UCLA
UCLA Previously Published Works

Title

Perceptions of School Climate Shape Adolescent Health Behavior: A Longitudinal Multischool Study

Permalink

https://escholarship.org/uc/item/1bx0t7kk

Journal

Journal of School Health, 93(6)

ISSN

0022-4391

Authors

Ko, Michelle Y
Rosenberg, Sofia M
Meza, Benjamin PL
et al.

Publication Date

2023-06-01

DOI

10.1111/josh.13274

Copyright Information

Peer reviewed

1

1   **TITLE:** PERCEPTIONS OF SCHOOL CLIMATE SHAPE ADOLESCENT HEALTH

2   BEHAVIOR: A LONGITUDINAL MULTI-SCHOOL STUDY

3   **RUNNING TITLE:** SCHOOL CLIMATE AND HEALTH BEHAVIORS

4   **Michelle Y Ko[1†], Sofia M Rosenberg [2†], Benjamin P L Meza [3†*], Rebecca N Dudovitz [4], Kulwant**

5   **K Dosanjh [3], Mitchell D Wong [3]**

6   [1]David Geffen School of Medicine, University of California Los Angeles, Los Angeles, CA

7   [2]University of Michigan, Ann Arbor, MI

8   [3]Divison of General Internal Medicine and Health Services Research, Department of Medicine,

9   David Geffen School of Medicine, University of California Los Angeles, Los Angeles, CA

10   [4]Division of General Pediatrics, Department of Pediatrics and Children's Discovery and Innovation

11   Institute, David Geffen School of Medicine, University of California Los Angeles, Los Angeles, CA

12   †These authors have contributed equally to this work and share first authorship.

13   *** Correspondence and address where work was conducted:**

14   Benjamin P.L. Meza

15   UCLA Division of General Internal Medicine and Health Services Research

16   1100 Glendon Ave, Suite 900, Los Angeles, CA 90024

17   Phone: 410-709-8752, email: bpmeza@mednet.ucla.edu

1 **Word Count**: Abstract 212/200   Manuscript 4,000/4,000   Figures & Tables 4/5

1 **ABSTRACT**

2 **Background**: Adolescent behaviors and academic outcomes are thought to be shaped by school

3 climate. We sought to identify longitudinal associations between school climate measures and

4 downstream health and academic outcomes.

5 **Methods**: Data from a longitudinal survey of public high school students in Los Angeles were

6 analyzed. Eleventh grade health and academic outcomes (dependent variables, e.g., substance use,

7 delinquency, risky sex, bullying, standardized exams, college matriculation), were modeled as a

8 function of 10th grade school climate measures (independent variables: institutional environment,

9 student-teacher relationships, disciplinary style), controlling for baseline outcome measures and

10 student/parental covariates.

11 **Results**: The 1114 student respondents (87.8% retention), were 46% male, 90% Latinx, 87% born in

12 the USA, and 40% native English speakers. Greater school order and teacher respect for students

13 were associated with lower odds of multiple high risk behaviors including 30-day alcohol use (OR

14 0.81 95%CI [0.72, 0.92] and OR 0.73 [0.62, 0.85]) and 30-day cannabis use (OR 0.74 [0.59, 0.91]

15 and OR 0.76 [0.63, 0.92]). Neglectful disciplinary style was associated with multiple poor health and

16 academic outcomes while permissive disciplinary style was associated with favorable academic

17 outcomes.

18 **Implications for School Health Policy, Practice, and Equity:** School health practitioners may

19 prospectively leverage school environment, teacher-student relationships, and disciplinary style to

20 promote health and learning.

1   **Conclusions**: Our findings identify specific modifiable aspects of the school environment with

2   critical implications for life course health.

3   **Keywords:** school climate, adolescent health, substance use, cannabis, risk-taking, bullying,

4   educational measurement, longitudinal studies.

5

1   School Climate and Adolescent Behaviors

1   Adolescence is a critical period of development marked by the formation of self-concept and

2   identity, independence from parental guidance, and growth in cognitive and socioemotional skills

3   such as empathy, resilience, and creativity.[1] However, some adolescents also begin to engage in

4   risky behaviors, such as use of tobacco, cannabis, alcohol and other substances. [2–4] These behaviors

5   are significant, as they can negatively influence this important developmental period and contribute to

6   a vicious cycle whereby risky behaviors interfere with school engagement and academic performance

7   and vice versa. This negative feedback loop is suggested by Richard Jessor's Theory of Problem

8   Behavior,[5,6] which proposes that school climate, including the social environment of peers,

9   contributes to adverse adolescent behaviors and outcomes including school disengagement, risky

10   behaviors, and academic failure. These adolescent behaviors in turn influence the school climate, as

11   when groups of students normalize delinquent behaviors, undermining academic engagement more

12   broadly. This vicious cycle in adolescence can have significant downstream effects in adulthood,

13   potentially affecting educational and socioeconomic opportunities as well as overall health

14   outcomes.[7,8]

15   While Jessor's theory suggests reciprocal effects between a negative school climate and

16   adolescent risky behaviors, it may also suggest that a positive school climate could create a virtuous

17   cycle of improved academic success, greater school engagement, academically and prosocially

18   supportive peers, and better academic and behavioral outcomes among teens.[9–11] This is supported by

19   prior literature which has shown that positive school climate is linked to better academic

20   performance,[12] student wellbeing, and school engagement, and lower rates of problem behaviors such

21   as disruptive, antisocial, violent, bullying, or delinquent behavior.[13–15] Although there is no

22   standardized measure of school climate, there are several domains which have been used to

23   characterize school climate and show predictive potential,[16] among them: the institutional

1 environment (e.g., school chaos/order, safety),[17,18] student-teacher relationships (e.g., teacher respect

2 for students, teacher support of college),[19–21] and disciplinary styles.[22] However, prior studies have

3 primarily only examined a limited set of school climate variables and adolescent risky behaviors and

4 most have been limited to cross-sectional designs.[12,23,24] As a result, it is still unknown which aspects

5 of school climate might be targeted to improve specific academic or health outcomes.

6 The present study sought to identify and compare associations between school climate measures

7 across multiple domains and multiple downstream health and academic outcomes longitudinally. We

8 examined data from an on-going longitudinal natural experiment (the RISE-UP - Reducing Health

9 Inequalities through Social and Educational Change Follow Up - Study), which has followed a cohort

10 of mostly Latinx students starting at the beginning of 9th grade through age 23 currently.

11 Racial/ethnic and socioeconomic disparities exist in youth outcomes and comparative studies suggest

12 that ethnicity may influence perception of school climate.[16,25–27] Furthermore, within the Latinx

13 experience there exists a diversity of national and indigenous heritages, degrees of acculturation and

14 integration, and immigration stories. While ethnicity was not the focus of this analysis, we believe

15 study of this predominantly Latinx population makes a valuable contribution to the extant literature.

