What's Happening

September 2014

The appropriateness of a California student and staff survey for measuring middle school climate

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Key findings

This analysis of response data from middle school students and teachers on the California School Climate, Health, and Learning Survey examines the appropriateness of the survey for identifying needs and monitoring changes in school climate. The study finds that student and staff surveys validly and reliably assess distinct school climate domains, such as safety and connectedness, meaningful participation, bullying and discrimination, and caring staff–student relationships. All school-level domain measures were associated in expected ways with school-level student academic performance and suspensions.

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Summary

A growing number of states and school districts use school climate assessments in progress reporting systems (Nathanson, McCormick, Kemple, & Sypek, 2013; Shah, 2013) and are interested in incorporating these assessments into accountability systems (Rockoff & Turner, 2010). This study examines the appropriateness of the California School Climate, Health, and Learning Survey (Cal-SCHLS) for identifying needs and monitoring improvements in school climate domains and for differentiating between individuals in their perceptions of school climate and between schools in their levels of school climate. It analyzes survey response data for 730,160 grade 7 students from 2004/05 through 2010/11 in 1,117 California middle schools and 16,255 teachers from 2008/09 through 2010/11 in 812 California middle schools to examine the following research questions:

- What school climate domains in middle school do the survey items measure?
- How reliably do the survey items measure school climate at the respondent and school levels?
- How stable are the school-level climate measures?
- Are the school climate measures related to student achievement and discipline infractions?

Three analytic strategies were used: exploratory/confirmatory factor analysis, estimation of respondent- and school-level reliability, and estimation of correlations of school climate measures over time and with student academic performance and suspensions.

School climate domains measured by surveys

Analyses of responses to the 40 student survey questions relevant to students' in-school experiences find that this survey can be used to validly and reliably assess student perceptions about six school climate domains:

- Safety and connectedness.
- Caring relationships with adults.
- Meaningful participation.
- Substance use at school.
- Bullying and discrimination.
- Delinquency.

Analysis of teacher responses to the 64 staff survey questions finds that this survey can be used to validly and reliably measure teacher perceptions of seven school climate domains:

- Support and safety.
- Caring staff–student relationships.
- Staff–peer relationships.
- Professional development needs.
- Student health and engagement.
- Student delinquency.
- Resource provision.

For both student and staff surveys the identified school climate domains are consistent with those identified by other middle school climate surveys.

Reliability of school climate measures

All the school climate measures exhibit adequate respondent- and school-level reliability, indicating that the survey items measuring school climate at the respondent level do so consistently and can be used to identify differences in average school climate across schools. To obtain reliable school-level climate scores, a school must sample at least 100 students and 10 teachers.

Stability of school climate measures

School-level scores were more stable across one-year intervals for the staff survey than for the student survey. The school-level scores based on the student survey were slightly less stable than the scores in another school climate survey (Brand, Felner, Shim, Seitsinger, & Dumas, 2003), while those based on the teacher responses on the staff survey were slightly more stable than found in a previous survey (Brand, Felner, Seitsinger, Burns, & Bolton, 2008). The school-level correlations were weaker for the two-year intervals than for the one-year intervals for all of the student survey measures and for six of the seven staff survey measures. However, the analytic sample of schools that administered the surveys in consecutive years is small and unlikely to be representative of schools in the state, so comparisons between the one- and two-year stability estimates should be interpreted cautiously.

Predictive nature of school climate measures

All the school-level school climate measures were associated in expected ways with student academic performance and suspensions. Student performance was higher and suspension rates were lower in schools with a positive school climate. These results support the validity of the survey measures for each of the school climate domains identified in the study.

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Why this study?

A troubling number of schools and districts are stuck in a pattern of high dropout rates, high teacher turnover, poor student engagement and attendance, and low student proficiency in core subjects. One thing many of these schools have in common is a negative school climate, which increasingly is recognized as a major barrier to success (for example, Bryk, Sebring, Allensworth, Luppesco, & Easton, 2010). A growing body of research suggests that students who attend schools with a positive school climate—schools that are safe and supportive and that provide opportunities for students to engage in relevant and interesting activities—have better attendance, academic performance, and academic motivation and stronger socioemotional competence (Anderson, 1982; Benninga, Berkowitz, Kuehn, & Smith, 2003; Blum, McNeely, & Rinehart, 2002; Bowen & Bowen, 1999; DeJung & Duckworth, 1986; Eccles et al., 1993; Hanson, Austin, & Lee-Bayha, 2004; Rumberger, 1987; Voight, Austin, & Hanson, 2013; Wu, Pink, Crain, & Moles, 1982).

Improving school climate is important for its intrinsic value and for its instrumental value in improving student academic performance and college and career readiness

School climate also affects teachers. A good school climate is significantly related to lower teacher burnout (Grayson & Alvarez, 2008), greater teacher job satisfaction, and higher teacher retention (Kelly, 2004; Loeb, Darling-Hammond, & Luczak, 2005). Positive teacher perceptions of school climate are also associated with higher productivity (Bevans, Bradshaw, Miech, & Leaf, 2007; Lee, Dedrick, & Smith, 1991; Taylor & Tashakkori, 1995), improved teacher efficacy (Bevans et al., 2007) and greater fidelity in implementing new curricula and interventions (Beets et al., 2008; Gregory, Henry, & Schoeny, 2007).

Problems related to school climate are particularly acute in middle schools. The rate of violent incidents is almost twice as high in middle schools as in elementary and high schools (Neiman, 2011). Students in middle schools also report substantially higher bullying rates (Neiman, 2011).

Improving school climate is important for its intrinsic value (a safe and supportive environment is good in and of itself) and for its instrumental value in improving student academic performance and college and career readiness (Farrington et al., 2012). School climate has promise as a focus of intervention because it incorporates some of the root factors that undergird student academic performance (Bryk et al., 2010). Whereas schools and districts may not be able to intervene in other areas affecting student performance, such as families, neighborhoods, and macrosocial policy environments, school climate is within their ability to influence (Bradshaw, Koth, Thornton, & Leaf, 2009).

Understanding school climate

Getting an accurate picture of school climate is a crucial first step. Many state education agencies are developing school climate policies that include school climate assessments and data-driven improvement plans in schools (Piscatelli & Lee, 2011). The U.S. Department of Education has funded recent initiatives to support state education agency efforts to prioritize school climate, including the Safe and Supportive Schools initiative, the Safe Schools–Healthy Students initiative, and the Promise Neighborhood initiative. Grantees must measure, monitor, and evaluate school climate–related indicators. The California Office to Reform Education (CORE)—a consortium of 10 of the largest local education agencies in California—has proposed building school climate measures into the school accountability system (CORE, 2013), which would place school climate alongside standardized test scores as a component of high-stakes accountability. All these efforts require assessments with proven validity for interpreting scores as measures of school climate.

Understanding school climate has been the primary focus of the Middle Grades School Climate Alliance at the Regional Educational Laboratory West. The alliance operates as a networked improvement community in which each participating school convenes a team to analyze its school safety and climate data as a first step in selecting, implementing, and piloting strategies for creating a more positive school climate. The alliance's California members have been using the state department of education's California School Climate, Health, and Learning Survey (Cal-SCHLS) system, which consists of three interrelated surveys—one for students, one for school staff, and one for parents—for use in elementary, middle, and high schools (box 1). These surveys address particular school climate domains, such as relationships, academic expectations, and physical safety. (See appendix A for more detailed information on school climate domains and how these domains relate to student learning.)

The California Office to Reform Education has proposed building school climate measures into the school accountability system, which would place school climate alongside standardized test scores as a component of high-stakes accountability

Research questions

For this report, intended for researchers, data users, and evaluation personnel in education agencies, the study team analyzed Cal-SCHLS data from California middle schools to identify the school climate domains included in the survey; assess the reliability, stability, and accuracy of the surveys' measures for these domains; and determine how well performance in specific domains predicts other school-level academic and behavioral outcomes. Specifically, the study considered four research questions:

1. What school climate domains in middle school do the survey items measure?

This question concerns the usefulness of the surveys for identifying specific school climate–related needs at a school and for monitoring progress in improving specific school climate domains.

2. How reliably do the survey items measure school climate at the respondent and school levels?

This question seeks to identify how consistently the survey items measure each school climate domain and how well the school climate measures differentiate between schools. This question also considers how many students and teachers must be surveyed to obtain reliable scores for individual schools.

3. How stable are the school-level climate measures?

This question helps survey users understand which of the identified school climate domains are persistent and which are transitory features of a school's environment. The results on stability also provide lower bound estimates of test-retest reliability, which can help in interpreting the size of observed changes in school climate scores in a given school.

4. Are the school climate measures related to student achievement and discipline infractions?

This question explores the relationship between school climate measures and other measures of school functioning—in particular, academic achievement and suspensions.

Box 1. The California School Climate, Health, and Learning Survey system

This study examines the psychometric properties of one school climate instrument—the middle school surveys of the California School Climate, Health, and Learning Survey (Cal-SCHLS) system. Developed collaboratively by the California Department of Education and WestEd, the system consists of surveys for students, school staff, and parents for elementary, middle, and high schools.

All California districts that received Title IV (The Safe and Drug Free Schools and Communities Act) funds from 2003/04 to 2010/11 were required to administer the Cal-SCHLS student and staff survey every two years. Only about 10 percent of districts—those that did not accept Title IV funds—did not administer the survey. Because of funding constraints, administration of Cal-SCHLS became voluntary in 2010/11. Nonetheless, 80 percent of districts continued to administer the surveys.

Most of the analyses for this study were based on data collected during 2008/09 and 2009/10, the last two-year period that survey administration was mandatory. The stability analyses, however, were based on student data collected between 2004/05 and 2010/11 and teacher data collected between 2008/09 and 2010/11. No changes in survey questions occurred during the years covered in the analytic samples.

The student survey. The Cal-SCHLS middle school student survey includes a core module and supplementary modules targeting specific themes. The core module includes 115 items that assess students' perceptions of their school environment and their personal health and risk behaviors. The module was designed to assess school connectedness, developmental supports at the school (caring relationships, high expectations, and opportunities for meaningful participation), and school violence and safety. Only core module items that are relevant to students' in-school experiences are included in this study. The 40 items that apply to in-school experiences are shown in table B1 in appendix B.

The staff survey. The Cal-SCHLS middle school staff survey consists of three sections: the first for all staff and the other two for specialized staff. The study used only the first section and analyzed only the responses from teachers, not those from other school staff. That section includes 69 items designed to assess five school climate areas: safe learning environments, norms and standards that encourage student learning, quality of relationships between staff and between staff and students, student behaviors that facilitate learning, and services and programs that address nonacademic barriers to learning (Austin & Bailey, 2008). All items from the staff survey are shown in table B2 in appendix B, except for five items on staff background.

Many of the student and staff survey questions were designed to measure the same school climate concept from two different perspectives—that of the student and that of the teacher. For example, on caring relationships between staff and students, the student survey asks, "At this school there is an adult who really cares about me," while the staff survey asks, "How many adults in this school really care about every student?"

Box 2. Study methodology

Data

School climate data. The analytic student sample consists of 730,160 grade 7 students in 1,117 California middle schools surveyed from 2004/05 through 2010/11. Because only grade 7 students were surveyed, different grade 7 students were surveyed across years. The teacher sample consists of 16,255 grade 6–8 teachers in 812 middle schools surveyed from 2008/09 through 2010/11. Because teachers tend to remain at the same school for some time, the same teachers were likely surveyed year after year, although the data's anonymity prevents confirming that. Only data from 2008/09 and 2009/10 were used to answer research questions 1, 2, and 4 because this is the most recent period in which the participating schools and districts were representative of the state's schools and districts.

School academic performance data. To examine the relationship between school climate and academic performance (research question 4), the study team analyzed school performance data from the California Department of Education's Standardized Testing and Reporting program using California Standards Test scores for grade 7 and 8 English language arts and grade 7 math. The test is criterion-referenced to state-adopted academic content standards. Academic performance is based on test score data aggregated at the school level.

Suspension data. School-level suspension and expulsion data were from the California Department of Education's Uniform Management Information Reporting System database, which includes the number of students suspended and expelled, by infraction, for each school in the state. The California Department of Education does not provide suspension and expulsion data for specific grades. Suspension and expulsion counts were converted into rates per 100 students. Expulsion rates, however, did not vary enough across schools to be included in the analyses. Researchers then examined the relationship of school-aggregate construct scores with overall school suspension rates.

Analysis

Separate analyses were conducted for the student survey and the staff survey. (See appendix C for a more detailed description of the analytic methods and appendix D for more detailed results.)

What school climate domains in middle school do the survey items measure? Researchers estimated a series of exploratory and confirmatory factor analysis models to determine how well a set of unobserved variables, or factors, explain the survey response patterns. Factor analysis techniques were used to determine the number of underlying school climate factors measured by the Cal-SCHLS survey items and to understand what those underlying factors are.

Data were analyzed for 214,465 grade 7 students in 997 middle schools that administered the student survey and 14,806 teachers in 794 middle schools that administered the staff survey in the 2008/09 or 2009/10 academic years—the most recent period in which the participating schools and districts were representative of California schools and districts.

After the survey items were mapped onto the underlying school climate domains, respondent-level summary measures of each domain were calculated by averaging ratings on the associated items. School-level summary scores were created by averaging respondents' summary measures for each school. These school-level summary scores served as the basis of the stability and validity analyses below.

How reliably do the survey items measure school climate at the respondent and school levels? Respondent-level internal consistency reliability estimates using Cronbach's alpha were

(continued)

calculated to assess the extent to which each survey item used in a scale produces similar scores (the degree to which the scores produced by the items are internally consistent). The study team used Nunnaly's (1978) criterion of .70 as the cutoff for determining acceptable internal consistency reliability for the scales.

To determine school-level reliability, the intraclass correlation (the ratio of the between-school variation over the total variation of a measure) was used to estimate the proportion of the total variance of each school climate scale located between rather than within schools. The intraclass correlation is incorporated into the Spearman-Brown prediction formula to compute school-level reliabilities (*r*) for each scale (Raudenbush & Bryk, 2001; Winer, Brown, & Michels, 1991). The Fastenau, Bennett, and Denburg (1996) criterion of .60 was used as the threshold for acceptable school-level reliability to interpret *r* coefficients for interrater reliability. Because the reliability of the aggregated measures is strictly a function of the intraclass correlation and the number of survey respondents within each school, the report presents a range of reliability values corresponding to different school sample sizes. The data sources and analytic sample used to examine this research question are the same as those used to address the first one.

How stable are the school-level climate measures? Individual school climate scores were aggregated to the school level to compute average correlations of school-level scores over one- and two-year intervals. Because of changes in school leadership and other factors that affect the school environment over one- and two-year periods, it is difficult to ascertain whether observed changes in scores are due to measurement instability or to actual change. However, because changes over a one-year period would reflect both measurement instability and actual change during that year, correlations between scores over a one-year period are likely to provide a lower bound estimate of test-retest reliability. The examination and description of climate score stability also provide a benchmark for interpreting the magnitude of observed changes in school climate scores in specific middle schools.

Between 2004/05 and 2010/11 there were 255 instances (among 129 schools) in which the same school administered the student survey in consecutive years and 1,941 instances (among 959 schools) in which the same school administered the student survey at a two-year interval. The aggregated student survey school climate measures were based on the responses of different grade 7 students across years. Between 2008/09 and 2010/11 there were 42 instances (among 34 schools) in which a school administered the staff survey in consecutive years and 119 instances (among 119 schools) in which a school administered the staff survey in a two-year interval. Thus, for both the student and teacher data, the analytic sample of schools that administered the surveys in consecutive years is small and unlikely to be representative of schools in the state, so comparisons between the one- and two-year stability estimates should be interpreted cautiously.

Are the school climate measures related to student achievement and discipline infractions? Using data collected in 2008/09 and 2009/10 the study team estimated correlations between school-level climate scores and school-level measures of academic achievement and suspensions. Based on previous research (Biddle, 2005), the team assumed that correlations of .30 or higher provide evidence of predictive validity.

Sensitivity analyses. Student and staff survey response rates vary substantially across schools. Because the risk of biased results rises as the response rate drops, analyses were conducted to determine whether schools with low student or teacher response rates differed from other schools in climate, staff, student demographic, or other characteristics. The team also conducted sensitivity analyses to determine whether low response rates biased the results.

The study relied on data from California public schools' administration of the Cal-SCHLS student and staff survey instruments, California Standards Test scores for grade 7 and 8 English language arts and grade 7 math, and school-level suspension and expulsion data from the California Department of Education's Uniform Management Information Reporting System database (see box 2 and appendix C for details on data and methods).

Study findings

Overall, the analysis showed that the 40 questions on the Cal-SCHLS student survey that are relevant to students' in-school experiences can be used to measure six school climate domains reliably and validly: safety and connectedness, caring relationships with adults, meaningful participation, substance use at school, bullying and discrimination, and delinquency. The internal consistency reliability of these six constructs ranged from .68 to .88, and the reliabilities were consistent with those from studies using other school climate instruments (Voight & Hanson, 2012). At the school level—the level at which a school's overall climate is measured—the measure for each domain exhibited reliabilities above .80 for sample sizes of approximately 200 students or more.

The 40 questions on the Cal-SCHLS student survey that are relevant to students' in-school experiences can be used to measure six school climate domains reliably and validly

The school-level scores were slightly less stable over time than those from another school climate survey (Brand et al., 2003). For the Cal-SCHLS student survey, scores on five of the six measures exhibited a correlation of .49 or higher across one-year intervals and .41 or higher across two-year intervals. Substance use at school was less stable over time than the other measures. Predictive validity was supported for all student-reported measures except bullying and discrimination. All the school-level measures are associated in expected ways with student academic performance and suspensions (indicators of positive aspects of school climate, such as caring relationships with adults, were associated with higher student academic performance and lower school suspension rates).

