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Relationships between Student, Staff, and Administrative Measures of School Climate and Student Health and Academic Outcomes

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Abstract

BACKGROUND—School climate is an integral part of a comprehensive approach to improving the wellbeing of students; however, little is known about the relationships between its different domains and measures. This study examined the relationships between student, staff, and

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administrative measures of school climate in order to understand the extent to which they were related to each other and student outcomes.

METHODS—The sample included 33,572 secondary school students from 121 schools in Los Angeles County during the 2014–2015 academic year. A multilevel regression model was constructed to examine the association between the domains and measures of school climate and five outcomes of student wellbeing: depressive symptoms or suicidal ideation, tobacco use, alcohol use, marijuana use, and grades.

RESULTS—Student, staff, and administrative measures of school climate were weakly correlated. Strong associations were found between student outcomes and student reports of engagement and safety, while school staff reports and administrative measures of school climate showed limited associations with student outcomes.

CONCLUSIONS—As schools seek to measure and implement interventions aimed at improving school climate, consideration should be given to grounding these efforts in a multi-dimensional conceptualization of climate that values student perspectives and includes elements of both engagement and safety.

Keywords

school climate; school safety; teacher perceptions; student perceptions; school improvement

School climate, the quality and character of school life, is recognized as an integral part of a comprehensive approach to school wellness. The *Whole School, Whole Community, Whole Child* model, which includes social and emotional climate as one of its ten components, highlights the important role of students' psychosocial wellbeing in influencing their social and emotional development and promoting overall health.[1]

School climate is a multifaceted concept that involves many aspects of the student's educational experience, including school safety, relationships with other students, and perceptions of teaching and learning. While previous studies have shown associations between school climate and a variety of student health and academic outcomes, there is little consensus on the best ways to define and study school climate.[2–4] Researchers and practitioners have identified a number of domains of school climate; however, very little information is available on how they interact to facilitate positive student behaviors and outcomes. In addition, while most experts agree that coupling administrative data sources with assessments of students and staff perspectives can provide a more holistic understanding of school climate, little data are available on the extent to which these perspectives contradict or complement each other.[4,5]

The present study sought to address these gaps by examining the associations between two of the core domains of school climate – student engagement and safety – and student academic and health outcomes, combining data from student reports, teacher reports, and administrative records. In order to inform school-based measurement and improvement efforts, this study sought to better elucidate which elements of school climate matter most for youth wellbeing – and from whose perspective.

Domains and Measures of School Climate

The National School Climate Council (2007) defines a positive and sustained school climate as one that "fosters youth development and learning necessary for a productive, contributing, and satisfying life in a democratic society" (p.4).[6] School climate is a perception-based concept grounded in students', parents', and school personnel's experiences of school life.[7] When measuring and studying school climate, two related challenges are frequently present: deciding what aspects of school climate to measure and from where to obtain data.

While there is no national consensus on the domains of school climate, recent research syntheses suggest that two of the most commonly studied areas are engagement and safety. The U.S. Department of Education's three-pronged model of school climate includes a focus on both physical and emotional safety and student engagement.[2] A recent review of school climate research highlights the importance of safety (eg, rules and norms, physical security, emotional security), relationships (eg, respect for diversity, social support, school connectedness), and teaching and learning (eg, service learning, social, emotional, ethnical, and civic learning) in influencing youth outcomes.[4] While safety and engagement have been established as core components of school climate, little empirical work has been done to describe the extent to which these domains have unique contributions and/or interact to influence student outcomes.

A second challenge facing the study of school climate is identifying the most meaningful data sources. Collecting perspectives from different school actors is widely recognized as an important component of a comprehensive assessment of school climate. [4] However, relatively few studies have considered if and how perspectives on school climate vary among student, staff, and administrative data sources.[8] The limited number of studies examining agreement between student and school staff perspectives show mixed results, with some studies demonstrating concordance,[9,10] while others show discrepancies.[5,11] Differences in perceived safety may be related to differential rates of victimization or perceptions of risk, with students tending to perceive greater levels of risk.[11,12] Differences in ratings of engagement may be related to the tendency of teachers to report more favorable conditions, especially on the quality of teacher-student interactions.[5,9] With regard to administrative data, while suspension and truancy rates have been identified as core accountability metrics of school climate,[13,14] the extent to which these measures reflect student or staff perspectives of safety or engagement is unclear.

