creating programs to provide opportunities for teacher career advancement, and working with local colleges and businesses to build a realistic and affordable school to college to successful career conduit. One example of this conduit is *Dallas County Promise*, an initiative

funded by local businesses for students in Dallas County. Dallas County Promise ensures college attendance is possible for low-income students by aligning the costs of attending one of their partner colleges with the amount awarded on a Pell Grant (Dallas County Promise, 2021), a need-based federal grant for undergraduates (U.S. Department of Education, n.d.-a).

State and Federal Level. Local engagement culture initiatives will be more sustainable with support and leadership from state and federal education agencies. In addition to minimizing emphasis on accountability culture, state and federal agencies should eliminate barriers to college, such as cost and time constraints, so that most students can realistically expect to attend college. They should also emphasize the implementation of restorative discipline practices. This emphasis should include funding, training, inclusion in strategic plans to justify expenditures, and collecting data around its use in the state and federal data collection systems, not through optional surveys.

The importance of emphasis upon embedding cultural norms is illustrated in Texas' weak implementation of restorative discipline practices. Even though Texas made a "significant investment" in the implementation of restorative discipline because of its potential to improve school attendance, climate, and bullying (Gerlach et al., 2018, p. 3), it did not mention restorative discipline in any strategic plans (TEA, n.d.-d) and did not require school districts to report on its use in the PEIMS system. The initiative was never embedded in the culture. The average response rate on the optional surveys sent out to gather feedback on the program was 14% (Gerlach et al., 2018, p. 5), and over half of those who responded described progress as "getting started" after a year of implementation (p. 16). The only required discipline reporting in Texas regards student removals from class (TEA, 2019j, 2020a; see Appendices B and C). Inconsistent

messaging is confusing and minimizes the perceived importance of the initiative (Schein & Schein, 2017).

Recommendations for Further Research

Future research should prioritize identifying actionable steps toward implementing engagement culture with the goal of making school more satisfying for everyone. This includes pinpointing systemic engagement culture indicators and qualifying which actions improve satisfaction and minimize dissatisfaction. One source of systemic engagement culture indicators might come from specific student culture survey items and constructs. The current study only considered the overall percent positive from students, but correlating more specific student culture data with elements of engagement culture could provide further systemic indicators and insights for school leaders. Another source of systemic engagement culture indicators is the data collected by USDoE, including the Common Core of Data (NCES, 2020b), Civil Rights Data Collection (U.S. Department of Education, 2018c), and EDFacts Data Files (U.S. Department of Education, 2020). Although this study focuses on academic outcomes of high-poverty students, non-academic variables associated with the presence of engagement culture should be studied. These non-academic variables might include school shootings, suicide rates, reports of bullying, teacher experience, and program funding.

Qualitative, phenomenological analyses with the aim of "describing the lived experiences of individuals" (Creswell & Creswell, 2018, p. 13) in an engagement culture could provide context for practitioners. For example, there is a strong correlation between teachers trusting the principal at his or her word (see Figure 9) and teacher satisfaction. Understanding what strengthens and undermines trust in these relationships could help strengthen engagement culture.

Summary

Understanding the role culture plays in high-poverty schools that consistently outperform their affluent counterparts (TEA, 2019c) is a big problem. Using Herzberg's motivation and maintenance factors to conceptualize engagement culture helped systemically identify how some high-poverty schools motivate students to yield improved academic performance. Engagement culture leads to improved academic outcomes on high-poverty campuses. The shared belief that intrinsic motivation sparks engagement and drives growth applies to everyone in a school, not just students. The non-experimental, correlational, cross-sectional methodology was robust; conclusions are sound and tie back to the literature; and findings should guide high-poverty campuses seeking to engage their students and improve academic outcomes.

Engagement culture explains academic growth and relative academic performance on high-poverty campuses. These findings justify a shift from coercive, dissatisfying school environments to intrinsically motivating, satisfying school environments. As such, educators and policy-makers should prioritize engagement culture over standardized test results and work to systemically embed engagement culture. More research should be conducted with a focus on identifying and implementing engagement culture.

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APPENDIX A

Discipline Summary Reports Information

Section A - Participation

A01 Cumulative Year End Enrollment (student counts): Enrollment during the entire year, counting a student who was a member (served two hours or more a day) at some point during the year.

A02 Discipline Population (student counts): Counts of students who were disciplined at least once during the year.

A03 Discipline Record Count (action counts): Counts of disciplinary actions. Districts submit one record for each disciplinary action.

Section B - Discipline Data Trends

B01 Count of Students Expelled to JJAEP (student counts): Counts of students who were placed in a JJAEP at least once during the year.

B02 Mandatory Expulsions to JJAEP and B03 Discretionary Expulsions to JJAEP (action counts): Counts of actions that resulted in student placements in a JJAEP. A placement of a student in a JJAEP can be mandatory or discretionary, depending on the disciplinary action reason. Please see Appendix 8.E Additional PEIMS Information Related to Discipline Data Reporting of the Texas Education Data Standards (TEDS) for more details.

B04 Count of Students Expelled (student counts): Counts of students who were expelled, including expulsions to a JJAEP or DAEP and expulsions without specific destinations, at least once during the year.

B05 Mandatory Expulsions and B06 Discretionary Expulsions (action counts): Counts of students who were expelled with mandatory or discretionary expulsion actions, including

expulsions to a JJAEP or DAEP and expulsions without specific destinations. An expulsion of a student can be mandatory or discretionary, depending on the disciplinary action reason. Please see Appendix 8.E Additional PEIMS Information Related to Discipline Data Reporting of the Texas Education Data Standards (TEDS) for more details.

B07 Count of Students Removed to a DAEP (student counts): Counts of students who were placed in a DAEP at least once during the year.

B08 Mandatory DAEP Removals and B09 Discretionary DAEP Removals (action counts): Counts of actions that resulted in student placements in a DAEP. A placement of a student in a DAEP can be mandatory or discretionary, depending on the disciplinary action reason. Please see Appendix 8.E Additional PEIMS Information Related to Discipline Data Reporting of the Texas Education Data Standards (TEDS) for more details.

B10 Count of Students Suspended in School (student counts): Counts of students who were placed in in-school suspension at least once during the year.

B13 Students Suspended Out of School (student counts): Counts of students who were placed in out-of-school suspension at least once during the year.