16 Additionally, RISE-UP examined a range of school climate characteristics, including school safety

17 and order, student-teacher relationships and support, and disciplinary style. We examined a variety of

18 different adolescent behaviors (alcohol and cannabis use, alcohol and cannabis misuse, delinquent

19 behaviors, violence, high-risk sexual behaviors, bullying), and academic outcomes (truancy,

20 changing schools, grades, standardized test scores, and matriculation into a 4-year college), so as to

21 permit a more holistic analysis that incorporates health and behavior with cognitive development.

22 **METHODS**

School Climate and Adolescent Behaviors

Participants

This is a secondary analysis of data from the RISE-UP (Reducing Health Inequalities through Social and Educational Change Follow Up) study, a longitudinal natural experiment designed to assess the effects of high-performing high schools on health behaviors among low-income, minority adolescents in Los Angeles. Five high-performing charter high schools were selected based on: (1) enrollment of predominantly economically disadvantaged students (i.e., qualifying for free or reduced lunch), (2) academic performance in the top tertile of public schools in Los Angeles County based on 2012 Academic Performance Index derived from standardized test scores, and (3) use of an admissions lottery. Eighth grade students who were applying for 9th grade admission into high school were randomly sampled from the admissions lottery list of "winners" and "losers" during two consecutive years in the spring before entry into high school (spring 2013 and 2014). To be eligible, students had to speak English or Spanish fluently and reside in Los Angeles County. Of 1509 eligible students, 1270 were enrolled and consented to participate in the study (16% refusal rate). Further details of the original study are published elsewhere.[11] The institutional review board of the RAND Corporation and the University of California Los Angeles approved this study. Written parental consent and student assent were obtained from all participants.

Procedure

Participants completed a baseline, face-to-face, computer-assisted survey from March of 8th grade through November of 9th (baseline 9th grade survey). Similar follow-up surveys were conducted in the spring semester of 10th grade and 11th grade (2015 to 2017). Interviews were conducted in the patient's primary language with the aid of bilingual research assistants and in a sufficiently private location of the participant's choice. A computer-assisted self-interview was used to minimize social desirability bias for potentially sensitive topics related to substance use and sexual and delinquent

1   behaviors.[28–30] A total of 1159 students completed the survey in 10th grade and 1114 students

2   completed the survey in 11th grade for an 87.8% retention rate through 11th grade.

3   **Instrumentation**

4   ***Adolescent behaviors and academic outcomes.*** At each survey, students reported their

5   frequency of alcohol and cannabis use in the last 30 days,[31] dichotomized (*no use vs any use*).

6   Students also completed an alcohol misuse scale[32] and a cannabis misuse scale (alpha = 0.85), which

7   assessed high risk substance use behaviors (use of alcohol/cannabis on school property, using by

8   oneself, binge use) and its negative consequences (blacking out, missing school, regret, getting into

9   trouble at school, getting into trouble at home, and poor concentration). Scale items were

10 dichotomized (*endorsed vs not*) and summed to produce a total score with higher scores representing

11 greater misuse characteristics. Students reported on delinquent behaviors that are associated with

12 negative life outcomes using the delinquent behavior index from the National Longitudinal Study of

13 Adolescent to Adult Health[33] and included: painting graffiti, damaging someone else's property,

14 shoplifting or stealing, running away from home, driving a car without the owner's permission,

15 burglary, armed robbery, selling illicit drugs, participation in a gang in the last year, and having ever

16 participated in a gang fight. The score was dichotomized (*zero vs one or more behaviors*). Students

17 were asked if they carried a weapon such as a real gun or knife in the last 30 days and if they had

18 been in a physical fight in the last 12 months. These questions were combined into one dichotomous

19 variable of any of the two behaviors (*none vs one or both behaviors*). Students responded to several

20 questions about high-risk sex behaviors including not using contraception, ever becoming pregnant,

21 and having multiple sexual partners (*none vs one or more high risk sex behaviors*). Students also

22 answered two questions about bullying at school in the last 12 months, which were dichotomized: 1)

1   whether someone had bullied or picked on them (*none vs. any*) and 2) whether they themselves had

2   bullied or picked on someone (*none vs. any*).

3   We also collected information on several academic outcomes. For truancy, students reported

4   if they had cut or skipped classes in the last 12 months, dichotomized (*never vs one or more times*).

5   Students also responded whether they transferred to another school for any reason in the last

6   academic year, dichotomized (*never vs one or more times*). We obtained student grade point average

7   (GPA) from official school transcript records (1091 out of 1270 students from baseline sample). We

8   used self-reported GPA when we could not obtain school transcripts (163 of 179 with missing

9   transcripts). We obtained standardized test scores for each student for 8th grade and 11th grade from

10   the California Department of Education. Math and English proficiency were determined by the

11   California Standardized Testing and Reporting Program (8th grade) and the California Assessment of

12   Student Performance and Progress (11th grade). We compared those who failed to meet 11th grade

13   standard versus those who were proficient or above. We obtained data on college matriculation into a

14   4-year college from the National Student Clearinghouse, a nonprofit organization providing

15   enrollment and degree-verification services to colleges and universities. These data were obtained on

16   10/30/2019 corresponding to about 1.5-2.5 years after the end of 12th grade.

17   ***Perception of school climate***. In the 10th and 11th grade surveys, students were asked about

18   several aspects of their school environment. These school climate measures are not comprehensive

19   but chosen to represent a diversity of school climate domains. School order refers to the amount of

20   confusion and chaos in the classroom[34] and was assessed using a scale based on the Confusion,

21   Hubbub, and Order Scale developed by Matheny and colleagues.[35] We analyzed the measure as

22   school order, the inverse of school chaos, so that higher scores indicated a more positive school

climate (Cronbach alpha = 0.68, 9 items, range 1-4). School safety was assessed using the Chicago Consortium on School Research Student Perceptions of Safety Scale, a 4-item measure of self-reported safety in and around school (Cronbach alpha = 0.63 range, 0-3, with higher scores indicating greater perceived school safety).[36]

Using a modified questionnaire from the annual survey of Chicago public schools[37] students reported perceptions of teacher-student relationships on a four point scale from strongly disagree to strongly agree. We simply summated the responses to three questions ("my teachers always try to be fair", "when my teachers tell me to do something, I know he/she has a good reason", "my teachers treat me with respect") into a single variable representing perceived teacher respect for students (Cronbach alpha = 0.72, higher scores indicating greater perceived teacher respect for students). We combined three additional questions ("teachers at this school help students plan for college outside of class time," "teachers expect most students in this school to go to college," and "teachers in this school feel that it is a part of their job to prepare students to succeed in college") into a second variable representing teacher support for college (Cronbach alpha = 0.72, higher scores indicating greater perceived support for college).

