How Do Parents Choose Schools? Evidence from Choices and a Survey of Choosers*

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Abstract

Understanding how families choose schools is critical for understanding the effects of school choice, patterns of school and residential segregation, and socially optimal policies relating to student assignment and the supply of schools and programs. Gaining this understanding has been challenging for at least three reasons. First, it is difficult to separate the role of preferences from that of beliefs when examining the observed relationship between choices and measured school attributes. Second, administrative datasets generally contain limited information about non-academic outcomes such as safety and social wellbeing, which might matter greatly to school choices. Third, lacking data on parents beliefs about their children's outcomes, researchers have been unable to test a leading hypothesis for why parents are observed to choose schools that enroll a more "favorable" composition of peers: because they believe that their children will enjoy better outcomes at those schools. This paper addresses these challenges by linking administrative data on school choices made by families of students enrolled in a mid-size urban school district with survey data on their beliefs about school attributes and subjective expectations about schools' impacts on their children's academic and non-academic outcomes. Three key findings emerge from our analyses. First, parents think that schools matter for their children's outcomes, but schools perceived to improve academic outcomes are not necessarily those perceived to improve non-academic outcomes. Second, while parents strongly prefer schools that they think will generate good academic outcomes, if anything, the non-academic outcomes for which we elicit beliefs matter even more. Third, parents beliefs about these outcomes are strongly related to their perception of student composition at a school, a finding that also emerges from a policy "vignette experiment" and that we therefore interpret as causal.

Keywords: school choice, expectations, beliefs, stated choice

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1 Introduction

In many school districts, parents can choose the school that their children attend. Even in districts with "neighborhood schools", neighborhood choice is often driven by school choice. This suggests that school choice is pervasive, and there are at least three reasons why it is vital that we understand how parents' school choices are made. First, this can help to explain school enrollment patterns within and across districts. For example, why disadvantaged students are less likely to attend certain types of schools and why schools are often segregated along racial lines. Second, this can help to understand the potential consequences of policies that give parents greater choice of school. For example, if parents choose schools that would improve their child's academic outcomes, choice may incentivize schools to focus on their academic offering. Third, this can guide decisions around the supply of schools and school programs. For example, if parents are looking for a good school climate (i.e., where their children will feel safe and form good relationships with other students and teachers), districts can design schools and programs with these concerns in mind.

Prior research on this question has focused on choice districts and used administrative data to examine how choices are shaped by measured school attributes (e.g., average test scores).[1] This research suggests that parents value proximity to a school and value schools that enroll certain types of students, but not necessarily schools that improve academic outcomes.[2] But this approach is limited in three ways. First, measured school attributes need not align with parents' beliefs about the impacts of their children attending a school. This could be because researchers cannot measure true impacts (e.g., average test scores do not capture academic impacts) or because parents have inaccurate beliefs (e.g., parents do not know school value added).[3] Either way, we would not expect estimates based on measured attributes to capture parents' true preferences - a possible explanation for the mixed evidence on parents' preferences for academics. Second, since administrative data cannot capture many attributes likely important to parents (e.g., concerns about school climate), the prior approach may leave large gaps in our knowledge of how parents choose schools.[4] Third, while prior studies suggest that parents value student composition, we do

[1] Hastings et al. (2009) pioneered this approach; see Agarwal and Somaini (2020) for a recent review.

[2] For example, evidence from the largest school district in the US (New York City) suggests that parents' school rankings are invariant to a school's academic value-added, at least conditional the composition of its students (Abdulkadiroğlu et al., 2020). Evidence from some other settings suggests that school choices do respond to these impacts (Beuermann et al., 2018; Campos and Kearns, 2022; Harris and Larsen, 2019)

[3] Even value-added measures will not capture true impacts if there is a match component to the impacts and if the researcher cannot capture this with available covariates.

[4] Using administrative data, Beuermann et al. (2018) relate choices to several measures of a school's impact on non-academic outcomes. However, these measures may not capture the outcomes most relevant to parents (e.g., safety), and these measures may not align with parents' beliefs.

not know why. Perhaps the leading hypothesis is that parents' lack information on school impacts and base their beliefs about school impacts on student composition.[5] If this is hypothesis is true, then districts could weaken the preference for composition by providing information on these impacts or on other relevant inputs. However, we know little about parents' beliefs and hence have little evidence for this hypothesis.

In this paper we advance of our understanding of how parents choose schools by matching data on real school choices to a survey of the parents making those choices. To our knowledge, this is the first study to survey US parents in the process of choosing schools and to elicit their beliefs about the schools they are choosing between.[6] We focus on a midsize urban school district that uses a centralized school choice system that requires parents to rank schools. We construct an algorithm that identifies four schools that we elicit beliefs about (we refer to these as "focal schools"). For each of these schools, we elicit parents' beliefs about their children's academic and non-academic outcomes were they to attend those schools. We also elicit beliefs about student composition in these schools. We validate our data by showing that stated choices on the survey (e.g., whether parents prefer focal school A to focal school B) align closely with real choices submitted to the district (i.e., whether school A is ranked higher than school B). We also show that parents report accurate beliefs about factors we expect them to know (e.g., their relative proximity to different focal schools).

We use these matched administrative-survey data to conduct three sets of analyses. First, we explore the properties of the beliefs data that we collect. We begin by evaluating whether parents have accurate beliefs about the composition of students at different schools (in terms of the fraction of students eligible for Free or Reduced Price Lunch (FRPL) and the fraction of students of the same race as the parent's child). It is important to assess the accuracy of beliefs. In particular, if the relationship between choices and measured peer composition is driven by parents basing their beliefs about own-child outcomes on their beliefs about peer composition, then they must have reasonably accurate beliefs about peer composition. We then turn to parents beliefs about their own-child outcomes. We elicit beliefs about academic and non-academic outcomes, including test scores, four-year college attendance, feeling safe at school, and having a good group of friends. We cannot compare these beliefs to true impacts.[7] Instead, we consider the extent to which parents think that schools matter

[5]For example, Abdulkadiroğlu et al. (2020) speculate that parents might use student composition as a proxy for academic effectiveness.

[6]Ainsworth et al. (2021) survey parents in Romania as they choose high school tracks. In addition to conducting our study in a very different setting, our survey collects information that allows us to examine questions that their study did not address. In particular, our survey allows us to analyze how student composition affects beliefs about childrens' academic and non-academic outcomes.

[7]In principle one could compare beliefs about test scores to "true impacts" as estimated under plausible assumptions. In our setting this is difficult. First, there is little exogenous variation in school attendance

for these outcomes, the extent to which they think that schools are multi-dimensional (i.e., relatively good for some outcomes but relatively bad for others) and the extent to which parents agree about which schools are good for which outcomes.

Second, we estimate preferences for schools' impacts on academic and non-academic outcomes. We do so by estimating rank-ordered logit models that relate parents' actual school choices to their subjective expectations of their children's outcomes at different schools. These models also include distance to school, allowing us to quantify preferences in terms of willingness to travel to a school that generates better expected outcomes for their child. These models also include school fixed effects, allowing us to assess how much of the variance in school popularity (as captured by the estimated fixed effects) can be explained by these beliefs. Our estimates enable us to compare the relative importance of academic and non-academic outcomes (safety and friends), and to explore whether these preferences differ by parent characteristics. Because our models includes school fixed effects, the key identifying assumption is that any unobserved beliefs are uncorrelated with the beliefs included in our model. We probe this assumption by examining the sensitivity of our estimates to the inclusion of additional beliefs about schools. Our identifying assumption is arguably weaker than that invoked in earlier studies that use administrative data on choices and attributes, namely that unobserved school attributes are uncorrelated with the attributes included in the model.

Our third analysis focuses on the formation of beliefs about own-child outcomes. Specifically, we test the hypothesis that parents believe that their children will enjoy better outcomes in schools that enroll particular types of student. We use two methods to do this. First, we estimate models that relate beliefs about outcomes to beliefs about peer composition in terms of poverty and race, controlling for student and school fixed-effects. Effectively, these models reveal whether, compared to parents who believe that a particular school's peer composition is less "favorable", parents who believe that it is more favorable believe that their children will have better outcomes in that school. Second, we conduct a vignette experiment that asks parents to imagine a policy change to the student assignment system that resulted in a change in the peer composition at a particular school. The district we study has made several recent and highly publicized changes to the assignment system, making it plausible that parents will understand this scenario and could imagine it happening. We examine how parents think this policy change would affect a school's peer composition. We then use this variation to estimate how beliefs about composition shape beliefs about

and so we would need to invoke "selection-on-observables" assumptions. Second, we have no student-level information on eligibility for FRPL and, for recent cohorts, no information on prior test scores (because of COVID-19). For many own-child beliefs (e.g., safety, friends) it will always be difficult to construct "true values". As such, comparing own-child beliefs to true values is not an objective of our paper.

own-child outcomes and stated choices.

We obtain the following key findings. First, the schools in the district differ greatly in terms of student composition (socio-economic status and race) and parents are largely aware of these differences. Second, parents think that schools matter for their child's outcomes and that schools are multi-dimensional; there is substantial - but not complete - agreement among parents as to which schools are "good" for particular outcomes. Third, we find that parents strongly prefer schools in which they expect their children to perform well academically. For example, on average, parents will travel an extra mile for a school that raises their child's expected test score by 10 percentiles. Moreover, contrary to some prior findings (e.g., Hastings et al. (2009)) we find little evidence to suggest that lower-SES and minority families have weaker preferences for these outcomes. Fourth, we find that parents have strong preferences for the non-academic outcomes that we elicited beliefs about (i.e., safety and friends). Indeed, we estimate that these non-academic outcomes explain more of the observed variation in school popularity than academic outcomes. Fifth, we find that beliefs about these academic and non-academic outcomes are related to parents' perceptions of composition. This finding emerges from analyses relating beliefs about peer composition to beliefs about own-child outcomes as well as the policy change vignette experiment, suggesting a causal effect of peer composition on perceptions about own-child outcomes. Beliefs about non-academic outcomes (i.e., safety) are especially sensitive to beliefs about composition.

We draw three main conclusions. First, since we find that parents prefer schools that improve their children's academic outcomes, our study underlines the potential importance of information interventions that can help to align these beliefs with true impacts (Ainsworth et al., 2021; Corcoran et al., 2018).[8] Second, since we find that parents have even stronger preferences for non-academic outcomes, our study suggests that choice could incentivize schools to compete on outcomes that matter to parents but are not easy for researchers to measure (e.g., the school climate). Third, since we find that academic and especially non-academic outcomes are shaped by parents perceptions of student composition, our study supports the hypothesis that parents choose schools that enroll more "favorable" types of students because they believe that their children will enjoy better outcomes at those schools. For example, our findings suggest that parents care about safety and believe that their children will be safer in schools that enroll certain types of students.

[8]In principle, these information interventions could be used to infer preferences under full information (i.e., a substitute for collecting data on beliefs). In practice this would be difficult. First, several own-child outcomes have no "true" counterparts (especially non-academic outcomes). Second, the results of these information interventions have been shown to depend on implementation details Cohodes et al. (2022). As such, we view these information interventions is highly policy relevant and important, but unlikely to uncover preferences.

