School Climate and Resilience: An Exploration of Latent Patterns of Student Perceptions

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Abstract

Both school climate and resilience are linked with multiple outcomes for students. However, few studies examine how students experience the multiple dimensions these constructs. This study will first identify subgroups of students based on unique patterns of school climate and resilience, and then explore relationships between these subgroups using a sample of 7th, 9th, and 11th grade students (n = 85,069) from California. Five-class models were the best fitting models for school climate and resilience. Independently, these models help illuminate how students simultaneously experience school climate and resilience. Associations between school-climate and resilience show that school environments may contribute to various elements of student resilience. Individual variation has implications for school-wide and individual intervention efforts.

Latent Patterns of School Climate and Resilience

Introduction

Both school climate and resilience are linked with multiple outcomes for students (e.g. Luthar, Cicchetti, & Becker, 2000; Rutter, 2006; Thapa, Cohen, Guffey, & Higgins-D'Alessandro, 2013; Wang & Degol, 2015). Separately, these two constructs have garnered significant interest from researchers seeking to understand how a school's climate impacts students and how student resilience can be understood and fostered. Few studies examine how students experience the multiple dimensions of school climate. Similarly, few studies examine students' perceptions of their own capacity for resilience.

A critical limitation of studies that have examined either school climate or resilience is the focus on uni-dimensional variables that do not capture the complexity of these constructs. Further, these studies have historically focused on variable-centered relationships. Recent literature emphasizes the utility of "person-centered" analysis, as this method can increase our knowledge about variation between subgroups of people (Masten, 2001; Nurius & Macy, 2008; Rosato & Baer, 2012; Wang & Degol, 2015). For example, research indicates that increased resilience is associated with improved outcomes that happen despite adversity (Rutter, 2006; Werner, 2013), but we do not necessarily know what increased resilience in a particular individual entails. This study will first identify subgroups of students based on unique patterns of school climate and resilience dimensions. Second, we will explore potential relationships between these subgroups. The identification of latent patterns may help understand unique student experiences that encompass multiple environmental contexts. Further, examining associations between school climate and resilience may be used to support intervention and theory.

School Climate

A large body of literature has established that school climate is comprised of multiple dimensions (Thapa et al., 2013; Wang & Degol, 2014; Zullig et al., 2010). The literature also indicates that there is considerable variation in how researchers define and operationalize these dimensions (e.g. Cohen, McCabe, Michelle, & Pickeral, 2009; Wang & Degol, 2014), though these dimensions often include school safety, teacher relationships, school connectedness, and meaningful participation, (Thapa et al., 2013). *School safety* involves physical safety and social-emotional safety, including clear crisis plans, supportive environments, and clear rules and regulations. *Teacher relationships* reflect the idea that learning in school is inherently relational (Thapa et al., 2013). Positive and supportive relationships with teachers thus demonstrate a respect for diversity, collaboration, and positive norms and values. *School connectedness* is defined as engagement in learning, connection to multiple people in the school, and is also influenced by staff who are enthusiastic about their work (Thapa et al., 2013). Lastly, *meaningful participation* refers to student involvement in relevant and meaningful activities that may increase responsibility to contribute to the school community (Thapa et al., 2013).

Positive school climate can promote student well-being, reduce negative social and emotional outcomes, and protect against stressors arising from multiple layers of a student's ecology (Astor, De Pedro, Gilreath, Esqueda, & Benbenishty, 2013). The Centers for Disease Control and Prevention (CDC) also cites school climate reform as a mechanism to improve youth well-being and prevent drop-out (CDC, 2009). School climate research continues to emphasize that complex social interactions and social emotional development are critical areas for long term student success (Astor et al, 2013; Bond et al., 2007; Cohen et al., 2009; Thapa et al, 2013).

When considering the potential, substantial, influence of school climate on students, it may be that some of the individual influence is reflected in student resilience.