Purpose of the Study

The present study sought to examine the relationships between student, staff, and administrative measures of school climate in order to understand the extent to which they were associated with each other as well as student academic and health outcomes. The study used data from school districts in Los Angeles County, a large, racially and economically diverse jurisdiction, to answer the following research questions: (1) How strongly associated are student, staff, and administrative measure of school climate? and (2) What aspects of school climate are associated with student outcomes of mental health, substance use, and academic achievement?

METHODS

Participants

This study combined data from three sources: student perspectives of school climate were derived from the core module of the California Health Kids Survey (CHKS); staff perspectives of school climate were derived from the California School Climate Survey (CSCS); and administrative measures of school climate were obtained from the California Department of Education (CDE).

Both the CHKS and the CSCS are overseen by WestEd in partnership with CDE, which began funding WestEd in 1997. Districts receiving certain federal grants are required to implement the CHKS every two years; other districts do so voluntarily.[15] Both the CHKS and CSCS have been shown to be reliable and valid for measuring school climate,[8,16] having been used to measure progress among the California high schools participating in the federal *Safe and Supportive Schools Program*[17] and districts working with the *California Office to Reform Education* to develop school climate accountability measures under a No Child Left Behind waiver.[18]

For the present study, we used data from all school districts in Los Angeles County that administered the CHKS and the CSCS during the 2014–2015 academic year. The sample contained 33,572 students from 121 schools across 18 districts – including the Los Angeles Unified School District, the second largest school district in the United States. The school districts included in the study sample represent over half (55.7%) of the total 7^{th}–12^{th} grade student population in Los Angeles County.

On average, 277.5 students (standard deviation [SD] 295.9, range 8 to 1137) and 34.8 staff (SD 25.2, range 1 to 111) responded from each school. Sample characteristics are presented in Table 1. Schools had high levels of students eligible for free or reduced-price lunch (mean 0.71, SD 0.24) and English-language learners (mean 0.20, SD 0.13). Average enrollment was 996 students (SD 669). The majority of students were in grades 7 (26%), 9 (32%), or 11 (26%). There was roughly an equal number of boys and girls. The majority of the students identified as Hispanic (76%), with fewer identifying as non-Hispanic White (11%), Black (6%), Asian (8%), or other/mixed (10%).

Procedure

The CHKS is an anonymous, self-administered survey taken at school either on paper or online, depending on district preferences. School staff administer the survey, following detailed instructions provided by WestEd and CDE that were designed to maintain confidentiality.[15] Students are surveyed only with the consent of parents or guardians; districts are given the option of using active or passive parental consent. The CSCS is an anonymous, self-administered online survey. In order to enhance accuracy and build staff buy-in, WestEd recommends that districts offer the CSCS to all minimally certificated staff working in all schools participating in the CHKS. The survey methodologies are described in greater detail elsewhere.[15,19]

Measures

Outcomes—Five student outcomes, constructed using data from the CHKS, were selected to examine aspects of student wellbeing potentially influenced by school climate. *Depressive symptoms or suicidal ideation* was coded as "present" if students indicated that they ever "feel so sad or hopeless almost everyday for two weeks or more that you stopped doing some usual activities" or "seriously consider attempting suicide" in the past 12 months. *Tobacco use* was coded as "yes" if students indicated that they had used either "cigarettes" or "smokeless tobacco" at least one day in the past 30 days; otherwise it was coded as "no." *Alcohol use* was coded as "yes" if students indicated that they had "one drink of alcohol" at least one day in the past 30 days; otherwise it was coded as "no." Similarly, *marijuana use* was coded as "yes" if students indicated that they had used marijuana at least one day in the past 30 days; otherwise it was coded as "no." Finally, *grade point average* was constructed by coding self-reported grades as numerical values ("mostly A's" coded as 4.0, "mostly A's and B's" as 3.5, etc.).

