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An exploration of the relationship between school poverty rates and students' perceptions of empowerment: student-staff relationships, equitable roles, & classroom sense of community

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ABSTRACT
This study explores the association between school-level poverty rates and young peoples' perceptions of student empowerment, drawing on survey and administrative data from a large urban district. Participants included 29,318 diverse youth in grades 6-12 from 211 schools. We used multilevel linear regression models to estimate the relationships between school poverty rates and students' reports of positive relationships, equitable roles, and a sense of community. Results indicated that youth attending schools with higher poverty rates were less likely to report empowering school climates than their peers from schools serving more affluent students. We also found a strong correlation between school-level poverty rates and student racial composition. Findings suggest that young people who attend racially segregated schools with concentrated poverty would likely benefit from greater opportunities for relationship building, power-sharing, and community building. Such efforts may also strengthen other domains of youth development, including academic achievement and positive identity.

Introduction

Schools can make profound contributions to youth development by enabling or constraining access to high quality educational experiences (Shinn & Yoshikawa, 2008). Yet too often schools reproduce patterns of inequity rather than mitigate them, especially along the confounding lines of race and class (Collins, 2009). Youth who attend schools characterized by concentrated poverty and racial segregation tend to experience significant opportunity gaps, with consequences that extend across the life course (Carter & Welner, 2013; Ladson-Billings, 2006, 2007). Indeed, one of the most consistent predictors of school climate and academic achievement is the proportion of students who are eligible for free and reduced price meals, a proxy for poverty (Berkowitz et al., 2017; Clotfelter et al., 2006; Voight et al., 2015). School climate appears to both mediate and moderate the relationship between school poverty rates and student outcomes, suggesting it is an especially important target in efforts to reduce disparities (Berkowitz et al., 2017). However, less research has considered the association between school poverty rates and malleable components of school climate, such as opportunities for student empowerment.

During the adolescent period many youth experience a developmental need for agency and autonomy which can include a disconnect from positive institutions such as schools (Eccles et al., 1993; Meece et al., 2006). This can be exacerbated for low-income youth and students of color who are more likely to experience discrimination from school staff and disengagement from school (Anyon et al., 2016; Travis & Leech, 2014). Given the dominance of deficit discourses about racially and economically marginalized students, and the schools they attend, opportunities for choice, voice and agency may be critical levers for improving developmental outcomes in these environments (Valencia, 1997, 2010). The current study considers the relationship between school poverty rates and students' perceptions of an empowering school climate, as conceptualized by Kirk et al. (2017) to encompass student-staff relationships, sense of community, and equitable roles.

School poverty rates, racial segregation, and opportunity gaps

Of the approximately fifty million students in the United States, roughly one-third attend "high-poverty" public schools, where a majority of the student body is eligible for free or reduced price meals (FRPM) (U.S. Department of Education, 2012). To qualify for FRPM, households may earn up to 1.3 to 1.85 times the federal poverty guideline (Federal Register, 2020). In 2020, the annual income of a household of four could be no more than $34,060 for free meals and no more than $48,470 for reduced price meals (Federal Register, 2020). The number of high-poverty schools is growing, from 12% in 2000 to 17% in 2010 (National Education Association, 2010).

High-poverty schools are often characterized by other forms of concentrated disadvantage, in particular, racial segregation (Fahle et al., 2020). School poverty rates are strongly correlated with student racial composition (Fahle et al., 2020). Nationally, students who identify as Black or Latinx make up a combined 41% of elementary and secondary students, but they comprise almost 75% of the students enrolled in high-poverty schools (U.S. Department of Education, 2014). This intersection of race and class is compounded and creates unequal school contexts. For example, high-poverty districts that serve predominantly students of color receive $1,600 less per student than the national average, whereas high-poverty districts that serve predominantly White students only receive $130 less per student (EdBuild, 2019). Overall, school districts with the highest rates of poverty receive about $1,000 less per student than those in the lowest poverty areas (Camera, 2018). Funding disparities are likely even worse than this data suggests, as it does not account for parent philanthropy, fundraising, or personal donations.

The consequences of these patterns are significant and contribute to substantial opportunity gaps, defined as differential access to quality educational experiences based on race and class (Carter & Welner, 2013; Ladson-Billings, 2006, 2007; Milner, 2010, 2012). Rather than highlighting disparities in young people's performance on standardized tests, opportunity gaps "draw attention to the conditions and obstacles" students face in these settings (Ladson-Billings, 2007; Mooney, 2018, p. 7). This focus stands in contrast to the concept of achievement gaps, which centers student outcomes and often reproduces negative discourses about low-income youth, families, and communities of color (Ladson-Billings, 2007; Milner, 2010; Valencia, 1997, 2010).

Racially segregated schools with high poverty rates tend to operate in deteriorating buildings with obsolete or poor-quality textbooks, outdated technology, weak internet connectivity, old software programs, and inadequate science equipment, all of which can negatively impact student engagement and achievement (Alexander & Lewis, 2014; Carter & Welner, 2013; Hudley, 2013). Students at these schools often have less access to world-language courses, science fairs, debate competitions, museums, libraries, and theatrical performances. They are more likely to be exposed to punitive security measures like police officers, drug-sniffing dogs and metal detectors (Kupchik & Ward, 2014), but are less likely to have opportunities to resolve conflict through restorative approaches (Payne & Welch, 2018). In general, schools that primarily serve racially and economically marginalized students tend to have negative school climates that undermine academic achievement (Berkowitz et al., 2017; Hudley, 2013).

Arguably, the most prominent challenge facing students in high-poverty and racially segregated schools is access to high quality teachers (Sass et al., 2012). These schools often employ early career teachers yet offer limited opportunities for mentorship and growth (Bryant, 2015). Teachers in schools with a greater proportion of low-income youth and students of color report negative work environments, lack of support from administration or fellow educators, and little control over what they teach or the materials they are able to use (Garcia & Weiss, 2019). Mathematics and science classes in these high schools are two to three times more likely to be taught by a teacher who has credentials in a different subject (Hudley, 2013). Teachers who are employed by such schools are paid less and often hold additional jobs, unrelated to the field of education, to supplement their income (Garcia & Weiss, 2019). The combination of low wages and poor working conditions lead to teacher burnout, higher turnover rates and attrition in schools with greater proportions of racially and economically marginalized students (Garcia & Weiss, 2019; Simon & Johnson, 2015).