Resilience

Similar to school climate, there are many ways to define resilience, and much debate about the definition of resilience (e.g. Kaplan, 2012; Luthar et al., 2000; Rutter, 2012). We are not attempting to clarify conceptualizations of resilience, but rather working to understand the experiences of students that contribute to resilience and positive future trajectories. Masten (2001) writes that resilience represents a "class of phenomena" that reflect good outcomes despite threats to adaptation and development. Important for this and other definitions of resilience is the existence of protective or promotive personal characteristics (Benard, 2004; Masten, 2001; Rutter, 2012) that constitute an individual's ability to respond to difficulty. Such protective characteristics can be sorted into four categories: social competence, problem solving, autonomy, and a sense of purpose (Benard, 2004). In this study, we utilized measures that fall into the categories of problem solving, autonomy, and sense of purpose (Hanson & Kim, 2007).

School Climate and Resilience

It is important that studying resilience encompasses individual and environmental elements (Kaplan, 2012; Rutter, 2012). In other words, understanding resilience requires us to look beyond individual characteristics and examine experiences that are rooted in environmental contexts. Many researchers have examined how resilience may be cultivated in schools (e.g. Johnson, 2008; Stewart, Sun, Patterson, Lemerie, & Hardie, 2004; Masten, Herbers, Cutuli, & Lafavor, 2008), yet these studies do not necessarily examine the potential relationship between school climate and resilience. We believe that the intersection of these two constructs warrants further exploration. As schools endeavor to foster positive climate, they are directly and/or

indirectly also working to foster resilience in students. At minimum, schools represent a social context where important skills and experiences that may comprise resilience are commonplace, and even intentionally structured. For example, in this study, problem solving is operationalized as an element of resilience. One can imagine that throughout a student's K-12 educational career, there are many opportunities for direct instruction in problem solving strategies, as well as many chances to hone problem solving abilities. Similarly, the development of self-efficacy, also an element of resilience in this study, is contingent on experiences of mastery, vicarious experiences, and verbal persuasion or instruction (Bandura, 1977). As students receive instruction, observe teacher modeling, and practice skills, they are simultaneously learning required academic content and building self-efficacy.

School is a mandated experience for children and adolescents; all children will go to school and experience some quality of school climate. Further, positive school climate can foster positive individual coping abilities, which may be protective (Benbenishty & Astor, 2005). Positive school climate then, as a place of interaction between individual and environment that allows a particular student to overcome particular challenges, could promote resilience.

Exploring Unobserved Person-Centered Heterogeneity

There is a growing body of research discussing the importance of exploring heterogeneity in populations (Nurius & Macy, 2008; Rosato & Baer, 2012; Rutter, 2012). Extant research helps us understand resilience in the context of various outcomes, but resilience remains a concept rooted in the unique experiences of individuals. Continued work is needed to understand patterns of individual experience that may reveal areas of risk and needs for intervention (Masten, 2001).

There is less discussion about the need to explore heterogeneity regarding school climate, though Wang and Degol (2015) do explicitly call for a person-centered approach to better

understand how students experience the multiple dimensions of climate. Similar to resilience, school climate is composed of multiple dimensions; the collective influence of these dimensions on student outcomes, teacher experiences, and school performance has garnered much attention. In this study, we are able to examine how students experience and perceive the multiple dimensions of school climate concurrently. To our knowledge, this is among the first efforts to examine both school climate and resilience through latent class analysis, and then examine associations between school climate and resilience based on student subgroups.

Method

Data for this study come from the 2013 administration of the California Healthy Kids Survey (CHKS) in school districts across the state of California. The CHKS is a biennial survey developed by WestEd in coordination with the California Department of Education (CDE); the CDE required districts receiving Title IV funding (~85% of districts statewide) to administer the survey to a representative sample of students in 5^{th}, 7^{th}, 9^{th}, and 11^{th} grades. Additional information about the CHKS administration is described elsewhere (Austin & Duerr, 2004). The present analysis included seventh, ninth, and eleventh grade students and utilized the core and resiliency modules of the CHKS. The final sample of students completing both of these modules was 85,069. This secondary data analysis was deemed exempt by the institutional review board at the [blinded for review.]