Student perceptions of school climate—Student perceptions of school climate were taken from the CHKS, using established guidance for scale construction and factor structure.[17] Four student measures of student engagement were used. *High expectations and caring relationships* was constructed based the average of six items indicating the extent of agreement (on a four point scale) of whether the student feels that there are adults at the school who have high expectations for him/her, cares about the him/her, etc. *Opportunities for meaningful participation* was constructed based on the average of three items indicating the extent of agreement (on a four point scale) of whether the student feels that there are meaningful opportunities to participate at school. *School connectedness* was constructed based on the average of four items indicating the extent of agreement (on a five point scale) of whether the student feels close to people at the school, is happy at the school, etc. *Perceived safety* was constructed based on the average of two items indicating the extent of agreement (on a five point scale) of whether the student feels safe at school.

Four student measures of school safety were used. *Violence perpetration* was constructed by adding responses to seven items (coded as "yes" or "no") indicating whether the student took part in any listed activities (been in a physical fight, carried a gun, etc.) on school property in the past 12 months. *Violence victimization* was constructed by adding responses to six items (coded as "yes" or "no") indicating whether the student experienced any listed events (been afraid of being beat up, had mean rumors spread about him/her, etc.) on school property in the past 12 months. *Harassment and bullying* was constructed by adding responses to five items (coded as "yes" or "no") indicating whether the student had been harassed or bullied as a result of the listed traits (sex, race/ethnicity, religion, etc.) in the past 12 months. *Substance use on school property* was constructed by adding responses to four items (coded as "yes" or "no") indicating whether the student had used cigarettes, alcohol, marijuana, or other illegal drugs on school property in the past 30 days.

Composite measures of *student engagement* and *school safety* were developed using the linear combination of the factor loadings provided by the factor analysis, specifying a two-factor structure and promax rotation. Composite measures were constructed to have a mean

of zero and a variance of one, where larger values reflect better ratings of school climate. Composite measures of *student engagement* and *school safety* were then partitioned into student-level (level one, within-school) and school-level (level two, between-school) variance components. Student-level variance was constructed by subtracting the mean school-level rating from each student's score (the group centered score). School-level variance was constructed based on the mean school-level rating.

School staff perceptions of school climate—Four staff measures of school climate were taken from the CSCS, using established guidance for scale construction and factor structure.[20,21] *High expectations and caring relationship* was constructed based the average of seven items indicating the extent of agreement (on a five point scale) of whether the staff feels that there are adults at the school who want all students to do their best, care about students, etc. *Opportunities for meaningful participation* was constructed based on the average of four items indicating the extent of agreement (on a four point scale) of whether the staff feels that the school provides students with opportunities to decide things, participate in enrichment activities, etc. *Perceived safety* was constructed based on the average of two items indicating the extent of agreement (on a four point scale) of whether the staff felt that the school was safe for students and staff. Finally, *student violence* was constructed based on the average staff rating (on a four point scale) of how much of a problem the six listed items (bullying, fighting, vandalism, etc.) represented.

A composite measure of staff-reported *school climate* was developed based on the linear combination of the factors loadings provided by the factor analysis, specifying a one-factor structure. Use of a one-factor structure was deemed appropriate based on eigenvalues (factor 1 eigenvalue=1.79, factor 2 eigenvalue=0.03). The composite measures was constructed to have a mean of zero and a variance of one, where larger values reflect better ratings of school climate.

Administrative measures of school climate—Two administrative measures of school climate included: (1) school *suspension rate* – the number of students who were suspended during the academic year, compared to the enrollment of the school – and (2) school *truancy rate* – the number of students who were classified as truant during the academic year pursuant to California Education Code Section 48260 (absent or tardy from school without a valid excuse for more than 30 minutes on three days), compared to the enrollment of the school.[22] *Suspension rate* was available from CDE for the 2014–2015 academic year; *truancy rate* was only available for 2013–2014.

