

## RESEARCH ARTICLE

# Student and Teacher Perceptions of School Climate: A Multilevel Exploration of Patterns of Discrepancy

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## ABSTRACT

**BACKGROUND:** School climate has been linked with improved academic achievement and reduced discipline problems, and thus is often a target of school improvement initiatives. However, few studies have examined the extent to which student and teacher perceptions vary as a function of individual, classroom, and school characteristics, or the level of congruence between teachers' and their students' perceptions of school climate.

**METHODS:** Using data from 1881 fifth-grade students and their 90 homeroom teachers, we examined parallel models of students' and teachers' perceptions of overall school climate and academic emphasis. Two additional models were fit that assessed the congruence between teacher and student perceptions of school climate and academic emphasis.

**RESULTS:** Multilevel analyses indicated that classroom-level factors were more closely associated with teachers' perceptions of climate, whereas school-level factors were more closely associated with the students' perceptions. Further analyses indicated an inverse association between student and teacher ratings of academic emphasis, and no association between student and teacher ratings of overall climate.

**CONCLUSIONS:** Teacher ratings were more sensitive to classroom-level factors, such as poor classroom management and proportion of students with disruptive behaviors, whereas student ratings were more influenced by school-level factors such as student mobility, student-teacher relationship, and principal turnover. The discrepancy in ratings of academic emphasis suggests that while all of the respondents may have shared objectively similar experiences, their perceptions of those experiences varied significantly. These results emphasize the importance of assessing both student and teacher perceptions in future research on school climate.

**Keywords:** school climate; organizational health; classroom- and school-level factors; student and teacher perceptions; multilevel modeling.

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School climate is defined as the shared beliefs, values, and attitudes that shape interactions between the students, teachers, and administrators. These tacit rules delineate the parameters of acceptable behavior and norms for the school.<sup>1-3</sup> Given the association between school climate and positive student outcomes, such as improved academic achievement and reduced discipline problems,<sup>4-5</sup> school climate is often a target of school improvement initiatives and programs aiming to promote positive outcomes for students and staff.<sup>6-7</sup>

Despite the increased interest in research and programming aimed at improving student and teacher perceptions of school climate, there has been limited research examining the congruence between student and teacher perceptions, or the extent to which student and staff perceptions vary as a function of individual and school characteristics. Social-cognitive theory<sup>8-9</sup> suggests that although students and their teachers share a common objective experience, their differing roles within the school will likely lead to discrepant perceptions of the environment. Furthermore, Bronfenbrenner's social ecological theory<sup>10</sup> suggests that factors at multiple levels within a school may influence student and staff perceptions of the school environment. For example, indicators of school disorder (eg, mobility, large student/teacher ratio, administrator turnover) may signal to students and teachers that the environment is unstable or unsupportive, which may impact their performance at school.<sup>11</sup> Although understudied, it is likely that teachers' perceptions of the school climate would also influence the way in which students' perceive the environment.<sup>12-15</sup>

Together, the extant theoretical and empirical work suggests that a multilevel perspective on school climate may be most instructive for identifying characteristics of the individual and school environment that influence student and teacher perceptions of climate. Examining the influence of these factors will inform future research, and prevention efforts aimed at improving the school environment. We briefly consider in greater detail potential factors at each level that may influence student and teacher perceptions of school climate.

### School-Level Factors

Social disorganization theory posits that community factors such as poverty, racial and ethnic heterogeneity, and resident mobility influence the levels of crime, violence, and community disorder.<sup>16-17</sup> Several researchers have applied social disorganization theory to the study of schools, and found that school-level indicators of disorder, such as student mobility and faculty turnover are inversely related to perceptions of school climate.<sup>11,18-22</sup> Similarly, administrator turnover has been linked with less favorable student

and parent perceptions of school order and discipline.<sup>23</sup> A higher student-teacher ratio, which is indicative of having larger classes, has been associated with poorer academic outcomes for students and decreased job satisfaction for teachers.<sup>24</sup> These indicators of disorder can signal instability within the school environment, and thus are likely linked with less favorable perceptions of the school climate among both students and teachers.