Section C - JJAEP Expulsions

C01 to C07 JJAEP Expulsions (action counts): Counts of actions that resulted in student placements in a JJAEP by student ethnicity.

Section D - Expulsion Actions

C08 to C14 Expulsion Actions (action counts): Counts of actions that resulted in JJAEP or DAEP placements or expulsions without specific destinations by student ethnicity.

Section E - DAEP Placements

C15 to C21 DAEP Placements (action counts): Counts of actions that resulted in DAEP placements by student ethnicity.

Section F - Out of School Suspensions

C22 to C28 Out of school suspensions (action counts): Counts of actions that resulted in out-of-school suspensions by student ethnicity.

Section G - In School Suspensions

C29 to C35 In school suspensions (action counts): Counts of actions that resulted in in-school suspensions by student ethnicity.

Section H - Special Education JJAEP Expulsions

D01 Special Education Students Expelled to JJAEP (student counts): Counts of students receiving special education services who were placed in a JJAEP at least once during the year.

D02 Special Education Expulsions to JJAEP and D03 Non Special Education Expulsions to JJAEP (action counts): Counts of actions that resulted in JJAEP placements by students' special education status.

Section I - Special Education Expulsions

D04 Special Education Students Expelled (student counts): Counts of student receiving special education services who were expelled, including expulsions to a JJAEP or DAEP and expulsions without a specific destination, at least once during the year.

D05 Special Education Expulsions and D06 Non Special Education Expulsions (action counts): Counts of actions that resulted in expulsions, including expulsions to a JJAEP or DAEP and expulsions without a specific destination, by students' special education status.

Section J - Special Education DAEP Placements

D07 Special Education Students DAEP Placement (student counts): Counts of students receiving special education services who were placed in a DAEP at least once during the year.

D08 Special Education DAEP Placements and D09 Non Special Education DAEP placements (action counts): Counts of actions that resulted in DAEP placements by students' special education status.

Section K - Special Education Out of School Suspension

D10 Special Education Students Suspended Out of School (student counts): Counts of students receiving special education services who were placed in out-of-school suspension at least once during the year.

D11 Special Education Out of School Suspensions and D12 Non Special Education Out of School Suspensions (action counts): Counts of actions that resulted in out-of-school suspensions by students' special education status.

Section L - Special Education in School Suspensions

D13 Special Education Students Suspended in School (student counts): Counts of students receiving special education services who were placed in in-school suspension at least once during the year.

D14 Special Education in School Suspensions and D15 Non Special Education in School Suspensions (action counts): Counts of actions that resulted in in-school suspensions by students' special education status.

Economically disadvantaged: Sections M through Q display the discipline information of economically disadvantaged students. Students with an ECONOMIC-DISADVANTAGE-CODE of 01, 02, or 99 (ECONOMIC-DISADVANTAGE-CODE) are classified as economically disadvantaged. Students with code 00 are classified as non economically disadvantaged.

Section M - Economically Disadvantaged Student JJAEP Placement

E01 Economically Disadvantaged Students Expelled to JJAEP (student counts): Counts of students classified as economically disadvantaged who were placed in a JJAEP at least once during the year.

E02 Economically Disadvantaged Expulsions to JJAEP, E03 Non Economically Disadvantaged Expulsions to JJAEP, and E04 Unknown Economic Status Expulsion to JJAEP (action counts): Counts of actions that resulted in JJAEP placements by students' economically disadvantaged status.

Section N - Economically Disadvantaged Student Expulsions

E05 Economically Disadvantaged Students Expelled (student counts): Counts of students classified as economically disadvantaged who were expelled, including expulsions to a JJAEP or DAEP and expulsions without a specific destination, at least once during the year.

E06 Economically Disadvantaged Expulsions, E07 Non Economically Disadvantaged Expulsions, and E08 Unknown Economic Status Expulsions: (action counts): Counts of actions that resulted in expulsions, including expulsions to a JJAEP or DAEP and expulsions without specific destinations, by economically disadvantaged status.

Section O - Economically Disadvantaged DAEP Placements

E09 Economically Disadvantaged Students Placed in DAEP (student counts): Counts of students classified as economically disadvantaged who were placed in a DAEP at least once during the year.

E10 Economically Disadvantaged DAEP Placements, E11 Non Economically Disadvantaged DAEP Placements, and E12 Unknown Economic Status DAEP Placements

(action counts): Counts of actions that resulted in students' placement in a DAEP by economically disadvantaged status.

Section P - Economically Disadvantaged Out of School Suspensions

E13 Economically Disadvantaged Students Suspended Out of School (student counts): Counts of students classified as economically disadvantaged who were placed in out-of-school suspension at least once during the year.

E14 Economically Disadvantaged Out of School Suspensions, E15 Non Economically Disadvantaged Out of School Suspensions, and E16 Unknown Economic Status Out of School Suspensions (action counts): Counts of actions that resulted in students' out-of-school suspensions by economically disadvantaged status.

Section Q - Economically Disadvantaged In School Suspensions

E17 Economically Disadvantaged Students Suspended in School (student counts): Counts of students classified as economically disadvantaged who were placed in in-school suspension at least once during the year.

E18 Economically Disadvantaged in School Suspensions, E19 Non Economically Disadvantaged in School Suspensions, and E20 Unknown Economic Status in School Suspensions (action counts): Counts of actions that resulted in students' in-school suspensions by economically disadvantaged status.

At-risk: Sections R through V display the discipline information based on students' at-risk status classifications. At-risk statuses indicate whether a student is currently identified as "at-risk" of not meeting standards or dropping out of school using state-defined criteria (TEC §29.081, Compensatory and Accelerated Instruction). Local criteria are not included in this indicator code.

Section R - At Risk Student JJAEP Placement

F01 At Risk Students Expelled to JJAEP (student counts): Counts of students classified as at-risk who were placed in a JJAEP at least once during the year.

F02 At Risk Expulsions to JJAEP, F03 Non At Risk Expulsions to JJAEP, and F04 Unknown At Risk Status Expulsion to JJAEP (action counts): Counts of actions that resulted in JJAEP placements by students' at-risk status.

Section S - At Risk Student Expulsions

F05 At Risk Students Expelled (student counts): Counts of students classified as at-risk who were expelled, including expulsions to a JJAEP or DAEP and expulsions without a specific destination, at least once during the year.