Student demographics—Student demographics of *sex*, *grade level*, and *race/ethnicity* were included as control variables in regression models to account for potential confounding.[2,4] All were taken from the CHKS, using student reports. For *race/ethnicity*, all students who reported being of "Hispanic or Latino" origin were coded as "Hispanic." Due to the small number of responses, students who reported "American Indian or Alaska Native," "Native Hawaiian or Pacific Islander," or "mixed (two or more races)" were coded as "other."

School characteristics—School characteristics – including *number of enrolled students*, the *percent of student who were English language learners*, the *percent of students who were eligible for free or reduced-price lunch*, and the *percent of students who were non-Hispanic White* – were included as control variables in regression models to account for potential confounding.[20] All were taken from the CDE 2014–2015 academic year administrative records.

Data Analysis

The four dichotomous outcomes (depressive symptoms or suicidal ideation, tobacco use, alcohol use, and marijuana use) were examined using multilevel logistic regression. The one continuous outcome (grade point average) was examined using multilevel linear regression. Four multivariable models were developed to examine the association of each outcome with: (1) student-reported measures of climate (student- and school-level measures of engagement and safety) (model 1); (2) staff-reported measures of climate (model 2); (3) administrative measures of climate (model 3); and (4) student-reported, staff-reported, and administrative measures of climate (model 4). All models included the full set of control variables: sex, grade level, race/ethnicity, percent of students who were English language learners, percent of students who were eligible for free or reduced-price lunch, percent of students who were non-Hispanic White, and school enrollment. All analyses were conducted using Stata version 14.1 *(StataCorp LP, College Station, Texas)*.

RESULTS

Measures of School Climate

Student-reported measures of school climate were moderate (Table 1). The average rating of whether students had meaningful opportunities to participate at school was slightly above a rating of “a little true” (mean 2.2, SD 0.84). With regard to perceived safety, the average fell just above students feeling “neither safe nor unsafe” (mean 3.6, SD 0.88). Violence perpetration and victimization were not uncommon, with the average student perpetrating one (mean 0.72, SD 1.31) and experiencing one and half (mean 1.54, SD 1.75) acts of violence in the past year. Staff-reported measures of school climate were more positive. The average rating of the proportion of adults that have high expectations and care about students was slightly above a rating of “most adults” (mean 4.2, SD 0.32). Average staff ratings of perceived safety were between “agree” and “strongly agree” (mean 3.2, SD 0.40).

Correlations between student-reported, staff-reported, and administrative measures of school climate were low. The correlation between student- and staff- reported measures of high expectations and caring relationships was 0.08, while the correlation between measures of opportunities for meaningful participation was 0.03. The correlation between student and staff reports of perceived safety was modest (r = 0.15). Correlations between administrative measures of climate and student-reported measures of student engagement were close to zero, while correlations between administrative measures of climate and student-reported measures of school safety were more modest (for example, r suspension rate and student-reported school safety = −0.15). Correlations were strongest between administrative and

staff-reported measures of climate (for example, r suspension rate and staff-reported climate = −0.30).

School Climate and Student Outcomes

Results from the multilevel models are presented in Table 2. Among the models with only student-reported measures of school climate (model 1), higher levels of student engagement and school safety were very strongly associated with lower levels of depressive symptoms or suicidal ideation as well as tobacco, alcohol, and marijuana use, after controlling for a range of student- and school-level covariates. Likewise, higher levels of student-reported engagement and safety were associated with higher grade point average. Student-level variance in engagement was associated with all outcomes; however, school-level variance in engagement was only associated with alcohol and marijuana use. Similarly, student-level variance in safety was associated with all outcomes; school-level variance in safety was associated with all outcomes except grade point average.

Overall, staff-reported (model 2) and administrative measures (model 3) of school climate were not strongly associated with student outcomes. Staff reports of school climate were significantly associated with only one outcome: grade point average (coefficient 0.11, 95% Confidence Interval [CI] 0.04, 0.18). Suspension rate was significantly associated with only one outcome: marijuana use (adjusted odds ratio 6.41, 95% CI 1.64, 25.07) and truancy rate was not significantly associated with any outcomes.

