UCHICAGO Consortium on School Research

RESEARCH SUMMARY APRIL 2023

Investing in Adolescents

High School Climate and Organizational Context Shape Student Development and Educational Attainment

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TABLE OF CONTENTS

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Introduction

Evidence in psychology and economics has converged on an understanding of what matters for students' learning and what influences their life trajectories. While earlier work focused on the role of large scale assessment test scores, more recent research emphasizes the importance of socioemotional skills, experiences, and mindsets—such as conflict resolution, conscientiousness, goal-setting, study skills, belonging, and adaptive self-beliefs—for thriving in adolescence and into adulthood.[1] This updated scientific knowledge about socioemotional factors has mobilized action in educational policy. Most notably, the 2015 *Every Student Succeeds Act* formally expanded the definition of school performance such that measures of supporting socioemotional development can now be used for accountability purposes. On the practice side, many educators have adopted programs and curricula that measure, promote, and assess socioemotional factors.[2] And many states and school districts have designed guidance to support socioemotional development (SED) in educational settings. For example, Illinois has formally adopted SED standards and Chicago Public Schools (CPS) has dedicated staff and resources to support the implementation of these standards.[3]

Yet many of these policy and practice shifts have moved forward without definitive evidence on critical questions about fostering SED in school contexts. While there is considerable evidence that socioemotional skills, mindsets, and beliefs matter and are malleable, there is much less evidence about whether and how schools meaningfully support their development.[4] In our recent research,[5] we addressed this gap by examining the role of high schools—and their climates—in shaping students' trajectories. We identified three key insights from this research:

1. Effective high schools contribute productively to *multiple* dimensions of student growth from eighth to ninth grade—socioemotional development, test scores from large-scale assessments, and observed behaviors in school[6] —and positively influence students' short- and long-run trajectories (e.g., college-going and interaction with the legal system on school grounds);
2. High schools' contributions to students' socioemotional development and behaviors matter most for students' short- and long-run trajectories; and
3. Effective high schools have supportive, collaborative, and instructionally ambitious climates.

1 Almlund, Duckworth, Heckman, & Kautz (2011); Borghans, Duckworth, Heckman, & Ter Weel. (2008); Farrington et al. (2012); Farrington, Porter, & Klugman (2019); Duckworth, Peterson, Matthews, & Kelly (2007); Dweck & Master (2008); Heckman & Rubinstein (2001); Immordino-Yang, Hammond, & Krone (2019); Pelligrino & Hilton (2012).

2 Grant et al. (2017); Jones, Barnes, Bailey, & Doolittle (2017).

3 Review Illinois standards and an explanation for why the Illinois State Board of Education chose to adopt them at https://www.isbe.net/sel

4 Credé, Tynan, & Harms (2017); Rimfeld, Kovas, Dale, & Plomin (2016); Revelle (2007); Duckworth & Yeager (2015); Immordino-Yang et al. (2019).

5 Jackson, Porter, Easton, Blanchard, & Kiguel (2020); Jackson, Kiguel, Porter, & Easton (forthcoming); Porter, Jackson, Kiguel, & Easton (2023).

6 For ease of discussion, in the following, we refer to socioemotional development, achievement, and academic behaviors as distinct dimensions of student growth; however, there is compelling research (e.g., Heckman, Stixrud, & Urzua, 2006; Heckman & Kautz, 2012) that socioemotional (and cognitive) factors contribute to each of these dimensions.

Contextualizing the research

The research described in this report provides evidence on the impact of high schools on the experiences and trajectories of CPS students, many of whom are members of historically marginalized communities. This work particularly attends to the importance of high schools for shaping students' socioemotional development and thus sits at the intersection of several areas of scholarly research and public discourse—for example, the purpose of schooling, the science of learning and development, and equity.

While research on socioemotional factors has existed for many decades, the importance of these factors—for academic, social, civic, and psychological markers of success—has been elevated more recently.[A] Evolutions in the education sector that may have contributed to increased attention to the socioemotional aspects of development include:

1) **a substantive shift in the social construction of "ability"** away from purely inheritable to substantially influenced by environment and access to resources;
2) **a rethinking of the purpose of schooling** from identifying exceptional "natural" talent toward nurturing the ability of all students to reach their intellectual potential; and
3) **a reckoning with the impacts of systemic racism and exclusionary cultural norms in education contexts** that restrict particular students' opportunities for rigorous, high-quality learning experiences. In short, there has been movement in the educational sector toward considering the "whole" student and a resituating of issues of student thriving within structures and institutions rather than individuals.[B]

Consistent with these broader shifts in focus from ability to whole students and from student "deficiencies" to inequitable institutions and structures, the present work provides evidence on the impact of schools on students' test scores, behaviors, and socioemotional development. This work expands beyond prior research that has documented racialized disparities in test scores and socioemotional experiences and mindsets, as well as work that has evaluated the effectiveness of light-touch interventions for improving students' experiences.[C] It also contributes to the compelling qualitative and quantitative evidence on the role of teachers, classrooms, policies, curricula, and programs in being responsive to students' development in ways that support well-being in school.[D] In particular, this work expands on prior work by examining the extent to which effective high schools causally impact students' development and long-run thriving, and by describing the climate and organizational context of these high schools.

