Special Issue: International Perspectives of School Climate

School Psychology International

School Psychology International
2018, Vol. 39(6) 646–662

DOI: 10.1177/0143034318810319
journals.sagepub.com/home/spi
SAGE

Does a rising school climate lift all boats? Differential associations of perceived climate and achievement for students with disabilities and limited English proficiency

Steven M. Sanders
Cleveland State University, USA

James M. Durbin
Cleveland State University, USA

Bart G. Anderson
Cleveland State University, USA

Laura M. Fogarty
Cleveland State University, USA

Regina J. Giraldo-Garcia
Cleveland State University, USA

Adam Voight
Cleveland State University, USA

Abstract

Previous research studies show that a positive school climate is associated with desirable academic outcomes for youth. In the United States, students with disabilities and English language learner (ELL) students are particularly at-risk for poor academic outcomes and therefore more in need of interventions to support their academic development. The present study examined whether school climate has a differential

Corresponding author:
Steven M. Sanders, 2485 Euclid Avenue, JH 377, Cleveland State University, Cleveland, OH 44115, USA.
Email: s.m.sanders@vikes.csuohio.edu

association with academic achievement for these at-risk students compared to their peers, which would suggest that school climate has the effect of reducing or widening achievement gaps based on disability and language. For students at all levels, the main effects of perceived school climate and disability status on mathematics and reading achievement were statistically significant controlling for race/ethnicity, gender, and grade. The results of this study have numerous implications for school psychology practice. Our findings suggest that a positive school climate is associated with higher achievement for all students at all levels in both mathematics and reading, school psychologists should consider school climate improvement as part of their mandate.

Keywords
achievement, disability, English language learner, limited English proficiency, school climate

For a number of political, economic, social, and historical reasons, American students who attend primary and secondary public schools in urban spaces have lower levels of academic achievement than their non-urban and non-public-school-attending peers (Milner & Lomotey, 2013). Among urban public school students, there is still large variation in achievement. Some of the most vulnerable of these students are those with disabilities and those for whom English is not the first language. Nationally, in the US, students with disabilities score much lower than their peers on state and national achievement tests and have lower secondary school graduation rates (Education Commission of the States, 2016). English language learners (ELLs) in the US, likewise, have much lower achievement test scores than their peers (National Center for Educational Statistics, 2013). Further, in Ohio, the state in which the present study was conducted, students with disabilities and ELL students have the two lowest subgroup achievement scores, in general (Ohio Department of Education, 2017). Therefore, in urban schools, students with disabilities and ELL students may be doubly vulnerable to academic failure. Although solutions that address larger-scale policy issues are important for addressing the root causes of these vulnerabilities, certain school-based strategies may help to alleviate the barriers facing these students.

One such school-based strategy is school climate improvement. School climate refers to the 'quality and character of school life' (Cohen, McCabe, Michelli, & Pickeral, 2009, p. 182) and most conceptual definitions of school climate include dimensions related to safety and relationships between teacher and students (Thapa, Cohen, Guffey, & Higgins-D'Alessandro, 2013). Globally, there has been a growing emphasis on school climate as an important component of overall school health and performance. A wealth of evidence suggests that a positive school climate is related to higher levels of student achievement, but there is some question as to whether this empirical association (and theorized effect) varies across students based on group membership. This study investigates whether

a positive school climate may correlate differently with achievement for urban American students with disabilities and English language learners, thus helping to narrow gaps in achievement based on disability and language.

Literature review

Different experiences of school climate based on student identity

Although the term 'school climate' implies that it is a characteristic of school buildings, research shows that students in the same school may experience safety, support, and connection differently based on their unique identities (Voight, Hanson, O'Malley, & Adekanye, 2015). Below we review theory and research that supports the notion that students experience school climate differently based on individual characteristics.

Age differences. School climate is experienced differently for students of different ages in terms of perception, importance, and impact on various outcomes. Theoretically, young people's needs for safety, support, and autonomy—all constitutive elements of school climate—evolve from early primary school to the end of secondary school (Eccles et al., 1993). Research supports these theorized differences in experiences of school climate between primary and secondary school grade levels. In a latent class analysis of school climate among students in California public schools, De Pedro, Gilreath, and Berkowitz (2016) found that students in higher grade levels had significantly more negative perceptions of school climate, which corroborated previous work that indicated that older students reported feeling more disengaged from school, less connected to peers, and that there were fewer caring adults in their school when compared with elementary and middle-grade students (Benbenishty & Astor, 2005; Gregory, Skiba, & Noguera, 2010; Pianta & Allen, 2008; Skiba, Michael, Nardo, & Peterson, 2002). De Pedro and colleagues (2016) explained this finding might be due to the fact that high school students have less exposure to any individual teacher as they move from class to class and thus less opportunity to form meaningful relationships. Studies that have investigated students' help-seeking behavior have found that students in middle and secondary grades are more likely to ask questions and request help from teachers than elementary school students (Newman & Schwager, 1993; Schenke, Lam, Conley, & Karabenick, 2015), and Newman and Schwager (1993) showed a positive correlation between this help-seeking behavior and mathematics achievement gains over a one-year period. Due to these demonstrated differences in perceptions of school climate by age, the present study conducted separated analyses for three different student age ranges.

