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School Racial Segregation and the Health of Black Children

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Abstract

OBJECTIVES: Few studies have evaluated whether school racial segregation—a key manifestation of structural racism—affects child health, despite its potential impacts on school quality, social networks, and stress from discrimination. We investigated whether school racial segregation affects Black children's health and health behaviors.

METHODS: We estimated the association of school segregation with child health, leveraging a natural experiment in which school districts in recent years experienced increased school segregation. School segregation was operationalized as the Black-White dissimilarity index. We used ordinary least squares (OLS) models as well as quasi-experimental instrumental variables (IV) analysis, which can reduce bias from unobserved confounders. Data from the Child Development Supplement of the Panel Study of Income Dynamics (1997–2014, N=1248 Black children) were linked with district-level school segregation measures. Multivariable regressions were adjusted for individual-, neighborhood-, and district-level covariates. We also carried out subgroup analyses by child sex and age (5–10 vs. 11–17 years).

RESULTS: In IV models, school segregation was associated with increased behavioral problems (β=2.53 points on a 27-point scale; 95%CI: 0.26, 4.80), and increased probability of having ever drunk alcohol (β=0.23; 95%CI: 0.049, 0.42) and of drinking at least monthly (β=0.20; 95%CI:

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0.053, 0.35). School segregation was more strongly associated with drinking behaviors among female children.

CONCLUSIONS: School segregation was associated with worse outcomes on several measures of well-being among Black children, which may contribute to health inequities across the lifespan. These results highlight the need to promote school racial integration and support Black youth who are attending segregated schools.

INTRODUCTION

Racial/ethnic inequities in child health and health behaviors in the U.S. persist, with worse health among Black children.[1, 2] Inequities in schooling environments may be one driver of child health disparities, given the centrality of schools in children's lives.[3] Indeed, school-age children spend ~20% of their time—1200 hours per year—in school.[4] Attending highly segregated schools, a common experience among Black children, may be a particularly salient determinant of health inequities.[5] School segregation may adversely impact Black children's health and behaviors through reduced school quality and increased exposure to racial discrimination.[6–10] Conversely, school segregation could plausibly improve health outcomes by reducing exposure to interpersonal racism from White peers or teachers.[11, 12] Evidence on the health impacts of school segregation, however, is sparse.

This is troubling given legal decisions that have reshaped the landscape of U.S. school segregation in the last three decades.[13–16] In 1954, the Supreme Court's landmark decision in *Brown v. Board of Education* ruled that school racial segregation was unconstitutional, resulting in substantial increases in racial integration across schools in the 1960s-1970s. This desegregation improved Black people's well-being, including increasing educational and occupational attainment and self-rated health[17, 18] and possibly reducing teen fertility.[19, 20] In 1991, however, the Supreme Court began issuing rulings that made it easier for districts to be released from court-ordered desegregation.[21] Since then, roughly 600 of 1,000 school districts previously under court-ordered desegregation have been released from oversight, reverting to neighborhood-based school assignment (eFigure 1A&B).[13–15] Highly segregated schools with 10% or less White students have more than tripled, from 5.7% to 18.6%.[16] There are no studies to our knowledge examining the child health effects of this recent increase in school segregation, other than a single study finding increased risk of preterm birth.[22]

The present study examined how recent school "resegregation" trends are associated with health among Black children, providing evidence on an understudied risk factor of child health disparities as well as on a specific modifiable policy. We used national survey data and a quasi-experimental design that leveraged the quasi-random (i.e., arbitrary) timing of school districts' releases from court desegregation orders to estimate the association of school segregation with health. We examined a broad range of outcomes, providing some of the first evidence on the impacts of school racial segregation on child health.

METHODS

Data Sources

Data on child health and behaviors were drawn from the Panel Study of Income Dynamics (PSID), which recruited a nationally representative sample of families in 1968 and interviewed them annually through 1997 and biennially thereafter. In 1997, PSID also began a Child Development Supplement (CDS) that collected extensive data on children aged 0–12 years. Two follow-up surveys of children who were still under 18 were conducted in 2002 and 2007. In 2014, a new CDS cohort was launched for children aged 0–17 years. We linked health data from these four CDS waves with data from the main PSID survey on children's individual and family demographic characteristics (including residential census blocks), focusing on children's observed schooling years.