A Heckman et al. (2006); Pellegrino & Hilton (2012); Farrington et al. (2012).

B Farrington et al. (2019); Darling-Hammond, Flook, Cook-Harvey, Barron, & Osher (2020); Nasir (2020); Nasir, Lee, Pea, & McKinney de Royston (2021).

C Aratani, Wight, & Cooper (2011); Benner & Crosnoe (2011); Coley, Spielvogel, & Sims (2018); Murphy, Gopalan, Carter, Emerson, Bottoms, & Walton (2020); Kautz, Heckman, Diris, Ter Weel, & Borghans (2014); Yeager et al. (2019).

D Kautz et al. (2014); Kautz & Zanoni (2014); Farrington et al. (2019); Jackson, Rockoff, & Staiger (2014); Fisher et al. (2019); Cheryan, Ziegler, Plaut, & Meltzoff (2014); Fryberg & Markus (2007); Ladson-Billings (2006).

CHAPTER 1

Research Details

Data used in this research

This research drew on a large dataset of six cohorts of eighth- and ninth-grade students who attended a CPS high school between 2011–12 and 2016–17 (160,148 students); unless otherwise noted, these data were collected by CPS and housed at the UChicago Consortium. The CPS students in our sample were primarily Black (42%) and Latinx (44%), and from families facing economic disadvantage, as measured by students receiving free or reduced priced lunch (86%) and the estimated socioeconomic advantage or disadvantage of the students' census block. The data included students' administrative records (demographics, attendance, and discipline records); five measures of SED completed by students on the *5Essentials* Survey (including supplementary measures); *5Essentials* Survey measures of school climate completed by students and teachers; and each school's School Quality Rating Policy (SQRP) score. GreatSchools Summary Ratings were gathered from publicly available data.

For analyses of longer-run college outcomes, our sample included CPS students who attended ninth grade for the first time between 2012–13 and 2013–14 (55,564 students). For analyses of longer-run high school outcomes, our sample included CPS students who attended ninth grade for the first time between 2011–12 and 2013–14 (82,146 students). Subsets of students were analyzed because these students were old enough to be observed on the longer-run college and/or high school outcomes, respectively. Outcomes included: **1)** outcomes observed in ninth grade (absences, ELA and math test scores, SED, disciplinary incidents, and suspensions); **2)** outcomes observed in ninth through eleventh grade (arrests for activities on- or off-campus that were recorded in school administrative data and high school completion); and **3)** outcomes observed in post-secondary years (two- and four-year college-going and persistence into sophomore year). For longer-run outcomes, all students in this sample were included, irrespective of survey completion (survey response rates were greater than 70% for each year); if a student repeated ninth grade, only data from the first ninth-grade year were included for relevant analyses and any other repeated ninth-grade years' survey data were excluded. Data from the National Student Clearinghouse were used for college records.

Socioemotional survey measures

We used five self-report survey measures of SED, consistent with the literature on socioemotional development: emotional health, school connectedness, academic engagement, grit, and study habits.[7] We found that these measures clustered into two domains: *academic effort and work* (academic engagement, grit, and study habits) and *social well-being* (school connectedness and emotional health). Each survey measure was composed of several items (**see Table 1 on p.4**) and students responded to each item using point scales to indicate agreement (e.g., 1=strongly disagree to 4=strongly agree). **Both domains (and therefore all five SED survey measures) were subsequently combined into a single SED factor for some analyses reported in this report.**

School climate survey measures

We used *5Essentials* Survey school climate measures that were developed by the UChicago Consortium.[8] Each essential—Effective Leaders, Collaborative Teachers, Involved Families, Supportive Environment, and Ambitious Instruction—includes multiple survey measures of students' and teachers' beliefs about the school climate and organization.[9]

7 See Farrington et al. (2012).

8 For detailed information about the development of the five essential supports framework and its measurement system see Bryk, Sebring, Allensworth, Luppescu, & Easton (2010) and Hart, Young, Chen, Zou, & Allensworth (2020).

9 See https://consortium.uchicago.edu/surveys for details about the *5Essentials* Survey. A full list of measures, items, and response scales is available upon request.