Disability. Under the federal Individuals with Disabilities Education Act (IDEA) of 2004, over six million American students age 3- to 21-years-old receive special education services for an identified disability each year (US Department of

Education, 2018). Under IDEA, a disability may include intellectual, hearing, speech/language, visual, or orthopedic impairments, emotional disturbance, autism, mental retardation, or traumatic brain injury. Despite the growing tendency in the US for including students with disabilities in general education classrooms, they are still often socially isolated from their peers without disabilities (Carter, Hughes, Guth, & Copeland, 2005), which may result in lower perceptions of support and connectedness.

Inauspiciously, though students with disabilities may face obstacles to feeling supported at school, they may also be the students who most need social support, high expectations, and safety in order to be successful academically. Milsom (2006) argued that students with disabilities may be more likely to internalize negative social cues in their school environment. Higgins-D'Alessandro and Sakwarawich (2011) found that students with disabilities may be particularly sensitive to the school social environment, for better or worse. Although this research suggests that students with disabilities may have a distinct experience of school climate, no known previous research has concurrently tested whether students with disabilities have more or less positive perceptions of school climate compared to their peers and whether their perceptions are more or less strongly associated with achievement.

Language. In the US, the terms English language learner (ELL) and limited English proficiency (LEP) are often used interchangeably to refer to students that are non-native English speakers or were born in the US but speak a language other than English at home (Abedi, 2006; Kim, 2011; Uro & Barrio, 2013). The US government's definition of LEP is somewhat subjective, basing proficiency on students' ability to be successful in educational settings and society where the language of instruction or communication is English (Uro & Barrio, 2013). The present study uses the term ELL except when citing a previous study that used a different designation. ELL students represent one of the fastest growing student subgroups in the US (Kena et al., 2016).

Previous research suggests that immigrant youth, many of whom are ELLs, find their schools to be less safe and supportive than their peers (Crosnoe, 2005; Watkins & Melde, 2009). ELL students' experience of school climate may be particularly influenced by their relationships with teachers. Research indicates that teachers who are more accommodating of ELLs in their classes are more likely to believe that an ELL student's first language proficiency promotes school performance and does not represent a limitation for learning a second language (Karabenick, & Noda, 2004).

School climate and student achievement

There is a growing base of empirical evidence that students' experiences of school climate and their academic achievement are linked (O'Malley, Voight, Renshaw, & Eklund, 2015; Voight, Austin, & Hanson, 2013). Although there is limited causal

evidence, cross-sectional and correlational studies have demonstrated a positive relationship between school-climate and average student achievement at the middle, and high school levels (Brand, Felner, Seitsinger, & Dumas, 2003; Hanson & Voight, 2014; Voight, Austin & Hanson, 2013). Further, cross-sectional research illustrates that the relationship between climate and achievement may be stronger for low-SES and racial minority students than their peers (Nation, Voight, & Nixon, 2011; O'Malley et al., 2015). As far as we are aware, no research has examined whether the school climate-achievement association is different for ELL students or students with disabilities, but these earlier studies that have shown that a positive school climate may narrow the achievement of other groups of students that experience social barriers to their academic success. This suggests that school climate may also narrow achievement gaps for ELL students and students with disabilities.

Rationale and research question

Students with disabilities and ELL students are among the most disadvantaged student subgroups in the US (Education Commission of the States, 2016; National Center for Educational Statistics, 2013). Theory and previous research suggest that these students may respond differently to the climate of their school, that is, feelings of safety and the support and expectations conferred by school adults. The present study addresses a gap in the school climate literature by examining whether the association of climate and academic achievement is different for ELL students and students with disabilities compared to their peers. The specific research questions addressed herein are: (1) do students with disabilities and ELL students have different perceptions of school climate compared to their peers; and (2) is the association between school climate perceptions and academic achievement different for students with disabilities and ELL students compared to their peers. Because there are reasons to believe that school climate operates differently across age, separate analyses are conducted at each level of schooling.

Method

Site, sample, and context

This study draws on a sample of mathematics and reading test scores and self-report school climate survey data from approximately 26,000 students in approximately 100 elementary and high schools in a large urban district in Ohio, a Midwest state in the US. In this sample, 13,290 students (51%) were male; 16,743 students (64.5%) were Black or African-American; 4,272 students (16.5 %) were Latinx; 3,257 students (12.5%) were ELL; and 5,406 students (20.8%) were classified as having a disability. In the district in which the research was conducted, 45.8% of all children live below the federal poverty line, and all students in district schools are eligible for free lunch (a benefit for families living a small margin above the

poverty line). Because 11th and 12th grade students in the district do not participate in the test used to measure academic achievement for this study, students in those grades were not included. All study data were collected as part of the participating district's normal activities and shared with the research team.

Since the advent of No Child Left Behind, the district has scored persistently low on state measures of district performance and recently instituted several reform initiatives in an agreement to avoid state takeover, including an effort to measure and improve school climate in all district schools. Specifically, the district works with schools to implement an evidence-based, universal social and emotional learning program in district elementary schools. Additionally, it establishes teams of adults in each school who identify students who exhibit early warning signs of academic failure and behavioral problems with a referral process to respond to student needs in a timely, coordinated, and effective manner; and it has solicited student and parent voice on strategies for school improvement.

