RELATIONS AMONG SCHOOL RACIAL CLIMATE, SCHOOL CONNECTEDNESS, AND RACE: A MODERATION ANALYSIS

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ABSTRACT

Students' experiences related to school climate, including school racial climate and school connectedness, have significant implications for mental health, academic outcomes, and school engagement. Adolescent students of color often report worse experiences of school racial climate and school connectedness, and corresponding worse outcomes, than White peers. The current study explored the relation between school racial climate and school connectedness, and if it was moderated by race. Perceptions of school racial climate and school connectedness differed across racial groups and schools. School racial climate was found to predict school connectedness. Results failed to support the hypothesis that race moderated the relation between school racial climate and school connectedness across all schools. However, at the predominantly White schools, a significant interaction indicated a stronger positive relation between school racial climate and school connectedness for White students than for Black students. This interaction was not present at the majority-Black school. These findings emphasize the importance of considering school characteristics and contextual factors in students' experiences of school climate, as well as the positive outcomes associated with school racial climate. These outcomes may have important implications for diversity-based programming in school settings and their potential benefit for students of all backgrounds.

Keywords: school climate, school racial climate, school connectedness, race, DEI

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Dedication

To my parents, for their love and support in all my adventures.

Acknowledgements

I would like to acknowledge our community partners who collected this data and graciously shared it for analysis. I would also like to acknowledge Dr. Paul Flaspohler, who provided invaluable advising and editing throughout this process. Lastly, I would like to acknowledge current members of the MUSCRAT Lab, in particular Amy Kerr and Katelyn Wargel-Fisk; without their support and advice this document could not have been written.

Relations Among School Racial Climate, School Connectedness, and Race: A Moderation Analysis

In recent years, diversity, equity, and inclusion (DEI) has become a particularly controversial topic in public school systems, especially as it relates to race. Politically, this has ranged from contentious school board meetings at local levels, to unfounded accusations of teaching Critical Race Theory (CRT) in school settings (Sawchuk, 2021), to policies advanced through legislatures in states such as Florida (Mershov, 2023) to remove content related to race and identities from curricula across grade levels. The policies and debates around this issue have generally failed to consider: what are students' actual experiences related to race, discussions of race, and experiences of race in their own schools?

One way to understand students' experiences with racial issues in schools is to measure school racial climate (SRC). School racial climate is an understudied component of school-based research that focuses on students' perceptions of race, fairness, and equity in their own schools (Mattison & Aber, 2007). Much of the existing research has focused on how school racial climate relates to school academic performance and outcomes; broadly, more negative perceptions of school racial climate are associated with poorer academic outcomes, particularly for students of color (Golden et al., 2017; Griffin et al., 2020). Less research on school racial climate has focused on other important school-based experiences, including mental health, discipline, and feelings of connectedness or belongingness.

The current study aimed to understand how students' perceptions of school racial climate may affect their experiences of school connectedness, and how that may differ by student race. By identifying if race moderates the relationship between school racial climate and school connectedness, researchers and practitioners may be better able to develop policies and programming to support students from a variety of racial backgrounds.

School Climate

School climate refers to the ways in which people, usually students, experience a school environment. Definitions of school climate include constructs about school norms, values, expectations, relationships, and organizational structure within a school environment (Thapa et al., 2013). Although there is no consensus on a comprehensive definition of school climate, researchers generally conceptualize it as multidimensional. Thapa et al. (2013) defined school climate as including safety, relationships, teaching and learning, institutional environment and school improvement process. Wang et al. (2016) defined a 4-dimension model that included academic, safety, institutional environment, and community dimensions. Kutsyuruba et al. (2015) defined a framework that included 3 dimensions: physical, social and academic. The physical domain included constructs such as the physical layout of the school, organization of classrooms, available resources, and safety. The social dimension included peer, staff, and student-teacher relationships, community, and equitable and fair treatment. The academic domain included academic achievement, pedagogy, and quality of instruction (Kutsyuruba et al., 2015; Loukas, 2007). Kutsyuruba's model is a succinct but comprehensive approach to understanding the various domains of school climate.

School climate can be considered an institutional variable, with a given school having a measurable climate. However, researchers often focus instead on measuring individual experiences of school climate. Measuring individuals' perceptions of school climate can be useful in understanding individual differences, given that a number of factors could influence

someone's experience of climate; these could be factors related to identity, such as race, gender or SES, or factors related to personality, such as optimistic outlook (Loukas, 2007). However, factors such as school racial composition, geographic region, and economics, are important school characteristics that can also contribute to students' individual experiences of school climate (Thrupp et al., 2002; Walseman et al., 2011). The majority of studies referenced in this review consider individual perceptions of school climate, rather than measuring climate as an institutional concept.

Aspects of school climate relate to behavioral, emotional, academic, and psychological outcomes for students. Positive perceptions and experiences of school climate have been associated with positive outcomes for youth. A systematic review of 48 studies found that for adolescent students, positive perceptions of school climate have been associated with positive outcomes in prosocial behavior, decreases in risk-taking, and improvement in mental health concerns (Aldridge & McChesney, 2018). Other reviews have shown that student academic achievement, as well as behavioral and disciplinary outcomes, are associated with school climate (Thapa et al., 2013). These reviews suggest that positive experiences of school climate are frequently associated with a variety of positive outcomes.

In addition, students experience school climate differently based on identities including race, gender, and class. In a study of over 400 middle schoolers, Black and Hispanic students reported worse experiences of school climate than White peers; this racial gap in school climate experiences was associated with racial gaps in academic achievement (Voight et al., 2015). In a study of 323 high school students, Black students reported different perceptions of school climate than White students, with Black students reporting higher academic expectations but lower support, and White students reporting more positive perceptions of support at school (Konold et al., 2017). Overall, research indicates that positive perceptions of school climate relate to positive outcomes for youth, but that experiences of school climate frequently differ across identity groups and are generally worse for racial minority students.

In the proposed study, two constructs related to school climate, School Racial Climate and School Connectedness, will be examined to determine how they relate to each other, and how this relation may differ by race.

School Racial Climate

School Racial Climate (SRC) is closely related to school climate. While some consider it a separate but related construct, other researchers consider it to be closely linked to subdomains of school climate, particularly relationships, engagement, and safety (Griffin et al., 2020). While school racial climate is not explicitly described in the Kutsyuruba et al. (2015) model of school climate, its features primarily align with the Social domain. Current models of school climate typically do not explicitly include school racial climate as a sub-dimension.

Like school climate, school racial climate does not have one agreed-upon definition. Racial climate is understood as the ways that perceptions of race and discrimination matter in the school environment, and how they relate to norms, values, relationships, and policies within a school setting (Golden et al., 2018; Mattison & Aber, 2007). Components include domains around fairness, discrimination, interpersonal relationships, and institutional support for racial concerns (Byrd, 2017; Griffin et al., 2020). Griffin et al. (2020) describe a model of school racial climate composed of four domains: fair treatment and racial equity, institutional support, interpersonal interactions, and manifestation of stereotypes. Byrd (2017) breaks school racial climate into two primary domains of intergroup interactions and school racial socialization, each

of which are composed of five subdomains. Much like school climate, some measures of school racial climate measure the construct as a whole, while others measure school racial climate and its subdomains.