School disciplinary style was assessed according to student ratings of school support and structure as previously described.[22] These two rating scales were categorized into tertiles, and then combined to create a single perceived school disciplinary style variable with five categories: authoritative (highest tertile for both support and structure), authoritarian (lowest tertile for support, highest tertile for structure), permissive (highest tertile for support, lowest tertile for structure), neglectful (lowest tertile in support and structure), and average (remainder of the sample).

School Climate and Adolescent Behaviors

1   *Covariates*. At the beginning of 9ᵗʰ grade, students reported information on their personal

2   demographics: gender (*male vs not*), Latinx ethnicity (*Latinx vs not*), birthplace (*USA born vs not*),

3   native language (*English vs not*), as well as parental characteristics: birthplace (*one or more parents*

4   *born in USA vs not*), employment (*one or more parents employed full-time vs not*), level of education

5   (*one or more parents graduated from high school vs not*) and their parent's parenting style (*normal,*

6   *authoritative, authoritarian, indulgent, neglectful*).[38,39] We use this measure of parenting style as a

7   gross approximation for potential parental behavioral confounders, understanding that parenting

8   effects may be moderated by child-, environment-, and culture-specific factors which make validation

9   of this scale in diverse populations challenging.[40]

10   **Data Analysis**

11   We conducted linear and logistic regression analyses to examine the relationship between

12   each school climate variable and each adolescent health, behavioral, and academic outcome

13   separately. For these analyses, the continuous school climate variables (school order, school safety,

14   teacher respect and teacher support for college) were standardized so that a 1-point change in each

15   scale equaled one standard deviation. All models were adjusted for student gender, Latinx ethnicity,

16   USA birthplace, native English language, parental birthplace, parental employment, parental

17   education and parenting style. In each model, we also controlled for the outcome measures at

18   baseline (end of 8ᵗʰ grade/beginning of 9ᵗʰ grade). For models examining GPA and standardized test

19   scores, we controlled for these outcomes from middle school. All models used generalized

20   estimating equations with a random effect for school to adjust for clustering of outcomes at the

21   school-level. The analyses were restricted to the sample of respondents who completed baseline, 10ᵗʰ

22   grade and 11ᵗʰ grade surveys. Among this analytic sample, values were missing for 2.3% or less of

23   the sample for any single measure. 5.1% of the sample were missing data for the 8ᵗʰ grade

1 standardized test scores, 11.7% were missing 11th grade standardized test scores, 2.3% were missing

2 transcript and self-reported GPA from middle school, and 0.3% were missing transcript and self-

3 reported GPA from high school. Missing values were multiply imputed using 100 replicates so as to

4 maximize the use of available data across a large number of variables. Sensitivity analyses using

5 listwise deletion produced similar results. STATA 14.0 (College Station, TX) was used for all

6 analyses.

7 **RESULTS**

8   The original RISE-Up sample was comprised of 1270 students at baseline (9th grade), 91%

9 (1159) of whom completed the 10th grade survey. This study was limited to the 1114 students (88%)

10 who completed the baseline through 11th grade surveys. Table 1 summarizes student and parental

11 demographic characteristics. Just under half of the sample were males (46%), 90% were Latinx, 87%

12 were born in the USA, and 40% were native English speakers. One-quarter of students reported

13 having at least one parent born in the USA, 89% had one or more parent working full-time, and 52%

14 had one or more parents graduate from high school. Compared to those in the analytic sample,

15 subjects who were lost to follow up before the 11th grade survey were more likely to be male (55% vs

16 46%, p=0.04), white (18% v 10% p=0.002), native English speaker (49% vs. 40%, p=0.02), and have

17 at least 1 parent born in the USA (36% vs 25%, p=0.003). Those who were lost to follow up were

18 less likely to have at least 1 parent working full-time (81% vs 88%, p=0.02). There were no

19 differences between the analytic sample and those lost to follow-up in parental education, birth in the

20 USA, and parenting style.

21   ***Prevalence of outcomes.*** A minority of the sample reported engaging in risky behaviors

22 (Table 2). At 11th grade, 15% reported using alcohol and 11% reported using cannabis in the last 30

23 days. One-fifth (22%) reported engaging in one or more alcohol misuse behaviors in the past year,

1   such as drinking alcohol at school, getting into trouble because of alcohol, or missing school because

2   of alcohol use (mean score 1.02, SD 2.72). Sixteen percent reported engaging in similar cannabis

3   misuse behaviors (mean score 0.67, SD 2.22). One-fifth (22%) of the sample also reported engaging

4   in one or more delinquent behaviors in the last year such as stealing, graffiti, selling drugs or being in

5   a gang. One in eight students (13%) reported either carrying a weapon in the last 30 days or being in

6   a physical fight in the last 12 months. Approximately 9% of students reported engaging in high-risk

7   sex. Nearly one in five (19%) reported being the victim of bullying and 15% reported bullying others

8   in the last 12 months.

9   Among respondents, 22% of students reported being truant. From the start of 9th grade to the

10   time of 11th grade survey, 23% of students reported changing schools at least once. Mean high

11   school GPA was 2.83 (SD 0.68), 35% and 71% of students were proficient in Math and English on

12   11th grade standardized tests respectively, and 43% matriculated at a 4-year college after high school.

13   ***Associations between school climate and adolescent health and behaviors.*** After controlling

14   for baseline (9th grade) variables including student covariates, parental covariates, and the relevant

15   outcome measure, perceived elements of school climate at 10th grade were associated with health and

16   behavioral outcomes reported in 11th grade (Table 3). Greater perceived school order was associated

17   with lower odds of 30-day alcohol and cannabis use (OR 0.81 95%CI [0.72, 0.92] and OR 0.74 [0.59,

18   0.91], respectively), lower scores on both alcohol and cannabis misuse scales (β -0.22 [-0.44, 0] and β

19   -0.23 [-0.39, -0.07], respectively), and lower odds of reporting a delinquent behavior (OR 0.79 [0.68,

20   0.93]), high risk sex (OR 0.65 [0.54, 0.78]), being a victim of bullying (OR 0.8 [0.71, 0.9]), and

21   bullying others (0.79 [0.68, 0.91)). Greater perceived school safety was associated with lower odds of

being a victim of bullying (OR 0.79 [0.70, 0.89]) as well as bullying others (OR 0.76 [0.67, 0.87]), but none of the other risky behaviors.