Our analysis builds on and connects four strands of literature. First, it builds on the large literature that estimates parents preferences for school attributes. Since these attributes are measured using administrative data, these papers either assume parents' expectations align with these attributes or acknowledge that the estimated weights on these attributes could reflect some combination of preferences and information. Second, it builds on a growing literature that uses subjective expectations data to model choices. Among other choices, this literature has considered the choice of college major (Zafar, 2013), university (Delavande and Zafar, 2019) and job (Wiswall and Zafar, 2018). Third, our focus on beliefs about schools connects our paper to literature concerned with what parents know about schools. This includes a large number of qualitative studies (e.g., Sattin-Bajaj (2014a), Sattin-Bajaj (2014b), Lareau et al. (2016)) and a small number of information interventions (e.g., Corcoran et al. (2018), Cohodes et al. (2022), Glazerman et al. (2020), Ainsworth et al. (2021)). Fourth, our focus on student composition builds on work outside of economics that has focused on parents preferences for composition and the various mechanisms that could give rise to these preferences (see Billingham and Hunt (2016) and Hailey (2022) and references therein). Finally, our empirical strategy builds on a growing literature that uses vignettes to generate exogenous variation in key variables, in our case student composition. For example, our approach is similar to that of Delavande and Zafar (2019).

2 Setting: Mid-Size Urban School District

2.1 Schools in Study District

The setting for this study is a mid-sized urban school district in the Western United States. In 2019-2020 it enrolled around 53,000 students in 104 schools (NCES, 2020). These include 70 elementary schools that offer kindergarten through fifth grade, 13 middle schools that offer sixth through eight grade, 13 high schools offering ninth through twelfth grade, and 8 "K8" schools that go from kindergarten through eighth grade. The district is ethnically diverse, and contains a large fraction of Asian students (37%) and Hispanic students (28%), in addition to White students (15%), Black students (7%) and students from two or more races (12%).[9]

Figure 1 shows three key facts about middle and high schools in the district. First, they exhibit considerable racial and socioeconomic stratification. The percent of students who are Black or Hispanic is around 20 percent in some schools and 80 percent in others, while the percent of students eligible for free- or reduced-price lunch (FRPL) ranges from 40 to 80

[9]Percentages for 2019-2020 from NCES (2020)

percent. Second, test scores vary substantially across schools, with average percentile scores ranging from 20 to 65, and are strongly correlated with demographic composition. Third, while the rate of FRPL eligibility is correlated with the percent of students who are Black or Hispanic, there are several schools with high rates of FRPL eligibility with a low percentage of Black or Hispanic students. This reflects the large number of low-income Asian students served in the district.

2.2 School Assignment Policy

The current school assignment policy used by the District has been in operation since 2010. No default schools exist in the District. Instead, families must submit an enrollment application with a rank-ordered list of their preferred schools. The application process centers around "transition grades" - kindergarten for elementary school, sixth grade for middle school, and ninth grade for high school.[10] Families submit applications to enroll their children in a new school in the year before they would be in these grades. In the year we administered our survey, applications were due on February 4.

Students are assigned to schools using a "deferred acceptance" algorithm that uses the rank-ordered school list from the enrollment application and, where schools are oversubscribed, various tie-breakers.[11] Under some assumptions, this algorithm is "strategy proof" (e.g., Abdulkadiroğlu and Sönmez (2003)), such that parents ought to request schools in order of their true preferences. In other words, listing less-preferred schools above more-preferred schools will not improve their chances of being assigned to a desirable school.

3 Survey and Descriptive Statistics

3.1 Survey Administration and Response Rates

In late fall 2021, we sent an online survey aimed at understanding families' school choice decisions to caregivers of District students who would need to select a middle or high school for the 2022-23 school year. Specifically, the target population for the survey was families of 5^{th} graders enrolled in an District elementary school and all District 8^{th} graders.[12] Families

[10] Fifth graders in K8 schools do not need to apply for a new school for sixth grade, so sixth grade is not a transition grade for these students.

[11] The priorities vary across grades, but include having siblings already enrolled in a school, living in low-scoring zip codes, attending "feeder schools" and living near the school. First priority is always given to students with siblings already enrolled in a school.

[12] These students were in "transition grades" in 2021-22 and would need to attend a different school in the 2022-23 school year. District elementary and middle schools end in 5^{th} or 8^{th} grade, respectively. The District also has several schools serving kindergarten through 8^{th} grade. Although 5^{th} graders in these

were initially sent the link to the survey in November 2021 (about four weeks after applications were available and 10 weeks before the deadline for submitting them), with 2 follow-ups sent in early December. These links were sent via email and SMS using contact information on file with the District. Personalized links were sent to each family, which enabled us to customize survey items based on individual circumstances and also to link survey responses to administrative records.[13] Families that completed the survey received a $20 gift card to Target or Amazon.

Across both grades, the target population consisted of 6,920 students. Of these, 1,699 (25 percent) clicked on the survey link, 1,452 (21 percent) answered at least one of the beliefs questions, and 1,065 (15.4 percent) completed all of the questions on beliefs about schools.[14] To examine how respondents compare to nonrespondents, Table 1 shows average student characteristics, characteristics of the students' current school, and characteristics of the first-choice school on the 2022-23 enrollment application by respondent status.[15] Respondents are more likely to be Asian or White and live in higher-SES neighborhoods. Their children are more likely to attend more-affluent schools with better safety and academic performance, and are more likely to request affluent and higher-performing schools.

One way to address survey nonresponse is to give greater weight to respondents whose characteristics are underrepresented among respondents relative to the target population. We do this by weighting respondents by the inverse of the probability of response, where this probability is estimated using a logistic regression of survey response on the individual characteristics and current-school attributes listed in Table 1. The attributes of requested schools are omitted from the response prediction model and serve as "leave-out" covariates that we use to evaluate the ability of reweighting to reduce differences in variables that are omitted from the prediction model.

After reweighting, the observed differences between respondents and non-respondents are much smaller and mostly statistically insignificant. Crucially, reweighting also sharply reduces differences in the leave-out variables (i.e., attributes of requested schools). In future

schools are eligible to apply to attend a new middle school for 6^{th} grade, in practice very few do. Thus, most of these students were not actively choosing schools for the 2022-23 school year and they were therefore not included in the survey target population.

[13] Surveys were translated into six languages: Spanish, Traditional Chinese, Tagalog, Vietnamese, and Arabic. Families who receive correspondence from the District in one of these languages were sent translated surveys (the text of email and SMS communication was also translated).

[14] We did not send surveys to families of 616 students in the target population because they did not have usable contact information. Among families to whom we actually sent surveys, 23 percent answered at least one belief question and 16.9 percent completed the beliefs questions.

[15] For these results, "respondent" is defined as completing the beliefs questions. However, some subsequent analyses use data from respondents who did not complete all of the beliefs questions as long as they have non-missing data on the information necessary for a particular analysis. The patterns of nonresponse displayed in Table 1 are similar when using other definitions of respondent.

work, we plan to compare the main results generated with and without reweighting to evaluate whether the main findings of the paper are particular to the relatively affluent sample of survey respondents or whether it might hold more broadly in the target population.

3.2 Survey Content

The survey contains five sections (the exact wording of key questions can be found in Appendix A. The first section asks for beliefs about District schools. To keep the survey length manageable, we only ask about four "focal" schools. These schools were carefully selected based on respondents' individual circumstances. First, we identified a "consideration set" of schools. This set included schools that families were likely to consider (based on geographic proximity and historical request patterns) and schools that were included to ensure that the set contained substantial variation in key attributes. Next, we chose two pairs of schools from the consideration sets, one that contained variation in academic performance and the second that contained variation in geographic proximity. For the first pair, we randomly selected one school with above-average test scores and one with below-average test scores.[16] For the second pair, we removed the first pair and chose the closest and furthest schools to the family's residence.

For each focal school, we ask respondents for beliefs about overall school attributes ("population beliefs") and beliefs about how their child would fare at a given school ("own-child beliefs"). We ask for population beliefs about the child's travel time to school, the percent of as school's students in poverty (i.e., the fraction eligible for FRPL), the percent of a school's students of the same race as their child, the school's average test performance and the schools' impacts on test scores (the scale for the test score items was percentile units). We ask for own-child beliefs about their child's test scores were they attend a particular school, the percent chance that they would attend a four-year college, the percent chance they would feel safe at school, and the percent chance they would have a good group of friends. Responses were given using a "slider" that enabled respondents to provide a continuous measure of their beliefs. Table 2 reports the mean and standard deviation of the belief measures collected in the survey.

The second section of the survey elicits stated preferences over these focal schools. Specifically, for each pair of focal schools, we asked for the percent chance they would choose one school over another. This provides a continuous measure of preferences at the time that respondents completed the survey, and these serve as baseline preferences for the vignette experiment analyzed in Section 4.2. This vignette experiment is the third section of the

[16]The consideration sets were constructed such that they always include at least one school with average test scores above and below the citywide mean.

survey and is discussed in more detail in Section 4.2. The fourth section of the survey asks respondents which school attributes are important to them and how they find information about those. The fifth section asks about socioeconomic status (highest level of education and household income).

3.3 Validity of Survey Data

An important concern with our survey is that respondents may not have taken it seriously or answered it truthfully. Even if respondents did not have any reason to respond untruthfully, inattention and the lack of incentive to respond truthfully could potentially undermine data quality.[17]

We evaluate the validity of the data on school beliefs in two ways. First, we compare stated preferences over the two focal schools (i.e., the percent chance of choosing school A over school B) with actual choices (i.e., whether school A is listed above school B on the application form). We would not expect these to correspond perfectly even with no inattention and fully truthful responses. First, preferences could change between completing the survey and submitting the application form. Second, parents may not list schools in order to true preference on the application form (despite the algorithm being strategy-proof). Nonetheless, we might hope to observe s a strong correlation between stated preferences and actual choices, especially when stated preferences are strong (i.e., respondents report a high likelihood of choosing one focal school over another). As seen in Figure 2, this is exactly the pattern observed in the data. When the probability of choosing the first school in the pair is close to zero or one, the fraction of instances where stated preferences are consistent with actual choices is close to one. When the probability of choosing the first school in the pair is closer to 0.5, there is much less agreement between stated preferences and actual choices.

Second, we compare perceptions about school attributes to their actual values. If respondents are taking the survey seriously, then reported beliefs should correspond to actual values, at least for attributes we would expect families to know (e.g., travel time to schools).Figure 3 plots beliefs against true values. Since most of our analyses focus on perceptions of relative differences across schools, we subtract respondent-specific means from both beliefs and true values. Variation in geographic proximity across schools is strongly correlated with differences in beliefs about travel time. Variation in eligibility for free/reduced-price lunch, the percent of same-race students and average test scores is also strongly correlated with variation in beliefs, although the variation in beliefs is compressed relative to variation in true values.

[17]While we offered monetary compensation for completing the survey, the compensation was not conditional on meeting any survey quality criteria.

We would not necessarily expect parents to hold accurate beliefs about characteristics such as student composition and average test scores. Indeed, potential information gaps motivate interventions that provide parents with some of this information (Ainsworth et al., 2021; Corcoran et al., 2018). For another perspective on whether parents are aware of relative differences across schools, we consider whether respondents can correctly rank schools in terms of these attributes. To do this, we consider all pairwise combinations of schools for which we collected beliefs (up to six per respondent), and compare parents' ranking of these schools (i.e., for which one they think the attribute is higher) with the difference in actual values. As seen in Figure 4, when the difference in actual values is large, parents rankings are mostly correct for all attributes. Not surprisingly, when the difference between actual values is smaller, parents rankings are less likely to be correct.

Altogether, these results provide strong evidence that respondents are responding with attentiveness and in a truthful manner. They also indicate that respondents are broadly aware of differences in school characteristics, especially when these differences are large.

3.4 Stylized facts about own-child beliefs

We close this section by presenting some stylized facts about own-child beliefs. We argued above that parents' school choices will be driven by their beliefs about how their children would fare in different schools (i.e., by their own-child beliefs). In the next section we use these beliefs to estimate preferences for these own-child outcomes. As a step towards this analysis, we describe some important features of the own-child beliefs that we have elicited.