Measures

School climate. School climate was composed of four dimensions (school connectedness, teacher relationships, meaningful participation, safety). Student perceptions of school connectedness were assessed with five questions asking how strongly they disagreed or agreed with the following: I feel close to people at this school; I am happy to be at this school; I

feel like I am part of this school; I feel safe at this school; and teachers at this school treat students fairly. Response options were on a 5-point Likert scale and included: 1 = Strongly disagree; 2 = Disagree; 3 = Neither disagree or agree; 4 = Agree; 5 = Strongly agree. The mean across these five items was included in subsequent analysis.

Meaningful participation was assessed with three items: I do interesting things; I help decide things like class activities or rules; I do things that make a difference. Response choices were on a 4-point Likert scale: 1 = Not at all true; 2 = A little true; 3 = Pretty much true; 4 = Very true. The mean across these three items was included in subsequent analysis.

Student perceptions of teacher relationships were assessed with 6 items: At my school, there is a teacher or other adult who really cares about me; who tells me when I do a good job; who notices when I'm not there, who wants me to do my best; who listens to me when I have something to say; who believes I will be a success. Response options were on a four-point Likert scale that included: 1 = Not at all; 2 = A little true; 3 = Pretty much true; and 4 = Very much true. The mean across these six items was included in subsequent analysis.

School safety was measured with a single item: I feel safe in my school. Responses were on a 5-point Likert scale including: 1 = Strongly disagree; 2 = Disagree; 3 = Neither disagree or agree; 4 = Agree; 5 = Strongly agree.

Resilience. Student resilience was measured with select questions from the Resilience and Youth Development Module of the CHKS. Three domains of internal resilience were utilized: goals, problem solving, and self-efficacy (Hanson & Kim, 2007). Students answered three questions about goals: I have goals and plans for the future; I plan to graduate from high school; I plan to go to college or some other school after high school. Three questions assessed problem solving: I know where to go for help with a problem; I try to work out problems by

talking or writing about them; When I need help, I find someone to talk with. Finally, three questions assessed self-efficacy: I can work out my problems; I can do most things if I try; There are many things that I do well. Responses for all of these items were on a 4-point Likert scale where 1 = Not at all true, 2 = A little true, 3 = Pretty much true, 4 = Very much true.

Analysis

Latent class analysis (LCA) is an appropriate tool in this study as it allows us to examine heterogeneity within a sample and identify subgroups (Rosato & Baer, 2012), in this case based on perceptions of school climate and resilience. Both models controlled for grade in school, gender, and race/ethnicity. To determine the appropriate number of classes for school climate and resilience, a series of models was run (see Table 2). An initial, one-class (no covariates) model was followed by models with increasing numbers of classes (i.e. two-class, three-class, etc.) representing different patterns of school climate or resilience. Model selection was initially guided by adjusted Bayesian Information Criteria (BIC) relative to other models, significant Lo-Mendell-Rubin Likelihood Ratio Test (LMR-LRT) values, and quality of classification assessed by Entropy (Nylund, Asparouhov & Muthen, 2007). Theoretical and conceptual concerns also guided model selection. After we determined the appropriate number of classes for the school climate and resilience models, a final model was run with school climate and resilience simultaneously; school climate class membership was used to predict resilience class membership, while controlling for covariates including grade, gender, and race/ethnicity. To account for missing data on dependent variables, full information maximum likelihood (FIML) was employed during analysis in Mplus. SAS 9.3 was utilized for data management and for descriptive statistics; LCA analyses were conducted using Mplus 7.3.

Results

Sample demographics are shown in Table 1. Just over half of the sample (n = 85,069) was female (51.37%). Roughly equivalent percentages of students were in ninth and eleventh grades, while a slightly smaller percentage (28.21%) were in seventh grade. Just under half of the sample identified as Hispanic (48.42%), with White being the next largest group (20.31%).