### Classroom-Level Factors

Social disorganization theory can also be applied to disorder in the classroom environment. In fact, a recent study indicated that classroom-level factors accounted for more variance in students' perceptions of climate than factors at the school level.<sup>25</sup> Indicators of disorder at the classroom-level include poor classroom management (eg, inconsistent implementation of rules) and a high proportion of students with disruptive behavior problems. Poor classroom management has consistently been linked with increased behavior problems among students and a decreased focus on academics. In addition, having a high proportion of students in the class who display disruptive problems has been associated with poorer perceptions of student climate.<sup>25-26</sup>

### Individual-Level Factors

There is a growing body of research documenting variation in perceptions of school climate by individual-level factors, such as gender, ethnicity, and age. With regard to elementary school teachers, being male or an ethnic minority has been linked with less favorable perceptions of the school environment.<sup>22</sup> Similarly, younger teachers, who tend to have less teaching experience, likely feel less supported or less effective at their job, and therefore they may perceive the environment less favorably than their more experienced colleagues.<sup>25,27</sup> Among students, girls tend to report greater consistency and fairness in school rules, whereas minority students tend to report less favorable attitudes toward academics.<sup>6,28</sup> Together, the extant research suggests that these individual-level factors would have an influence on both student and teacher perceptions of climate and academic emphasis.

### Overview of the Current Study

The purpose of the current study was to examine the factors at different levels that are related to the student and teacher perceptions of school climate and its emphasis on academics. We employed a multilevel approach to compare parallel student and teacher models, in which we estimated the influence of school- and classroom-level indicators of disorder on student and teacher reports of school climate,

while adjusting for individual-level characteristics. We examined both the overall school climate, and the more specific construct of academic emphasis, due to its link with academic performance.<sup>7,23,28</sup> While disorder and instability at the school level likely affect both teachers and students, we hypothesized that staff may be more sensitive to school-level factors, which have a more direct effect on their work environment. In contrast, we hypothesized that students would be more sensitive to the more proximal influences of disorder at the classroom level.<sup>25</sup> We also examined the association between student and teacher ratings of school climate by fitting a combined model that included the influence of teachers' perceptions of climate on student perceptions. Together, these findings may identify potential factors at the school- and classroom levels that affect student and staff perceptions of school climate, which in turn could be targeted through school improvement efforts to promote a favorable school environment.

## METHODS

### Data

Data for the current study were collected from 1881 fifth-grade students and 90 fifth-grade teachers at 37 Maryland public elementary schools participating in a large-scale study of school improvement and reform initiatives (see Table 1 for sample demographic characteristics). The data were collected at a single time point from an anonymous sample of fifth-grade students whose data were linked by their homeroom teacher and school. Students ranged from 9 to 13 years of age and were either White (40.9%), African American (32.9%), American Indian/Alaskan Native (3.0%), Asian (2.2%), Native Hawaiian/Pacific Islander (.4%), multiracial (5.5%), or other (14.9%). Nearly half of the teachers were 30 years of age or younger (46.7%), 20.0% were 31-40, 17.8% were 41-50, and 15.5% were 51 or older. Most teachers were White (87.8% White, 1.1% Asian, 2.2% multiracial, and 8.9% African American). The schools ranged in size from 223 to 791 ( $M = 472$ ,  $SD = 135$ ). Forty-eight percent of the schools were located in suburban communities, 41% in urban fringe communities, and 11% in rural communities.

### Measures

**School Climate.** Students completed the elementary school version of the *School Development Program School Climate Survey* (SCS),<sup>4</sup> which consisted of 53 statements measuring 8 facets of climate (ie, fairness, order and discipline, parent involvement, sharing of resources, student interpersonal relationships, student-teacher relations, achievement motivation, and school building). Students responded to each