In regard to student-teacher relationships, teacher respect for students was protective for 30-day alcohol use (OR 0.73 [0.62, 0.85], 30-day cannabis use (OR 0.76 [0.63, 0.92]), alcohol misuse (β -0.34 [-0.54, -0.15]), cannabis misuse (β -0.23 [-0.35, -0.12]), delinquent behaviors (OR 0.75 [0.64, 0.88]), violence (OR 0.85 [0.73, 0.99]), high risk sex (OR 0.80 [0.66, 0.97]), and bullying others (OR 0.82 [0.69, 0.97]). Perceived teacher support for college was protective for 30-day alcohol use (OR 0.82 [0.70, 0.97]) and alcohol and cannabis misuse (β -0.24 [-0.43, -0.05] and β -0.22 [-0.43, -0.02], respectively).

Associations with school disciplinary style used the average category as reference. The authoritative style (high support and structure) was protective against reporting delinquent behaviors (OR 0.62 [0.39, 1.00]) and being a victim of bullying (OR 0.62 [0.42, 0.93]). In contrast, the authoritarian style (low support, high structure) was a strong risk factor for 30-day cannabis use (OR 3.26 [1.63, 6.52]). The permissive disciplinary style was not significantly associated with any health or behavioral outcomes but was positively associated with some academic outcomes (see below). Finally, the neglectful style was a risk factor for 30-day cannabis use (OR 2.71 [1.79, 4.12]), alcohol misuse (β 0.43 [0.01, 0.85]), cannabis misuse (β 0.47 [0.16, 0.77]), delinquent behaviors (OR 1.99 [1.34, 2.97]), and high risk sex (OR 1.75 [1.09, 2.81]).

Association between school climate and adolescent academic outcomes. Perceived school climate variables were also associated with academic outcomes (Table 4). Greater school order was associated with lower odds of truancy (OR 0.72 [0.61, 0.86]) and greater odds of matriculating in a 4-year college (1.14 [1.00, 1.31]). Greater perceived school safety was associated with lower odds of

1 truancy (OR 0.83 [0.72, 0.96]). Teacher respect for students was associated with lower odds of

2 truancy (OR 0.84 [0.72, 0.99]), as well as slightly higher GPA (β 0.03 [0, 0.06]) and greater odds of

3 Math and English proficiency (OR 1.16 [1.02, 1.31], OR 1.19 [1.04, 1.37], respectively). Perceived

4 school disciplinary style was also associated with academic outcomes. Authoritative disciplinary

5 style was associated with lower truancy (OR 0.67 [0.46, 0.97]). Permissive style was associated with

6 lower odds of truancy (OR 0.43 [0.23, 0.82]), higher GPA (β 0.24 [0.11, 0.36]), higher odds of

7 English proficiency (OR 2.86 [1.12, 7.33]), and greater odds of matriculation in a 4-year college (OR

8 3.31 [1.38, 7.96]). Neglectful disciplinary style was associated with increased truancy (OR 1.75

9 [1.23, 2.49]), increased odds of changing schools (OR 1.29 [1.04, 1.61]) and lower GPA (β -0.08 [-

10 0.15, -0.01]).

11 **DISCUSSION**

12   In the process of displacing millions of adolescents from school settings across the nation and

13 the world, SARS-CoV-2 has reminded parents and policymakers alike of the irreplaceable role

14 schools have in adolescent growth and health. It has also reinvigorated interest in the importance of

15 the social climate that each school cultivates. These findings add longitudinal evidence that student-

16 reported metrics of school climate – including an orderly environment, teacher-student relationships,

17 and disciplinary style – are important upstream predictors of both health and academic outcomes in

18 subsequent years. Departing from the current literature that tends to isolate one or two school climate

19 variables and outcomes, this analysis took a comprehensive approach in analyzing the longitudinal

20 relationship between multiple school climate variables and an array of both health and academic

21 outcomes. This permits a more holistic analysis that better captures the effect of a multifaceted

22 school climate not just on cognitive development but also on health and behavioral development.

1   The findings support some widely held beliefs about school climate and challenge others.

2   While perceptions of school order and teacher respect for students were protective for nearly all risky

3   behaviors, perceptions of safety were surprisingly only associated with less bullying. This supports

4   some researchers' assertion that, except in the case of bullying, school safety is only inconsistently

5   protective for many outcomes.[41] Similarly, perceptions of order and teacher respect for students was

6   beneficial for a number of academic outcomes. Yet surprisingly, teacher support for college was not

7   linked to any of our objective academic outcomes. Other authors have attributed such divergences to

8   variations in measurement,[13] however, as yet unidentified modifiers such as cultural norms cannot be

9   excluded. Aligning well with the literature,[14,22,24] neglectful disciplinary style (low structure, low

10   support) was associated with several serious and concerning behaviors (i.e., cannabis use and misuse,

11   alcohol misuse, delinquent behaviors, and high-risk sex) as well as poor academic outcomes (truancy,

12   changing schools, and GPA). In contrast, permissive disciplinary style (low structure, high support)

13   was strongly predictive of English proficiency and college matriculation, providing additional

14   evidence for the critical role of teacher support.[14,42–45] These findings are notably different than a

15   previous study in which perceptions of school safety, respect, and authoritative disciplinary style

16   (high structure and high support) were each consistently predictive of beneficial social-emotional

17   health outcomes including depression, stress, self-efficacy, grit, and hopelessness,[46] which may hint at

18   important differences between the determinants of these outcomes.

19   There are several potential mechanisms for these findings interpreted through the lens of

20   Jessor's theory of problem behavior, which framed problem behavior as the developmental result of

21   three systems: personality, perceived environment, and behavior.[5] School order may be protective for

22   most problem behaviors by permitting students greater personal control and elevating expectations

23   for academic achievement. Teacher respect for students validates prior literature on the importance of

1   social support and quality of positive social relationships, but the more limited significance of teacher

2   support for college suggests that this school climate measure may either be overly specific or

3   otherwise does not reflect an important contextual factor for student behaviors and decision-making.

4   Interestingly, the data revealed a far less robust association between an authoritative disciplinary

5   style (high structure and support) and outcomes than anticipated. This could be due to several

6   reasons including: 1) study design bias (e.g., insufficient lag between exposure and outcomes, sample

7   size, imprecise measurement of disciplinary style) or 2) true lack of an association indicating that

8   high risk behaviors are less subject to authoritative school disciplinary style than mental health

9   outcomes. That estimates were qualitatively concordant with a protective effect but not statistically

10   significant, suggests the former as a more likely explanation. Authoritarian disciplinary style (low

11   support, high structure) was associated with increased cannabis use and the neglectful disciplinary

12   style (low support and low structure) was associated with increased risky behavior and worsened

13   academic outcomes. Meanwhile the permissive disciplinary style (high support, low structure) had

14   the opposite effect for academic outcomes. Together these findings add additional evidence that

15   teachers can be a key source of social support for adolescent development and that relationships with

16   teachers influence both academic outcomes and engagement in risky behaviors.