In short, the education students receive in these schools is "demonstrably insufficient to make them competitive with their more advantaged … peers" (Hudley, 2013, p. 1). As a result, students from such schools tend to have lower scores on reading, mathematics, music, and art assessments when compared to youth who attend low-poverty and predominantly White schools (NCES, 2010). These opportunity gaps in primary and secondary education undoubtedly lead

to disparities in college and career preparedness, with long-term consequences for young people's developmental trajectories (Engle et al., 2006; Ladson-Billings, 2006, 2007; Milner, 2010, 2012; Swanson, 2008). According to the National Center for Education Statistics (2010), roughly 32% of students who attend high-poverty schools do not graduate, compared to only 9% of students in low-poverty schools. Additionally, only 28% of students in high-poverty schools go on to attend a four-year college, compared to 52% of students in low-poverty schools (National Education Association, 2010). Attending a high poverty school, often one that is also racially segregated, can hinder young people's development more broadly, with negative consequences for students' careers, health, and mortality (National Research Council, 2013; Sasson, 2016).

Theoretical frameworks: Positive youth development and student empowerment

This study draws on Positive Youth Development and Student Empowerment frameworks to consider malleable factors that may mitigate the effect of school poverty rates on student outcomes (Anyon & Jenson, 2014; Berkowitz et al., 2017; Kirk et al., 2017). Positive Youth Development is a theory for understanding child and adolescent well-being that focuses on the assets and resources young people need to thrive, rather than the risks and deficits that predict problem behavior (Anyon & Jenson, 2014; Pittman et al., 2003). One model of Positive Youth Development is the 5 C's, which emphasizes young people's need for competence, confidence, connectedness, caring, and character to experience optimal outcomes (Lerner et al., 2011; Dechants et al., 2018). Children and adolescents develop the 5 C's through reciprocal relationships with people and institutions across multiple contexts, but schools are key settings for cultivating these types of assets, strengths, and protective factors (Anyon & Jenson, 2014; Lerner et al., 2011).

After the initial wave of Positive Youth Development literature, scholars argued for a greater emphasis on youth engagement, agency, and empowerment, in part to account for the unique experiences of young people with marginalized identities (Ginwright & James, 2002; Pittman et al., 2003). Some researchers have extended the 5 C's model of Positive Youth Development to foreground empowerment by adding the dimensions of community and citizenship (Travis & Leech, 2014). Broadly speaking, the concept of empowerment, "suggests a belief in the power of

people to both be the masters of their own fate and involved in the life of their several communities" (Rappaport, 1987, p. 142). In the school setting, empowerment is "a process by which students gain the power needed to meet their individual needs (e.g. learning, social relationships, diploma) and work with others (e.g. students, teachers, administrators) to achieve collective goals (e.g. a safe and positive school environment)" (Kirk et al., 2017).

To operationalize student empowerment further, Kirk et al. (2017) draw on the K-12 school climate literature to outline three overlapping and interconnected dimensions of student empowerment: positive relationships with school adults, equitable roles, and a sense of community. Positive relationships between youth and school staff are characterized by feelings of trust and care. Students' perceptions of their relationships with adults at school are consistently associated with key developmental indicators, including motivation, prosocial behavior, life satisfaction, school engagement, and socioemotional safety (Cohen et al., 2009; Crosnoe et al., 2004; Murray & Zvoch, 2011). Equitable roles refer to mutually-beneficial and respectful dynamics between school adults and students, along with youth involvement in and influence over decisions that impact their education. Young people's perceptions of more equitable roles at school may strengthen their academic engagement and school bonding (Anyon et al., 2018; Mitra & Serriere, 2012). When students feel greater autonomy in their education, they are also more likely to feel an internal locus of control, motivation to learn, and sense of efficacy (Mitra & Serriere, 2012; Patall et al., 2008). Finally, students' sense of community at school includes feeling shared goals related to learning (Lenzi et al., 2017; Petrillo et al., 2016). Students who feel affinity with their school community tend to report better psychological well-being, perceived justice, and increased student engagement (Perkins & Zimmerman, 1995; Petrillo et al., 2016).

Student empowerment may be constrained for youth who attend schools with concentrated poverty and racial segregation given dominant discourses about low-income students of color that direct educators' attention to their deficits or limitations, instead of their strengths or leadership potential (Valencia, 1997, 2010). Yet empowered students can provide school staff with a better understanding of their lived experiences and learning needs; they may also improve policies, programs, and practices in classrooms and as part of whole-school reforms (Fine, 1991; Kennedy et al., 2019; Mitra, 2003, 2009). This is

especially important in schools that serve racially and economically marginalized students, where teachers from primarily White and middle-class backgrounds may not have been exposed to the structural inequalities faced by low-income communities of color or their assets (Levin, 2000; Mitra, 2004; Travis & Leech, 2014). However, there should not be an expectation for students in these schools to exhibit resilience and grit in the face these unequal school contexts, but rather school staff should improve conditions and facilitate opportunities for positive student-teacher relationships, equitable roles, and sense of community within these schools (Joseph et al., 2020).

There are also substantial within-school differences in students' perceptions of empowering school climates. In several studies, Black and Latinx students reported less equitable roles (Voight et al., 2015), more negative student-staff relationships, especially in schools with racial discipline gaps (Anyon et al., 2016; Fan et al., 2011; James et al., 2020; Pena-Shaff et al., 2019; Shirley & Cornell, 2012; Voight et al., 2015), and a lower sense of community (Pena-Shaff et al., 2019) compared to their White peers. Less consistently, student-level family poverty has been negatively associated with perceptions of school climate (Bottiani et al, 2017; Fan et al., 2011; Hopson & Lee, 2011; James et al., 2020). However, these studies considered different indicators such as school belonging and racial equity (Bottiani et al, 2017) or did not find these relationships were statistically significant (Fan et al., 2011; Hopson & Lee, 2011; James et al., 2020).