There is not currently one standardized approach for measurement of school racial climate across researchers; this may be because the construct is relatively new and measures are still in development. Two scales that were developed specifically to assess school racial climate include the School Climate for Diversity – Secondary (SDS; Byrd, 2017), as well as the Racial Climate Survey – High School Version (Griffin et al., 2017). Current measures of school racial climate are self-report. Some measures ask about specific personal experiences with school racial climate, such as experiencing discrimination or racism, while others ask about broader perceptions of school environment, values, and norms.

Historically, research about racial climate in educational settings has been conducted on college campuses with undergraduates (Chavous et al., 2005; Mattison & Aber, 2007; Watkins & Aber, 2009). Within the last 15 years, more scholarship on school racial climate at the middle and high school level has emerged. This has primarily focused on the relationship between school racial climate and school performance outcomes, particularly academic achievement and school engagement. Among a sample of Black and White high school students, more positive perceptions of school racial climate were associated with better academic achievement and discipline outcomes (Mattison & Aber, 2007). Within a different a high school sample, higher perceptions of school as fair and equitable was associated with higher levels of school engagement; additionally, higher perceived peer discrimination was associated with lower school engagement (Griffin et al., 2020). School engagement partially mediated the relation between school racial climate and academic outcomes in a sample of high schoolers (Griffin et al., 2017). Overall, evidence suggests that school racial climate relates strongly to academic achievement and engagement.

Students of color seem to experience school racial climate and associated outcomes differently than White peers. This is unsurprising, given that students of color likely experience core components of school racial climate, such as higher rates of discrimination and racial injustice, differently than White peers (American Psychological Association, 2017). One study of middle school students investigated how students' intersectional identities related to their perception of school racial climate, examining race, gender, and class. Black students reported lower positive perceptions of school racial climate than White students, and White students from a higher SES background held the most positive perceptions of school racial climate (Watkins & Aber, 2009). In addition, Black girls perceived less racial fairness than Black boys (Watkins & Aber, 2009). Students' perceptions of school racial climate have also been tentatively associated not only with their racial identity, but with school-level factors, such as the racial composition of their school; weak evidence suggests that students may feel better about their school experience if there are more students of their racial background at their school (McNeely et al., 2002).

Although some research indicates that students from minoritized racial identities have more negative experiences with school racial climate, other studies suggest that a strong positive perception of one's own racial identity may prove protective for minoritized students who experience negative school racial climate. One study found that for Black high school students, strong regard for their personal racial identity moderated the relationship between school racial climate and school engagement and acted as a protective factor (Griffin et al., 2020). Current research on protective factors against the negative outcomes of poor perception of school racial climate remains limited.

One characteristic of recent research on school racial climate is that samples are primarily composed of BIPOC students, rather than samples representative of a given school or community (Golden et al. 2018; Griffin et al. 2020). This research provides valuable insight into the experiences of marginalized students, who are often underrepresented in research. However, these targeted samples limit researchers' ability to draw conclusions about how school racial climate may differentially affect students from different races, and if that may affect their perceptions of other elements of school climate. Limited research exists about how White students perceive school racial climate.

School Connectedness

School connectedness refers to the feeling that one belongs in a school and feels connected to the school community (McNeely, 2002). It can also be understood as a student's belief that people within the school system care about them (CDC, 2022). School connectedness is often assessed as part of school climate; many of the school climate frameworks and measures reviewed by the researcher incorporate school connectedness (Thapa et al., 2013; Wang et al. 2016). In Kutsyuruba et al.'s (2015) three-domain model, school connectedness, much like school racial climate, would fall within the Social domain of school climate. Perceptions of school connectedness are traditionally measured by student self-report (McNeely et al., 2002). Generally, school connectedness is considered a core component of school climate.

School connectedness has been associated with a number of outcomes for students. Low school connectedness has been found to predict higher levels of mental health concerns and substance use later in schooling, and higher school connectedness functions as a protective factor against substance use (Bond et al., 2007; McNeely et al., 2002). In a sample of middle school students, school connectedness partially mediated the relationship between school climate domains, including satisfaction with classes, with depressive symptoms and conduct problems (Loukas et al., 2006). In addition, connectedness appears to relate to academic achievement. For middle and high schoolers, students who report higher levels of school connectedness have also been found to have better grades (Monahan et al., 2010). A number of positive academic, behavioral, and mental health outcomes have been associated with positive perceptions of school connectedness.

Predictors of school connectedness include experience of discrimination from peers and adults, reported relationships with adults, and teacher support. A study of Hispanic middle school students found that higher levels of racial discrimination were associated with lower levels of school connectedness; this relationship was mediated by depressive symptoms for girls, and by conduct problems for boys (Fernandez et al., 2019). Another study of middle school students found that weight discrimination from peers was negatively associated with school connectedness (Golaszewski et al., 2018). Teacher support was associated positively with school connectedness, though teacher support did not serve as a protective factor for students who experience weight discrimination (Golaszewski et al., 2018). Other research suggests that perceptions of teacher support and stronger relationships with adults are associated with higher levels of school connectedness (Monahan et al., 2010). Unsurprisingly, reports of strong relationships at school appear linked to positive perceptions of school connectedness, while experiences of discrimination and weaker relationships are associated with negative perceptions of school connectedness.

Research around school connectedness and race has primarily incorporated race as a covariate, or as a moderator between school connectedness and other dependent variables. Some

research suggests that race moderates the relation between school connectedness and peer victimization (Eugene et al., 2021). Other studies have found differences in school connectedness based on race. A study of adolescent students found that racial minority students felt less connected to adults than white peers did, and reported lower overall school connectedness as a result (Anyon, 2016). The reasons minority students may experience worse connectedness are not fully explored, but may relate to aspects of school racial climate, such as worse experiences of discrimination or unfair treatment based on race. Differences in school connectedness across racial groups, with racial minority students experiencing lower school connectedness, could lead to differential outcomes in academic achievement, behavioral consequences, and mental health outcomes.

Rationale and Hypotheses

Prior research suggests that school racial climate and school connectedness may be related. Both include constructs positively related to belongingness, feeling welcome, and feeling connected to others (Mattison & Aber, 2007; McNeely, 2002). Some constructs measured in SRC, such as discrimination, have been associated with lower school connectedness (Fernandez et al., 2019). In addition, both school racial climate and school connectedness have been associated with similar outcomes for academic achievement, with both higher levels of school racial climate and school connectedness relating to higher levels of academic achievement, and vice versa (Griffin et al., 2017; Loukas et al., 2006). Taken together, the current literature suggests that we might expect perceptions of school racial climate to positively correlate with school connectedness. However, previous research has not yet assessed if school racial climate predicts school connectedness. The current study aims to fill this gap.

In addition, prior research on school racial climate indicates that the saliency of racial identity and school racial climate may differ among students of different races. Overall, students of color are more likely to experience race-based discrimination and unfair treatment than White peers (American Psychological Association, 2017; Watkins & Aber, 2009). These may relate to lower feelings of school connectedness in students of color compared to their White peers. In addition, for students of color, race-based experiences in school may be more salient to them than to their White peers. For students of color, race-based experiences in school may be more salient to them than to their White peers. As a result, these negative experiences may relate to lower feelings of school connectedness compared to White peers. Students of color, who are more likely to be directly impacted and have more negative repercussions from negative experiences and perceptions of school racial climate, and for whom racial experiences may be more salient, may experience the relationship between school racial climate and connectedness more strongly.