TABLE 1

Items on student self-report SED surveys

Social well-being	Academic effort and work
Emotional health	**Study habits**
• I can always find a way to help people end arguments • I listen carefully to what other people say to me • I'm good at working with other students • I'm good at helping other people.	• I always study for tests • I set aside time to do my homework and study • I try to do well on my schoolwork even when it isn't interesting to me • If I need to study, I don't go out with my friends.
School connectedness	**Grit** (perseverance facet) (Duckworth et al., 2006)
• I feel like a real part of my school • People here notice when I'm good at something • Other students in my school take my opinions seriously • People at this school are friendly to me • I'm included in lots of activities at school	• I finish whatever I begin • I am a hard worker • I continue steadily towards my goals • I don't give up easily
	Academic engagement
	• The topics we are studying are interesting and challenging • I usually look forward to this class • I work hard to do my best in this class • Sometimes I get so interested in my work I don't want to stop

Notes: This table shows the five self-report survey measures of SED used in the empirical research summarized in this report. The measures clustered into two domains; 1) social well-being and 2) academic effort and work. These were subsequently combined into a single SED factor for some analyses reported in this report. Survey response rates were high (greater than 70%) across all students; students with better grades had slightly higher response rates. These measures were collected as supplemental measures on the 5Essentials Survey to inform ongoing research.

Analysis and research questions

Our analysis had several steps. We first assessed CPS high school impacts (i.e., value-added models or VAMs) on students' SED from eighth to ninth grade. That is, we assessed the impact of attending a particular high school on ninth-grade students' *social well-being* and *academic effort and work* relative to attending other high schools in CPS. Because high schools may also meaningfully influence other aspects of students' development, we also assessed the impact of high schools on ninth-grade students' large scale assessment test scores (math and ELA) and behaviors (attendance, suspensions, and disciplinary infractions). By using VAMs, we were able to evaluate the impact of attending a high school on the four dimensions of student growth while holding constant other factors that may be related to student development (e.g., prior academic preparation, background characteristics).[10]

We next combined all of the VAMs into a single high school impact—or effectiveness—score.[11] **Thus, we define school effectiveness as the combined impact of high schools on ninth-grade students' SED, test scores, and behaviors**. Based on a factor analysis, we found that the four VAMs received different weights in the school effectiveness calculation and each one contributed meaningfully to overall school effectiveness. Last, the school effectiveness measure (RQ1 and RQ3) and individual VAMs (RQ2) were used in statistical regressions

10 School VAMs were used because they isolate the contribution of high schools by accounting for the many other factors that influence students' social-emotional development, are commonly used to estimate schools' impacts (e.g., on test score achievement), and have been subjected to extensive validation (e.g., Deming, 2014; Angrist, Hull, Pathak, & Walters, 2016; Loeb, Christian, Hough, Meyer, Rice, & West, 2019; Fricke, Loeb, & Hough, 2019). Full details of our VAM calculations are available in Jackson et al. (forthcoming).

11 Throughout this paper, we frequently use the term "effective" to refer to schools that positively influence all measured student dimensions. We justify the use of this term given the impact of these schools on long-run student trajectories, though we acknowledge that there are other well-reasoned definitions of effective schools in practice, policy, and the scholarly literature.

to answer the following key research questions:

- **Research Question 1 (RQ1):** What is the impact of attending an effective school—one that positively contributes to socioemotional development, test scores, and behaviors recorded by schools—for students' short-run (end of ninth grade) and long-run (eleventh grade through college) trajectories?
- **Research Question 2 (RQ2):** What matters most for students' short- and long-run trajectories: school impacts on students' socioemotional development, test scores, and/or behaviors?
- **Research Question 3 (RQ3):** What characterizes the climate and organizational context of effective schools?

For more information on methods, see the summary provided in the Appendix; more detailed descriptions of the methodological approach are available in Jackson et al. (2020), Jackson et al. (forthcoming), and Porter et al. (2023).

CHAPTER 2

Findings

1. Effective high schools—those that fostered multiple dimensions of student growth—improved students' short- and long-run trajectories

The school effectiveness measure we developed comprises VAMs that represent high schools' contributions to students' eighth- to ninth-grade growth on SED (social well-being, and academic effort and work), math and ELA test scores, and behaviors, respectively. We examined the impact of attending a school that fostered growth on all of these dimensions—what we term an *effective school*—on short- and long-run student trajectories.

In the short-run, we examined the impact of attending an effective school on ninth-grade measures, including math and ELA test scores, SED, and behaviors. We found that, on average, attending a school at the 85th percentile of school effectiveness, vs. one at the median, improved test scores by 8.90% of a standard deviation, self-reports of SED by 10.2% of a standard deviation, and observed behaviors by 5.71% of a standard deviation (**see Table 2**).

In the long-run, effective schools promoted successful progression through high school and into post-secondary education. Attending a high school at the 85th percentile of effectiveness, vs. the median, increased the likelihood of high school graduation by 2.41 percentage points and college-going (within two years of high school completion) by 2.57 percentage points (**see Table 2**). It also reduced the likelihood of being arrested on school grounds by 0.80 percentage points. The average school-based arrest rate was 3.72%, and thus this seemingly small reduction in school-based arrests amounted to about a 20% reduction in the likelihood that a student was arrested on school grounds. The significance of this finding is best understood in the sociohistorical context of racialized policing in the U.S., whereby the disproportionate arrest of Black and Latinx people is shaped by structural factors. To this point, the reduction in school-based arrest likelihood primarily affected Black and Latino boys and, importantly, was attributable to differences in institutions rather than students.