Current study

Despite attention to opportunity gaps in high-poverty schools and the role of empowerment in positive youth development, few studies have bridged these two bodies of literature (Carter & Welner, 2013; Ginwright & James, 2002; Ladson-Billings, 2006; Travis & Leech, 2014). The present investigation explores whether student empowerment may be constrained or enabled in ways that align with income segregation in schools. Drawing on survey and administrative data from a large urban school district, we used multilevel modeling to estimate the relationship between school poverty rates and self-reported student empowerment, as conceptualized by Kirk et al. (2017). We hypothesized that students in schools with more concentrated poverty would report weaker relationships with school adults, less equitable roles, and a lower sense of community than youth attending schools with more advantaged student populations.

Table 1. Student-level sample characteristics.

	All students (n = 29,318 students) %
Student Characteristics	
Gender	
Male	49.9
Grade level (6-12th)	
6th	18.0
7th	16.5
8th	14.9
9th	15.9
10th	13.6
11th	10.8
12th	10.2
Race	
Native American	0.7
Black	11.9
Latinx	55.8
Asian	3.5
Pacific Islander	0.3
White	23.9
Multiracial	3.9
Special Education	9.2
English Language Learner	33.4
Gifted and Talented	12.2
Average Attendance	91.1
School Characteristics	
Free and Reduced Lunch	65.3
School Size	789.7
Charter School	33.2
Attendance Rate	89.1
Grade Span	
Middle	38.5
High	47.3
Other	14.2

[a] All descriptive statistics reported are based on the original dataset, prior to multiple imputation.
*p < .05; **p < .01; ***p < .001 based on a two-sample test of proportions.

Materials and methods

We used multilevel modeling techniques to analyze a dataset we constructed by merging student-level survey data on school climate with administrative data on school-level demographics from a large urban school district. This study was approved by the Internal Review Board of the authors' affiliated university.

Participants

The study sample was drawn from a school district that serves more than 100,000 students in over 200 schools in a large metropolitan area in the Western United States; it is among the top 50 largest districts in the country. Our sample (n = 29,318) includes all students in grades 6-12 who were enrolled in a district school during the 2018–2019 school year and participated in the district's annual school climate survey (see Table 1). Overall, survey participants attended schools where the mean proportion of students eligible for FRPM was 65.4% (SD: 27.6, min: 5.6, max: 100). English language learners (ELL) comprised 33.4% of students in the sample; at the school-level,

Table 2. Student-level variables.

Variable	Items
Student-Staff Relationships (SSR)	"Most of my teachers care about how I am doing in their class." (a)
	"If I have a problem or concern there is at least one adult in the school I feel comfortable talking to" (b)
	"Most of my teachers encourage me to do my best." (c)
Equitable Roles (ER)	"Most of the adults who work at the school treat me with respect." (a)
	"Teachers give me useful feedback on the work I do." (b)
	"An adult at my school is available when I need help with my schoolwork." (c)
	"I understand what I need to do to learn and make progress in most of my classes." (d)
Sense of Community (SOC)	"I am getting a good education at my school." (a)
	"The atmosphere at my school supports student learning." (b)
	"Most of the students at this school treat me with respect." (c)

participants attended schools where ELL represented a mean of 24.1% of the student body (SD: 16.8, min: 0.0, max: 70.0). Half of the participants identified as male (50.1%) and half as female (49.9%).

In terms of racial identities, 55.8% of the sample was Latinx, 23.9% were White, 11.9% were Black, 3.9% were Multiracial, 3.5% were Asian, 0.3% were Pacific Islander, and 0.7% were Native American. Unfortunately, this school district does not track the specific groups that Multiracial students identify with at the school level, the mean racial composition was: 55.8% Latinx (SD: 26.4, min: 8.0, max:100), 22.9% White (SD: 21.4, min: 0.0, max: 8.0); 13.1% Black (SD: 9.5, min: 0.0, max: 47.0); 4.0% Multiracial (SD: 2.8, min: 0.0, max: 13.0); 3.1% Asian (SD: 2.9, min: 0, max: 24%); 0.2% Pacific Islander (SD: 0.7, min: 0, max: 6.0); 0.7% Native American (SD: .7; min: 0, max: 3.0). Sixth grade students represented 18.0% of participants, 7th grade 16.5%, 8th grade, 14.9%, 9th grade, 15.9%, 10th grade 13.6%, 11th grade 10.8%, and 12th grade 10.2%. Thirty-nine percent of the sample were enrolled in middle schools (6-8), 47.3% in high schools (9-12), and 14.2% were enrolled in schools with other grade spans (K-8 or K-12).

Measures

School climate survey

Teachers administered the survey to all 6-12th grade students in the district to assess their perceptions of school climate. Participation was completely voluntary, and no incentive was provided for completion. The school district estimates that the response rate was 81% based on student attendance on the day of survey administration.

Student-level dependent variables. The researchers used Kirk et al. (2017) three concepts of student empowerment to construct the dependent variables (see Table 2 for a summary of variable construction). The first, student-staff relationships, was a composite score of three items that focused on student's

perceptions of relationships with their teachers and other school adults: (a) "Most of my teachers care about how I am doing in their class" (b) "If I have a problem or concern there is at least one adult in the school I feel comfortable talking to," and (c) "Most of my teachers encourage me to do my best." Item responses were on a four point Likert-type scale ranging from strongly disagree (0) to strongly agree (3). The mean score for the student-staff relationship scale was 6.64 (SD= 1.77) and Cronbach's alpha for the reliability of the items was .78.

We measured equitable roles using a composite score of four items on the survey that assessed whether dynamics between adults and students were balanced and mutually beneficial: (a)"Most of the adults who work at the school treat me with respect," (b) "Teachers give me useful feedback on the work I do," (c) An adult at my school is available when I need help with my schoolwork," and (d) "I understand what I need to do to learn and make progress in most of my classes." Items responses were on a four point Likert-type scale ranging from strongly disagree (0) to strongly agree (3). The mean score for the equitable student-staff roles scale was 8.79 (SD= 2.07) and Cronbach's alpha for the reliability of the items was .79.

