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RESEARCH BRIEF:

The Roots and Fruits of Positive School Climate

A multilevel examination of school climate's mediating role in the relations among student risk factors and student performance outcomes

A final report to the Pennsylvania Department of Education
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Abstract

The school experience of a student is molded by relations and interactions that occur within the school, also known as school climate. Positive school climate may improve achievement and serve as a protective factor for students. This study sought to examine the extent to which one commonly used measure of school climate, The PA School Climate Survey, operates comparably across diverse student groups. In addition, this study utilized a multilevel, multifaceted analytic approach to better understand differences in school climate, and subsequent associations with academic achievement, across different contexts. Findings suggest that slightly modified scores from the PA School Climate Survey may better assess the intended domains of school climate. Further, findings suggest that school climate, particularly high expectations and a safe and respectful school climate, are associated with improvements in academic achievement for students from all backgrounds. Finally, learning in a safe and respectful school climate may confer a particular benefit for racial minority students in regard to achievement in mathematics.



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The mission of the Department of Education is to ensure that every learner has access to a world-class education system that academically prepares children and adults to succeed as productive citizens. Further, the Department seeks to establish a culture that is committed to improving opportunities throughout the commonwealth by ensuring that technical support, resources, and optimal learning environments are available for all students, whether children or adults.



Access the full report on “The Roots and Fruits of Positive School Climate” and additional Research Project reports on PDE’s website. >



A robust body of research suggests that maintaining a positive school climate enhances student achievement and serves as a protective factor for students (e.g., adverse home experiences, low socioeconomic status (SES); Masten, Herbers, Cutuli, & Lafavor, 2008; O’Malley, Voight, Renshaw, & Eklund, 2015).

Background

A school building holds far more within it than desks and pencils. The school experience of a student is molded by relations and interactions that occur within the school. A robust body of research suggests that maintaining a positive school climate enhances student achievement and serves as a protective factor for students (e.g., adverse home experiences, low socioeconomic status (SES); Masten, Herbers, Cutuli, & Lafavor, 2008; O’Malley, Voight, Renshaw, & Eklund, 2015). However, the mechanisms by which school climate may impact outcomes, and ways that racial minority students may be differentially impacted by issues related to school climate, are unclear. Thus, there is a need for multilevel, multifaceted analyses to better understand differences in school climate, and subsequent associations with academic achievement, across different contexts. Yet, assurance of valid and accurate measurements of school climate across racial and cultural groups is a crucial prerequisite to the examination of school climate across diverse school contexts. The PA School Climate Survey is a commonly used measure of school climate among schools in Pennsylvania.

The purpose of this study was to examine the validity of the PA school climate survey across racial groups, to examine baseline mean differences in academic achievement and exposure to exclusionary discipline across racial groups, and to conduct a nuanced evaluation to determine whether the four dimensions of school climate mediate known relationships between race/SES and an array of outcomes including reading and math achievement and use of exclusionary discipline practices.

Method and Results

All analyses were conducted based on extant datasets provided by PDE. Descriptions of the data and analyses utilized are provided below.

Study 1

The objective of Study 1 was to (a) conduct exploratory factor analysis to identify the ideal set of items to include in factor scores for use with the sample as a whole, (b) conduct confirmatory factor analysis to further evaluate the factor structure and scores identified in the exploratory analyses, and (c) conduct measurement equivalence analyses to evaluate the validity of the newly derived factor scores across racial groups. A total of 29,729 Pennsylvania high school students from 33 counties were included in the sample. Approximately 48% of respondents identified as female. Students included in the study were racially and ethnically diverse: 4% American Indian/Alaskan Native; 11% Black/African American; 9.2% Hispanic; 4.6% Multi-Racial; 76.4% White/Caucasian; 2.4% Asian; .9% Native Hawaiian/Pacific Islander. In summary, the PA School Climate Survey appears to assess four central aspects of school climate: Student Support; Safe and Respectful School Climate; Social Emotional Learning; and High Expectations, Academic Rigor, & Challenge. Our findings suggest that the scores have sufficient measurement equivalence across racial groups.

Study 2

The objective of Study 2 was to examine the baseline relationships between race, academic achievement, and exclusionary discipline. Chi-square analyses were used to examine the relationship between race and achievement categories (Advanced, Proficient, Basic, Below Basic) on the Pennsylvania System of School Assessment (PSSA). In both English/Language Arts and math, African American, Hispanic, and Multi-Racial students were significantly and disproportionately more likely to achieve at a Basic or Below Basic level relative to their peers. African American and Multi-racial students were disproportionately likely to have experienced exclusionary discipline. For example, African American students comprised approximately 10% of the sample, but 24.5% of students who had experienced exclusionary discipline. Likewise, Multi-racial students



Our findings suggest that the scores from the PA School Climate Survey have sufficient measurement equivalence across racial groups.



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comprised 3.7% of the sample 10.2% of students who had experienced exclusionary discipline. Similar patterns exist for economically disadvantaged students whereby 53% of the students in the sample were economically disadvantaged, compared to 61.2% of students who had been subjected to exclusionary discipline.

Study 3

The purpose of Study 3 was to conduct a more nuanced analysis to understand the relationships between demographic variables (race/ ethnicity and SES) and academic outcomes (academic performance in reading and mathematics as reflected by the PSSA ELA and math scores) and exposure to exclusionary discipline, and the ways in which each of the four school climate variables (Student Support; Safe and Respectful School Climate; Social Emotional Learning; and High Expectations, Academic Rigor, & Challenge) influence the relationship between demographic variables and academic and disciplinary outcomes. A sample of 4,000 students was randomly selected from the larger population for the purposes of this study. It was necessary to select a random sample due to the limits of the software required to conduct this type of complex analysis. The demographic makeup of this subsample was comparable to that reported for Study 1. Multilevel path analysis was utilized to test the hypotheses. Overall, the model fit the data well (CFI=.97; RMSEA=.10).

In regard to ELA achievement, students who were African American, Hispanic, or Multi-Racial; lower SES; or attending a school with a school security officer had lower PSSA scores in English/ Language Arts. School climate did not impact this relationship. However, regardless of a student's race, SES, or whether their school had a security officer, students had higher ELA achievement when they attended a school where most students perceived that their teachers had high expectations for them.

In regard to math achievement, students who were African American, Hispanic, or Multi-Racial; lower SES; or attended a school with a school security officer, had significantly lower PSSA scores in math. Regardless of a student's race, SES, or whether their school had a security officer, students had higher math achievement when they perceived that they attended a school where (a) most students perceived that their teachers had high expectations for them, and (b) most students considered the climate to be safe and respectful. In particular, attending a school that most students view as having a safe and respectful climate, while important for all students, may confer additional benefit to African American, Hispanic, and Multi-Racial students.



Regardless of a student's race, SES, or whether their school had a security officer, students had higher ELA and math achievement when they attended a school where most students perceived that their teachers had high expectations for them.



Students who were African American, Hispanic, or Multi-Racial; lower-SES, or attended a school with a school security officer, had significantly lower PSSA scores in English/Language Arts and math.

Conclusions and Discussion

In summary, these findings indicate that slightly modified scores from the PA School Climate Survey may better assess the intended domains of school climate (see the Appendix for formulas). Further, findings from analyses utilizing these alternative scores suggest that school climate, particularly high expectations and a safe and respectful school climate, are associated with improvements in academic achievement for students from all backgrounds. Further, learning in a safe and respectful school climate may confer a particular benefit for racial minority students in regard to achievement in mathematics.



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