3.4.1 Do families think schools matter?

Theories of school competition rely on families choosing schools based on relative quality differences. For this to be true, families must believe that schools affect their children's outcomes. Our beliefs data allow us to examine this question. Figure 5 shows the distribution of the difference between the expected outcome at the schools that generates the best and worst outcomes. Since this difference is based on the four focal schools for which we asked for beliefs, it will be a lower-bound on the difference between the perceived district-wide best and worst schools. For all outcomes, many families think that their children would have substantially different outcomes at different schools. This is especially true for good friends and feeling safe at school, where the median top/bottom school difference is 20 percentage points. Interestingly, it appears that families think schools may be less important for four-year college enrollment. This might be driven by a conviction that their children have a high likelihood of going to college regardless of their middle or high school. For test scores, the

median top/bottom difference is 10 percentile points.

3.4.2 Do families agree which are the "good" schools?

As mentioned above and as explained in more detail below, our empirical strategy for estimating preferences for schools' impacts on student outcomes relies on families differing in their beliefs about how their children would fare at the same school. Examining such variation is interesting in its own right, as it speaks to whether families believe that "schools matter" for their children's outcomes. It may also help explain, for instance, why families that live near each other make different choices about schools.

To investigate heterogeneity in beliefs about schools, we need to account for the fact respondents are not all asked about the same schools. Therefore, we focus on comparisons between pairs of schools, and examine how much agreement there is across respondents asked about a given pair. First, we examine the fraction of respondents who think outcomes would be better at one of the schools in the pair. Specifically, for each pair (j, j') and outcome y, we identify which school the majority of respondents think would generate better outcomes for their child. Then, we calculate the fraction of respondents who agree with the majority. Values close to 0.5 indicate that respondents are evenly split about which school would generate better outcomes, while values close to 1 indicate respondents are nearly in complete agreement. The results in Table 3 show that about 70-75% of respondents agree about which school generates better outcomes, indicating there is considerable agreement, yet it is far from complete.

Next, we consider the distribution of $D^y_{i,j,j'} = B^y_{i,j} - B^y_{i,j'}$, where $B^y_{i,j}$ and $B^y_{i,j'}$ are beliefs respondent i has about their child's outcome y at schools j and j' respectively. For each respondent, we calculate $D^y_{i,j,j'}$ for the six pairwise comparisons available from the beliefs data collected on their four focal schools. We then pool data across respondents and pairs of schools, and examine the distribution of $\widetilde{D^y_{i,j,j'}} = D^y_{i,j,j'} - \overline{D^y_{j,j'}}$, where $\overline{D^y_{j,j'}}$ is the mean difference across respondents for the pair of schools (j, j'). The variation in this quantity reflects heterogeneity in beliefs about the difference in outcomes if their children were to attend school j versus school j'.[18]

Figure 6 shows the distribution of the differences in beliefs between pairs of schools along with the standard deviation and inter-quartile range. The standard deviation and the inter-quartile range for friends and safety are both about 20 percentage points. For attending a four-year college, the inter-quartile range is about 12 percentage points. For test scores, the inter-quartile range is about 10 percentile rank points. Thus, for all outcomes, there is

[18] We normalize pair differences to zero to ensure that there is no variation stemming from variation in which of the two schools in the pair is considered the first and the second school (an arbitrary choice).

considerable variation in the difference in outcomes respondents expect their children would have if they were to attend one school in a pair versus the other. Consistent with the partial agreement in rankings documented above, these statistics show that there is at least some disagreement between parents as to which are the "good" schools for these outcomes.

3.4.3 Do families perceive school quality to be multi-dimensional?

Although much of the economics literature has focused on schools' academic quality, prior research has shown that school quality is multidimensional, with schools' impacts varying across outcomes (Beuermann et al., 2018). An important question, therefore, is whether families tend to think of schools as being uniformly high- or low-quality, or if they think a school may be beneficial for some outcomes but not necessarily others. In the first case, we would expect families to choose the schools that generated the best outcomes along all dimensions. In the second case, families will face trade-offs when choosing between schools they perceive to be good for some outcomes and schools they perceive to be good for other outcomes.

Table 4 shows evidence consistent with families perceiving school quality as multi-dimensional. Beliefs about how their children would fare at a school are strongly correlated across outcomes, but these correlations are well below one. The strongest correlation is for beliefs about safety and friends (0.69). In contrast, the correlation between beliefs about test scores and safety (0.47) and friends (0.45) are smaller.[19] Table 5 shows that about one-third of respondents do not believe the same school would generate the best outcome for their child for a given pair of outcomes, further demonstrating that families do not always perceive that there is a single "best" school for all of these outcomes.

Next we present preference estimates using a similar model and school ranking data as used in previous work, but replacing school characteristics (estimated value-added and other statistics) with individual parental beliefs about how these schools would affect their children.

We use rank-ordered logit models, incorporating actual rankings of schools provided to the District during their school selection period. We specify the utility from each school j to each household i as

$$U_{ij} = \gamma d_{ij} + E_i(Y|j)'\beta + \alpha_j + \epsilon_{ij}$$

where d_{ij} is the distance (in miles) between household i's residence and school j. $E_i(Y|j)$ is

[19] We find broadly similar patterns when the correlations are computed after subtracting the respondent-level mean belief across the four schools they were asked about.

the vector of household i's own-child beliefs about outcomes Y (academics and non-academic outcomes e.g. test scores or safety) their child would experience if she were to attend school j. α_j is a school-specific fixed effect, and ϵ_{ij} is an idiosyncratic i.i.d. Extreme Value term. Given some parameters, each household's probability of ranking each school first, second, and so on can then be computed, where these probabilities follow standard logit forms. Parameters are estimated using Maximum Likelihood Estimation.[20]

There are three important advantages of our study design and data collection compared to previous studies. First, a typical previous specification would replace own-child beliefs with school level characteristics (e.g. estimated test-score value-added), or in some cases school characteristics by some observed student characteristics (e.g. estimated value-added for Black students and White students separately to capture school-match effects). The estimates in this case would in general conflate preferences with beliefs unless all parents have the same and accurate beliefs. With our survey data eliciting own-child beliefs, we can isolate preferences, and provide a robust estimate of what school attributes parents care about when choosing schools.

Second, our survey data allows us to estimate preferences over school characteristics that are difficult or impossible to measure from standard administrative data sets. We measure parents' perceptions of how safe their children would be at various schools and how good their friendships would be at these schools, variables which are only imperfectly proxied with aggregate school characteristics such as the proportion of student discipline cases or climate survey responses of currently enrolled students.[21] Importantly, our survey data can also capture heterogeneous match-effects as perceived by households, even *within* groups of observationally-equivalent households (e.g. perceptions of school-match effects within the group of White and Black households).

Finally, a third important advantage to our specification is that we can include school-level fixed effects. These capture any unobserved school level differences that are common knowledge to parents but not captured by our included beliefs variables. Because school-level fixed effects would absorb any school-level covariates, previous studies could not include school-level fixed effects and needed to rely on stronger assumptions regarding unobserved school features. Threats to identification of preferences in our setting is then not that from

[20] In the Appendix, we provide alternative estimates using only the first preferred school, relative to the remaining schools or just the second ranked school. Estimates are similar. The rank-ordered logit model is preferred because it can incorporate the full rankings provided by students.

[21] Crucially, these school characteristics must be estimated in such a way as they represent the causal effect of attending a school–a difficult task that requires more sophisticated estimators to purge correlations from self-selection bias. See Abdulkadiroğlu et al. (2020) for recent approaches to this issue making use of school lotteries and rankings lists in a control function type estimators. Our survey method does not require this kind of data or estimators.

any unobserved feature of schools correlated with included variables, but only from the smaller set of features that are not common knowledge to parents.

Table 6 reports estimates of preferences following the specification above. All models include the distance (in miles) between each family's residence and each school and school fixed effects. We first test the representativeness of our survey sample in the context of these choice models. We begin in columns (1) - (3) with models that do not include any other predictors of rankings but use different samples of schools and students. In column (1) we use only the administrative data and the full sample of schools and students. In column (2) we restrict our use of the administrative data only to the focal schools used in the survey but continue to include all students (including survey non-respondents). And in column (3) we use only the data from individuals who returned surveys. Across all 3 samples and data sources, we estimate a similar dis-taste for distance/travel. This indicates that at least in this dimension, our survey sample well represents the overall preferences of the population of district households.

In columns (4)-(5) of Table 6 we use the survey measures of own-child beliefs for each household and each school to estimate preferences for these attributes relative to the distastes for travel–how far are parents and students willing to travel for better schools, as they perceive it? In column (4), we estimate a positive and statistically significant preference for raising their students end-of-grade standardized test scores. The coefficient estimate of 0.0664 relative to the distance coefficient of -0.634 indicates that households are willing-to-travel (WTT) 0.0665/0.634 = 0.105 miles for an increase of their child's test scores of 1 percentile, or about 1 extra mile for a 10 percentile gain.[22] To get a sense of magnitudes, note that on average students live about 2.25 miles from their top choice school, so an additional mile of travel is a substantial increase over the baseline. In addition, note that the standard deviation of parental beliefs about their child's end-of-grade test scores is about 18.6 percentiles, and 10 percentile change is then about 0.54 standard deviation change.

Comparing our estimates of a positive and substantial preference for schools parents believe will causally improve their children's test scores stands in contrast to some of the most recent evidence using estimated value-added from administrative data. Abdulkadiroğlu et al. (2020) find that while parents seem to prefer schools with higher estimated value-added in isolation, conditional on average peer quality at the school, there is no relationship, and parents seem only to have strong preferences over peer quality. It is important to note that our estimates implicitly condition on peer quality because we include school fixed effects,

[22] In the Appendix, we report alternative specifications using another measure of own-child academic perceptions, percent chance that one's child would attend college if she attended this school, and find a similar statistically significant positive preference.

which absorb any school level characteristic as perceived by parents. And our own-child beliefs questions are then the analog of the causal effects (or value-added) of schools as perceived by the parents.[23] Therefore our estimates indicate that parents do substantially prefer, and are willing-to-travel for, schools they believe will improve their children's test scores, even conditional on peer quality.

What else do parents care about when choosing schools? Column (5) of Table 6 adds additional own-child characteristics, beliefs about the percent chance their child would feel safe at each school, percent chance their child would have good friends at each school, and the proportion of students at the school the parents believe would be of the same race as their child. Each of these 3 additional own-child characteristics are positively and statistically significantly related to the parents' rankings of the schools. And because they are positively correlated with academic beliefs, their inclusion reduces the preference for own-child academics to about 1/3 the level in Column (4), where these variables are omitted. The WTT estimates in Column (5) including these additional variables indicate that parents are willing to travel about a 1/3 of a mile for a 10 percentile increase in their child's end-of-grade test scores. The coefficient on safety is of a higher but similar magnitude. The preference for good friends has an even higher associated coefficient, and that for own-race peers is about half of the academic and safety coefficients. We caution that comparing across characteristics is not straightforward in isolation (how to compare the meaning of a 1 percent chance increase in safety versus a 1 percent chance increase in having good friends), but it is clear that parents not only value academics meaningfully but non-academic characteristics as well.[24]

Another indication of the importance of these school characteristics to parents is how their inclusion reduces the unexplained school level preferences. Each of our models includes school fixed effects, which are identified using this survey data because parents differ in their beliefs about how their child would fare at each school (from either heterogeneity in the accuracy in beliefs or heterogeneity in perceived school-match effects). Moving from column (3), which includes only distance to column (4) which includes distance and own-child beliefs about academics, the variance of the school fixed effects falls from 2.68 to 2.185, an 18 percent reduction. Including 3 additional variables for beliefs about non-academic characteristics in column (5) reduces the variance even further, to 1.481, a nearly 50 percent reduction from the distance-only specification. That four survey variables can explain nearly half of the systematic variation in preferences for schools, conditional on distance, provides evidence

[23] Our own-child beliefs questions are the combination of the average school-level value added accruing to all students and the match-specific effect.