Finally, we created a composite score of three items on the survey focused on students' sense of community: (a) "I am getting a good education at my school," (b) "The atmosphere at my school supports student learning," and (c) "Most of the students at this school treat me with respect." Items responses were on a four point Likert-type scale ranging from strongly disagree (0) to strongly agree (3). The mean score for the sense of community scale was 6.38 (SD= 1.61) and Cronbach's alpha for the reliability of the items was .71.

Administrative dataset

School-level independent variable. The dependent variable was a continuous percentage of students eligible for FRPM. Although there are many ways to measure income segregation in schools, Wisman

(2019) found that the proportion of students eligible for FRPM was a stronger predictor of student- and school- outcomes than other measures that combined race and FRPM or included neighborhood factors.

School-level covariates. At the school-level, covariates included grade span (middle, high, or other (e.g. K-8)), school size (divided by 100), governance model (charter or traditional), school attendance rate, and the proportion of Black students in the school. We recoded grade configuration and governance models into dummy variables, with middle schools and traditional schools, respectively, as the reference groups in all statistical models. Average school-wide attendance was a continuous variable of percentages.

We used the proportion of the student body that was Black as our indicator of school-level racial composition for several reasons. First, the percent of students who are eligible for FRPM, our independent variable of interest, was strongly and significantly correlated with the proportion of students in a school who are students of color ($\square$ .96, p<.000) or Latinx ($\square$ 0.89, p<.000), but much less so for Black students ($\square$ 0.06, p<.000), who have been the focus of integration efforts in the district (see Table 3). Second, several studies suggests that all students who attend schools with predominantly Black students are consistently more likely to experience multiple dimensions of a negative school climate, such as weaker student-staff relationships (Anyon et al., 2018), greater use of exclusionary and punitive discipline and larger racial discipline gaps (for a review, see Little & Welsh, 2019), less use of restorative justice, in which staff and students have more equitable roles in resolving conflicts (Payne & Welch, 2010, 2018) and lower perceived safety (Payne & Welch, 2010). These negative associations have not been found as consistently when considering the school composition of other racial groups, such as the proportion of students who are Latinx (e.g. Payne & Welch, 2010, 2015, Rocque & Paternoster, 2011; Welch & Payne, 2010). Findings regarding more negative school climates in schools with a larger proportion of Black students in a school have been attributed to cultural mismatches between students and staff, along with racial bias in risk management approaches and perceptions of threatening student behavior (Little & Welsh, 2019). These dynamics apply to students of color more broadly, but may be less severe (Welch & Payne, 2010).

Student-level covariates. Student-level covariates were several dichotomous variables: gender (male or not), special education status (active Individualized Education Program or not), participation in the gifted and talented program (eligible or not), and English language learner status (ELL or not). Average daily attendance and grade level were continuous variables. Racial categories included Native American, Black, Latinx, Asian, Pacific Islander, White, and Multiracial. We recoded these into dummy variables, with White students serving as the reference group for analysis.

Additional descriptive statistics and correlations of study variables are presented in Table 3.

Data analysis

Merging
The school climate survey provided student-level reports of participants' relationships with school adults, equitable roles, and sense of community, whereas data from the district's information system included student- and school-level demographic indicators. Using student and school ID as the matching variables, we merged the student-level survey responses with administrative demographic data.

Missing data
The proportion of missing data for student-level survey responses was 2.7% for student-staff relationships, 3.2% for equitable roles, and 3.0% for sense of community. We estimated missing values using multiple imputation methods (Graham, 2009). More specifically, we used the "mi impute" command in STATA 13 (StataCorp, 2013) to generate 20 datasets with estimated values created using an iterative Markov Chain Monte Carlo method (Rabe-Hesketh & Skrondal, 2008). This approach generated a combined set of results drawing on the 20 imputed datasets.

Confirmatory factor analysis
A three-factor Confirmatory Factor Analysis (CFA) was produced using Amos Version 23.0 (Arbuckle, 2014) to assess if the ten indicators could be predicted by three latent factors (student-staff relationships, equitable roles, and sense of community). The chi-square test of model fit indicated a statistically significant, over-identified model (x^2=5525.72, df = 32, p<.001). Several other fit indices were also included to evaluate the model, all of which indicated adequate model fit (CFI = .96, TLI = .93, RMSEA = .07). After using Unit Loading Identification (ULI) to fix the indicator variance of SSR(a) at 1, ER(a) at 1, and SOC(a) at 1, results suggested ten statistically significant associations: The first latent construct (student-staff relationships) significantly predicted SSR(a) (β =