F06 At Risk Expulsions, F07 Non At Risk Expulsions, and F08 Unknown At Risk Status Expulsions (action counts): Counts of actions that resulted in JJAEP placements by students' economically disadvantaged status.

Section T - At Risk Student DAEP Placement

F09 At Risk Students Placed in DAEP (student counts): Counts of students classified as at-risk who were placed in a DAEP at least once during the year.

F10 At Risk DAEP Placements, F11 Non At Risk DAEP Placements, and F12 Unknown At Risk Status DAEP Placements (action counts): Counts of actions that resulted in students' placement in a DAEP by at-risk status.

Section U - At Risk Student Out of School Suspensions

F13 At Risk Students Suspended Out of School (student counts): Counts of students classified as at-risk who were placed in out-of-school suspension at least once during the year.

F14 At Risk Out of School Suspensions, F15 Non At Risk Out of School Suspensions, and F16 Unknown At Risk Status Out of School Suspensions (action counts): Counts of actions that resulted in students' out-of-school suspensions by at risk status.

Section V - At Risk In School Suspensions

F17 At Risk Students Suspended In School (student counts): Counts of students classified as at-risk who were placed in in-school suspension at least once during the year.

F18 At Risk in School Suspensions, F19 Non At Risk in School Suspensions, and F20 Unknown At Risk Status in School Suspensions (action counts): Counts of actions that resulted in students' in-school suspensions by at-risk status.

Section W - Reason Incident Counts (G01-G59)

Incident counts by disciplinary action reasons. For the disciplinary action reasons and codes, please see DISCIPLINARY ACTION REASONS.

Section X - Discipline Action Counts (H01-G61)

Disciplinary action counts by disciplinary action code. For the disciplinary actions and codes, please see DISCIPLINARY ACTION CODES.

From *Discipline Summary Reports*, by Texas Education Agency, 2020a (https://tea.texas.gov/reports-and-data/student-data/discipline-data-products/discipline-summary-reports). In the public domain.

APPENDIX B

Texas School Disciplinary Action Codes

Code	Translation
1	Permanent Removal By A Teacher From Class (Teacher has removed the student from classroom and denied the student the right to return. TEC 37.003 has been invoked.) TEC 37.002(b)
2	Conduct Punishable As A Felony TEC 37.006(a)(2)(A)
4	Possessed, Sold, Used, Or Was Under The Influence Of Marihuana Or Other Controlled Substance TEC 37.006(a)(2)(C) and 37.007(b)
5	Possessed, Sold, Used, Or Was Under The Influence Of An Alcoholic Beverage TEC 37.006(a)(2)(D) and 37.007(b)
6	Abuse Of A Volatile Chemical TEC 37.006(a)(2)(E)
7	Public Lewdness Or Indecent Exposure TEC 37.006(a)(2)(F)
8	Retaliation Against School Employee TEC 37.006(b) and 37.007(d)
9	Based On Conduct Occurring Off Campus And While The Student Is Not In Attendance At A School-Sponsored Or School-Related Activity For Felony Offenses In Title 5, Penal Code TEC 37.006(c), TEC 37.007(b)(4), and TEC 37.0081
10	Based On Conduct Occurring Off Campus And While The Student Is Not In Attendance At A School-Sponsored Or School-Related Activity For Felony Offenses not In Title 5, Penal Code TEC 37.006(d) and TEC 37.007(b)(4)
11	Brought a Firearm to School - TEC 37.007(e) or Unlawful Carrying of a Handgun under Penal Code 46.02 - TEC 37.007(a)(1)
12	Unlawful Carrying of a Location-Restricted Knife under Penal Code 46.02 - TEC 37.007(a)(1) (Location-Restricted Knife - blade longer than 5.5 inches)
13	Unlawful Carrying of a Club under Penal Code 46.02 - TEC 37.007(a)(1)
14	Conduct Containing the Elements of an Offense Relating to Prohibited Weapons Under Penal Code 46.05 - TEC 37.007(a)(1)
16	Arson TEC 37.007(a)(2)(B)
17	Murder, Capital Murder, Criminal Attempt To Commit Murder, Or Capital Murder TEC 37.007(a)(2)(C)
18	Indecency With A Child TEC 37.007(a)(2)(D)
19	Aggravated Kidnapping TEC 37.007(a)(2)(E)

Code	Translation
21	Violation Of Student Code Of Conduct Not Included Under TEC 37.002(b), 37.006, or 37.007
22	Criminal Mischief TEC 37.007(f)
23	Emergency Placement/Expulsion TEC 37.019
26	Terroristic Threat TEC 37.006(a)(1) or 37.007(b)
27	Assault Under Penal Code 22.01(a)(1) Against a school district employee or volunteer TEC 37.007(b)(2)(C)
28	Assault Under Penal Code 22.01(a)(1) Against someone other than a school district employee or volunteer TEC 37.006(a)(2)(B)
29	Aggravated Assault Under Penal Code 22.02 Against a school district employee or volunteer TEC 37.007(d)
30	Aggravated Assault Under Penal Code 22.02 Against someone other than a school district employee or volunteer TEC 37.007 (a)(2)(A)
31	Sexual Assault Under Penal Code 22.011 Or Aggravated Sexual Assault Under Penal Code 22.021 Against a school district employee or volunteer TEC 37.007(d)
32	Sexual Assault Under Penal Code 22.011 Or Aggravated Sexual Assault Under Penal Code 22.021 Against someone other than a school district employee or volunteer TEC 37.007(a)(2)(A)
35	False Alarm/False Report TEC 37.006(a)(1) and 37.007(b)
36	Felony Controlled Substance Violation TEC 37.007(a)(3)
37	Felony Alcohol Violation TEC 37.007(a)(3)
41	Fighting/Mutual Combat Excludes all offenses under Penal Code 22.01
46	Aggravated Robbery TEC 37.007(a)(2)(F), TEC 37.007(C)-(D) (HB9680)
47	Manslaughter TEC 37.007(a)(2)(G)
48	Criminally Negligent Homicide TEC 37.007(a)(2)(H)
49	Engages In Deadly Conduct TEC 37.007(b)(3)
55	Student Is Required To Register As A Sex Offender Under Chapter 62 Of The Code Of Criminal Procedure And Is Under Court Supervision - TEC 37.304. The offense(s) for which the student is required to register as a sex offender must have occurred on or after Sept. 1, 2007