Measures

School climate perceptions. The district's student school climate survey was used to measure students' perceptions of school climate, social experiences of students within a school including feelings of safety and perceptions of support and connectedness (Cohen, McCabe, Michelli, & Pickeral, 2009), referred to as the Conditions for Learning Survey (CFL). The CFL is a 46-item measure using Likert–type response scales. The three dimensions of school climate include safety, how physically and emotionally safe students feel, teacher expectations, how much students perceive that teachers and other adults in the school encourage them to do their best, and teacher support, how much students feel listened to and cared about by their teachers and other adults in their school (Osher, Kendziora, & Chinen, 2008).

Analyses of 2014–15 CFL district data showed good internal consistency for three subscales: Safety (15 items; Cronbach's $\alpha = 0.89$ for grades 5–12), expectations (17 items; $\alpha = 0.80$ for grades 5–8; $\alpha = 0.85$ for grades 9–12), and teacher support (14 items; $\alpha = 0.83$ for grades 5–8; $\alpha = 0.82$ for grades 9–12). The reliability and validity of this measure was established in earlier research by Osher and colleagues (2008) in Chicago public schools. For this study, those three-dimension scores were averaged together to create a composite school climate perception score (Benbenishty, Astor, Roziner, & Wrabel, 2016). In the year of study, the survey was administered to all students three times. The calculated composite school climate perception scores from each time-point were averaged together to render a single school climate score that ranges from a minimum of 1 (i.e., most negative perception of school climate) and a maximum of 4 (i.e., most positive perception of school climate) for students in grades 5–12. Because a shorted response scale (1–3 instead of 1–4) is used on the district's school climate survey for students in grades 2–4, the range of school climate scores in the elementary school analysis is 1–3.

Academic achievement. Academic achievement was measured using Rasch unit test (RIT) scores on the mathematics and reading forms of the Measures of Academic Progress (MAP) test of the Northwest Evaluation Association (NWEA). The three administrations of the MAP test (fall, winter, and spring), were averaged together to create a composite achievement score for both mathematics and reading for the academic year. The mean test scores for all elementary participants across all three 2016 test administrations were 185.15 for mathematics (SD = 15.627) and 181.52 for reading (SD = 16.263); middle school participants had averages of 208.53 (SD = 16.775) and 202.02 (SD = 16.436); and high school participants had averages of 219.22 (SD = 18.919) and 209.44 (SD = 17.671) for mathematics and reading respectively. For reference, according to the national norms published by NWEA (2015), the national elementary (grades 2–5) mean scores for mathematics and reading are 187 and 190, respectively; 212 and 219 for middle school (grades 5–8); and 220 and 231 for high school (grades 9–11).

Disability and ELL Status. Student demographic data regarding the binary indicators of ELL and disability status were extracted from district administrative records. Disability (0 = no disability; 1 = disability) and ELL (0 = non-ELL, 1 = ELL) status were both treated as binary variables. Other demographic control variables (e.g., gender) derived from these records, as well.

Analytic approach

The data were analysed using multilevel regression with student-level interaction effects in Stata 15. In a moderation analysis with interaction effects, the goal is to determine under what conditions or for what categories of individuals an association between two variables exists and to what magnitude (Hayes & Rockwood, 2017). If an independent variable's (X) association with the dependent variable (Y) is moderated by a moderator variable (M), then the X and M variable interact. In the present study, the dependent variable is academic achievement, the independent variable perceptions of school climate and the moderator variables disability and ELL status. To address our research question, we separated sample students into three groups: An elementary subsample, 2nd through 4th grades ($N = 8{,}991$); a middle school subsample, 5th through 8th grades ($N = 10{,}278$); and a high school subsample, grades 9th and 10th grades ($N = 6{,}618$).

Our regression models are represented by the following generic equation:

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_1 X x_4 + \beta_5 x_1 X x_3 + \varepsilon + \mu$$

where y represents academic achievement, x_1 represents perceived school climate, x_2 represents disability status, x_3 represents ELL status, and $x_1 X x_2$ represents the interaction of climate and disability status, and $x_1 X x_3$ represents the interaction of climate and ELL status. Within each of the three subsamples, separate models were estimated for mathematics and reading achievement as dependent variables, for a

total of six models. Models controlled for student race, gender, and grade (these variables are not included in the above equation for the sake of simplicity). There are two error terms in the equation representing student-level (ε) and school-level (μ) error, as students are nested within schools to account for shared variance due to common school membership. The inclusion of schools as a level-2 unit in the analysis effectively controls for all unmeasured characteristics of schools (e.g., principal quality, resources) in the analysis.

Missing data were addressed using listwise deletion, however, as both the CFL and MAP tests are required for all district students in grades 2 and up, there were few instances of missing data. The missing data rate was four percent for elementary, five percent for middle school, and nine percent for high school participants. The authors' institutional review board approved the study.