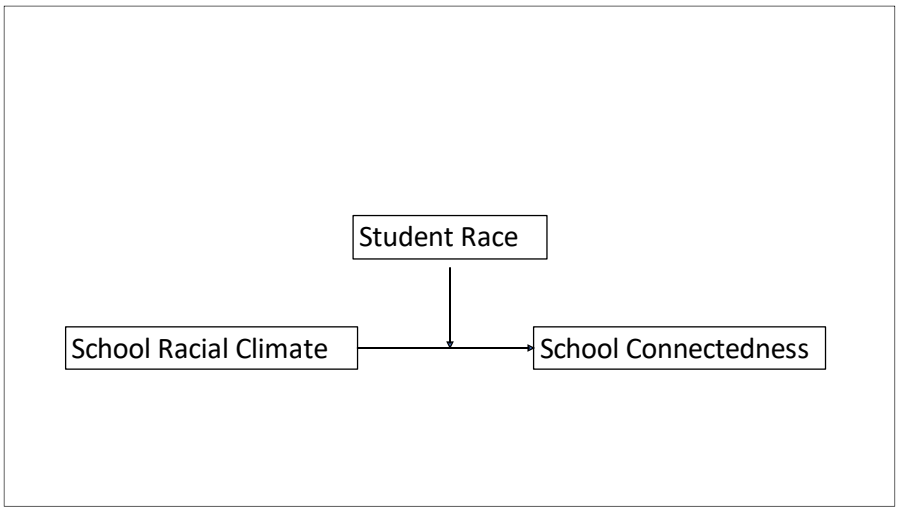
Based on this, this study hypothesized that the relation between school racial climate and school connectedness will be stronger for students of color than for White students. To test this hypothesis, a moderated relationship, in which the relationship between school racial climate and school connectedness is moderated by race, was tested.

Research Question: How do school racial climate and school connectedness relate in adolescent students, and does that vary across race?

Hypothesis: Race moderates the relationship between school racial climate and school connectedness, such that there will be a stronger positive relationship between school racial climate and school connectedness for students from minoritized racial backgrounds than for White students.

Figure 1

Conceptual Model



Methods

Archival data were used in these analyses. Data were collected by a non-profit that implements mental health programming in school settings; these data were collected as part of the organization's regular practices and needs assessment procedures.

Participants

Participants included 3,051 students ages 11-17 from five schools in the Midwest. Two of the five schools were all-girls private institutions, and schools served students from urban and suburban communities with a range of socio-economic levels. Within the sample, 65% (*n* = 1,982) of respondents identified as female, 33% (*n* = 996) identified as male, and 1% (*n* = 31) identified as "other". The sample was primarily White[1] (*n* = 2055) at 67.4%. See Tables 2 and 3 in the results for demographic details. Notably, 13% (*n* = 392) of respondents elected to write in their racial-ethnic identity; this was typically because their identity was not listed, they did not appear to understand the terminology used in the survey (e.g., wrote "White" instead of selecting "Caucasian"), or their identity encompassed multiple categories. The researcher coded the qualitative responses into the survey categories and added an additional Multiracial category.

Measures

The measures of school connectedness and school racial climate used in this study were derived from a larger school climate survey administered by a non-profit community partner. This survey was designed to balance the data integrity with the teacher and student burden of collecting data; the organization primarily developed this survey for needs-assessment procedures, rather than for more traditional research. The non-profit organization included

[1] Data collection materials used the terms "Caucasian" and "African American". The remainder of this paper will refer to these groups as "White" and "Black" to reflect more modern language (APA, 2022).

original items and adapted existing measures to develop the survey used in this study. In their needs assessment procedures, this organization typically interpreted results at the item level. The current study identifies groups of questions that map onto theorized constructs of interest within school climate: school connectedness and school racial climate. These question groups were identified by comparing items in this survey to theorized constructs in the literature, as well as to items and scales in validated school climate measures, such as the Community and Youth Collaborative Institute (CAYCI) School Experiences Surveys (Anderson-Butcher et al., 2013; Thapa et al., 2013; Wang et al., 2016).

School Connectedness

School connectedness (SC) refers to feelings of belongingness and connection at school. Four of the school climate items within the school climate survey were determined to measure SC (see Appendix A). These items ask students to rate statements such as "I feel connected to my peers." The survey uses a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5(Strongly Agree). Internal consistency was measured via Cronbach's alpha; results indicate an alpha of .79, which suggests adequate internal consistency.

School Racial Climate

School Racial Climate (SRC) broadly refers to the ways that racism and discrimination are perceived and experienced in a school environment. Four items were determined to assess SRC (see Appendix A). These included items about personal experiences of discrimination, witnessing of discrimination, perception of peer and teacher attitudes, and school structures to support diverse students. These items are rated on a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5(Strongly Agree). Internal consistency was measured via Cronbach's alpha; results indicate an alpha of .765, which suggests adequate internal consistency.

Demographics

Participants were asked to report sex, age, grade level, school, and race/ethnicity. Students self-reported sex, which was coded as 0 = Male, 1 = Female, and 2 = Other. Students also self-reported school; the school variable was dummy coded for each analysis. Participants reported their age at the time of survey completion. Participants self-reported grade levels ranging from 7-12. Given that age and grade are likely to be strongly correlated, grade was used instead of age in the following analyses. Including grade level rather than age allowed results to be understood in the context of the school environment, and how a student's progression through a school or school system may affect their experiences.

For race/ethnicity, 13% of respondents elected to use the open response option to qualitatively describe their identity. The researcher coded these qualitative responses into the racial categories used by the survey, as well as a Multiracial category. A number of responses (*n* = 277) were excluded due to providing responses that could not be categorized (e.g., "Jewish", "American"), or were nonsensical or otherwise unusable (e.g., "Smurf", "I don't know").

Procedures

Data were collected as part of regular activities of a non-profit organization in Southwest Ohio, which partners with schools to improve child and adolescent mental health programming. The organization administers an online survey assessing school climate to all students, teachers, and parents at each school. The purpose of this survey is to gather information for a needs

assessment and gap analysis of resources and services. The organization typically interprets the survey at the item level. The organization and the researchers developed a Data Use Agreement for the use of this archival data, and use of the data was approved by Miami University's Institutional Review Board.

The data used in this study include student report responses to the climate survey administered at each school during the 2020-2021 school year. Students completed the survey at different times during the school year, depending on when the school's needs assessment was conducted. Parents were given the opportunity for their child to opt out of completing the survey. Students were presented with the opportunity to assent and were informed that the survey was voluntary. Students completed the survey online using the online survey platform SurveyMonkey.

Results

Descriptive Statistics and Preliminary Analyses

Data were evaluated for adherence to assumptions for Ordinary Least Squares (OLS), including normality, skew, kurtosis, and outliers (Darlington & Hayes, 2017; Tabachnick & Fidell, 2019). The independent and dependent variables met assumptions for normality (see Table 1). All variables had distributions within normal ranges. Skew and kurtosis fell within expected ranges. Descriptive statistics were also gathered for the categorical variables race, sex, and school (see Table 2 and 3). Outliers were identified using Z-scores (z>3) and histograms. Forty-five univariate outliers were identified. These outliers appeared to fall relatively close to the normal distribution and were determined not to affect analysis results, so were included in the final dataset. Correlations among the continuous predictor and covariates were run to assess multicollinearity among continuous variables. SRC and grade were significantly correlated (r = .07, p <.001). The correlation was significant between school connectedness and SRC (r = .480, p <. 001).