Results from successive LCA models for school climate and resilience are shown in Table 2, with the final models in italics. Possibly due to sample size, after 10 classes neither the LMR-LRT or BIC indicators indicated a best-fit model. From a theoretical standpoint, moving beyond six classes made it difficult to distinguish between models in a meaningful way. For example, seven-class models for both school climate and resilience have two classes that are essentially the same. Five class models were chosen for school climate and resilience as parsimonious models that also created meaningful groupings of students.

Conditional probabilities and means for school climate are presented inTable 3. Class 1 (“low climate”) accounted for 4.51% of the sample. Students in this class were likely to report low levels of school connectedness, teacher support, meaningful participation, and safety. Students in class 2 (“neutral climate”) accounted for 24.79% of the sample; these students were not likely to endorse high or low levels of connectedness, teacher support or meaningful participation, and nearly half were likely to report that school was “neither” safe or unsafe. Class 3 (“moderate”) accounted for 47.51% of the sample, and represents students who were likely to endorse moderately high (i.e. not the highest) ratings for connectedness, support and participation. In contrast to class 2, more than half of these students “agreed” that their school was a safe place. Students in class 4 (“positive teacher support) accounted for 3.52% of the sample. Students in this class were more likely to report their school was not safe, and low perceptions of connectedness and participation. However, they were likely to report high levels

of teacher support. Finally, class 5 (“high climate”) accounted for 20.01% of the sample. Students in this class were likely to report high levels of all dimensions of school climate, and overwhelmingly reported they felt their school was safe.

Conditional probabilities for resilience are presented in Table 4. Class 1 (“Mostly resilient”) accounted for 7.38% of the sample. The majority of these students were likely to report that items were “pretty much true” across the three dimensions of resilience (goals, problem solving, and self-efficacy). In class 2 (“HS graduate, low resilience”), students were likely to report they had goals and plans for the future but lower levels of problem solving and self-efficacy; this class accounted for 17.51% of the sample. Class 3 (“Low”) accounted for 4.14% of the sample; students in this class were likely to endorse low levels (e.g. “not at all true”) across all items. Class 4 (“variable”) accounted for 34.01% of the sample. Students in this class presented more variation in their responses to resilience items, ranging from moderate to high levels of resilience. Lastly, class 5 (“high”) accounted for 37.12% of the sample. Students in this class were likely to report high (“very much true”) resilience across all items.

Multinomial logistic regression was used to predict the odds of resilience class membership based on school climate class membership while controlling for gender, grade in school, and ethnicity. Table 5 shows model results expressed as odds ratios. Compared to those in the high-climate class, students in the low-climate class had higher odds of being in the low-resilience (vs. high-resilience) class (OR = 16.84, 95% CI = 14.37-19.74), as well as higher odds of being in the HS graduate/low resilience class (OR = 39.96, 95% CI = 33.31, 47.96). These students also had higher odds of being in the mostly resilient (vs. high-resilience) class (OR = 7.81, 95% CI 5.99, 10.17). Students in the neutral climate class, compared to those in the high-climate class, had higher odds of being in the mostly-resilient (vs. high-resilience) class (OR =

21.65, 95% CI = 17.73, 26.44); this group also notably had higher odds of being in the HS graduate/low resilience class (OR = 63.31, 95% CI = 53.91, 74.35). Again compared to the high-climate class, students in the positive teacher support class had higher odds of being in the graduate HS/low resilience class (vs. high-resilience) class (OR = 6.80, 95% CI = 5.40, 8.57); these students also had higher odds of being in the mostly resilient (vs. high-resilience) class (OR = 3.22, 95% CI = 2.40, 4.32). Finally, compared to those in the high-climate class, students in the moderate school climate class had higher odds of being in the mostly resilient (vs. high-resilience) class (OR = 12.64, 95% CI = 10.45, 15.29); these same students had higher odds of being in the HS graduate/low class (vs. high-resilience) class (OR = 9.56, 95% CI = 7.99, 11.45).