TABLE 2

More effective schools improved short- and long-run student trajectories

	1	2	3	4	5	6
	Test scores 9th grade	SED 9th grade	Behaviors 9th grade	High school graduation	Enrolled in any college within 2 years	School-based arrests
School effectiveness index	0.0890***	0.102***	0.0571***	0.0241***	0.0257***	-0.00804***
Number of students	102,235	120,129	157,628	82,146	55,564	82,146

Note: Each point estimate comes from a separate regression. Results are based on regression of outcomes on a single measure of out-of-sample school impacts (overall effectiveness, test score value-added, SED value-added, or behavior value-added). All models include individual demographic controls (race/ethnicity, free and reduced-price lunch, and gender), eighth-grade measures (math and ELA test scores, survey measures, absences, and discipline), and school-level averages for all the demographics and lagged measures, as well as year fixed effects. We also include the socioeconomic advantage or disadvantage of the student census block proxied by average occupation status and education levels. Missing eighth-grade measures were imputed using seventh-grade measures and demographic characteristics. For the longer-run college outcomes, the sample includes two cohorts of first-time ninth-graders in spring 2013 and 2014. For the longer-run high-school outcomes, the sample includes three cohorts of first-time ninth-graders in spring 2012, 2013, and 2014. For the measures, the sample includes six cohorts of first-time ninth-graders between spring 2012 and 2017. Sample sizes may differ across outcomes due to some missingness in ninth-grade test scores and surveys. *** indicates that differences are significant at p<0.01, ** indicates that differences are significant at p<0.05, and * indicates that differences are significant at p<0.1.

Together, these findings highlight the importance of considering multidimensional models of high schools' impacts on students' trajectories. The long-run impact of a school that supported multiple dimensions of students' development was about double the impact of a school that fostered only test score growth—and, as we discuss below, fostering socioemotional development accounted for much of the overall impact of schools. Thus, a key takeaway of our research is that focusing on schools' value-added to test scores alone will grossly underestimate the effect of high schools on their students.

2. The socioemotional development (SED) and behavior VAMs had the greatest impact on students' short- and long-run trajectories

Despite the historical emphasis on test scores in education policy and practice, research has shown that other student factors are important—for instance, SED is tied to healthy adjustment and positive identity formation.[12] Our research builds on these findings by showing that schools can meaningfully influence students' trajectories by fostering multiple dimensions of development, and especially SED.[13]

We found that relative to schools' impacts on test scores, schools' impacts on SED mattered about as much or more for students' short-run trajectories. **Table 3** (on p.8) shows the impact of the individual VAMs that constitute the school effectiveness measure on short- and long-run student trajectories. The test score VAM, SED VAM, and behavior VAM were each most impactful for their corresponding ninth-grade measure – e.g., the test score VAM had the greatest impact on ninth-grade test scores. However, when examining the impact of SED and test score VAMs on all ninth-grade measures, a remarkable pattern emerged. The SED VAM was about as impactful for ninth-grade test scores and behaviors as the test score VAM and nearly twice as important for ninth-grade self-reports of SED as the test score VAM.

The long-run impact of fostering SED was also greater than fostering test score growth. Fostering SED yielded nearly double the impact on high school graduation relative to fostering test score growth. Fostering SED was also 15–20% more impactful for improving enrollment in college and reducing school-based arrests relative to fostering test score growth. Comparing across all VAMs, fostering SED had the greatest impact on educational attainment and fostering behaviors had the greatest impact on reducing school-based arrest.

Together, these findings demonstrate that high schools' investments beyond test score growth had the greatest returns to academic thriving, educational attainment, and school-based arrests. Schools' impacts on students' reports of their SED, in particular, were an influential contribution to students' development and, in turn, students' longer-run postsecondary trajectories. These findings suggest that students' reports about their own socioemotional development are a reliable, rich source of information and a key to understanding the role of schools in shaping students' growth and trajectories from adolescence to early adulthood.