When considering student, staff, and administrative measures of school climate together (model 4), student reports of both engagement and safety were very strongly associated with all five of the outcomes examined. After accounting for other measures of climate, staff reports of climate were only associated with one outcome (grade point average), while administrative measures were not associated with any outcomes.

DISCUSSION

This study sought to examine the relationships between student, staff, and administrative measures of school climate in order to understand the extent to which they were associated with mental health, substance use, and academic achievement in a sample of school districts in Los Angeles County. Overall, student, staff, and administrative measures of school climate were weakly correlated. Results showed strong associations between student outcomes and student reports of both engagement and safety, while school staff reports and administrative measures of climate showed limited associations with student outcomes.

Results of the present study support emerging work demonstrating discrepancies in student, staff, and administrative measures of school climate.[5,12] In the present study, almost no association was seen between student-reported measures of engagement and staff and administrative measures of climate. Indicators of student- and staff- reported measures of safety showed only modest correlations. There are many potential reasons for differences in these perspectives, including under-estimation by school staff of student-on-student violence perpetration[11,12] and more positive beliefs among school staff about their ability to foster engagement than students might perceive.[5,9] Divergence between administrative measures

and student perspectives may be the result of sphere of influence; suspension may reflect an extreme measure of safety and student delinquency, which influences a small percentage of students and does not, therefore, contribute strongly to the majority of students' experiences with school life.

Results support the notion that student reports of school climate are central to shaping youth outcomes. Previous studies have emphasized the important role of student perceptions, including the role of perceived safety[12] and the connections students feel to school staff,[23] in influencing youth outcomes. While objective components of safety, school structures, and teacher behaviors certainly influence student perceptions, the need to explicitly consider how students perceive these facets of school life should be central to school reform efforts. In the present study, both absolute levels of climate (eg, how safe a school is compared to other schools) and relative levels of climate (eg, how safe a student feels compared to his peers in the same school) were associated with the outcomes examined. Results align with the current literature on strategies to improve school climate and enhance school wellness in general that suggest the need to consider school-wide environmental changes alongside more individual-level approaches.[24,25]

Finally, this study adds additional nuance of the importance and unique contributions of both student engagement and safety in supporting mental health, health behaviors, and academic achievement. Results support previous qualitative work[12,26] and the U.S. Department of Education's current practice framework,[2] which encourages practitioners and researchers to consider the inter-related but unique aspects of engagement, safety, and school environment. Unfortunately, these domains can sometimes be at odds in practice. School-based zero tolerance policies, which mandate the application of predetermined consequences for school behavior violations, have been widely adopted in an effort to improve safety (one domain of climate) but may have negative impact on other domains, such as engagement. Such policies can contribute to students, especially students of color, feeling disconnected and dropping out of school.[27–29] The present study underscores the importance of further explicating a theory of change for the domains of school climate and expanding efforts to identify and test strategies that can work together to ensure that schools, simultaneously, are safe, foster positive relationships with peers and school staff, and create a place where students want to be.

Although this study is one of the first to examine the associations between student outcomes and multiple domains and measures of school climate, it has a number of limitations. First, participation in the CHKS and the CSCS is only required for a limited number of school districts. Selection bias might occur if certain types of districts, schools, students, or staff are selected or opt to participate. Previous studies using the CHKS demonstrate high student response rates[30,31] and suggest that estimates of school climate from the CSCS are stable to staff response rates;[20] however, caution should be taken in interpreting study results. Second, this study was not able to examine school environment as a domain of school climate or parent perceptions of school climate. Third, because the questions used to assess school climate differed between students and staff, this study could not directly compare their level of concordance. Differences between staff and student reports may be the result of different measures, different perceptions, or both. Fourth, because students reported both school

climate and outcomes, reverse causality might lead to biased conclusions. Because this is a cross-sectional study, relationships should not be interpreted as causal. Fifth, we were only able to examine a limited number of student outcomes. Finally, while results provide insights on the relationship between school climate and student outcomes in a largely low-income Hispanic sample, caution should be taken when generalizing the findings to other contexts. Future studies, especially longitudinal studies, are needed in order to better understand (1) the association between the different domains of school climate and a broader range student outcomes such as violence, bullying, academic achievement, and attendance – especially using objective outcome indicators – and (2) the impacts of school climate interventions on student health and wellbeing.