Results

Results are organized by grade range, with a presentation of both main effects (i.e., regression coefficients for ELL, disability, and school climate perceptions) and interaction effects. All of the results reported below should be interpreted with the understanding that students' race/ethnicity, gender, grade level, and all unmeasured characteristics of schools were held constant. Presented along with each estimated coefficient is an effect size (ES) that is a standardized regression coefficient for continuous predictors (i.e., school climate and the interaction term coefficients) and the standardized group mean difference for binary predictors (i.e., ELL and disability status).

Elementary school (grades 2–4)

For elementary students, in regards to mathematics achievement, the main effects of perceived school climate ($\beta = 2.68$, $p < 0.001$, $ES = 0.03$) and disability status ($\beta = -15.30$, $p < 0.001$, $ES = -0.64$) were statistically significant, but the ELL status main effect was not ($\beta = 1.71$, n.s., $ES = 0.07$). This implies that a one-point (on a three-point scale) improvement in climate is associated with an approximate three-point improvement in mathematics test score. Further, the main effects imply that among students with the lowest perceptions of climate (i.e., climate equals zero), students with disabilities have lower mathematics scores (by about 15 points) whereas ELL students perform close to the same level as their peers on mathematics (approximately a one-point difference). The interaction of disability status and perceived climate ($\beta = 2.46$, $p < 0.001$, $ES = 0.03$) was statistically significant, and the interaction of ELL status and perceived climate was not ($\beta = -1.39$, n.s., $ES = -0.02$). The interaction implies that for students with disabilities, improved perceptions of climate are associated with a shrinking, but still significant gap in mathematics achievement compared to their peers without disabilities—among students with the most positive perceptions of climate, students with disabilities have mathematics scores about 8 points lower than their peers, on average.

As with the mathematics achievement model, the main effects of perceived school climate ($\beta = 3.54$, $p < 0.001$, $ES = 0.04$) and disability ($\beta = -13.21$, $p < 0.001$, $ES = 0.56$) status on reading achievement were statistically significant, but the main effect of ELL status was not ($\beta = 4.18$, n.s., $ES = 0.18$). This implies that for non-ELL students without a disability, a one-point (on a three-point scale) improvement in climate is associated with an approximate four-point improvement in reading test score. Further, the main effect implies that among students with the lowest perceptions of climate, students with disabilities have lower reading scores (by about 13 points), whereas ELL students perform close to the same level as their peers on reading. The interactions of disability status ($\beta = 0.44$, n.s., $ES = 0.01$) and ELL status ($\beta = -2.40$, n.s., $ES = -0.03$) with perceived climate were not statistically significant for elementary school students which implies that there are no significant differences between students with disabilities and ELL students and their peers in the association of climate and achievement.

Middle school (grades 5–8)

For middle school students, in regards to mathematics achievement, the main effects of perceived climate ($\beta = 2.61$, $p < 0.001$, $ES = 0.04$) and disability status ($\beta = -23.01$, $p < 0.001$, $ES = -1.05$) were statistically significant, but the main effect of ELL status ($\beta = -1.43$, n.s., $ES = -0.07$) was not. This implies that for students without a disability, a one-point improvement in climate is associated with about a three-point improvement in mathematics test score. The main effects further imply that among students with the lowest perceptions of climate, students with disabilities have mathematics test scores about 23 points lower than their peers, on average, and ELL students do not have significantly different mathematics test scores, on average, than their non-ELL peers. The interaction of disability and perceived climate ($\beta = 3.03$, $p < 0.01$, $ES = 0.05$) was statistically significant, and the interaction between ELL and perceived climate ($\beta = -0.22$, n.s., $ES = -0.01$) was not. The interactions imply that for students with disabilities, improved perceptions of climate are associated with a shrinking, but still significant gap in mathematics achievement compared to their peers without disabilities—even among students with the most positive perceptions of climate, students with disabilities have mathematics scores about 14 points lower than their peers, on average. For ELL students, the interaction indicates that the association between perceived climate and mathematics achievement is not significantly different between them and their non-ELL peers.

For reading achievement, the main effects of perceived climate ($\beta = 1.99$, $p < 0.001$, $ES = 0.03$) and disability status ($\beta = -21.88$, $p < 0.001$, $ES = -0.95$) were statistically significant, but the main effect of ELL status ($\beta = -0.97$, $p > 0.05$, $ES = -0.04$) was not. This implies that for non-ELL students without a disability, a one-point improvement in climate is associated with about a two-point improvement in reading test score. The main effects further imply that among students with the lowest perceptions of climate, students with disabilities have

reading test scores about 22 points lower than their peers, on average, and ELL students do not have significantly different reading test scores, on average, than their non-ELL peers. The interaction of disability and perceived climate ($\beta = 2.07$, $p < 0.05$, $ES = 0.03$) was statistically significant, and the interaction between ELL and perceived climate ($\beta = -0.90$, n.s., $ES = -0.02$) was not. The interactions imply that for students with disabilities, improved perceptions of climate are associated with a shrinking, but still significant gap in reading achievement compared to their peers without disabilities. For ELL students, the interaction indicates that the association between perceived climate and reading achievement is not significantly different between them and their non-ELL peers.