Code	Translation
56	Student Is Required To Register As A Sex Offender Under Chapter 62 Of The Code Of Criminal Procedure And Is not Under Court Supervision - TEC 37.305. The offense(s) for which the student is required to register as a sex offender must have occurred on or after Sept. 1, 2007
57	Continuous Sexual Abuse Of Young Child Or Children Under Penal Code 21.02 Occurring on school property or while attending a school-sponsored or school-related activity on or off school property TEC 37.007(a) (2) (I)
58	Breach of Computer Security TEC 37.007(a)(5) (HB1224)
59	Serious Misbehavior, as defined by TEC 37.007(c), while expelled to/placed in a Disciplinary Alternative Education Program (DAEP)- TEC 37.007(c) defines “serious misbehavior" as: (1) deliberate violent behavior that poses a direct threat to the health or safety of others; (2) extortion, meaning the gaining of money or other property by force or threat; (3) conduct that constitutes coercion, as defined by Section1.07, Penal Code; or (4) conduct that constitutes the offense of: (A) public lewdness under Section 21.07, Penal Code; (B) indecent exposure under Section 21.08, Penal Code; (C) criminal mischief under Section 28.03, Penal Code; (D) personal hazing under Section 37.152; or (E) harassment under Section 42.07(a)(1), Penal Code, of a student or district employee.
60	Harassment Against an Employee of the School District under Texas Penal Code 42.07(a)(1), (2), (3), or (7) TEC 37.006(a)(2)(G)
61	Bullying TEC 37.0052(b)

From *TSDS Web-enabled Data Standards: C-165 Disciplinary-action-reason-code*, by Texas Education Agency, 2019j (https://tealprod.tea.state.tx.us/TWEDS/66/283/502/0/CodeTable/List/8035). In the public domain.

APPENDIX C

SSMS Query for Inclusion of Campuses

```
select  r.cdc_campus, r.campus_name, n.nces_campus_type_description,
school_level = (case
                  when r.school_type = 'b' then 'Both'
                  when r.school_type = 'E' then 'Elementary'
                  when r.school_type = 'M' then 'Middle'
                  when r.school_type = 'S' then 'Senior High'
                  else '' end),

r.grade_span_total_enr, r.all_students_count, r.enrollment_ecodis_p,
r.d1_scale, r.d1_staar_raw, r.d1_staar_scale, r.[d2_growth_ rating],
r.[d2_growth_ scale], r.[d2_growth_ raw],
r.flag_jjaep, r.flag_aea_aec, r.flag_daep, r.flag_charter,
r.flag_paired_campus, r.flag_res_treatment_fac, r.overall_rating

--select *
from DISS_tapr_camprate_2019 r

left join [ReflectPlanDoLocal].[dbo].[DISS_nces_campus_2019] n
on n.cdc_campus = r.cdc_campus

left join [ReflectPlanDoLocal].[dbo].[RPD_school_district_directory_20201008]
d
on right('000000000'+ISNULL(d.[cdc_campus],''),9) = r.cdc_campus


where r.cdc_district = '057905' --comment this for population; include for
sample
and  r.flag_jjaep <> 'y' and r.flag_aea_aec <> 'y' and r.flag_daep <> 'y' and
r.flag_charter <> 'y' and r.flag_paired_campus <> 'y' and
r.flag_res_treatment_fac <> 'y' and overall_rating <> 'not rated'

and r.cdc_campus in (select p.cdc_campus from DISS_tapr_campus_profile_2019 p
where cast(p.EconDisadvPercent_2019 as float) >= 79.5)
and n.nces_campus_type_code in ('11', '21', '41')

order by 19 desc


/*
not included:
--1 jjaep
         057905096 JUVENILE JUSTICE AEP
--2 aec/aea:
         057905030 MAYA ANGELOU H S;
         057905389 JOHN LESLIE PATTON JR ACADEMIC CEN
--3 daep:
         057905011 BARBARA M MANNS MIDDLE DAEP;
         057905029 BARBARA M MANNS H S DAEP;
         057905241 ELEMENTARY' DISCIPLINARY ALTERNATI
```

--0 charter:
I excluded charters from the population so I mentioned it here.

--5 flag_paired campus (aka no 3-12 enrollment):
057905102 PREK PARTNERSHIP CENTER;
057905285 N W HARLLEE EARLY CHILDHOOD CENTER;
057905300 ARLINGTON PARK EARLY CHILDHOOD CEN;
057905385 MONTESSORI ACADEMY AT ONESIMO HERN;
057905386 SOLAR PREP FOR BOYS AT JOHN F KENN
--1 residential treatment facility:
057905099 HOSPITAL/HOMEBOUND
--6 not rated:
057905011 BARBARA M MANNS MIDDLE DAEP
057905029 BARBARA M MANNS H S DAEP
057905030 MAYA ANGELOU H S
057905096 JUVENILE JUSTICE AEP
057905099 HOSPITAL/HOMEBOUND
057905241 ELEMENTARY' DISCIPLINARY ALTERNATI

Not Rated
057905011 BARBARA M MANNS MIDDLE DAEP
057905029 BARBARA M MANNS H S DAEP
057905030 MAYA ANGELOU H S
057905096 JUVENILE JUSTICE AEP
057905099 HOSPITAL/HOMEBOUND
057905241 ELEMENTARY' DISCIPLINARY ALTERNATI

No Gr 3-12
057905102 PREK PARTNERSHIP CENTER;
057905285 N W HARLLEE EARLY CHILDHOOD CENTER;
057905300 ARLINGTON PARK EARLY CHILDHOOD CEN;
057905385 MONTESSORI ACADEMY AT ONESIMO HERN;
057905386 SOLAR PREP FOR BOYS AT JOHN F KENN

AEC – take tests, but students are “over-age and under-credited in comparison to their grade level peers.”
057905389 JOHN LESLIE PATTON JR ACADEMIC CEN