Table 1

Descriptive Statistics for Continuous Variables

Variable	Mean	Standard Deviation	Range	Skewness	Kurtosis
SRC	3.85	.69	4	-0.608	0.354
School Connectedness	3.63	.80	4	-0.66	1.05
Grade	9.74	1.50	5	-0.20	-0.81

Table 2

Categorical Demographics

Variable	Categories	N	%
Race			
	African American	315	10.3
	Asian	93	3.0
	White	2,055	67.4
	Hispanic	105	3.4
	Native American	101	3.3
	Pacific Islander	13	0.4
	Multiracial	92	3.0
	Excluded	277	9.1
Sex			
	Male	996	32.6
	Female	1,976	64.8
	Other	47	1.5
	Missing	32	1.0
School			
	1	450	14.7
	2	1,362	44.6
	3	631	20.7
	4	309	10.1
	5	299	9.8

Table 3

Demographics by School

	School 1		School 2		School 3		School 4		School 5		Total	
	n	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*
Sex												
Male	213	47.4	647	47.5	0	0	136	44	0	0	996	32.6
Female	225	50	679	49.9	623	98.7	156	50.5	299	100	1976	64.8
Other	11	2.4	5	0.3	5	0.1	10	3	0	0	47	1.5
Race												
Black	7	1.6	36	2.6	55	8.7	215	69.6	2	0.1	315	10.3
Asian	5	1.1	56	4.1	13	2.1	1	0.3	18	6.0	93	3.0
White	372	82.7	925	70.0	491	77.8	24	7.8	243	81.2	2,055	67.4
Hispanic	10	2.2	61	4.5	13	2.1	13	4.2	8	2.7	105	3.4
Native	24	5.3	59	4.3	5	1	11	3.6	2	0.1	101	3.3
American												
Pacific	6	1.3	5	0.4	2	0.3	0	0	0	0	13	0.4
Islander												
Multi-racial	4	0.1	43	3.2	17	27.0	10	3.2	10	3.3	92	3.0
Exclude	22	4.8	177	13.0	35	9.7	16	5.2	16	5.4	277	9.1

Across all schools, 3,051 students completed the measures. Of those, 277 were excluded from analyses due to missing race data. Remaining missing values were evaluated using the missing values analysis function in SPSS. Only 65 values (0.04%) and 61 cases (2.20%) contained missing data. Due to the extremely low rate of missingness, and the large sample size, listwise deletion was used to handle missing data (Graham, 2009). 66 participants were excluded using the listwise deletion approach. In total, 343 cases were excluded, and data from 2,708 participants were included in the final analysis.

ANOVA Analyses

One-way ANOVA models were conducted to examine differences in both SRC and school connectedness based on race and school. The independent variables were race and school. ANOVA models were run across the dependent variables SRC and school climate.

For race, there was a statistically significant difference among racial groups for both SRC ($F(6, 2760) = 9.51$, $p < .001$) and for school connectedness ($F(6, 2759) = 12.334$, $p < .001$). To estimate effect size, η^2 was calculated. For SRC, $\eta^2 = .026$, which indicates a small effect size (Cohen 1992). For school connectedness, $\eta^2 = .015$, which indicates a small effect size (Cohen 1992). See Table B1 in Appendix B for ANOVA results.

A post-hoc Tukey HSD test was conducted to further examine these differences. For SRC, White students reported significantly higher SRC (M =3.90, SD = 0.65) than Black (M = 3.65, SD = .75, $p < .001$), Asian (M = 3.67, SD = 0.79, p = .017), Hispanic (M =3.63, SD = 0.85, p = .001), and multiracial (M = 3.62, SD = 0.72, p = .001) students. In addition, Native American students reported significantly higher SRC (M =3.99, SD = 0.65) than Black ($p <$ .001), Hispanic (p = .003), and multiracial (p = .003) students. For school connectedness, White students (M = 3.68, SD = 0.77) reported significantly higher school connectedness than Black (M = 3.37, SD = 0.83, $p <$.001) and multiracial (M = 3.37, SD = 0.72, p = .004) students; Native American students (M= 3.77, SD = 0.86) also reported significantly higher school connectedness than Black ($p < .001$) and multiracial students (p = .008). See Table B2 in Appendix B. The results of these ANOVA models indicate differences across racial groups in their perceptions of SRC and school connectedness, and that White students report more positive experiences than many peers of color.

A one-way ANOVA model was used to examine differences in SRC and school connectedness by school. There was a statistically significant difference among schools for both SRC ($F(4, 2766) = 45.38$, $p < .001$) and for school connectedness ($F(6, 2765) = 20.01$, $p < .001$). To estimate effect size, η^2 was calculated. For SRC, $\eta^2 = .028$, which indicates a small effect size (Cohen, 1992). For school connectedness, $\eta^2 = .062$, which indicates a medium effect size (Cohen, 1992). See Table B3 in Appendix B for results.

A post-hoc Tukey test was conducted to assess the nature of these differences. Broadly, there was variability in school racial climate across schools. SRC was higher at all of the predominantly White schools than at the majority-Black school, and at two of the four predominantly White schools, School 3 (M = 4.08, SD = 0.63, $p < .001$) and School 5 (M = 4.14, SD = 0.59, $p < .001$), SRC was significantly higher than the majority-Black school (M =3.70, SD = 0.65). School connectedness was significantly higher at each of the four predominantly White schools than at the majority-Black school. See Table B3 for results of the ANOVA and post-hoc Tukey test.

Moderation Analyses

A moderation analysis was conducted using the PROCESS macro in SPSS in order to assess how the strength of the relation between school racial climate and school connectedness changed based on race (Hayes, 2022) The SRC variable was mean centered to allow for meaningful interpretation of results. The race variable was dummy coded, with White as the reference group (White = 0), to allow for comparison of other racial groups to the White majority group. School, grade, and sex were included as covariates in the analysis. Sex and school were dummy coded, with male (Male = 0) and the majority-Black school as the reference groups. Within the PROCESS macro, the interaction terms for the SRC x Race interaction were calculated. An interaction term was calculated for each category of the variable (e.g., SRC x Black), except for the reference group (White students). The significance of the interaction was tested via a ΔR^2 test to assess if the interaction terms accounted for significant variance within the model. Significant interactions were probed for simple effects to understand the relation between SRC and school connectedness across different categories of race. Based on the results, additional analyses were conducted to understand the main effects, using multiple regression to examine the relationship between SRC and school connectedness without the interaction terms, and including school, grade, sex, and race as covariates.