17   **Limitations**

18   The study results should be considered within the following limitations. Measures of school

19   climate were based upon student report. Thus it is possible that the student's behaviors influenced

20   their perceptions of school climate rather than vice versa. We tried to mitigate this reverse causal

21   relationship by examining the relationship of school climate perceptions measured at 10th grade with

22   outcomes measured at 11th grade, controlling for the outcome at baseline. Nevertheless, the field of

23   school climate is moving toward multidimensional measures which include student self-report and

studies have confirmed high internal validity of many student-reported variables when examined at

the school level.[21] Behavioral outcomes were also obtained via student self-report. Some outcomes

were dichotomized to aid interpretability and because some outcomes are relatively rare, however,

dichotomizing can introduce measurement bias, reduce statistical power, and underestimate

variability between groups. The parental disciplinary style used as a covariate grossly approximated

potential confounders such as parental monitoring, however, this measure may introduce

measurement bias as these questions may not align well with commonly held conceptions of

parenting in Latinx communities.[47,48] This study was observational in nature so we cannot draw

conclusions about causality. The generalizability of this study is further hampered by the great

heterogeneity of school climate definitions in the literature.[49,50] The baseline differences between the

analytic sample and those lost to follow-up were relatively minor but could indicate the possibility of

attrition bias. Lastly, the student population was mostly Latinx. While the sample was roughly

similar to the population of students in the Los Angeles Unified School District, the results may not

be generalizable to other student populations. Future studies may delve deeper into the Latinx

experience and how school climate may better promote adolescent health and development.

Implications for School Health Policy, Practice, and Equity

Our findings support ongoing reform initiatives to measure student perspectives and intervene on

school climate with the expectation of downstream benefits to student health and academic

achievement, with reaffirmation in a predominantly Latinx student population. Such interventions

have become more common including social-emotional learning interventions, school-wide positive

behavioral interventions and supports, bullying prevention, community development programs, and

interventions to improve teacher working conditions.[51] These interventions are understandably cross-

1   disciplinary. Therefore our findings also reaffirm school health practitioners' use of the CDC's

2   Whole School, Whole Community, Whole Child framework and direct engagement with youth

3   toward cross-disciplinary systems change.[52,53]

4   **CONCLUSIONS**

5   As the isolation of SARS-CoV-2 has reminded us, the settings in which youth study and

6   create relationships with peers and adults outside the home shape their long-term health and

7   educational trajectories with consequences that reverberate throughout the life course. Adolescents

8   are at the threshold of transitioning to adulthood from a developmental and social perspective and

9   hence the potential consequences of risky health behaviors such as substance use or poor academic

10   performance can be highly impactful on their long-term health trajectories. School climate is a

11   measurable and changeable construct[17,50] and could be a valuable public health target, particularly

12   relevant during adolescence when youth are especially sensitive to social influences.[54] To the extent

13   that school climate drives health, such an approach may broaden the scope of schools from centers

14   for academic learning to platforms for human thriving, transforming vicious cycles to virtuous ones.

15   **HUMAN SUBJECTS APPROVAL STATEMENT**

16   The institutional review board of the RAND Corporation and the University of California Los

17   Angeles have approved this study and all methods were performed in accordance with the relevant

18   guidelines and regulations. Written parental consent and student assent were obtained from all

19   participants.

20   **CONFLICT OF INTEREST DISCLOSURE STATEMENT**

21   The authors declare that the research was conducted in the absence of any commercial or financial

22   relationships that could be construed as a potential conflict of interest.

1 **REFERENCES**

2 1. Gutman LM, Schoon I. *The Impact of Non-Cognitive Skills on Outcomes for Young People. A*
3   *Literature Review*. Education Endowment Foundation; 2013. Accessed November 21, 2021.
4   https://educationendowmentfoundation.org.uk/evidence-summaries/evidence-reviews/essential-
5   life-skills/

6 2. Avenevoli S, Swendsen J, He JP, Burstein M, Merikangas KR. Major Depression in the
7   National Comorbidity Survey–Adolescent Supplement: Prevalence, Correlates, and Treatment.
8   *J Am Acad Child Adolesc Psychiatry*. 2015;54(1):37-44.e2. doi:10.1016/j.jaac.2014.10.010

9 3. Kim-Cohen J, Caspi A, Moffitt TE, Harrington H, Milne BJ, Poulton R. Prior juvenile diagnoses
10   in adults with mental disorder: developmental follow-back of a prospective-longitudinal cohort.
11   *Arch Gen Psychiatry*. 2003;60(7):709-717. doi:10.1001/archpsyc.60.7.709

12 4. Miller ML, Hurd YL. Testing the Gateway Hypothesis. *Neuropsychopharmacology*.
13   2017;42(5):985-986. doi:10.1038/npp.2016.279

14 5. Jessor R. Problem-Behavior Theory, Psychosocial Development, and Adolescent Problem
15   Drinking. *Br J Addict*. 1987;82(4):331-342. doi:10.1111/j.1360-0443.1987.tb01490.x

16 6. Jessor R. Risk behavior in adolescence: A psychosocial framework for understanding and
17   action. *Dev Rev*. 1992;12(4):374-390. doi:10.1016/0273-2297(92)90014-s

18 7. Conti G, Heckman JJ, Pinto R. The Effects of Two Influential Early Childhood Interventions on
19   Health and Healthy Behaviour. *Econ J*. 2016;126(596):F28-F65. doi:10.1111/ecoj.12420

20 8. Conti G, Heckman J, Urzua S. The Education-Health Gradient. *Am Econ Rev*. 2010;100(2):234-
21   238. doi:10.1257/aer.100.2.234

22 9. Telzer EH, van Hoorn J, Rogers CR, Do KT. Chapter Seven - Social Influence on Positive
23   Youth Development: A Developmental Neuroscience Perspective. In: Benson JB, ed. *Advances*
24   *in Child Development and Behavior*. Vol 54. JAI; 2018:215-258.
25   doi:10.1016/bs.acdb.2017.10.003

26 10. Dudovitz RN, Wong MD, Perez-Aguilar G, Kim G, Chung PJ. Update on How School
27   Environments, Social Networks, and Self-Concept Impact Risky Health Behaviors. *Acad*
28   *Pediatr*. 2019;19(2):133-134. doi:10.1016/j.acap.2018.09.014

29 11. Dudovitz RN, Chung PJ, Reber S, et al. Assessment of Exposure to High-Performing Schools
30   and Risk of Adolescent Substance Use: A Natural Experiment. *JAMA Pediatr*.
31   2018;172(12):1135-1144. doi:10.1001/jamapediatrics.2018.3074