Table 3. Correlation matrix.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Student-Level Covariates																								
1. Gender	1																							
2. Grade	−0.003	1																						
3. Native American	0.006	.018**	1																					
4. Black	−0.002	0.009	−.031**	1																				
5. Latino	0.004	0.029**	−.096**	−.412**	1																			
6. Asian	−.014*	0.003	−.016**	−.070**	−.214**	1																		
7. Pacific Islander	−0.003	0.006	−0.005	−.021**	−.064**	−0.011	1																	
8. White	0.002	−.040**	−.048**	−.206**	−.630**	−.107**	−.032**	1																
9. Multiracial	0.001	−.013*	−.017**	−.074**	−.226**	−.038**	−0.011	−.113**	1															
10. Special Education	.078**	−0.005	.031**	.038**	.035**	−.027**	−0.005	−.058**	−.014*	1														
11. English Language Learner	.036**	−.047**	−.049**	−.143**	.442**	.031**	−0.004	−.350**	−.131**	.049**	1													
12. Gifted and Talented	−.036**	.184**	−0.006	−.059**	−.060**	.021**	−.016**	.102**	.015*	−.104**	−.153**	1												
13. Average Attendance	0.005	−.235**	−.067**	−.031**	−.116**	.080**	−.017**	.131**	.018**	−.080**	−.025**	.055**	1											
School-Level Variables																								
14. % FRPM	.031**	.015*	.015**	−0.010	.488**	−0.009	.015*	−.509**	−.117**	.063**	.388**	−.099**	−.134**	1										
15. School Size	−.018*	.212**	−0.002	0.007	−.273**	.020**	0.000	.279**	.056**	−.066**	−.205**	.128**	.058**	−.499**	1									
16. Charter	.014*	−.125**	−.020**	.014*	.150**	.013*	0.006	−.177**	−.021**	0.003	.157**	−.040**	.102**	.264**	−.390**	1								
17. Attendance Rate	−0.010	−.389**	−.037**	−.022**	−.148**	.046**	−0.004	.161**	.035**	−.069**	−.068**	.019**	.517**	−.282**	.082**	.186**	1							
18. Middle School	−0.004	−.684**	−0.006	−.026**	−0.009	−.015*	−.021**	.036**	0.011	0.006	0.011	−.131**	.137**	.015**	−.234**	.061**	.247**	1						
19. High School	−.014*	.826**	.017**	0.000	.026**	−0.005	0.009	−.026**	−.015*	−0.002	−.043**	.162**	−.219**	−0.007	.315**	−.216**	−.422**	−.749**	1					
20. Alternative	.025**	−.228**	−.016**	.036**	−.024**	.027**	.017**	−.013*	0.007	−0.005	.046**	−.049**	.122**	−0.011	−.125**	.224**	.259**	−.322**	−.385**	1				
21. % Black	.013*	.041**	−.021**	.268**	−.223**	.032**	.030**	.014*	.063**	0.008	−.084**	−.038**	−.052**	−.063**	.114**	0.011	−.077**	−.096**	.023**	.100**	1			
Student-Level Dependent Variables																								
22. Student-Staff Relationships	−0.006	.040**	0.000	−.031**	−0.010	0.000	0.003	.037**	−0.004	.020**	0.006	0.001	.017**	−.016**	−.010	−.025**	−.063**	−.030**	.032**	−0.004	−.023**	1		
23. Equitable Roles	0.011	.067**	−0.005	−.025**	0.007	0.011	.012*	0.011	−.014*	.013*	.023**	0.009	.015*	−0.005	−.015*	−.020**	−.073**	−.049**	.054**	−.010	−.021**	.798**	1	
24. Sense of Community	.019**	.078**	−0.001	−.033**	.012*	0.000	0.001	.013*	−0.005	−0.005	.018**	.019**	.020**	−.054**	.018**	−0.002	−.050**	−.070**	.069**	−0.002	−.042**	.649**	.738**	1
Min, Max	0, 1	8, 14	0, 1	0, 1	0, 1	0, 1	0, 1	0, 1	0, 1	0, 1	0, 1	0, 1	.06, 1	.06, 1	21, 2748	0, 1	.53, 1	0, 1	0, 1	0, 1	0, 1	0, 9	0, 12	0, 9
Mean or %	0.5	10.64	0.01	0.12	0.56	0.03	0	0.24	0.04	0.09	0.33	0.12	0.91	0.65	789.68	0.33	0.89	0.38	0.47	0.14	0.13	6.63	8.78	6.37
Standard Deviation	0.5	1.946	0.085	0.323	0.497	0.184	0.057	0.427	0.193	0.289	0.472	0.328	0.094	0.249	598.153	0.471	0.063	0.487	0.499	0.349	0.094	1.767	2.065	1.610

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

Table 4. Standardized factor loadings for CFA.

Student-Staff Relationships			Equitable Roles				Sense of Community		
SSR(a)	SSR(b)	SSR(c)	ER(a)	ER(b)	ER(c)	ER(d)	SOC(a)	SOC(b)	SOC(c)
.84	.61	.84	.72	.75	.73	.60	.67	.76	.61

.838, SE = .006, p < .001), SSR(b) (β = .614, SE = .008, p < .001), and SSR(c) (β = .837, SE = .006, p < .001). The second latent construct (equitable roles) significantly predicted ER(a) (β = .724, SE = .008, p < .001), ER(b) (β = .754, SE = .008, p < .001), ER(c) (β = .730, SE = .008, p < .001), and ER(d) (β = .596, SE = .007, p < .001). The third latent construct (sense of community) significantly predicted SOC(a) (β = .668, SE = .007, p < .001), SOC(b) (β = .760, SE = .012, p < .001), and SOC(c) (β = .613 SE = .012, p < .001). SSR(a), ER(a), and SOC(a) were also statistically significant (p<.001) when the ULI was moved to a different indicator. As shown in Table 4, all factor loadings met or exceeded the 0.60 threshold value (Awang et al., 2015). Latent Constructs covaried at .83 for student-staff relationships & sense of community, .96 for equitable roles & sense of community, and .97 for student-staff relationships & equitable roles.

Multilevel modeling

We estimated multilevel regression models using Stata 13 (StataCorp, 2013) to assess relationships between school-level poverty rates and three dimensions of student empowerment: student-staff relationships, equitable roles, and sense of community. We employed multilevel modeling because our primary research question focuses on a school-level variable (percent free and reduced lunch) and this statistical approach accounts for students being nested or clustered within schools (Rabe-Hesketh & Skrondal, 2008). Indeed, in a recent systematic review of research on socioeconomic status and school climate, the authors recommend using multilevel models because of the interdependent nature of student experiences (Berkowitz et al., 2017). Our data analyses revealed statistically significant variation between schools in the dependent variables that warrant multilevel models. Intraclass coefficients in the unconstrained models were .05 for student relationships with school adults (p < .001), .07 for equitable roles (p < .001), and .08 for sense of community (p < .001). For hypothesis testing, we selected a .05 a priori Type I error rate. In models based on large samples, Stata calculations involve adjusting the degrees of freedom. Given the large sample size in this study, model calculations adjusted all models to parameter-specific degrees of freedom to estimate more precise standard errors.