Table 6 presents conditional probabilities of membership in a school climate class by resilience. Among those students classified as perceiving low climate, the probability of being in the low resilience class was 19.9%. However, this same class had a 37.7% probability of being in the HS graduate/low skills class and a 27.4% probability of being in the high resilience class. Among those in the neutral climate class, the probability of being in the HS graduate/low skills class was 39.6%. For those students in the positive teacher support class, the probability of being in the high resilience class was 57%.

Discussion

This study set out with two primary objectives. First, we identified patterns (or subgroups) of student perceptions of school climate and resilience. Second, we examined associations between school climate class membership and resilience class membership. Insight from latent patterns and associations between school climate and resilience may help to understand student experiences in unique ways, and inform intervention and theory. Our results reinforce the complexity of climate and resilience constructs and their relationship to each other.

Our results show considerable variability in how students perceive the multiple dimensions of school climate. In our five-class solution, a large proportion of our sample (67%) report generally positive school climate, suggesting that the majority of students generally feel good about being in school. However, the low-climate class indicates that a small percentage of students feel disconnected, unsafe, and likely unhappy about their school environments. Additionally, students in the positive teacher support class present an interesting constellation of perceptions. Their reports of greater teacher support contrast sharply with low ratings of safety and school connectedness. There is extensive literature that supports the importance of teacher relationships, including bolstered academic progress (Bond et al., 2007) and the long-lasting impacts of teachers' roles as mentors (Jennings & Greenberg, 2009; Tatar, 1998); our results may support the importance of these relationships despite difficulties in other areas. Also noteworthy is the differentiation between the neutral and moderate school climate classes. Though arguably similar in student perceptions of school connectedness, differences in safety, teacher support, and meaningful participation indicate that subtle shifts in how students experience various components of school climate may change their overall perception of school.

Similarly, the five-class solution for resilience reflects the complicated nature of this construct (Masten, 2001; Rutter, 2012), and illustrates that students experience resilience in different ways. The large proportion of our sample in the variable resilience and high resilience classes (71.13%) suggest that the majority of students are on a positive trajectory with the potential to address challenges and solve problems in an effective manner. Students in the variable resilience class are different from other groups primarily in the discrepancy between the likelihood to report positive ratings regarding future plans but lower ratings regarding problem solving domains. For this group, targeted interventions to increase problem-solving skills, for

example, may efficiently boost their overall resilience. Most worrisome is the low resilience class, composed of students reporting low skills for problem solving, low self-efficacy, and little confidence that they will graduate from high school. In our sample, this means that roughly 1200 students, many of them 11th graders, don't believe they will graduate. Thus, it is a possibility that these students are at higher risk for behavioral problems that may span multiple ecological contexts, including school, home, and community. Knowing that this group of students exists in a school and making efforts to identify and support them is important.

Lastly, the Graduate HS/low skills class shows another disparate constellation of resilience. These students indicate that they believe their high school graduation is likely, but are likely to report relatively low skills in other areas. Students in this class may feel that high school graduation is a "given" but perceive that they may not have the resilience to see their future beyond high school. This perception of limited future options is then combined with a high probability of feeling that their problem-solving and self-efficacy skills are minimal. This class may also be an example of the notion that a poor outcome for some may in fact represent a resilient outcome for others (Kaplan, 2012; Rutter, 2012). One can imagine that a student just managing to graduate from high school with lower levels of problem solving skills and self-efficacy may not seem destined for success. However, if this student is the first in the family to graduate and comes from an unstable or unsafe neighborhood, it may very well indicate resilience. Such youth are excellent targets for specialized skill-building and life skills programming while still in school.