**Table 1. School, Teacher, and Student-Level Demographic Characteristics**

Variables	Mean (SD)	Range	N (%)
Student level (N = 1881)			
Student's age			
9-10			900 (47.8)
11			909 (48.3)
12-13			72 (3.9)
Student's gender			
Female			918 (48.8)
Student's ethnicity			
White			751 (40.9)
African American			605 (32.9)
Other*			525 (26.2)
Student's perception of school climate <sup>†</sup>			
Overall	55.85 (20.10)	1.89-100	
Academic emphasis	62.25 (26.80)	0-100	
Teacher/Classroom-level (N = 90)			
Teacher's age			
30 or younger			42 (46.7)
31-40			18 (20.0)
41-50			16 (17.8)
51 +			14 (15.6)
Teacher's gender			
Female			79 (87.8)
Teacher's ethnicity			
White			79 (87.8)
Other <sup>‡</sup>			11 (12.2)
Poor classroom management <sup>§</sup>	23.57 (21.30)	0-91.67	
Percentage of students with disruptive behaviors	18.75 (15.52)	0-69.23	
Teacher's perception of school climate <sup>  </sup>			
Overall	3.01 (.45)	1.94-3.97	
Academic emphasis	2.56 (.66)	1-4	
School level (N = 37)			
Experienced a change in principal			6 (16.2)
Student mobility	23.04 (10.10)	6.70-47.50	
Student-teacher ratio	21.15 (4.84)	13.10-31.30	
Faculty turnover	14.54 (12.19)	0-66.67	

\*Includes American Indian or Alaskan Native, Asian, Native Hawaiian or Pacific Islander, multiracial, and other.

<sup>†</sup>Indicates student-reported school climate, assessed via the School Development Program School Climate Survey.

<sup>‡</sup>Includes Asian, African American, and multiracial.

<sup>§</sup>Indicates low level of effective classroom management, as reported by teachers on the Effective Behavior Survey.

<sup>||</sup>Indicates staff-reported school climate, assessed via the Organizational Health Inventory.

item on the scale by indicating "agree" or "disagree"; some items were reverse scored so that a higher score indicated a more positive school environment. The overall scale and the academic emphasis mean scores were calculated by summing the 0 or 1 responses to the individual items and dividing the sum by the total number of items in the scale to yield a percentage score (0-100%), which indicated the degree to which the students reported positive perceptions of school climate. The Cronbach's  $\alpha$  for the 53-item overall

climate scale was .93, while the alpha for the 6-item achievement motivation subscale, which assessed the extent to which the students believe they can learn (eg, "I feel I can do well in this school"), was .65.

Teachers' perceptions of school climate were assessed through the Organizational Health Inventory—Elementary School Version (OHI),<sup>29</sup> which consisted of 37 items assessing the following 5 dimensions of organizational health: the school's ability to maintain the integrity of the school's educational programs; principal leadership; availability of educational materials; staff affiliation; and academic emphasis (ie, student and staff focus on academics). All items were measured on a 4-point scale from 1 = "rarely occurs" to 4 = "very frequently occurs" and were scored such that a higher score indicated a more favorable climate. The scale scores ranged from 1 to 4, and represented an average across the items of the scale. In order to parallel the student measure of school climate, we used teachers' scores on both the overall OHI (which was an average of all 37 items on the OHI,  $\alpha = .96$ ) as an indicator of overall school climate and the academic emphasis subscale (average of 5 items,  $\alpha = .83$ ), which is conceptually similar to student-reported (S-R) academic motivation on the SCS. For example, students responded to the item, "I do extra work," which is similar to the teacher-reported (T-R) item, "Students seek extra work for good grades."

**Student and Teacher Demographic Information.** Demographic data on the students (ie, age, gender, and race/ethnicity) were obtained from the students, whereas demographic data on the teachers (ie, age, gender, and race/ethnicity) were obtained through a brief self-report measure completed by all participating staff.

**Classroom-Level Variables.** Three indicators of classroom disorder were analyzed in the current study. Poor classroom management was assessed through the classroom-wide subscale of the Effective Behavior Survey (EBS), which is a T-R measure of the quality of classroom management (eg, having positively worded and clear statements describing rules and expectations).<sup>30</sup> The items were scored such that a higher score indicated less effective classroom management (12-item  $\alpha = .83$ ). The level of student disruptive behavior, which was represented by the percentage of students in each classroom who exhibited behavior problems, was assessed through the aggressive/disruptive behaviors subscale of the Teacher Observation of Classroom Adaptation—Checklist (TOCA-C).<sup>31</sup> The TOCA-C is a brief checklist completed by the homeroom teachers in reference to each students' disruptive behavior problems ( $\alpha = .92$ ). Previous research has shown that high scores on the aggressive/disruptive behavior subscale

of the TOCA in elementary school are a strong predictor of violence and delinquent behavior in adolescence and early adulthood.<sup>32</sup>

**School-Level Indicators of Disorder.** The following 4 school-level characteristics were obtained from the schools and included in the models as indicators of disorder: student mobility rate (a sum of the percent of students moving in and percent of students moving out of the school in that school year), student-teacher ratio (calculated by dividing the total number of students by the number of teachers at the school), principal change (whether or not there was a new principal for that school year), and faculty turnover (the percentage of faculty new to the school that year).

