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Original Article

The effect of academic outcomes, equity, and student demographics on parental preferences for schools: evidence from a survey experiment

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How does competition for school resources, along with racial and socioeconomic biases, shape parental preferences for schools? In this article, I investigate how school attributes affect preferences and choice, which sheds light on the processes that maintain school segregation. To do so, I conduct a survey experiment that explores parental preferences and the tradeoffs inherent in the process of school selection using school profiles that resemble those available on widely used education data platforms. I find that parents hold the strongest positive preferences for learning opportunities and overall school achievement compared to other attributes, including school racial and socioeconomic composition. Additionally, though parents prefer schools that have higher equity rankings, highly equitable schools are less desirable to parents than schools with more status and learning opportunities. However, parents also hold independent racial and socioeconomic preferences and —on average—avoid schools with more students of color and low-income students. Furthermore, results suggest they are largely unwilling to make tradeoffs that would result in schools with higher fractions of students of color or low-income students. Taken together, this study links prior studies on the segregating effects of educational data with literatures on school segregation by illustrating the specific dimensions that drive school choice.

Key words: education; race/ethnicity; social class.

Introduction

American public schools remain stubbornly and persistently segregated by both race and socioeconomic status (SES), resulting in entrenched educational inequality. Though schools remain segregated in part due to residential segregation, the proliferation of school choice policies has decoupled residential and schooling choices in many school districts across the country, leading to increased segregation (Saporito and Sohoni, 2006; Pearman and Swain, 2017; Candipan, 2020; Rich et al., 2021; Schachner, 2022). At the same time, the increasing availability of educational data and rankings systems, such as *GreatSchools*,[1] has created an environment in which parents are able to obtain more information than ever about potential school options for their children, increasing opportunities for competition and sorting (Hasan and Kumar, 2019; McArthur and Reeves, 2022).

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Such data reflects an era of information saturation, where parents can obtain information on school attributes ranging from academic outcomes to the demographic composition of a given school. The rise in the availability of educational data, paired with a policy reliance on parental agency in structuring school choice, elevates the question of how parental preferences play out in the maintenance (or mitigation) of segregated schools.

Following scholarship that prioritizes understanding the mechanisms underlying choice and segregation (Fiel, 2015; Billingham and Hunt, 2016; Haderlein 2021; Hailey, 2022a), I conduct a survey experiment to examine preferences around schooling. Parents have historically struggled to balance the goals of a public educational system with their own interests in the private payoffs associated with education (Labaree, 1997). In competing for access to school-based goods, some families have a distinct advantage: families with more resources and capital are able to maintain their social and educational positions and exclude other groups from accessing the same set of resources (Saporito and Lareau, 1999; Fiel, 2015; Lewis and Diamond, 2015). Recent experimental work has shown that parents display a wide array of preferences for school attributes, ranging from those associated specifically with status and resources (such as a school's average test scores; hereafter achievement), to learning opportunities and test score growth,[2] to the racial and SES composition of the student body (Haderlein 2021; Ukanwa et al., 2022; Hailey, 2022a; Houston and Henig, 2023; Mellon and Siegler, 2023). Along the same lines, other school attributes, such as school equity,[3] may also drive choices. However, it is not immediately clear which is the most consequential in driving the choice of schools or creating the conditions under which parents choose schools with more segregation. Though studies have shown that these school attributes matter for parents, we do not yet know how they matter in relationship to each other.

Using a conjoint survey experiment where respondents choose between school profiles with randomly assigned attributes, I simultaneously estimate parents' independent preferences for school achievement, learning rates, overall ranking, equity ranking, and school demographic (racial and SES) compositions. This study extends prior sociological research on these topics in three main ways. First, while prior work has established the extent to which parents hold racial and socioeconomic preferences that are independent of preferences for other attributes (Billingham and Hunt, 2016; Hailey, 2022a; Mellon and Siegler, 2023), this study builds upon such work by simultaneously estimating preferences for these measures at once, which answers several questions: which attributes do parents value the most—and by how much? Do there exist conditions where parents might be less likely to choose racially or socioeconomically segregated schools? Second, while much of the prior work has used discrete categories of racial and SES compositions, this study varies all attributes continuously and, when possible, draws them from the actual underlying distribution of each measure using data from the Stanford Education Data Archive (SEDA; Reardon et al., 2021). This allows for an estimation of tradeoffs that inform decisions (e.g., by how much would the average school need to raise average test scores in order for White parents to accept a school with an incremental increase in the fraction of Black students?), along with identifying any sudden discontinuities that exist over the continuum of possible school compositions (e.g., is there a maximum composition of students from a given racial/SES group, above which parents on average are unlikely to choose a school?). Third, we have little information on the impact that quantified school equity may—or may not—have on preferences. Equity measures have been introduced onto platforms such as *GreatSchools* as an intervention to mitigate the extent to which ranked educational data exacerbates segregation (Barnum, 2020), but this idea hinges on the assumption that parents prefer schools with more equity, and that any positive preferences for equity do not vary by the racial or SES composition of the school. If equity and high achievement are viewed as fundamentally incompatible by parents, respondents may avoid schools with more equity, defeating the purpose of many of these policy shifts.

Taken together, this study examines how parents' preferences play out in the market for schools, shedding light on the processes by which schools remain segregated and providing practical policy insight into how parents make educational choices and tradeoffs. In using profiles that draw from information that parents may have on hand when making actual schooling

decisions, this study informs how preferences for various school attributes shape choice patterns. I find that parents have the strongest preferences for schools with high learning rates and high average achievement, followed by overall school ranking. Though parents do have a slight preference for schools with more (rather than less) equity, this preference is less strongly held than preferences for other (private) goods such as learning rates, achievement, and overall school ranking. This suggests that competition for learning opportunities and test scores are the primary lenses through which parents evaluate schools, and therefore likely a primary means through which segregated schools are maintained. In addition, the secondary nature of equity as a driver of preferences highlights a reliance on schooling as a private, individual good, rather than a collective and public one (Labaree, 1997).

By race, parents are heterogeneous in their preferences for same-race classmates. On average, however, negative preferences against schools with increased fractions of students of color and low-income students are less strong than positive preferences for achievement, growth, or overall ranking. However, consistent with prior work, I also find that parents of all races and income backgrounds hold race- and SES-based biases that are independent of their preferences for other school attributes (Billingham and Hunt, 2016; Ukanwa et al., 2022; Hailey, 2022a). Finally, though I find evidence that parents are moderately willing to accept tradeoffs between educational goods, these tradeoffs are large and impractical, further illustrating the entrenched nature of these biases.

Background

School segregation by race and SES

Most public school students in the United States attend segregated schools (Reardon et al., 2019; Owens, 2020), which are associated with a number of negative consequences on student outcomes. For example, several studies have found that school segregation is among the strongest predictors of racial and SES test score disparities between children of different racial backgrounds (Reardon, 2016; Matheny et al., 2023; Michelmore and Rich, 2023). However, there is mixed evidence on the mechanisms that explain the role of school segregation in shaping disparate academic outcomes: for example, some studies have also found that exposure to school poverty has a modest or limited effect on academic outcomes (Lauen and Michael Gaddis, 2013; Wodtke and Parbst, 2017). Beyond test scores alone, however, segregation has also been shown to be associated with discipline gaps (Edwards, 2016; Pearman et al., 2019), dropout rates (Guryan, 2004; Johnson, 2011), mobility gaps (Chetty et al., 2014; Johnson, 2019), and other valued life outcomes (Johnson, 2011). While there is strong evidence that court-mandated desegregation policies had dramatic positive causal effects on the *academic* trajectories of Black children (without negative consequences for White children in the same districts; Johnson, 2019, Johnson, 2011), there are also concerns about negative ramifications on both the mental health and emotional well-being of Black students and the careers of Black teachers post-desegregation (Oakley et al., 2009; Goosby and Katrina 2012; Brown, 2016; Hargrove 2023).