IMPLICATIONS FOR SCHOOL HEALTH

Given recent federal-level changes to the Elementary and Secondary Education Act and state-level changes to education funding formulas, both of which place greater emphasis on non-cognitive factors such as school climate,[13,32] a more nuanced understanding of the relationships between the domains and measures of school climate – as outlined in this study – might be particularly timely in informing policy implementation. Both the present study and previous research[2,4] demonstrate the value of a safe and nurturing school climate in promoting positive academic and health outcomes, helping students to develop skills such as self-esteem and conflict resolution and avoid disruptive and risky behaviors such as substance use and violence. By improving school climate, schools can lay the foundation for improving academic achievement and attendance. [33]

This study underscores the need to ground school climate measurement and improvement efforts in a multi-dimensional conceptualization of climate that values student perspectives and includes elements of both engagement and safety. A system of school climate indicators that includes measures from multiple domains may help school administrators better examine current challenges and think more holistically about how to structure school-based interventions. Models for such a holistic assessment of school climate are emerging, including the U.S. Department of Education's recently released *ED School Climate Surveys*, which include measures of student engagement, safety, and the environment to better understand the perceptions of students, school staff, and parents.[34] Another local model is the *School Quality Improvement System* being used by seven districts in California, which focuses on academic preparedness, social-emotional skills, and the culture and climate of a school.[18] Such a system of indicators provides a foundation by which schools can identify challenges and solutions, prioritize investments, and build the necessary network of resources and partners to advance the holistic wellbeing of students. Reviewing data is a key first step in identifying and implementing interventions to improve school climate – such as school discipline reform and bullying prevention – helping schools and districts to more actively engage stakeholders, make data-driven decisions, and lay the groundwork for monitoring progress.

HUMAN SUBJECTS' APPROVAL STATEMENT

All materials were reviewed and approved by the Los Angeles County Department of Public Health Institutional Review Board, project number 2015-02-565.

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Table 1

Sample Characteristics and Indicators of School Climate: 121 Schools in 18 School Districts, Los Angeles County, 2014–2015 [1]

	Number (Percent) or Mean (Standard Deviation)
Student Demographics (N=33,572)	
Grade [2]	
6th	935 (2.8%)
7th	8,859 (26.4%)
8th	1,354 (4.0%)
9th	10,860 (32.4%)
10th	973 (2.9%)
11th	8,775 (26.1%)
12th	715 (2.1%)
Non-traditional/ungraded	1,101 (3.3%)
Sex	
Male	16,734 (49.9%)
Female	16,838 (50.2%)
Race/Ethnicity	
Hispanic	22,112 (76.4%)
Non-Hispanic White	3,533 (10.5%)
Black	1,994 (5.9%)
Asian	2,500 (7.5%)
Other/mixed	3,433 (10.2%)
School Characteristics (N=121)	
Percent of students eligible for free or reduced-price lunch	0.71 (0.24)
Percent of English-language learners	0.20 (0.13)
Percent non-Hispanic White	0.13 (0.21)
Total enrollment	995.7 (668.6)
Student Reports of School Climate (N=33,572) [3]	
Student Engagement[4]	
High expectations and caring relationships *(range 1 to 4)*	2.8 (0.79)
Opportunities for meaningful participation *(range 1 to 4)*	2.2 (0.84)
School connectedness *(range 1 to 5)*	3.4 (0.84)
Perceived safety *(range 1 to 5)*	3.6 (0.88)
School Safety[5]	
Violence perpetration *(range 0 to 7)*	0.72 (1.31)
Violence victimization *(range 0 to 6)*	1.54 (1.75)
Harassment and bullying *(range 0 to 5)*	0.42 (0.93)
Substance use on school property *(range 0 to 4)*	0.15 (0.60)
School Staff Reports of School Climate (N=121) [6]	