High school (grades 9 and 10)

For high school students, in regards to mathematics achievement, the main effects of perceived climate ($\beta = 2.07$, $p < 0.01$, ES = 0.03), disability status ($\beta = -25.09$, $p < 0.001$, $ES = -1.01$), and ELL status ($\beta = -9.76$, $p < 0.05$, $ES = -0.39$) were statistically significant. This implies that for non-ELL students without a disability, a one-point improvement in climate is associated with about a two-point improvement in mathematics test scores. The main effects further imply that among students with the lowest perceptions of climate, students with disabilities have mathematics test scores about 25 points lower than their peers, on average, and ELL students have mathematics test scores about nine points lower, on average, than their non-ELL peers. The interaction of disability and perceived climate ($\beta = 2.94$, $p < 0.05$, $ES = 0.04$) was statistically significant, whereas the interaction between ELL and perceived climate ($\beta = 2.48$, $p > 0.05$, $ES = 0.04$) was not. The interactions imply that for students with disabilities, improved perceptions of climate are associated with a shrinking, but still significant gap in mathematics achievement compared to their peers without disabilities. For ELL students, the interaction indicates that the association between perceived climate and mathematics achievement is not significantly different between them and their non-ELL peers.

For reading achievement, the main effects of perceived climate ($\beta = 2.63$, $p < 0.001$, $ES = 0.04$), disability status ($\beta = -22.27$, $p < 0.001$, $ES = 0.11$), and ELL ($\beta = -12.56$, $p < 0.01$, $ES = -0.51$) were statistically significant. This implies that for non-ELL students without a disability, a one-point improvement in climate is associated with about a three-point improvement in reading test scores. The main effects further imply that among students with the lowest perceptions of climate, students with disabilities have reading test scores about 22 points lower than their peers, on average, and ELL students have reading test scores about 13 points lower, on average, than their non-ELL peers. The interactions of disability and perceived climate ($\beta = 2.60$, $p < 0.10$, $ES = 0.04$) and ELL and perceived climate ($\beta = 3.11$, $p < 0.10$, $ES = 0.04$) were approaching statistical significance. The interactions imply that improved perceptions of school climate are associated with shrinking gaps in achievement between ELL students and students with disabilities and their non-ELL and non-disabled peers.

Discussion

A novel finding of this study is that the link between perceptions of school climate and academic achievement in both mathematics and reading is approximately twice as strong for students with disabilities compared to their peers without disabilities. The results suggest that were school climate to improve from the lowest to highest possible levels, the gap in mathematics and reading achievement between students and disabilities and their peers would shrink by between one-third and one-half (except for reading achievement in grades 2–4, where there was no significant interaction). Importantly, the association of school climate and academic achievement was positive for all student subgroups examined in this study, but the association was strongest for students with disabilities. This study, then, adds to the research literature suggesting a compensatory effect of school climate for vulnerable student groups (cf. Esposito, 1999; O'Malley et al., 2015).

Despite theory that school climate may operate differently for students at different grade levels (Eccles et al., 1993; De Pedro et al., 2016), this study found that this interaction of disability and climate perceptions was remarkably durable across the three subsamples analysed. Previous research has indicated that students with disabilities may be more likely to internalize negative social cues in their school environment (Milsom, 2006) and that they may be especially sensitive to the social environment in their school (Higgins-D'Alessandro & Sakwarawich, 2011). These results lend support to the findings of these previous studies.

The results further indicate that, across all levels of schooling, for ELL students there is generally no difference in the association of academic achievement and school climate compared to their non-ELL peers, which corroborates previous research with middle school students (Nation, Voight, & Nixon, 2011). The results suggest that there is positive association of climate and achievement for ELL students but that the magnitude of that association is not different than it is for non-ELL students. The exception was for reading achievement in high school, where the interaction was marginally significant and suggested that a more positive school climate may, in fact, be associated with a shrinking ELL achievement gap.

The main effect of ELL did point to differences in the academic achievement gap based on ELL status across levels of schooling. For the elementary and middle school subsamples, ELL students did not perform significantly different than their peers academically. However, in the high school subsample, ELL students performed more than one-half SD lower than their peers.

Limitations and future research

One limitation of this study is that it utilized cross-sectional data. Cross-sectional data absent an experimental design lack the ability to draw causal conclusions. Thus, in the present study, one cannot conclude that a positive school climate causes better achievement, just that the two are associated. This design does not address the directionality of the relationship nor account for alternative explanations for why a particular student may have either high or low perceptions of

climate and achievement. Future research could use longitudinal data in a fixed-effects regression model with lagged predictors (e.g., a cross-lagged panel design) to establish the directionality of the climate-achievement association for specific student subgroups (cf. Benbenishty, Astor, Roziner, & Wrabel, 2016). Experimental studies could help establish the causal paths between these variables for different student subgroups (cf. Bradshaw, Koth, Bevans, Ialongo, & Leaf, 2008), but school climate is difficult to manipulate in an experimental study.