School segregation persists, in part, because of the choices that individual parents and families make when choosing a school. Though parents choose schools in an individual context, such choices have cumulative ramifications on community segregation levels. These choices need not be zero-sum: for example, high-income children tend to perform similarly in school districts with high and low levels of segregation, but low-income children's test scores are much higher in places with low segregation levels (Quillian, 2014). However, parents alone are not to blame for the existence of persistently segregated schools. Parents strongly prefer geographic proximity to schools, but school districts in the United States are situated within segregated residential zones where there are dramatic differences in the affordability of different neighborhoods (Goyette and Lareau, 2014; Rhodes and Warkentien, 2017; Edwards, 2021). Still, within-district school segregation accounts for one-third of overall school segregation (Stroub and Richards, 2013; Owens et al., 2016)—and is growing over time, particularly in large districts (Owens et al., 2022).

Valuing school attributes

Existing research on how preferences shape segregation has painted a complicated picture of the mechanisms underlying school choice and segregation (Goyette and Lareau, 2014; Burdick-Will et al., 2020; Hailey, 2022a; Thompson and Trejo, 2023). For example, prior work has highlighted the degree to which school segregation is driven by status competition and social closure, where parents from different status groups compete for school-based resources (Weber, 1968; Fiel, 2015). For example, when presented with the opportunity to do so, parents tend to hoard educational opportunities that will benefit their own children at the expense of others (Tilly, 1998; Lewis and Diamond, 2015). As school choice policies have proliferated across districts, rising decentralization allows for increased sorting as individuals and families compete for school-based resources (Fiel, 2015; Rich et al., 2021).

Parents tend to value both achievement and growth when making choices about which schools they prefer for their children (Abdulkadiroğlu et al., 2020; Haderlein 2021; Houston and Henig, 2023). Importantly, however, achievement and growth are separate constructs that carry different implications. While achievement indicates a school's average test scores, it is also highly correlated with student characteristics such as race and SES (Hanselman and Fiel, 2017; Reardon, 2019). As such, scholars tend to consider achievement a poor measure of school quality because it tells us more about the students that a school serves rather than the learning that it promotes, given that wealthier students tend to enter school with higher standardized test scores (Downey et al., 2008; Hanselman and Fiel, 2017; Reardon, 2019). On the other hand, growth measures indicate how much students *improve* on standardized tests on average over the course of the school year and are more closely related to learning opportunities and progress than to student SES and privilege (Reardon, 2019). Achievement and growth measures are also largely uncorrelated, so school districts that tend to have high-growth opportunities are not always those with the highest initial average test scores (Reardon, 2019).

Though growth measures are most tightly tied to the effectiveness of a school, they are often overlooked relative to achievement. Growth is of particular value to parents in experimental settings (Haderlein 2021), though they tend to prefer achievement over growth in rank-ordered situations (Abdulkadiroğlu et al., 2020). Hanselman and Fiel (2017) also found that, unlike with achievement, schools do not tend to be segregated by learning opportunities, suggesting that if parents do value growth above all else, they do a poor job of seeking out these resources in real-world contexts. Because of the segregation of school resources and achievement, providing parents with growth information alone has been shown to have desegregating results (Houston and Henig, 2023), but only when this information is not paired with other information about school average test scores.

In addition, we have limited practical insight into the ramifications of equity measures on educational data platforms. Equity measures are a relatively new addition to educational data platforms and may evoke unexpected responses from parents. These measures generally describe the extent to which a school is able to provide students from both advantaged and disadvantaged backgrounds with similar opportunities and have been instituted, in part, to lower segregation levels (Barnum, 2020). And yet, little is known about the value of equity to parents making school choices. Parents may find equity to be a positive school attribute or may instead prefer schools with less equity, where they might have increased abilities to monopolize scarce educational resources.

Finally, while preferences for measurable academic resources may drive choice patterns, parents may also seek to exclude other groups and maintain their status through opportunity hoarding and boundary maintenance (Tilly, 1998; Hanselman and Fiel, 2017; Diamond and Lewis, 2022). For example, prior studies have shown that parents display racial preferences for schools that are independent of school characteristics (Billingham and Hunt, 2016; Hailey, 2022a; Mellon and Siegler, 2023), and White parents tend to view schools with large (or increasing) representation of Black students as lower quality (Goyette et al., 2012; Evans, 2021). While parents rarely

state directly that racial and socioeconomic compositions drive their choice of schools, revealed preferences show that these are among the most salient features of school choice (Holme, 2002; Billingham and Hunt, 2016; Burdick-Will et al., 2020; Hailey, 2022a).

Educational data & choice logics

Educational data has become increasingly available to everyday consumers, complicating the relationship between competition for school-based resources and parental logics of school choice. In the past, parents might not have had access to a given school's exact achievement levels or growth rates and instead might have relied on other (potentially incorrect) indicators of quality, but at present information on school attributes is ubiquitous. Though these data sources can democratize accountability information that might not have previously been available to all parents, they can also drive segregation patterns as parents self-sort based on school attributes. For example, evidence from the staged rollout of *GreatSchools* showed that the platform had a causal effect on housing prices that accelerated residential segregation (Hasan and Kumar, 2019). Likewise, the introduction of school performance data in England increased residential segregation because advantaged families became more concentrated in areas with high-ranked schools (McArthur and Reeves, 2022). Thus, the provision of seemingly "neutral" public information can in fact drive more inequality between schools and districts.

The growing use of educational data has mirrored a rise in accountability and rankings data across organizational sectors (Espeland and Stevens, 2008; Lamont, 2012; Correll et al., 2017). These rankings influence public perception of the value of schools and organizations, which in turn shapes how organizations themselves operate (Espeland and Sauder, 2007; Chu, 2021). Prior work has shown that parents are responsive to educational data (Clinton and Grissom, 2015; Valant and Weixler, 2022; Houston and Henig, 2023), and seek it out with fervor as school choice options in their area increase (Lovenheim and Walsh, 2018).

This study builds upon prior work on these topics by weighing the relative influence of a series of school attributes, rankings, and student body compositions on parents' school preferences. In doing so, I aim to shed light on the factors motivating schooling choices, which speaks to the theoretical mechanisms underlying school segregation and the use of ranked schooling data.

Data

Participant recruitment

To examine the questions raised in this study, I fielded a pre-registered[4] conjoint survey experiment among 1,807 US-based parents of school-aged children in January 2022. Participants in this study were recruited through Prolific, an online survey platform that directly connects researchers to survey participants and has been shown to be a source of quality experimental data (Palan and Schitter, 2018). Descriptive statistics of survey respondents can be found in table 1.

Survey experiment

This study uses a conjoint experiment survey design, which is designed to disentangle the complexities of multidimensional choices (Hainmueller et al., 2014). In a standard conjoint experiment setup, respondents view profiles with several attributes that are all varied at once, which approximately mirrors the ways that people make choices in context. In doing so, a conjoint experiment allows for the investigation of the independent causal effect of several attributes on likelihood of choice (Hainmueller et al., 2014).

In particular, conjoint experimental designs have several benefits that are useful for disentangling preferences around schooling for this study. First, because respondents respond to several choice tasks during the experiment, conjoint experiments with repeated tasks have much higher statistical power than similar vignette studies (for example, in this study, each respondent completed 6 choice tasks). Likewise, because all of the attributes are varied at once, social desirability bias is more limited with conjoint designs because it is difficult for respondents

Table 1. Descriptive statistics of analytic sample ($n = 1{,}807$).

	Mean/Prop.	SD
Respondent (parent) race		
White	.82	
Black	.07	
Asian	.03	
Mixed	.05	
Other	.02	
Latino/Hispanic	.07	
Household income above median	.52	
Age	38.73	7.64
Gender		
Women	.64	
Men	.36	
Prefer not to say	.001	

to discern the goals of the study (Hainmueller et al., 2014; Horiuchi et al., 2022). For example, potentially sensitive attributes are randomized alongside a number of less sensitive attributes, which makes it more difficult for respondents to align their responses with a particular social norm (Horiuchi et al., 2022). Finally, the design of this experiment in particular approximately resembles real-world profiles such as those found on *GreatSchools*, where respondents are using a number of attributes—including both academic and demographic characteristics of a school—to make decisions. However, the artificial setting of such experiments limits our ability to precisely translate findings on preferences to real-world choice settings.

