

# School Climate and Student Learning

**An analysis of the relationship between school climate, student achievement,  
and other contributing factors**

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# **Executive Summary**

## **School Climate and Student Achievement**

### *What is School Climate?*

The National School Climate Council defines school climate as “the norms, values, and expectations that support people feeling socially, emotionally, and physically safe” (National School Climate Council 2013). In a school with a positive school climate, students, families, and teachers collaborate to “develop, live, and contribute to a shared school vision” and to realize that vision (Thapa, Cohen, Guffey, D’Alessandro 2013). However, perceptions of school climate can differ from student to student, so data is collected at the student level.

### *Context*

In order to measure how students feel in Tennessee schools, the Tennessee Department of Education (TDOE) applied for and received the 2010 Safe and Supportive Schools Grant from the Federal Department of Education. This \$3.3 million grant required TDOE to complete three tasks: (1) to design a survey to measure school climate; (2) to administer the survey to a variety of students in schools across the state for multiple years; and (3) to use the findings of the survey to facilitate improvements in school climate by school administrators. For example, if a school received its survey data and found that students within that school felt unsafe, TDOE would work with schools to invest grant dollars in programs or materials which would promote school safety.

To date, schools have looked at the averages of their survey results without considering the impact on student achievement. In order to better be able to understand if there is a relationship between school climate and student achievement, TDOE asked me to use the survey to answer two questions:

- (1) What student- and school-level factors predict student perceptions of school climate?
- (2) Do perceptions of school climate predict student achievement outcomes for high school students in Tennessee?

### *Why Does School Climate Matter to the Tennessee Department of Education?*

The National Center for School Climate (NCSC) posits that “A sustainable, positive school climate fosters youth development and learning necessary for a productive, contributing and satisfying life in a democratic society” (NCSC 2013). Positive school climate has been positively related to student attachment to his or her school and strong social, emotional, and academic outcomes among middle and high school students (Blum, McNeely, and Rinehart, 2002; Goodenow and Grady, 1993; V. E. Lee, Smith, Perry, and Smylie, 1999; Osterman, 2000; Wentzel, 1997). Evidence suggests that positive school climate improves academic outcomes such as absenteeism, graduation rate, and academic achievement in both the short and long term (Hoy, Hannum, and Tschannen-Moran, 1998).

### *Overview of Findings and Recommendations*

- Student characteristics strongly relate to how students view school climate. Specifically, gender, race, and achievement levels relate to constructs of school climate.

- TDOE should use the information gathered from the first part of this analysis to assist schools as they design strategies for school climate improvements. Targeted interventions for specific subgroups of students may best support improvements in school climate.
- School climate constructs inconsistently relate to student achievement outcomes. This indicates a need for further research.
- However, these conclusions are not causal or generalizable to the population. To help mitigate these limitations, TDOE should continue analysis into future years and work with schools to ensure full participation.

### *Methodology*

In order to assess how student- and school-level characteristics affect students' perceptions of school climate, I use a multiple regression approach. This is an improvement from means testing which does not control for other factors possibly causing the relationship. In addition, I use school-level fixed effects. Fixed effects allow me to hold the variation in a school constant to observe the variation in perceptions of school climate that occurs within that school. There may be some unobserved characteristics in a school which affect how students perceive school climate. For example, characteristics of a school which make a student in an urban school feel unsafe will be different from what makes a student in a relatively safer suburban school feel unsafe. Fixed-effects allow me to control somewhat for those unobservable differences.

In order to evaluate the relationship between perceptions of school climate and student achievement, I use a similar analytical approach: I use multiple regression approach which controls for student demographics first, add school-level characteristics in the second model, and then the school-level fixed-effects in the third and final model.

### *Results*

First, I found that student perceptions of school climate vary widely based on student characteristics. It is important to understand these variations in order to be able to target improvements.

Overall, males, ninth and twelfth graders, and higher achieving students had more positive perceptions of school climate than their female, tenth and eleventh grade, low-achieving peers respectively. While this broad finding is important as a starting point, it does not provide specific guidance. After reviewing the literature, I generated specific hypotheses around specific school climate constructs and uncovered several important findings.