The primary model included SRC and interaction terms as predictors; race as the moderator; grade, sex, and school as covariates; and school connectedness as the outcome. The R^2 change test was not significant ($\Delta R^2 = .001$, $F(6,2694) = .82$, $p = .553$). This indicates that the SRC x Race interaction was not significant, overall. None of the individual interaction terms were significant at the $p < .05$ level. This suggests that the relation between SRC and school connectedness was not significantly different between the White reference group and the other racial groups. Additionally, the coefficients were significant for the covariates for the Other sex category ($b = - -0.40$, $SE = 0.11$), indicating that students who reported their sex as Other reported significantly lower school connectedness than male students. The coefficients for all schools were significant, indicating differences in school connectedness across schools. Table 4 contains results from the moderation analysis.

Table 4

Moderation Analysis Results

	b	***SE***	***t***	***p***	**LLCI**	**ULCI**
Constant (b_0)	3.39	0.00	30.48	.000	3.17	3.60
SRC (X)	0.57	0.02	23.43	.000	0.52	0.61
Black (W1)	0.04	0.06	0.66	.509	-0.08	0.16
Asian (W2)	0.06	0.08	0.81	.417	-0.09	0.21
Hispanic (W3)	0.05	0.07	0.64	0.52	-0.09	0.19
Native American (W4)	0.03	0.07	0.41	.682	-0.12	0.18
Pacific Islander (W5)	-0.29	0.19	-1.52	.130	-0.66	0.09
Multiracial (W6)	-0.07	0.08	-0.92	.357	-0.23	0.08
SRC x Black	-0.11	0.06	-1.72	.085	-0.22	0.01
SRC x Asian	-0.01	0.09	-0.16	.877	-0.20	0.17
SRC x Hispanic	-0.09	0.08	-1.03	.303	-0.25	0.08
SRC x Native American	0.08	0.11	0.69	.490	-0.14	0.30
SRC x Pacific Islander	0.14	0.23	0.60	.547	-0.32	0.59
SRC x Multiracial	-0.04	0.10	-0.35	.723	-0.24	0.17
Grade	-0.01	0.01	-1.28	.202	-0.03	0.01
Female	-0.08	0.03	-2.55	.011	-0.15	-0.12
Sex (“Other”)	**-0.40**	**0.11**	**-3.56**	**.000**	**-0.62**	**-0.18**
School 1	**0.52**	**0.07**	**7.00**	**.000**	**0.37**	**0.66**
School 2	**0.43**	**0.07**	**6.49**	**.000**	**0.30**	**0.57**
School 3	**0.42**	**0.07**	**5.93**	**.000**	**0.28**	**0.56**
School 5	**0.49**	**0.08**	**6.14**	**.000**	**0.33**	**0.64**

Note. Bolding indicates significance at the $p < .05$ level.

Table 5

Hierarchical Regression of SRC on School Connectedness

	Unstandardized Coefficients		Standardized Coefficients			Correlations		
Model	***b***	***SE***	***Beta***	***t***	***p***	**Zero-order**	**Partial**	**Part**
1(Constant)	1.46	0.08		19.14	<.001			
mean_SRC	0.56	0.02	0.49	28.90	<.001	.49	.49	.49
2(Constant)	1.34	0.13		10.31	<.001			
mean_SRC	0.55	0.02	0.47	27.29	<.001	.49	.47	.45
School 1	0.48	0.06	0.22	8.27	<.001	.01	.16	.14
School 2	0.40	0.05	0.25	8.12	<.001	-.02	.15	.13
School 3	0.39	0.06	0.21	6.78	<.001	.07	.13	.11
School 5	0.46	0.06	0.18	7.08	<.001	.09	.14	.12
Grade	-0.02	0.01	-0.03	-1.56	.119	-.02	-.03	-.03
Female	-0.08	0.03	-0.05	-2.48	.013	-.01	-.05	-.04
Sex (Other)	-0.41	0.11	-0.06	-3.65	<.001	-.10	-.07	-.06
3(Constant)	1.26	0.15		8.69	<.001			
mean_SRC	0.55	0.02	0.48	27.01	<.001	.49	.46	.45
School 1	0.53	0.07	0.24	7.13	<.001	.01	.14	.12
School 2	0.45	0.07	0.28	6.69	<.001	-.02	.13	.11
School 3	0.44	0.07	0.23	6.16	<.001	.07	.12	.10
School 5	0.50	0.08	0.19	6.34	<.001	.09	.12	.11
Grade	-0.01	0.01	-0.03	-1.39	.164	-.02	-.03	-.02
Sex (Female)	-0.08	0.03	-0.05	-2.49	.013	-.01	-.05	-.04
Sex (Other)	-0.41	0.11	-0.06	-3.64	<.001	-.10	-.07	-.06
Black	0.07	0.06	0.03	1.08	.283	-.14	.02	.02
Asian	0.06	0.07	0.01	0.80	.425	-.01	.02	.01
Hispanic	0.06	0.07	0.02	0.87	.385	-.02	.02	.01
Native American	0.05	0.07	0.01	0.64	.522	.04	.01	.01
Pacific Islander	-0.28	0.19	-0.02	-1.47	.141	-.02	-.03	-.02
Multiracial	-0.07	0.08	-0.02	-0.91	.366	-.06	-.02	-.02

a. Dependent Variable: mean_SchConn

Because the interaction was not significant, the main effects were examined. A multiple regression analysis was run to calculate the main effects of the relation between SRC and school connectedness with covariates of grade, sex, race, and school. A hierarchical regression was run, with SRC added in the first step, grade, sex, and school dummy codes added in the second step,

and race dummy codes added in the third step. This process allowed for evaluation of the effect size of race within the model. With all components in the model, SRC predicted school connectedness over and above the effects of sex, grade, race, and school (b = .55, se = .02, p <.001) (see Table 5). The effect size of SRC was calculated using the squared semipartial correlation; sr^2 = .20, which is considered a medium effect size (Cohen, 1988). Adding the race variables in the third step resulted in a very weak effect size (ΔR^2 = .002, ΔF (6, 2463) = 1.88, p = .081), which suggests adding race does not account for significant variance in the model (Cohen, 1988).

Further analyses were conducted to explore if the relation between SRC and school connectedness might differ across schools with different racial composition. Table 3 presents the racial composition of each school. Schools 1,2,3, and 5 served a majority-White population, while School 4 served a majority-Black student population.

In order to assess how school composition might influence the results, additional moderation analyses were conducted, first with only data from the school serving a majority-Black population, then with only data from the 4 schools serving a majority-White population. For the predominantly Black school, only one Asian student was present in the sample and was excluded due to low category size. Other missing data were handled using listwise deletion. A total of 236 participants from the predominantly Black school were included. The interaction was not significant (ΔR^2 = .02, F(4, 224) = 1.75, p =.139), and none of the interaction terms for the individual comparisons were significant. See Table 6 for results. This suggests that for the sample of students from the predominantly Black school, race did not moderate the relationship between SRC and SC. However, given the low size of the White student group (n = 24), there may not have been sufficient statistical power within the sample of the majority-Black school to meaningfully address this research question.