To begin the survey, respondents were first asked to imagine that they were choosing a school for their child as if that child were entering school for the first time at age 5. Respondents were presented with a pair of schools with randomly assigned school attributes and asked which school they preferred. Respondents could only select one of the two schools, resulting in a forced choice. Each school profile included the following attributes (presented in a randomized order): achievement level, learning rate, overall ranking, and equity ranking.[5] In addition, each profile included both student racial/ethnic (percent White, Hispanic, Asian, and Black students, presented in a randomized order across respondents) and SES composition (operationalized as the percent of students eligible for free- or reduced-price lunch). Respondents completed this choice task a total of six times, resulting 10,842 observations (6 tasks for each of the 1,807 respondents). An example choice profile set from the study is provided in the appendix (Fig. A1).

School profiles and attributes

Achievement and learning rates. Achievement and learning rate measures are drawn from SEDA 4.1, which incorporates test score data for nearly every public school in the United States between 2009 and 2019 (prior to the onset of the COVID-19 pandemic; Reardon et al., 2021). The measures included in the experiment approximately reflect achievement and growth from the actual underlying distribution of these measures, which were derived from the publicly available school-level SEDA file (see appendix figures A2-A5). For both sets of attributes, I constrained the minimum and maximum values for school profiles to be roughly two SD above and below the mean of the actual underlying distribution, respectively. To describe these attributes prior to completing the choice tasks, respondents were told the following (ordered to align with the randomized presentation of these attributes in the profiles):

Average standardized test performance is measured as the average school test scores, compared to the national average.

Learning rate is measured as how much students learn in one school year, compared to the national average.

I transformed the raw attributes from SEDA for interpretability. Achievement measures were displayed in grade level units relative to the national average (i.e., "compared to the national average, this school's test scores are 1.2-grade levels above average"), while learning rates were shown as the percent more/fewer children in the school tended to learn relative to the national average (i.e., "students at this school typically learn 22% more per year than the national average").

Overall and equity rankings. *GreatSchools* include rankings from 1/10 to 10/10 for both the overall ranking of a school and the equity ranking of a school. For this reason, I also varied experimental profiles such that overall and equity rankings varied from 1/10 to 10/10. To describe these attributes, respondents were told the following (ordered to align with the randomized presentation of these attributes in the profiles):

School overall ranking shows how this school typically ranks overall on school rating platforms, such as GreatSchools (on a scale from 1-10).

School equity ranking shows how well this school serves disadvantaged students relative to all students (on a scale from 1-10). A low equity ranking (such as 1/10) shows that a school has large achievement gaps and high levels of inequality between students from different backgrounds.

Racial and socioeconomic composition. To include school racial compositions, I randomly assigned percentages to four racial/ethnic groups (White, Asian, Black, and Hispanic students) and constrained them such that they comprised 100% of the student population. For brevity and to avoid an overwhelming number of attribute dimensions for respondents to consider, I did not include other racial/ethnic subgroups.[6] To conduct this randomization, I first randomly selected one of the four subgroups (e.g., Black students) and then randomly assigned a percentage (e.g., 34%) ranging from 1–99% of the school population.[7] I then randomly selected a second subgroup of the three remaining groups (e.g., Hispanic students, 14%; ranging from 1% to the remaining available fraction), and so on until all four subgroups had an assigned percentage. Likewise, I randomly assigned a fraction of low-income students ranging from 1–99% of the school population.

Analytic strategy

Average marginal component effects

In a conjoint experiment, respondents are asked to choose between two profiles where all of the attributes for each of the profiles have been randomly assigned. Because all of the treatments are fully randomized, it is possible to disentangle their relative effects on probability of choice, averaged over all other attributes. A strength of using the profile measures used in this study is that each exists on a continuum from high to low; therefore, measures held at their average have a meaningful and interpretable real-world implications. While there are necessarily some unusual school profile combinations that do not exist in real-world contexts, by randomly assigning these characteristics it is possible to disentangle the causal effect of each attribute on likelihood of choice, independent of the other characteristics.

To estimate the effects of a given measure on choice, I use average marginal component effects (AMCEs), which illustrate the causal effect of an incremental change in one of the underlying attributes on the probability of choice, net other measures (Hainmueller et al., 2014; Bansak et al., 2022). These can be estimated using ordinary least squares (OLS) models with robust standard

errors clustered by respondents using versions of the following equation:

$$Choice_{ij} = \beta_0 + \beta_1 Learning\ Rate_{ij} + \beta_2 Achievement_{ij} + \beta_3\ Status\ Ranking_{ij} + \beta_4 Equity\ Ranking_{ij} + \beta_5 \%Low\ Income_{ij} + \beta_6 \%Asian_{ij} + \beta_7 \%Black_{ij} + \beta_8 \%Hispanic_{ij} + \varepsilon_{ij} \quad (1)$$

$Choice_{ij}$ is a binary outcome variable for reflecting the choice outcome for school i by respondent j. All school characteristics are included as standardized measures.

Recent work has criticized the estimation of AMCEs for understanding preferences in part because they do not take into account the alternative options that a given respondent is choosing between (Ganter, 2023; Abramson, Kocak, and Magazinnik 2022). To account for potential bias that may be introduced by examining all profiles simultaneously rather than pairing considered options, I also estimate conditional logit models that specifically take choice sets into account. These are of the same general form as equation (1), with robust standard errors clustered at the respondent level. Furthermore, as an additional robustness check to examine the sensitivity of models to analytic choices and interpretations, I also estimate models of the same general form as equation (1) using (1) multi-level models that partition error variance at the choice set and respondent levels and (2) an alternative estimator to the AMCE, the average component preference estimator (ACP; see Ganter, 2023). Results from these alternative estimations can be found in the appendix (summarized in table A1) and are substantively similar to the AMCE displayed in the main text. Further, I examine preferences for school racial composition relative to same-race preferences in table A2.

Tradeoffs (willingness to pay)

In addition to estimating AMCEs that illustrate the likelihood of choice, conditional on other attributes, I also estimate marginal rates of substitution, a commonly used willingness to pay metric (McFadden, 1980; Train, 2003; Lara and Shores, 2018). While the AMCEs illustrate the effect of increasing a given attribute on likelihood of choice, willingness to pay estimates show the relative tradeoffs between metrics, such as the amount of achievement grade levels that respondents might be willing to trade in order to increase a school's learning rate. First, Probit coefficients for each of the attributes are derived from an equation in the form of equation (1). Next, the marginal rate of substitution is the ratio of the coefficients of interest:

$$-\beta_{attribute1}/\beta_{attribute2} \quad (2)$$

For example, from equation (2), the marginal rate of substitution estimate of the amount of achievement grade levels that respondents might be willing to trade in order to incrementally increase school learning rate is calculated by dividing the Probit coefficient for attribute 1 (learning rate; in percentage points), by the Probit coefficient for attribute 2 (achievement; in grade level units). The ratio between the coefficients suggests the tradeoff between them. Note that, while I display AMCE coefficients in standardized units, I leave marginal rates of substitution in their original units to preserve meaningful unit interpretations.

Nonlinear or discontinuous trends

Finally, I also borrow from literature on residential segregation in examining the extent to which there may be tipping points based on the demographic composition of a given school (Schelling, 1971; Bruch and Mare, 2006), above which parents are unlikely to choose a given option. For example, observational studies have found that parental preferences for the racial demographics of a given school vary nonlinearly based on the fraction of same-race students in a given school (Denice and Gross, 2016; Glazerman and Dotter, 2017). First, to better understand the fit of the data and how likelihood of choice varies over school race/SES composition, I display two

functional forms for the racial and SES compositions of schools: linear splines that proceed in 0.10 increments[8] and regression specifications that include a linear and quadratic term for each compositional measure, while controlling for other non-compositional school attributes (i.e., achievement, growth, equity, and ranking). Quadratic continuous fits take the form of equation (3) (below):

$$Choice_{ij} = \beta_0 + \beta_1\ Group\ Composition_{ij} + \beta_2\ Group\ Composition_{ij}^2 + \mathbf{X_{ij}\Phi} + \mathbf{Y_{ij}\delta} + \varepsilon_{ij} \quad (3)$$

where $Group\ Composition_{ij}$ and $Group\ Composition_{ij}^2$ represent the focal group composition of interest (e.g., $\%Low\ Income_{ij}$), while $\mathbf{X_{ij}\Phi}$ is a vector containing all non-focal group composition and their quadratic terms (here, this would include $\%Asian_{ij}$, $\%Black_{ij}$,and $\%Hispanic_{ij}$, since low-income is the focal category, with the fraction of higher-income and White students serving as reference categories). $\mathbf{Y_{ij}\delta}$ is a vector containing all other school attributes. These specifications differ from those displayed in the AMCEs, which assume a linear functional form.