## Procedure

Teacher reports of the schools' climate were collected in the spring of a single school year via an individually addressed survey packet. The survey packets were mailed in bulk to the school and distributed to the school staff. Teacher participation was voluntary, and participants provided written consent. To ensure confidentiality, teachers completed the study materials on their own time and returned the materials directly to the researchers through the US mail. Each teacher questionnaire packet included a small incentive (eg, disposable ballpoint pen). The teacher response rate was 89.9%. Also in the spring the TOCA-Cs were mailed to the school in packets for each fifth-grade classroom teacher. Teachers completed a TOCA-C in reference to each child in the class during the month of May. The completed forms were returned to the school administrator in a sealed envelope, and then all TOCA-Cs were mailed in bulk to the researchers. All fifth graders completed the SCSs, which were group administered by trained project staff members who provided a brief overview of the purpose of the survey and read each question aloud as the students completed the survey. The individual surveys were anonymous but were linked to the student's homeroom teacher. The student response rate was 94.1%. Student participation occurred through a passive consent process.

## Analyses

To examine our hypotheses, we fit a series of multilevel models in the HLM 6.02 software.<sup>33</sup> We first computed the intraclass correlation coefficients (ICC) by fitting fully unconditional hierarchical linear models (without any covariates) separately for students and teachers for each outcome.<sup>34</sup> This indicates the amount of variance in school climate that is explained by membership within classrooms or within schools. We then tested 2 two-level models predicting staff perceptions of climate (overall climate and academic emphasis). We modeled the climate outcome, the teacher's individual-level factors (ie, teacher age,



gender, and ethnicity), and the classroom-level indicators of disorder (ie, poor classroom management and concentration of students with disruptive behavior problems) at level 1, and the school-level indicators of disorder (ie, student mobility, student-teacher ratio, faculty turnover, and change in principal) at level 2. For students, we tested 2 three-level models predicting student perceptions of climate (overall climate and academic emphasis). Specifically, we modeled each climate outcome and the student-level demographic covariates (ie, student age, gender, and ethnicity) at level 1, the classroom indicators of disorder (eg, poor classroom management and concentration of students with disruptive behavior problems) at level 2, and the school-level indicators of disorder at level 3 (ie, student mobility, student-teacher ratio, faculty turnover, and change in principal). The next 2 models included the corresponding teacher reports of school climate/academic emphasis as classroom-level variables in order to determine the extent to which teacher perceptions of climate were associated with student perceptions. Finally, we explored associations between the covariates and the outcomes using subgroup analyses for boys, girls, White students, and African-American students.

## RESULTS

### Unconditional Models

We fit the fully unconditional hierarchical linear models and computed the ICC for both the teacher-report (T-R) and student-report (S-R) of overall school climate and academic emphasis.<sup>34</sup> The classroom-level ICC for S-R overall school climate was .28, and .12 for S-R academic emphasis. The school-level ICC for T-R overall climate was .35, and .54 for T-R academic emphasis. These ICCs suggested that schools account for a relatively high proportion of the variability in climate ratings.<sup>35</sup>

### Multivariate Models

We then fit a series of multilevel models including the covariates of interest for both students and teachers. In evaluating model fit for the multilevel models, we computed the Bayesian information criterion (BIC) based on the deviance estimate generated in HLM and the number of parameters for each model.<sup>35</sup> A smaller BIC indicates better model fit,<sup>35</sup> which suggests that models 3 and 5 (main effects only) fit slightly better than models 4 and 6, which include interaction terms between teacher- and student-rated climate. Also, we computed the  $R^2$  values, which indicate percent of variance explained by the predictors at that level, for each level of each model.