The 64 questionnaire items on the Cal-SCHLS staff survey measure seven school climate domains: support and safety, caring staff–student relationships, staff–peer relationships, professional development needs, student health and engagement, student delinquency, and resource provision. The professional development needs domain had poor reliability (.50) at the school level and, in stability analyses, evinced a correlation of –.07 across consecutive years. The internal consistency reliability of the six other domains all exceeded .82. In most cases these constructs' reliabilities are higher than those of other school climate surveys (Voight & Hanson, 2012). Each teacher-reported school climate measure exhibited correlations of .56 or higher across one-year intervals and .38 or higher across two-year intervals, and each was associated in expected ways with student achievement and suspensions.

A more detailed description of the results is presented below. (See appendixes C and D for a more detailed description of the models, analysis, and results.)

What school climate domains in middle school do the survey items measure?

Student survey. The Cal-SCHLS student survey measures six school climate domains: safety and connectedness, caring relationships with adults, meaningful participation, substance use at school, bullying and discrimination, and delinquency (figure 1). These domains are consistent with those identified in other middle school climate surveys

(Voight & Hanson, 2012); however, the Cal-SCHLS does not assess some domains that are measured in other middle school student surveys: classroom order and fairness, community involvement, administrative leadership, parent involvement, physical environment, peer relationships, and respect for diversity.[1]

Other findings include the following:

- Two Cal-SCHLS items that ask about students' perceptions of safety at school (for example, "I feel safe in my school") appear to assess the same domain as four questions asking about school connectedness (for example, "I feel close to people at this school"). The study team labeled this domain "safety and connectedness."
- Consistent with prior psychometric analyses on this same survey (Hanson & Kim, 2007), six questions asking about caring relationships with adults at school and high-expectation messages from adults at school assess teacher–student supportive relationships (caring relationships with adults).
- The data revealed that the survey assesses the three distinct domains of student substance use at school, bullying and harassment victimization, and delinquency. Questions that ask about being victimized by physical violence (for example, being pushed or shoved), about nonphysical aggression (for example, mean rumors or lies spread), and about being harassed or bullied because of gender, race/ethnicity, religion, or other status all measure a single dimension of victimization.
- The school climate domains measured by the student survey cover two of the three main categories in the federal Safe and Supportive Schools model—engagement and safety (see figure A1 in appendix A). None of the identified domains correspond to the environment domain.

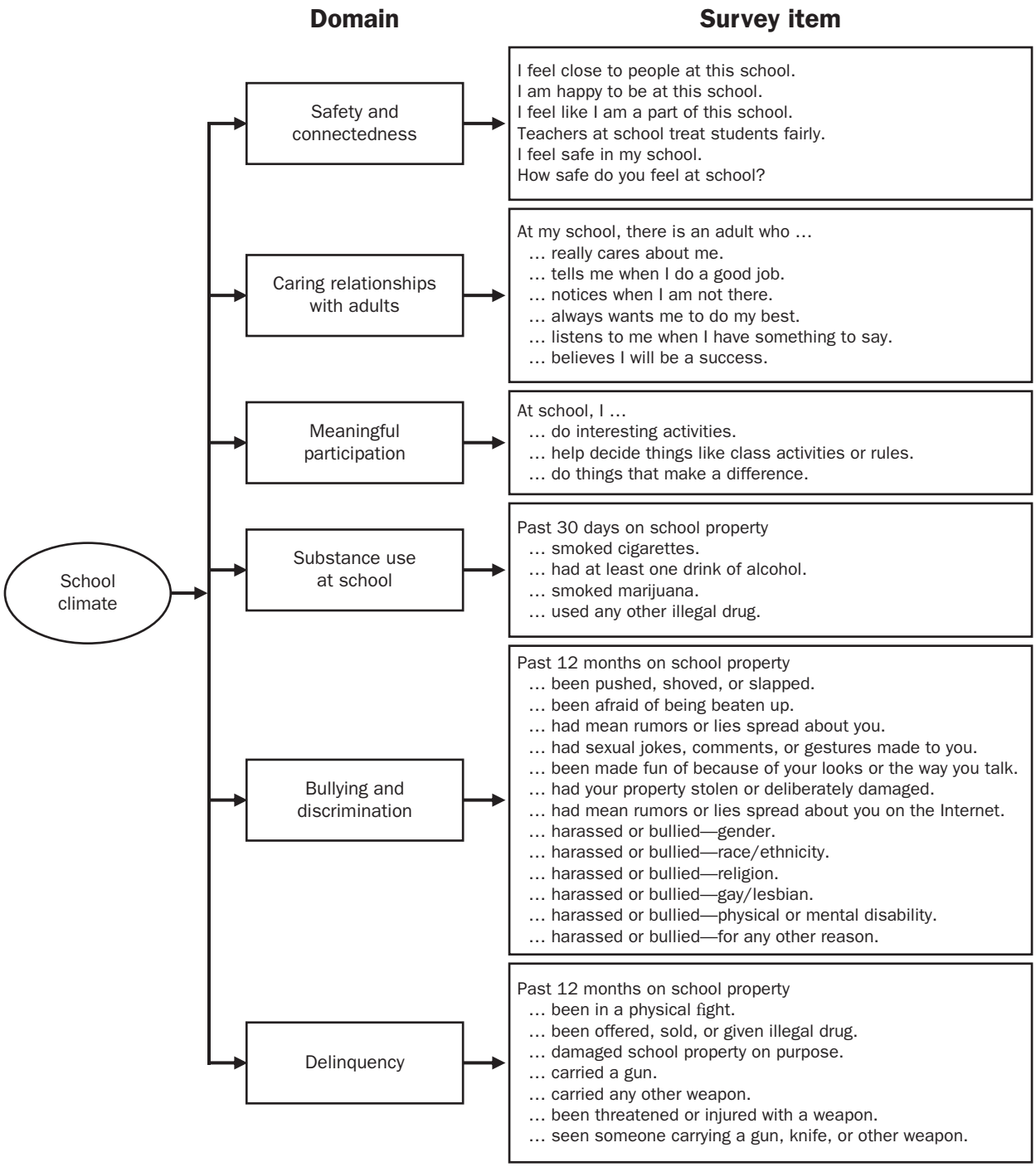
Teacher responses on the staff survey measure seven school climate domains

Staff survey. Teacher responses on the staff survey measure seven school climate domains: support and safety, caring staff–student relationships, staff–peer relationships, professional development needs, student health and engagement, student delinquency, and resource provision (figure 2).

- Many of the 25 items that measure support and safety were intended to measure multiple distinct school climate domains, such as positive student learning environment (items 6–11), meaningful participation (items 16–20), cultural sensitivity (items 21–25), clarity of discipline policies (items 26–28), and perceived school safety (items 29 and 30). However, these more specific factors were too strongly correlated with each other to identify empirically distinct measures.
- Similar to the student survey, five staff survey questions that ask about caring relationships with students and about high expectations for students assess caring staff-student relationships. Two questions that ask about fair treatment of students also assess this domain.

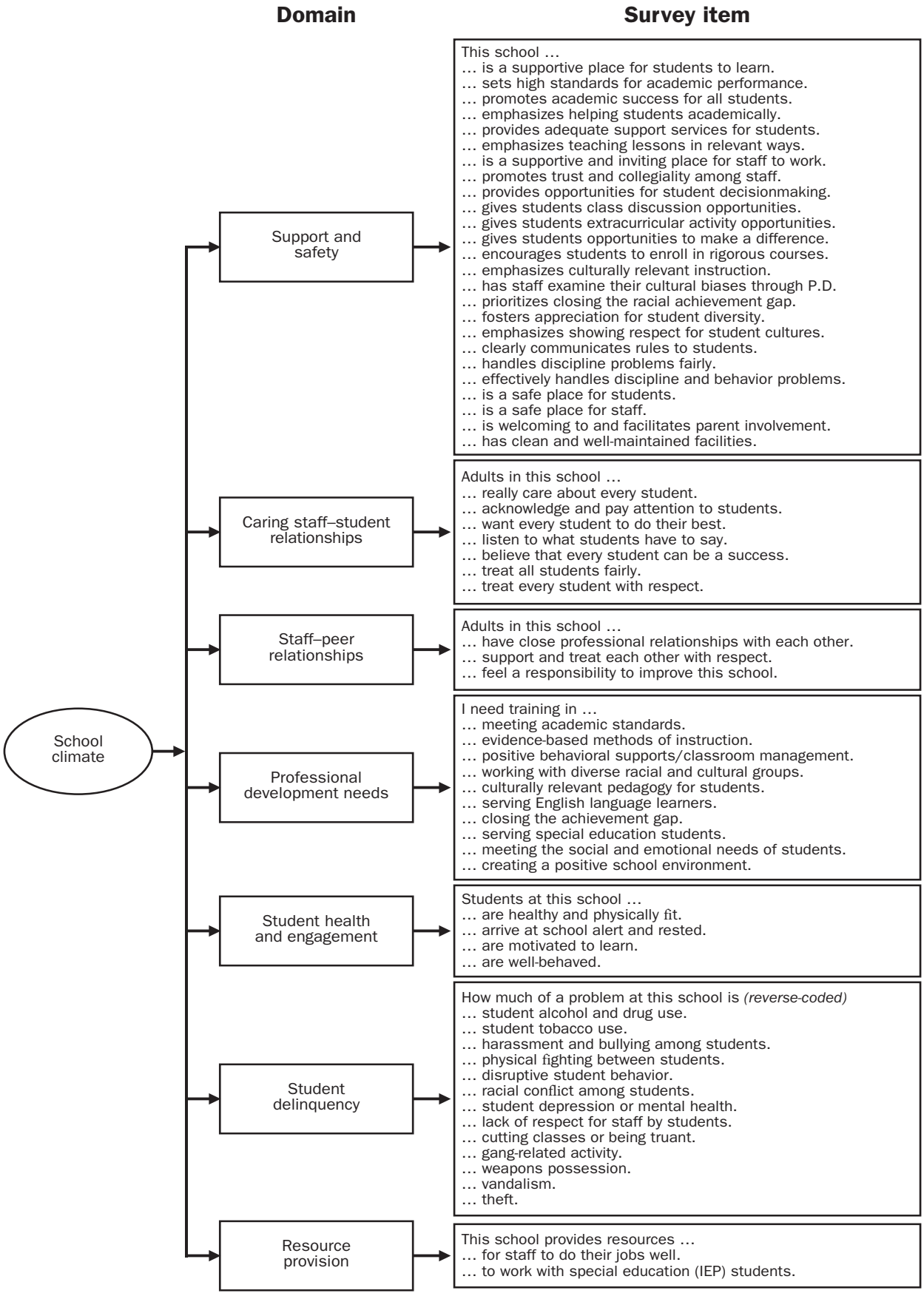
Overlap of domains assessed by student and staff survey. Table 1 shows how the domains identified from the analysis of staff and student survey data overlap so that inconsistencies and consistencies in areas assessed by the two surveys can be more easily seen. The staff survey domains of support and safety and student health and engagement are represented by the student survey domains of safety and connectedness and meaningful participation. On the staff survey, student delinquency encompasses three of the domains identified using the student survey: substance use at school, bullying and discrimination, and delinquency. Both surveys had a distinct measure of caring relationships between students and staff.

Figure 1. School climate domains on the student survey of the California School Climate, Health, and Learning Survey, grade 7 students



Source: Adapted with permission from California School Climate, Health, and Learning Survey [middle school student survey], by WestEd, 2010.

Figure 2. School climate domains on the staff survey of the California School Climate, Health, and Learning Survey, middle school teachers



Source: Adapted with permission from California School Climate, Health, and Learning Survey [middle school staff survey], by WestEd, 2010.

Table 1. Overlap of school climate domains identified on the student and staff surveys of the California School Climate, Health, and Learning Survey

Student survey domains	Staff survey domains						
	Support and safety	Caring staff–student relationships	Staff–peer relationships	Professional development needs	Student health and engagement	Student delinquency	Resource provision
Safety and connectedness	✔				✔		
Caring relationships with adults		✔					
Meaningful participation	✔						
Substance use at school						✔	
Bullying and discrimination						✔	
Delinquency						✔	

Source: 2008/09 and 2009/10 Cal-SCHLS student and staff survey.

The measure of student delinquency on the staff survey is more general than the related measure on the student survey. On the staff survey, student delinquency is assessed by 13 questions that ask respondents to rate the extent to which substance use, harassment and bullying, physical violence, student depression, truancy, vandalism, and theft are a problem at the school.

The analysis identified a distinct four-item student health and engagement domain on the staff survey, an indicator of student readiness to learn. Finally, the staff survey assesses three domains not measured by the student survey: staff–peer relationships and two resource-related factors—a general factor for professional development needs (10 items) and a two-item measure of resource provision.

How reliably do the survey items measure school climate at the respondent and school levels?

Respondent-level reliability indicates how well a measure can be used to assess individual differences between students or teachers on that measure or differences between students and between teachers who score above and below some threshold. The higher the respondent-level reliability, the more likely the measure can be used to correctly distinguish students who report low levels of safety and connectedness from students who report average levels of safety and connectedness, for example. Typically, a measure that includes more items yields greater respondent-level reliability.

School-level reliability indicates how well a measure can be used to distinguish between schools in their average levels on the measure. The higher the school-level reliability, the more consistently the measure distinguishes schools with low scores from schools with high scores. School-level reliability rises with the number of surveys completed in a school, variation in average scores across schools, and respondent-level reliability. Information about school-level reliability can guide decisions about how many surveys to administer within schools. Such reliability information is also relevant for assessing the survey's usefulness for ranking and distinguishing schools.

Student survey. To determine the respondent-level reliability of the measures derived from analysis of the student sample for each of the six domains, the study team calculated internal consistency reliability estimates using Cronbach's alpha (α) (table 2). All reliability measures exceeded Nunnaly's (1978) threshold of .70 for acceptable internal consistency,

Table 2. Student- and school-level reliability of student survey measures of the California School Climate, Health, and Learning Survey

School climate domain	Student level	School level					
		r given size of student sample per school[b]					
	Cronbach's alpha[a]	226 (mean)	50	100	300	400	Intraclass correlation
Safety and connectedness	.80	.95	.81	.89	.96	.97	.078
Caring relationships with adults	.85	.86	.58	.74	.89	.92	.027
Meaningful participation	.68	.89	.63	.77	.91	.93	.033
Substance use at school	.88	.81	.49	.66	.85	.89	.019
Bullying and discrimination	.85	.81	.49	.66	.85	.89	.019
Delinquency	.83	.89	.63	.77	.91	.93	.033

Note: The analytic sample consists of 214,465 students in 949 middle schools that administered the survey in 2008/09 or 2009/10.

a. Recommended reliability coefficient of .70 or higher.

b. Reliability predicted from Spearman-Brown formula; recommended value of .60 or higher.

Source: 2008/09 and 2009/10 Cal-SCHLS student survey.

All reliability measures except the one for the meaningful participation domain demonstrated good internal consistency reliability, indicating that all survey items consistently measure a single underlying domain and can be used to consistently assess individual differences between students

except the one for the meaningful participation domain (α = .68). The other measures demonstrated good internal consistency reliability, indicating that all survey items consistently measure a single underlying domain and can be used to consistently assess individual differences between students.

The estimated school-level reliability coefficients (*r*) are above .80 for all of the measures when 226 students are surveyed at a school (the mean for the analytic sample; see table 2). This result suggests that, with a sample of approximately 200 students in a school, all six measures are reliable when aggregated to the school level. With a sample of 100 students in a school, the school-level reliability for all measures is reduced but is still above .60. With school sample sizes of 50 students, the school-level reliability for caring relationships with adults, substance use at school, and bullying and discrimination falls below the Fastenau et al. (1996) criterion of .60. Thus, a school-specific sample of at least 100 students is necessary to ensure adequate school-level reliability.

The intraclass correlation captures the extent to which students' scores are similar in the same school or, stated differently, the proportion of variation in each measure that is located between rather than within schools. For example, an intraclass correlation of .30 indicates that 30 percent of the total variation is between schools and 70 percent is within schools. The correlations for the school climate scales in the student survey range from .019 for bullying and discrimination and substance use at school to .078 for safety and connectedness (see table 2). These values indicate that most of the variation in student perceptions of school climate is within rather than between schools. In addition, students' scores are more similar within the same school for safety and connectedness than for bullying and discrimination and substance use at school. Falling between those two intraclass correlations are the within-school consistency of scores on caring relationships with adults (.027), meaningful participation (.033), and delinquency (.033).

Staff survey. All seven of the staff survey measures for teachers demonstrated internal consistency reliabilities exceeding Nunnaly's (1978) .70 threshold for acceptable internal

consistency (table 3). The internal consistency estimates range from .82 (resource provision) to .96 (support and safety). According to these results, teacher responses to the staff survey consistently measure each school climate domain.

For a sample size of 19 teachers at a school (the mean of the analytic sample), all the school-level reliability coefficients exceed .70 except the coefficient for professional development needs (r = .50) (see table 3). A sample size of 30 or more is needed to achieve adequate reliability for the professional development needs item (r = .61). Thus, a sample size of 10 or more teachers is needed to consistently distinguish schools with low levels from those with high levels for all the staff-reported school climate measures except professional development needs.