Results

Preferences for school attributes

Table 2 presents AMCEs for each of the coefficients of interest for both the overall analytic sample as well as for parents of different racial and income subgroups. Each coefficient represents the causal effect of a one SD increase in a given school attribute on likelihood of choice, holding all other attributes constant at their averages. For ease of interpretation, I also illustrate the AMCEs in a coefficient plot in figure 1.

Overall, parents express the strongest positive preferences for school learning rate, with a one SD increase in learning rate increasing likelihood of choice by 12 percentage points ($P < 0.001$). This is followed by school achievement levels (β=0.11, $P < 0.001$), and school ranking (β=0.08, $P < 0.001$). Parents also express positive preferences for school equity (β=0.04, $P < 0.001$). In general, preferences for school attributes that are not based on student demographic composition are relatively similar across parent race and SES: both the magnitudes and the order of importance are similar in statistical significance across racial/ethnic groups. [9]

However, a different story emerges when examining school student composition by race and SES. In the pooled parent sample, parents on average are less likely to choose schools with higher fractions of low-income students, relative to high-income students, with a one SD increase in the fraction of low-income students corresponding to a 3-percentage point decrease in the likelihood of choice. Likewise, on average, parents express negative preferences towards schools with higher fractions of Black ($\beta = -0.02$, $P < 0.001$), Asian ($\beta = -0.01$, $P < 0.01$), and Hispanic ($\beta = -0.01$, $P < 0.001$) students, respectively, relative to White students. Parents are least likely to choose schools with higher fractions of Black students, followed by schools with higher fractions of Hispanic and Asian students, holding all else constant. I also observe that positive preferences for non-demographic attributes (e.g., learning rate, achievement, school ranking, and equity ranking) are larger in magnitude in the overall sample than negative preferences held against schools with higher fractions of low-income and non-White students.

For White parents, patterns of demographic preferences largely follow similar patterns as the overall parent sample (which is in part due to the fact that White parents make up 82% of the sample). Next, I find that Black parents are the only group of parents exhibiting positive preferences for schools with higher fractions of Black students, with a one SD increase in the percent of Black students corresponding to a 4-percentage point increase in the likelihood of choice ($P < 0.01$). Tests examining the coefficients show that these estimates are statistically distinct from the preferences of White parents. Indeed, preferences regarding fractions of Black students are the only attribute—academic or otherwise—that differs significantly between parent

Table 2. AMCEs predicting school choice among randomly assigned attributes.

	(1)		(2)		(4)		(3)		(5)		(6)		(7)	
	All parents		White parents		Black parents		Asian parents		Latino/Hispanic parents		Lower-income parents		Higher-income parents	
Learning rate	0.12	***	0.12	***	0.11	***	0.12	***	0.11	***	0.12	***	0.12	***
	(0.00)		(0.00)		(0.01)		(0.02)		(0.01)		(0.00)		(0.00)	
Achievement	0.11	***	0.11	***	0.10	***	0.10	***	0.10	***	0.11	***	0.12	***
	(0.00)		(0.00)		(0.01)		(0.02)		(0.01)		(0.00)		(0.00)	
School ranking	0.08	***	0.09	***	0.08	***	0.06	**	0.08	***	0.08	***	0.08	***
	(0.00)		(0.00)		(0.01)		(0.02)		(0.01)		(0.01)		(0.00)	
Equity ranking	0.04	***	0.04	***	0.04	***	0.05	**	0.04	**	0.05	***	0.04	***
	(0.00)		(0.00)		(0.01)		(0.02)		(0.01)		(0.00)		(0.00)	
% Low-income	−0.03	***	−0.03	***	−0.03	*	−0.06	**	−0.00		−0.02	***	−0.03	***
	(0.00)		(0.00)		(0.01)		(0.02)		(0.01)		(0.00)		(0.00)	
% Black	−0.02	***	−0.03	***	0.04	**	−0.03		−0.02		−0.02	***	−0.02	***
	(0.00)		(0.00)		(0.01)		(0.02)		(0.01)		(0.00)		(0.00)	
% Asian	−0.01	**	−0.01	***	0.00		0.02		−0.01		−0.01		−0.01	**
	(0.00)		(0.00)		(0.01)		(0.02)		(0.02)		(0.00)		(0.00)	
% Hispanic	−0.01	***	−0.02	***	0.01		−0.01		0.01		−0.01	*	−0.02	**
	(0.00)		(0.00)		(0.01)		(0.02)		(0.01)		(0.00)		(0.00)	
Constant	0.50	***	0.50	***	0.50	***	0.49	***	0.50	***	0.50	***	0.50	***
	(0.00)		(0.00)		(0.01)		(0.01)		(0.00)		(0.00)		(0.00)	
Observations	10,842		8,910		714		354		720		5,208		5,634	

Notes: Each column displays results from a separate regression. All school attributes have been standardized. Standard errors in parentheses. * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$. Among racial subgroups, results are statistically similar by race with the exception of the preferences of Black parents for the percent of Black students in a given school. Among income subgroups, results are statistically similar by income with the exception of preferences for the percent of low-income students in a given school.

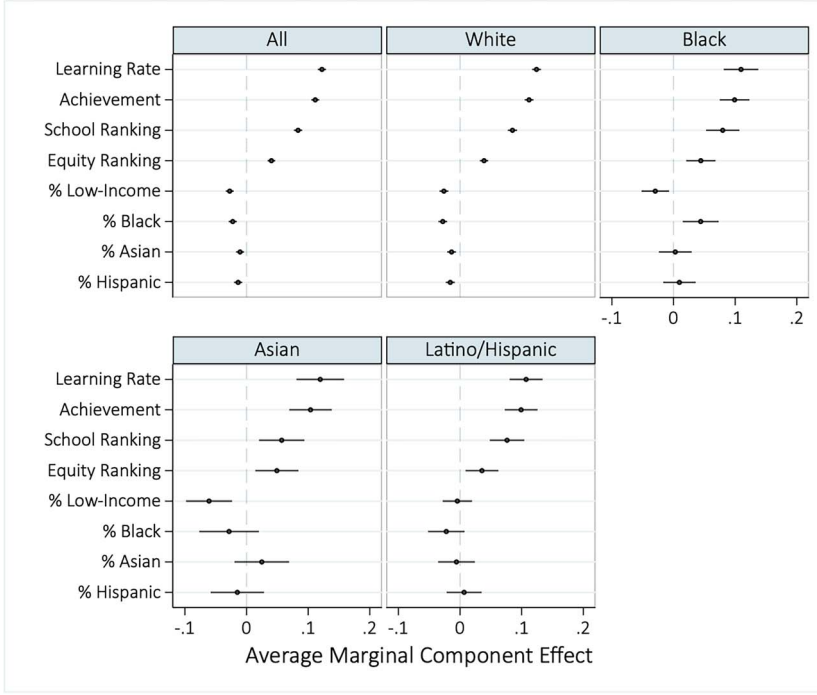

Figure 1. Coefficient plot illustrating AMCEs among randomly assigned attributes, by respondent race/ethnicity. *Notes:* All coefficients are standardized. Error bars represent 95% confidence intervals. The reference category for coefficients related to student racial/ethnic composition is the proportion of White students. All racial/ethnic groups display statistically similar preferences, with the exception of Black parents' preferences for the percent of Black students in a given school.

racial groups. Moreover, Black parents did not appear to have statistically significant preferences for students of other racial groups but did tend to avoid choosing schools with higher fractions of low-income students at statistically similar rates to the overall parent sample ($\beta = -0.03$, $P < 0.05$). Asian parents are less likely to choose schools with higher fractions of low-income students ($\beta = -0.06$, $P < 0.01$), but increases in the Black, Hispanic, or Asian population of the student body do not appear to be statistically related to likelihoods of choice. However, because Asian parents represent the smallest fraction of the overall parent sample, it is also useful to note that the positive magnitude of the coefficient for Asian students is suggestive of positive preferences for this group by Asian parents, relative to preferences for White students. Finally, I find that Latino/Hispanic parents do not exhibit statistically significant preferences for either the racial or the SES composition of the schools. Importantly, while figure 1 displays coefficients by parent race, only the coefficient on the percent of Black students is statistically different across parent race, as previously noted.

