

## A Brief Look at How School Climate Distinguishes Schools That Are Beating the Achievement Odds

*Amid a national education conversation fraught with themes of dropout factories and achievement gaps, educators, researchers, and policymakers are striving to identify factors that characterize successful public schools. A growing body of research suggests that school climate may be an important variable in explaining why some schools are more successful than others. School climate includes such factors as a school's order; safety and discipline; supports for teaching and learning; personal and social relationships; and, school connectedness.*

Positive school climate has been associated with better student academic achievement, graduation, and behavioral outcomes, and has been the target of several recent initiatives for school reform, including the federal Safe and Supportive Schools program.<sup>1</sup>

The study, *A Climate for Academic Success*, contributes to this research by exploring the climate of a handful of schools with extraordinary success compared to that of other schools, including those that consistently underperform. School success is often defined in absolute terms, such as average standardized test scores. But such criteria are known to be strongly correlated with the socioeconomic characteristics of a school's student body. And the fact that a largely affluent student body is linked to school success offers little useful direction for those trying to improve achievement in struggling schools with low-income student populations.

To address this limitation, the present study's design and methodology take student characteristics into account. Specifically, a successful school is defined as one whose test scores are better than would be predicted based on its student characteristics. Using this definition, the study, *A Climate for Academic Success*, investigated how two factors, school

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climate and school personnel resources—used for comparison in data analysis—differed among three groups of California secondary schools: those that performed much better across multiple years than their student characteristics would predict, referred to as *beating-the-odds* (BTO) schools (Perez et al., 2007);<sup>2</sup> those that performed much worse than would be predicted over multiple years, referred to as *chronically underperforming* (CU) schools; and other, “regular” schools.

Using a sample of 1,715 California middle and high schools, the study revealed these key findings:

» The 40 BTO schools (2.4 percent of the sample) had substantially more positive school climates »

than both the 20 CU schools (1.2 percent) and all other secondary schools (96.4 percent).

- » BTO schools had climate scores at the 82nd percentile, on average, whereas regular secondary schools were at the 49th percentile, on average.
- » Differences in school climate were twice as large between BTO schools and CU schools.
- » The probability of beating the odds for a school with a climate in the top five percent is over ten times that of a school with an average climate.

The rest of this brief describes selected research informing the study, *A Climate for Academic Success*; methodology and data sources; and findings related to the three questions guiding the study. Those questions are:

- » What are the reported differences in school climate by students in successful versus unsuccessful schools?
- » How are school climate and personnel resources, respectively, related to the likelihood of academic success?
- » What are the practical implications of these findings for improving the academic performance of schools?

## What the research says

### Successful-schools approach

The *successful-schools* approach has traditionally been used by education-finance scholars to determine appropriate school expenditure levels. Researchers

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define success, they calculate how much successful schools are spending, and this spending figure becomes a sort of norm for the resources required to make schools successful. However, as argued in a report by the American Institutes for Research (Perez et al., 2007), using absolute criteria to define adequate resources for success is overly simplistic and ignores the impact of student characteristics

on resource needs. Schools that serve students who are predominantly low-income and/or have special needs are likely to have higher resource needs per-student. If such schools are systematically excluded from being identified as successful, the results of any analysis linking resources and success will be biased. The study, *A Climate for Academic Success*, appropriates the elegance of the successful-schools model, while also accounting for demographics.

### Effective schools

There is a rich body of research on identifying the characteristics of successful or effective schools. In large part, this research grew from the findings of the Coleman Report (Coleman et al., 1966),<sup>3</sup> which stressed student demographics as the most salient predictor of academic success. For decades, research on effective schools has boiled down to a handful of factors: leadership, relationships, and teaching and learning, to put it most generally. Purkey and Smith (1983)<sup>4</sup> referred to these factors collectively as *school culture* or *school climate*, identifying them as the most important factors enabling a school to facilitate student achievement. In a review of over 300 studies, commissioned by the U.S. Department of Education (Visher, Emanuel, & Teitelbaum, 1999),<sup>5</sup> the predictors of effectiveness were high ▀