Table 6

Moderation Results from Majority-Black School

	b	***SE***	***t***	***p***	**LLCI**	**ULCI**
Constant	3.26	0.33	9.85	.000	2.61	3.92
SRC (X)	0.69	0.28	2.47	.014	0.14	1.24
Black (W1)	-0.06	0.17	-0.34	.737	-0.39	0.28
Hispanic (W2)	0.13	0.28	0.47	.641	-0.42	0.68
Native American (W3)	0.40	0.29	1.39	.167	-0.17	0.97
Multiracial (W4)	0.17	0.25	0.66	.508	-0.33	0.67
SRC x Black	-0.13	0.29	-0.44	.66	-0.70	0.44
SRC x Hispanic	0.46	0.47	0.99	.323	-0.46	1.38
SRC x Native American	1.13	0.62	1.84	.068	-0.08	2.34
SRC x Multiracial	-0.09	0.42	-0.21	.834	-0.92	0.74
Grade	0.02	0.03	0.65	.517	-0.45	-0.11
Sex (female)	**-0.30**	**0.10**	**-3.10**	**.002**	**-0.49**	**-0.11**
Sex (other)	-0.25	0.28	-0.90	.369	-0.79	0.29

Note: Bolding indicates significance at the p = .05 level.

Because the interaction was not significant, a multiple regression analysis was run to examine the main effects of the relationship between SRC and school connectedness with covariates of grade, sex, and race. A hierarchical regression was run, with SRC added in the first step, grade, and sex dummy codes added in the second step, and race dummy codes added in the third step. This process allowed for evaluation of the effect size of race within the model. Overall, SRC predicted school connectedness over and above the effects of grade, sex and race (b = 0.61, se = .08, p < .001). The effect size of SRC was calculated using the squared semipartial correlation; sr^2 = .20, which is considered a medium effect size (Cohen, 1998). The race variables added in the third level of the hierarchical regression did not account for significant variance in the model, and that the model was not significantly different than the previous iteration (ΔR^2 =.01, ΔF (4, 228) = .765, p = .549). Full results of this regression can be found in Table 7.

Table 7

Hierarchical Regression from Majority-Black school

	Unstandardized Coefficients		**Standardized Coefficients**			**Correlations**		
Model	***b***	***SE***	***Beta***	***t***	***p***	**Zero-order**	**Partial**	**Part**
1(Constant)	0.73	0.28		2.58	.010			
mean_SRC	0.6	0.08	0.50	8.73	<.001	.50	.50	.50
2(Constant)	1.02	0.42		2.43	.016			
mean_SRC	0.13	0.08	0.46	8.12	<.001	.50	.47	.45
Grade	0.01	0.03	0.01	0.24	.808	.01	.02	.01
Sex (Female)	-0.31	0.10	-0.19	-3.28	.001	-.24	-.21	-.18
Sex (Other)	-0.36	0.26	-0.08	-1.40	.164	-.09	-.09	-.08
3(Constant)	0.99	0.45		2.19	.030			
mean_SRC	0.61	0.08	0.46	8.05	<.001	.50	.47	.45
Grade	0.01	0.03	0.02	0.42	.670	.01	.03	.02
Sex (Female)	-0.30	0.10	-0.18	-3.15	.002	-.24	-.20	-.18
Sex (Other)	-0.38	0.26	-0.09	-1.46	.146	-.09	-.10	-.08
Black	-0.06	0.17	-0.03	-0.37	.715	-.11	-.02	-.02
Hispanic	0.03	0.28	0.01	0.11	.911	.01	.01	.01
Native American	0.27	0.28	0.06	0.94	.347	.09	.06	.05
Multiracial	0.15	0.25	0.05	0.63	.529	.03	.04	.04

a. Dependent Variable: mean_SchConn

For the sample from the predominantly White schools, 2,477 students were included. The overall interaction was not significant (ΔR^2 =.003, $F(6, 2457) = 1.41$, p=.260). The interaction term for Black students (b = -0.20, p =.013) was significant, suggesting that the relation between SRC and school connectedness was significantly different between Black and White groups. Table 8 contains the results of this moderation.

To understand how the relation between SRC and school connectedness differed across the Black and White groups at these schools, the interaction was probed for simple effects. Using the PROCESS macro, the slopes for the relation between SRC and school connectedness were calculated for Black and White groups. The simple slopes were significant for both White students (b = 0.57, SE =0 .02, p < .001), and for Black students (b = 0.37, SE = 0.08, p < .001). For both White and Black students, there was a significant positive relation between SRC and school connectedness, and this relation was slightly stronger for White students. Table 8 contains the results of this moderation.

Table 8

Moderation Results with Predominantly-White Schools

	b	***SE***	***t***	***p***	**LLCI**	**ULCI**
Constant	3.92	0.11	34.28	000	3.70	4.14
SRC (X)	0.57	0.02	23.47	.000	0.52	0.62
Black (W1)	0.11	0.08	1.47	.143	-0.04	0.26
Asian (W2)	0.05	0.08	0.72	.47	-0.09	0.20
Hispanic (W3)	0.04	0.07	0.52	.601	-.011	0.19
Native American (W4)	-0.00	0.08	-0.04	.965	-0.16	0.15
Pacific Islander (W5)	-0.28	0.19	-1.50	.135	-0.66	0.09
Multiracial (W6)	-0.13	0.08	-1.49	.137	-0.29	0.04
SRC x Black	**-0.20**	**0.08**	**-2.48**	**.013**	**-0.36**	**-0.04**
SRC x Asian	-0.01	0.09	-0.12	.902	-0.19	0.17
SRC x Hispanic	-0.11	0.08	-1.35	.177	-0.28	0.05
SRC x Native American	0.05	0.12	0.45	.651	-0.17	0.28
SRC x Pacific Islander	0.13	0.23	0.57	.569	-0.32	0.58
SRC x Multiracial	-0.05	0.11	-0.50	.617	-0.27	0.16
Grade	-0.02	0.01	-1.51	.131	-0.04	0.00
Sex (Female)	-0.05	0.03	-1.42	.155	-0.17	0.02
Sex (Other)	-0.42	0.12	-3.41	**.001**	-0.66	-0.18
School 2	-0.09	0.04	-2.22	**.027**	-0.17	-0.01
School 3	-0.12	0.05	-2.53	**.011**	-0.22	-0.03
School 5	-0.05	0.06	-0.90	.368	-0.16	0.06

Bolding indicates significance at the p <.05 level.

A multiple regression analysis was run to test the main effects of the relation between SRC and school connectedness with covariates of grade, sex and race at the predominantly White schools. A hierarchical regression was run, with SRC added in the first step, grade, and sex dummy codes added in the second step, and race dummy codes added in the third step. This process allowed for evaluation of the effect size of race within the model. Overall, SRC significantly predicted school connectedness over and above the effects of grade, sex, race, and schools ($b = 0.55$, $p < .001$). See Table 9 for regression results. The effect size of SRC was calculated using the squared semipartial correlation; $sr^2 = .21$, which is considered a medium effect size (Cohen, 1988). The race variables added in the third level of the regression did not account for significant variance in the model, and did not result in a model that was significantly different than the previous iteration ($\Delta R^2 = .003$, ΔF (6, 2463) = 1.88, $p = .081$). Full results of this regression can be found in Table 9.