Data on school district court orders were compiled by Reardon and colleagues[23] and ProPublica.[24] School district demographic characteristics and segregation measures (from 1991 on) were derived from the Common Core of Data, compiled by the National Center for Education Statistics.[25] We linked school district data with PSID residential data using a crosswalk that mapped school districts onto census blocks.

Study Sample

We restricted our analysis to Black children in PSID. Among the 3,263 Black children who participated in at least one CDS wave, we included 2,750 who were school-aged (5–17) between 1991 and 2014. After applying relevant inclusion and exclusion criteria (eMethods), the final analytic sample included 1,248 Black children who ever lived in districts under desegregation orders in 1991. Each child potentially participated in multiple survey waves, and we used all available person-year observations. The sample size for each outcome varied because some were collected in limited years or over limited age ranges (eTable 1).

Exposure

We operationalized school segregation as the average level of school segregation in the school districts children attended between their first observed schooling year (baseline) and the year in which a given health outcome was measured. School district-level racial segregation was measured using the Black-White dissimilarity index (range 0–1), a standard measure of segregation that represents the proportion of Black or White students who would have to move to a different school to achieve a uniform Black-White distribution across schools within a district.[13, 26] Higher values represent higher segregation (eMethods).

One challenge in identifying the health effects of school segregation is confounding: school segregation is often correlated with individual and family characteristics (e.g., socioeconomic status) and neighborhood characteristics (e.g., poverty or residential segregation) that could affect both school segregation and health (eFigure2). To circumvent this problem, we leveraged changes in school segregation created by local court decisions that released school districts from court-ordered desegregation since 1991 (when the relevant Supreme Court decision occurred). Discontinuous increases in school segregation have been noted in released districts after these court decisions relative to districts that remained under

an order.[13, 14] Prior work has demonstrated that many arbitrary factors affected release procedures, such as unequal court caseloads across districts and the varying duration of the release process,[13, 15, 16, 27] making the timing of these releases effectively quasi-random. Accordingly, empirical evidence has shown that school districts that were released from court-ordered desegregation were similar to those that were not released on most observable characteristics (e.g., baseline segregation levels, student racial composition), although larger districts were more likely to be released.[13] This evidence supports the idea that releases led to exogenous variation in school segregation that is less likely to be confounded by individual and neighborhood factors, and is the basis of our quasi-experimental approach, described below, which is similar to other studies that have leveraged variation in education policies to examine the effects of school characteristics on health.[28, 29]

Outcomes

We selected child health outcomes and behaviors likely to be affected by school segregation.[30–33] Health outcomes include self-rated health (dichotomized as poor/fair/good versus very good/excellent); diagnoses of asthma, obesity, and mental/emotional health problems; and the Behavioral Problem Index (BPI, range: 0–27), a validated scale that asks about antisocial behavior, hyperactivity, and other indications of behavioral difficulties.[34] For health behaviors, we included two outcomes representing whether children participated in more than 30 minutes of vigorous physical activities at least 3 days a week *inside* school in physical education (PE) class and separately *outside* of school; three alcohol-related binary outcomes (ever drank, drank at least monthly, and binged on alcohol [5+ drinks in a row] at least monthly); two smoking-related binary outcomes (ever smoked and ever smoked regularly); and one smoking-related continuous outcome (number of days smoked in past month). See eMethods and eTable 1 for survey questions and outcome coding.

Covariates

Individual-level covariates included binary child sex (as a proxy for gender identity and exposure to gendered psychosocial experiences),[35] age when outcomes were measured, and family inflation-adjusted income and parental marital status at baseline. Birthyear indicator variables (i.e., fixed effects) were included to account for secular trends. We also included district covariates corresponding to each child's first observed school district in 1991, including total student enrollment, student racial composition, and percent of students eligible for free or reduced-price lunch. We also included district-level *residential* racial segregation, measured by the Black-White dissimilarity index across census tracts within each district. Finally, fixed effects for state of residence at baseline were included to adjust for any observed or unobserved time-invariant state factors that could influence district release status and health.

Statistical Analyses

To estimate the association between school segregation and each outcome, we first fitted ordinary least squares (OLS) models regressing each outcome on average exposure to school segregation, adjusting for the covariates above. Standard errors were clustered at the district and individual levels to account for correlated observations in the same district and for the

same individual. However, OLS models may suffer from confounding from unmeasured common causes of the exposure and outcome.