32 12. Shukla K, Konold T, Cornell D. Profiles of Student Perceptions of School Climate: Relations
33   with Risk Behaviors and Academic Outcomes. *Am J Community Psychol*. 2016;57(3-4):291-
34   307. doi:10.1002/ajcp.12044

1   13. Reaves S, McMahon SD, Duffy SN, Ruiz L. The test of time: A meta-analytic review of the
2   relation between school climate and problem behavior. *Aggress Violent Behav*. 2018;39:100-
3   108. doi:10.1016/j.avb.2018.01.006

4   14. Konold T, Cornell D, Jia Y, Malone M. School Climate, Student Engagement, and Academic
5   Achievement: A Latent Variable, Multilevel Multi-Informant Examination. *AERA Open*.
6   2018;4(4):2332858418815661. doi:10.1177/2332858418815661

7   15. Aldridge JM, McChesney K. The relationships between school climate and adolescent mental
8   health and wellbeing: A systematic literature review. *Int J Educ Res*. 2018;88:121-145.
9   doi:10.1016/j.ijer.2018.01.012

10 16. Thapa A, Cohen J, Guffey S, Higgins-D'Alessandro A. A Review of School Climate Research.
11   *Rev Educ Res*. 2013;83(3):357-385. doi:10.3102/0034654313483907

12 17. Voight A, Nation M. Practices for Improving Secondary School Climate: A Systematic Review
13   of the Research Literature. *Am J Community Psychol*. 2016;58(1-2):174-191.
14   doi:10.1002/ajcp.12074

15 18. Gottfredson GD, Gottfredson DC, Payne AA, Gottfredson NC. School Climate Predictors of
16   School Disorder: Results from a National Study of Delinquency Prevention in Schools. *J Res
17   Crime Delinquency*. 2005;42(4):412-444. doi:10.1177/0022427804271931

18 19. Goodenow C. Classroom Belonging among Early Adolescent Students: Relationships to
19   Motivation and Achievement. *J Early Adolesc*. 1993;13(1):21-43.
20   doi:10.1177/0272431693013001002

21 20. Wong MD, Strom D, Guerrero LR, et al. The Role of Social-Emotional and Social Network
22   Factors in the Relationship Between Academic Achievement and Risky Behaviors. *Acad
23   Pediatr*. 2017;17(6):633-641. doi:10.1016/j.acap.2017.04.009

24 21. Konold T, Cornell D. Multilevel multitrait–multimethod latent analysis of structurally different
25   and interchangeable raters of school climate. *Psychol Assess*. 2015;27(3):1097-1109.
26   doi:10.1037/pas0000098

27 22. Lau C, Wong M, Dudovitz R. School Disciplinary Style and Adolescent Health. *J Adolesc
28   Health*. 2018;62(2):136-142. doi:10.1016/j.jadohealth.2017.08.011

29 23. Reid KL, Smith K. Secondary Students' Self-Perceptions of School Climate and Subjective
30   Well-Being: Invitational Education Meets Positive Psychology. *J Invit Theory Pract*.
31   2018;24:45-69. Accessed November 21, 2021. https://eric.ed.gov/?id=EJ1251834

32 24. Cornell D, Shukla K, Konold TR. Authoritative School Climate and Student Academic
33   Engagement, Grades, and Aspirations in Middle and High Schools. *AERA Open*.
34   2016;2(2):2332858416633184. doi:10.1177/2332858416633184

25. De Pedro KT, Gilreath T, Berkowitz R. A latent class analysis of school climate among middle and high school students in California public schools. *Child Youth Serv Rev*. 2016;63:10-15. doi:10.1016/j.childyouth.2016.01.023

26. Buckley MA, Storino M, Sebastiani AM. *The Impact of School Climate: Variation by Ethnicity and Gender*.; 2003. Accessed August 3, 2022. https://eric.ed.gov/?id=ED481671

27. Pena-Shaff JB, Bessette-Symons B, Tate M, Fingerhut J. Racial and ethnic differences in high school students' perceptions of school climate and disciplinary practices. *Race Ethn Educ*. 2019;22(2):269-284. doi:10.1080/13613324.2018.1468747

28. Booth-Kewley S, Larson GE, Miyoshi DK. Social desirability effects on computerized and paper-and-pencil questionnaires. *Comput Hum Behav*. 2007;23(1):463-477. doi:10.1016/j.chb.2004.10.020

29. Kurth AE, Martin DP, Golden MR, et al. A Comparison Between Audio Computer-Assisted Self-Interviews and Clinician Interviews for Obtaining the Sexual History. *Sex Transm Dis*. 2004;31(12):719-726. doi:10.1097/01.olq.0000145855.36181.13

30. Perlis TE, Des Jarlais DC, Friedman SR, Arasteh K, Turner CF. Audio-computerized self-interviewing versus face-to-face interviewing for research data collection at drug abuse treatment programs. *Addiction*. 2004;99(7):885-896. doi:10.1111/j.1360-0443.2004.00740.x

31. Brener ND, Kann L, Shanklin S, et al. Methodology of the Youth Risk Behavior Surveillance System — 2013. *Morb Mortal Wkly Rep Recomm Rep*. 2013;62(1):1-20. Accessed November 21, 2021. https://www.jstor.org/stable/24832543

32. Edelen MO, McCaffrey DF, Ellickson PL, Tucker JS, Klein DJ. Creating a developmentally sensitive measure of adolescent alcohol misuse: An application of item response theory. *Subst Use Misuse*. 2009;44(6):835-847. doi:10.1080/10826080802484686

33. Haynie DL, Osgood DW. Reconsidering Peers and Delinquency: How do Peers Matter? *Soc Forces*. 2005;84(2):1109-1130. doi:10.1353/sof.2006.0018

34. Wong MD, Chung PJ, Hays RD, Kennedy DP, Tucker JS, Dudovitz RN. The Social Economics of Adolescent Behavior and Measuring the Behavioral Culture of Schools. *J Child Fam Stud*. 2019;28(4):928-940. doi:10.1007/s10826-018-01325-0

35. Matheny AP, Wachs TD, Ludwig JL, Phillips K. Bringing order out of chaos: Psychometric characteristics of the confusion, hubbub, and order scale. *J Appl Dev Psychol*. 1995;16(3):429-444. doi:10.1016/0193-3973(95)90028-4

36. Steinberg MP, Allensworth E, Johnson DW. *Student and Teacher Safety in Chicago Public Schools: The Roles of Community Context and School Social Organization*. Consortium on Chicago School Research; 2011. Accessed November 23, 2021. https://eric.ed.gov/?id=ED519414