Table 9

Hierarchical Regression from Predominantly-White schools

Coefficients[a]								
	Unstandardized Coefficients		Standardized Coefficients			Correlations		
Model	*B*	*Std. Error*	*Beta*	*t*	*p*	Zero-order	Partial	Part
1 (Constant)	1.56	0.08		20.01	<.001			
mean_SRC	0.54	0.02	0.48	27.37	<.001	.48	.48	.48
2(Constant)	1.86	0.15		12.75	<.001			
mean_SRC	0.54	0.02	0.48	26.00	<.001	.48	.46	.46
School 2_K	-0.08	0.04	-0.05	-2.02	.044	-.08	-.04	-.04
School 3_M	-0.10	0.05	-0.06	-2.11	.035	.04	-.04	-.04
School 5_U	-0.04	0.06	-0.02	-0.72	.472	.08	-.01	-.01
Grade	-0.02	0.01	-0.03	-1.76	.078	-.08	-.04	-.03
Sex (Female)	-0.05	0.03	-0.03	-1.36	.174	.00	-.03	-.02
Sex (Other)	-0.43	0.12	-0.06	-3.47	<.001	-.09	-.07	-.06
3 (Constant)	1.81	0.15		12.21	<.001			
mean_SRC	0.55	0.02	0.49	25.86	<.001	.48	.46	.45
School 2_K	-0.08	0.04	-0.05	-2.11	.035	-.08	-.04	-.04
School 3_M	-0.12	0.05	-0.06	-2.41	.016	.04	-.05	-.04
School 5_U	-0.04	0.06	-0.02	-0.78	.438	.08	-.02	-.01
Grade	-0.02	0.01	-0.03	-1.57	.116	-.08	-.03	-.03
Sex (Female)	-0.05	0.03	-0.03	-1.37	.169	.00	-.03	-.02
Sex (Other)	-0.43	0.12	-0.06	-3.45	<.001	-.09	-.07	-.06
Black	0.17	0.07	0.04	2.35	.019	-.01	.05	.04
Asian	0.05	0.07	0.01	0.68	.497	-.02	.01	.01
Hispanic	0.06	0.07	0.01	0.80	.422	-.02	.02	.01
Native American	0.01	0.08	0.00	0.13	.893	.03	.00	.00
Pacific Islander	-0.28	0.19	-0.03	-1.45	.146	-.02	-.03	-.03
Multiracial	-0.12	0.08	-0.03	-1.48	.139	-.06	-.03	-.03

a. Dependent Variable: mean_SchConn

In summary, the results of one-way ANOVA models demonstrated differences in perceptions of SRC and school connectedness across racial groups, as well as variability across schools. For students from all schools, SRC positively predicted school connectedness over and above race, school, sex, and grade. Across the sample from all schools, there was no observed interaction. However, at the predominantly White schools, the observed interaction indicated a stronger relationship between SRC and school connectedness for White students compared to their Black peers. This interaction was not observed with the sample from the predominantly Black school. Differences in school characteristics may explain some of these results, and may contribute to experiences of SRC and school connectedness.

Discussion

The primary purpose of this study was to examine the relationship among school racial climate, school connectedness, and race in an adolescent sample. Prior research has shown that school racial climate and school connectedness each independently predict outcomes including academic achievement, school engagement, and mental health outcomes (Bond et al., 2007; Griffin et al., 2017; Mattison & Aber, 2007). Discrimination, which is considered an element of school racial climate, has been found to predict school connectedness and engagement (Fernandez et al., 2019; Griffin et al. 2020). In addition, students of different races report different perceptions of school climate, school racial climate, and school connectedness, with BIPOC students often reporting worse perceptions than White peers (Anyon, 2016; Watkins & Aber, 2009). Based on previous research, the aim of this study was to examine if school racial climate predicted school connectedness in an adolescent sample, and if that relationship was moderated by race. The researcher hypothesized that there would be a positive relationship between school racial climate and school connectedness, and that this relationship would be significantly stronger for students of color.

White students reported more positive perceptions of school racial climate and school connectedness than students of color. The results of a one-way ANOVA model examining group differences by race in school racial climate and school connectedness scores found significant differences between the White group and students of color, with higher mean scores for the White group than for Black and multiracial groups. This finding is consistent with previous research suggesting that White students tend to report more positive experiences of school climate, specifically school racial climate and school connectedness, than BIPOC peers, particularly Black peers (Anyon, 2016; Konold et al., 2017; Voight et al., 2015; Watkins & Aber, 2009). Perceptions of school racial climate are often studied only with racial and ethnic minority students; this study provides data about White students' experiences of school racial climate, and provides additional evidence that students of color, particularly Black students, experience less positive school racial climate than White students.

In addition, the results supported the hypothesis that school racial climate predicts school connectedness over and above other factors including sex, grade, and school. Overall, school racial climate positively predicted school connectedness; as school racial climate increased, so did school connectedness. Previous literature has not directly assessed this connection, but has found that elements of school racial climate, such as discrimination, predict school connectedness (Fernandez et al., 2019) These results add to the literature regarding how elements of school climate, particularly those related to identity, fairness, and discrimination, relate to student connectedness and belongingness. This finding also suggests that students from all racial and ethnic backgrounds may benefit from positive experiences of school racial climate, since this positive relationship was observed for students from all racial groups.

Across students from all schools, the hypothesized interaction was not supported; race did not moderate the relation between school racial climate and school connectedness. The strength of the relation between school racial climate and school connectedness did not significantly differ across racial groups for the sample as a whole. Because of the dearth of research in this area, it is difficult to explain why the initial hypothesis was not supported. It appears that while race does relate to experiences of school racial climate and school connectedness together, the strength of that relationship does not differ significantly by racial

group. It is possible that the salience of racial identity might not be significantly different across racial groups, or may not contribute to students' experiences of SRC and school connectedness in the ways that were expected. Future qualitative research may be useful to understand the nature of these results, and how adolescents perceive that their racial identity affects their experiences of school racial climate, school connectedness, and the relation across these.

Follow-up analyses revealed differences in the relation between school racial climate and school connectedness across schools. At the predominantly White schools, the interaction was significant for Black and White students. At these schools, at the same level of school racial climate, White students experienced higher school connectedness than Black peers. However, no significant interaction by race was found at the majority-Black school; at this school, the relation between school racial climate and school connectedness did not significantly differ by race.

These results were unexpected in two ways: differences were found across schools based on composition, and the direction of the significant interaction was different than hypothesized. First, there were meaningful differences across schools based on composition, with a significant interaction in the predominantly White school sample; at these schools the relation between school racial climate and school connectedness was significantly stronger than for Black students. No significant interaction was found at the majority-Black school. Some of these results may reflect issues of statistical power. At the predominantly White schools, there were only 100 Black students in total, comprising 3.6% of the student population at those schools. At the majority-Black school, there were only 24 White students, comprising 7% of the population. Because racial diversity within each school was low, it may be difficult to make claims about students who were minorities within their school.

These results may also suggest that school membership, and factors specific to each school, likely influence students' experience of SRC and school connectedness. Results of the one-way ANOVA model examining differences by school supported this assertion. Results showed significant differences in SRC and school connectedness across schools, with both variables generally higher at the predominantly White schools. A variety of school and community characteristics have been found to predict students' experiences in school, including their experience of school climate, academic achievement, and college readiness (Chan et al., 2023; Thrupp et al., 2002; Waters et al., 2010). The schools in this sample are distinct in a number of ways, including racial composition of student body, public vs private school, and neighborhood. In addition, two schools were private, religious all-girls institutions. It is difficult to say which of these factors may have contributed to the differences across schools, but it is likely that distinct school characteristics contribute to students' experiences of school climate, racial climate, and school connectedness.