12 Immordino-Yang & Gotlieb (2017).

13 See also Angrist et al. (2016); Jackson (2010); Beuermann, Jackson, Navarro-Sola, & Pardo (2023).

TABLE 3

The SED and behavior VAMs had the greatest impact on students' short- and long-run trajectories

	1	2	3	4	5	6
	Test scores 9th grade	SED 9th grade	Behaviors 9th grade	High school graduation	Enrolled in any college within 2 years	School-based arrests
SED VAM	0.0623***	0.0840***	0.0276**	0.0197***	0.0192***	-0.00564**
Test score VAM	0.0682***	0.0445***	0.0267**	0.0106***	0.0168***	-0.00479***
Behavior VAM	0.0268**	0.0475***	0.228***	0.0116***	0.0167***	-0.0114**
Number of students	102,235	120,129	157,628	82,146	55,564	82,146

Note: Each point estimate comes from a separate regression. Results are based on regression of outcomes on a single measure of out-of-sample school impacts (overall effectiveness, test score value-added, SED value-added, or behavior value-added). All models include individual demographic controls (race/ethnicity, free and reduced-price lunch, and gender), eighth-grade measures (math and ELA test scores, survey measures, absences, and discipline), and school-level averages for all the demographics and lagged measures, as well as year fixed effects. We also include the socioeconomic advantage or disadvantage of the student census block proxied by average occupation status and education levels. Missing eighth-grade measures were imputed using seventh-grade measures and demographic characteristics. For the longer-run college outcomes, the sample includes two cohorts of first-time ninth-graders in spring 2013 and 2014. For the longer-run high-school outcomes, the sample includes three cohorts of first-time ninth-graders in spring 2012, 2013, and 2014. For the measures, the sample includes six cohorts of first-time ninth-graders between spring 2012 and 2017. Sample sizes may differ across outcomes due to some missingness in ninth-grade test scores and surveys. *** indicates that differences are significant at p<0.01, ** indicates that differences are significant at p<0.05, and * indicates that differences are significant at p<0.1.

3. Effective high schools had supportive, collaborative, and instructionally ambitious climates

Effective high schools served students with varying backgrounds and had strong climates and organizational contexts. Of ninth-grade students in our sample who attended schools in the top one-third of school effectiveness, about 47.1% were Black, 5.8% were White, and 42.3% were Latinx; 84% were eligible for free and/or reduced-price lunch; and 18% had a documented disability. These findings are significant because they suggest that many, though not all, CPS students who are members of historically marginalized communities had access to high-quality schools that positively supported their development.

In our analysis, we also examined the extent to which a simple average of the 5Essentials Survey school climate measures predicted schools' effectiveness in fostering student development and long-run thriving. School climate has been conceptualized as the cultural norms and values reflected in (and imparted by) school policies and practices.[14] Existing research on school climate provides substantial evidence of a positive correlation between student academics and school climate—in short, schools with better climates tend to serve students with better academic records.[15] Building on this research, our work found that schools with better climates had positive *impacts* on student development.[16]

Specifically, we found that the composite *5Essentials* Survey climate measure strongly and positively predicted school effectiveness. As represented in **Figure 1**, schools that were one standard deviation higher in school climate were, on average, 0.6 standard deviations higher in school effectiveness. Each of the essentials also independently predicted school effectiveness, with Supportive Environment, Ambitious Instruction, and Collaborative Teaching each independently explaining more than one-third of the variation in school effectiveness (**see Table 4**). Together, these survey findings

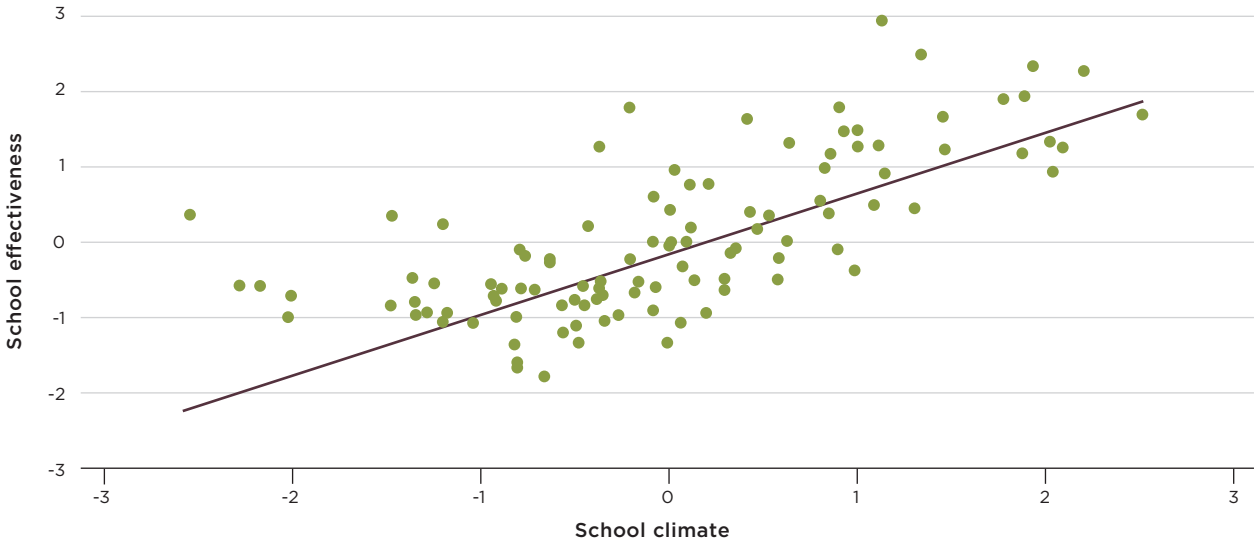
14 Hallinger & Heck (1998); Hallinger & Heck (1999); Sheldon & Epstein (2005); Robers, Zhang, & Truman (2012); Reys, Reys, Lapan, Holliday, & Wasman (2003).