Another limitation of the present study concerns administration procedures for the student survey. Certain students with disabilities (namely those who participate in alternative assessments for state accountability) are not included in the survey administration. This excludes, for example, students with severe cognitive disabilities. The result is that the present findings may not be generalizable to students with the most severe disabilities. Future research could strategically target students with severe cognitive disabilities to better understand the role of school climate in their learning.

Practical implications

The results of this study have a number of implications for school psychology practice. Most broadly, as the present findings suggest that a positive school climate is associated with better achievement for all students at all levels in both mathematics and reading, school psychologists should consider school climate improvement as part of their mandate. There has a been a proliferation of research on school climate in school psychology journals in the past two decades, some of which points to strategies school psychologists can employ to improve school climate. These include soliciting parent involvement in school programming (Haynes, Comer, & Hamilton-Lee, 1989), promoting school-wide positive behavior supports (Mitchell & Bradshaw, 2013), and teaching students social and emotional skills (Kilian, Fish, & Maniago, 2006). The effectiveness of these strategies in improving school climate is supported by two recent reviews of evidence-based school climate improvement practices (Bear, Yang, Mantz, & Harris, 2017; Voight & Nation, 2016), the latter of which also identified student voice; a strategy that school psychologists could champion (O'Malley, Voight, & Izu, 2014).

School psychologists who undertake the work of school climate improvement should be sensitive to student subgroup disparities in perceptions of school climate. Recent studies show that all of the students in a particular school may not view their school's climate uniformly. Students of color, for example, report systemically poorer climate than their same-school peers (Bottiani, Bradshaw, & Mendelson, 2014; Voight et al, 2015). Given that the present study found that a positive school climate may be particularly beneficial to the academic achievement of students with disabilities, it is important that school psychologists be mindful that these students (and other subgroups) may have different understandings of and needs for safety, support, and expectations. For example, teaching social and emotional skills may be received differently by some students than others and may implicitly

communicate that individual skill deficiencies—rather than environmental factors that are often out of students' control—are the sole obstacle to success (Hoffman, 2017). There is little research on how to improve school climate perceptions among students with disabilities, in particular, but school psychologists should listen to these students to better understand what is required to help them feel safe and supported.

Conclusion

This study builds on previous research into school climate as it relates to academic achievement for K-12 students. This study, however, focuses on two subpopulations of students who have been historically marginalized, specifically students with disabilities and ELL students. These two student subgroups are often among the most vulnerable to academic failure and therefore the most in need of academic supports. The findings suggest that school climate is one potential method to improve achievement for these two subgroups and to even narrow the achievement gap between students with disabilities and their peers. School psychologist can help create a more positive climate in their schools for historically marginalized students through the use of the findings of this study.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: The authors would like to acknowledge support through Grant Number #R305H170068 from the Institute of Education Sciences, U.S. Department of Education.

ORCID iD

Steven M. Sanders http://orcid.org/0000-0002-7816-705X

References

Abedi, J. (2006). Psychometric issues in the ELL assessment and special education eligibility. *Teachers College Record*, *108*, 2282, http://dx.doi.org/10.1111/j.1467-9620.2006.00782.x

Bear, G. G., Yang, C., Mantz, L. S., & Harris, A. B. (2017). School-wide practices associated with school climate in elementary, middle, and high schools. *Teaching & Teacher Education*, *63*, 372–383, http://dx.doi.org/10.1016/j.tate.2017.01.012

Benbenishty, R., & Astor, R. (2005). *School violence in context: Culture, neighborhood, family, school, and gender*. New York, NY: Oxford University Press.

Benbenishty, R., Astor, R., Roziner, I., & Wrabel, S. L. (2016). Testing the causal links between school climate, school violence, and school academic performance: A cross-

lagged panel autoregressive model. *Educational Researcher*, *45*, 197–206, http://dx.doi.org/10.3102/0013189X16644603

Bottiani, J. H., Bradshaw, C. P., & Mendelson, T. (2014). Promoting an equitable and supportive school climate in high schools: The role of school organizational health and staff burnout. *Journal of School Psychology*, *52*(6), 567–582, http://dx.doi.org/10.1016/j.jsp.2014.09.003

Bradshaw, C. P., Koth, C. W., Bevans, K. B., Ialongo, N., & Leaf, P. J. (2008). The impact of school-wide positive behavioral interventions and supports (PBIS) on the organizational health of elementary schools. *School Psychology Quarterly*, *23*, 462–473, http://dx.doi.org/10.1037/a0012883

Brand, S., Felner, R., Shim, M., Seitsinger, A., & Dumas, T. (2003). Middle school improvement and reform: Development and validation of a school-level assessment of climate, culture pluralism, and school safety. *Journal of Educational Psychology*, *95*, 570–588, http://dx.doi.org/10.1037/0022-0663.95.3.570

Carter, E., Hughes, C., Guth, C. B., & Copeland, S. R. (2005). Factors influencing social interaction among high school students with intellectual disabilities and their general education peers. *American Journal of Mental Retardation*, *110*, 366–377, http://dx.doi.org/10.1352/0895-8017(2005)110%5B366:FISIAH%5D2.0.CO;2.