Second, the results failed to support the hypothesis that the relation between school racial climate and SRC would be stronger for students of color. Instead, they indicated that the relation between school racial climate and school connectedness is stronger for White students at predominantly White schools than for Black students at these schools. While previous research has not directly assessed the nature of this relationship, some theories suggest that experiences related to racism and discrimination would be more meaningful for students of color than for White students (Fernandez et al., 2019); the results of this study do not appear to support this previous research. Several possible reasons could explain this surprising finding. Much of the prior research on school racial climate has been conducted within individual schools, rather than across schools, and primarily includes students of color as participants; the effect of school racial composition has not been frequently studied. The current results may reflect the unique

environments of each of the five schools included in the study, or may point to meaningful differences in the experiences of Black and White students at predominantly White schools (for example, Black students may experience more racial bias at these schools, and their racial identity may be more salient to them). It is clear that Black and White students have significantly different experiences related to school racial climate and school connectedness at predominantly White schools. Exploring students' experiences at schools with different types of racial diversity or composition could provide additional insight into why these differences were found; perhaps more or less diverse schools have different levels of inclusivity, or may host specific programming related to diversity. Qualitative interviews with Black and White adolescents could provide additional information about students' experiences with school racial climate and school connectedness, and how they perceive their own race affecting those experiences. This could additionally help to clarify students' experiences not only as majority or minority group members in their country, but their group member status within their school (e.g., as a Black student at a predominantly White school, as a White student at a majority-Black school). At present, because the relationship between school racial climate and school connectedness in the context of race has not been explicitly studied before, it is challenging to explain why this moderation hypothesis was not supported by the current results.

Some methodological and contextual factors merit consideration in the interpretation of these results. About 10% of the sample was excluded from the analysis due to not providing a meaningful response when asked about race/ethnicity. Within the predominantly White schools, race data was missing from a range of 4.9%-12.5% of cases; at the predominantly Black school, race was missing or excluded from 8.7% of cases. In this sample, documented reasons for missing race data included deliberately providing nonsensical responses, or not understanding the question. Other students may have chosen not to report race data due to concerns about being identified or discriminated against based on their responses; if these students had reported their data, this may have affected the results by including participants with greater concerns about racial climate. In addition, these data were collected during the 2020-2021 school year, which was a time of great racial unrest in the United States, as well as a time when many White people gained increasing awareness of racial issues (Sawchuk, 2021; Zaveri, 2020). It could be possible that White students were particularly attentive to issues of race and racial climate during this time, and reported stronger beliefs and experiences as a result of this increased attention. However, this hypothesis is highly speculative.

Limitations

Important limitations to this study should be noted. The school climate measures used in data collection have undergone minimal validation. While the scales had reasonable face validity and strong internal consistency, it is possible that they may not be fully accurately measuring the constructs. Further research to address the psychometric properties of this measure could inform future use of this tool by researchers and the community partner. Replicating this study using validated measures to assess this research question may help to address these limitations in future research. In addition, the analytic approach did not use a multilevel-modeling strategy, and as a result was not able to fully account for the nested structure of the data (Heck et al., 2014). Multilevel modeling would assess the extent to which variance can be attributed to school-level and individual factors, and how students within schools may have similar or different experiences of SRC and school connectedness. Demographic data, which were key variables in this study, were not fully inclusive; for example, data on race were not entirely comprehensive,

and may not have accurately reflected the identities of the study participants (American Psychological Association, 2022). Data were collected concurrently rather than sequentially; because of this approach, causal claims in this study are limited.

Future Directions

Future research on the relationship between school racial climate and school connectedness, and the role of race, should assess the role of school characteristics, including school racial composition and geographic location. Considering these types of school characteristics, as well as collecting data from racially diverse schools, could provide more insight as to how school location, composition, and existing programming may affect students' experiences of school racial climate and school connectedness. Intentionally selecting schools with high or low diversity could allow for further exploration of the role of school racial composition and experiences as a majority or minority student within a school on students' experience of school climate. Qualitative or mixed-methods approaches to understanding students' experiences of these phenomena may inform the development of future studies and measures of school racial climate, school connectedness, and unique experiences of youth from different racial backgrounds, as well as examining experiences of being a minority or majority group member within a school setting.

The finding that school racial climate predicts school connectedness across students of all races has important implications for school programming and policies, as well as future research directions. Given that school connectedness predicts a variety of important academic, psychological, and behavioral outcomes for adolescents, targeting elements of school racial climate in interventions could in turn improve school connectedness and its associated outcomes for all students. This suggests that universal interventions related to school racial climate, including programming related to diversity and commitments to supporting students of color, may have long-term benefits for all students in a given school. Moreover, this provides evidence that specific experiences and programming related to race in school are not detrimental to students, and in fact appear to be beneficial for students of all racial backgrounds. School administrators and policymakers may wish to consider the positive effects of school racial climate and understanding issues of race, and leverage that to develop programming and policies around diversity, equity, and inclusion that will ultimately benefit all of their students.

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Appendix A

School Climate Scales and Items

Scale	Items
School Connectedness	
	I feel connected to my school.
	I like going to school.
	I feel connected to my peers.
	I get along with students at my school.
School Racial Climate Items	
	Students at my school treat me with respect regarding my race/ethnicity.
	Teachers at my school treat me with respect regarding my race/ethnicity.
	My school provides adequate programs and services to promote the success of students of color.
	My school is committed to improving relations between people of different races/ethnic origins.

Appendix B

ANOVA Result Tables

Table B1

Means, Standard Deviations, and One-Way Analyses of Variance in School Connectedness and SRC by Race

	White (n = 2050)		**Black (n=313)**		**Asian American (n = 93)**		**Hispanic (n=105)**		**Native American (n=100)**		**Pacific Islander (n=13)**		**Multiracial (n=92)**		**F (6, 2766)**	**p**	**η^2**
	M	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**			
School Connectedness	3.68	0.77	3.37	0.83	3.60	0.77	3.58	0.79	3.77	0.86	3.41	1.03	3.37	0.72	9.51	<.001	.015
SRC	3.90	0.65	3.65	0.75	3.67	.079	3.63	0.85	3.99	0.65	3.90	0.86	3.62	0.72	12.33	<.001	.026

Table B2

Post-Hoc Tukey's HSD Test Results for ANOVA by Race

	Post-Hoc Tukey's Test
School Connectedness	White, Native American > Black, Multiracial
SRC	White > Black, Asian, Hispanic, Multiracial; Native American > Black, Hispanic, Multiracial

TABLE B3

Means, Standard Deviations, One-Way Analyses of Variance in School Connectedness and SRC by Race, and post-hoc Tukey HSD Test Results

	School 1 (n = 427)		School 2 (n = 1181)		School 3 (n = 594)		School 4 (n = 299)		School 5 (n = 283)		p	F (4, 2762)	η^2	Post-Hoc Tukey results
	M	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**				
School Connectedness	3.64	0.80	3.60	0.78	3.72	0.75	3.29	0.83	3.83	0.74	<.001	20.02	.028	School 1, School 2, School 3, School 5 > School 4
SRC	3.71	0.71	3.75	0.69	4.08	0.63	3.70	0.65	4.14	0.59	<.001	45.38	.062	School 3, School 5 > School 4