<80% ecodis

cdc_campus	campus_name	enrollment_ecodis_p
057905217	WILLIAM B TRAVIS VANGUARD ACAD OF	15.5
057905162	MOCKINGBIRD EL	21.8
057905134	GEORGE B DEALEY MONTESSORI ACADEMY	25
057905034	BOOKER T WASHINGTON SPVA MAGNET	31.7
057905039	SCHOOL FOR THE TALENTED AND GIFTED	34.5
057905384	SUDIE L WILLIAMS TALENTED AND GIFT	38.2
057905022	WOODROW WILSON H S	47.4
057905230	HARRY C WITHERS EL	49.8
057905306	SOLAR PREPARATORY SCHOOL FOR GIRLS	49.8
057905153	VICTOR H HEXTER EL	52.1
057905026	SCHOOL OF SCIENCE AND ENGINEERING	53.1
057905270	EDUARDO MATA EL	56.7
057905212	HARRY STONE MONTESSORI ACADEMY	57.5
057905135	EVERETTE LEE DEGOLYER EL	58.2

```
057905383 CITYLAB H S   59.9
057905171 LAKEWOOD EL   6.6
057905360 D A HULCY STEAM MIDDLE  63.7
057905053 J L LONG MIDDLE    64.9
057905204 ROSEMONT EL   65.4
057905174 GENEVA HEIGHTS EL  65.6
057905169 ARTHUR KRAMER EL   67.7
057905033 SCHOOL OF BUSINESS AND MANAGEMENT    68.9
057905021 W T WHITE H S 69.9
057905037 ROSIE SORRELLS EDUCATION AND SOCIA   70.9
057905362 IGNITE MIDDLE 70.9
057905035 IRMA RANGEL YOUNG WOMEN'S LEADERSH   71.4
057905036 SCHOOL OF HEALTH PROFESSIONS     73.6
057905006 HILLCREST H S 73.7
057905380 WILMER-HUTCHINS H S    74.1
057905038 JUDGE BAREFOOT SANDERS LAW MAGNET    74.6
057905025 SKYLINE H S   74.7
057905090 DR WRIGHT L LASSITER JR EARLY COLL   74.7
057905224 WALNUT HILL EL     75.3
057905381 BARACK OBAMA MALE LEADERSHIP ACAD    75.7
057905279 JERRY R JUNKINS EL 75.7
057905023 DAVID W CARTER H S 75.9
057905049 W E GREINER EXPLORATORY ARTS ACADE   77
057905073 HENRY W LONGFELLOW CAREER EXPLORAT   77.2
057905280 ANNE FRANK EL 77.3
057905206 ALEX SANGER PREPARATORY SCHOOL   77.7
057905203 DAN D ROGERS EL    77.7
057905359 ROSEMONT MIDDLE    78.5
057905007 THOMAS JEFFERSON H S   78.6
057905018 SUNSET H S    78.7
057905008 JUSTIN F KIMBALL H S   79.2
057905085 KATHLYN JOY GILLIAM COLLEGIATE ACA   79.4


*/
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APPENDIX D

IRB Non-Human Subjects Determination Notice

PEPPERDINE UNIVERSITY

Graduate & Professional Schools Institutional Review Board

February 3, 2021

Protocol #: **2321**

Project Title: Does Culture Eat Poverty for Breakfast? Exploring the Role of Engagement for Achievement in Texas Schools.

Dear Laura:

Thank you for submitting a "GPS IRB Non-Human Subjects Notification Form" for *Does Culture Eat Poverty for Breakfast? Exploring the Role of Engagement for Achievement in Texas Schools.* project to Pepperdine University's Institutional Review Board (IRB) for review. The IRB has reviewed your submitted form and all ancillary materials. Upon review, the IRB has determined that the above titled project meets the requirements for *non-human subject research* under the federal regulations 45 CFR 46.101 that govern the protection of human subjects.

Your research must be conducted according to the form that was submitted to the IRB. If changes to the approved project occur, you will be required to submit *either* a new "GPS IRB Non-Human Subjects Notification Form" or an IRB application via the eProtocol system (httpw://irb.pepperdine.edu) to the Institutional Review Board.