Cohen, J. S., McCabe, E. M., Michelli, N. M., & Pickeral, T. (2009). School climate: Research, policy, practice, and teacher education. *Teachers College Record*, *11*, 180–213.

Crosnoe, R. (2005). Double disadvantage or signs of resilience? The elementary school contexts of children from Mexican immigrant families. *American Educational Research Journal*, *42*, 269–303, http://dx.doi.org/10.3102/00028312042002269

De Pedro, K. T., Gilreath, T., & Berkowitz, R. (2016). A latent class analysis of school climate among middle and high school students in California public schools. *Children and Youth Services Review*, *63*, 10–15, http://dx.doi.org/10.1016/j.childyouth.2016.01.023

Eccles, J. S., Midgley, C., Wigfield, A., Buchanan, C. M., Reuman, D., Flanagan, C., . . . Mac Iver, D. (1993). Development during adolescence: The impact of stage-environment fit on young adolescents' experiences in schools and in families. *American Psychologist*, *48*, 90–101, http://dx.doi.org/10.1037/0003-066X.48.2.90

Education Commission of the States. (2016). Closing the achievement gap of students with specific learning disabilities. Retrieved on April 11, 2018 from https://www.ecs.org/50-state-comparison-states-school-accountability-systems

Esposito, C. (1999). Learning in urban blight: School climate and its effect on the school performance of urban, minority, low-income children. *School Psychology Review*, *28*(3), 365–377.

Gregory, A., Skiba, R. J., & Noguera, P. A. (2010). The achievement gap and the discipline gap two sides of the same coin? *Educational Researcher*, *39*, 59–68.

Hanson, T., & Voight, A. (2014). The appropriateness of a California student and staff school climate survey for measuring middle school climate (REL 2014-039). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory West. Retrieved from http://ies.ed.gov/ncee/edlabs.

Hayes, A. F., & Rockwood, N. J. (2017). Regression-based statistical mediation and moderation analysis in clinical research: Observations, recommendations, and implementation. *Behaviour Research and Therapy*, *98*, 39–57, http://dx.doi.org/10.1016/j.brat.2016.11.001

Haynes, N. M., Comer, J. P., & Hamilton-Lee, M. (1989). School climate enhancement through parental involvement. *Journal of School Psychology*, *27*, 87–90, http://dx.doi.org/10.1016/0022-4405(89)90034-4.

Higgins-D'Alessandro, A., & Sakwarawich, A. (2011, October). Congruency and determinants of teacher and student views of school culture. Paper presented at the Association for Moral Education annual conference, Nanjing, China.

Hoffman, D. M. (2009). Reflecting on social emotional learning: A critical perspective on trends in the /United States. *Review of Educational Research*, *79*, 533–556, http://dx.doi.org/10.3102/0034654308325184/

Karabenick, S. A., & Noda, P. A. C. (2004). Professional development implications of teachers' beliefs and attitudes toward English language learners. *Bilingual Research Journal*, *28*, 55–75, http://dx.doi.org/10.1080/15235882.2004.10162612

Kena, G., Hussar, W., McFarland, J., de Brey, C., Musu-Gillette, L., Wang, X., et al. (2016). The condition of education 2016. NCES 2016–144. National Center for Education Statistics.

Kilian, J. M., Fish, M. C., & Maniago, E. B. (2006). Making schools safe: A system-wide school intervention to increase student prosocial behaviors and enhance school climate. *Journal of Applied School Psychology*, *23*(1), 1–30, http://dx.doi.org/10.1300/J370v23n01_01

Kim, J. (2011). Relationships among and between ELL status, demographic characteristics, enrollment history, and school persistence. CRESST Report 810. National Center for Research on Evaluation, Standards, and Student Testing (CRESST).

Milner, R., & Lomotey, K. (2013). *Handbook of urban education*. New York, NY: Routledge http://dx.doi.org/10.4324/9780203094280

Milsom, A. (2006). Creating positive school experiences for students with disabilities. *Professional School Counseling*, *10*, 66–72, http://dx.doi.org/10.5330/prsc.10.1.ek6317552h2kh4m6

Mitchell, M. M., & Bradshaw, C. P. (2013). Examining classroom influences on student perceptions of school climate: The role of classroom management and exclusionary discipline strategies. *Journal of School Psychology*, *51*(5), 599–610, http://dx.doi.org/10.1016/j.jsp.2013.05.005

Nation, M., Voight, A., & Nixon, C. (2011, June). *School climate and academic achievement: Unpacking the relations between school context and the academic achievement of at-risk students*. Paper presented at the Biennial Meeting of the Society for Community Research and Action, Chicago, IL.

Newman, R. S., & Schwager, M. T. (1993). Students' perceptions of the teacher and classmates in relation to reported help seeking in math class. *The Elementary School Journal*, *94*, 3–17, http://dx.doi.org/10.1086/461747

National Center for Educational Statistics. (2013). English language learners. Retrieved April 11, 2018 from https://nces.ed.gov/programs/coe/pdf/Indicator_CGF/COE_CGF_2013_05.pdf

Northwest Evaluation Association. (2015). *2015 NWEA measures of academic progress normative data*. Portland, OR: NWEA.