## Methodology and data sources

### School climate

The study, *A Climate for Academic Success*, used the School Climate Index (SCI), developed for the California Safe and Supportive Schools project, to measure school climate. It is based largely on student self-report data from the California Healthy Kids Survey (CHKS), which measures such dimensions of school climate as safety, bullying, and harassment; developmental supports (e.g., adult high expectations, caring relationships, and opportunities for meaningful participation); and school connectedness. It also includes truancy data extracted from the California Basic Education Database System (CBEDS) of the California Department of Education. The SCI ranges from 100 to 500, with a mean of 300 and a standard deviation of 50.

### School personnel resources

A school's personnel resources<sup>6</sup> (e.g., teacher and administrator experience) are an alternative explanation for academic success. These factors were included in the analysis in order to examine the connection between climate and success

even between schools with the same amount of resources. Data on personnel resources for the sample schools were derived from CBEDS. A single personnel-resources index was created, which gives each school a standardized score that reflects teacher experience, administrator experience, and proportion of staff who are in student-services roles.

### Student and demographic characteristics

Several databases were combined to create a profile of public middle and high schools in California from 2007/08 to 2010/11. Information regarding schools' racial composition, proportion of English learners, and proportions of students eligible for free- or reduced-price lunch and special education services were drawn from the CBEDS Academic Performance Index database.

### Outcome measures

Academic performance indicators were accessed through the California Standardized Testing and Reporting program. The academic outcomes of interest were middle school English language arts and

math scores on the California Standards Tests (CST) from 2007/08 to 2010/11 and high school CST math scores in grade 10 on the California High School Exit Exam from 2008/09 to 2010/11.

### Sample

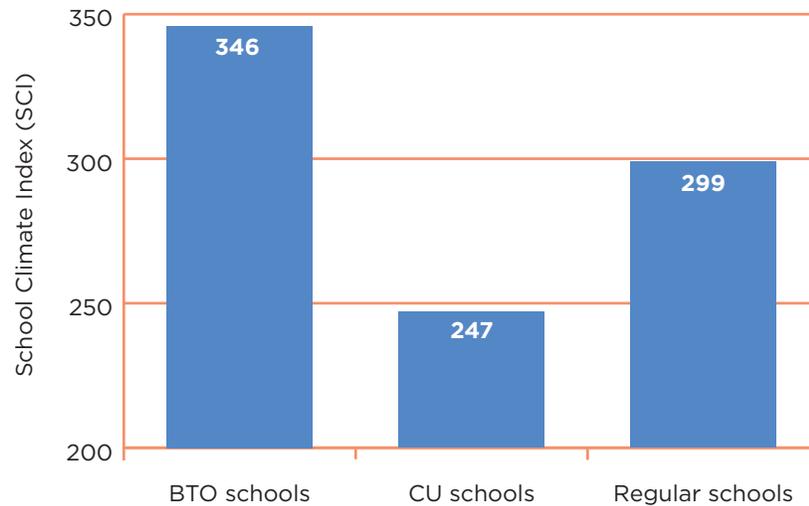
The sample for this analysis included 1,715 California middle and high schools that administered the CHKS during the 2008/09 and 2009/10 school years. BTO and CU schools were identified based on the difference between their actual state standardized test performance between the 2007/08 and 2010/11 school years and their predicted performance in consideration of their student demographics, as identified through CBEDS data. To be classified as BTO or CU, a school had to beat the odds or underperform in each of these four years. Out of the sample of 1,715 schools, this selection process resulted in 40 schools (2.4 percent) being classified as BTO (17 middle schools and 23 high schools). Twenty schools (1.2 percent) were identified as CU (13 middle schools and seven high schools).