The intraclass correlations are higher for the staff measures than for the student measures (except for professional development needs), indicating that within the same school, teachers' scores are more similar than are student scores. Across the teacher measure, the intraclass correlations are highest for student health and engagement (.352), followed by support and safety (.263) and student delinquency (.152). Professional development needs had the lowest intraclass correlation (.050), indicating that teachers within a school exhibit more dissimilar scores on this measure than on the other measures. The professional development survey questions ask teachers to report on their own needs for professional development rather than on their perceptions about the school, which may explain why responses were more dissimilar on this measure than on the other staff survey measures.

All seven of the staff survey measures for teachers demonstrated internal consistency reliabilities exceeding the threshold for acceptable internal consistency; thus teacher responses to the staff survey consistently measure each school climate domain

How stable are the school-level climate measures?

The study examined the stability of school-level climate scores over one- and two-year intervals to identify the persistence of school climate features and to estimate a lower

Table 3. Teacher- and school-level reliability of staff survey measures of the California School Climate, Health, and Learning Survey

School climate domain	Teacher level	School level					
	Cronbach's alpha[a]	*r* given teacher sample size per school[b]					Intraclass correlation
		19 (mean)	5	10	30	40	
Support and safety	.96	.87	.64	.78	.91	.93	.263
Caring staff–student relationships	.95	.74	.43	.60	.82	.86	.129
Staff–peer relationships	.88	.75	.44	.61	.83	.86	.136
Professional development needs	.89	.50	.21	.34	.61	.68	.050
Student health and engagement	.84	.88	.67	.80	.92	.94	.352
Student delinquency	.91	.91	.73	.84	.94	.96	.152
Resource provision	.82	.77	.47	.64	.84	.88	.129

Note: The analytic sample consists of 14,347 teachers in 764 middle schools that administered the survey in 2008/09 or 2009/10.

a. Recommended reliability coefficient of at least .70.

b. *r* = reliability predicted from Spearman-Brown formula; recommended value of at least .60.

Source: 2008/09 and 2009/10 Cal-SCHLS staff survey.

bound of test-retest reliability. These stability estimates, based on a large sample of middle schools, can be a yardstick for interpreting changes in schools that are working to improve the school climate.

Student survey. Average correlations between school-level school climate measures over one- and two-year intervals were weighted by the number of schools that administered the student survey at each interval between 2004/05 and 2010/11 (see tables D9 and D10 in appendix D for estimated correlations for each interval). The average correlation of the student-reported measures over one-year intervals ranged from .36 (substance use at school) to .80 (safety and connectedness), with an average of .55 across all the student survey measures (table 4). This compares with an average correlation of .64 across grade 7 school climate measures in Brand et al.'s (2003) analysis of school-level stability.

The average correlation of the student-reported measures over one-year intervals ranged from .36 (substance use at school) to .80 (safety and connectedness), with an average of .55 across all the student survey measures

Stability over one-year intervals was greater between the 2009/10 and 2010/11 administrations of the survey than between earlier administrations (see table D9 in appendix D). Between the 2009/10 and 2010/11 administrations, the stability correlation for all measures was at least .58 (for substance use) and above .70 for four other measures (it was .62 for bullying and discrimination, the sixth measure).

The correlations for the student survey results were weaker for the two-year intervals than for the one-year intervals (see table 4), ranging from .34 to .68. The difference in stability was largest for safety and connectedness (.12). For the other measures the difference between one- and two-year correlations ranged from .02 to .08. The average two-year

Table 4. Stability of school climate measures for the California School Climate, Health, and Learning Survey at one- and two-year intervals (correlations)

Measure	One-year interval	Two-year interval
Student survey		
Safety and connectedness	.80	.68
Caring relationships with adults	.52	.45
Meaningful participation	.54	.51
Substance use at school	.36	.34
Bullying and discrimination	.49	.41
Delinquency	.61	.56
Number of survey intervals	255	1,941
Staff survey		
Support and safety	.62	.42
Caring staff–student relationships	.69	.45
Staff–peer relationships	.78	.38
Professional development needs	–.07	.43
Student health and engagement	.72	.66
Student delinquency	.69	.64
Resource provision	.56	.42
Number of survey intervals	42	119

Note: The student survey analytic sample consists of 129 schools that administered the student survey in consecutive years and 959 schools that administered it at two-year intervals. The staff survey analytic sample consists of 34 schools that administered the staff survey in consecutive years and 119 schools that administered it at two-year intervals.

Source: 2004/05 to 2010/11 CAL-SCHLS student survey and 2008/09 to 2010/11 staff survey.

correlation of .49 was similar to the correlation of .445 estimated by Brand et al. (2003). For the student survey, safety and connectedness was the most stable of the school-level measures, followed by delinquency, meaningful participation, caring relationships with adults, bullying and discrimination, and substance use at school.

Staff survey. The average correlation of the teacher measures over one-year intervals ranged from –.07 for professional development needs to .78 for staff–peer relationships (see table 4). With the exception of professional development needs, an outlier, all variables had correlation averages of .56 or higher. An average correlation of close to zero for professional development needs suggests that it is not a reliable measure of a stable school characteristic. The two-year correlations were lower than the one-year correlations for six of the seven teacher measures. They ranged from .38 for staff–peer relationships to .66 for student health and engagement. Student health and engagement and student delinquency both had one- and two-year average correlations above .60. Comparisons between one- and two-year correlations should be interpreted cautiously because only 34 schools administered the staff survey in consecutive years.

Predictive validity is supported for all of the student-reported measures except bullying and discrimination

Are the school climate measures related to student achievement and discipline infractions?

The predictive validity of the school climate measures was analyzed by examining their correlations with school-level measures of academic achievement and suspensions. Correlations of .30 or higher are assumed to provide evidence of predictive validity (Biddle, 2005).

Student survey. High scores on safety and connectedness, caring relationships with adults, and meaningful participation were expected to correlate positively with English language arts and math test scores and negatively with suspension rates. The opposite was expected for high scores on substance use, bullying and discrimination, and delinquency.

The correlations were in the expected direction for all six measures (table 5). All student-reported measures except bullying and discrimination had a correlation of .30 or higher with each achievement test score variable, with safety and connectedness and delinquency showing the strongest correlations. All the measures except substance use and bullying and discrimination had a correlation of .30 or higher with suspensions per 100 students. The correlations of the student survey measures were consistently lower for suspensions than for academic achievement.

Predictive validity is supported for all of the student-reported measures except bullying and discrimination; the correlation of bullying and discrimination with other measures of school functioning never exceeded .30. The correlations of school climate scores with grade 7 and 8 English language arts scores were very similar, even though the school climate scores are based solely on the grade 7 student reports.

Staff survey. High scores on support and safety, caring staff–student relationships, staff–peer relationships, student health and engagement, and resource provision were expected to correlate positively with English language arts and math test scores and negatively with suspensions per 100 students. The opposite was expected for professional development needs and student delinquency. The correlations between school-level staff survey measures and achievement and suspensions were in the expected direction

Table 5. School-level correlations of school climate measures on the California School Climate, Health, and Learning Survey with student achievement and discipline infractions

Measure	English language arts scores		Math scores	Suspensions
	Grade 7	Grade 8	Grade 7	
Student survey				
Safety and connectedness	.66	.65	.60	–.46
Caring relationships with adults	.43	.42	.41	–.30
Meaningful participation	.50	.50	.47	–.33
Substance use	–.46	–.44	–.39	.29
Bullying and discrimination	–.18	–.20	–.23	.13
Delinquency	–.60	–.61	–.53	.35
Staff survey				
Support and safety	.45	.47	.43	–.22
Caring staff–student relationships	.40	.41	.35	–.18
Staff–peer relationships	.27	.28	.23	–.14
Professional development needs	–.32	–.33	–.29	.16
Student health and engagement	.77	.77	.68	–.43
Student delinquency	–.67	–.69	–.60	.45
Resource provision	.25	.26	.30	–.15

Note: The student survey analytic sample consists of in 949 middle schools. The staff survey analytic sample consists of 764 middle schools that administered the survey in 2008/09 or 2009/10.

Source: 2008/09 and 2009/10 Cal-SCHLS student survey and staff survey.

Respondent- and school-level reliability results suggest that both the student- and teacher-reported measures can be used to distinguish differences between schools and between respondents within schools

for all seven measures (see table 5). Across teacher-reported measures, student health and engagement and student delinquency had the strongest average correlations, followed by support and safety and caring staff–student relationships. Staff–peer relationships, resource provision, and professional development needs had the weakest average correlations with test scores and suspensions. However, in most cases these correlations still approached .30. The correlations were consistently lower for suspensions than for academic achievement.

Study implications

For reliable school-level measurement of school climate, the study findings suggest that schools should sample at least 100 grade 7 students[2] and 10 teachers in the school.[3] The respondent- and school-level reliability results suggest that both the student- and teacher-reported measures can be used to distinguish differences between schools and between respondents within schools. The poor reliability (r = .50) of the measure for professional development needs suggests that this domain should not be included in measuring school climate.

As with student standardized test scores and other school-based measures, most of the variation in student and teacher perceptions of school climate was found within rather than between schools. Thus, the measures may be particularly useful for identifying differences in student perceptions of school climate across different groups (for example, racial/ethnic groups) within schools. Differences between schools with the lowest and highest scores may not be substantively meaningful because there is so little variation between schools for some school climate domains.

Study limitations

The Cal-SCHLS student survey was designed primarily as an epidemiological surveillance survey for school districts to track school climate factors, student health risks, and student problem behaviors that research has identified as important barriers to learning (Hanson & Kim, 2007). It was designed to measure a broad array of factors while being short enough for widespread administration in schools. That intentional brevity may mean that there are too few items to use the survey to adequately assess the underlying factors of some school climate domains. Another limitation of the data for assessing school climate in middle school is that only grade 7 students were surveyed. To the extent that students in grades 6 and 8 have different perceptions of the school climate, the student survey data provide only a partial picture of the school environment as perceived by middle school students. However, school-level scores would be expected to remain fairly stable across different cohorts of grade 7 students if the school climate scales capture enduring features of the school environment.

The structures of the student and teacher samples differ in important ways that have implications for comparing the student and teacher results. First, student survey data were collected from grade 7 students exclusively, while staff survey data were collected from teachers in all middle school grades. This may reduce the student-based measures' comparability with the teacher measures. Also, because the survey targeted grade 7 students exclusively, the same students are unlikely to participate in the grade 7 survey in subsequent years. Most teachers, however, remain at the same school in successive years and may thus participate in the survey year after year. This could inflate the stability estimates of the teacher measures relative to that of the student measures. If there are stable differences in individual perceptions of school climate, then surveying the same group of respondents in successive years (as in the case of teachers) will yield more consistent responses than asking different groups of respondents (as with the students). Another reason to interpret the stability analyses cautiously is that only a small number of schools administered the staff survey in consecutive years, reducing the results' precision and generalizability.

A further limitation of the data is that Cal-SCHLS student and teacher response rates vary substantially across schools. Sensitivity analyses conducted to determine whether results differed between the total sample of schools and the sample of schools with high and low response rates found that the response rate did not affect the school climate domains identified or the respondent-level reliability estimates of the measures. And with one exception (substance use at school), school-level reliability was similar in the two samples. However, the student-reported measures were more stable and more strongly associated with student achievement and suspension rates when response rates were high than when they were low. Such differences in stability and predictive validity were not apparent for the teacher-reported measures. These results suggest that the stability and validity of the student survey school climate measures are enhanced when response rates are high.

Appendix A. The link between school climate and student learning

School climate encompasses the characteristics of a school's environment that influence students' academic and social development (Brand et al., 2008). A more positive school climate is associated with more positive student outcomes. Students in schools with safe, caring, and participatory climates show higher academic performance (Bowen & Bowen, 1999; Hanson et al., 2004; Voight et al., 2013) and stronger socioemotional competence (Anderson, 1982; Blum et al., 2002; Eccles et al., 1993). Poor school climates are associated with lower student engagement and attendance, more frequent disruptive classroom behavior, lower academic aspirations, and diminished performance (Benninga et al., 2003; DeJung & Duckworth, 1986; Rumberger, 1987; Wu et al., 1982).

School climate domains

Studies have identified multiple domains of school climate (Bear, Gaskins, Blank, & Chen, 2011; Brand et al., 2008; Cohen, McCabe, Michelli, & Pickeral, 2009):

- The quality of relationships among and between students and staff.
- The degree of connectedness that students feel to the school community.
- Expectations that the school explicitly and implicitly sets for student learning and behavior.
- Opportunities for students to participate in meaningful and personally relevant activities.
- How safe students and staff feel at school, including how safe they feel from bullying, harassment, and other physical and emotional forms of victimization.
- The quality of the school facility and its physical environment.

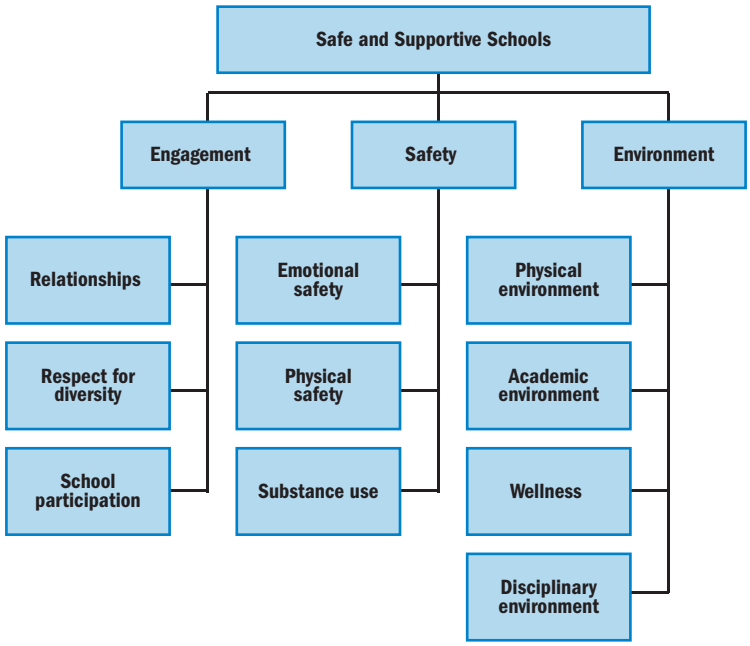
To measure school climate, schools and districts often administer surveys to students and staff. Some school climate survey questions ask respondents about their level of agreement with specific statements about the school's social and physical environment (Brand, 2003). Other questions are based on group-level aggregation of respondent reports of their own behaviors and attitudes (Lüdtke et al., 2008).

The federal Safe and Supportive Schools model

In 2009 the U.S. Department of Education's Office of Safe and Drug Free Schools drafted a model of school climate that includes three main categories: engagement, safety, and environment (figure A1) (Jennings, 2010; O'Malley, Renshaw, Ritchey, & Furlong, 2011).

Engagement. Engagement includes relationships, respect for diversity, and school participation. High-quality relationships between and among teachers and students are critical for developing a school environment conducive to student attachment and learning. For example, clear and positive teacher expectations structure and guide behavior and provide the challenge necessary to press students to succeed (Benard, 2004). Students benefit most when high expectations are coupled with high levels of teacher warmth and support (Bryk et al., 2010; Shouse, 1996). Caring teacher–student relationships are positively linked to student engagement in school, academic performance, and personal well-being (Benard, 2004; Danielsen, Samdal, Hetland, & Wold, 2009; Malecki & Demaray, 2003). Students are more likely to internalize the values of those to whom they feel a strong sense of attachment (Ryan & Deci, 2000). Student attachment to teachers is fostered when

Figure A1. Federal Safe and Supportive Schools model



Source: Safe and Supportive Schools Technical Assistance Center 2012.

teachers exhibit high levels of warm, supportive behavior. Consequently, students whose teachers demonstrate caring behavior are more likely to internalize the value of succeeding in school (Danielsen, Wiium, Wilhelmsen, & Wold, 2010).

Respect for diversity—defined as the acceptance of subgroups in the school and the community—is thought to promote a positive school climate by enhancing school safety and the quality of student relationships (Green, Adams, & Turner, 1988). Promoting the inclusiveness of all student groups may diminish or eliminate teasing and bullying behavior directed at students who are perceived to be different. Respect for diversity is likely an essential step to addressing racial/ethnic disparities in students' school engagement (Cohen et al., 2009).

School participation refers to staff, student, and parent participation in school activities and governance, as well as to broader community involvement in school activities (Cohen et al., 2009; Libbey, 2004). Learning environments that support autonomy—that provide opportunities for students to engage in relevant and interesting activities that encourage responsibility and elicit contribution—are believed to foster motivation and promote identification with the goals of learning (Black & Deci, 2000). When students are given responsibility and some control over the learning process, they are more likely to become invested in academic and other types of success (Newman, 1992). Moreover, participating meaningfully in the classroom allows students to contribute actively and positively to the classroom climate and likely enhances their bonds with the school (McLaughlin, 2000; National Research Council, 2003).

Safety. School safety includes emotional and physical safety, as well as low rates of substance use. Numerous studies demonstrate that bullying and violence in schools harm

students (Beauvais, Chavez, Oetting, Deffenbacher, & Cornell, 1996; Bowen & Bowen, 1999; Bowen, Richman, Brester, & Bowen, 1998; Eccles, Lord, & Midgley, 1991; Ellickson, Saner, & McGuigan, 1997; Furlong, Chung, Bates, & Morrison, 1995; Gronna & Chin-Chance, 1999; Herrenkohl et al., 2000; Jenkins & Bell, 1994; National Center for Educational Statistics, 1995).