A goal of the IRB is to prevent negative occurrences during any research study. However, despite our best intent, unforeseen circumstances or events may arise during the research. If an unexpected situation or adverse event happens during your investigation, please notify the IRB as soon as possible. We will ask for a complete explanation of the event and your response. Other actions also may be required depending on the nature of the event. Details regarding the timeframe in which adverse events must be reported to the IRB and documenting the adverse event can be found in the *Pepperdine University Protection of Human Participants in Research: Policies and Procedures Manual* at https://community.pepperdine.edu/irb/policies/.

Please refer to the protocol number denoted above in all further communication or correspondence related to this approval.

On behalf of the IRB, we wish you success in this scholarly pursuit.

Sincerely,

Institutional Review Board (IRB)
Pepperdine University

cc: Mrs. Katy Carr, Assistant Provost for Research
Dr. Judy Ho, Graduate School of Education and Psychology IRB Chair

24255 Pacific Coast Highway, Malibu, California 90263 ▪ 310-506-4000

APPENDIX E

Variables

Table E1

All Potential Variables Were Included in the Initial Analysis

Variable	Description
year_growth_rate	Rate of math and reading tests that demonstrated a year of growth
rel_perf_staar_only_scale	Domain II STAAR-only relative performance scale score
d1_staar_raw	Domain I STAAR-only raw score
parent_pct_pos	Parent survey percent positive
student_survey_pct	Student survey percent positive
fac_pct_pos	Staff survey percent positive
mot19_pct_pos	I am satisfied with the recognition I receive for doing a good job.
mot25_pct_pos	I have sufficient opportunities and encouragement to develop my leadership potential.
mot30_pct_pos	Teachers expect most students in this school to go to college.
mot42_pct_pos	The principal has confidence in the expertise of the teachers.
hyg4_pct_pos	I have the support I need from campus leadership to do my job well.
hyg8_pct_pos	How similar are your school's priorities to what you think they should be?*
hyg13_pct_pos	I usually look forward to working each day at this school.
hyg14_pct_pos	I believe I work in an environment of support and respect.
hyg37_pct_pos	Teachers in this school trust each other
hyg38_pct_pos	It's OK in this school to discuss feelings, worries, and frustrations with other teachers.
hyg43_pct_pos	I trust the principal at his or her word.

Variable	Description
hyg44_pct_pos	It's OK in this school to discuss feelings, worries, and frustrations with the principal.
hyg46_pct_pos	The principal looks out for the personal welfare of the faculty members.
Beliefs and Priorities	Staff Survey Category
College Going Culture	Staff Survey Category
Culture of Feedback and Support	Staff Survey Category