[24] We do note that the overall sample standard deviation of these characteristics are roughly similar, with a slightly lower standard deviation for own-child test scores than own-child safety or own-child good friends.

that parents have strong preferences over these attributes, and our survey design is able to elicit these preferences without overwhelming noise. And in addition, this provides evidence that at least in this setting non-academic outcomes are even more important to school choice than the academic outcomes.

Table 7 divides the sample by level (middle vs. high school) and household race (Asian & White vs. Black & Hispanic). For each sub-sample we report estimates from two rank-ordered logit models (all including school fixed effects as in the previous Table), one including distance and academics, and the other including distance, academics, and the 3 additional non-academic characteristics. We use the same variables as Table 6, where each characteristic is the own-child beliefs of the parental respondent. When interpreting coefficients across sub-samples it is important to translate estimates into WTT as both the estimated distance and school characteristic coefficients can vary across specification, and cannot be interpreted in isolation.

Comparing middle vs. high school levels, we see that distance matters more at the middle school than high school level (greater dis-taste for travel for older students), and consequently while the coefficient on safety is substantially larger for the middle school sample, the WTT for safety $0.0313/0.674 = 0.046$ at the middle school level is about equal to that at the high school level $0.0228/0.547 = 0.042$. In general, preferences are similar across the two levels for all own-child attributes, although notably we lose statistical significance for academics at the high school level when including non-academic beliefs variables, suggesting the importance of non-academic attributes especially at the high school level.

Turning to differences by race, the most salient difference in preferences is the larger WTT for academics for the pooled Asian and White sample versus the pooled Black and Hispanic sample, WTT for academics in column (8) for White and Asian parents is about twice as much as for the Black and Hispanic sample (WTT of 0.051 miles for a 1 percentile test score gain vs. 0.026 for the same gain), and the coefficient for the Black and Hispanic sample is not statistically significant from 0. Both sub-groups of parents have positive preferences for safety and friends, and of a similar magnitude in terms of WTT. Neither sub-group has statistically significant preferences for own-race peers.[25] This indicates that these groups have far stronger preferences for actual outcomes for their children (academic and non-academic) rather than directly for characteristics of the peers.

[25]The positive coefficient on own-race peers in the pooled analysis likely reflects unobserved race-specific preferences for particular schools. In the dis-aggregated analysis by race, these unobserved race-specific preferences are reflected in the differences in school-level fixed effect values.

4 Own-child Beliefs and Student Composition

We have seen that parents look for schools in which they think their child will perform well academically, feel safe and make good friends. A natural next question is how they form those beliefs. For example, in which types of schools do they think that their children will perform well academically?

As noted in the Introduction, researchers have speculated that parents' beliefs are related to their perceptions of student composition at different schools. For example, Abdulkadiroğlu et al. (2020) speculate that parents lack information about school effectiveness (i.e., a school's impact on students' academic outcomes) and instead use their perceptions of student composition as a proxy for these impacts. In other words, parents assume that their children will perform well academically in schools that enroll a more favorable mix of students. Sociologists have also speculated that parents may form beliefs about their child's safety on the basis of student composition at a school (Billingham et al., 2020).

There are many reasons why these perceptions may be related to student composition. First, true impacts may be related to composition and parents may have accurate beliefs about true impacts. This is a difficult hypothesis to assess, since we are unlikely to ever measure a school's true impact on outcomes such as "making good friends". Second, parents may be believe that these outcomes exhibit peer effects (whether they do or not), so that a more favorable composition of peers will improve their children's outcomes directly. Third, parents may believe that more favorable peers may improve these outcomes via other, indirect, channels. For example, they may result in schools being able to hire more effective teachers. We do not address the important question of *why* parents' beliefs might be related to composition. Instead, we focus on the more fundamental question of whether parents' beliefs are related to composition.

4.1 Evidence from Beliefs Data

To address this question, we begin by relating parents' own-child beliefs to their beliefs about student composition. As discussed above, we collected beliefs about two dimensions of composition: the fraction of students eligible for FRPL ("in poverty") and the fraction of students of the same race as the parent's child. We saw that parents have reasonable accurate beliefs about these dimensions of composition. In particular, they are able to identify higher- and lower-poverty schools, even if they cannot quantify the precise difference between them.

We begin with beliefs about their children's test scores. We regress these on beliefs about poverty, beliefs about own race and student fixed effects. These models reveal, for example, whether parents who think that school A has higher poverty than school B also

think that their children will score higher in school A (i.e., an across-school comparison). We also estimate models that include school fixed effects. Effectively, these models reveal whether, compared to parents who believe that a particular school's peer composition is less "favorable", parents who believe that it is more favorable believe that their children will have better test scores at a school (i.e., a within-school comparison).

Table 8 reports our estimates. Looking at column (1), we find that a ten percentage point decrease in the perceived poverty rate at a school is associated with two percentile point increase in their child's expected test score. A ten percentage point increase in the perceived percentage of students of the same race as their child is associated with a one percentile point increase in their child's expected test score. These estimates are reduced in magnitude when we add school fixed effects (column (2)) but the estimates remain statistically significant.

We see interesting differences when we estimate these models separately by level (middle/high school) and race. First, test scores at the middle school appear more sensitive to perceptions of composition, perhaps because middle school test scores are perceived to be more malleable than high school test scores. Second, while Asian and White parents and Black and Hispanic parents expect their children to achieve higher test scores at schools with lower poverty rates, there is a striking difference between the results for "own race". In particular, while Asian and White students expect their children's scores to be increasing in the fraction of own-race students, Black and Hispanic students expect their children's scores to be decreasing in the fraction of own-race students. An obvious interpretation is that all parents have the same beliefs about the relationship between their children's test scores and a school's racial composition. Below we assess whether this could reflect an omitted variables bias (i.e., perceptions about racial composition are correlated with unobserved perceptions about other inputs into test scores, such as resources and teacher quality).

Turning to other outcomes, we find broadly similar patterns of results when we look at own-child beliefs about safety (Table 9), college and friends (omitted for brevity). Interestingly, safety is the outcome most sensitive to parents' beliefs about student composition: parents think that a 30 percentage point reduction in the percent of students in poverty will yield a 10 percentage point increase in the chance that their child will feel safe at school; again, the effect of "own race" is positive for Asian and White parents and negative for Black and Hispanic parents. When we look at whether parents think that their children will make good friends we find similar patterns for Asian and White parents but find that Black and Hispanic families believe that this outcome is invariant to the share of students of the same race as their children, at least conditional on their perceptions of poverty.

4.2 Evidence from a Vignette Experiment

An obvious concern with these estimates is that parents' beliefs about student composition are correlated with their beliefs about other inputs into their child's outcomes such as class size or teacher effectiveness. In that case, estimates of the role played by parents' perceptions of student composition could be spurious.

To address this possibility we use exogenous variation in perceptions of student composition generated by a "vignette experiment". We begin by describing the experiment and then we confirm that parents revise their beliefs about composition in a way that is consistent with the experiment. We then use these revised beliefs to estimate the relationship between beliefs about own-child outcomes and beliefs about composition.

Design

As discussed in Section 3.2, we chose four "focal schools" to present to each respondent. The first pair were chosen on the basis of performance, which we know is strongly correlated with student composition. The second pair were chosen on the basis of distance.

We conducted a vignette experiment using one of the schools in the first pair (the "intervention school"). Specifically, we used the school that differed the most from the student's current school (current elementary school for students applying to middle school, current middle school for students applying to high school). More precisely, we calculated the difference between current school performance and performance at the two focal schools in the pair. We then used the school for which the difference was greatest. Recall that one of the schools in the performance pair has above-average performance and one has below-average performance. If the current school is high-performing, then the intervention school will be lower-performing. If the current school is low-performing then the intervention school will be higher-performing.

Appendix Figure A1 illustrates this design. Starting with the middle school plot (panel A), the X-axis measures current (i.e., elementary) school performance. The Y-axis measures the difference between current school performance and intervention middle school performance. For a middle school applicant attending a high-performing elementary school, the intervention school will be lower-performing and hence the difference between current and intervention school performance will be positive. The opposite is true for a middle school applicant currently attending a low-performing elementary school: the intervention school will be higher performing and the difference between current and intervention school performance will be negative. For a middle school applicant attending an elementary school with roughly average levels of performance, the intervention middle school could have above- or

below-average performance. That is because there is a random component to the choice of focal school (see Section 4). This means that there is a range of current school performance (indicated by the vertical lines) over which the difference between current and intervention school performance could be positive or negative. The same basic pattern is observed for high school (panel B).

Appendix Figure A2 plots the analogous figure for poverty (i.e., the proportion of students eligible for a free or reduced-price lunch). Because poverty is highly correlated with performance, we see the same basic pattern: when the current school has high levels of student poverty, the difference between poverty levels at the current school and the intervention school is positive (i.e., the current school has higher poverty levels). The difference tends to be negative when the current school has low levels of poverty.

The vignette experiment involved asking parents to imagine that the district changed how it assigns students to schools. Specifically, it asked parents to imagine that this change in the assignment system meant that student composition (in terms of poverty and ethnic composition) at the intervention school was similar to student composition at the current school (see the Appendix for question text). We think it is highly plausible to suppose that the district could change student assignment rules such that student composition changed in this way. Like many urban school districts that operate centralized choice (e.g., New York City), the district has changed the student assignment system many times. Indeed, at the time at which we conducted the experiment, the district was in the news for changing the system used to assign students to the selective schools in the district (selective schools are excluded from our sample).

Revised Beliefs about Student Composition

We now analyze how parents revised their beliefs about student composition in response to the experiment. In particular, we compare the perceived impact and the "true impact" of the experiment. For a particular dimension X of student composition (e.g., poverty), we define the true impact $\triangle X$ and the perceived impact $\triangle \widehat{X}$ as follows:

$$\triangle X = X_C - X_I$$
$$\triangle \widehat{X} = \widehat{X}_I^{POST} - \widehat{X}_I^{PRE}$$

where subscript I denotes the intervention school, subscript C denotes the current school, "hats" denote beliefs and "POST" and "PRE" denote pre- and post-experiment.

If parents were fully informed about student composition at both the current and intervention school, and if they understood the experiment, then the perceived impact would

equal the true impact. But the perceived impact could differ from the true impact for several reasons. For example, suppose the true impact is positive. The perceived impact could be negative if parents have correct beliefs about the composition of the current school but overly optimistic beliefs about the composition of the intervention school. Alternatively, it could be negative if parents have correct beliefs about the composition of the intervention school but overly pessimistic beliefs about the composition of the current school. Of course both of these possibilities may hold. Parents may also misunderstand the experiment (e.g., if they think that "similar" means "more like").

Figure 7 plots perceived impacts on poverty against true impacts on poverty. The dots are the raw data and the solid line is a non-parametric smoother. The gradient of this line is less than one, but the expected relationship holds. In other words, on average, parents correctly perceive that the vignette experiment will alter student composition in a way that is consistent with the true difference in poverty between the current school and the intervention school. In the middle and bottom panels of this figure we see that a similar relationship holds when we restrict to middle school applicants, high school applicants, Asian and White families and Black and Hispanic families.