15 Bryk et al. (2010); Borman, Hewes, Overman, & Brown (2003); Cohen, McCabe, Michelli, & Pickeral (2009); Durlak, Weissberg, Dymnicki, Taylor, & Schellinger (2011); Sebastian & Allensworth (2012); West et al. (2016); Heck & Hallinger (2009); Berkowitz, Moore, Astor, & Benbenishty (2017).

16 Bloom, Unterman, Zhu, & Reardon (2020) examined the relationship between features of high schools and schools' impacts on graduation rates for a particular type of school (small schools). We expand on this work by focusing on a school district and examining multiple dimensions of schools' impacts on students.

FIGURE 1

School climate predicted school effectiveness



Note: The *5Essentials* Survey school climate measures include teacher and student reports of five components of school climate: Supportive Environment, Ambitious Instruction, Collaborative Teachers, Effective Leaders, and Involved Families. Results are based on regressions of school effectiveness on the individual components of school climate as well as a summary composite of all components of school climate. Multiple survey measures comprise each construct. Each datapoint on the graph represents a school.

TABLE 4

Each of the essentials also independently predicted school effectiveness

Essentials	Coefficient	R Squared
Effective Leaders	0.535***	0.234
Collaborative Teachers	0.713***	0.421
Involved Families	0.623***	0.264
Supportive Environment	0.753***	0.704
Ambitious Instruction	0.799***	0.670
All *5Essentials* together		0.756

Note: Results are based on regressions of school effectiveness on the individual components of school climate as well as a summary composite of all components of school climate. Multiple survey measures comprise each construct. *** indicates that differences are significant at p<0.01, ** indicates that differences are significant at p<0.05, and * indicates that differences are significant at p<0.1.

were consistent with prior literature suggesting that **1)** a school's influence on student development operates through a complex ecology of its students, personnel, policies, and practices, and **2)** adolescents may be particularly responsive to rigorous academic environments with relational ties that scaffold and support their success.[17]

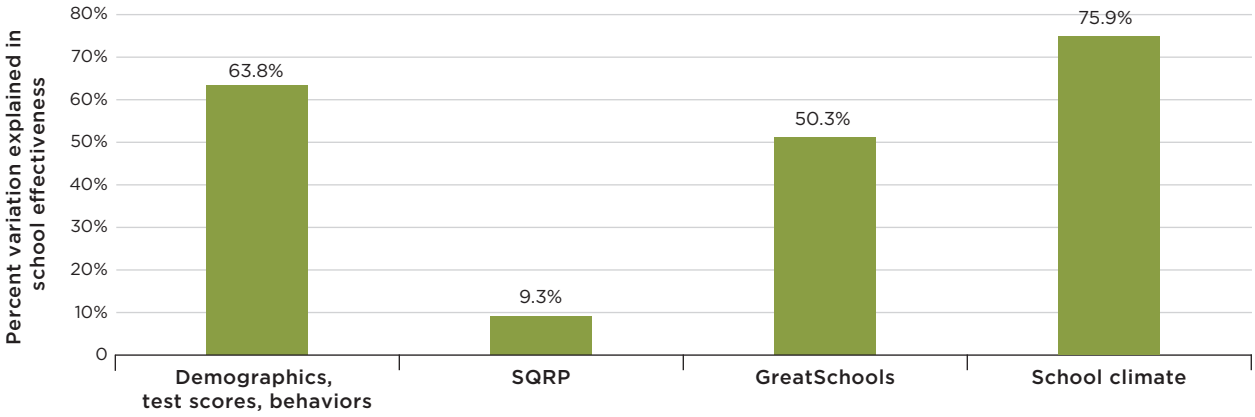
One implication of our findings is that, given the strong and positive relationship between school climate and school effectiveness, climate could serve as a proxy indicator of school effectiveness when effectiveness data are not readily available. In some districts, including CPS, school climate information is publicly available. To examine the usefulness of school climate as an indicator of effectiveness, we comparatively examined the relationships between our measure of school effectiveness and various other publicly available information about schools, including behavioral and test score data and two composite ratings of school quality, the CPS SQRP and the GreatSchools Summary Rating (**see Figure 2**).[18]