expectations, parent involvement, staff development, and more intimate learning environments, along with initiatives to connect learning with students' interests and career plans. Factors identified by Marzano (2003),<sup>7</sup> in a more recent review, overlap heavily with those already mentioned. These findings have been further corroborated by a comprehensive empirical study of Chicago public schools by Bryk and colleagues (2010).<sup>8</sup>

### School climate

The terms “school culture” and “school climate” have regained prominence in education only in the last several years. A positive school climate has been associated with higher academic achievement and healthy behavioral outcomes for students. Brand and colleagues (2003)<sup>9</sup> found multiple dimensions of school climate to be significantly associated with student academic, behavioral, and socio-emotional well-being in a large, nationally representative sample of middle school students. The association between climate and achievement has been confirmed in data from California middle and high schools (Hanson, Austin, & Zheng, 2011).<sup>10</sup> Patton and colleagues (2006)<sup>11</sup> conducted one of the few documented randomized trials involving school climate, which showed that an intervention designed to enhance

**Figure 1. School Climate in Beating-the-Odds, Chronically Underperforming, and Regular Schools**



school connectedness and student engagement had the effect of reducing the frequency of student health-risk behaviors and substance use.

### Answers to research questions

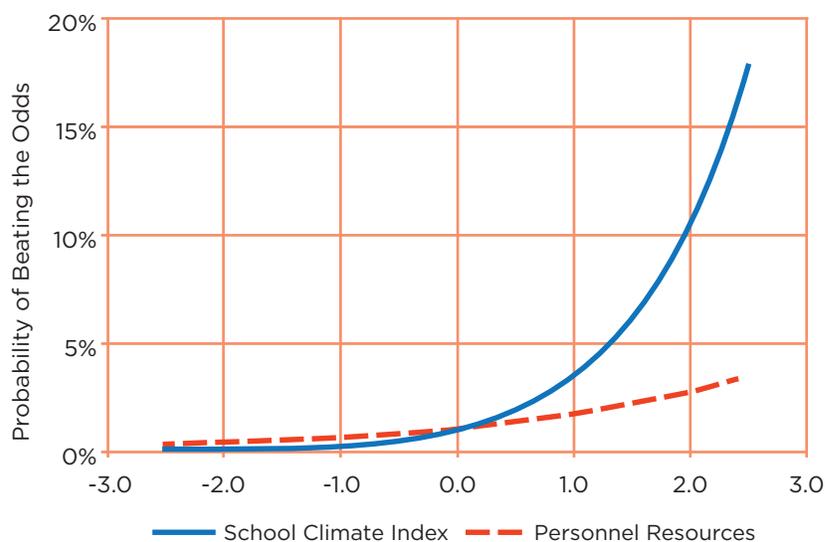
#### What are the reported differences in school climate by students in successful versus unsuccessful schools?

Do BTO and CU schools have different school climates compared to each other, as well as to other, or “regular,” public secondary schools in California?

The data suggest that they do. Figure 1 depicts the SCI differences across BTO, CU, and regular secondary schools. BTO schools had much higher SCIs than regular schools. Expressed in percentiles, the difference in SCI between BTO and regular schools was 33 percentiles (82nd and 49th, respectively). The difference in SCI between BTO and CU schools was more than twice as large: 68 percentiles (82nd and 14th, respectively). These are dramatic differences by social-science standards.

One explanation for these school climate gaps among between BTO, CU, and regular schools might be that there are unmeasured factors that underlie both

**Figure 2. A School's Probability of Beating the Odds, Based on Its School Climate Index and Personnel Resources**



school climate and performance. For example, BTO schools also had smaller enrollments, fewer students in poverty, and more personnel resources (e.g., teachers per student and experienced teachers and administrators). These differences may explain both BTO status and school climate. However, analyses that controlled for these factors confirmed that, student demographics, school size, and personnel resources being equal, BTO schools still had more positive climates, and CU schools had less positive climates than regular schools.