Turning to preferences among different SES groups, I observe largely similar patterns in the preferences of parents whose household incomes are above the median relative to those who are below the median. The only exception to this pattern is preferences around higher fractions of low-income students. Though this difference is substantively quite small and therefore likely not of practical importance, respondents whose household family income is below the United States median display more positive preferences towards schools with higher fractions of low-income students than do respondents whose household incomes are above the median.

Table 3. Marginal rates of substitution for school attributes.

	(1)	(2)	(3)	(4)
	Learning rate	Achievement	School ranking	Equity ranking
Learning rate		−0.09***	−0.17***	−0.35***
		(0.00)	(0.01)	(0.03)
Achievement	−10.77***		−1.82***	−3.78***
	(0.46)		(0.10)	(0.33)
School ranking	−5.93***	−0.55***		−2.09***
	(0.31)	(0.03)		(0.19)
Equity ranking	−2.86***	−0.27***	−0.48***	
	(0.24)	(0.02)	(0.04)	
% Low-income	0.20***	0.02***	0.03***	0.07***
	(0.02)	(0.00)	(0.00)	(0.01)
% Black	0.18***	0.02***	0.03***	0.06***
	(0.03)	(0.00)	(0.00)	(0.01)
% Asian	0.09**	0.01**	0.01**	0.03**
	(0.03)	(0.00)	(0.00)	(0.01)
% Hispanic	0.11***	0.01***	0.02***	0.04***
	(0.03)	(0.00)	(0.00)	(0.01)
Observations	10,842	10,842	10,842	10,842

Notes: Columns are displayed in the units of the "cost" metric (attribute 2 in equation (2)). For example, all coefficients in Column 1 are displayed in learning rate units. Standard errors in parentheses. * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.

Tradeoffs

I next discuss the extent to which experimental results from the AMCEs suggest relative tradeoffs that parents are expected to be willing to make between various school characteristics (see table 3). These estimates allow us to ask the following: are there conditions under which we might expect parents to choose schools with higher levels of low-income students and Black, Asian, or Hispanic students? All estimates are presented in the units of the "cost" variable in the columns (attribute 2 in equation (2)). For example, the first column of table 3 is in learning rate units and suggests that, based on the results presented previously in table 2, parents might be willing to trade 10.8 percentage points of average school learning rate in order to have a one-grade level increase in that school's average achievement. Both school ranking and equity ranking willingness to pay rates are also negative, suggesting that parents would be willing to trade some amount of school learning rate for an incremental increase in the overall school or equity ranking. However, note that the marginal rates of substitution for proportions of low-income and non-White students are positive. For example, these results suggest that, based on parents' preferences, a given school would need to increase learning rates by 0.2 percentage points or achievement by 0.02-grade levels in order for parents to accept a single percentage point increase in the proportion of low-income students. Other two-by-two pairwise comparisons can be seen in the table. Overall, estimates in table 3 show that parents are willing to sacrifice some educational goods for others at varying rates that align with the order in which they value these attributes (see also table 2). However, given biases on average towards schools with higher fractions of lower-income students or students of color, results suggest that average parents would be willing to accept schools with higher proportions of these students only if the accompanying increase in learning rate, achievement, status, or equity was substantial.

To further illustrate relative tradeoffs over the distributions of schools displayed to respondents, I also focus on two specific tradeoffs of interest: the rate at which parents chose schools based on learning rates and achievement (the two school attributes most preferred by parents) and their biases against schools with higher fractions of low-income and Black classmates for

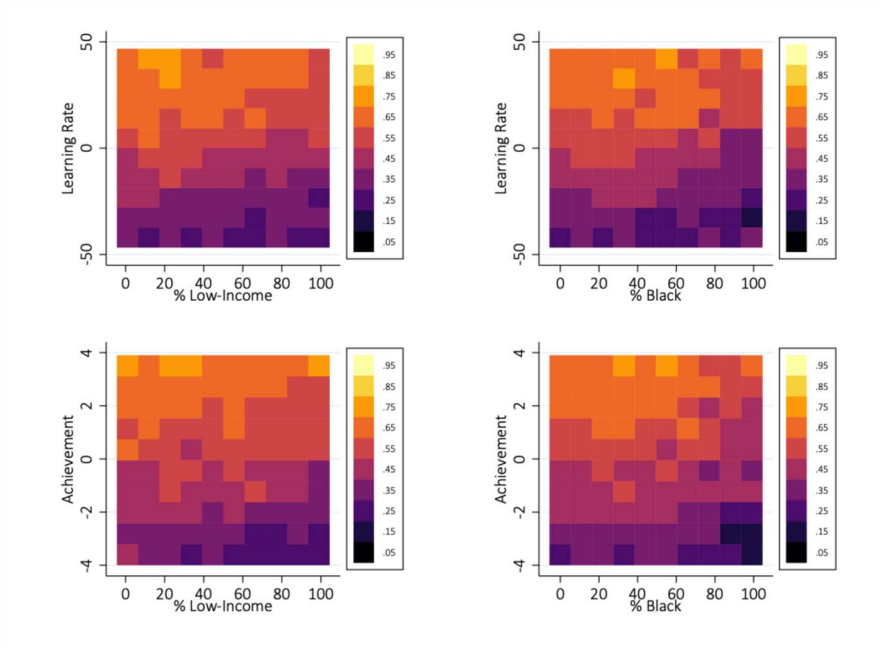

Figure 2. Heat maps illustrating the relationship between learning rate or average achievement, socioeconomic/racial composition, and probability of school profile choice. *Notes:* Learning rate is presented in percentage points above/below the national average. Achievement is presented in grade levels above/below the national average.

their children (representing the two demographic groups for whom parents–on average–expressed the strongest negative preferences).[10]

Figure 2 illustrates heat maps for each of the pairwise comparisons of interest, with each of the squares showing the probability that respondents at a given level of that attribute chose the school profile in question. Darker purple tones indicate lower likelihoods of choice, while lighter yellow tones indicate a higher likelihood of choice. As can be seen in the figures, choice patterns are largely similar for both attributes, with learning rates or achievement levels that are above the national average generally indicating a higher likelihood of choice, but less so when those schools also have much higher proportions of either low-income or Black students. At the same time, even though parents have the strongest preferences for schools with high learning rates and achievement levels, schools with the highest possible value of either of these measures in schools that are approaching 100% low-income or Black students are only moderately likely to be chosen by parents, controlling for all else. For example, figure 2 illustrates that parents are similarly likely to choose a school profile that is 2-grade levels *above* the national average in achievement with around 100% Black students as they are to choose a school profile that is 2-grade levels below the national average in achievement with 0–20% Black students. Thus, even schools with the highest possible values of achievement or learning rate—up to approximately 2 SD above the national mean, which is exceedingly rare in real-world scenarios—are only moderately likely to be chosen by parents if they predominately serve low-income or Black students.

Equity

Next, I more closely examine how equity measures and shifting school demographics might relate to tradeoffs that parents are (or are not) willing to make. For example, while parents may prefer

Table 4. Heterogeneity of effects of equity across student body composition.