17 Hamre & Pianta (2006); Bronfenbrenner (2005); Eccles & Roeser (2011); Jennings & Greenberg (2009); Osterman (2000).

18 The CPS School Quality Rating Policy (SQRP) is the district's policy for measuring annual school performance; SQRP includes *5Essentials* measures in its calculation. See details at: https://www.cps.edu/about/district-data/metrics/sqrp/ The GreatSchools Summary Rating is a measure of how well schools are serving students across a particular state. For more on this rating and its evolution, see: https://www.greatschools.org/gk/ratings/#summary-rating. The GreatSchools Thrive Award is based on data from the *5Essentials* Survey. For details, see: https://www.greatschools.org/gk/thrive-award-methodology/

FIGURE 2

School climate explains comparatively more variation in schools' effectiveness than other publicly available information about schools



Note: Graph represents the results of regressing the school effectiveness measure on, respectively, the *5Essentials* Survey school climate measures, the GreatSchools Summary Rating, the CPS SQRP (school quality rating), and a combination of school demographics, average mathematics and ELA large scale assessment test scores, and average attendance and suspensions. School climate explains more of the variation in school effectiveness than other publicly available information about schools. These findings do not speak to the broader meaningfulness or other potential uses of this information about schools.

We found that school climate (as measured by the *5Essentials* Survey student and teacher reports) explained the largest share of the variation in this measure of school effectiveness relative to other publicly available information about schools. **Figure 2** shows that school climate explained approximately three-quarters (75.9%) of the variation in school effectiveness on its own, 18 percentage points more than demographics, average math and ELA test scores, and average behaviors (suspensions, disciplinary infractions, and attendance) combined (63.8%). While school climate explains more of the variation in school effectiveness than either school quality rating, these findings do not speak to the broader meaningfulness of those ratings, nor to the other potential purposes or uses of the ratings. Instead, these findings point specifically to the exceptional utility of school climate as an indicator of school effectiveness and contribute to the growing body of evidence on the relationship between school climate and student thriving.

CHAPTER 3

Interpretive Summary

The three recent studies summarized in this report provide strong evidence of **1)** the importance and value of factors beyond test scores—and, in particular, socioemotional development (SED)—for adolescents as they transition into high school, and **2)** the role of high school climate and organizational context in shaping students' SED and longer-run trajectories.

When schools foster SED, students are more likely to thrive in high school and beyond.

Relative to schools that fostered only test score growth, schools that promoted growth on *all* of the dimensions we studied (SED—both social well-being and academic effort and work—test scores, and behaviors*)* had a far greater impact on student success at the end of ninth grade. Attending these effective schools had positive impacts on students' long-run trajectories, including increasing the likelihood of high school graduation and college enrollment. These same schools reduced the likelihood of school-based arrest, as well, thereby reducing students' racialized interactions with law enforcement. Our research adds to the encouraging evidence base that shows the value of socioemotional development. Collectively, this evidence strongly suggests the need to take a more holistic view of adolescents—consistent with recommendations from research oriented in whole child, culturally-sustaining, and trauma-informed frameworks.

Many 'school quality' measures miss the important ways in which high schools foster student thriving.

Our findings, which point to the importance of SED measures in understanding high school impacts, show that effective high schools cultivate an environment in which: students and teachers interact positively and productively, students develop connections to their peers and feel a stronger sense of belonging in their schools, and students' orientation toward hard work, effort, and engagement is nurtured and supported.

Based on this research, school quality measures that are based primarily on test scores will underestimate or misidentify many impactful schools. The gap between what happens at effective schools and what is captured in school quality measures may already be apparent to the educators most familiar with their schools; this research underscores the size of that disconnect.

School climate is strongly and positively tied to school effectiveness.

This research found that school culture, policies, and norms predicted high schools' impacts on multiple dimensions of student growth. More research is needed to unpack the nature of this relationship; however, one possibility is that a strong school climate raises the capacity of educators to develop an environment that is tailored to the needs of their students. A hint that this may be the case is that effective schools seemed to reliably meet the needs of their particular students year after year, perhaps suggestive that leaders and teachers in effective schools had the capacity (e.g., support, strategies, professional development) needed to be adaptive and responsive as circumstances, students, and/or staffing changed over time.

Effective schools are rigorous and relationship-oriented.

Three aspects of school climate—Supportive Environment, Ambitious Instruction, and Collaborative Teachers—were the strongest predictors of school effectiveness. These results are consistent with other evidence pointing to the importance of relationships in educational settings, which feature prominently in these climate measures. One important implication of this work (and other work with similar findings) is that it may be more productive to understand rigor and relationships as functioning in concert rather than independently. Consider, for example, a school community in which educators collaborate with one another to develop

rigorous instructional strategies, teachers and students build relationships that enable the creation of classwork and experiences that feel relevant to students, and students feel empowered to deeply engage with challenging work given the support of their teacher and peers.

And last, student and teacher voices are reliable, valuable, and valid guides for school improvement. What students and teachers have to say about their school experiences matters greatly. We found in this research that schools' impacts on students' self-reports of SED were more strongly related to students' longer-run thriving than schools' impacts on test scores.