Positive Culture and Environment	Staff Survey Category
Teacher-Principal Trust	Staff Survey Category
Teacher-Teacher Trust	Staff Survey Category
discr_removal_rate	Rate of disciplinary removals not required by law
dpop_rate_enr	Rate of enrolled students removed from class for disciplinary reasons
extracurricular_participation_pct	Rate of students involved in extracurricular activities
extracurricular_participation_scale	Extracurricular activities scale score

Table E2

Study variables comprise systemic indicators of intrinsic motivation, minimal dissatisfaction, overall satisfaction, and minimal coercion

What's in the Bag	Variable	Survey Category	Herzberg Factor
Evidence of Intrinsic Motivation from Staff Survey	mot19: I am satisfied with the recognition I receive for doing a good job. (answered by all employees on campus)	Positive Culture & Environment	Recognition
	mot25: I have sufficient opportunities and encouragement to develop my leadership potential. (answered by teachers on campus)	Culture of Feedback & Support	Advancement
	mot30: Teachers expect most students in this school to go to college. (answered by teachers and admins on campus)	College-Going Culture	Achievement
	mot42: The principal has confidence in the expertise of the teachers. (answered by teachers on campus)	Teacher-Principal Trust	Responsibility
Evidence of Minimal Dissatisfaction from Staff Survey	hyg13: I usually look forward to working each day at this school. (answered by all employees on campus)	Positive Culture & Environment	Work Conditions
	hyg14: I believe I work in an environment of support and respect. (answered by all employees on campus)	Positive Culture & Environment	Work Conditions
	hyg37: Teachers in this school trust each other. (answered by teachers on campus)	Teacher-Teacher Trust	Peer Relationships
	hyg38: It's OK in this school to discuss feelings, worries, and frustrations with other teachers. (answered by teachers on campus)	Teacher-Teacher Trust	Peer Relationships

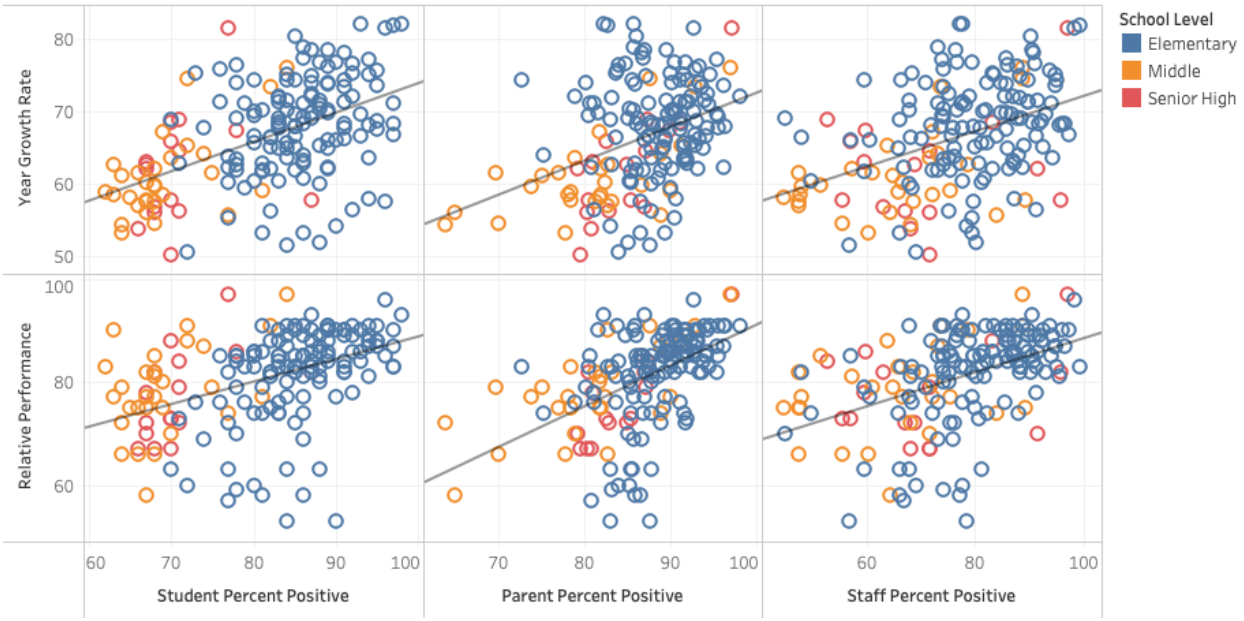
What's in the Bag	Variable	Survey Category	Herzberg Factor
	hyg4: I have the support I need from campus leadership to do my job well. (answered by all employees on campus)	Beliefs & Priorities	Company Policy & Administration
	hyg43: I trust the principal at his or her word. (answered by teachers on campus)	Teacher-Principal Trust	Supervision
	hyg44: It's OK in this school to discuss feelings, worries, and frustrations with the principal. (answered by teachers on campus)	Teacher-Principal Trust	Supervision
	hyg46: The principal looks out for the personal welfare of the faculty members. (answered by teachers on campus)	Teacher-Principal Trust	Supervision
	hyg8: How similar are your school's priorities to what you think they should be? (answered by all employees on campus)	Beliefs & Priorities	Company Policy & Administration
Evidence of Overall Satisfaction	Student Climate Survey	Overall Percent Positive	N/A
	Parent Climate Survey	Overall Percent Positive	N/A