The multilevel teacher models (models 1 and 2 in Table 2) indicated that teachers aged 41-50 rated overall climate significantly more favorably than teachers who were 30 or younger, whereas those who were over 50 reported higher academic emphasis ratings than the youngest group of teachers. However, there were no significant effects for gender or race/ethnicity for teachers. Poor classroom management was inversely related to T-R overall climate and academic emphasis. Similarly, a higher rate of disruptive behaviors in the classroom was associated with lower academic emphasis. At the school-level for teachers, student mobility was associated with lower scores on academic emphasis; however, none of the other school-level indicators of disorder reached statistical significance.

In all of the student models, gender and ethnicity were significantly associated with both overall climate and academic emphasis (see models 3 and 4 in Table 2). Specifically, the female students rated the overall climate and academic emphasis significantly higher than the males, whereas the White students reported more favorable climate scores than their minority peers. However, student age was not associated with climate ratings. On the classroom-level, while higher rates of disruptive behavior were associated with lower S-R climate, poor classroom management was not associated with S-R overall climate or academic emphasis. At the school-level, greater student mobility was associated with lower S-R climate and academic emphasis. Student-teacher ratio was negatively associated with S-R overall climate, but unrelated to academic emphasis. Experiencing a change in the principal was associated with lower S-R academic emphasis, but was not related to overall climate. Faculty turnover was not associated with either measure of S-R climate.

The next 2 three-level models (models 5 and 6) were tested to examine the association between S-R and T-R school climate scores. Scores on S-R overall school climate were not associated with T-R overall school climate, adjusting for student-, classroom-, and school-level variables. Surprisingly, there was an inverse association observed between T-R academic emphasis and S-R academic emphasis, again adjusting for student-, classroom-, and school-level variables in a 3-level student model.

Results from the 4 post hoc subgroup analyses, which examined associations among boys, girls, White students, and African-American students, were largely the same as those in models 3-6 with the full sample. However, we did find that the classroom-level variable, percent of students with disruptive behavior problems, was nonsignificant for African-American students in models 3-6 (unstandardized betas ranged  $-.105$  to  $.050$ ), while this variable retained its significance

**Table 2. Unstandardized Regression Coefficients for School, Classroom, and Individual-Level Effects on Teacher and Student-Rated School Climate**

	<b>Model 1: T-R Overall Climate</b>	<b>Model 2: T-R Academic Emphasis</b>	<b>Model 3: S-R Overall Climate</b>	<b>Model 4: S-R Academic Emphasis</b>	<b>Model 5: S-R Overall Climate</b>	<b>Model 6: S-R Academic Emphasis</b>
Variables	B (SE B) <sup>†</sup>	B (SE B) <sup>†</sup>	B (SE B) <sup>†</sup>	B (SE B) <sup>†</sup>	B (SE B) <sup>†</sup>	B (SE B) <sup>†</sup>
Student level						
Student age						
9-10			-.221 (.669)	.260 (1.192)	-.222 (.669)	.294 (1.192)
12-13			1.708 (3.092)	.145 (3.602)	1.706 (3.089)	.185 (3.564)
Student gender			1.825*** (.704)	6.720*** (1.171)	1.825*** (.705)	6.701*** (1.176)
Student ethnicity						
White			3.565*** (1.044)	2.852** (1.429)	3.569*** (1.045)	3.012** (1.418)
African American			-1.686 (1.311)	-1.655 (1.725)	-1.682 (1.311)	-1.612 (1.706)
Classroom/Teacher level						
Teacher age						
31-40	.100 (.112)	.221 (.139)				
41-50	.300*** (.010)	.198 (.131)				
51+	.204* (.121)	.320*** (.108)				
Teacher gender	-.060 (.098)	.075 (.166)				
Teacher ethnicity	.011 (.133)	-.179 (.122)				
Poor classroom management	-.008*** (.002)	-.007*** (.003)	-.036 (.039)	-.035 ( -.768)	-.044 (.042)	-.059 (.045)
% Disruptive behaviors	-.004** (.002)	-.012*** (.003)	-.175*** (.052)	-.106* ( - 1.739)	-.179*** (.051)	-.161*** (.057)
T-R Overall climate					-.941 (2.385)	
T-R academic emphasis						-4.035** (1.718)
School level						
Student mobility	-.005 (.004)	-.029*** (.004)	-.593*** (.086)	-.473*** (.097)	-.600*** (.093)	-.594*** (.107)
Student-teacher ratio	-.010 (.011)	-.009 (.011)	-.414** (.187)	-.241 (.199)	-.426** (.189)	-.283 (.198)
Faculty turnover	-.002 (.004)	.000 (.004)	.126 (.075)	.102 (.075)	.125* (.074)	.100 (.083)
Principal change	.151 (.145)	.010 (.118)	-4.336 (2.998)	-5.558** (2.675)	-4.228 (2.856)	-5.022 <sup>†</sup> (2.573)
Pseudo R <sup>2</sup> and model fit						
Level 1 R <sup>2</sup>	.159	0	.014	.023	.014	.022
Level 2 R <sup>2</sup>	.974	.974	.069	.040	.072	.182
Level 3 R <sup>2</sup>	na	na	.932	.982	.932	.894
BIC	140.497	178.342	16,252.427	17,638.176	16,259.799	17,641.742