Own-Child Beliefs and Student Composition

How do parents think that their children would fare in this hypothetical scenario in which student composition has changed? To address this question we estimate the following model:

$$\triangle \widehat{Y}_{ij} = \beta_0 + \beta_1 \triangle \widehat{X}_{ij} + \varepsilon_{ij}$$

where $\triangle \widehat{Y}_{ij} = \widehat{Y}_{ij}^{POST} - \widehat{Y}_{ij}^{PRE}$ is the difference between beliefs about own-child outcome Y before and after the intervention. Estimates of β_1 will tell us whether more-optimistic beliefs about student composition are associated with more-optimistic beliefs about own-child outcomes.

Relative to the approach used to estimate this relationship in Section 6, the strength of this approach is that we are exploiting within-person variation in beliefs about student composition. This eliminates the concern that these beliefs are correlated with beliefs about other inputs such as class size and teacher quality.

Tables 10 and 11 present estimates of the impacts of student composition on own-child beliefs about test scores and safety (estimates for other outcomes are omitted for brevity and available on request). These are simple regressions of the *change* in parents' beliefs about own-child outcomes on the *change* in parents' beliefs about student composition (i.e., one observation per parent). They tell us whether parents think that a change in the composition

of students attending a school would change their children's academic and non-academic outcomes at that school.

It is tempting to compare these estimates to those in Tables 8 and 9. They are identifying similar parameters, but the underlying thought experiment is different. In particular, we view the vignette experiment as asking parents to imagine how their children's outcomes would respond to a change in student composition and, implicitly, a change in the various inputs that might be associated with a change in student composition (e.g., a change in resources, a change in the composition of teachers, etc). In contrast, the estimates based on beliefs data are identified in models that include school fixed effects and thereby absorb any school-level factors that are associated with different sets of peers.

Despite these differences in the underlying parameters, the message that emerges from Tables 10 and 11 is strikingly similar to that emerging from Tables 8 and 9. Namely, these estimates suggest that parents believe that their children in better outcomes in schools that enroll a more favorable composition of students. Interestingly, in both sets of tables (Tables 8-9 and 9-10), it appears that parents think that the non-academic outcome (safety) is more strongly related to composition than is the academic outcome (test scores). This may be because parents believe that they have more control over test scores than they do over safety. In other words, while be able to help with homework and use tutoring services if their children struggle academically, there may be little they can do to prevent them from being bullied in school.

Looking across the columns in Tables 10 and 11, we find that for each subgroup of parents, there is a strong relationship between perceptions of the change in safety and perceptions of the change in the proportion of students in poverty. The impact of "own race" is also very strong, and now positive among Black and Hispanic families, albeit not statistically significant.

Based on this vignette experiment, we conclude that our earlier estimates of the relationship between own-child beliefs and beliefs about composition are not spurious. In other words, they do not reflect a correlation between perceptions of student composition and beliefs about other unobserved inputs into their children's outcomes. Instead, they reflect parents' beliefs in a causal relationship between student composition and their children's outcomes.

Preferences for Student Composition

Finally, having shown that parents look for schools in which their children will fare well in terms of academic and non-academic outcomes, and having shown that they form beliefs about these outcomes based in part on their beliefs about student composition, we

would expect the vignette experiment to change their stated choices over the schools in the performance pair.

To verify that conjecture we estimate the following model:

$$\triangle ln(\frac{\widehat{P}_{ij}}{1-\widehat{P}_{ij}}) = \beta_0 + \beta_1 \triangle \widehat{X}_{ij} + \varepsilon_{ij}$$

where the left-hand side is the change in the log-odds of choosing this school over the other school in the pair. As expected, the estimates in Table 12 confirm that *changes* in beliefs about composition change the probability that parents will choose the intervention school. Consistent with the results in Tables 8-11, we find that an increase in poverty makes parents less likely to choose the school, while an increase in own race makes all except Black and Hispanic parents more likely to choose the school.

As a check on the magnitudes of these estimates, we can ask whether they are consistent with the preference estimates reported in Section 3.4.3. More concretely, we can use these preference estimates and our estimates of the impacts of composition on own-child beliefs to predict the impact of the change in composition beliefs on choices. To the extent that these predictions match the actual effects we can have more confidence in the earlier preference estimates. We will include this exercise in future drafts of the paper.

5 Conclusion

Understanding how families choose schools is critical for understanding the effects of school choice, patterns of school and residential segregation, and socially optimal policies relating to student assignment and the supply of schools and programs. Gaining this understanding has been challenging for several reasons. First, it is difficult to separate the role of preferences from that of beliefs when examining the observed relationship between choices and a school's impacts on children's outcomes. While information interventions are informative about the importance of misinformation, and are highly policy relevant, they are unlikely to be an effective substitute to identify preferences by eliciting beliefs. Second, administrative datasets generally contain limited information about non-academic outcomes such as safety and social wellbeing, which might matter greatly to school choices. To the extent that school quality is multidimensional (Beuermann et al., 2018), analyses that focus on academic quality may miss important drivers of choices and misattribute demand for non-academic outcomes to academic outcomes.

We address these challenges by combining administrative data on school choices with beliefs about school attributes and impacts on own-child outcomes elicited from a survey

of families choosing schools in a mid-size urban school district. Using data on subjective expectations of children's outcomes allows us to separate beliefs about academic outcomes from preferences for academic outcomes. Similarly we are able to examine preferences for non-academic outcomes using data on beliefs about whether the respondent's children would be safe at school and whether they would have good friends.

Three key findings emerge from our analyses. First, parents think that schools matter for their children's outcomes and that school quality is multi-dimensional; schools perceived to improve test scores are not necessarily the same schools where they think their children would have good friends or feel safe. Second, while parents strongly prefer schools they think will generate good academic outcomes, if anything, whether they think their children will feel safe and have good friends matters even more. Third, parents perceive these outcomes - especially non-academic outcomes - will be better in schools that enroll higher-SES students.

These results have several important implications. First, since we find strong preferences for schools that improve test scores, this suggests the finding in some studies (e.g. Abdulkadiroğlu et al. (2020)) that parents do not select schools based on test score impacts is unlikely to reflect a weak preference for academics. Instead, it is more likely to reflect incomplete information about these impacts or unobserved school attributes that make high value added schools unattractive. Second, strong preferences for non-academic outcomes coupled with the multi-dimensionality of school quality offers a possible explanation for why some families select schools that they perceive to have relatively low-quality academics. This in turn may mitigate the effect of demand-driven competition on academics, even if parents can accurately identify schools effective at improving academics. Finally, the finding that perceptions of peer composition shape beliefs about own-child outcomes supports the conjecture that providing information about school quality could weaken preferences for peer composition and increase incentives for improved productivity (e.g., Abdulkadiroğlu et al. (2020)). At the same time, the notion that a school with a large concentration of socioeconomically disadvantaged peers is necessarily one that generates poor outcomes may be deeply entrenched and largely impervious to this type of information. An important question for future research is whether and how perceptions of school quality can be made to align more closely with actual effectiveness rather than peer composition.

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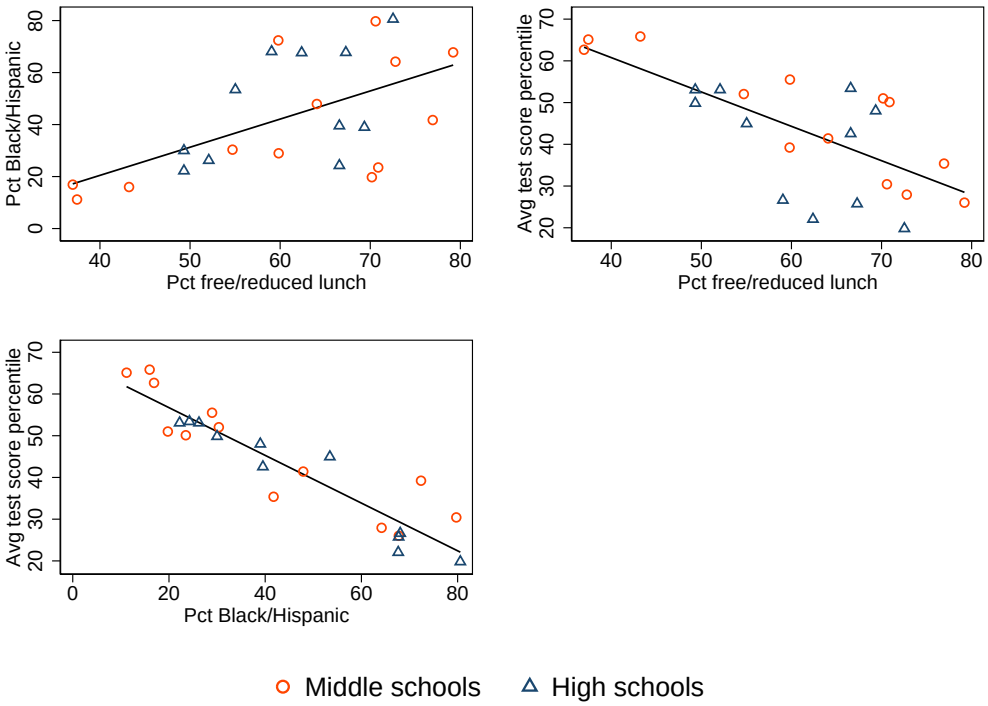
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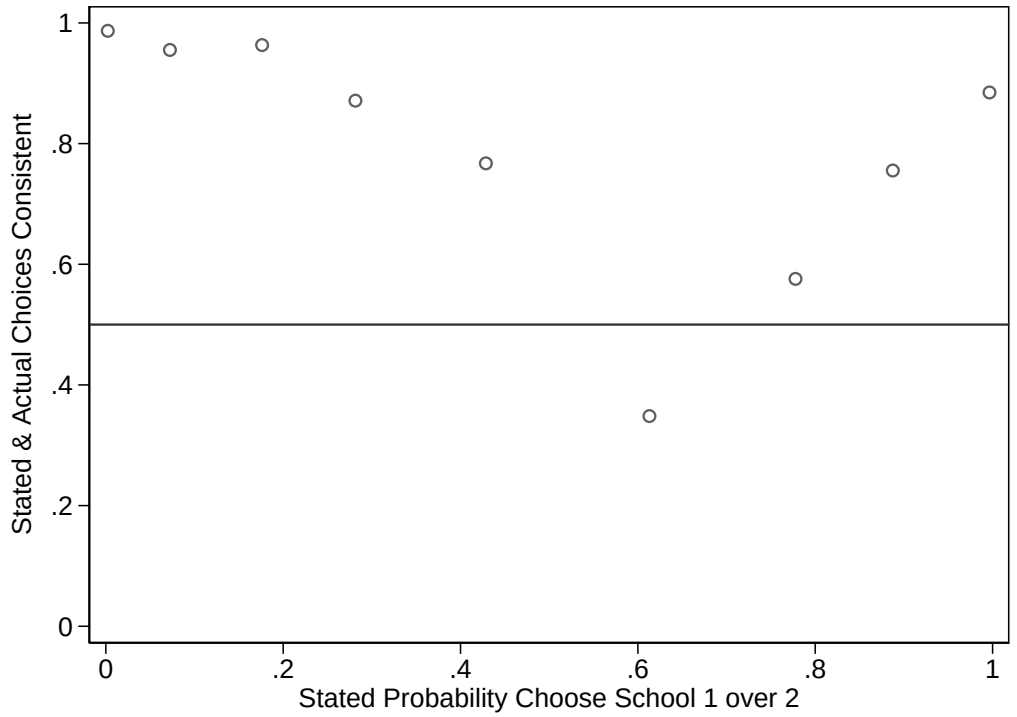
Figures