We therefore next conducted instrumental variables (IV) analysis, an established technique that relies on a quasi-randomly determined exposure—known as the "instrument"—that affects the predictor (school segregation) but does not suffer from the same unobserved confounding.[36] The quasi-random perturbation in the predictor caused by the instrument is used to infer the effects of the predictor on the outcome. Here, we leveraged the arbitrary timing of each district's release from court-ordered desegregation. This instrument here represents the average years elapsed since a child's school district was released from court-ordered desegregation (see eMethod for detailed instrument construction). We performed several tests that supported the validity of the instrument to provide reassurance of the validity of IV assumptions; details including first-stage coefficients and *F*-statistics are shown in eMethods and eTable 2–5.

These IV models were fitted as two-stage multivariable regressions adjusted for the covariates above. We estimated linear models for both binary and continuous outcomes since IV probit/logistic regressions failed to converge. For outcomes that are not reversible (e.g., ever diagnosed with asthma), we dropped observations after the outcome was first reported (eMethods). Standard errors were again clustered at the district and individual levels.

We also carried out "reduced-form" analyses, regressing each outcome directly on the instrument, to estimate the association of desegregation order releases with health, as opposed to the association of school segregation itself.

Secondary Analyses

The association of segregation and education with children's health may differ by key characteristics.[37–40] We conducted subgroup analyses by age at outcome ascertainment (5–10 versus 11–17 years old) and sex. We also carried out a sensitivity analysis using an alternative racial segregation measure (eMethods).

RESULTS

Sample characteristics

At baseline, 48% of the sample children were girls, 38% had married parents, and the average inflation-adjusted family income was $41,936. The mean age at interview was 11 (SD=3.5). About 35% of children had poor/fair/good health, 15% had asthma, 9% had obesity, and 14% had a mental/emotional problem. The mean BPI was 8.0 (out of 27; SD=6.7). About 37% of children older than 11 had ever drunk alcohol, and 33% had ever smoked (Table 1).

The mean level of school segregation that children were exposed to was 0.47; that is, 47% of Black or White students would have needed to move to another school in the same district to reach even racial distributions across schools. The average number of years elapsed between districts' release years and when outcomes were measured was 2.9 years. The school districts that children attended at baseline were on average large (97,170

student enrollment) and 49% Black, with a majority of students eligible for free or reduced-price lunch. Average residential segregation was 0.56, indicating a medium-high level of neighborhood segregation within districts.[41, 42]

Association of School Segregation with Child Health (OLS Models)

In OLS models (Table 2, Column 1), we were unable to rule out the null hypothesis that there was no association between school segregation and well-being among Black children.

Association of School District Release from Court-Ordered Desegregation with Child Health (IV Reduced Form Models)

More years elapsed since districts' release from court-ordered desegregation was associated with an increase in children's BPI (β=0.16 points; 95%CI: 0.031, 0.28), probability of ever drinking (β=0.031; 95%CI: 0.0080, 0.054), and probability of drinking at least monthly (β=0.028; 95%CI: 0.0088, 0.047), with no associations for other outcomes (Table 2, Column 2).

Estimated Effect of School Segregation on Child Health (IV Models)

In quasi-experimental IV models (Table 2, Column 3), a one standard deviation increase in school segregation was associated with an increase in BPI (β=2.53 points; 95%CI: 0.26, 4.80), probability of ever drinking (β=0.23; 95%CI: 0.049, 0.42), and probability of drinking at least monthly (β=0.20; 95%CI: 0.05, 0.35), with no associations for other outcomes.

Subgroup Analyses

In IV models stratified by sex, school segregation was associated with an increased probability of drinking at least monthly for Black girls, but not boys (girls: β=0.33; 95%CI: 0.050, 0.62; boys: β=0.095; 95%CI: −0.049, 0.24) (Table 3). There were no associations between school segregation and vigorous activities outside PE class and smoking regularly among each stratified group, even though the associations were statistically different between two groups.

IV analyses stratified by age showed that school segregation was associated with increased probability of having asthma among younger children but not older children, but the difference was not statistically significant (5–10 years: β=0.19; 95%CI: 0.027, 0.35; 11–17 years: β=0.02; 95%CI: −0.11, 0.15).