	Number (Percent) or Mean (Standard Deviation)
High expectations and caring relationships *(range 1 to 5)*	4.2 (0.32)
Opportunities for meaningful participation *(range 1 to 4)*	3.1 (0.26)
Perceived safety *(range 1 to 4)*	3.2 (0.40)
Student violence *(range 1 to 4)*	1.8 (0.40)
Administrative Measures of School Climate (N=121)	
Truancy rate [7]	0.32 (0.24)
Suspension rate [8]	0.06 (0.07)
Student Outcomes (N=33,572)	
Depressive symptoms or suicidal ideation[9]	11,131 (33.2%)
Tobacco use [10]	1,640 (4.9%)
Alcohol use [10]	5,686 (16.9%)
Marijuana use [10]	3,787 (11.3%)
Grade point average *(range 0 to 4)*	2.8 (0.95)

[1]Analysis sample contains 33,572 students from 121 schools; only students with complete student- and school-level variables of interest were included in the present study.

[2]The California Health Kids survey is intended for students in grades 7, 9, and 11 but students were included in this study who reported grades 6–12.

[3]Scoring and factor structure of student reports of school climate were developed using established guidance for scale construction and factor structure.[17]

[4]The composite measure of engagement had a mean of 0, standard deviation (SD) of 0.84, and range of −3.10 to 1.97. The student-level (level one) variance component had a mean of 0, SD of 0.81, and range of −3.54 to 2.48. The school-level (level two) variance component had mean of 0, SD of 0.23, and range of −0.68 to 0.89.

[5]The composite measure of safety had a mean of 0.02, SD of 0.82, and range of −5.03 to 0.92. The student-level (level one) variance component had a mean of 0.02, SD of 0.81, and range of −5.06 to 2.13. The school-level (level two) variance component had mean of 0, SD of 0.13, and range of −1.30 to 0.58.

[6]Scoring and factor structure of school staff reports of school climate were developed using established guidance for scale construction and factor structure.[20,21] The composite measure of staff-reported climate had a mean of −0.08, SD of 0.53, and range of −2.06 to 0.89.

[7]The number of students who were suspended during the academic year, compared to the enrollment of the school.

[8]The number of students who were classified as truant during the academic year pursuant to California Education Code Section 48260 (absent or tardy from school without a valid excuse for more than 30 minutes on three days), compared to the enrollment of the school.

[9]Percentage of students who reported that they ever “feel so sad or hopeless almost everyday for two weeks or more that you stopped doing some usual activities” or “seriously consider attempting suicide” in the past 12 months.

[10]Percent who reported any use in the past 30 days.

Table 2

Multilevel Regression Models: Association between School Climate and Student Outcomes in 18 Los Angeles County School Districts, 2014–2015[1]