37. Luppescu S, Hart H, Rosenkranz T, et al. *CCSR's 2007 Survey Reports for Chicago Public Schools*. Accessed December 21, 2021. https://consortium.uchicago.edu/publications/ccsrs-2007-survey-reports-chicago-public-schools

38. Baumrind D. Effects of Authoritative Parental Control on Child Behavior. *Child Dev*. 1966;37(4):887-907. doi:10.2307/1126611

39. Lamborn SD, Mounts NS, Steinberg L, Dornbusch SM. Patterns of Competence and Adjustment among Adolescents from Authoritative, Authoritarian, Indulgent, and Neglectful Families. *Child Dev*. 1991;62(5):1049-1065. doi:10.2307/1131151

40. Smetana JG. Current research on parenting styles, dimensions, and beliefs. *Curr Opin Psychol*. 2017;15:19-25. doi:10.1016/j.copsyc.2017.02.012

41. Ma X, Wilkins JLM. The Development of Science Achievement in Middle and High Schoolr: Individual Differences and School Effects. *Eval Rev*. 2002;26(4):395-417. doi:10.1177/0193841X02026004003

42. Fletcher A, Bonell C, Hargreaves J. School Effects on Young People's Drug Use: A Systematic Review of Intervention and Observational Studies. *J Adolesc Health*. 2008;42(3):209-220. doi:10.1016/j.jadohealth.2007.09.020

43. Denny SJ, Robinson EM, Utter J, et al. Do schools influence student risk-taking behaviors and emotional health symptoms? *J Adolesc Health Off Publ Soc Adolesc Med*. 2011;48(3):259-267. doi:10.1016/j.jadohealth.2010.06.020

44. Klem AM, Connell JP. Relationships Matter: Linking Teacher Support to Student Engagement and Achievement. *J Sch Health*. 2004;74(7):262-273. doi:10.1111/j.1746-1561.2004.tb08283.x

45. Gase LN, Kuo T, Coller K, Guerrero LR, Wong MD. Assessing the connection between health and education: Identifying potential leverage points for public health to improve school attendance. *Am J Public Health*. 2014;104(9):47-54. doi:10.2105/AJPH.2014.301977

46. Wong MD, Dosanjh KK, Jackson NJ, Rünger D, Dudovitz RN. The longitudinal relationship of school climate with adolescent social and emotional health. *BMC Public Health*. 2021;21(1):207. doi:10.1186/s12889-021-10245-6

47. Mogro-Wilson C, Cifuentes A. The Influence of Culture on Latino Fathers' Parenting Styles. *J Soc Soc Work Res*. 2021;12(4):705-729. doi:10.1086/715440

48. Fischer C, Harvey EA, Driscoll P. Parent-centered parenting values among Latino immigrant mothers. *J Fam Stud*. 2009;15(3):296-308. doi:10.5172/jfs.15.3.296

49. Wang MT, Degol JL. School Climate: a Review of the Construct, Measurement, and Impact on Student Outcomes. *Educ Psychol Rev*. 2016;28(2):315-352. doi:10.1007/s10648-015-9319-1

50. Grazia V, Molinari L. School climate multidimensionality and measurement: a systematic literature review. *Res Pap Educ*. 2021;36(5):561-587. doi:10.1080/02671522.2019.1697735

1 51. Charlton CT, Moulton S, Sabey CV, West R. A Systematic Review of the Effects of Schoolwide
2   Intervention Programs on Student and Teacher Perceptions of School Climate. *J Posit Behav*
3   *Interv*. 2021;23(3):185-200. doi:10.1177/1098300720940168

4 52. Lewallen TC, Hunt H, Potts-Datema W, Zaza S, Giles W. The Whole School, Whole
5   Community, Whole Child Model: A New Approach for Improving Educational Attainment and
6   Healthy Development for Students. *J Sch Health*. 2015;85(11):729-739. doi:10.1111/josh.12310

7 53. Whole School, Whole Community, Whole Child (WSCC) | Healthy Schools | CDC. Published
8   March 23, 2021. Accessed June 2, 2021. https://www.cdc.gov/healthyschools/wscc/index.htm

9 54. Degenhardt L, Stockings E, Patton G, Hall WD, Lynskey M. The increasing global health
10   priority of substance use in young people. *Lancet Psychiatry*. 2016;3(3):251-264.
11   doi:10.1016/s2215-0366(15)00508-8

12

13 **TABLES AND FIGURES**

Table 1. Student and parental characteristics reported by participants in the RISE-Up Study, Los Angeles, CA (N = 1114)

	Percent of students
Student demographics	
Male	46.3%
Latinx	90.3%
USA Born	87.3%
Native English speaker	39.7%
Parental characteristics	
Born in the USA, one or more parents	25.1%
Full-time employed, one or more parents	88.0%
Graduated high school, one or more parents	
No	43.5%
Yes	51.6%
Unsure	4.8%
Parenting style*	
Normal	50.0%
Authoritative	20.2%
Authoritarian	9.4%
Indulgent	8.9%
Neglectful	11.5%

*Parenting style scale developed by Lamborn et al [38,39].

1

2

3

Table 2. Health, behavioral, and academic outcomes of participants in the RISE-Up study, Los Angeles, CA (N = 1114)

Health and behavior outcomes	
30-day alcohol use, %	15.3%
30-day cannabis use, %	11.4%
Alcohol misuse, mean (sd)	1.02 (2.72)
Cannabis misuse, mean (sd)	0.67 (2.22)
Delinquent behaviors, one or more, %	21.6%
Violence, %	12.8%
High risk sex, %	8.6%
Victim of bullying, %	18.8%
Bullied others, %	15.2%
Academic outcomes	
Truancy, %	21.8%
Changed schools since 9th grade, %	23.0%
GPA, mean (sd)	2.83 (0.68)
Proficient in Math, * %	34.7%
Proficient in English, * %	70.6%
Matriculated in a 4-year College, %	43.1%

*Proficient or above 11th grade standard on California Assessment of Student Performance and Progress, a state-wide standardized exam.

1

2

3

1

1

Table 3. Associations Between School Climate (10ᵗʰ grade) and Health Outcomes (11ᵗʰ grade), Los Angeles, CA (N=1114).