DISCUSSION

This paper provides some of the first evidence on the relationship between school racial segregation and the well-being of Black children, using a robust, quasi-experimental design to evaluate the outcomes of a specific set of local policies. Previous research on the effects of school segregation has examined the desegregation of schools in the 1960s-80s. We provide timely evidence on more recent trends that have resulted in resurgent segregation in districts across the country. We found greater school segregation was associated with increased behavioral problems and alcohol consumption among Black children, especially

for girls. These findings have important implications for Black children's well-being in childhood and across the lifespan.

The results for behavioral problems align with a large literature linking social, racial, and economic marginalization with inequities in child behavioral problems.[43–47] Children who are consistently exposed to stressful family and neighborhood environments may have more difficulty managing mental and emotional challenges and experience impaired cognitive development.[46, 48, 49] Here, school segregation may increase children's stress. For instance, Black children may experience harsher disciplinary treatment at racially segregated schools, part of the "school-to-prison pipeline."[7, 8, 50] More frequent police contact, which often accompanies this discipline, is associated with poorer mental health among adolescents, especially Black girls.[33] Simultaneously, segregated schools have fewer resources to provide adequate support for children's mental health and cognitive development. For example, relative to majority-White schools, they often have high teacher turnover, less experienced teachers, limited material resources, and crowded classrooms, all of which can lead to poorer mental health management among children.[51, 52] As children with behavioral conditions are more likely to have lower educational achievement and psychosocial resources later,[53–55] and poor early academic achievement can lead to increased adolescent behavioral difficulties,[56, 57] school segregation-induced behavioral problems could exacerbate a harmful cycle of racial inequities in lifetime well-being.

Similarly, the results for alcohol consumption may be explained by unhealthy coping behaviors due to increased stress from school segregation, or peer effects.[7, 8, 50, 58] Prior (correlational) studies showed that higher levels of racial segregation in a school were associated with decreased odds of drinking and smoking for students, especially Black girls.[59–62] However, these studies either controlled for school characteristics that likely mediate the relationship between school segregation and health or estimated the effect of within-school segregation, both downstream effects of policies at the district level that determine school segregation levels. Our results thus do not necessarily contradict those studies, given our differing methods.

In IV models, we did not find that school segregation was associated with other child health indicators, including general health, obesity, and a diagnosis of a mental/emotional problem, even though school segregation may lead to reduced school resources with consequences for other domains of children's health.[6, 10] For example, reduced funding for maintaining segregated schools' physical infrastructure might increase students' exposure to asthmagens.[30, 63] Notably, these IV estimates were large and positive with wide confidence intervals, and IV methods in general have less statistical power than conventional analyses.[64] Larger samples with better statistical power may help clarify whether associations are truly null or simply imprecisely estimated in the current sample.

IV estimates contrasted with those from correlational OLS models, which did not show associations between school segregation and any outcome. OLS models typically suffer from confounding by unmeasured characteristics, such that their null results may obscure the actual negative impact of school segregation on child behavioral problems. For example, students in segregated schools may live in segregated neighborhoods—that

protect against behavioral or emotional problems among children. While many studies highlight the numerous negative health impacts of residential segregated neighborhoods for Black adults,[65–68] a small number suggest that living in segregated neighborhoods may confer mental health benefits, perhaps due to increased social support and lower exposure to interpersonal racism.[69–72] Thus, results from OLS models may be confounded by the protective effect of neighborhoods. Alternately, IV results may deviate from OLS results because the two approaches estimate different parameters. OLS models estimate associations between health and school segregation generally, from any cause. In contrast, IV models estimate the "local average treatment effect"[73] of school segregation driven by changes in court orders. The latter may be particularly damaging for Black children's health.

Strengths & Limitations

This study has several strengths, addressing a policy-relevant question using a robust quasi-experimental design and rich, nationwide, longitudinal data. It also has limitations. First, outcomes and covariates were self-reported and may be subject to reporting biases. Second, school segregation measures were captured at the district level and do not address segregation at larger (e.g., between districts) or smaller (e.g., within schools) levels.[74, 75] For this study, however, court decisions were targeted at school districts, and data on the specific schools that children attended are not available, making schools a less relevant unit of analysis. Third, releases from desegregation orders may have affected child health through channels other than school segregation (e.g., changing district's residential characteristics). We argue this is unlikely, since previous studies found few changes in residential segregation after districts were released from desegregation orders.[21] Our study also did not investigate mechanisms through which school segregation affects child health; we leave this to future work.