Figure 1 School demographic composition and average test scores



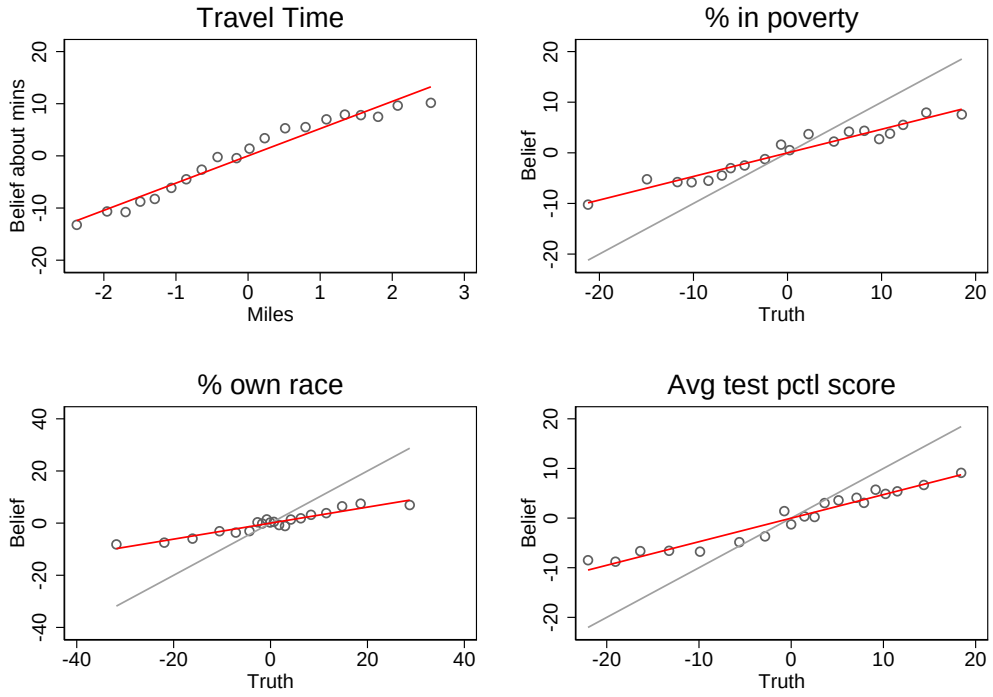
Notes: Figure shows relationship among school demographic composition measures and average test scores. These are actual values of these attributes, not beliefs. Average test scores are average percentile ranks of the average of the math and ELA scale scores. Two high schools with selective admissions are excluded from the figures.

Figure 2 Correspondence between stated and actual school choices



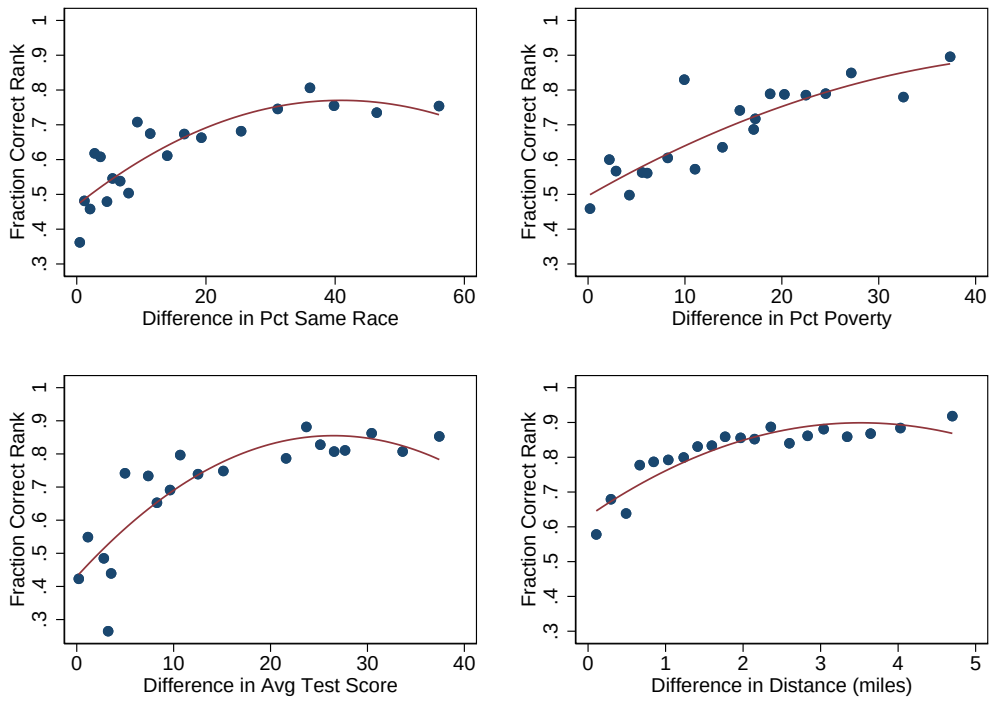
Notes: This figure is based on pairs of focal schools where respondents were asked to give the percent chance of choosing one school over the other. The horizontal axis is the stated percent chance of choosing the first school in a pair over the other. The vertical axis is the fraction of pairs where the stated choice and actual choice are consistent. We define stated and actual choices as being consistent when the stated percent chance of choosing the first school is > 50, they rank the first school over the second, or when the stated percent chance of choosing the first school is < 50, they rank the second school over the first. Pairs where schools cannot be uniquely ranked based on either stated or actual choices are excluded (that is, when the percent chance of choosing one school over the other is 50 or when both of the schools in the pair were omitted from their ranked list of schools on the enrollment application).

Figure 3 Relationship between perceptions and actual values of school attributes



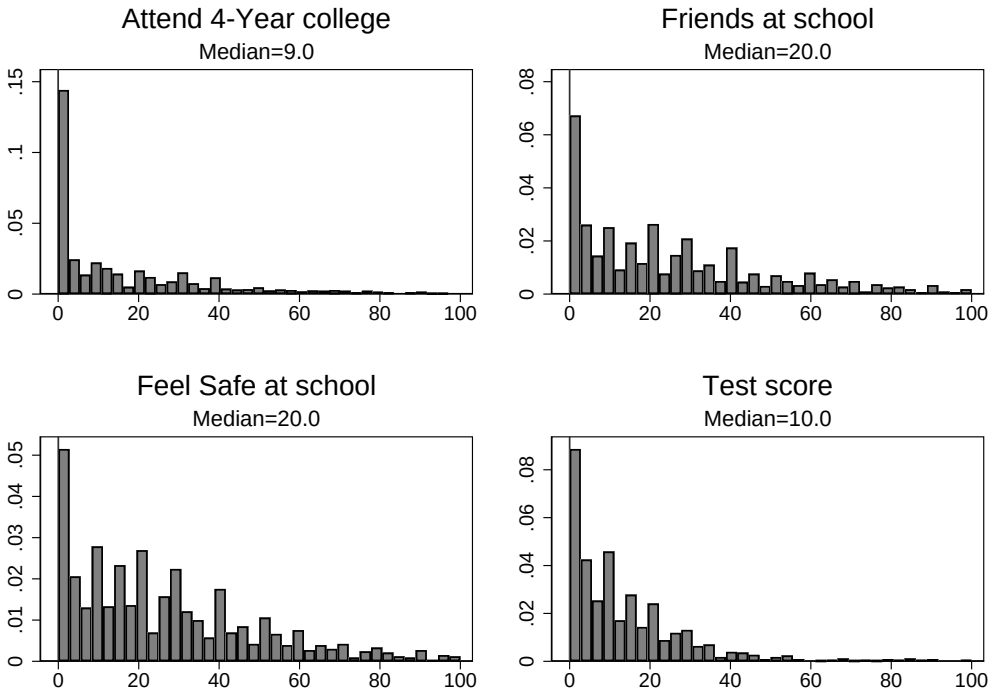
Notes: Each panel depicts the relationship between perceptions of a school attribute and actual values, where both the beliefs and actual values have been de-demeaned at the individual level (so that the values shown in the graphs are deviations from the mean value across the four focal schools an individual was asked about). The line of best fit is depicted in red and the 45 degree line depicted in grey. Upper-left panel shows beliefs about travel time in minutes against linear distance between an individual's home and school (measured in miles). Lower-right panel shows beliefs about average test scores against actual average test scores, where the unit for both beliefs and actual values is percentile ranks of the student test score distribution.

Figure 4 Agreement of school rankings based on beliefs and actual values



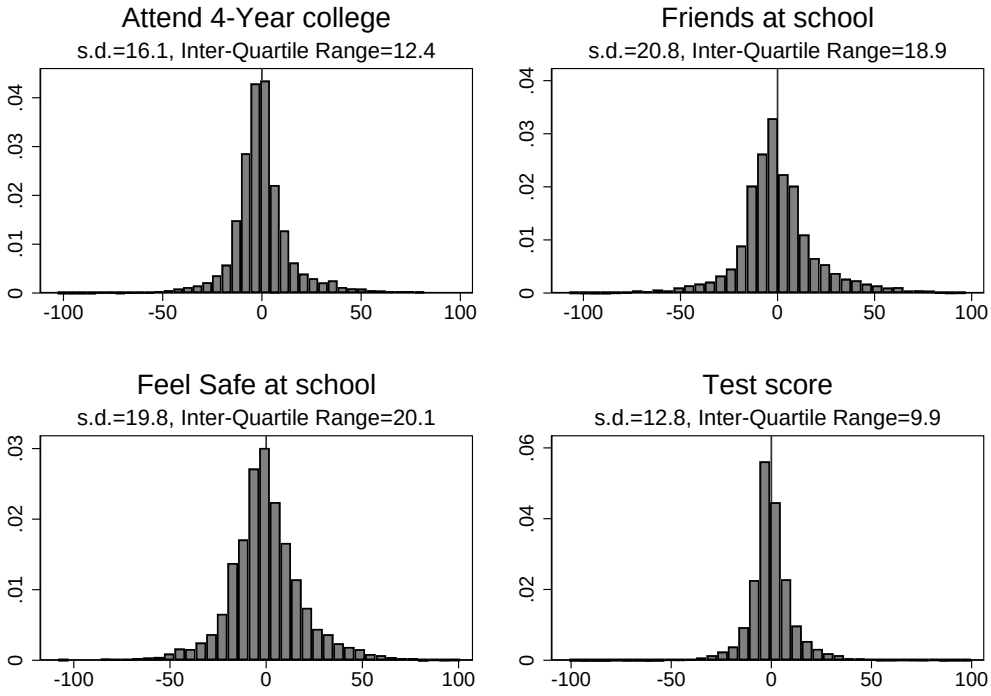
Notes: The vertical axis is the fraction of pairwise school comparisons where the rank based on beliefs about a given attribute is the same as the rank based on the true value. The horizontal axis is the absolute value of the difference in the true values of the attribute. Each respondent contributes up to six pairwise comparisons for each panel, with pairs missing beliefs data for at least one school or where the beliefs are "tied" for both schools excluded.