The results regarding associations between school climate class membership and resilience class membership suggest that this relationship is important, but perhaps not in a linear fashion. For example, results indicating that students in the low climate class are more likely to

be in the low resilience class are striking, but not surprising. What seems to be an unusual pattern in our study is that students in neutral and low climate classes have have noticeably higher odds of being in the HS Graduate/low skills resilience class. These findings also lend support to our suggestion that targeted programs should be skills-based versus focused on improving school climate for these youth.

There are limitations within this study that warrant consideration. First, these data are cross-sectional and therefore causality cannot be inferred. Second, the CHKS is a self-report survey, though in this study we are expressly interested in the perceptions of students. Third, as indicated earlier in this paper, both school climate and resilience lack consensus regarding their exact definition. Subsequently, our conceptualization and measurement of these domains are not standardized and may differ from others. Finally, data for this study comes from school districts in California, limiting generalizability to other regions.

Despite these limitations, there are implications that stem from our results. Using a multidimensional assessment of school climate and resilience domains, we found that students are not merely high or low in either school climate or resilience. Additionally, examining associations between these two constructs does not reveal clear patterns. This does not contradict extant research about the importance of school climate for student outcomes (Thapa et al., 2013; Wang and Degol, 2015) or the importance of resilience for students (Johnson, 2008; Masten et al., 2008). However, the complexities and variation present here clearly indicate that interventions for students need to take into account characteristics of specific domains depending on a variety of indicators and that they need to be tailored/targeted for individuals. Merely working to exclusively improve school climate or resilience in students may ignore areas of strength that can be leveraged or overlook significant areas of need.

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Table 1. Sample Characterisics

	n	%
Demographics		
Male	40923	47.62
Female	44146	51.37
Grade 7	24242	28.21
Grade 9	31185	36.29
Grade 11	30507	35.50
American Indian/Alaska Native	941	1.10
Asian	10292	11.98
African American	3516	4.09
Latino	41609	48.42
Pacific Islander	1894	2.20
White	17453	20.31
Mixed	8515	9.91
School Climate (Possible ratings 1-5)	**M**	**SD**
School connectedness	3.55	0.87
Meaningful Participation	2.28	0.84
Teacher Support	2.98	0.75
I feel safe at this school	3.59	1.10
Resilience (Possible ratings 1-4)		
Problem Solving		
I know where to go for help with a problem	3.20	1.00
I work out problems by talking or writing	2.86	1.14
When I need help I find someone to talk to	3.00	1.14
Self-efficacy		
I can do most things if I try	3.29	0.83
There are many things I do well	3.19	0.89
I can work out my problems	3.16	0.91
Goals		
I have goals and plans for the future	3.41	0.89
I plan to graduate from high school	3.67	0.74
I plan to go to college or other school	3.53	0.85

Table 2. Model Fit Indicators

Model	Description	**School Climate**			**Resilience**		
		Adjusted BIC	LMR-LRT p-value	Entropy	Adjusted BIC	LMR-LRT p-value	Entropy
1	One class	867279.058	-	-	1580968.120	-	-
2	Two class	808116.290	0.0000	0.701	1350395.176	0.0000	0.861
3	Three class	785326.689	0.0000	0.739	1268617.640	0.3333	0.869
4	Four class	773908.544	0.0000	0.764	1235005.708	0.0000	0.857
5	*Five class*	*765452.727*	*0.0000*	*0.776*	*1204384.876*	*0.0000*	*0.860*
6	Six class	762015.900	0.0000	0.764	1193430.816	0.0000	0.826

Table 3. Conditional Probabilities and Means for 5-class model of School Climate

	Class 1 Low climate	Class 2 Neutral	Class 3 Moderate	Class 4 Positive teacher support	Class 5 High-climate
Class Prevalence %	4.51	24.79	47.15	3.52	20.01
School Connectedness					
Mean (1-5)	1.627	3.012	3.759	1.810	4.466
Teacher Support					
Mean (1-4)	1.616	2.336	3.136	3.380	3.677
Meaningful Participation					
Mean (1-4)	1.526	1.700	2.292	2.608	3.094
Safe at this School					
Strongly Disagree	0.569	0.068	0.015	0.533	0.006
Disagree	0.199	0.159	0.041	0.2	0.01
Neither	0.157	0.458	0.235	0.134	0.046
Agree	0.046	0.268	0.574	0.077	0.311
Strongly agree	0.028	0.047	0.135	0.056	0.627