Unsafe school environments can affect student performance and learning in several ways. First, exposure to violence and abuse can increase emotional and psychological distress, making it harder for students to concentrate and attend to academic matters. Second, the distress associated with exposure to crime, violence, bullying, and teasing may reduce instruction time by causing students to stay home from school or cut classes (Harris & Associates, 1995). Third, crime, violence, and social disorganization at school may affect academic performance by influencing teaching and learning processes in the classroom. For example, having disruptive and aggressive students in the classroom diverts teachers' attention, reducing instruction time for all students (Lochman, Lampron, Gemmer, & Harris, 1987, as cited in Bowen & Bowen, 1999).

Environment. Environment consists of wellness and the physical, academic, and disciplinary environments. Wellness refers to the availability of physical and mental health supports in school for students with health-related problems that make learning difficult.

The physical environment is the physical space of the school, including facility quality and upkeep, ambient noise, and classroom temperature. These aspects of a school's physical environment are associated with academic performance and other school climate domains (Evans, 2006; Plank, Bradshaw, & Young, 2009). Middle school students who attend schools that are in disrepair report less positive relationships with teachers and other students, lower perceptions of safety, and higher perceptions of social disorder (for example, fighting, verbal abuse, substance use) at school (Plank et al., 2009).

The academic environment consists of classroom instructional and behavioral features, such as teaching and enforcing classroom rules and routines, adapting instructional strategies to increase opportunities for academic success, and teaching and reinforcing appropriate behavior and social skills (Epstein, Atkins, Cullinan, Kutash, & Weaver, 2008).

The classroom behavioral and academic environment is inextricably linked to student learning. Finally, the disciplinary environment refers to the communication to students of school policies on discipline and behavior, and the adequacy and fairness of policy enforcement.

Appendix B. School climate items on the California School Climate, Health, and Learning Survey student and staff surveys

The student survey of the California School Climate, Health, and Learning Survey (Cal-SCHLS) includes 115 items in its core module that assess students' perceptions of their school environment and their personal health and risk behaviors. Only the 40 core module items that are relevant to students' in-school experiences are included in this study (table B1).

The staff survey of the Cal-SCHLS consists of three sections: the first for all staff and the other two for specialized staff. The study used only the first section, which encompasses 69 items designed to assess five school climate areas: safe learning environments, norms and standards that encourage student learning, quality of relationships between staff and between staff and students, student behaviors that facilitate learning, and services and programs that address nonacademic barriers to learning (table B2).

Table B1. School climate items on the student survey of the California School Climate, Health, and Learning Survey that are relevant to students' in-school experiences

Question number	Description
11	I feel close to people at this school.
12	I am happy to be at this school.
13	I feel like I am a part of this school.
14	The teachers at this school treat students fairly.
15	I feel safe in my school.
At this school there is an adult who…	
16	… really cares about me.
17	… tells me when I do a good job.
18	… notices when I am not there.
19	… always wants me to do my best.
20	… listens to me when I have something to say.
21	… believes that I will be a success.
At school…	
22	… I do interesting activities.
23	… I help decide things like activities or rules.
24	… I do things that make a difference.
Substance use at school	
55	During your life, how many times have you been drunk on alcohol or "high" on drugs on school property?
During the past 30 days, on how many days on school property have you…	
72	… smoked cigarettes?
73	… had at least one drink of alcohol?
74	… smoked marijuana?
75	… used any other illegal drug or pill to get "high?"
During the past 12 months, how many times on school property have you…	
100	… been pushed, shoved, or slapped?
101	… been afraid of being beaten up?

(continued)

Table B1. School climate items on the student survey of the California School Climate, Health, and Learning Survey that are relevant to students' in-school experiences *(continued)*

Question number	Description
102	… been in a physical fight?
103	… had rumors or lies spread about you?
104	… had sexual jokes, comments, or gestures made to you?
105	… been made fun of because of your looks or the way you talk?
106	… had your property stolen or deliberately damaged, such as your car, clothing, or books?
107	… been offered, sold, or given an illegal drug?
108	… damaged school property on purpose?
109	… carried a gun?
110	… carried any other weapon (such as a knife or club)?
111	… been threatened or injured by a weapon (such as a knife or club)?
112	… seen someone carrying a gun, knife, club, or other weapon?
During the past 12 months, how many times on school property were you harassed or bullied for any of the following reasons? *[You were bullied if repeatedly shoved, hit, threatened, called mean names, teased in a way you didn't like, or had other unpleasant things done to you. It is not bullying when two students of about the same strength quarrel or fight.]*	
113	Your race, ethnicity, or national origin
114	Your religion
115	Your gender (being male or female)
116	Because you are gay or lesbian or someone thought you were
117	A physical or mental disability
118	Any other reason
119	How safe do you feel at school?
120	In the past 12 months, I have been cyber-bullied

Source: 2008/09 and 2009/10 Cal-SCHLS student survey.

Table B2. School climate items from the first section of the staff survey of the California School Climate, Health, and Learning Survey

Question number	Description
This school…	
6	… is a supportive and inviting place for students to learn.
7	… sets high standards for academic performance for all students.
8	… promotes academic success for all students.
9	… emphasizes helping students academically when they need it.
10	… provides adequate counseling and support services for students.
11	… emphasizes teaching lessons in ways relevant to students.
12	… is a supportive and inviting place for staff to work.
13	… promotes trust and collegiality among staff.
14	… provides the materials, resources, and training (professional development) needed to do your job effectively.
15	… provides the materials, resources, and training (professional development) needed to work with special education (IEP) students.

(continued)

Table B2. School climate items from the first section of the staff survey of the California School Climate, Health, and Learning Survey staff survey *(continued)*

Question number	Description
16	… encourages opportunities for students to decide things like class activities or rules.
17	… gives all students equal opportunity to participate in classroom discussions or activities.
18	… gives all students equal opportunity to participate in numerous extracurricular and enrichment activities.
19	… gives students opportunities to "make a difference" by helping other people, the school, or the community (e.g., service learning).
20	… encourages students to enroll in rigorous courses (such as honors and AP), regardless of their race, ethnicity, or nationality.
21	… emphasizes using instructional materials that reflect the culture or ethnicity of its students.
22	… has staff examine their own cultural biases through professional development and other processes.
23	… considers closing the racial/ethnic achievement gap a high priority.
24	… fosters appreciation for student diversity and respect for each other.
25	… emphasizes showing respect for all students' cultural beliefs and practices.
26	… clearly communicates to students the consequences of breaking school rules.
27	… handles discipline problems fairly.
28	… effectively handles student discipline and behavioral problems.
29	… is a safe place for students.
30	… is a safe place for staff.
31	… is welcoming to and facilitates parent involvement.
32	… has clean and well-maintained facilities and property.
How many adults in this school…	
33	… really care about every student?
34	… acknowledge and pay attention to students?
35	… want every student to do their best?
36	… listen to what students have to say?
37	… believe that every student can be a success?
38	… treat all students fairly?
39	… treat every student with respect?
40	… have close professional relationships with one another?
41	… support and treat each other with respect?
42	… feel a responsibility to improve this school?
Do you feel that you need more professional development, training, mentorship, or other support to do your job in any of the following areas?	
43	Meeting academic standards
44	Evidence-based methods of instruction
45	Positive behavioral supports/classroom management
46	Working with diverse racial, ethnic, or cultural groups
47	Culturally relevant pedagogy for the school's student population
48	Serving English language learners
49	Closing the achievement gap
50	Serving special education (IEP) students
51	Meeting the social, emotional, and developmental needs of youth (e.g., resilience promotion)
52	Creating a positive school environment

(continued)

Table B2. School climate items from the first section of the staff survey of the California School Climate, Health, and Learning Survey staff survey *(continued)*

Question number	Description
Based on your experience, how many students at this school…	
53	… are healthy and physically fit?
54	… arrive at school alert and rested?
55	… are motivated to learn?
56	… are well-behaved?
How much of a problem at this school is…	
57	… student alcohol and drug use?
58	… student tobacco use?
59	… harassment or bullying among students?
60	… physical fighting between students?
61	… disruptive student behavior?
62	… racial/ethnic conflict among students?
63	… student depression or other mental health problems?
64	… lack of respect for staff by students?
65	… cutting classes or being truant?
66	… gang-related activity?
67	… weapons possession?
68	… vandalism?
69	… theft?

Source: 2008/09 and 2009/10 Cal-SCHLS staff survey.

Appendix C. Methodology

The study relied on existing data from California public schools' administration of the California School Climate, Health, and Learning Survey (Cal-SCHLS) to grade 7 student and middle school staff. Separate analyses were conducted for the student survey and the teacher responses to the staff survey.

Data

Since 1997 WestEd's Health and Human Development Program, on contract to the California Department of Education, has provided school districts administering the surveys with technical assistance, data scanning, and a report on the district-level data collected in each module. These data, collected anonymously, are housed in WestEd's Health and Human Development Program. The California Department of Education approved the use of survey data to conduct this research. School data for academic performance and suspensions are publicly available on the California Department of Education's website.

School climate data used in this study are pooled from administration of the Cal-SCHLS student survey instrument in California middle schools[4] from 2004/05 through 2010/11 and from the staff survey instrument from 2008/09 through 2010/11. The Cal-SCHLS staff survey is administered to all types of school staff (teachers, administrators, classified staff), but only reports from teachers were included in this study.

The study addressed four research questions:

- What school climate domains in middle school do the survey items measure?
- How reliably do the surveys items measure school climate at the respondent and school levels?
- How stable are the school-level climate measures?
- Are the school climate measures related to student achievement and discipline infractions?

The analyses that address research questions 1, 2, and 4 are based on data collected from 214,465 grade 7 students in 997 middle schools that administered the student survey and 14,806 teachers in 794 middle schools that administered the staff survey in the 2008/09 or 2009/10 academic years—the most recent period in which the participating schools and districts were representative of the schools and districts in the state.

These students, teachers, and schools represent a fraction of those in the larger dataset that includes survey results from 2004/05 to 2010/11. During 2008/09 and 2009/10, the California Department of Education required all schools and districts receiving Title IV funding under the No Child Left Behind Act to administer the student and staff surveys at least once every two years. Middle schools were required to administer the student survey to grade 7 students and the staff survey to all school staff. Also during this period, 48 middle schools administered the student survey in both 2008/09 and 2009/10, and 30 middle schools administered the staff survey in both years. For these schools only data from 2009/10 were included in the analyses for research questions 1, 2, and 4. The 2008/09 data from schools that administered the survey more than once during the two-year period were excluded to ensure that the school-level observations in the dataset were independent (see below) and that the sample was representative of schools that were required to administer the surveys.

Analyses for research questions 1 and 2 were based on respondent-level data (either student or teacher); analyses for research questions 2, 3, and 4 were based on data aggregated to the school level. To examine research question 3 on stability, the study team used Cal-SCHLS grade 7 student survey data from 962 middle schools from 2004/05 through 2010/11 and teacher data from 145 middle schools for each school year from 2008/09 through 2010/11. Only three years of teacher data were used in the stability analyses because many new items were added to the Cal-SCHLS staff survey after 2007/08.

School performance data from the California Department of Education's Standardized Testing and Reporting program were used to examine the relationship of school climate to academic performance (see box 1 in the main report). Academic performance is based on test score data aggregated at the school level. School-level suspension and expulsion data came from the California Department of Education's Uniform Management Information Reporting System database. Suspension and expulsion counts were converted into rates per 100 students. After discovering that the variation across schools was low—nearly two-thirds of schools had fewer than five total expulsions—the analyses examining the relationship of school climate to expulsion rates were dropped.

Analyses

For each research question separate analyses were conducted for the student sample and the teacher sample. The analytic approaches discussed below were applied to both the student and teacher datasets.

What school climate domains in middle school do the survey items measure? To address research question 1, the study team estimated a series of exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) models. EFA models were estimated using oblique rotation to determine roughly the number of latent factors underlying the data and their measurement structure, as well as how the survey items mapped onto the underlying dimensions identified. A random split-half sample of schools from the full sample was used for the EFA, and the other half was used as a sample for CFA, described below. The results of the EFA models were used as a starting point for a series of nested CFA models with the validation sample. Factor-loading patterns, measures of model fit, and correlations among the latent factors or tests of discriminant validity were used to make decisions about the final models (table C1).

Specifically, the optimal number of factors in the EFA was determined by first estimating a series of models, each specifying a different numbers of factors, and then comparing

Table C1. Steps in selecting a measurement model

Step 1	Estimate 10 exploratory factor analysis models with 1–10 factors using first split-half sample of schools.
Step 2	Choose model that has RMSEA ≤ .06, SRMR ≤ .08, CFI ≥ .95, and TLI ≥ .95.
Step 3	Estimate confirmatory factor analysis model based on step 2 using second split-half sample of schools.
Step 4	Modify confirmatory factor analysis based on factor-loading patterns observed in steps 2 and 3.
Step 5	Choose model that has RMSEA ≤.06, lowest WRMR, CFI ≥ .95, and TLI ≥ .95.
Step 6	Combine factors that fail Fornell and Larcker's (1981) discriminant validity test.

RMSEA is root mean square error of approximation. SRMR is standardized root mean square residual. CFI is comparative fit index. TLI is Tucker-Lewis index. WRMR is weighted root mean square residual.

Source: Authors' construction.

indices of model fit to see how well each model represents the actual data (step 1, table C1). Several common fit indices were used to help with this determination, including the root mean square error of approximation (RMSEA), the standardized root mean square residual (SRMR), the comparative fit index (CFI), and the Tucker-Lewis index (TLI). A smaller value of RMSEA and SRMR and larger value of CFI and TLI indicate better model fit. The rule of thumb for a "good fit' model is a value of .06 or lower for the RMSEA,[5] .08 or lower for the SRMR, and .95 or higher for the CFI and TLI (Hu & Bentler, 1999). The decisionmaking criterion for choosing the number of factors in all EFAs was to select the model with the fewest number of factors that still met the cutoff for good fit for the RMSEA, SRMR, CFI, and TLI indicators (step 2, table C1). This approach privileges simpler factor structures while still ensuring sound psychometric qualities.

The EFA solution was used as a starting point for a series of nested CFA models using data from a sample that included only the schools not selected for the EFA analytic sample (steps 3–4, table C1). The CFA models were estimated not to confirm the estimated EFA model but to identify a conceptually grounded, best-fitting, sensible model (Bollen, 1989). Similar to other scale development work, the CFA was used in an exploratory fashion to ascertain the best use of the survey items for identifying conceptually distinct school climate domains (Brand et al., 2003; Cabrera-Nguyen, 2010; Worthington & Whittaker, 2006). Because the analytic samples are so large, modifying the CFA models sequentially using data from one sample is unlikely to be affected by chance sample characteristics (Hutchinson, 1998).

The CFA models used the same fit indices and cutoff criteria as for the EFAs to assess model fit, with the exception that the SRMR was replaced by the weighted root mean square residual (WRMR).[6] A smaller WRMR indicates better fit. The conventional cutoff for good fit is 1.0 or lower, although the WRMR is often inflated in analyses with such large sample sizes (Yu, 2002). Models that had better estimated fit across the five indices were prioritized (step 5, table C1).

After selecting a preferred CFA model (step 5), the study team applied Fornell and Larcker's (1981) test for assessing discriminant validity of factors (the extent to which latent variables adequately discriminate from other latent variables). This involves comparing the average variance explained by the latent factor on observed indicators with the shared variance explained by latent factors.[7] If the shared variance explained with any other factor is larger than the average variance explained by a latent factor, then discriminant validity is not supported and, for this study, the two factors were combined into a single factor (step 6, table C1).

To derive estimates for the EFA and CFA models, the study employed Muthén and Muthén's (2012) Mplus 7 statistical modeling program. Because items on the Cal-SCHLS are ordinal (that is, measured using Likert-type response options), Muthén's (1984) approach to EFA and CFA with ordinal indicators was applied, where each observed dichotomous or ordinal item (y) is linked to a latent continuous item (y^*) in a nonlinear way through a model of thresholds. The relationships between an observed ordinal item y with c categories to y^* can be expressed as:

$$y = c, \textit{ if } \tau_c < y^* \leq \tau_{c+1}$$

for $c = 0, 1, 2, \ldots, c-1$. The τs represent threshold parameters. Muthén's (1984) approach models the relationships among these more fundamental latent y^* variables.

The EFAs and CFAs accounted for the nesting of students within schools using clustered errors. No covariates for year of survey administration were included in the CFA models because survey year is unlikely to be related to the measurement parameter estimates and, with mandatory biennial survey administration, schools that administered the survey over a two-year period represent all the schools with Cal-SCHLS data in the state.

How reliably do the survey items measure school climate at the respondent and school levels? Respondent-level internal consistency of reliability of each measure was estimated by calculating Cronbach's alpha, using Nunnaly's (1978) criterion of .70 as the benchmark for acceptable internal consistency reliability. Cronbach's alpha assesses the extent to which each survey item used in a scale produces similar scores.

The proportion of the total variance of each measure that is located between schools was first estimated to determine school-level reliability (the intraclass correlation), and the intraclass correlation was incorporated into the Spearman-Brown prediction formula for each scale (Raudenbush & Bryk, 2001; Winer et al., 1991). The reliability of the average school-level score as an estimator of the true school average was assessed using:

$$\lambda_j = \frac{\tau_{00}}{\tau_{00} + \frac{\sigma^2}{n_j}}$$

where λ_j is an estimate of the proportion of total variance that is true school variance, as opposed to variance due to measurement or sampling error, τ_{00} is the between-group variance, σ^2 is the within-group variability, and n_j is the within-school sample size in a hypothetical school j (Raudenbush & Bryk, 2001). Fastenau et al.'s (1996) criterion of .60 was used as the threshold for acceptable school-level reliability. A range of reliability values corresponding to different school sample sizes is included in the results.