**How are school climate and personnel resources, respectively, related to the likelihood of academic success?**

In this analysis, school climate, personnel resources, and student demographics were each treated as predictors of a school's likelihood of beating the odds. A school's SCI had the strongest association with its likelihood of beating the odds. Figure 2 shows that, in an average secondary school in California, the probability of beating the odds increases as both SCI and personnel resources increased, but the increase in probability was much higher for school climate.

In an average California secondary school, where the mean for both SCI and personnel resources was set at 0 for purposes of analysis, the probability of beating the odds was very low, only about 1 percent. As the SCI improved, the probability of beating the odds increased exponentially. Figure 2 shows the probabilities of beating the odds associated with SCIs and personnel resources between -2.5 and 2.5 standard deviations from the mean.

- » An SCI of 350, one standard deviation above the mean, is associated with a 3.5 percent probability of beating the odds.
- » An SCI of 400, two standard deviations above the mean, is associated with a 10.6 percent probability of beating the odds, or ten times higher than for an average school.
- » An SCI of 425, two and a half standard deviations above the mean, is associated with a 17.8 percent probability of beating the odds.

Moreover, a school that has a SCI equal to the highest SCI value in the sample (480, or 3.6 standard deviations) has a 44.5 percent estimated probability of beating the odds (not shown in Figure 2). In contrast, while increases in personnel resources are also associated with increases in

probabilities of beating the odds, the effect is much smaller. With a level of personnel resources two standard deviations above the mean, there is only a 2.8 percent probability of beating the odds.

### What are the practical implications of these findings for improving the academic performance of schools?

This study adds to the large and growing body of research demonstrating that safe, supported, and engaged students perform better in school. While the likelihood of beating the odds is low for all public middle and high schools in California, an exceptional school climate is associated with an exponentially higher probability. In contrast, the results suggest that school climate has more to do with BTO than personnel resources do. The effect size for school climate is more than twice as large. Even in a school with the optimal level of personnel resources, the probability of beating the odds is still only 3.9 percent. For student demographics, the association with BTO probability is not significantly different from that with school climate. Enrollment appears to be the main driver of the association between student demographics and BTO, with smaller student bodies predicting a greater likelihood of BTO.

It is prudent to refer to the relationship between school climate and school success as “association,” rather than as “cause and effect,” however tempting it may be to assert causality. While this study addresses some alternative explanations for why school climate and performance are related, there are many potential factors

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not included in this study that could affect both of these variables. Nevertheless, it is clear from the results of this analysis that BTO schools have significantly more positive school climates.

Future research could build on the work of this study by looking at the relationship between school climate and success over time, to better assess causality. Additional research could use the schools identified as BTO in this study as model cases from which to learn

about best practices for school success and school climate.

There is little question that students’ demographics are a major determinant of their academic success and that broad initiatives are needed that target the social forces that make low-income, racial-minority, and English-learner students less successful in school.

As noted earlier in this brief, however, many characteristics that have been statistically shown to put students at a disadvantage—such as race, socioeconomic status, first language, and special needs—are not within a school’s or district’s ability to address alone. The approach employed in this study helps direct the focus of research toward characteristics of schools that can be targeted through intervention and changed, toward measures that educators can take to meet students at their current level of achievement and improve their learning. School climate is a malleable factor that schools or districts are able to manipulate.

Among the more commonly employed strategies for improving climate at the school level are schoolwide prevention approaches that involve all staff in the installation of a behavior-management system, and student social and emotional learning approaches that rely on classroom social-skill instruction. For example, some schools have implemented

restorative justice programs—as opposed to traditional, punitive discipline codes—that focus on the relationship between the perpetrator of misbehavior and members of the school community, including potential victims and their families. Another example is transformative classroom management that leverages students' motivation and engagement in order to increase adherence to classroom behavioral norms.

This study suggests that a positive school climate may be beneficial for all schools, serving all types of students. This news is especially encouraging for schools whose students face socioeconomic barriers to academic success. These schools *must* beat the odds in order to achieve conventional levels of success. This study shows that certain schools are beating the odds and achieving extraordinary academic outcomes, and these schools have a positive school climate in common.