Figure 5 Distribution of gap between expected own-child outcomes at school with the highest and lowest expected outcomes



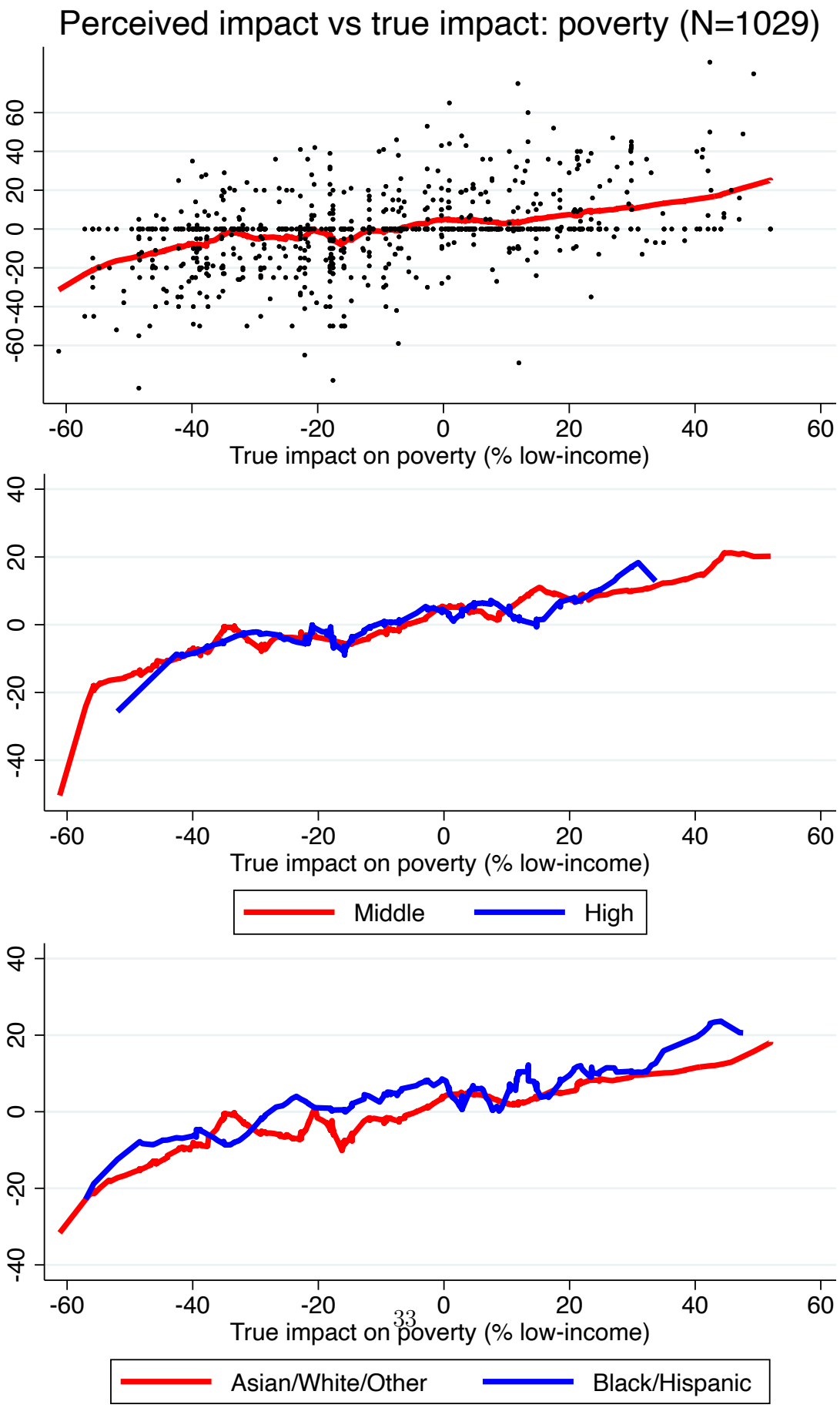
Notes: Figure depicts distribution of gap between expected own-child outcomes at focal school with the highest and lowest expected outcomes. Since we ask for beliefs about four focal schools, these gaps will be a lower bound on the gap between expected own-child outcomes at the schools with the highest and lowest expected outcomes in the District.

Figure 6 Distribution of pairwise differences in expected own-child outcomes



Notes: Figure depicts heterogeneity in beliefs about the relative impact of schools on own-child outcomes. Pairwise differences in beliefs are computed for each possible pair of schools (up to six per respondent), and these are pooled across respondents and pairs of schools. Each panel shows the distribution of these differences for different outcomes. To account for heterogeneity across pairs of schools that does not reflect heterogeneity across respondents in their beliefs about a given comparison between a pair of schools, we demean the pairwise differences at the school pair level.

Figure 7 Perceived impacts of vignette experiment on poverty rates



Tables

Table 1 Means of student and school characteristics by survey response status

	All	Respondents	Resp-Nonresp	Reweighted Resp-Nonresp
Individual characteristics:				
Middle School	0.50	0.50	–0.01	–0.01
Disadvantaged nbhd	0.21	0.14	–0.08*	–0.01
Asian	0.31	0.38	0.08*	0.01
Black	0.06	0.03	–0.04*	–0.01
Hispanic	0.29	0.22	–0.09*	–0.01
White	0.19	0.22	0.03*	0.00
Enrolled in 2018–19	0.90	0.92	0.03*	0.01
Test score percentile	50.2	58.4	9.86*	4.05*
Old for grade	0.06	0.05	–0.01	–0.00
Attendance rate	0.96	0.96	0.01*	0.00
Boy	0.52	0.54	0.02	0.02
ELL (ever)	0.49	0.41	–0.09*	–0.01
Special ed	0.15	0.14	–0.01	0.01
1st language Chinese	0.25	0.31	0.08*	0.02
1st language Spanish	0.19	0.10	–0.10*	–0.01
1st language English	0.47	0.52	0.06*	–0.00
1st language Other	0.09	0.06	–0.03*	–0.01
Adults speak Chinese	0.24	0.29	0.06*	0.01
Adults speak Spanish	0.20	0.11	–0.10*	–0.01
Adults speak English	0.46	0.53	0.08*	0.01
Adults speak Other	0.09	0.06	–0.04*	–0.01
Neighborhood SES index	0.00	0.18	0.21*	0.04
Missing neighborhood SES	0.03	0.03	0.00	0.01
Attributes of current school:				
Serves grades K-8	0.13	0.17	0.04*	0.03
Segregation cat 1	0.27	0.33	0.08*	0.01
Segregation cat 2	0.24	0.29	0.06*	0.01
Segregation cat 3	0.21	0.18	–0.03*	–0.00
Segregation cat 4	0.17	0.12	–0.06*	–0.01
Segregation cat 5	0.12	0.08	–0.05*	–0.01
Average test percentile	50.8	54.1	3.93*	0.59
Pct Black	5.65	4.84	–0.95*	–0.27
Pct Asian	32.4	36.7	4.97*	0.82
Pct Hispanic	27.3	22.3	–5.93*	–0.79
Pct White	13.7	14.9	1.42*	0.17
Pct Free/Reduced Lunch	54.5	50.7	–4.49*	–0.81
Pct feel safe	56.7	57.6	1.09*	0.15
Average neighborhood SES	0.03	0.15	0.15*	0.02
Attributes of requested school:				
Feeder MS	0.58	0.65	0.07*	0.03
Closest school to home	0.32	0.33	0.01	–0.01
Distance to top choice	2.27	2.25	–0.03	0.02
Average test percentile	50.8	52.3	1.81*	0.42
Pct Black	6.22	5.83	–0.47*	–0.03
Pct Asian	42.9	45.1	2.67*	0.53
Pct Hispanic	25.4	23.3	–2.52*	–0.59
Pct White	11.5	12.1	0.70*	0.13
Pct Free/Reduced Lunch	55.0	53.5	–1.87*	–0.36
Pct feel safe	62.3	62.7	0.46	0.10
Average neighborhood SES	0.07	0.12	0.06*	0.01
Num sch listed on app	2.93	3.27	0.40*	0.34*
N	6920	1065		

Note: Difference in unweighted means by respondent status reported in Column 3. Differnce in means after weighting by inverse probability of survey response in Column 4. Differences statistically significant at the 5 percent level denoted by "*". Probability of survey response estimated using a logistic regression of response on the individual characteristics and attributes of the current school. Attributes of requested schools refer to the top-choice school (except for number of schools requested) and are treated as "leave out" variables and not used to estimate response probabilities. "Seg cat" variables are dummies for school segregation quintiles (1=least socioeconomically disadvantaged, 5=least socioeconomically disadvantaged).

Table 2 Summary statistics of beliefs variables

		School Level		Race	
	All	Middle	High	White/Asian	Black/Hisp.
Population beliefs:					
Test score ATE	66.3	66.9	65.8	67.8	63.3
	(17.8)	(17.7)	(17.9)	(16.3)	(21.1)
Percent of low-income students	51.9	50.4	53.4	51.6	54.4
	(24.4)	(24.7)	(24.0)	(23.7)	(25.6)
Percent of same-race students	40.5	40.7	40.3	40.3	43.3
	(22.2)	(22.3)	(22.1)	(20.6)	(24.3)
Average test score	63.9	64.6	63.2	65.6	60.3
	(17.9)	(18.0)	(17.7)	(16.8)	(20.2)
Travel time (minutes)	30.1	26.8	33.5	30.0	31.3
	(16.5)	(15.5)	(16.8)	(16.3)	(17.1)
Own-child beliefs:					
Pct chance 4yr college	79.0	78.9	79.0	79.8	74.3
	(22.3)	(21.9)	(22.7)	(21.5)	(24.4)
Pct chance good friend group	66.2	67.1	65.4	67.2	63.6
	(24.5)	(24.6)	(24.5)	(24.0)	(25.9)
Test score	73.7	73.1	74.4	75.6	68.2
	(18.6)	(18.1)	(19.0)	(16.7)	(22.0)
Pct chance feel safe at school	68.1	68.3	67.9	69.1	65.5
	(22.7)	(22.9)	(22.5)	(21.7)	(24.5)
N (respondent-school)	5428	2765	2663	3114	1532
N (respondents)	1452	749	703	825	422

Note: Table entries are means and standard deviations in parentheses for respondents' beliefs about schools. Sample size refers to number of observations that have non-missing data for at least one of the beliefs variables.

Table 3 Agreement across respondents in beliefs about own-child outcomes

	Respondent weighted	Pair weighted
College	0.740	0.760
Feel safe at school	0.748	0.760
Good friend group	0.730	0.740
Test score	0.700	0.720

Note: Table entries are the fraction of respondents asked for their beliefs about a given pair of schools that agree about the ranking of the schools in a pair. Values close to 0.5 indicate that respondents are evenly split about which school would generate better outcomes, while values close to 1 indicate respondents are nearly in complete agreement. The first column weights respondent-pair observations equally; the second column weights each pair equally.

Table 4 Correlations of Beliefs About Own-Child Outcomes

	College	Safe	Friends
Feel safe at school	0.545		
Good friend group	0.563	0.690	
Test score	0.584	0.472	0.451

Note: Correlations calculated pooling belief data across respondents.

Table 5 Agreement in beliefs about top-ranked school across outcomes

		Same top-ranked school
College	Feel safe at school	0.704
College	Good friend group	0.674
College	Test score	0.666
Feel safe at school	Good friend group	0.686
Feel safe at school	Test score	0.649
Good friend group	Test score	0.606

Note: Table shows fraction of respondents that believe the same school would generate the best outcome for their child in terms of the outcomes listed in the first and second columns. The sample for each row is limited to respondents who have non-missing beliefs data about at least two schools for both outcomes, and where there is a single highest value for beliefs about each outcome (i.e., the first- and second-highest belief values are not tied).

Table 6 Preferences for own-child beliefs

	Full sample		Survey sample		
	(1)	(2)	(3)	(4)	(5)
Distance	-0.643***	-0.602***	-0.631***	-0.634***	-0.600***
	(0.00717)	(0.0141)	(0.0338)	(0.0344)	(0.0365)
Test score				0.0664***	0.0213**
				(0.00580)	(0.00689)
Feel safe					0.0268***
					(0.00404)
Good friends					0.0464***
					(0.00412)
Own race					0.0112***
					(0.00323)
Students	5931	5931	1034	1034	1024
Schools	All	Focal	Focal	Focal	Focal
Var_FE	2.093	2.043	2.680	2.185	1.481

Note: entries are coefficients from rank-ordered logit models of parents' school rankings. Each specification includes a set of schol fixed effects. The choice set includes 13 middle schools and 11 high schools.