Results

Student-staff relationships

Results from the multilevel regression (Table 5, Model A) indicated that school-level poverty rates were negatively associated with students' perceptions of their relationships with teachers and other school adults (B= −.33, p <.05). Several other student and school characteristics were significantly correlated with reports of care, encouragement, and support from school staff. Black (B= −.24, p < .001), Latinx (B= −.16, p<.001), and Multiracial students (B= −.12, p < .05) were significantly less likely to report positive relationships with educators than White youth. Youth in special education (B= .11, p < .01), English language learners (B= .07, p<.01), and students with higher attendance rates (B = 1.36, p < .001) were significantly more likely to report they felt cared about, encouraged, and supported by school adults. Students enrolled in larger schools (B= −.00, p < .05) and those with higher average daily attendance rates (B= −3.3, p < .001) were significantly less likely than their counterparts to report positive relationships with school staff.

Equitable roles

As shown in Table 5 (Model B) students who attended schools with greater concentrated poverty (B= −.50, p <.01) reported less equitable roles. Black (B= −0.15, p < .001) and Multiracial (B= − 0.13, p < .05) youth also felt less respect, useful feedback, assistance with schoolwork, and shared understanding from school adults than their White peers, whereas Pacific Islander students (B= .51, p < .05) reported more positive perceptions of equitable roles. Students in higher grades (B= .04, p < .01), English language learners (B= .13, p < .001), and students with better attendance (B = 1.71, p < .001) were significantly more likely than their peers to report that school adults treated them equitably. At the school level, attendance rate (B= −3.82, p < .001) and school size (B= −.00, p < .01) were negatively associated with students' perceptions of equitable roles.

Table 5. Adjusted regression coefficients (multilevel model) predicting student empowerment[a] (n = 29,318).

	Model A Relationships		Model B Equitable Roles		Model C Sense of Community	
	B	(95% CI)	B	(95% CI)	B	(95% CI)
Student-Level Covariates						
Gender (Male)	-.04	-.08, .00	.02	-.02, .07	.05**	.02, .09
Grade Level	.01	-.01, .03	.04**	.01, .06	.02*	.00, .04
Native American	-.09	-.33, .15	-.10	-.38, .18	.11	-.11, .33
Black	-.24***	-.31, −.16	-.15**	-.24, −.06	-.04	-.11, .03
Latinx	-.16***	-.22, −.09	-.04	-.12, .03	.10***	.05, .16
Asian	-.11*	-.23, .01	.07	-.07, .21	.07	-.04, .17
Pacific Islander	.05	-.31, .41	.51*	.09, .93	.27	-.05, .60
Multiracial	-.12*	-.23, −.01	-.13*	-.26, −.00	.00	-.10, .10
Special Education	.11**	.04, .18	.05	-.03, .14	-.03	-.10, .03
English Language Learner	.07**	.02, .12	.13***	.07, .19	.10***	.06, .15
Gifted and Talented	-.02	-.08, .05	.02	-.05, .10	.03	-.02, .09
Average Attendance	1.36***	1.11, 1.61	1.71***	1.42, 2.01	1.23***	1.01, 1.46
School-Level Variables						
Free and Reduced Lunch	-.33*	-.61, −.04	-.50**	-.86, −.14	-.66***	-1.01, −.34
School Size	-.02*	-.04, −.00	-.03**	-.05, −.01	-.01	-.03, .01
Charter School	-.02	-.14, .11	-.01	-.16, .15	.10	-.04, .24
Attendance Rate	−3.26***	−4.14, −2.38	−3.82***	−4.92, −2.71	−3.01***	−3.98, −2.05
High	.08	-.09, .24	.12	-.08, .33	.20*	.02, .38
Other Grade Span	.11	-.06, .28	.11	-.10, .32	.16	-.02, .35
% Black	-.31	-.87, .24	-.26	-.96, .45	-.55	−1.17, .07

*p < .05; **p < .01; ***p < .001.

Sense of community

As shown in Table 5 (Model C) the proportion of the student body eligible for FRPM was negatively correlated to participants' sense of community (B= −.66, p <.001). Compared to their White peers, Latinx (B= .10, p < .001) youth felt more respected by students, felt they were getting a good education, and that their school supported student learning. There were no other significant differences between students from other racial groups and White youth in their perceptions of the school community. Male students (B= .05, p < .01), those in higher grades (B= .02, p < .05), English language learners (B= .10, p < .001), and students with better attendance (B = 1.23, p < .001) were significantly more likely than their peers to report a positive sense of school community. At the school level, attendance rate (B= −3.00, p < .001) was negatively associated with students' sense of community, whereas attending a high school (B= .20, p < .05) was positively associated with this dependent variable.

Discussion

As hypothesized, findings from our exploratory analysis indicated that participants who attended schools with more concentrated poverty were less likely to report empowering climates than their peers from schools with more affluent student bodies. However, the very large correlation between school poverty rates and racial composition makes it impossible to disentangle the effects of each separately. Although it is a

limitation of our research, this pattern is not unique to our study, and reflects how segregation by race and class intersect in ways that are too often indistinguishable in US public schools (Fahle et al., 2020). It is also an example of systemic racism and economic marginalization as interlocking forms of inequities in the lives of young people today. At the same time, a relatively small group of White youth in our study also attended schools with high poverty rates, which is true across the country (Fahle et al., 2020). The findings of our research, therefore, are relevant to students from all racial groups who attend schools serving primarily low-income youth.

Across all three dimensions of student empowerment theory, youth from higher poverty and racially segregated schools reported more negative perceptions of student-staff relationships, equitable roles, and sense of community than students from schools with lower poverty rates. The strength of the relationships between school-level composition and student-level empowerment is consistent with the observation that, "schools are uniquely positioned to influence empowerment in the academic domain" (Kirk et al., 2016). Findings also shed light on an additional opportunity gap that may contribute to differences in academic achievement between higher- and lower-poverty schools (NCES, 2013). These patterns also suggest that students who attend racially and economically segregated schools may be acutely aware that adults feel "little hope for transformation" in these settings (Bryan, 2005, p. 219).