Learning rate	0.12	***
	(0.00)	
Achievement	0.11	***
	(0.00)	
School ranking	0.08	***
	(0.00)	
Equity ranking	0.04	***
	(0.00)	
% Low-income	−0.03	***
	(0.01)	
% Black	−0.02	***
	(0.00)	
% Asian	−0.01	**
	(0.00)	
% Hispanic	−0.01	***
	(0.00)	
Equity ranking × % low income	0.00	
	(0.00)	
Equity ranking × % Black	−0.00	
	(0.00)	
Equity ranking × % Asian	−0.00	
	(0.00)	
Equity ranking × % Hispanic	−0.00	
	(0.00)	
Constant	0.50	***
	(0.00)	
Observations	10,842	

Notes: Standard errors in parentheses. All coefficients have been standardized. * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.

equity in the aggregate, some parents may be less open to higher levels of equity depending on the racial or SES composition of a given school. To answer this question, I first estimate additional exploratory models that examine for heterogeneity in student compositions and equity levels. These models can be found in table 4. As can be seen in the table, none of the interactions between equity ranking and student body compositions are statistically significant. Along the same lines, the heat maps displayed in figure 3 show the relationship between preferences for equity and preferences for school racial/socioeconomic composition. Across both sets of analyses, I do not observe strong evidence of a tradeoff between equity and racial/SES student body compositions.

Demographic compositions

Finally, results examining continuous variation across school racial and socioeconomic compositions are displayed in figures 4-8. Each of the four panels for each respective figure shows the predicted probability that a given racial/ethnic group of parents will choose a given school based on the racial/SES composition of that school, net of other attributes. These figures should be primarily interpreted in terms of their deviation from a predicted probability of 0.5, which is the expected probability of choice if parents did not hold any racial/ethnic preferences (given that respondents were shown two profiles and asked to choose only one). The figures include both linear and quadratic functional forms for each racial group of parents in turn. For example, figure 4 illustrates how the likelihood that a White parent will choose a given school changes as a result of the racial or SES composition of that school. As can be seen in the figures, the linear spline and quadratic continuous models both have relatively similar fits to the data, though the

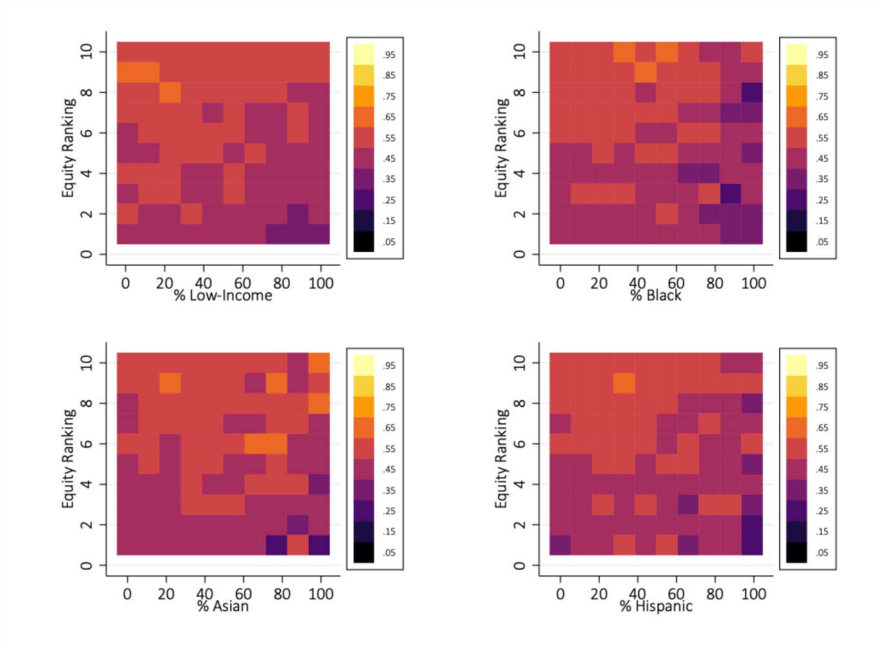

Figure 3. Heat maps illustrating the relationship between equity, socioeconomic/racial composition, and probability of school profile choice. *Notes:* Equity ranking ranges from 1/10 to 10/10.

relationship becomes noisier for the smaller parent samples (and should therefore be interpreted with caution). Across the figure panels, I do not observe strong evidence of a discontinuous tipping point beyond which parents are unwilling to consider a given school. This suggests a continuous rather than discontinuous trend based on student body compositions. Since I include the composition of White students as a reference group in most figures and tables, I also display White parents' preferences for White students separately so that it is possible to view their in-group racial preferences. In general, I find evidence that parents tend to prefer schools with higher proportions of their own racial groups.

In addition, a few parabolic relationships show nuance in the trends illustrated in the previous results. For example, though Black parents on average prefer schools with higher fractions of Black students, this peaks at around 60% Black students, after which there is a more dramatic drop off in likelihood of school profile choice.

Discussion

In this study, I use an original survey experiment to examine how parents value school resources and simultaneously exhibit racial or SES bias when deciding between hypothetical school options. In doing so, I investigate the extent to which resources and school attributes shape patterns of parental preferences relative to a given school's racial or SES composition. I find that parents privilege learning opportunities and high school achievement comparatively more than other school attributes, such as overall school ranking and equity. Desires for these attributes also outweigh the average parent's negative preferences towards students of color or students from families with lower incomes, though I also observe some heterogeneity across parent racial groups. In particular, Black parents are the only group that displays positive preferences for schools with higher fractions of Black students. Further, all parents—including parents with

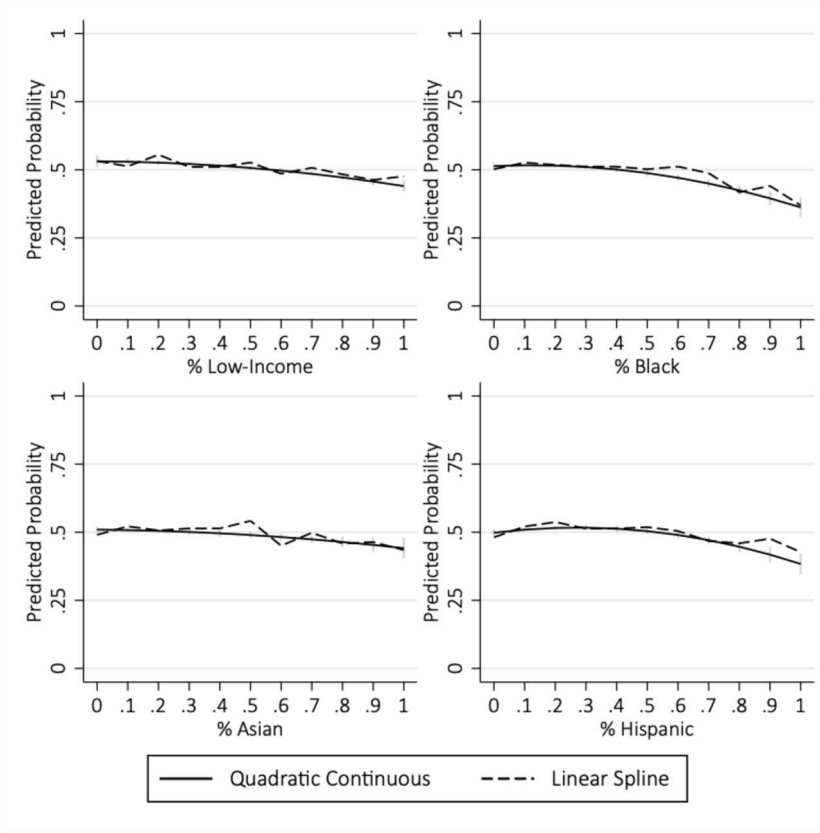

Figure 4. Predicted probabilities of choosing a school, based on white parents' responses. *Notes:* Figure includes both linear spline models and quadratic continuous models. All models control for other school attributes.

lower incomes—tend to avoid choosing schools with higher fractions of low-income students. Moreover, I find that both racial and SES school composition independently drive preferences, suggesting that school demographics play an important (and independent) role in shaping choice. Willingness to pay estimates also suggest that parents are only willing to make large and impractical tradeoffs to send their children to schools with higher non-White or low-income student populations. However, I do not find strong compelling evidence of tipping points or sharp discontinuities, which is consistent with prior work on neighborhood segregation that suggests that these patterns tend to follow a continuous form rather than one with an abrupt drop off (Bruch and Mare, 2006).