Evidence of Minimal Coercion	Discipline Population Rate	N/A	N/A

APPENDIX F

Supporting Figures

Figure F1

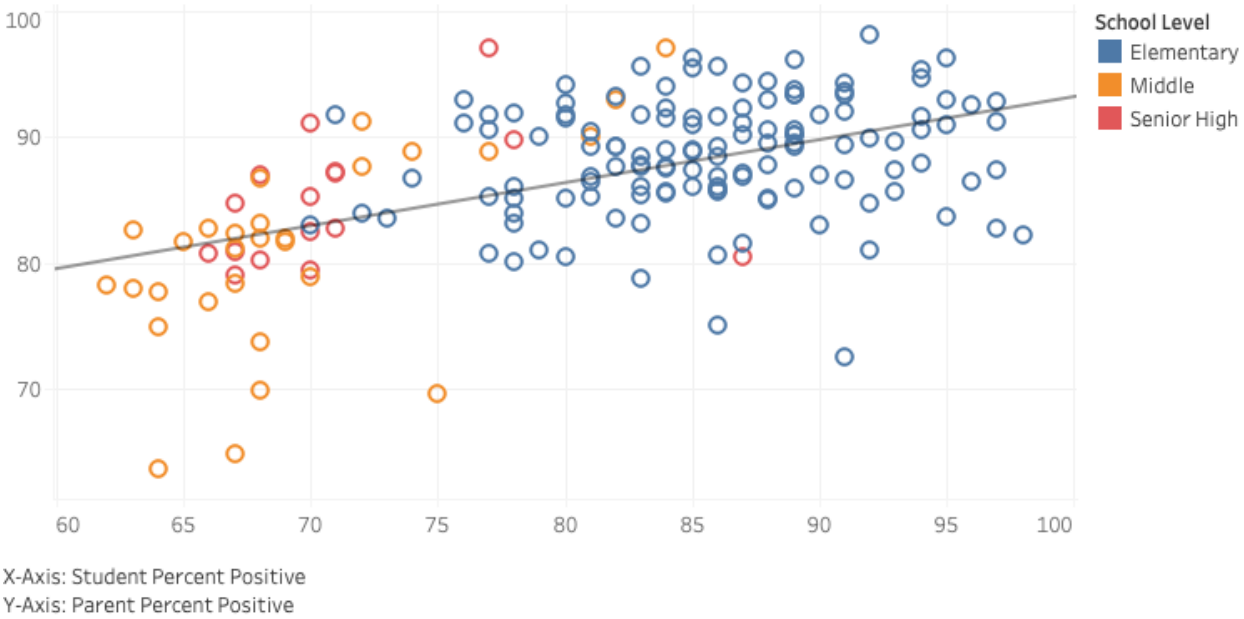
Factors of Engagement Culture are Linked to Academic Growth and Relative Performance



Note. Student percent positive is strongly correlated with growth, $r(145) = .51$, $p < .001$, and moderately correlated with relative academic performance., $r(145) = .44$, $p < .001$. Parent percent positive is moderately correlated with growth, $r(145) = .38$, $p < .001$, and strongly correlated with relative academic performance $r(145) = .52$, $p < .001$. Staff percent positive is moderately correlated with both growth, $r(145) = .42$, $p < .001$, and relative academic performance, $r(145) = .46$, $p < .001$.

Figure F2

Student and Parent Overall Satisfaction are Strongly Correlated



Note. $r(145) = .52$, $p < .001$.

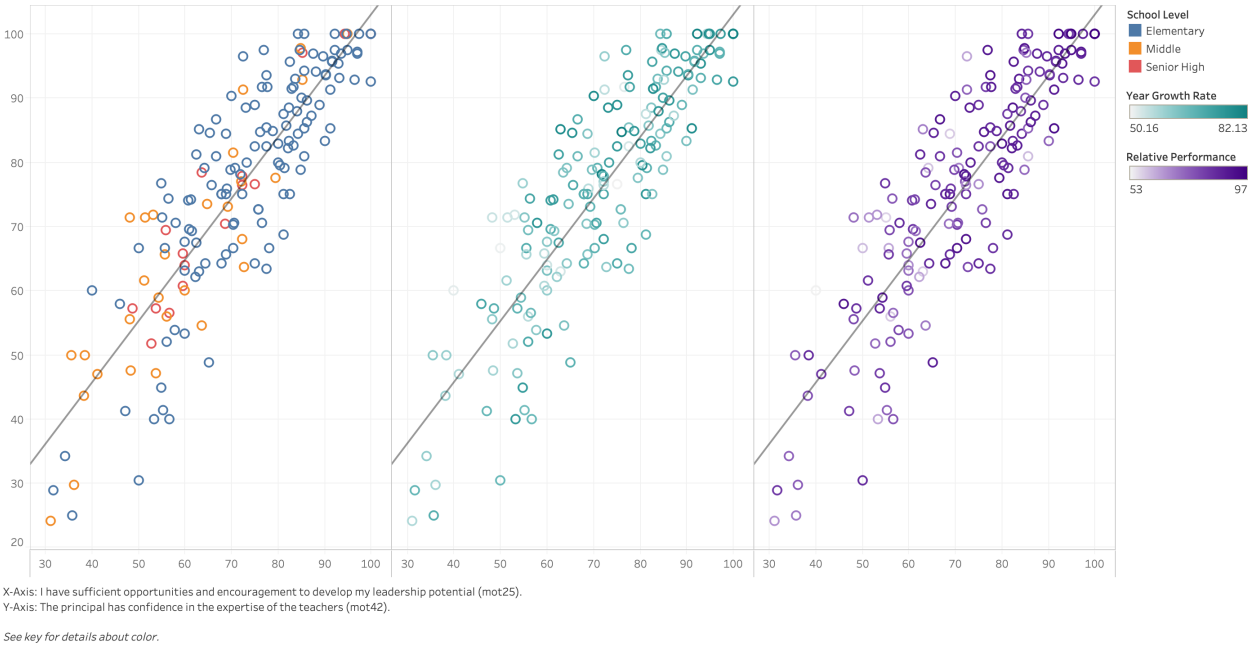
Figure F3

Feeling Supported and Respected is Strongly Correlated with Work Enjoyment and Moderately Correlated with Academic Outcomes

Note. "I believe I work in an environment of support and respect" is strongly correlated with the item, "I usually look forward to working each day at this school," $r(145) = .93$, $p < .001$. It is also moderately correlated with both growth, $r(145) = .34$, $p < .001$, and relative academic performance, $r(145) = .38$, $p < .001$.

Figure F4

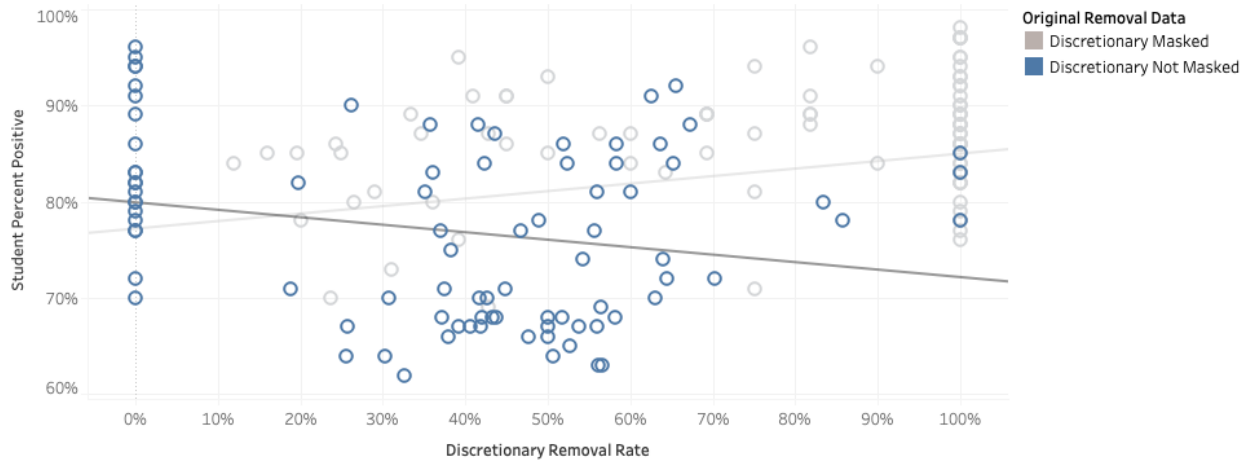
Career Opportunity for Teachers is Strongly Correlated with Principal Confidence in Teachers and Moderately Correlates with Academic Outcomes



Note. "I have sufficient opportunities and encouragement to develop my leadership potential" is moderately correlated with both growth $r(145) = .38$, $p < .001$, and relative performance, $r(145) = .44$, $p < .001$. "The principal has confidence in the expertise of the teachers" is moderately correlated with both growth $r(145) = .32$, $p < .001$, and relative performance, $r(145) = .36$, $p < .001$. They are strongly correlated with each other $r(145) = .87$, $p < .001$, even though they represent different categories in the staff survey.

Figure F5

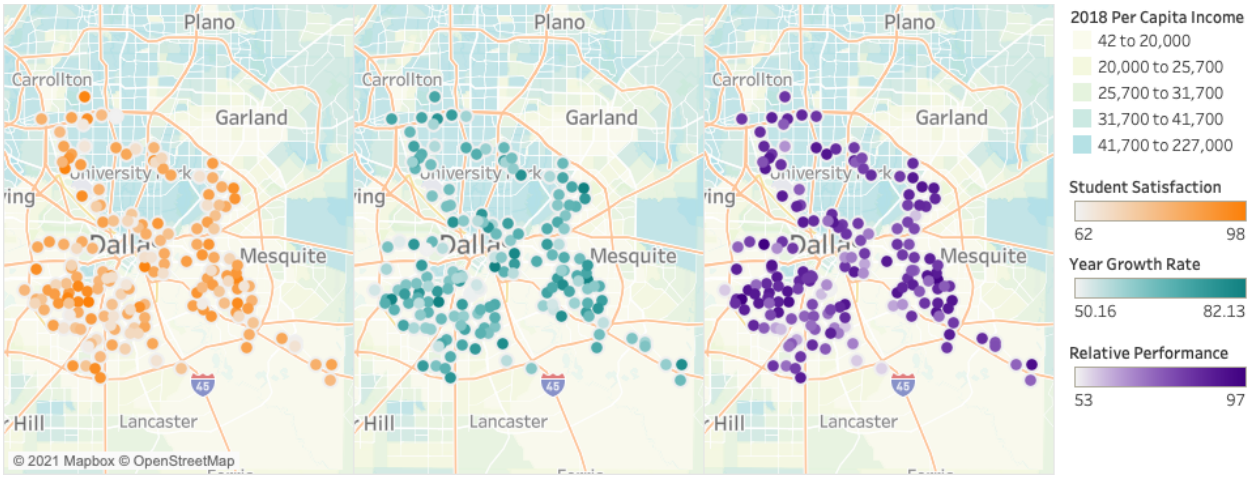
The Approach to Approximate Discretionary Discipline Data was not Appropriate



Note. Removing the originally masked datapoints changed the trendline from positive to negative. Discretionary removal rate had an unexpectedly positive correlation with student satisfaction $r = .29$, $p < .001$. Once the campuses with masked discipline data were removed, the trendline became expectedly negative, $r = .22$, $p < .05$.

Figure F6

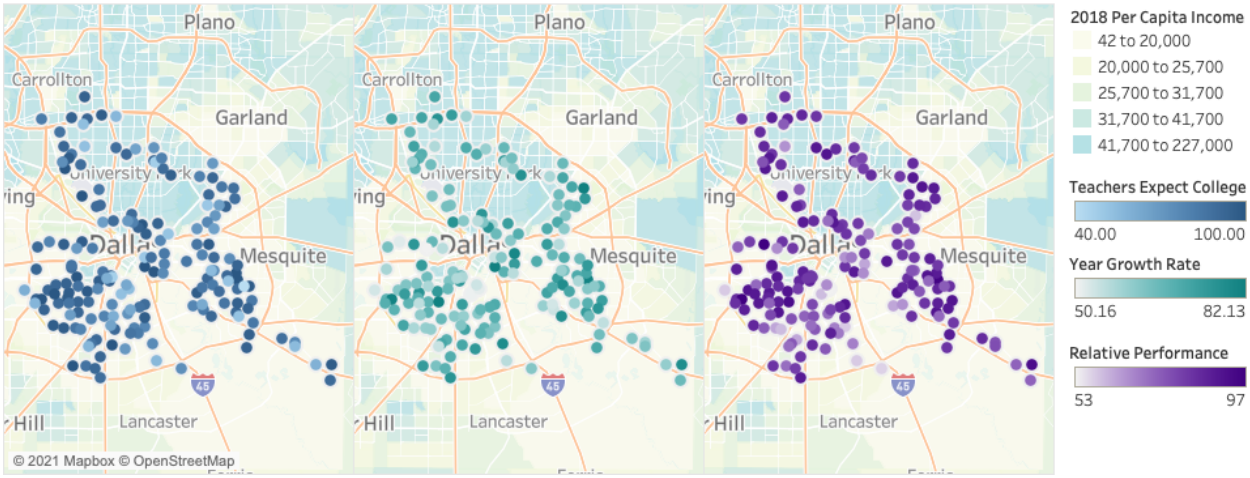
Student satisfaction is linked with academic performance, even in schools serving neighborhoods with the lowest per-capita income



Note. U.S. Census Bureau, 2019.

Figure F7

Teacher Belief that Students will Attend College is Linked With Academic Performance, Even In Schools Serving Neighborhoods with the Lowest Per-Capita Income



Note. U.S. Census Bureau, 2019.