How stable are the school-level climate measures? To examine the stability of school aggregate measures over time, the scores for individual school climate measures were aggregated to the school level, and correlations were estimated across one- and two-year intervals of survey administration. Average correlations for all one- and two-year intervals were weighted by the number of survey administrations over the interval period. These estimates are presented in table 5 in main report. Tables D9–D11 in appendix D show stability results for each year of survey administration. Student data collected from schools over a seven-year period between 2004/05 and 2010/11[8] and teacher data collected between 2008/09 and 2010/11 were analyzed to examine stability in school scores. Only three years of teacher data were used because the staff survey was modified substantially after the 2007/08 academic year. More details on the sample used for these analyses are provided in box 2 in the main report.

Are the school climate measures related to student achievement and discipline infractions? Research question 4 focuses on predictive validity of school-level climate measures from the Cal-SCHLS surveys. Correlations were estimated between school-level school climate measures and school-level measures of academic achievement and suspensions (see box 2 in the main report). These analyses were based on student and staff survey data collected in 2008/09 and 2010/11.

Sensitivity analyses. The study team conducted two sets of sensitivity analyses to determine whether low response rates bias the results. First, school climate scores,[9] student demographic characteristics, staff characteristics, and other school characteristics were compared between two groups of schools: those with low response rates (lower than 60 percent on the student survey and lower than 50 percent on the staff survey) and those with high response rates (rates above those levels). The response rate was calculated by dividing the number of surveys returned by grade 7 enrollment (student survey) or number of teachers in the school (staff survey). Second, differences by response rates were examined for the measurement model parameters (research question 1), respondent- and school-level reliabilities (research question 2), stability of school-level climate scores (research question 3), and relationships of school climate measures to student achievement and discipline infractions (research question 4). The sensitivity analysis results are shown in appendix E.

Appendix D. Detailed results

A detailed description of the results for research questions 1 and 3 is presented below.

What school climate domains in middle school do the survey items measure??

Student survey exploratory factor analysis. Exploratory factor analysis (EFA) models were estimated to determine the number of factors underlying the data and the measurement structure of the latent factors. Using a randomly selected sample of approximately half the schools from the full sample, models were estimated for 10-factor solutions with between 1 and 10 factors. All models with two or more factors met the root mean square error of approximation (RMSEA) criterion for good fit (.06 or lower; table D1). All models with three or more factors met the standardized root mean square residual (SRMR) criterion for good fit (.08 or lower). All models with five or more factors met the comparative fit index (CFI) and Tucker-Lewis index (TLI) criterion for goodness of fit (.95 or higher). Thus, the five-factor model was retained as the preferred model and used as the starting point for comparative factor analysis (CFA) models.

Box D1 defines the terms used in describing the results.

The item factor loadings from the five-factor model suggested the following constructs, with items grouped based on the factor onto which they loaded most strongly: safety and connectedness (items 11–15 and item 119), caring relationships with teachers (items 16–21), meaningful participation (items 22–24), substance use at school and delinquency (items 55–75, 102, and 107–112), and bullying and discrimination (items 100 and 101, 103–106, 113–118, and 120). Item 22 ("At school, I do interesting activities") was estimated to load

Table D1. Exploratory factor analysis goodness-of-fit statistics for the student survey of the California School Climate, Health, and Learning Survey

Number of factors	Root mean square error of approximation[a]	Standardized root mean square residual[b]	Comparative fit index[c]	Tucker-Lewis index[c]
1	.061	.155	.416	.384
2	.037	.101	.796	.773
3	.027	.050	.894	.876
4	.021	.043	.941	.927
5[d]	.017	.034	.963	.951
6	.013	.027	.979	.971
7	.011	.019	.987	.980
8	.010	.017	.990	.985
9	.008	.013	.994	.990
10	.007	.011	.996	.992

Note: The analytic sample consists of 106,928 students in 464 middle schools that administered the survey in 2008/09 or 2009/10.

a. Recommended value of .06 or lower.

b. Recommended value of .08 or lower.

c. Recommended value of at least .95.

d. Preferred model.

Source: 2008/09 and 2009/10 Cal-SCHLS student survey.

Box D1. Definitions of terms used in describing the results

Factor. The underlying, unobserved variable explained by variation in responses on observed survey items.

Construct. General, subjective label applied to a factor to describe what it is.

Summary measure. Respondent-level, average of responses on the items that comprise a construct.

Summary score. School average of respondent-level summary measures.

almost equally onto safety and connectedness, caring relationships with adults, and meaningful participation but was included with meaningful participation for conceptual clarity. The estimated item factor loadings for the five-factor EFA model are shown in appendix F.

Student survey comparative factor analysis. The five-factor EFA solution was used as a starting point for a series of nested CFA models using data from a sample that included only the schools that were not selected for the EFA analytic sample. Five CFA models were tested to determine which factor specification had the best fit with the data (table D2).

Model 1 specified the five-factor measurement structure suggested by the preferred EFA model, resulting in good fit based on RMSEA. Model 2 separated the items from the substance use at school and delinquency factors into two factors—one that included the substance use item and one for the delinquency items, as suggested by the factor loadings in the EFA for seven factors. This specification improved model fit based on all indices. Model 3 separated the safety and connectedness factor into two factors, guided by the factor loadings in the eight-factor EFA, resulting in improved model fit. Model 4 split the bullying items and discrimination items off from their original single factor, guided by factor loadings in the nine-factor EFA, further improving model fit. Model 5 moved item 118 ("During the past 12 months, how often were you harassed or bullied for any other reason?") from the bullying factor to the discrimination factor, as suggested by the 10-factor EFA results, weakening the model fit. Fit indices showed model 4 to be the preferred model, with eight constructs: safety, connectedness, caring relationships with adults, meaningful participation, substance use at school, delinquency, bullying, and discrimination.

Correlations were estimated between these eight latent factors to determine whether they were sufficiently distinct from one another to justify including them as different factors. The results revealed high correlations for safety and connectedness (r = .81), bullying and discrimination (r = .82), and substance use and delinquency (r = .74). Correlations for safety and connectedness and for bullying and discrimination were high enough that a Fornell and Larcker (1981) test did not support discriminant validity. The two factors in each pair were combined, which resulted in a six-factor solution identical to that specified in model 2. Thus, model 2 was the selected model and included the following constructs, which can be understood as the domains of school climate (shown in figure 1 in the main report): safety and connectedness, caring relationships with adults, meaningful participation, substance use at school, bullying and discrimination, and delinquency. These six constructs serve as the basis for the reliability and validity analyses addressed in subsequent research questions. The factor loadings for each survey item on its respective construct are shown in table D3. Factor correlations are shown in table D4.

Table D2. Comparative factor analysis goodness-of-fit statistics for the student survey of the California School Climate, Health, and Learning Survey

Model	Factors	Root mean square error of approximation[a]	Weighted root mean square residual[b]	Comparative fit index[c]	Tucker-Lewis index[c]
1	Five-factors, consistent with benchmark exploratory factor analysis	.028	10.048	.906	.899
2	Six-factors, separates substance use/delinquency[d]	.025	8.706	.926	.920
3	Seven-factors, separates connectedness/safety	.023	8.002	.936	.931
4	Eight-factors, separates bullying/discrimination[e]	.022	7.469	.941	.936
5	Eight-factors, q118 loads on discrimination factor	.022	7.524	.940	.935

Note: The analytic sample consists of 107,260 students in 485 middle schools that administered the survey in 2008/09 or 2009/10.

a. Recommended value of .06 or lower.

b. Recommended value of 1.0 or lower or minimum value.

c. Recommended value of at least .95.

d. Selected model based on Fornell and Larcker's (1981) discriminant validity test.

e. Preferred model.

Source: 2008/09 and 2009/10 Cal-SCHLS student survey.

Table D3. Factor loadings for the selected confirmatory factor analysis model (model 2) for the student survey of the California School Climate, Health, and Learning Survey

Item number	Description	Estimated loadings	Standardized loadings
Safety and connectedness			
11	I feel close to people at this school	1.00	0.52
12	I am happy to be at this school	1.45	0.76
13	I feel like I am a part of this school	1.47	0.77
14	Teachers at school treat students fairly	1.32	0.69
15	I feel safe in my school	1.49	0.78
119	How safe do you feel at school	1.31	0.68
Caring relationships with adults			
16	Adult who really cares about me	1.00	0.74
17	… who tells me when I do a good job	1.08	0.80
18	… who notices when I am not there	0.93	0.69
19	… who always wants me to do my best	1.10	0.82
20	… who listens to me when I have something to say	1.11	0.82
21	… who believes that I will be a success	1.12	0.83
Meaningful participation			
22	I do interesting activities	1.00	0.73
23	I help decide things like activities or rules	1.00	0.73
24	I do things that make a difference	1.05	0.76

(continued)

Item number	Description	Estimated loadings	Standardized loadings
Substance use at school			
55	Lifetime, been drunk or high at school	1.00	0.92
72	Past 30 days, smoked cigarettes at school	1.03	0.95
73	… drank alcohol at school	0.95	0.87
74	… smoked marijuana at school	1.04	0.96
75	… used other illegal drug at school	0.99	0.91
Bullying and discrimination			
100	Past 12 months, been pushed or shoved	1.00	0.68
101	… been afraid of being beaten up	0.91	0.62
103	… had rumors spread about you	1.04	0.71
104	… had sexual jokes made to you	1.05	0.72
105	… been made fun of because of looks	1.02	0.69
106	… had your property stolen or damaged	0.99	0.68
113	… been bullied because of race/ethnicity	1.01	0.69
114	… been bullied because of religion	0.96	0.66
115	… been bullied because of gender	1.06	0.72
116	… been bullied because you are LGBT	1.07	0.73
117	… been bullied because of disability	1.05	0.72
118	… been bullied for any other reason	1.05	0.72
120	… been cyber-bullied	0.91	0.62
Delinquency			
102	Past 12 months, been in a physical fight	1.00	0.73
107	… been offered or sold an illegal drug	1.10	0.80
108	… damaged school property on purpose	1.09	0.79
109	… carried a gun	1.18	0.86
110	… carried any other weapon	1.17	0.85
111	… been threatened or injured by a weapon	1.15	0.84
112	… seen someone carrying a weapon	1.04	0.75

Note: The analytic sample consists of 107,260 students in 485 middle schools that administered the survey in 2008/09 or 2009/10.

Source: 2008/09 and 2009/10 Cal-SCHLS student survey.

Table D4. Correlations of the school climate measures for the student survey of the California School Climate, Health, and Learning Survey

	Safety and connectedness	Caring relationships with adults	Meaningful participation	Substance use at school	Bullying and discrimination
Caring relationships with adults	.60				
Meaningful participation	.54	.61			
Substance use at school	–.35	–.28	–.16		
Bullying and discrimination	–.37	–.16	–.10	.38	
Delinquency	–.41	–.28	–.17	.74	.65

Note: The analytic sample consists of 107,260 students in 485 middle schools who provided responses on the 2008/09 or 2009/10 survey.

Source: 2008/09 and 2009/10 Cal-SCHLS student survey.

Staff survey exploratory factor analysis. As with the student survey items, EFA models were estimated for the staff survey data to determine the number of underlying factors and the measurement structure of the latent factors. Fit indices were estimated for 10 models with 1–10 factors using a randomly selected sample of approximately half the schools from the full sample. Models with 5, 9, and 10 factors could not converge (table D5). Of the estimated models, the four-factor model and the models with six or more factors met the RMSEA criterion of good fit; only the eight-factor model met the CFI criterion for good fit.

The eight-factor model was the preferred model that met most rule-of-thumb criteria for good fit. However, an investigation of item factor loadings for the eight-factor model revealed several items that cross-loaded onto multiple factors. Thus, a simpler model that included six factors was retained as the starting point for the CFA models.

The item factor loadings from the six-factor model suggested the following constructs, with items grouped based on the factor onto which they loaded most strongly: support and safety (items 6–25 and 29–32); school discipline practices (items 26–28); caring relationships among staff and between staff and students (items 33–42); professional development needs around academic, socioemotional, and cultural issues (items 43–52); student health and engagement (items 53–56); and student delinquency (items 57–69). The estimated item factor loadings for the selected six-factor EFA model are shown in appendix G.

Staff survey comparative factor analysis. Using the six-factor EFA solution as a starting point, 16 CFA models were estimated to determine fit indices (table D6). Model 1 specified the six-factor measurement structure suggested by the preferred EFA, resulting in good

Table D5. Exploratory factor analysis goodness-of-fit statistics for the staff survey of the California School Climate, Health, and Learning Survey

Number of factors	Root mean square error of approximation[a]	Standardized root mean square residual[b]	Comparative fit index[c]	Tucker-Lewis index[c]
1	.096	.152	.624	.611
2	.082	.123	.733	.715
3	.073	.087	.797	.776
4	.060	.053	.867	.848
5	No convergence			
6[d]	.048	.038	.919	.901
7	.044	.033	.937	.920
8[e]	.039	.028	.950	.935
9	No convergence			
10	No convergence			

Note: The analytic sample consists of 7,079 teachers in 393 middle schools that administered the survey in 2008/09 or 2009/10.

a. Recommended value of .06 or lower.

b. Recommended value of .08 or lower.

c. Recommended value of at least .95.

d. Selected model.

e. Preferred model.

Source: 2008/09 and 2009/10 Cal-SCHLS staff survey.

fit based on RMSEA. Model 2 split items gauging appreciation for diversity, which cross-loaded on a separate factor in the eight-factor EFA, away from the support and safety construct, resulting in improved model fit. Model 3 moved items 29 ("This school is safe place for students") and 30 ("This school is safe place for staff") from the support and safety construct to the discipline practices construct, as they cross-loaded on the two constructs, resulting in better fit. Models 4, 5, and 6 experimented with different means of separating the new support construct, but none improved model fit.

In models 7–13, items from the support factor were iteratively parsed into separate constructs representing meaningful participation, provision of resources for staff, student supports, and staff supports. Items from the discipline factor were separated to create a new safety factor, and items from the relationships factor were separated into caring staff–student relationships and staff–peer relationships. Professional development items were split into three factors, each representing a different area of competence. The addition of each new factor resulted in improved model fit. Model 13 was the preferred model based on fit indices, with 14 constructs: student supports, staff supports, provision of resources, student participation, safety, discipline practices, appreciation for diversity, staff–student relationships, staff–peer relationships, academic professional development needs, socioemotional professional development needs, cultural professional development needs, student health and engagement connectedness, and student delinquency.

Correlations were estimated between these 14 latent factors to determine whether they were sufficiently distinct from one another. The factor correlations indicated high correlations between the following pairs of factors:

- Student supports and student participation (r = .88).
- Student supports and safety (r = .85).
- Appreciation for diversity and student participation (r = .87).
- Cultural professional development needs and socioemotional professional development needs (r = .88).

The strength of these correlations did not support discriminant validity based on a Fornell and Larcker (1981) test. The model was thus reduced by combining items from the academic supports, meaningful student participation, and safety factors and the cultural and socioemotional professional development needs factors. A new CFA model with 11 factors (model 14 in table D6) was then estimated, which resulted in factor correlations between the new student supports factor and the appreciation for diversity (r = .84) and discipline factors (r = .80) and between the two professional development needs factors (r = .85). Thus, these factors were combined, resulting in a new eight-factor CFA.

In the eight-factor CFA (model 15), the correlation between the new student supports factor and the staff supports factor (r = .81) did not support discriminant validity; thus, these were combined into a seven-factor model (model 16), the model that was ultimately selected. The seven constructs identified in the selected model (shown in figure 2 in the main report) were support and safety, caring staff–student relationships, staff–peer relationships, professional development needs, student health and engagement, student delinquency, and resource provision. These seven constructs serve as the basis for the reliability and validity analyses addressed in subsequent research questions. The factor loadings for each survey item are shown in table D7. The factor correlations are shown in table D8.

Table D6. Comparative factor analysis goodness-of-fit statistics for the staff survey of the California School Climate, Health, and Learning Survey

Model	Factors	Root mean square error of approximation[a]	Weighted root mean square residual[b]	Comparative fit index[c]	Tucker-Lewis index[c]
1	6 factors, consistent with baseline exploratory factor analysis	.041	4.503	.913	.910
2	7 factors, separates supports/diversity	.039	4.218	.922	.919
3	7 factors, q29 q30 with discipline	.038	4.085	.927	.924
4	8 factors, separates student supports/ staff supports	.041	4.430	.913	.908
5	8 factors, separates supports/staff relationships	.039	4.205	.921	.918
6	9 factors, separates student/staff supports/staff resources	.038	4.064	.925	.921
7	8 factors, separates supports/ participation	.037	3.962	.930	.927
8	9 factors, separates safety/discipline	.036	3.888	.932	.929
9	10 factors, separates support/staff resources	.035	3.728	.936	.933
10	11 factors, separates student support/staff support	.034	3.540	.941	.938
11	12 factors, separates student relations/staff relations	.031	3.197	.951	.948
12	13 factors, separates relationships/ high expectations	Could not be estimated			
13	14 factors, separates academic/ cultural/social professional development[d]	.030	2.887	.956	.953
14	11 factors, combined student support/ safety/participation and cultural/ social professional development	.033	3.426	.943	.940
15	8 factors, combined student support/ diversity/discipline and academic/ sociocultural professional development	.039	4.261	.920	.917
16	7 factors, combined student support/ staff collegiality[e]	.041	4.520	.912	.908

Note: The analytic sample consists of 7,358 teachers in 371 middle schools that administered the survey in 2008/09 or 2009/10.

a. Recommended value of .06 or lower.

b. Recommended value of 1.0 or lower or minimum value.

c. Recommended value of at least .95.

d. Preferred model.

e. Selected model based on Fornell and Larcker's (1981) discriminant validity test.