Participants in our study who attended schools with a greater share of low-income students and youth

of color were significantly less likely to report feeling a sense of community. This finding may be explained by the poor physical characteristics, outdated textbooks and technology, less experienced teachers, and greater teacher attrition that often accompany schools with concentrated poverty (Carter & Welner, 2013; Hudley, 2013; Kupchik & Ward, 2014). These conditions may interfere with students' attempts to find meaning in their school experiences and their ability to feel "part of a larger dependable and stable structure" (Kirk et al., 2016, p. 590; Mitra, 2004).

Student empowerment theory suggests that young people are more likely to develop a sense of agency when professionals are seen as collaborators rather than authority figures (Perkins & Zimmerman, 1995). Our results indicated that youth in schools with concentrated poverty and greater shares of students of color reported less mutually-beneficial dynamics with school staff than their peers in more privileged environments. This dimension of student empowerment is arguably the most difficult to address in typical public schools that have rigidly hierarchical structures, where preserving adult power is more common than engaging students as partners in their learning (Mitra, 2008). Educational stakeholders may worry that if students have more control over their learning environments they will make choices that professionals believe are "not in their best interest" (Golman & Newman, 1988, p. 5). Yet creating equitable roles between youth and school staff may actually be critical in determining students' best interests, as deficit discourses emphasize person-centered explanations of achievement gaps and link them to group membership (Valencia, 1997, 2010). In partnership with young people, educators may increase their awareness of the root causes of educational inequities and how their instructional approaches can be more responsive to the lived experiences of low-income students and youth of color. Student voice and choice often highlights broader structural and cultural changes that are necessary, while simultaneously creating a culture of shared leadership in the school (Fine, 1991; Mitra, 2003, 2009).

Finally, while still statistically significant, school poverty rates had the weakest association with student-staff relationships. This finding is surprising given the barriers against relationship building in schools with concentrated poverty. For example, poor wages and working conditions lead to higher teacher turnover rates in high-poverty schools, constraining possibilities for long-term relationships (Garcia & Weiss, 2019; Simon & Johnson, 2015). Our findings may be explained by recent attention to relationship building in the media, education reforms, and inter-disciplinary research. The increased focus on student-staff relationships over the past twenty years may have contributed to greater awareness among educators about their impact on student learning and achievement (Prewett et al., 2019; Roorda et al., 2011). Moreover, during the academic year when this survey was collected, the district had several ongoing initiatives related to social emotional learning, mental health, and restorative practices that emphasize positive student-staff relationships as a key lever for improving school and student outcomes. This dimension of student empowerment may not be as strongly related to school poverty rates as equitable roles and sense of community because, arguably, relationships between students and staff do not fundamentally challenge deficit discourses or the status quo of education. In other words, relationship building does not "challenge the institution's ownership of decision making and authority" (Mitra, 2006, p. 742).

Given the overlap in schools with high poverty rates and those that serve predominantly students of color, several student-level racial group differences in the results were noteworthy. Black, Latinx, and Multiracial youth were less likely than White students to report positive relationships with school staff. This finding is consistent with the results of other studies of school climate (Anyon et al., 2016; Fan et al., 2011; James et al., 2020; Pena-Shaff et al., 2019; Shirley & Cornell, 2012; Voight et al., 2015). Black and Multiracial students also perceived less equitable roles between youth and school adults when compared to their White peers. These patterns may reflect young people's experiences with differential treatment based on racial bias and stereotypes. In particular, educators report lower expectations of Black students academically, are more likely to interpret their behavior as troublesome, and more often give them negative feedback regardless of their performance (Lindsay & Hart, 2017; Okonofua & Eberhardt, 2015). Students may experience these dynamics as unfair and uncollaborative (Scott et al., 2019; Vavrus & Cole, 2002).

On the other hand, Latinx students reported a stronger sense of community at school than White students, possibly because they are the largest racial group in the district and comprise the majority of students at more than half of all schools (56.8%). This finding replicates the results of at least one other study (Parris et al., 2018), but a much larger body of research has found Latinx students typically endorse a weaker sense of community than their White peers

(Anyon et al., 2016; Berkowitz et al., 2017; Voight et al., 2015). These somewhat inconsistent findings may be explained by heterogeneity in country of origin, English language fluency, and generational status among students classified as Latinx. Indeed, Romero and O'Malley (2020) found that Latinx youth vary widely in their perceptions of school connectedness and recommend examining within-group differences for this population. Although this was not possible in our study, it is an important avenue for future inquiry.

Implications for policy and practice

The persistence of economic and racial inequities in education suggests a need to adapt existing models for improving high-poverty schools (Evans et al., 2017; National Center for Education Statistics, 2013). Current educational policies "do not require addressing the wide range of structural inequalities based on school funding, mobility, and segregation by race and class that contribute to learning and achievement gaps" (Fránquiz & Ortiz, 2016, p. 1). The relentless focus on accountability through standardized testing, without any assessment of opportunity gaps, reproduces deficit discourses in ways that may lead educators to overlook opportunities for student empowerment (Valencia, 1997, 2010). Our results suggest a need for policies that incentivize the implementation of empowerment approaches in high-poverty and racially segregated schools. In addition to financial incentives, contextual indicators of student empowerment could be incorporated into federal, state, and district accountability measures (Kirk et al., 2016). Given the centrality of student-teacher relationships in student empowerment theory, policies that strengthen the quality of educators in these schools would also likely address some of the patterns found in our study (Bonner, 2018; Cohen et al., 2009; Crosnoe et al., 2004; Murray & Zvoch, 2011).

We recognize that there is a variation in schools serving students experiencing poverty. For example, in the literature there are a number of high-poverty schools who are described as excelling (Podolsky et al., 2019; Reeves, 2003). When these schools are shown in high-esteem, individuals will often use inductive reasoning as a way to ignore or dismiss structural inequalities in education. As it relates to meritocracy, this dismissal may lead an individual to question "if the system is to blame, why do some people make it out and others never do?" (Payne, 2012, p. 14). This focus on "what works" in high-poverty schools can also reproduce stereotypes about low-income communities and people of color by suggesting that they have unique cultural values that

require different educational practices to be effective. Yet all schools perform better when teachers focus on relationships with their students, opportunities for choice and voice, and classroom sense of community (Kirk et al., 2017).