	30-day Alcohol Use [OR, 95%CI]	30-day Cannabis Use [OR, 95%CI]	Alcohol Misuse [β, 95%CI]	Cannabis Misuse [β, 95%CI]	Delinquent Behaviors [OR, 95%CI]	Violence [OR, 95%CI]	High Risk Sex [OR, 95%CI]	Victim of Bullying [OR, 95%CI]	Bullied Others [OR, 95%CI]
School environment									
Order*	**0.81 [0.72, 0.92]**	**0.74 [0.59, 0.91]**	**-0.22 [-0.44, 0]**	**-0.23 [-0.39, -0.07]**	**0.79 [0.68, 0.93]**	0.83 [0.68, 1.01]	**0.65 [0.54, 0.78]**	**0.80 [0.71, 0.90]**	**0.79 [0.68, 0.91]**
Safety**	0.92 [0.77, 1.10]	0.91 [0.74, 1.12]	-0.17 [-0.39, 0.05]	-0.14 [-0.30, 0.02]	0.92 [0.8, 1.06]	0.95 [0.79, 1.14]	0.98 [0.81, 1.20]	**0.79 [0.70, 0.89]**	**0.76 [0.67, 0.87]**
Teacher relationship									
Teacher respect for students	**0.73 [0.62, 0.85]**	**0.76 [0.63, 0.92]**	**-0.34 [-0.54, -0.15]**	**-0.23 [-0.35, -0.12]**	**0.75 [0.64, 0.88]**	**0.85 [0.73, 0.99]**	**0.80 [0.66, 0.97]**	0.88 [0.73, 1.05]	**0.82 [0.69, 0.97]**
Teacher support for college	**0.82 [0.70, 0.97]**	0.90 [0.75, 1.08]	**-0.24 [-0.43, -0.05]**	**-0.22 [-0.43, -0.02]**	0.90 [0.78, 1.04]	0.88 [0.74, 1.06]	0.86 [0.68, 1.09]	0.97 [0.82, 1.14]	0.95 [0.81, 1.10]
Disciplinary Style*									
Average	reference	reference	reference	reference	reference	reference	reference	reference	reference
Authoritative	0.70 [0.44, 1.11]	0.65 [0.32, 1.33]	-0.33 [-0.66, 0.01]	-0.13 [-0.47, 0.21]	**0.62 [0.39, 1.00]**	0.99 [0.60, 1.63]	0.62 [0.36, 1.07]	**0.62 [0.42, 0.93]**	0.86 [0.57, 1.30]
Authoritarian	1.45 [0.80, 2.62]	**3.26 [1.63, 6.52]**	0.42 [-0.38, 1.22]	0.5 [-0.45, 1.45]	1.36 [0.71, 2.63]	1.22 [0.58, 2.55]	0.44 [0.11, 1.73]	0.84 [0.44, 1.60]	0.63 [0.23, 1.72]
Permissive	0.30 [0.08, 1.05]	1.15 [0.34, 3.87]	0.02 [-1.32, 1.36]	0.11 [-0.51, 0.73]	0.48 [0.11, 2.12]	1.34 [0.40, 4.46]	0.63 [0.13, 3.00]	1.32 [0.62, 2.83]	0.56 [0.18, 1.76]
Neglectful	1.30 [0.90, 1.88]	**2.71 [1.79, 4.12]**	**0.43 [0.01, 0.85]**	**0.47 [0.16, 0.77]**	**1.99 [1.34, 2.97]**	1.36 [0.83, 2.23]	**1.75 [1.09, 2.81]**	0.77 [0.56, 1.05]	1.02 [0.74, 1.42]

Abbreviations: OR – Odds Ratio, β – regression coefficient. **Bold font** indicates estimate significant to p<0.05. All models adjusted for: student gender, Latinx ethnicity, USA birthplace, native English language, parental birthplace, parental employment, parental

education, parenting style, outcome measure at 9th grade. *Wong et al.'s measure of school order with higher scores indicates a more positive school climate [34]. **Chicago Consortium on School Research Student Perceptions of Safety Scale, higher scores indicating greater perceived safety [36]. ***School Disciplinary Style Score [22].

1

Table 4. Associations Between School Climate (10th grade) and Academic Outcomes (11th grade), Los Angeles, CA (N=1114).

	Truancy [OR, 95%CI]	School change [OR, 95%CI]	GPA [β, 95%CI]	Math proficient [OR, 95%CI]	English proficient [OR, 95%CI]	4-year College matriculation [OR, 95%CI]
School environment						
Order*	**0.72 [0.61, 0.86]**	1.02 [0.93, 1.13]	0.02 [-0.01, 0.06]	1.05 [0.92, 1.20]	1.06 [0.93, 1.20]	**1.14 [1.00, 1.31]**
Safety**	**0.83 [0.72, 0.96]**	0.96 [0.87, 1.07]	0.01 [-0.01, 0.04]	1.10 [0.96, 1.27]	1.04 [0.93, 1.15]	1.04 [0.95, 1.14]
Teacher relationship						
Teacher respect for students	**0.84 [0.72, 0.99]**	0.98 [0.90, 1.06]	**0.03 [0, 0.06]**	**1.16 [1.02, 1.31]**	**1.19 [1.04, 1.37]**	1.06 [0.93, 1.21]
Teacher support for college	0.88 [0.75, 1.02]	0.94 [0.85, 1.03]	0 [-0.04, 0.04]	1.00 [0.84, 1.18]	1.13 [0.96, 1.32]	1.04 [0.93, 1.15]
Disciplinary Style*						
Average	Reference	reference	reference	Reference	reference	reference
Authoritative	**0.67 [0.46, 0.97]**	1.07 [0.78, 1.46]	0.02 [-0.05, 0.10]	0.95 [0.65, 1.40]	1.37 [0.82, 2.30]	1.19 [0.79, 1.80]
Authoritarian	0.82 [0.44, 1.54]	1.17 [0.82, 1.68]	-0.04 [-0.15, 0.08]	0.58 [0.29, 1.15]	0.95 [0.53, 1.70]	0.87 [0.45, 1.68]
Permissive	**0.43 [0.23, 0.82]**	0.80 [0.50, 1.29]	**0.24 [0.11, 0.36]**	1.00 [0.47, 2.14]	**2.86 [1.12, 7.33]**	**3.31 [1.38, 7.96]**
Neglectful	**1.75 [1.23, 2.49]**	**1.29 [1.04, 1.61]**	**-0.08 [-0.15, -0.01]**	0.76 [0.53, 1.10]	1.04 [0.74, 1.47]	1.03 [0.79, 1.35]

Abbreviations: OR – Odds Ratio, β – regression coefficient. **Bold font** indicates estimate significant to p<0.05. All models adjusted for: student gender, Latinx ethnicity, USA birthplace, native English language, parental birthplace, parental employment, parental education, parenting style, outcome measure at 9th grade. *Wong et al.'s measure of school order with higher scores indicates a more positive school climate [34]. **Chicago Consortium on School Research Student Perceptions of Safety Scale, higher scores indicating greater perceived safety [36]. ***School Disciplinary Style Score [22].

1 **School Climate and Adolescent Behaviors**

1