Source: 2008/09 and 2009/10 Cal-SCHLS staff survey.

Table D7. Factor loadings for the selected confirmatory factor analysis model (model 16) for the staff survey of the California School Climate, Health, and Learning Survey

Item number	Description	Estimated loadings	Standardized loadings
Support and safety			
6	This school is a supportive place for students to learn	1.00	0.87
7	… sets high standards for academic performance	0.94	0.82
8	… promotes academic success for all students	1.02	0.88
9	… emphasizes helping students academically	0.96	0.84
10	… provides adequate support services for students	0.78	0.68
11	… emphasizes teaching lessons in relevant ways	0.89	0.78
12	… is a supportive and inviting place for staff to work	1.02	0.89
13	… promotes trust and collegiality among staff	1.00	0.87
16	… provides opportunities for student decisionmaking	0.74	0.64
17	… gives students class discussion opportunities	0.90	0.78
18	… gives students extracurricular activity opportunities	0.83	0.72
19	… gives students opportunities to make a difference	0.82	0.71
20	… encourages students to enroll in rigorous courses	0.84	0.73
21	… emphasizes culturally relevant instruction	0.79	0.69
22	… has staff examine their cultural biases through P.D.	0.73	0.64
23	… prioritizes closing the racial achievement gap	0.77	0.67
24	… fosters appreciation for student diversity	0.98	0.86
25	… emphasizes showing respect for student cultures	0.96	0.84
26	… clearly communicates rules to students	0.94	0.82
27	… handles discipline problems fairly	1.01	0.88
28	… effectively handles discipline and behavior problems	1.01	0.88
29	… is a safe place for students	0.99	0.87
30	… is a safe place for staff	0.98	0.85
31	… is welcoming to and facilitates parent involvement	0.93	0.81
32	… has clean and well-maintained facilities	0.77	0.67
Caring staff–student relationships			
33	Adults in this school really care about every student	1.00	0.88
34	… acknowledge and pay attention to students	1.05	0.93
35	… want every student to do their best	1.03	0.91
36	… listen to what students have to say	1.04	0.92
37	… believe that every student can be a success	1.01	0.90
38	… treat all students fairly	1.06	0.94
39	… treat every student with respect	1.07	0.94
Staff–peer relationships			
40	… have close professional relationships with each other	1.00	0.87
41	… support and treat each other with respect	1.06	0.92
42	… feel a responsibility to improve this school	1.03	0.90
Professional development needs			
43	I need training in meeting academic standards	1.00	0.84
44	… evidence-based methods of instruction	0.96	0.81
45	… positive behavioral supports/classroom management	0.97	0.81
46	… working with diverse racial and cultural groups	1.04	0.87

(continued)

Table D7. Factor loadings for the selected confirmatory factor analysis model (model 16) for the staff survey of the California School Climate, Health, and Learning Survey *(continued)*

Item number	Description	Estimated loadings	Standardized loadings
47	… culturally relevant pedagogy for students	1.05	0.88
48	… serving English language learners	0.97	0.82
49	… closing the achievement gap	0.96	0.81
50	… serving special education students	0.93	0.78
51	… meeting the social and emotional needs of students	0.97	0.82
52	… creating a positive school environment	1.05	0.88
Student health and engagement			
53	Students at this school are healthy and physically fit	1.00	0.74
54	… arrive at school alert and rested	1.13	0.84
55	… are motivated to learn	1.22	0.91
56	… are well-behaved	1.18	0.87
Student delinquency			
57	Student alcohol and drug use a problem at school	1.00	0.76
58	Student tobacco use…	0.92	0.70
59	Harassment and bullying among students…	1.03	0.78
60	Physical fighting between students…	1.09	0.83
61	Disruptive student behavior…	1.11	0.85
62	Racial conflict among students…	0.94	0.72
63	Student depression or mental health…	0.79	0.60
64	Lack of respect for staff by students…	1.10	0.84
65	Cutting classes or being truant…	1.02	0.78
66	Gang-related activity…	0.99	0.76
67	Weapons possession…	1.02	0.78
68	Vandalism…	1.00	0.76
69	Theft…	0.98	0.75
Resource provision			
14	… provides resources for staff to do their jobs well	1.00	0.89
15	… provides resources to work with special education (IEP) students	0.99	0.88

Note: The analytic sample consists of 7,358 teachers in 371 middle schools that administered the survey in 2008/09 or 2009/10.

Source: 2008/09 and 2009/10 Cal-SCHLS staff survey.

Table D8. Correlations of staff survey measures on the California School Climate, Health, and Learning Survey

Measure	Support and safety	Caring staff-student relationships	Staff-peer relationships	Professional development needs	Student health and engagement	Student delinquency
Caring staff–student relationships	.62					
Staff–peer relationships	.66	.83				
Professional development needs	–.16	–.16	–.12			
Student health and engagement	.51	.44	.41	–.13		
Student delinquency	–.50	–.39	–.36	.20	–.63	
Resource provision	.75	.44	.52	–.14	.39	.38

Note: The analytic sample consists of 7,358 teachers in 371 middle schools that administered the survey in 2008/09 or 2009/10.

Source: 2008/09 and 2009/10 Cal-SCHLS staff survey.

Table D9. Stability of student survey measures on the California School Climate, Health, and Learning Survey for one-year intervals, by survey year (correlations)

Measure	2004/05 to 2005/06	2005/06 to 2006/07	2006/07 to 2007/08	2007/08 to 2008/09	2008/09 to 2009/10	2009/10 to 2010/11	One-year average
Safety and connectedness	.80	.65	.77	.83	.82	.91	.80
Caring relationships with adults	.26	.31	.67	.68	.61	.75	.52
Opportunities for participation	.37	.07	.73	.67	.65	.77	.54
Substance use at school	.51	.20	.10	.38	.29	.58	.36
Bullying and discrimination	.48	.50	.52	.44	.40	.62	.49
Delinquency	.69	.41	.57	.56	.60	.75	.61
Number of one-year survey intervals	64	34	40	38	38	41	na

na is not applicable.

Note: The analytic sample consists of 129 schools that administered the survey in consecutive years, for a total of 255 intervals.

Source: 2004/05 to 2010/11 Cal-SCHLS student survey.

How stable are the school-level climate measures?

To examine stability of school-level climate summary scores over time, school-level aggregate scores were correlated at one- and two-year intervals of survey administration. As described in appendix C, correlations were estimated for all one- and two-year intervals of survey administration. Results are presented for the student survey and the teacher survey.

Student survey. The average correlation of school-level summary scores over one-year intervals ranged from .36 (substance use) to .80 (safety and connectedness; table D9). These averages were weighted by the number of schools that administered the student survey at each one-year interval (see appendix C). The one-year stability of the scores generally improved over time. Between the 2009/10 and 2010/11 administrations of the survey, the stability correlations for all scores were at least .58 (for substance use) and above .70 for four of the constructs.

At two-year intervals the average stability of all student survey scores was diminished (table D10). For example, whereas safety and connectedness was highly correlated from year to year (r = .80), the average correlation is only .68 at two-year intervals. The decrease in stability is largest for safety and connectedness. Safety and connectedness was the most stable of the school-level scores over time, followed by delinquency, meaningful participation, caring relationships with adults, bullying and discrimination, and substance use at school.

Staff survey. For the staff survey school-level summary scores, the weighted average correlation over one-year intervals ranged from –.07 to .78, with professional development needs the outlier (–.07); all other scores had averages of .56 or higher (table D11). That the average correlation for professional development needs was negative suggests that it is not a reliable measure of an enduring school characteristic. The two-year correlations, between the 2008/09 and 2010/11 administration of the teacher survey, were between .38 and .66. Student health and engagement and student delinquency had one-year average correlations and two-year correlations above .60.

Table D10. Stability of student survey measures on the California School Climate, Health, and Learning Survey for two-year intervals, by survey year (correlations)

Measure	2004/05 to 2006/07	2005/06 to 2007/08	2006/07 to 2008/09	2007/08 to 2009/10	2008/09 to 2010/11	Two-year average
Safety and connectedness	.65	.69	.60	.73	.62	.68
Caring relationships with adults	.35	.48	.44	.46	.44	.45
Meaningful participation	.33	.52	.45	.59	.57	.51
Substance use at school	.19	.35	.32	.39	.38	.34
Bullying and discrimination	.48	.43	.34	.38	.44	.41
Delinquency	.49	.58	.51	.61	.51	.56
Number of two-year survey intervals	269	585	259	637	191	—

Note: The analytic sample consists of 959 schools that administered the survey in two-year intervals, for a total of 1,941 two-year intervals.

Source: 2004/05 to 2010/11 Cal-SCHLS student survey.

Table D11. Stability of staff survey measures on the California School Climate, Health, and Learning Survey, by survey intervals (correlations)

Measure	2008/09	One-year interval 2009/10 to 2010/11	One-year average	Two-year interval 2008/09 to 2010/11
Support and safety	.71	.53	.62	.42
Caring staff–student relationships	.59	.80	.69	.45
Staff–peer relationships	.73	.83	.78	.38
Professional development needs	.25	–.43	–.07	.43
Student health and engagement	.73	.71	.72	.66
Student delinquency	.54	.86	.69	.64
Resource provision	.56	.57	.56	.42
Number of survey intervals	22	20	42	119

Note: The analytic sample consists of 34 schools that administered the survey in consecutive years and 119 schools that administered the survey at two-year intervals.

Source: 2008/09 to 2010/11 Cal-SCHLS staff survey.

Appendix E. Sensitivity analyses

Student and staff survey response rates vary substantially across schools. Because the risk of biased results rises as the response rate drops, analyses were conducted to determine whether schools with low student or staff response rates differed from other schools in climate, staff, student demographics, or other characteristics. The team also conducted sensitivity analyses to determine whether low response rates biased the results.

Differences in schools by survey response rate

Student and staff survey response rates—the proportion of eligible individuals who completed the surveys—varied substantially across schools in the analytic samples. The student response rate for each school was calculated by dividing the number of student surveys returned by grade 7 enrollment. For staff the response rate was calculated by dividing the number of staff surveys completed by the number of eligible respondents, as reported by each school prior to survey administration. All school staff—teachers, administrators, and other certificated and classified staff—are asked to complete the Cal-SCHLS staff survey, but only teacher survey responses were examined in this report. While the student survey was administered only in grade 7, the staff survey included all middle school teachers, so the response rate is based on all eligible staff at each middle school.

For 2008/09–2009/10 the median survey response rate for the student survey was 74.6 percent. One-quarter of schools had a student response rate below 60 percent, and 10 percent had a rate below 35 percent. The estimated response rates for the staff survey were substantially lower. The median response rate for middle school teachers in 2008/09–2009/10 was 48 percent, with 25 percent of schools having a response rate below 28 percent.

School climate summary scores, student demographic characteristics, staff characteristics, and other school characteristics were compared between schools with low response rates (lower than 60 percent on the student survey and lower than 50 percent on the staff survey) and those with high response rates.

Schools with high response rates on the student survey had significantly higher average scores on the substance use survey construct than did schools with low response rates (table E1). There were no significant differences between school groups on other survey constructs. Also, schools with high response rates had significantly lower proportions of Black and low-income students and suspension rates and significantly higher academic performance than did schools with low response rates.

Schools with high response rates on the teacher survey had higher scores on all but two of the teacher survey constructs (table E2). The schools with high response rates exhibited higher scores on support and safety, caring staff–student relationships, staff–peer relationships, student health and engagement, and resource provision. Schools with high response rates also had higher percentages of White students, higher academic performance, and lower percentages of Hispanic students and low-income students.

These differences by response-rate group indicate that analyzing data only from schools with high response rates on the student and staff surveys could reduce the generalizability of the results to other schools in the state, since schools with high response rates are

Table E1. Comparison of student survey measures on the California School Climate, Health, and Learning Survey, by high and low response rates

School characteristic	All sample schools		Schools with high student response rate (at least 60 percent)	Schools with low student response rate (less than 60 percent)	Difference (standard deviation)
	Mean	Standard deviation			
School climate scores					
Safety and connectedness	300	50	300	299	+0.03
Caring relationships with adults	300	50	299	302	–0.05
Meaningful participation	300	50	300	299	+0.03
Substance use at school	300	50	302	294	+0.16**
Bullying and discrimination	300	50	299	304	–0.11
Delinquency	300	50	300	300	0.00
Demographics, percentage of students who are					
Asian	9	14	10	8	+0.11
Black	6	8	6	9	–0.41**
Hispanic	47	28	47	49	–0.07
White	30	25	31	28	+0.10
Low-income	53	28	51	58	–0.26**
Other school characteristics					
Academic performance index	777	83	783	770	+0.26**
English language arts test score average (grade 7)	358	26	360	353	+0.27**
English language arts test score average (grade 8)	358	26	360	352	+0.29**
Math test score average	354	29	355	350	+0.18**
Suspensions per 100 students	25	24	23	30	–0.27**

**Difference is significant at the $p < .05$ level based on a two-sample t-test with unequal variances.

Note: The analytic sample consists of 949 middle schools (720 high-response-rate schools and 229 low-response-rate schools) that administered the survey in 2008/09 or 2009/10.

Source: 2008/09 and 2009/10 Cal-SCHLS student survey.

different from schools with low response rates. Generalizability to all schools in the state is best ensured by including all schools in the analytic sample. However, the extent to which schools with low response rates exhibit greater within-school differences between respondents and nonrespondents may reduce generalizability. The comparisons do not provide information on the differences between respondents and nonrespondents in schools.

Replication in schools with low and high survey response rates

What school climate domains in middle school do the survey items measure? All analyses of the student survey data related to research question 1 were replicated for two subsamples: students in schools with student survey response rates of 60 percent or greater and students in schools with rates below 60 percent. The model fit estimates for these subgroup analyses are shown. The same decisionmaking criteria were used as for the full sample analysis. There were no substantive differences in conclusions to research question 1 in either of the two subsamples. The same measurement structure was identified for students in schools with high and low survey response rates (tables E3–E6).

Table E2. Comparison of staff survey measures on the California School Climate, Health, and Learning Survey, by high and low response rates

School characteristic	All sample schools		Schools with high teacher response rate (at least 50 percent)	Schools with low teacher response rate (less than 50 percent)	Difference (standard deviation)
	Mean	Standard deviation			
School climate scores					
Support and safety	300	50	308	295	+0.30**
Caring staff–student relationships	300	50	306	295	+0.24**
Staff–peer relationships	300	50	308	294	+0.30**
Professional development needs	300	50	296	301	–0.13
Student health and engagement	300	50	304	297	+0.16**
Student delinquency	300	50	296	304	–0.16**
Staff resources	300	50	309	294	+0.33**
Demographics, percentage of students who are					
Asian	9	14	9	10	–0.10
Black	6	7	5	6	–0.07
Hispanic	47	28	44	49	–0.15**
White	32	24	35	29	+0.26**
Low-income	50	28	48	52	–0.14**
Other school characteristics					
Academic performance index	787	82	794	780	+0.17**
English language arts test score average (grade 7)	361	26	362	359	+0.12
English language arts test score average (grade 8)	361	27	363	358	+0.12
Math test score average	356	29	358	354	+0.13
Suspensions per 100 students	23	21	22	24	–0.13

**Difference is significant at the $p < .05$ level based on a two-sample t-test with unequal variances.

Note: The analytic sample consists of 762 middle schools (362 high-response-rate schools and 400 low-response-rate schools) that administered the survey in 2008/09 or 2009/10.

Source: 2008/09 and 2009/10 Cal-SCHLS staff survey.

Table E3. Exploratory factor analysis goodness-of-fit statistics for the student survey of the California School Climate, Health, and Learning Survey, schools with high response rates

Number of factors	Root mean square error of approximation[a]	Standardized root mean square residual[b]	Comparative fit index[c]	Tucker-Lewis index[c]
1	.067	.155	.337	.302
2	.041	.101	.761	.735
3	.031	.050	.871	.848
4	.024	.042	.930	.912
5[d]	.019	.034	.956	.942
6	.015	.027	.974	.964
7	.012	.019	.984	.976
8	.011	.017	.988	.981
9	.009	.013	.993	.988
10	.008	.011	.995	.990

Note: The analytic sample consists of 184,509 students in 720 middle schools with response rates of 60 percent or higher that administered the survey in 2008/09 or 2009/10.

a. Recommended value of .06 or lower.

b. Recommended value of .08 or lower.

c. Recommended value of at least .95.

d. Preferred model.

Source: 2008/09 and 2009/10 Cal-SCHLS student survey.

Table E4. Exploratory factor analysis goodness-of-fit statistics for the student survey of the California School Climate, Health, and Learning Survey, schools with low response rates

Number of factors	Root mean square error of approximation[a]	Standardized root mean square residual[b]	Comparative fit index[c]	Tucker-Lewis index[c]
1	.076	.165	.556	.532
2	.050	.108	.817	.796
3	.041	.054	.885	.864
4	.033	.045	.930	.913
5[a]	.026	.037	.957	.944
6	.022	.028	.972	.961
7	.019	.021	.981	.972
8	.015	.018	.989	.982
9	.012	.013	.993	.988
10	.011	.012	.994	.990

Note: The analytic sample consists of 29,679 students in 229 middle schools with response rates below 60 percent that administered the survey in 2008/09 or 2009/10.

a. Recommended value of .06 or lower.

b. Recommended value of .08 or lower.

c. Recommended value of at least .95.

d. Preferred model.