Table 4. Conditional Probabilities for 5-class model of Resilience

	Class 1 Mostly resilient	Class 2 HS graduate/low	Class 3 Low	Class 4 Variable	Class 5 High
Class prevalence %	7.38	17.34	4.14	34.01	37.12
Goals/Plans for Future					
Not true at all	0.009	0.126	0.838	0.003	0.005
A little true	0.071	0.404	0.083	0.052	0.01
Pretty much true	0.889	0.29	0.048	0.248	0.04
Very much true	0.031	0.18	0.031	0.696	0.945
Plan to graduate HS					
Not true at all	0.001	0.051	0.832	0	0.001
A little true	0.012	0.224	0.081	0.001	0.001
Pretty much true	0.847	0.26	0.037	0.025	0.004
Very much true	0.14	0.466	0.049	0.974	0.993
College or other school					
Not true at all	0.006	0.1	0.907	0.004	0.006
A little true	0.053	0.321	0.053	0.021	0.006
Pretty much true	0.921	0.298	0.013	0.098	0.015
Very much true	0.02	0.281	0.027	0.877	0.973
Know where to find help					
Not true at all	0.008	0.232	0.954	0.042	0.015
A little true	0.055	0.422	0.03	0.143	0.008
Pretty much true	0.846	0.19	0.006	0.416	0.033
Very much true	0.091	0.156	0.01	0.399	0.944
Work out problems					
Not true at all	0.047	0.374	0.952	0.177	0.057
A little true	0.105	0.359	0.029	0.264	0.036
Pretty much true	0.82	0.155	0.01	0.362	0.07
Very much true	0.028	0.112	0.009	0.197	0.838
Find someone to help					
Not true at all	0.004	0.178	0.943	0.026	0.009
A little true	0.065	0.469	0.034	0.179	0.009

Pretty much true	0.896	0.212	0.01	0.525	0.051
Very much true	0.035	0.14	0.013	0.27	0.931
Talk/write to work out problems					
Not true at all	0.024	0.159	0.94	0.007	0.005
A little true	0.116	0.425	0.03	0.07	0.008
Pretty much true	0.825	0.283	0.014	0.499	0.03
Very much true	0.035	0.134	0.015	0.424	0.957
I can do things if I try					
Not true at all	0.041	0.196	0.913	0.012	0.008
A little true	0.152	0.451	0.048	0.143	0.019
Pretty much true	0.772	0.241	0.018	0.486	0.079
Very much true	0.035	0.112	0.022	0.359	0.894
Many things I do well					
Not true at all	0.03	0.297	0.873	0.098	0.033
A little true	0.127	0.397	0.058	0.257	0.036
Pretty much true	0.785	0.187	0.032	0.386	0.076
Very much true	0.058	0.119	0.037	0.258	0.855