These findings have a number of implications for sociological literatures. In particular, this study builds upon existing work that has sought to understand how an individual choice of a school contributes to aggregate patterns of segregation (Billingham and Hunt, 2016; Burdick-Will et al., 2020; Haderlein 2021; Hailey, 2022a). If school segregation is the product of competition for resources (Fiel, 2015), identifying the specific resources that are of interest to parents provides meaningful insight into this process. In identifying the school attributes that parents hold the strongest preferences for, we can better understand why school choices tend to lead to more segregation between schools, rather than less. Findings from this study also align with prior notions of race and SES biases as an important independent contributor to patterns of segregation alongside resource competition between status groups.

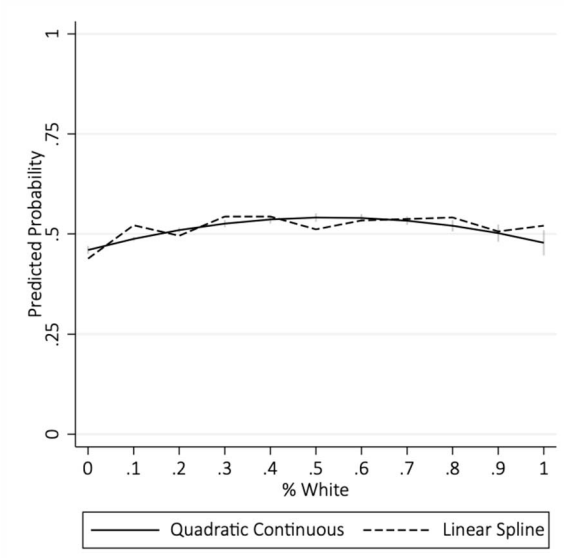

Figure 5. Predicted probabilities of choosing a school by percent of White students, based on White parents' preferences. *Notes:* Figure includes both linear spline models and quadratic continuous models. All models control for other school attributes.

Parents, on average, avoid choosing schools with higher fractions of low-income students and Black, Hispanic, and Asian students, holding all else constant, with one exception: Black parents are the only group that express positive preferences for higher fractions of Black students. This is largely consistent with work showing that parents hold racial preferences that are independent of school characteristics (Billingham and Hunt, 2016; Ukanwa et al., 2022; Hailey, 2022a; Mellon and Siegler, 2023), and that biases tend to follow a racialized status hierarchy that positions White students first, followed by Asian students, then Hispanic/Latino students, with Black students experiencing the most racial bias (Lewis and Diamond, 2015; Hailey, 2022a). This suggests that efforts to reduce segregation need to consider the reality of both structural inequalities that tend to assign low-income, Black and Hispanic/Latino students to schools with fewer resources and lower average test scores, but also that high rankings on commonly used measures of school quality cannot compensate for or overcome parents' racial biases toward out-groups and students from historically marginalized groups.

Moreover, this study also contributes to empirical and theoretical work in sociology on how individuals respond to ranked and quantified school profile data, and the extent to which these choices have cumulative consequences on the makeup of a community's schools. Though parents put the highest emphasis on learning rates, which do not tend to be as correlated with the income profile of a school's students, there remains a strong emphasis among parents on achievement and overall status rankings, which skew toward wealthier and more advantage schools and school districts (Reardon, 2019). While parents do have positive preferences for equity, these preferences are weaker than preferences for other attributes. This suggests that, to the extent that parents have preferences for attributes such as achievement, segregation will persist even absent outright racial or SES preferences. Given that growth measures are not as segregated by income and wealth as other measures (Hanselman and Fiel, 2017; Reardon, 2019), efforts to reduce school segregation through policy should focus on these measures over those that are likely to have segregating consequences, such as average achievement (Houston et al., 2021; Houston and Henig, 2023). However, I do not find an absence of independent racial/SES preferences, which suggests that

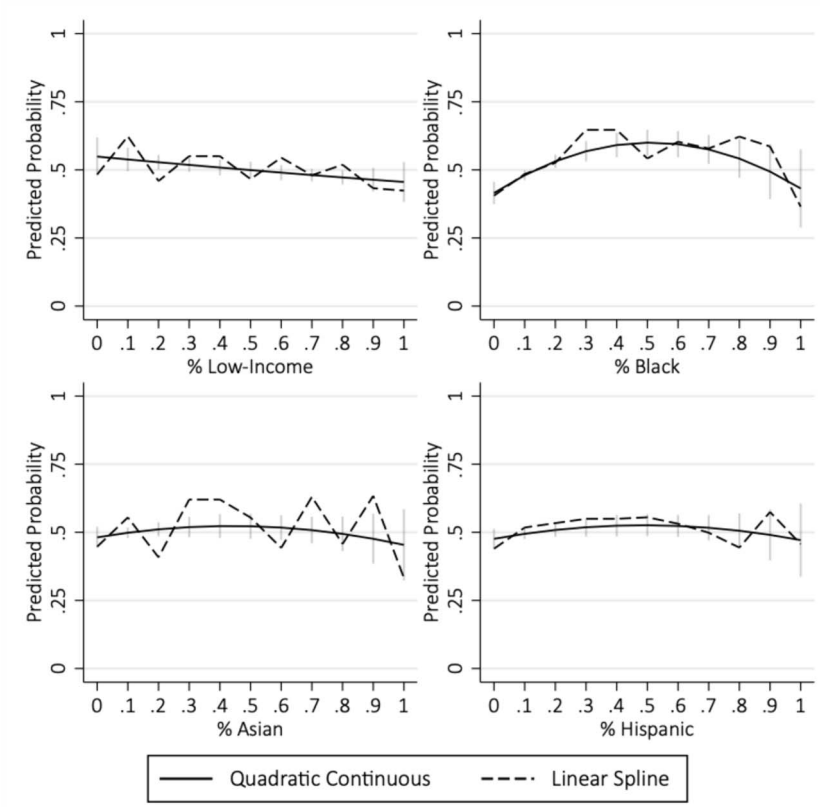

Figure 6. Predicted probabilities of choosing a school, based on Black parents' responses. *Notes:* Figure includes both linear spline models and quadratic continuous models. All models control for other school attributes.

segregation can be dually maintained both by preferences for academic outcomes and by parental race and SES biases that separate schools by status groups. Finally, consistent with prior work on the power—and peril—of rankings (Espeland and Sauder, 2007; Chu, 2021; McArthur and Reeves, 2022), this study suggests that we are unlikely to see a reduction of segregation as we continue to release educational quality rankings into the ether.

There are several important limitations to this work that merit additional discussion and scrutiny. First, as with all survey experiments, there may be differences between what people report valuing and how they actually behave—particularly given the artificial setting of the survey. However, a recent similar study on NYC-based parent and student populations found remarkable similarities between choices derived in survey experiments and those derived from administrative data on students' actual choices (Hailey, 2022a). Though social desirability bias is a concern, research on demand effects in survey experiments has shown that respondents have limited ability to adjust behaviors based on their guess of the experiment's purpose (Mummolo and Peterson, 2019). In particular, conjoint experiments dampen many of these concerns because all school attributes are simultaneously randomly varied at once, making it difficult for respondents to manipulate responses.

Though these profiles mirror the type of information that is widely available for parents to use to choose schools, they do not replicate the full set of school characteristics that may be important to a given parent, such as travel time or special program offerings. Neighborhoods