\* $p < .10$ ; \*\* $p < .05$ ; \*\*\* $p < .01$ ; \*\*\*\* $p < .001$ .

T-R indicates teacher-reported climate variables. S-R indicates student-reported climate variables. Student age: 11 years is reference group. Student gender (0 = male, 1 = female). Student ethnicity: other ethnicity (ie, American Indian or Alaskan Native, Asian, Native Hawaiian or Pacific Islander, multiracial, and other) is the reference group. Teacher age: 30 or younger is reference group. Teacher gender (0 = male, 1 = female). Teacher ethnicity (0 = African American, Asian, and multiracial, 1 = White). BIC = Bayesian information criterion.

<sup>†</sup>Nonstandardized regression coefficient and standard error.

( $p < .01$ ) in the models for White students (estimates ranged  $-.365$  to  $-.242$ ).

## DISCUSSION

The current study aimed to examine student and staff perceptions of school climate and academic emphasis. Contrary to our hypothesis that teachers' ratings of school climate would be more sensitive to school-level characteristics compared with their students' ratings, we found that a greater number of school characteristics were significantly associated with climate ratings for students compared with teachers. While we expected that classroom factors would have more influence on students' perceptions of climate, due to closer proximity of classroom policies to students' daily routines, we found that school-level factors such as student mobility, student-faculty ratio, and a change in principal had more influence

than classroom factors. Furthermore, we found that poor classroom management and disruptive behaviors were significant covariates for teachers, whereas only disruptive behaviors were significant for students. This suggests that teachers may be more sensitive to classroom-level factors than their students. It is difficult to discern why, after accounting for the other variables at the classroom- and school-level, students' ratings of the climate were not associated with other classroom factors, such as poor classroom management. It appears, however, that students may be more influenced by more global school factors than previously anticipated.

We also were surprised to observe that teacher ratings of the overall climate were not associated with student ratings of the overall climate. Similar discrepancies in student and teacher perceptions have been previously reported. For example, a study of middle school students found that teachers rated

their classrooms as more orderly and organized and having greater rule clarity than did their students.<sup>36</sup> Specifically, teachers reported greater student involvement and greater teacher support than did their students. These differences in reports of the same objective experience may reflect differences in power. Teachers may feel more positively toward the environment since they may have greater control over their daily activities and the order in which they engage in their daily tasks, while students may hold less favorable views of the climate as they have less power in deciding the order in which tasks are accomplished. Therefore, having a more passive role in the school environment may lead to less favorable perceptions of the school climate. These differing roles and associated power inequalities may explain the lack of association between teacher and student overall climate ratings.

The inverse relationship between student and teacher ratings of the academic climate was also unexpected. Students may be rating academic emphasis more in terms of their own individual actions and accomplishments, whereas teachers may be reporting on their perceptions of students as a whole. For example, students were asked to rate their own commitment to academics (ie, responding to statements about themselves rather than students in general), whereas teachers provided a global assessment of students. This subtle difference in the wording of the items may contribute to the discrepancy in perceptions. In addition, it is possible that students may be inclined to rate their own behavior more favorably, due to social desirability. Future studies should explore these discrepancies more closely.