CONCLUSIONS

In this study, we found that recent school "resegregation" resulting from school districts being released from *Brown v. Board* desegregation orders was associated with increased behavioral problems among Black school-aged children and unhealthier drinking behaviors, especially among girls. The results highlight the need for structural interventions to improve the school environment for Black children, including reforming school funding formulas to increase government funding and education resources in segregated districts,[76] reducing biased and disproportionately harsh treatment targeting at Black children, and promoting school racial integration (e.g., busing initiatives recently proposed in the Strength in Diversity Act[77]). Future work should evaluate the effects of such policies on educational and health inequities.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1.

Descriptive summary

	% or Mean (SD)	Person-year observations
Individual characteristics		
Age at interview (years)	10.9 (3.5)	
Birthyear	1994 (6.9)	
Female (%)	48.2	
Family income at baseline (USD)	41936 (36858)	
Parents ever married at baseline (%)	38.0	
Outcome		
Poor/fair/good health (%)	34.8	1872
Asthma (%)	15.0	1705
Obesity (%)	9.0	1436
Mental/emotional problem (%)	14.5	1806
Behavioral Problems Index	8.0 (6.7)	1781
Drinking (%)		
Ever	37.0	511
Drank at least monthly	18.1	518
Had 5 or more drinks in a row at least monthly	4.4	518
Smoking		
Ever (%)	32.6	516
Ever smoked regularly (%)	5.2	520
Number of days smoked in the last month	0.8 (4.3)	520
PE class > 3 days/week (%)	26.7	633
Vigorous activities outside PE class > 3 days/week (%)	54.3	634
Exposure to school segregation		
Average Black-White dissimilarity index	0.47 (0.21)	
Instrument for exposure to school segregation		
Average years elapsed since release from court-ordered desegregation	2.9 (4.7)	
School district characteristics (baseline)		
Total students enrolled	97170 (154822)	
Black students (%)	49.1	
White students (%)	30.9	
Hispanic students (%)	16.4	
Receiving reduced price/free lunch (%)	57.8	
Residential segregation (dissimilarity index)	0.56 (0.22)	

Abbreviation: PE, physical education

Note: Sample was drawn from Child Development Supplement (CDS) waves in 1997, 2002, 2007, and 2014 and includes 1,248 Black children who ever resided in districts that were under the desegregation order in 1991. Children may have participated in more than one wave and we used all available person-year observations. School district characteristics represent the 1991 characteristics for the first observed district (baseline) that each child resided. The number of baseline school districts was 439.

Table 2.

Association of school segregation with health among Black children

Outcome	Coefficient (95% CI)		
	OLS (1)	Reduced form (2)	IV (3)
Poor/fair/good health	−0.023 (−0.060, 0.014)	0.0038 (−0.0030, 0.011)	0.062 (−0.049, 0.17)
Asthma	−0.0079 (−0.046, 0.030)	0.0057 (−0.0012, 0.013)	0.095 (−0.022, 0.21)
Obesity	0.0068 (−0.024, 0.038)	0.0035 (−0.0022, 0.0092)	0.055 (−0.041, 0.15)
Mental/emotional problem	−0.024 (−0.036, 0.031)	0.0044 (−0.0023, 0.011)	0.074 (−0.044, 0.19)
Behavioral Problems Index	−0.19 (−0.77, 0.39)	0.16* (0.031, 0.28)	2.53* (0.26, 4.80)
PE class > 3 days/week	−0.018 (−0.070, 0.035)	−0.0017 (−0.016, 0.013)	−0.012 (−0.12, 0.094)
Vigorous activities outside PE >3 days/week	0.032 (−0.026, 0.090)	0.017 (−0.0071, 0.041)	0.12 (−0.043, 0.28)
Drinking			
Ever	0.034 (−0.045, 0.11)	0.031** (0.0080, 0.054)	0.23** (0.049, 0.42)
Drank at least monthly	0.013 (−0.054, 0.079)	0.028** (0.0088, 0.047)	0.20** (0.053, 0.35)
Had 5+ drinks in a row at least monthly	0.026 (−0.033, 0.085)	0.010 (−0.0011, 0.022)	0.075 (−0.0082, 0.16)
Smoking			
Ever	0.082 (−0.058, 0.074)	0.0049 (−0.017, 0.027)	0.036 (−0.13, 0.20)
Smoked regularly	0.022 (−0.011, 0.055)	0.0039 (−0.0096, 0.017)	0.028 (−0.069, 0.13)
Number of days smoked	0.0091 (−0.59, 0.61)	0.0081 (−0.18, 0.20)	0.059 (−1.32, 1.43)