Source: 2008/09 and 2009/10 Cal-SCHLS student survey.

Table E5. Comparative factor analysis goodness-of-fit statistics for the student survey of the California School Climate, Health, and Learning Survey, schools with high response rates

Model	Factors	Root mean square error of approximation[a]	Weighted root mean square residual[b]	Comparative fit index[c]	Tucker-Lewis index[c]
1	Five-factors, consistent with benchmark exploratory factor analysis	12.495	.025	.910	.904
2	Six-factors, separates substance use/delinquency[d]	10.727	.022	.931	.926
3	Seven-factors, separates connectedness/safety	9.954	.020	.940	.935
4	Eight-factors, separates bullying/discrimination[e]	9.192	.019	.948	.943
5	Eight-factors, q118 loads on discrimination factor	9.293	.019	.946	.941

Note: The analytic sample consists of 184,509 students in 720 middle schools with response rates of 60 percent or higher that administered the survey in 2008/09 or 2009/10.

a. Recommended value of .06 or lower.

b. Recommended value of 1.0 or lower or minimum value.

c. Recommended value of at least .95.

d. Selected model based on Fornell and Larcker's (1981) discriminant validity test.

e. Preferred model.

Source: 2008/09 and 2009/10 Cal-SCHLS student survey.

Table E6. Comparative factor analysis goodness-of-fit statistics for the student survey of the California School Climate, Health, and Learning Survey, schools with low response rates

Model	Factors	Root mean square error of approximation[a]	Weighted root mean square residual[b]	Comparative fit index[c]	Tucker-Lewis index[c]
1	Five-factors, consistent with benchmark exploratory factor analysis	6.141	.030	.933	.928
2	Six-factors, separates substance use/delinquency[d]	5.271	.027	.947	.943
3	Seven-factors, separates connectedness/safety	4.775	.024	.956	.952
4	Eight-factors, separates bullying/discrimination[e]	4.531	.024	.958	.954
5	Eight-factors, q118 loads on discrimination factor	4.526	.024	.958	.954

Note: The analytic sample consists of 29,679 students in 229 middle schools with response rates below 60 percent that administered the survey in 2008/09 or 2009/10.

a. Recommended value of .06 or lower.

b. Recommended value of 1.0 or lower or minimum value.

c. Recommended value of at least .95.

d. Selected model based on Fornell and Larcker's (1981) discriminant validity test.

e. Preferred model.

Source: 2008/09 and 2009/10 Cal-SCHLS student survey.

Similarly, the teacher models were reestimated for two subsamples: teachers in schools with staff survey response rates of 50 percent or greater and teachers in schools with rates below 50 percent. As with the sensitivity analyses for the student survey, there were no substantive differences in conclusions in either of the two subsamples. The same measurement structure was identified for teachers in schools with high and low survey response rates (tables E7–E10).

Table E7. Exploratory factor analysis goodness-of-fit statistics for the staff survey of the California School Climate, Health, and Learning Survey, schools with high response rates

Number of factors	Root mean square error of approximation[a]	Standardized root mean square residual[b]	Comparative fit index[c]	Tucker-Lewis index[c]
1	.096	.152	.499	.482
2	.080	.122	.665	.643
3	.071	.085	.741	.714
4	.058	.050	.834	.811
5	.053	.043	.869	.845
6[d]	.047	.037	.898	.875
7	.043	.033	.920	.898
8[e]	.038	.028	.938	.918
9	No convergence			
10	No convergence			

Note: The analytic sample consists of 10,239 teachers in 362 middle schools with response rates of 50 percent or higher that administered the survey in 2008/09 or 2009/10.

a. Recommended value of .06 or lower.

b. Recommended value of .08 or lower.

c. Recommended value of at least .95.

d. Selected model.

e. Preferred model.

Source: 2008/09 and 2009/10 Cal-SCHLS staff survey.

Table E8. Exploratory factor analysis goodness-of-fit statistics for the staff survey of the California School Climate, Health, and Learning Survey, schools with low response rates

Number of factors	Root mean square error of approximation[a]	Standardized root mean square residual[b]	Comparative fit index[c]	Tucker-Lewis index[c]
1	.101	.152	.637	.625
2	.088	.123	.729	.711
3	.075	.985	.811	.791
4	.062	.052	.877	.859
5		No convergence		
6[d]		No convergence		
7	.044	.032	.943	.928
8[e]	.040	.028	.955	.940
9	.036	.025	.964	.951
10		No convergence		

Note: The analytic sample consists of 4,331 teachers in 400 middle schools with response rates below 50 percent that administered the survey in 2008/09 or 2009/10.

a. Recommended value of .06 or lower.

b. Recommended value of .08 or lower.

c. Recommended value of at least .95.

d. Selected model.

e. Preferred model.

Source: 2008/09 and 2009/10 Cal-SCHLS staff survey.

Table E9. Comparative factor analysis goodness-of-fit statistics for the staff survey of the California School Climate, Health, and Learning Survey Staff, schools with high response rates

Model	Factors	Root mean square error of approximation[a]	Weighted root mean square residual[b]	Comparative fit index[c]	Tucker-Lewis index[c]
1	6 factors, consistent with baseline exploratory factor analysis	.040	5.090	.914	.910
2	7 factors, separates supports/diversity	.038	4.771	.922	.919
3	7 factors, q29 q30 with discipline	.037	4.684	.927	.923
7	8 factors, separates supports/participation	.036	4.515	.930	.927
11	12 factors, separates student relations/ staff relations	.030	3.592	.952	.948
13	14 factors, separates academic/cultural/ social professional development[d]	.029	3.260	.956	.953
14	11 factors, combined student support/ safety/participation and cultural/ social professional development	.032	3.835	.944	.941
15	8 factors, combined student support/ diversity/discipline and academic/ sociocultural professional development	.037	4.637	.925	.922
16	7 factors, combined student support/staff collegiality[e]	.040	5.112	.913	.909

Note: The analytic sample consists of 10,239 teachers in 362 middle schools with response rates of 50 percent or higher that administered the survey in 2008/09 or 2009/10.

a. Recommended value of .06 or lower.

b. Recommended value of 1.0 or lower or minimum value.

c. Recommended value of at least .95.

d. Preferred model.

e. Selected model based on Fornell and Larcker's (1981) discriminant validity test.

Source: 2008/09 and 2009/10 Cal-SCHLS staff survey.

Table E10. Comparative factor analysis goodness-of-fit statistics for the staff survey of the California School Climate, Health, and Learning Survey, schools with low response rates

Model	Factors	Root mean square error of approximation[a]	Weighted root mean square residual[b]	Comparative fit index[c]	Tucker-Lewis index[c]
1	6 factors, consistent with baseline exploratory factor analysis	.046	3.901	.925	.922
3	7 factors, q29 q30 with discipline	.041	3.463	.939	.937
7	8 factors, separates supports/participation	.040	3.362	.942	.939
11	12 factors, separates student relations/ staff relations	.034	2.708	.960	.957
13	14 factors, separates academic/cultural/ social professional development[d]	.032	2.481	.964	.961
14	11 factors, combined student support/ safety/participation and cultural/ social professional development	.037	2.992	.951	.948
16	7 factors, combined student support/staff collegiality[e]	.047	3.964	.923	.919

Note: The analytic sample consists of 4,331 teachers in 400 middle schools with response rates below 50 percent that administered the survey in 2008/09 or 2009/10.

a. Recommended value of .06 or lower.

b. Recommended value of 1.0 or lower or minimum value.

c. Recommended value of at least .95.

d. Preferred model.

e. Selected model based on Fornell and Larcker's (1981) discriminant validity test.

Source: 2008/09 and 2009/10 Cal-SCHLS staff survey.

How reliably do the surveys items measure school climate at the respondent and school levels? The student- and teacher-level internal consistency estimates of reliability were nearly identical between the subsamples with high and low response rates. There were no substantive differences between the two groups (tables E11 and E12).

Table E11. Internal consistency reliability of the student survey measures on the California School Climate, Health, and Learning Survey Staff, by high and low response rates (Cronbach's alpha)

Measure	High student response rate (at least 60 percent)	Low student response rate (less than 60%)
Safety and connectedness	.80	.79
Caring relationships with adults	.85	.84
Meaningful participation	.68	.68
Substance use at school	.88	.87
Bullying and discrimination	.85	.85
Delinquency	.83	.82

Note: Recommended value is at least .70. The analytic sample consists of 184,509 students in 720 schools with high response rates and 29,679 students in 229 schools with low response rates that administered the survey in 2008/09 or 2009/10.

Source: 2008/09 and 2009/10 Cal-SCHLS student survey.

Table E12. Internal consistency reliability of staff survey measures on the California School Climate, Health, and Learning Survey Staff, by high and low response rates (Cronbach's alpha)

Measure	High staff response rate (at least 50 percent)	Low staff response rate (less than 50 percent)
Support and safety	.96	.96
Caring staff–student relationships	.95	.94
Staff–peer relationships	.88	.87
Professional development needs	.89	.89
Student health and engagement	.84	.83
Student delinquency	.91	.91
Resource provision	.81	.82

Note: Recommended value is at least .70. The analytic sample consists of 10,239 teachers in 372 schools with high response rates and 4,331 teachers in 400 schools with low response rates that administered the survey in 2008/09 or 2009/10.

Source: 2008/09 and 2009/10 Cal-SCHLS staff survey.

The school-level reliabilities were mostly similar across the two samples as well, although the reliability coefficient for substance use on school property was noticeably lower for the subsample with low response rates (table E13). In the subsample with high response rates the *k* coefficient (Spearman-Brown reliability coefficient) for the substance use measure with a school sample size of 100 was .67, compared with .55 in the subsample with low response rates. This difference was due to the fact that the intraclass correlation for the substance use construct was smaller for the subsample with low response rates, implying that there are fewer between-school differences in student substance use on school

Table E13. School-level reliability of student survey measures on the California School Climate, Health, and Learning Survey, by high and low response rates

Measure	Intraclass correlation	*r* given student sample size per school[a]				
		226 (mean)	50	100	300	400
High response rate (at least 60 percent)						
Safety and connectedness	.079	.95	.81	.90	.96	.97
Caring relationships with adults	.027	.86	.58	.74	.89	.92
Meaningful participation	.033	.89	.63	.77	.91	.93
Substance use at school	.020	.82	.51	.67	.86	.89
Bullying and discrimination	.020	.82	.51	.67	.86	.89
Delinquency	.033	.89	.63	.77	.91	.93
Low response rate (less than 60 percent)						
Safety and connectedness	.068	.94	.78	.88	.96	.97
Caring relationships with adults	.027	.86	.58	.74	.89	.92
Meaningful participation	.033	.89	.63	.77	.91	.93
Substance use at school	.012	.73	.38	.55	.78	.83
Bullying and discrimination	.016	.79	.45	.62	.83	.87
Delinquency	.027	.86	.58	.74	.89	.92

Note: The analytic sample consists of 184,509 students in 720 schools with high response rates and 29,679 students in 229 schools with low response rates that administered the survey in 2008/09 or 2009/10.

a. Reliability predicted from Spearman-Brown formula; recommended value of at least .60.

Source: 2008/09 and 2009/10 Cal-SCHLS student survey.

Table E14. School-level reliability of staff survey measures on the California School Climate, Health, and Learning Survey, by high and low response rates

Measure	Intraclass correlation	*r* given teacher sample size per school[a]				
		19 (mean)	5	10	30	40
High response rate (at least 50 percent)						
Support and safety	.239	.86	.61	.76	.90	.93
Caring staff–student relationships	.124	.73	.41	.59	.81	.85
Staff–peer relationships	.149	.77	.47	.64	.84	.88
Professional development needs	.045	.47	.19	.32	.59	.65
Student health and engagement	.264	.87	.64	.78	.91	.93
Student delinquency	.329	.90	.71	.83	.94	.95
Resource provision	.118	.72	.40	.57	.80	.84
Low response rate (less than 50 percent)						
Support and safety	.288	.88	.67	.80	.92	.94
Caring staff–student relationships	.115	.71	.39	.57	.80	.84
Staff–peer relationships	.143	.76	.45	.63	.83	.87
Professional development needs	.052	.51	.22	.35	.62	.69
Student health and engagement	.307	.89	.69	.82	.93	.95
Student delinquency	.349	.91	.73	.84	.94	.96
Resource provision	.148	.77	.46	.63	.84	.87

Note: The analytic sample consists of 10,239 teachers in 362 schools with high response rates and 4,331 teachers in 400 schools with low response rates that administered the survey in 2008/09 or 2009/10.

a. Reliability predicted from Spearman-Brown formula; recommended value is at least .60.

Source: 2008/09 and 2009/10 Cal-SCHLS staff survey.

property among schools with low response rates. No response rate group differences in school-level reliabilities were apparent on the teacher-reported measures (table E14).

How stable are the school-level climate measures? For the student survey, the average one- and two-year stability estimates for the subsample with high response rates were higher than the estimates for the subsample with low response rates. For the one-year stability estimates, the coefficients for the subsample with high response rates were larger than those for the subsample with low response rates for five of the six measures (table E15). These differences, however, should be interpreted cautiously because there were too few schools in the subsample with low response rates that administered the student survey in back-to-back years to obtain consistent estimates. Differences in the average one-year stability estimates between the full sample (see table 5 in main report) and the subsample with high response rates were minimal, though the estimates for the subsample with high response rates were slightly higher for all constructs. For example, the average one-year stability coefficient for safety and connectedness was .80 in the full sample and .82 in the subsample with high response rates.

For the two-year stability estimates, the coefficients were larger for the subsample with high response rates than for the subsample with low response rates for all six measures (table E16). For example, the average two-year stability coefficient for caring relationships with adults was .48 in the subsample with high response rates and .36 in the subsample with low response rates. The results suggest that temporal stability of the student measures is higher in the subsample with high response rates than in the subsample with low response rates.

Table E15. Stability of student survey measures on the California School Climate, Health, and Learning Survey for one-year intervals, by survey year and response rate (correlations)

Measure	2004/05 to 2005/06	2005/06 to 2006/07	2006/07 to 2007/08	2007/08 to 2008/09	2008/09 to 2009/10	2009/10 to 2010/11	One-year average
High response rate (at least 60 percent)							
Safety and connectedness	.83	.70	.80	.81	.86	.91	.82
Caring relationships with adults	.25	.41	.64	.66	.65	.80	.57
Meaningful participation	.39	.05	.77	.74	.80	.81	.59
Substance use at school	.55	.39	.08	.38	.29	.60	.38
Bullying and discrimination	.54	.50	.51	.40	.42	.65	.50
Delinquency	.71	.49	.60	.57	.65	.78	.63
Number of survey intervals	54	28	34	33	33	37	219
Low response rate (less than 60 percent)							
Safety and connectedness	.78	.39	.71	.94	.30	–.37	.51
Caring relationships with adults	.80	–.26	.88	.83	.71	.08	.53
Meaningful participation	.12	.33	.21	.49	.21	–.93	.12
Substance use at school	.58	–.31	.91	.63	.39	.79	.48
Bullying and discrimination	.70	.61	.84	.71	.12	–.84	.44
Delinquency	.56	–.05	–.20	.16	–.30	.34	.09
Number of survey intervals	7	6	6	5	5	4	33

Note: The analytic sample consists of 122 schools (106 schools with high response rates and 16 schools with low response rates) that administered the survey in consecutive years.

Source: 2004/05 to 2010/11 Cal-SCHLS student survey.

Table E16. Stability of student survey measures on the California School Climate, Health, and Learning Survey for two-year intervals, by survey year and response rate (correlations)

Measure	2004/05 to 2006/07	2005/06 to 2007/08	2006/07 to 2008/09	2007/08 to 2009/10	2008/09 to 2010/11	Two-year average
High response rate (at least 60 percent)						
Safety and connectedness	.64	.71	.61	.76	.67	.68
Caring relationships with adults	.31	.55	.42	.51	.53	.46
Meaningful participation	.35	.56	.50	.61	.63	.51
Substance use at school	.16	.37	.34	.41	.43	.34
Bullying and discrimination	.52	.45	.36	.44	.50	.45
Delinquency	.51	.64	.52	.64	.52	.57
Number of survey intervals	204	455	203	494	151	1,507
Low response rate (less than 60 percent)						
Safety and connectedness	.64	.62	.59	.64	.33	.56
Caring relationships with adults	.41	.34	.58	.37	.08	.36
Meaningful participation	.16	.36	.27	.53	.26	.32
Substance use at school	.43	.21	.33	.32	.23	.30
Bullying and discrimination	.35	.41	.25	.17	.12	.26
Delinquency	.65	.54	.51	.54	.40	.53
Number of survey intervals	57	118	54	134	40	403

Note: The analytic sample consists of 941 schools (731 schools with high response rates and 210 schools with low response rates) that administered the survey in two-year intervals.

Source: 2004/05 to 2010/11 Cal-SCHLS student survey.

For the staff survey, there were too few schools in the subsamples with high and low response rates to interpret differences in stability coefficients across groups (table E17). However, in comparison with the full sample estimates (see table 5 in main report) for the two-year stability estimates, the coefficients for the subsample with high response rates were slightly larger than those for the subsample with low response rates for five constructs: support and safety, caring staff–student relationships, staff–peer relationships, student health and engagement, and resource provision. For example, the two-year stability coefficient for support and safety was .42 in the full sample, .46 in the subsample with high response rates, and .40 in the subsample with low response rates. For professional development needs and student delinquency, the subsample with low response rates had higher two-year stability coefficients than the full sample, and the subsample with high response rates had lower coefficients.