First, males and low achievers perceive that they are less supported by teachers. Thus, TDOE should consider investing in programs that target these subgroups. Although I hypothesized that minority students would feel more supported by teachers in schools where they are the ethnic majority, the data did not support this claim fully. Instead, the data reveal that minority students in predominantly white schools feel less supported by teachers than their white peers. However, in schools which have mostly minority students, minority students do not feel statistically differently about their relationships with teachers than their white peers.

Second, females report that they feel as though peers are less accepting of differences than male peers. However, my hypothesis that racial group membership would predict this was not a statistically significant finding.

As predicted, younger students and females feel more bullied by peers than older students and males respectively. The finding related to gender supports the growing body of literature which finds that the face of bullying is changing. Bullying no longer takes the form of physical violence among males, now it is often emotional and takes place via social media, texting, and verbal bullying behaviors (CDC 2013). Given the change in the nature of bullying and given that females are often the target (CDC 2013), TDOE should encourage schools to invest in bullying programs specifically geared toward this newer model of bullying and which target females.

A number of interesting patterns emerged when evaluating academic confidence. First, student achievement level predicts academic confidence. Students with high achievement outcomes report significantly higher levels of academic confidence than average and low achieving peers.

Additionally, Black students report having substantially higher levels of academic confidence than their white peers, all else equal. However, Native Americans and Hispanic students have lower levels of academic confidence than their white peers. Given the growing achievement gap and the economic problems which result, this is a very relevant finding – especially given the relationship between academic confidence and student achievement.

In my analysis of the second question, I found that perceptions of school climate affect student achievement, but not always as expected. After analyzing what contributes to student-level differences in perceptions of school climate, it is important to analyze and understand how these differences may predict variation in student achievement. While there is not enough evidence to assign a causal conclusion, these findings are important for TDOE.

Academic constructs were more positively related to and had the largest sized effects on student achievement. The constructs that positively relate to student achievement include Supportive Relationships with Teachers, Academic Confidence, and Future Educational Aspirations and are also the three largest effect sizes observed. These constructs are primarily academic in nature and support the idea that a culture of achievement is an important cultural component and may be worth investing in building. However, Academic Motivation, another academic construct, negatively relates to student achievement.

Constructs related to engagement with peers have varying relationships with student achievement. Freedom from Bullying and Harassment, School Participation, and Acceptance of Differences positively relate to student achievement whereas Sense of Belonging negatively relates to student achievement (and has a large effect size) and Supportive Relationships with Students has no relationship with student achievement.

The constructs related to classroom environment negatively relate to student achievement, however the effect sizes are small. Still, this finding is counter to what one might expect. Across all models, student perceptions of Clear and Fair Enforcement of Rules, and

Reasonable and Restorative Sanctions negatively relate to academic outcomes. However, perceptions of Classroom Management positively relate to student achievement.

Constructs related to feelings of safety also had mixed relationships with student achievement, but the effects were small. Physical Safety and Freedom from Substances negatively relate to student achievement while Freedom from Bullying positively relates to student achievement.

There are some limitations of these findings. First, these are not causal claims. These results should not be interpreted as a way to improve student perceptions of school climate or student achievement. Rather, they describe the relationship and provide an impetus for further research and exploration.

Second, these findings are representative of the survey takers, but not of the schools they represent or the state as a whole. Only 60% of students in participating schools validly completed the survey. The reason for their non-participation is uncertain and may bias the results. Of those who took the survey and completed it validly, only two-thirds reported the correct student identification numbers necessary to match survey responses with student achievement data. Thus, less than 40% of eligible students are represented in this analysis.

In order to address these limitations, TDOE can adjust the execution and analysis of the survey in future years. First, TDOE should work with schools to ensure either that all students in participating schools complete the survey or that schools provide an explanation of which students did not participate and why. Second, following students' academic achievement outcomes and perceptions of school climate over time will help TDOE understand the causal link between school climate and student achievement, if a link exists. These are not small adjustments, however they will help mitigate the major limitations of this analysis and help TDOE better understand the relationship between student perceptions of school climate and academic achievement.