Abbreviation: PE, physical education

Note: Sample was drawn from Child Development Supplement (CDS) waves in 1997, 2002, 2007, and 2014 and includes Black children who ever resided in school districts that has been under court-ordered desegregation in 1991. The association was estimated with regressions of health on cumulative average segregation (OLS, Column 1), regressions of health on the average years elapsed since release from desegregation order (reduced form, Column 2), or instrumental variables (IV, Column 3) estimates of the effects of cumulative average segregation on health with the average years elapsed since the school district was released from desegregation order as an instrument. All models adjust for baseline school district characteristics (total student enrollment, student racial composition, and percent of students eligible for free or reduced-price lunch, residential segregation index measured by dissimilarity index), individual characteristics (sex, age, family inflation-adjusted income, and parental marital status), and fixed effects for birthyear and state. Exposure to school segregation is measured by the dissimilarity index. Standard errors are clustered at the individual level.

* $p < 0.05$

** $p < 0.01$

Table 3.

Association of school segregation with health among Black children, subgroup analyses

Outcome	Coefficient (95% CI)			
	By sex		By age	
	Male[a]	Female	11–17 years old[a]	5–10 years old
Poor/fair/good health	0.082 (−0.11, 0.27)	0.029 (−0.10, 0.16)	0.040 (−0.093, 0.17)	0.072 (−0.10, 0.24)
Asthma	0.077 (−0.096, 0.25)	0.11 (−0.022, 0.25)	0.02 (−0.11, 0.15)	0.19* (0.027, 0.35)
Obesity	0.050 (−0.083, 0.17)	0.029 (−0.092, 0.15)	0.088 (−0.028, 0.20)	0.0090 (−0.12, 0.14)
Mental/emotional problem	0.13 (−0.047, 0.30)	0.029 (−0.12, 0.18)	0.087 (−0.046, 0.22)	0.070 (−0.12, 0.26)
Behavioral Problems Index	2.64 (−0.27, 5.55)	2.42 (−0.31, 5.16)	2.42 (0.14, 4.71)	3.44 (0.076, 6.80)
PE class > 3 days/week	−0.10 (−0.29, 0.086)	0.071 (−0.079, 0.22)		
Vigorous activities outside PE >3 days/week	0.13 (−0.070, 0.33)	0.035 (−0.17, 0.24)[b]		
Drinking				
Ever	0.18 (−0.0042, 0.40)	0.34* (0.039, 0.64)		
Drank at least monthly	0.095 (−0.049, 0.24)	0.33* (0.050, 0.62)[b]		
Had 5 or more drinks in a row at least monthly	0.054 (−0.025, 0.13)	0.12 (−0.020, 0.25)		
Smoking				
Ever	0.026 (−0.22, 0.27)	0.065 (−0.25, 0.38)		
Smoked regularly	0.083 (−0.11, 0.27)	−0.015 (−0.071, 0.042)[b]		
Number of days smoked	0.051 (−2.23, 2.33)	0.36 (−0.40, 1.11)		

Abbreviation: PE, physical education

Note: Sample was drawn from Child Development Supplement (CDS) waves in 1997, 2002, 2007, and 2014 and includes Black children who ever resided in districts that were under the desegregation order in 1991. Coefficients represent instrumental variables (IV) estimates of the effects of cumulative average segregation on health with the average years elapsed since the school district was released from desegregation order as an instrument. All models include the baseline school district characteristics (total student enrollment, student racial composition, percent of students eligible for free or reduced-price lunch, and residential segregation index measured by dissimilarity index), individual characteristics (sex, age, family inflation-adjusted income, and parental marital status), and birthyear and state fixed effects. Exposure to school segregation is measured by dissimilarity index. Instrumental variable is the average years elapse from dismissal. Standard errors are clustered at the district level.

*$p < 0.05$

**$p < 0.01$.

[a]Reference group.

[b] Estimate is statistically significantly different from the estimate for the reference group. The significance is derived from an interaction model that interact sex or age with the school segregation exposure.