Extrapolating from our findings, we encourage schools and supporting organizations to **1)** accelerate the pace at which more culturally-responsive survey measures are adopted that can more accurately capture experiences and learning of a broad range of students, and **2)** pursue other means of capturing rich student and teacher voice beyond surveys, such as focus groups, discussions and reflections, and informal and formal interviews. In seeking student voice, in particular, it will be important to situate students as agents of change, empower them to share their perspectives, and demonstrate in observable ways how these perspectives are influential and valued.

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Appendix

Measuring school impacts

Historically, VAMs have been used in educational contexts to estimate teachers' and schools' influence on large scale assessment test scores; CPS includes test score VAMs as part of its school and teacher evaluation policies. In line with prior research, we extended and broadened the use of VAMs to examine school impacts on students' socioemotional development, test scores, and behaviors between eighth and ninth grade.[19]

Many factors predict students' change or development from eighth to ninth grade (e.g., grades, attendance, test scores, and family's socioeconomic circumstances); VAMs holds these factors constant so that we are able to isolate the plausibly *causal influence* of the school separate from these other factors. **Thus, SED VAMs, for example, can be interpreted as capturing how much self-reports of SED change from eighth to ninth grade due to attending a particular school.** We constructed VAMs for each of the domains of self-reported SED (i.e., *social well-being* and *academic effort and work*), a combined VAM for behaviors (which includes attendance, disciplinary incidents, and suspensions), and a combined VAM for large scale assessment test scores (which includes reading and math test scores). Test score and SED VAMs were strongly correlated, while the behaviors VAM was the least strongly correlated with each of the other VAMs (**Table A.1**).

To ensure that our estimates of school impacts were plausibly causal, we conducted two types of statistical selection tests. The results of both of these tests were consistent with a causal interpretation of school impacts on SED, test scores, and behaviors. To prevent issues of endogeneity, we employed a leave-year-out technique that constructed school VAMs for students in a given cohort, using only data from students in other cohorts. In analyses, VAMs were estimated with drift, giving greater weight to more recent years. For full methodological details, see Jackson et al. (forthcoming).

Creating a school effectiveness index

To determine how to mathematically combine and weight the four school VAMs for the measures described above (social well-being and academic effort and work SED, behaviors, and test scores) into a summary index of school effectiveness, we entered all of the VAMs into a factor analysis. The factor analysis revealed that all four VAMs loaded onto a single factor, but that the two SED components should receive the greatest weightings. Our operationalization of school effectiveness is thus unique in its emphasis on SED, relative to

TABLE A.1

Correlations (Rs) of school-level VAMs (143 schools)

	Test score VAM	Academic effort & work SED VAM	Social SED VAM	Behaviors VAM
Test score VAM	1			
Academic effort & work SED VAM	0.4449	1		
Social SED VAM	0.4795	0.6486	1	
Behaviors VAM	0.1468	0.0205	0.0746	1

Note: Each VAM represents school impacts on a different dimension of student growth or development. The correlation between the test score and SED VAMs is substantially greater in magnitude than correlations between behavior VAM and any of the other VAMs. This difference could reflect measurement error or more unique variation in schools' contributions to behaviors relative to other dimensions.

19 Heckman et al. (2006); Kautz et al. (2015); Jackson (2016).

test scores and in-school behaviors. As we demonstrated in the original empirical work, the overall school effectiveness index is a better predictor of ninth-grade students' short- and long-run trajectories than any one of the VAMs alone; however, SED frequently accounts for most of the high school impacts on short- and long-run trajectories.

Assessing the relationship between school climate and school effectiveness

In order to assess the relationship between school climate and school effectiveness, we collapsed data on schools between 2010–11 and 2016-17 and constructed school-level summaries of the *5Essentials* Survey measures. Survey response rates were high (greater than 70%); however, the likelihood of nonresponse was higher for students with lower grades and test scores. Essentials include the following:

- Effective Leaders measures the extent to which principals have a clear and strategic vision for the school, uphold rigorous instructional standards, support instruction and materials that coheres across subjects and grade levels, provides teachers with opportunities for professional development, and fosters teacher voice and buy-in.
- Collaborative Teachers measures the extent to which teachers are committed to the school, receive strong professional development, assume shared responsibility in supporting students, work together to improve instruction, enforce roles, and shape policies within the school.
- Involved Families measures the extent to which the school staff views parents, guardians, and communities as partners, builds strong relationships with families and communities, and engages these critical constituents in supporting students' success in school.
- Supportive Environment measures the extent to which the school creates provisions for a safe and orderly environment that promotes learning. Supportive environments are evidenced by fair and consistent implementation of rules governing student behavior, teachers who have high expectations for academic achievement and participate in individual relationships with students, and peers who support and respect one another.
- Ambitious Instruction measures the extent to which classes are intellectually demanding, engage students by emphasizing the application of knowledge, and where appropriate, require teamwork and metacognitive strategies, like self-monitoring of progress on complex projects, to be successful.

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