Ohio Department of Education (2017). *Ohio school report cards*. Retrieved from http://reportcard.education.ohio.gov/Pages/default.aspx

O'Malley, M., Voight, A., & Izu, J. A. (2014). Engaging students in school climate improvement. In M. J. Furlong, R. Gilman, & E. S. Huebner (Eds.), *Handbook of positive psychology in schools*. (2nd ed., pp. 329–346). New York, NY: Routledge. http://dx.doi.org/10.4324/9780203106525.ch21

O'Malley, M., Voight, A., Renshaw, T. L., & Eklund, K. (2015). School climate, family structure, and academic achievement: A study of moderation effects. *School Psychology Quarterly*, *30*, 142–157, http://dx.doi.org/10.1037/spq0000076

Osher, D., Kendziora, K., & Chinen, M. (2008). *The student connection research: Final narrative report to the Spencer Foundation*. Washington, DC: American Institutes for Research Retrieved from https://www.air.org/sites/default/files/downloads/report/Spencer_final_report_3_31_08_0.pdf

Pianta, R., & Allen, J.(2008). Building capacity for positive youth development in secondary school classrooms: Changing teachers' interactions with students. In *Toward positive youth development*: *Transforming schools and community programs*. Oxford: Oxford University Press. http://dx.doi.org/10.1093/acprof:oso/9780195327892.003.0002

Schenke, K., Lam, A. C., Conley, A. M., & Karabenick, S. A. (2015). Adolescents' help seeking in mathematics classrooms: Relations between achievement and perceived classroom environmental influences over one school year. *Contemporary Educational Psychology*, *41*, 133–146, http://dx.doi.org/10.1016/j.cedpsych.2015.01.003

Skiba, R. J., Michael, R. S., Nardo, A. C., & Peterson, R. L. (2002). The color of discipline: Sources of racial and gender disproportionality in school punishment. *The Urban Review*, *34*, 317–342.

Thapa, A., Cohen, J., Guffey, S., & Higgins-D'Alessandro, A. (2013). A review of school climate research. *Review of Educational Research*, *83*(3), 357–385, http://dx.doi.org/10.3102/0034654313483907

Uro, G., & Barrio, A. (2013). English language learners in America's great city schools: Demographics, achievement and staffing. Council of the Great City Schools.

US Department of Education. (2018). IDEA section 618 data products. Retrieved April 11, 2018 from https://www2.ed.gov/programs/osepidea/618-data

Voight, A., Austin, G., & Hanson, T. (2013). *A climate for academic success: How school climate distinguishes schools that are beating the achievement odds*. San Francisco, CA: WestEd.

Voight, A., Hanson, T., O'Malley, M., & Adekanye, L. (2015). The racial school climate gap: Within-school disparities in students' experiences of safety, support, and connectedness. *American Journal of Community Psychology*, *56*, 252–267, http://dx.doi.org/10.1007/s10464-015-9751-x

Watkins, A. M., & Melde, C. (2009). Immigrants, assimilation, and perceived school disorder: An examination of the 'other' ethnicities. *Journal of Criminal Justice*, *37*, 627–635, http://dx.doi.org/10.1016/j.jcrimjus.2009.09.011

Author biographies

Steven M. Sanders is a PhD student in Urban Education with a focus in Counseling Psychology at Cleveland State University. He is a graduate assistant for the Center for Urban Education at Cleveland State University. His research focuses on post-secondary educational achievement, internalized racism, the imposter phenomenon, and psychological distress.

James M. Durbin is a PhD student in Urban Education with a focus in Adult, Continuing, and Higher Education at Cleveland State University. He is also a

faculty member in the Department of Communication Studies at Cleveland State University.

Bart G. Anderson has served over 20 years as a school superintendent with additional service as a principal, mathematics teacher and coach. Dr. Anderson earned his doctorate from the University of Pennsylvania and his MS and BS from Miami University.

Laura M. Fogarty is a PhD student in Urban Education with a focus in Counseling Psychology at Cleveland State University. She is the CSU-CMSD Policy Fellow and her research focuses on grade banding and school calendar configurations, locating external evidence and evaluating student outcomes for programs that partner with CMSD schools, and helping to create a portfolio-outcomes dashboard to assist principals in more efficient decision-making.

Regina J. Giraldo-Garcia received her PhD in Urban Education from Cleveland State University and is an instructor of graduate courses in education research, evaluation, and psychological foundations of education in the college of Education and Human Services. Currently she is a Post-doctoral research fellow at CSU and also serves as a reviewer for the Journal of Latinos and Education, and for the Journal of Urban Learning, Teaching and Research (AERA SIG). Her research examines individual and institutional factors that influence the academic achievement of minority students in urban contexts, and the impact of socioeconomic and school climate on academic performance.

Adam Voight is an Assistant Professor of Curriculum and Foundations and Director of the Center for Urban Education in the College of Education and Human Services at Cleveland State University. He received his PhD in community psychology from Peabody College of Education and Human Development at Vanderbilt University. Dr. Voight works in partnership with urban schools, communities, and youth to create environments more conducive to the learning and well-being of young people, particularly those marginalized by structural forces like poverty and racism.