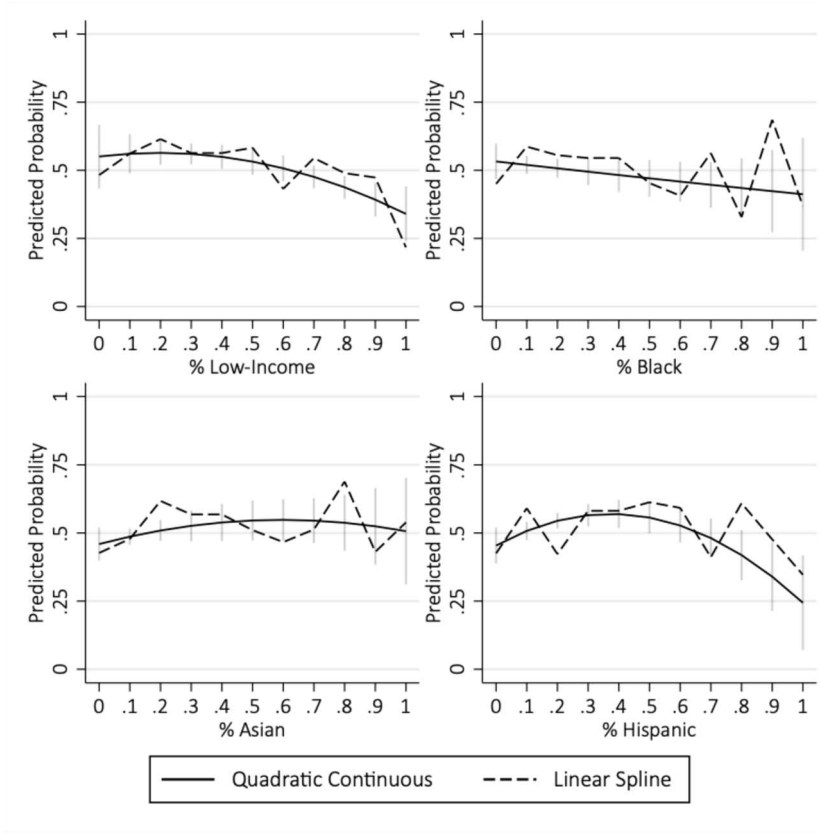

Figure 7. Predicted probabilities of choosing a school, based on Asian parents' responses. *Notes:* Figure includes both linear spline models and quadratic continuous models. All models control for other school attributes.

are also stratified in the extent to which they offer certain school options (Denice and Gross, 2016; Glazerman and Dotter, 2017; Burdick-Will et al., 2020; Rich and Owens, 2023), which further constrains the choices that parents have available to them in real-world contexts. In addition, parents may hold biases about schools with higher fractions of low-income or non-White students due to other school characteristics that are correlated with race/ethnicity or income, such as perceived belonging or school safety (Billingham and Hunt, 2016; Hailey, 2022a, Hailey, 2022b; Burdick-Will, Gebo, and Williams 2023; Mellon and Siegler, 2023). In addition, this study does not use a representative sample of parents by race or income. Finally, there may be additional parent characteristics that shape heterogeneity in choice (including nativity status, political orientation, and education level).

In sum, this study builds upon prior empirical and theoretical work on the attributes that shape preferences, choice, and segregation. If we conceptualize the maintenance (and resurgence) of segregation in the market for schools as a series of individuals making decisions with aggregate, cumulative consequences, it then becomes more urgent to understand the extent to which certain resources and preferences drive these patterns. From a policy perspective, the increased prevalence of both school choice policies and educational rankings data has the potential to dramatically shift the composition of US public schools and neighborhoods. By detailing how families engage with ranked educational data, this study illustrates patterns underlying decisions about schools.

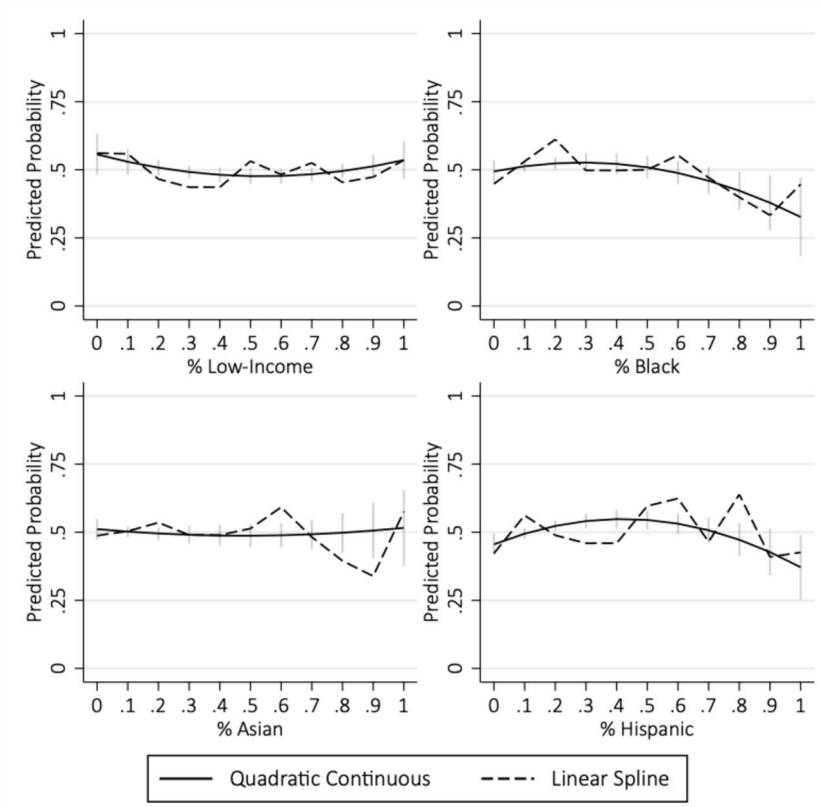

Figure 8. Predicted probabilities of choosing a school, based on Latino/Hispanic parents' responses. *Notes:* Figure includes both linear spline models and quadratic continuous models. All models control for other school attributes.

Endnotes

1. www.greatschools.org
2. I use the terms "growth" and "learning rates" interchangeably in this study.
3. "Equity" is an expansive term without a consistent definition (Levinson, Geron, and Brighouse 2022; Cook and Hegtvedt, 1983). Broadly, I conceptualize equity in education contexts as the extent to which education resources are distributed based on compensating for disadvantage and need. In the experimental design of this study, I follow definitions used on *GreatSchools* and elsewhere to define equity as the extent to which a school or district serves structurally disadvantaged or marginalized groups (e.g., lower-income students and students of color) relative to more structurally advantaged groups (e.g., higher-income students and White students).
4. The preregistration document and replication package can be found at the following link: https://osf.io/kxvmj/
5. The ordering of these measures was randomized across participants but kept constant within respondents to reduce confusion as participants completed the multiple iterations of the choice task. School-related attributes were always displayed before racial and SES compositions both to mirror profiles on *GreatSchools* and to avoid confusion by having composition measures interspersed within other attribute variables.

6. I include Hispanic alongside other racial categories rather than separating Hispanic as an ethnicity in this study. I do this for two main reasons. First, on profiles on *GreatSchools*, Hispanic is presented alongside other racial categories without a clear delineation between racial and ethnic student subgroups. Likewise, given the increased racialization of the ethnic category Hispanic, I include Hispanic alongside other standard racial categories (Frank, Akresh, and Lu 2010; Golash and Darity Jr., 2008; Roth, 2012; Morning and Saperstein, 2018). However, because Prolific collected background data from respondents using "Latino/Hispanic" as an ethnicity (separate from race), I preserve Hispanic as a standalone respondent covariate and present it in Table 1 separate from other racial groups when I am referring to respondent race/ethnicity (where respondents may have selected both a racial group and an ethnic group to self-identify). Here, I also include Latino alongside Hispanic to reflect the way that the question was recorded.
7. This also reflects the minimum and maximum values for individual schools in the SEDA 4.1 dataset, where the achievement and learning rate measures were derived.
8. For the linear spline models, I include all demographic groups as linear covariates. In contrast, I include quadratic terms for all demographic groups in the quadratic continuous models.
9. Subgroup heterogeneity was examined using both tests comparing the coefficients across regressions as well as by examining marginal means and interactions (see Leeper et al., 2020). I observe consistent conclusions using all methods (results in the appendix; figures A6 and A7).
10. For brevity, I focus racial results in this figure on schools with higher fractions of Black students given that respondents, on average, expressed the strongest racial biases against schools with more Black students compared to other racial groups. I display heat maps for tradeoffs related to other racial/ethnic groups in the appendix. Note that these results show preferences for parents on average, which tends to reflect the choices of White parents given that they make up the majority of the respondent sample. I also include figures that compare probabilities from the heat maps to the underlying distribution of schools using data from SEDA.

About the author

Marissa E. Thompson is an assistant professor of sociology at Columbia University. Her research investigates the causes and consequences of racial and socioeconomic inequality, with an emphasis on understanding the role of education in shaping disparate outcomes over the life course.

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Supplementary material

Supplementary material is available at *Social Forces* online.

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Data availability

The preregistration document and replication package can be found at the following link: https://osf.io/kxvmj/.

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