*The full report from which this brief was produced, A Climate for Academic Success: How Climate Differentiates Schools That Are Beating the Achievement Odds, was authored for the California Comprehensive Center at WestEd by three members of WestEd's Health & Human Development program staff: Adam Voight, School Climate Technical Assistance and Research*

*Specialist; Gregory Austin, Director; and Thomas Hanson, Senior Research Associate.*

## Endnotes

1. California is one of 11 states that received federal Safe and Supportive Schools grants to improve the learning conditions and other school climate factors in low-performing high schools. For more information and access to a wide range of resources to assist school climate improvement efforts, visit the project website: <http://californias3.wested.org/>.

2. Perez, M., Anand, P., Speroni, C., Parrish, T., Esra, P., Socías, M., & Gubbins, P. (2007). *Successful California schools in the context of educational adequacy*. Washington, DC: American Institutes for Research.

3. Coleman, J. S., Campbell, E. Q., Hobson, C. J., McPartland, J., Mood, A. M., Weinfeld, F. D., & York, R. L. (1966). *Equality of educational opportunity*. Washington, DC: U.S. Department of Health, Education, and Welfare, Office of Education.

4. Purkey, S. C., & Smith, M. S. (1983). Effective schools: A review. *The Elementary School Journal*, 83(4), 426–452.

5. Vishner, M. G., Emanuel, D., & Teitelbaum, P. (1999). *Key high school reform strategies: An overview of research findings*. Washington, DC: U.S. Department of Education.

6. The personnel resources index is an average of standard scores on six

indicators: (a) average teacher education; (b) average teacher experience in education; (c) average administrator experience in education; (d) percentage of teachers with tenure; (e) percentage of teachers with full credentials; and (f) number of student-services staff.

7. Marzano, R. J. (2003). *What works in schools: Translating research into action*. Alexandria, VA: Association for Supervision and Curriculum Development.

8. Bryk, A. S., Sebring, P. B., Allensworth, E. M., Luppescu, S., & Easton, J. Q. (2010). *Organizing schools for improvement: Lessons from Chicago*. Chicago: University of Chicago Press.

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10. Hanson, T., Austin, G., & Zheng, C. (2011). *The relationship of academic achievement and school well-being*. Los Alamitos, CA: WestEd. Summary available for download at <http://www.childrennow.org/index.php/learn/beingwelllearningwell>.

11. Patton, G. C., Bond, L., Carlin, J. B., Thomas, L., Butler, H., Glover, S., Catalano, R., & Bowes, G. (2006). Promoting social inclusion in schools: A group-randomized trial of effects on student health risk behavior and well-being. *American Journal of Public Health*, 96, 1582–1587.

## For more information

- » For more information on assessing school climate and on the CHKS see Austin, G., O'Malley, M., & Izu, J. (2011). *Making sense of school climate*. San Francisco: WestEd. Available for download at <http://californiaS3.wested.org/tools>.
- » For information on the development and use of the School Climate Index, see Hanson, T. (2012). *Construction of California's School Climate Index (SCI) for high schools participating in the Safe and Supportive Schools Program*. San Francisco: WestEd. Download at: <http://californias3.wested.org/about>. The SCI is used in preparation of School Climate Report Cards, which can be downloaded from the same website.

## About the California Comprehensive Center

WestEd operates the California Comprehensive Center (CA CC), one of 16 Regional Comprehensive Assistance Centers funded by the U.S. Department of Education. With California's diverse student population and complex needs, technical assistance is essential to extend the capacity of the California Department of Education (CDE) and other state-level stakeholders.

The CA CC, a partnership between WestEd and the American Institutes for Research, provides intensive technical assistance to the CDE in several areas, including:

- » Ensuring a high-quality schooling framework to support effective instruction and student outcomes
- » Planning and successfully implementing the Common Core State Standards
- » Supporting educator excellence
- » Increasing capacity to support productivity, effectiveness, and efficiency

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