	Outcome: Depressive Symptoms or Suicidal Ideation[2]				Outcome: Tobacco Use[2]				Outcome: Alcohol Use[2]			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
	Adjusted Odds Ratio (95% Confidence Interval)[4]											
Student Reports of School Climate												
Student Engagement												
Student-level[5]	0.71 (0.69, 0.74)**	--	--	0.71 (0.69, 0.74)**	0.74 (0.69, 0.80)**	--	--	0.74 (0.69, 0.80)**	0.83 (0.80, 0.86)**	--	--	0.83 (0.80, 0.86)**
School-level[6]	0.96 (0.71, 1.28)	--	--	0.75 (0.53, 1.04)	0.77 (0.47, 1.26)	--	--	0.68 (0.37, 1.27)	0.60 (0.43, 0.84)**	--	--	0.52 (0.35, 0.79)**
School Safety												
Student-level[5]	0.38 (0.37, 0.40)**	--	--	0.38 (0.37, 0.40)**	0.36 (0.35, 0.38)**	--	--	0.36 (0.35, 0.38)**	0.44 (0.42, 0.46)**	--	--	0.44 (0.42, 0.46)**
School-level[6]	0.44 (0.31, 0.63)**	--	--	0.43 (0.30, 0.60)**	0.29 (0.18, 0.49)**	--	--	0.29 (0.18, 0.48)**	0.33 (0.23, 0.48)**	--	--	0.34 (0.23, 0.48)**
Staff Reports of School Climate												
School Climate	--	1.03 (0.93, 1.14)	--	1.13 (1.00, 1.27)*	--	0.95 (0.75, 1.20)	--	1.02 (0.82, 1.26)	--	0.86 (0.74, 1.00)	--	0.99 (0.86, 1.14)
Administrative Measures of School Climate												
Truancy rate	--	--	0.88 (0.70, 1.11)	0.97 (0.76, 1.23)	--	--	0.72 (0.44, 1.18)	1.00 (0.66, 1.51)	--	--	0.84 (0.60, 1.17)	0.86 (0.66, 1.13)
Suspension rate	--	--	0.96 (0.42, 2.21)	0.39 (0.15, 1.04)	--	--	1.29 (0.30, 5.65)	0.58 (0.14, 2.44)	--	--	2.18 (0.75, 6.33)	0.53 (0.19, 1.49)

	Outcome: Marijuana Use[2]				Outcome: Grade Point Average[3]			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
	Adjusted Odds Ratio (95% Confidence Interval)[4]				Adjusted Coefficient (95% Confidence Interval)[4]			
Student Reports of School Climate								
Student Engagement								
Student-level[5]	0.73 (0.69, 0.76)**	--	--	0.73 (0.69, 0.76)**	0.23 (0.22, 0.24)**	--	--	0.23 (0.22, 0.24)**
School-level[6]	0.42 (0.29, 0.63)**	--	--	0.43 (0.26, 0.71)**	0.17 (−0.00, 0.35)	--	--	0.07 (−0.13, 0.27)
School Safety								
Student-level[5]	0.42 (0.40, 0.44)**	--	--	0.42 (0.40, 0.44)**	0.06 (0.05, 0.07)**	--	--	0.06 (0.05, 0.07)**

	Outcome: Marijuana Use[2]				Outcome: Grade Point Average[3]			
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 1**	**Model 2**	**Model 3**	**Model 4**
	Adjusted Odds Ratio (95% Confidence Interval)[4]				**Adjusted Coefficient (95% Confidence Interval)[4]**			
School-level [6]	0.31 (0.20, 0.46) **	--	--	0.30 (0.20, 0.46) **	−0.06 (−0.28, 0.16)	--	--	−0.06 (−0.27, 0.15)
Staff Reports of School Climate								
School Climate	--	0.85 (0.69, 1.05)	--	1.07 (0.90, 1.28)	--	0.11 (0.04, 0.18) **	--	0.11 (0.03, 0.18) **
Administrative Measures of School Climate								
Truancy rate		--	0.97 (0.62, 1.51)	1.16 (0.84, 1.60)	--	--	−0.02 (−0.19, 0.16)	−0.02 (−0.18, 0.15)
Suspension rate	--	--	6.41 (1.64, 25.07) **	1.31 (0.41, 4.22)	--	--	−0.04 (−0.60, 0.53)	0.02 (−0.57, 0.62)

[1] Analysis sample contains 33,572 students from 121 schools; only students with complete student- and school-level variables of interest were included in the present study.

[2] Multilevel logistic regression.

[3] Multilevel linear regression.

[4] After controlling for student gender, student grade level, student race/ethnicity, the percent of student who were English language learners, the percent of students who were eligible for free or reduced-price lunch, the percent of students who were non-Hispanic White, and total school enrollment.

[5] Student-level variance represents level one variation (variance within the school).

[6] School-level variance represents level two variation (variance between schools).

* p < .05;

** p < .01