The post hoc subgroup analyses also revealed some interesting results involving student ethnicity. Specifically, we found that ratings of overall school climate and academic emphasis were associated with disruptive behavior for White students but not for African-American students. These results suggest that White students in classrooms marked by high rates of student disruption rate the climate less favorable. In contrast, the African-American students tended to rate their schools consistently lower on climate, regardless of their levels of disruptive behavior. There were no significant subgroup effects for student gender.

### Limitations

It is important to bear in mind certain limitations when reviewing these findings. Owing to the students' reading and comprehension levels, we only obtained data from fifth-grade students and their teachers. A different pattern of findings may have emerged if younger elementary school students and teachers from other grade levels were assessed. The findings may also differ for middle or high school students who change classes frequently throughout the day.

Additional research is needed to determine the extent to which these findings generalize to students at other grade levels. Although we used previously validated and reliable measures to assess student and teacher perceptions of similar climate constructs, there were some minor differences in student and staff measures. For example, as noted above, the students reported on perceptions of their own academic behavior whereas the teachers described the academic behavior of the student body collectively. These minor deviations between the conceptually parallel scales may have contributed to the divergent results observed for the perceptions of academic emphasis. To account for these slight differences between the measures, we fit separate models for teachers and students, and included teacher perceptions as a factor predicting student perceptions (models 5 and 6). There is a need for further psychometric research on valid and reliable multi-informant assessments of school climate.<sup>37</sup> Having a student and teacher version of the same measure would facilitate direct comparisons of their perceptions.

Furthermore, we were not able to directly compare teacher and student ratings of school climate due to the nested nature of the data. On the basis of extant ecological literature,<sup>10</sup> it is also reasonable to assume that there are bidirectional influences between teachers and their students in which perceptions and behaviors of 1 group may affect perceptions and behaviors of the other group.<sup>10</sup> Additional methodological research is needed to test for bidirectional influences on climate. It is also important to note that the 2 classroom-level variables were assessed through teacher-report (ie, classroom management and concentration of students with disruptive behavior). It is possible that the shared method variance for these measures along with the teachers' reports of the climate measures accounted for the association among these measures. In addition, teachers' reports on the EBS classroom management measure may have been influenced by social desirability. Unfortunately, data on these variables are not currently available from other sources.

### IMPLICATIONS

To our knowledge, few studies have empirically examined the differences in climate perceptions between teachers and their students. Our findings suggest that efforts aimed at improving students' perceptions of climate should target school-level factors, such as reducing the student-teacher ratio or stabilizing the administrative leadership. In contrast, programs aiming to improve teachers' perceptions may need to provide professional development on classroom management. Such training could in turn reduce the level of classroom disruption, which proved to be related to both student and staff perceptions of climate in the

current study. It is also important to note that student gender and ethnicity were among the strongest predictors of perceptions of climate. Therefore, it may be beneficial to implement programs or activities that help these students better connect to each other and the school environment.<sup>37</sup>

Because perceptions of the environment can have a significant influence on behavior, future research should explore the association between S-R and T-R climate and academic emphasis in greater detail, as well as the influence of school-level factors on S-R and T-R school climate. Other factors, like parent involvement in classroom activities or the students' own level of disruptive behavior may also play a role in student and staff perceptions of climate. In addition, longitudinal data from students and teachers could help identify the factors which influence changes in perceptions of the school environment over time. There may also be particularly sensitive time points in students' academic careers during which perceptions of climate have a great influence over subsequent academic performance or school engagement (eg, transition to middle school).<sup>38</sup>

Overall, our findings underscore the importance of assessing both student and teacher perceptions in order to better understand school climate, especially when monitoring the outcomes of school improvement initiatives. Some schoolwide programs, such as Positive Behavioral Interventions and Supports (PBIS), have been shown to be effective at altering the school climate, as perceived among students<sup>39</sup> and staff.<sup>40</sup> The current findings suggest that the effects of programs aiming to improve climate may also vary by contextual factors at the classroom and school level. Therefore, additional work is needed to identify how and under what circumstances PBIS and other such schoolwide initiatives are able to improve the school environment for both students and staff.

**Human Subjects Approval Statement.** The study was approved by the researchers' institutional review board.

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