More generally, incorporating the principles of student empowerment into the educational policy-making process may also strengthen efforts to reduce opportunity gaps by race and class. Typical school improvement efforts often involve costly curricula and professional development programs that are not responsive to the working and learning conditions in schools with concentrated poverty (Greenberg et al., 2003). This mismatch may reflect a history of top-down, paternalistic decision making about school reform and student interventions based on deficit discourses about low-income students, families and communities (Bryan, 2005; Valencia, 1997, 2010). Indeed, some scholars have observed that "listening to student voice has been one of the most neglected aspects of educational research and an underutilized resource in education." (Barker, 2018, p. 2; Bishop & Pflaum, 2005; Sargeant & Gillett-Swan, 2015). Greater opportunities for young people to be involved in and have an influence over educational decisions - large and small - may mitigate this trend. Students are experts in their own educational experiences and are a source of valuable ideas about how schools could serve them better (Kane & Chimwayange, 2014; Mitra, 2009). The addition of students in the decision-making process, "reminds teachers and administrators that students possess unique knowledge and perspectives about their schools that adults cannot fully replicate without this partnership" (Mitra, 2006, p. 1). A growing body of evidence suggests student empowerment approaches like youth participatory action research do generate new insights about the root causes of inequities and draw attention to the need for reforms at multiple levels (Kennedy et al., 2019).

In practice, empowerment approaches focus on enhancing individuals' abilities, using professionals as partners rather than in positions of power, and working collaboratively to build resources across multiple contexts (Rappaport, 1987). Consistent with Positive Youth Development, recognizing strengths is more important than identifying risk factors and examining environmental or community influences of social problems replaces victim blaming (Perkins & Zimmerman, 1995). Practical approaches to building positive relationships include fostering and encouraging learning from different perspectives, developing empathy, creating a mentoring dynamic, and being vulnerable in ways that reveal adults' humanity rather than their authority (Chaffee et al., 2012). Positive

relationships can be developed when school staff are genuine and encouraging and focus on students' strengths. School adults need to "convince students that [they] care and that [they'll] never give up" (Bondy et al., 2007, p. 2). School staff can promote equitable roles by releasing some control, modeling imperfections, and creating opportunities for student voice and choice (Dymond, 2018; Tricarico, 2012). While "there is no recipe for building community," creating shared vision, a sense of purpose, and common values are key (Sergiovanni, 1994, p. 218). Some practical strategies are to include young people in the development of school-wide and classroom expectations, have explicit conversations with students about the nature of learning, and encourage youth participation in school-wide activities while also allowing individuals to "pass" (Canning, 1993; Manning & Saddlemire, 1996; Royal & Rossi, 1997).

Limitations and recommendations for future research

A strength of our exploratory research was that we used multilevel modeling to analyze a large and diverse sample of students that attended a broad selection of schools (Kirk et al., 2016). However, there are several limitations to our study design that could inform future research. Our findings are correlational, so we cannot assume causality in the relationships between school poverty rates and participants' reports of student empowerment. The sample was limited to one school district and is not generalizable to different contexts. Additional research with suburban and rural districts from other geographical regions, and with different student composition is needed.

Our statistical models do not capture the dynamic nature of student empowerment in schools, nor did they account for many confounding variables in the relationship between school poverty rates and students' perceptions of relationships, roles, and community. Research that includes other multilevel factors, such as young people's academic success, social-emotional skills, staff members' beliefs, district initiatives, and policy mandates would be illuminating (Berkowitz et al., 2017). In particular, the extreme correlation between school-level racial and class composition makes it nearly impossible to identify the unique, and potentially different, contributions of each factor. Moreover, research that considers how student empowerment interacts across these levels is lacking. Empirically, individual-level poverty is less consistently related to perceptions of school climate

than school-level poverty (e.g. Fan et al., 2011; Hopson & Lee, 2011; James et al., 2020). This pattern suggests it is the conditions associated with concentrated disadvantage that have the greatest impact. However, the focus of our study is on concentrated disadvantage at the school level, and we were unable to test the interaction between school- and individual-level variables. Self-report data also runs the risk of socially desirable answers, especially since the surveys used in this study were collected by teachers. Research on student empowerment would benefit from multi-informant approaches that incorporate the perspectives of teachers, caregivers, and other school staff (Berkowitz et al., 2017; Bottiani et al., 2020; Kirk et al., 2016).

Although our study responds to Berkowitz et al. (2017) call for research on distinct components of school climate, future research should consider how student empowerment is similar or different from other aspects of educational environments. Research on how to create empowering climates in schools with high poverty rates is needed given the unique conditions and opportunity gaps in these settings. This could involve studies of youth-adult partnerships in schools with concentrated poverty that include professional development and coaching for staff focused on student empowerment principles (Anyon et al., 2018; Kirk et al., 2016). Finally, future research could examine student empowerment as a mediator between the percentage of students eligible for FRPM and academic outcomes such as test scores, GPA, and graduation rates. Because student empowerment is a complex, abstract, and dynamic concept, both qualitative and quantitative methods are needed in future research on these topics.

Conclusion

In light of limited progress toward improving the performance of schools with high poverty rates (USDE, 2012), continued investment in typical interventions that are grounded in deficit discourses about low-income youth, families and communities seems unwarranted. Instead, building educators' capacities to create empowering school climates may be an underutilized approach to reducing opportunity gaps that shape youth development (Dymond, 2018; Kirk et al., 2016; Scales et al., 2020). Our study suggests schools with higher poverty rates may especially benefit from implementing policies and practices that build community, strengthen relationships, and facilitate equitable roles. New avenues for decreasing disparities based on income segregation may emerge when educators engage with young people in these ways and

take action based on students' ideas and insights (Fine, 1991; Johnston & Nicholls, 1995; Kushman, 1997; Levin, 2000; Mitra, 2003, 2004, 2009).

Data availability statement

Data not available due to ethical and legal restrictions. Due to the nature of this research, participants of this study did not agree for their data to be shared publicly, so supporting data is not available.

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