Are the school climate measures related to student achievement and discipline infractions? Correlations between the school climate measures and the four criterion measures were stronger in the subsample with high response rates than in the subsample with low response rates, particularly for the student survey (tables E18 and E19). The largest differences were for caring relationships with adults, meaningful participation, and bullying and discrimination. For each of these measures the correlations were substantially stronger in the subsample with high response rates than in the subsample with low response rates. For example, the correlation between math test scores and caring relationships was .49 in

Table E17. Stability of staff survey measures on the California School Climate, Health, and Learning Survey, by survey interval and response rate (correlations)

Measure	One-year interval			Two-year interval
	2008/09 to 2009/10	2009/10 to 2010/11	One-year average	2008/09 to 2010/11
High response rate (at least 50 percent)				
Support and safety	.79	.13	.33	.46
Caring staff–student relationships	.70	.88	.78	.51
Staff–peer relationships	.73	.88	.80	.44
Professional development needs	–.14	.76	.26	.32
Student health and engagement	.74	.83	.78	.79
Student delinquency	.88	.93	.90	.62
Resource provision	.78	.06	.46	.44
Number of survey intervals	14	11	25	55
Low response rate (less than 50 percent)				
Support and safety	.68	.70	.79	.40
Caring staff–student relationships	.52	.73	.63	.40
Staff–peer relationships	.74	.81	.78	.33
Professional development needs	.95	–.93	.01	.48
Student health and engagement	.79	.14	.47	.59
Student delinquency	–.01	.74	.37	.66
Resource provision	.56	.90	.73	.41
Number of survey intervals	8	9	17	64

Note: The analytic sample consists of 34 schools (19 schools with high response rates and 15 schools with low response rates) that administered the survey in consecutive years and 119 schools (55 schools with high response rates and 64 schools with low response rates) that administered the survey in two-year intervals.

Source: 2008/09 to 2010/11 Cal-SCHLS staff survey.

Table E18. School-level correlations of student survey measures on the California School Climate, Health, and Learning Survey with student achievement and discipline infractions, by high and low response rates

Measure	English language arts test scores		Math test scores	Suspensions
	Grade 7	Grade 8	Grade 7	
High response rate (at least 60 percent)				
Safety and connectedness	.68	.67	.64	–.51
Caring relationships with adults	.49	.48	.49	–.38
Meaningful participation	.55	.54	.53	–.39
Substance use	–.48	–.47	–.41	.34
Bullying and discrimination	–.23	–.24	–.29	.19
Delinquency	–.63	–.64	–.57	.42
Low response rate (less than 60 percent)				
Safety and connectedness	.61	.60	.46	–.37
Caring relationships with adults	.24	.26	.17	–.17
Meaningful participation	.36	.37	.26	–.22
Substance use	–.44	–.39	–.30	.22
Bullying and discrimination	.01	–.06	.02	.01
Delinquency	–.49	–.53	–.40	.24

Note: The analytic sample consists of 949 middle schools (720 high-response-rate schools and 229 low-response-rate schools) that administered the survey in 2008/09 or 2009/10.

Source: 2008/09 and 2009/10 Cal-SCHLS student survey.

Table E19. School-level correlations of staff survey measures on the California School Climate, Health, and Learning Survey with student achievement and discipline infractions, by high and low response rates

Measure	English language arts test scores		Math test scores	Suspensions
	Grade 7	Grade 8	Grade 7	
High response rate (at least 60 percent)				
Support and safety	.48	.50	.41	–.25
Caring staff–student relationships	.43	.45	.35	–.23
Staff–peer relationships	.28	.30	.20	–.17
Professional development needs	–.42	–.41	–.34	.20
Student health and engagement	.83	.82	.72	–.47
Student delinquency	–.69	–.70	–.60	.46
Resource provision	.28	.31	.29	–.19
Low response rate (less than 60 percent)				
Support and safety	.43	.44	.45	–.19
Caring staff–student relationships	.38	.38	.35	–.14
Staff–peer relationships	.26	.26	.23	–.10
Professional development needs	–.27	–.28	–.27	.13
Student health and engagement	.74	.74	.66	–.39
Student delinquency	–.66	–.67	–.59	.44
Resource provision	.24	.23	.31	–.10

Note: The analytic sample consists of 362 high-response-rate schools and 400 low-response-rate schools that administered the survey in 2008/09 or 2009/10.

Source: 2008/09 and 2009/10 Cal-SCHLS staff survey.

the subsample with high response rates and .17 in the subsample with low response rates. In the subsample with low response rates, predictive validity is not supported for caring relationships with adults and bullying and discrimination.

Similarly, for the staff survey, correlations between the school climate measures and the four criterion measures were stronger in the subsample with high response rates than in the subsample with low response rates, but the differences were mostly smaller than they were for the student survey. The largest difference in correlations between groups was for professional development needs and English language arts test scores: .–42 in the subsample with high response rates compared with –.27 in the subsample with low response rates.

Overall, greater predictive validity was demonstrated for schools with high survey response rates than for schools with low survey response rates.

Appendix F. Student survey exploratory factor analysis results: Factor loadings from preferred model

Table F1 presents factor loadings for each student survey item estimated through exploratory factor analyses for the preferred model. The model is based on data from a randomly generated split-half sample of schools from the full sample of schools that administered the student survey of the California School Climate, Health, and Learning Survey in 2008/09 or 2009/10.

Table F1. Five-factor exploratory factor analysis model of student survey items on the California School Climate, Health, and Learning Survey

Item	Description	1	2	3	4	5
11	I feel close to people at this school	**.61**	.02	.14	–.01	.01
12	I am happy to be at this school	**.83**	–.06	–.02	.02	–.05
13	I feel like I am a part of this school	**.78**	.03	.03	–.01	.02
14	Teachers at school treat students fairly	**.36**	.20	–.16	–.05	–.02
15	I feel safe in my school	**.67**	.02	–.04	–.11	–.04
16	Adult who really cares about me	.04	**.71**	.04	.01	.07
17	… who tells me when I do a good job	.02	**.74**	–.02	.01	–.03
18	… who notices when I'm not there	.00	**.68**	.08	–.03	.03
19	… who always wants me to do my best	–.03	**.80**	–.03	.03	–.09
20	… who listens to me	.02	**.75**	.00	–.06	.00
21	… who believes that I will be a success	–.03	**.81**	–.02	–.03	–.03
22	I do interesting activities at school	.28	.29	–.01	.03	.26
23	I help decide things like activities or rules	.24	**.35**	–.02	–.01	**.53**
24	I do things at school that make a difference	.23	**.37**	–.03	.05	**.46**
55	Lifetime, been drunk or high at school	–.04	–.04	**.76**	.02	.21
72	Past 30 days, smoked cigarettes at school	–.03	–.02	**.80**	–.01	**.40**
73	… drank alcohol at school	–.03	.01	**.78**	–.04	**.32**
74	… smoked marijuana at school	–.04	–.02	**.86**	–.05	**.33**
75	… used other illegal drug at school	–.02	.00	**.76**	–.02	**.43**
100	Past 12 months, been pushed or shoved	–.03	.01	.04	**.67**	–.09
101	… been afraid of being beaten up	–.08	.05	–.09	**.67**	–.02
102	… been in a physical fight	–.01	.02	**.53**	**.33**	–.06
103	… had rumors spread about you	.03	.02	.00	**.76**	–.03
104	… had sexual jokes made to you	.04	–.01	.09	**.69**	–.06
105	… been made fun of because of looks	–.02	–.01	–.20	**.82**	–.03
106	… had your property stolen or damaged	.00	.02	.12	**.63**	–.01
107	… been offered or sold an illegal drug	.00	–.01	**.67**	.24	–.03
108	… damaged school property on purpose	.02	–.05	**.61**	**.30**	–.04
109	… carried a gun	.03	–.01	**.76**	.24	.01
110	… carried any other weapon	.03	.00	**.78**	.23	–.09
111	… been threatened or injured by a weapon	.00	.02	**.53**	**.46**	.01
112	… seen someone carrying a weapon	.02	.04	**.56**	**.35**	–.11
113	… been bullied because of race/ethnicity	–.02	–.02	–.01	**.64**	.25
114	… been bullied because of religion	.00	–.02	.03	**.60**	**.35**
115	… been bullied because of gender	.00	–.01	–.01	**.70**	**.31**

(continued)

Table F1. Five-factor exploratory factor analysis model of student survey items on the California School Climate, Health, and Learning Survey *(continued)*

Item	Description	1	2	3	4	5
116	… been bullied because you are LGBT	–.03	–.02	.00	**.69**	.23
117	… been bullied because of disability	–.01	–.02	.10	**.61**	**.30**
118	… been bullied for any other reason	–.05	.00	–.15	**.78**	.11
119	How safe do you feel at school	**.51**	.04	–.03	–.26	.04
120	Past 12 months, been cyber-bullied	.03	–.02	.16	**.49**	.14

Note: The analytic sample consists of 106,928 students in 464 middle schools that administered the survey in 2008/09 or 2009/10. Numbers in bold are factor loadings of at least .30.

Source: 2008/09 and 2009/10 Cal-SCHLS student survey.

Appendix G. Staff survey exploratory factor analysis results: Factor loadings from selected model

Table G1 presents factor loadings for each staff survey item estimated through exploratory factor analyses for the selected model. The model is based on data from a randomly generated split-half sample of schools from the full sample of schools that administered the California School Climate, Health, and Learning Survey staff survey in 2008/09 or 2009/10.

Table G1. Six-factor exploratory factor analysis model of staff survey items on the California School Climate, Health, and Learning Survey

Item	Description	1	2	3	4	5	6
6	This school is a supportive place for students to learn	**.73**	.00	.12	–.01	.12	.19
7	… sets high standards for academic performance	**.74**	–.01	.04	.01	.07	.22
8	… promotes academic success for all students	**.87**	–.03	–.02	.00	–.01	.22
9	… emphasizes helping students academically	**.81**	.02	.01	–.02	–.04	.17
10	… provides adequate support services for students	**.64**	–.03	.06	.01	.06	.05
11	… emphasizes teaching lessons in relevant ways	**.77**	.05	–.02	.01	–.02	.10
12	… is a supportive and inviting place for staff to work	**.52**	.06	**.56**	.01	–.12	.17
13	… promotes trust and collegiality among staff	**.47**	.14	**.57**	.01	–.16	.14
14	… provides resources for staff to do their jobs well	**.82**	–.20	.03	–.03	.00	.16
15	… provides resources to work with special education (IEP) students	**.84**	–.19	–.01	–.06	.01	.12
16	… provides opportunities for student decision-making	**.69**	.00	–.04	.05	.04	–.02
17	… gives students class discussion opportunities	**.72**	.10	.01	–.04	.01	–.03
18	… gives students extracurricular activity opportunities	**.68**	.00	.00	–.01	.07	–.01
19	… gives students opportunities to make a difference	**.68**	–.01	.00	.00	.10	.01
20	… encourages students to enroll in rigorous courses	**.70**	.03	–.01	–.01	.06	–.01
21	… emphasizes culturally relevant instruction	**.81**	.02	–.12	–.01	–.05	–.16
22	… has staff examine their cultural biases through P.D.	**.75**	.06	–.12	.00	–.11	–.21
23	… prioritizes closing the racial achievement gap	**.69**	.12	–.03	.00	–.13	–.23
24	… fosters appreciation for student diversity	**.77**	.15	.04	–.01	.01	–.27
25	… emphasizes showing respect for student cultures	**.76**	.16	.05	–.02	–.01	–.29
26	… clearly communicates rules to students	**.43**	–.01	**.58**	.00	.09	–.18
27	… handles discipline problems fairly	**.37**	.02	**.71**	.01	.11	–.25
28	… effectively handles discipline and behavior problems	**.38**	–.02	**.68**	.01	.13	–.21
29	… is a safe place for students	**.49**	–.04	**.42**	.01	.28	–.03
30	… is a safe place for staff	**.50**	–.05	**.45**	.01	.23	–.01
31	… is welcoming to and facilitates parent involvement	**.63**	.05	.21	.01	.09	.00
32	… has clean and well-maintained facilities	**.45**	.02	.19	.05	.14	.03
33	Adults in this school really care about every student	.04	**.87**	–.04	.00	.03	.16
34	… acknowledge and pay attention to students	.03	**.91**	–.05	.00	.03	.17
35	… want every student to do their best	.07	**.83**	.01	.01	.02	.06
36	… listen to what students have to say	.07	**.87**	–.04	.00	.05	.00
37	… believe that every student can be a success	.11	**.82**	–.03	.02	.06	–.02
38	… treat all students fairly	.00	**.90**	.07	–.01	.11	–.18
39	… treat every student with respect	–.02	**.90**	.08	.00	.11	–.18
40	… have close professional relationships with each other	–.02	**.68**	**.42**	–.03	–.09	.04

(continued)

Table G1. Six-factor exploratory factor analysis model of staff survey items on the California School Climate, Health, and Learning Survey *(continued)*

Item	Description	1	2	3	4	5	6
41	… support and treat each other with respect	–.07	**.73**	**.49**	–.03	–.08	.03
42	… feel a responsibility to improve this school	.08	**.69**	**.30**	.01	–.08	.01
43	I need training in meeting academic standards	.11	.03	–.07	**.88**	.03	–.08
44	… evidence-based methods of instruction	.03	.04	–.02	**.85**	.07	–.06
45	… positive behavioral supports/classroom management	.07	.02	–.07	**.78**	–.09	–.06
46	… working with diverse racial and cultural groups	–.02	–.03	.06	**.88**	.01	.13
47	… culturally relevant pedagogy for students	–.08	–.02	.09	**.86**	–.01	.11
48	… serving English language learners	–.02	.02	.08	**.82**	.00	.02
49	… closing the achievement gap	–.02	–.01	.05	**.81**	–.01	–.01
50	… serving special education students	–.08	.01	.03	**.77**	.02	.01
51	… meeting the social and emotional needs of students	.00	–.03	–.03	**.81**	–.03	.03
52	… creating a positive school environment	.00	–.09	–.19	**.77**	–.05	.00
53	Students at this school are healthy and physically fit	.02	.14	–.07	.05	**.47**	**.48**
54	… arrive at school alert and rested	.02	.16	–.05	.02	**.54**	**.56**
55	… are motivated to learn	.04	.11	.06	–.01	**.50**	**.58**
56	… are well-behaved	.00	.05	.16	–.03	**.53**	**.50**
57	Student alcohol and drug use is not a problem at school	.00	.03	–.09	.03	**.82**	–.17
58	Student tobacco use…	–.05	.04	–.09	.03	**.79**	–.17
59	Harassment and bullying among students…	.08	.05	.04	–.03	**.66**	–.07
60	Physical fighting between students…	.01	.01	.05	–.03	**.78**	.01
61	Disruptive student behavior…	.06	–.04	.13	–.02	**.71**	.15
62	Racial conflict among students…	.05	.05	.02	–.06	**.60**	–.08
63	Student depression or mental health…	.03	.06	–.02	–.04	**.55**	–.04
64	Lack of respect for staff by students…	.03	.00	.21	–.01	**.67**	.17
65	Cutting classes or being truant…	–.01	–.01	.08	–.03	**.73**	.11
66	Gang-related activity…	.01	–.05	–.02	–.03	**.80**	.06
67	Weapons possession…	–.04	–.01	.00	–.03	**.81**	.00
68	Vandalism…	.01	–.04	.01	.01	**.81**	.03
69	Theft…	–.02	.02	.00	.01	**.76**	.00

Note: The analytic sample consists of 7,079 teachers in 393 middle schools that administered the survey in 2008/09 or 2009/10. Numbers in bold are factor loadings of at least .30.

Source: 2008/09 and 2009/10 Cal-SCHLS staff survey.

Notes

1. A supplemental module of the Cal-SCHLS that was designed for high schools participating in the Safe and Supportive Schools Initiative includes questions about academic rigor, respectful relationships and cultural sensitivity, the relevance of classroom lessons, discipline and enforcement of rules, and the quality of facilities maintenance.
2. Since the student survey was administered to grade 7 students only, it is unclear whether a sample of 100 students across all grades in middle schools (that is, 33–34 students in each grade) would produce the same reliability estimates.
3. Because the school-level reliability estimates represent the proportion of total variance that is not due to measurement error or sampling error, the estimated number of respondents needed per school is an upper bound estimate, assuming an infinite school population size.
4. For this study, middle schools include all traditional schools with grade 6–8 and grade 7–8 configurations only. K–8 schools or schools with other grade configurations were not included in the analytic sample.
5. This cutoff is a commonly accepted rule of thumb in assessing goodness of model fit using RMSEA. There are arguments that a smaller threshold may be more effective in correctly rejecting misspecified models when the sample size is large (Chen, Curran, Bollen, Kirby, & Paxton, 2008).
6. SRMR is not available in Mplus when item thresholds are estimated, as they were in the CFA models.
7. The average variance explained by the latent factor on observed indicators is the average of the squared factor loadings. The shared variance explained by latent factors is the squared correlations between latent factors in the CFA models described above.
8. The aggregated constructs are based on the responses of different students across years (grade 7 students in 2007, grade 7 students in 2009).
9. It is possible to determine whether schools with lower response rates differ from other schools in school climate characteristics by aggregating the school climate measures to the school level and making direct comparisons. However, these comparisons can only reveal if the respondents who completed the surveys in schools with high and low response rates report similar levels of school climate. The comparisons do not provide information on the differences between respondents and nonrespondents in schools.

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