Table 5. Odds Ratio results for multinomial logistic regression models

	School Climate Classes (vs. High climate)				**Resilience classes (vs. High resilience)**			
	OR (95% CI)				OR (95% CI)			
	Moderate	Positive Teacher Support	Neutral	Low	Mostly Resilient	Variable	HS Graduate/low-resilience	Low
Covariates								
American Indian/Alaska Native[a]	1.26 (0.99,1.60)	**3.31 (2.31,4.74)**	**2.56 (2.03,3.23)**	**3.56 (2.55,4.97)**	**1.56 (1.16,2.10)**	**0.76 (0.61,0.95)**	**1.53 (1.21,1.94)**	**1.53 (1.13,2.08)**
Asian[a]	**1.35 (1.25,1.45)**	**1.19 (1.01,1.40)**	**1.54 (1.42,1.68)**	1.11 (0.94,1.30)	**1.22 (1.08,1.38)**	**1.28 (1.20,1.38)**	**1.16 (1.05,1.27)**	**0.71 (0.61,0.82)**
African American[a]	**1.82 (1.59,2.09)**	**3.79 (3.07,4.67)**	**2.72 (2.36,3.13)**	**4.76 (3.94,5.74)**	1.10 (0.93,1.44)	**0.63 (0.56,0.71)**	**0.86 (0.75,0.99)**	0.93 (0.77,1.11)
Pacific Islander[a]	**1.53 (1.31,1.80)**	**1.98 (1.49,2.64)**	**1.64 (1.37,1.95)**	**1.52 (1.12,2.06)**	1.15 (0.93,1.44)	0.98 (0.85,1.12)	1.03 (0.86,1.24)	**0.73 (0.56,0.97)**
Mixed[a]	**1.43 (1.32,1.56)**	**1.86 (1.58,2.20)**	**1.87 (1.71,2.05)**	**2.05 (1.75,2.39)**	**1.18 (1.04,1.34)**	0.94 (0.87,1.01)	**1.18 (1.07,1.31)**	0.90 (0.78,1.04)
Latino[a]	**1.80 (1.70,1.90)**	**1.92 (1.70,2.16)**	**2.84 (2.68,3.02)**	**2.60 (2.34,2.90)**	**1.58 (1.45,1.71)**	1.02 (0.97,1.08)	**1.42 (1.33,1.52)**	0.96 (0.87,1.06)
9th Grade[b]	**1.26 (1.19,1.33)**	**1.32 (1.17,1.49)**	**1.80 (1.70,1.92)**	**1.64 (1.48,1.83)**	**1.49 (1.37,1.62)**	0.96 (0.91,1.01)	**1.23 (1.15,1.31)**	**2.15 (1.93,2.39)**
11th Grade[b]	**1.15 (1.08,1.22)**	**1.84 (1.64,2.07)**	**1.73 (1.62,1.84)**	**1.73 (1.56,1.92)**	**1.49 (1.37,1.62)**	**0.93 (0.88,0.97)**	0.96 (0.90,1.03)	**1.65 (1.47,1.84)**
Male[c]	1.01 (0.97,1.06)	1.03 (0.94,1.13)	0.99 (0.95,1.04)	**1.42 (1.30,1.54**	**1.58 (1.48,1.69)**	**0.80 (0.77,0.84)**	**1.02 (0.97,1.08)**	**1.59 (1.47,1.72)**
School Climate								
Moderate	-	-	-	-	**12.64 (10.45,15.29)**	**5.96 (5.51,6.45)**	**9.56 (7.99,11.45)**	**2.01 (1.73,2.34)**
Positive teacher	-	-	-	-	**3.22 (2.40,4.32)**	**1.39 (1.18,1.65)**	**6.80 (5.40,8.57)**	**2.52 (2.03,3.13)**
Neutral	-	-	-	-	**21.65 (17.73,26.44)**	**6.33 (5.63,7.12)**	**63.31 (53.91,74.35)**	**6.43 (5.58,7.40)**
Low climate	-	-	-	-	**7.81 (5.99,10.17)**	**1.47 (1.17,1.84)**	**39.96 (33.31,47.96)**	**16.84 (14.37,19.74)**

Reference categories: a= white; b = 7th Grade; c= Female

Significant odds ratios in bold

Table 6. Conditional probabilities of school climate by resilience

	Low	HS Graduate/Low	Variable	Mostly Resilient	High
Low Climate	0.199	0.377	0.098	0.052	0.274
Neutral	0.049	0.396	0.284	0.094	0.178
Moderate	0.026	0.103	0.468	0.092	0.311
Positive Teacher Support	0.06	0.131	0.196	0.043	0.57
High	0.03	0.025	0.189	0.016	0.74