Table 7 Preferences for own-child beliefs: by subgroup

	All		Middle School		High School		Asian & White		Black & Hispanic	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Distance	-0.634***	-0.600***	-0.690***	-0.674***	-0.594***	-0.547***	-0.645***	-0.613***	-0.549***	-0.538***
	(0.0344)	(0.0365)	(0.0542)	(0.0578)	(0.0442)	(0.0466)	(0.0401)	(0.0423)	(0.0727)	(0.0774)
Test score	0.0664***	0.0213**	0.0665***	0.0217*	0.0665***	0.0193	0.0755***	0.0315***	0.0492***	0.0141
	(0.00580)	(0.00689)	(0.00759)	(0.00925)	(0.00900)	(0.0105)	(0.00778)	(0.00947)	(0.00868)	(0.00986)
Feel safe		0.0268***		0.0313***		0.0228***		0.0245***		0.0253***
		(0.00404)		(0.00598)		(0.00558)		(0.00525)		(0.00650)
Good friends		0.0464***		0.0459***		0.0475***		0.0519***		0.0357***
		(0.00412)		(0.00537)		(0.00655)		(0.00515)		(0.00718)
Own race		0.0112***		0.0102*		0.0121*		0.00751		-0.00124
		(0.00323)		(0.00442)		(0.00475)		(0.00465)		(0.00551)
Students	1034	1024	516	510	518	514	781	774	253	250
Var_FE	2.185	1.481	0.873	0.488	1.326	0.989	3.325	2.123	1.019	0.871

Note: entries are coefficients from rank-ordered logit models of parents' school rankings. Each specification includes a set of schol fixed effects. The choice set includes 13 middle schools and 11 high schools.

Table 8 Own-Child Beliefs about Test Scores

	All		Middle School		High School		Asian & White		Black & Hispanic	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Poverty	-0.196***	-0.101***	-0.243***	-0.136***	-0.145***	-0.0693**	-0.152***	-0.0773***	-0.119**	-0.0643
	(0.0174)	(0.0189)	(0.0246)	(0.0271)	(0.0244)	(0.0262)	(0.0187)	(0.0201)	(0.0381)	(0.0393)
Own race	0.0934***	0.0614**	0.126***	0.0940***	0.0582*	0.0285	0.206***	0.154***	-0.107**	-0.0898*
	(0.0192)	(0.0192)	(0.0268)	(0.0266)	(0.0270)	(0.0272)	(0.0210)	(0.0218)	(0.0360)	(0.0362)
School Fixed Effects	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Students	1188	1188	611	611	577	577	866	866	322	322
Observations	4316	4316	2145	2145	2171	2171	3210	3210	1106	1106

Note: the entries are coefficient estimates from least squares estimation of models relating own-child beliefs about test scores to beliefs about composition and student fixed effects. Robust standard errors in parentheses.

Table 9 Own-Child Beliefs about Safety

	All		Middle School		High School		Asian & White		Black & Hispanic	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Poverty	-0.553***	-0.356***	-0.614***	-0.393***	-0.487***	-0.322***	-0.522***	-0.349***	-0.341***	-0.244***
	(0.0237)	(0.0254)	(0.0325)	(0.0360)	(0.0340)	(0.0355)	(0.0268)	(0.0283)	(0.0535)	(0.0539)
Own race	0.226***	0.163***	0.259***	0.183***	0.190***	0.143***	0.383***	0.259***	-0.130*	-0.0848
	(0.0252)	(0.0242)	(0.0349)	(0.0327)	(0.0361)	(0.0357)	(0.0288)	(0.0298)	(0.0505)	(0.0495)
School Fixed Effects	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Students	1182	1182	604	604	578	578	864	864	318	318
Observations	4294	4294	2131	2131	2163	2163	3202	3202	1092	1092

Note: Note: the entries are coefficient estimates from least squares estimation of models relating own-child beliefs about test scores to beliefs about composition and student fixed effects. Robust standard errors in parentheses.

Table 10 Own-Child Beliefs about Test Scores

	All		Middle School		High School		Asian & White		Black & Hispanic	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
impact_pov	-0.0300	-0.0299	-0.0943*	-0.0991**	0.0499	0.0576	-0.0798*	-0.0492	0.0714	0.0251
	(0.0273)	(0.0265)	(0.0390)	(0.0366)	(0.0332)	(0.0338)	(0.0309)	(0.0310)	(0.0528)	(0.0504)
impact_race		0.142***		0.162***		0.130***		0.146***		0.0912
		(0.0267)		(0.0407)		(0.0318)		(0.0282)		(0.0655)
Observations	1022	1011	503	497	519	514	769	762	253	249
R-squared	0.00235	0.0523	0.0219	0.0800	0.00704	0.0533	0.0158	0.0679	0.0135	0.0250

Note: The entries are estimates from least squares estimation of models that relate the change in own-child beliefs about test scores to the change in beliefs about student composition. Robust standard errors in parentheses.

Table 11 Own-Child Beliefs about Safety

	All		Middle School		High School		Asian & White		Black & Hispanic	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
impact_pov	-0.194***	-0.189***	-0.211***	-0.223***	-0.173**	-0.148*	-0.244***	-0.179***	-0.0812	-0.139
	(0.0419)	(0.0403)	(0.0562)	(0.0517)	(0.0623)	(0.0632)	(0.0532)	(0.0519)	(0.0620)	(0.0792)
impact_race		0.273***		0.293***		0.256***		0.313***		0.139
		(0.0370)		(0.0550)		(0.0480)		(0.0468)		(0.0730)
Observations	1026	1015	505	499	521	516	770	763	256	252
R-squared	0.0413	0.117	0.0502	0.134	0.0314	0.101	0.0564	0.146	0.00972	0.0290

Note: The entries are estimates from least squares estimation of models that relate the change in own-child beliefs about safety to the change in beliefs about student composition. Robust standard errors in parentheses.

Table 12 Preferences and Student Composition

	All		Middle School		High School		Asian & White		Black & Hispanic	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
impact_pov	-0.0209***	-0.0211***	-0.0242***	-0.0246***	-0.0171***	-0.0164***	-0.0248***	-0.0217***	-0.0100	-0.0100
	(0.00348)	(0.00358)	(0.00498)	(0.00514)	(0.00472)	(0.00467)	(0.00442)	(0.00455)	(0.00523)	(0.00605)
impact_race		0.0116**		0.00657		0.0176**		0.0155**		-0.00313
		(0.00400)		(0.00495)		(0.00640)		(0.00521)		(0.00567)
Observations	888	879	429	424	459	455	650	644	238	235
R-squared	0.0625	0.0809	0.0873	0.0937	0.0398	0.0802	0.0730	0.0990	0.0236	0.0295

Note: the dependent variable is the change in the log odds of choosing the intervention school.

Appendix: Survey question wording

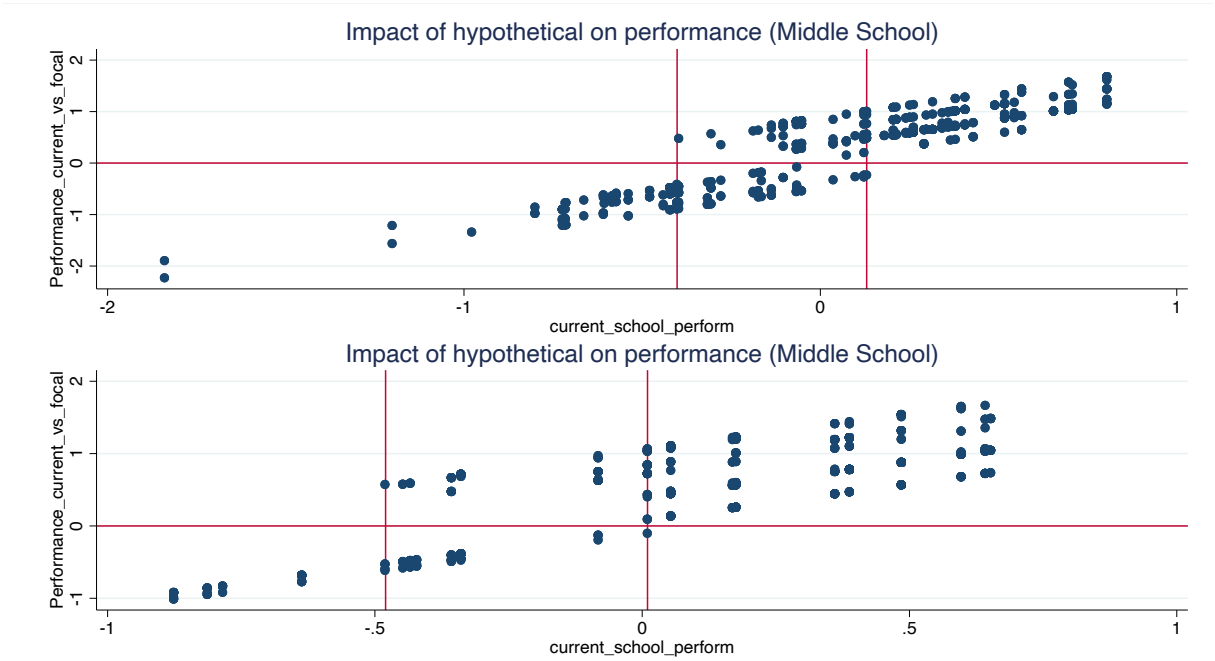
Survey item	Wording
Population beliefs instructions	Now we would like to ask you some questions about the schools indicated on the map, as well as any schools you said you were considering applying to. We would like to learn about **your beliefs** about these schools, so please **do not consult any other resources** (e.g., the internet) when answering these questions. Again, your answers **will not affect your child's school assignments.** **If you are not familiar with any of these schools, please just give your best guesses to the questions we ask.** [Image of Map]
Travel time	How many minutes do you think it would take your child to travel to: [list of focal schools with sliders]
Pct low-income	What do you think is the **percent** of students who are **low-income** (qualify for a free/reduced-price lunch because of their income) at: [list of focal schools with sliders]
Pct same-race	What do you think is the **percent** of students who are **of the same race** as your child at: [list of focal schools with sliders]
Instructions for test score questions	Every spring, students in [District Name] take tests in math and English. The same tests are used in every school. A student's performance on these tests compared to other students can be expressed as a score between 0 and 100. Higher scores mean the student did better on the test. These scores also tell you how well students did compared to other students in [District Name]. For example, if a student scored 75, it means they scored better than 75% of [District Name] students. The next questions are about these test scores. When we say "score" we mean the average of math and English scores.
Average test scores	What do you think is the **average score** among[8/11]th grade students at: [list of focal schools with sliders]
School ATE on test scores	Suppose that a family of a student has just moved to [City Name] and is trying to decide which [middle/high] school would be best for their child's academic outcomes. Previously, this child's test scores were about average for [District Name] students. What do you expect **this child would score** in [8/11]th grade if they attended the following schools from [6/9]th grade through [8/11]th grade: [list of focal schools with sliders]

Own-child test scores	What do you think **your child** would score in [8/11]th grade if they attended the following schools from [6/9]th grade through [8/11]th grade: [list of focal schools with sliders]
Percent chance instructions	The next questions ask you about the "percent chance" of something happening. The "percent chance" is a number between 0 and 100. The higher the number, the more likely something is to happen. For example, think about the percent chance that you will eat pizza in the next two weeks. Numbers between 0 and 10 mean there is almost no chance that you will eat pizza in the next two weeks. Numbers between 90 and 100 mean it is almost certain that you will eat pizza in the next two weeks.
Own-child safety	What do you think is the percent chance that **your child** would **feel safe at school** if they attended: [list of focal schools with sliders]
Own-child friends	What do you think is the percent chance that **your child** would **have a good group of friends** if they attended: [list of focal schools with sliders]
Own-child 4yr. college	What do you think is the percent chance that **your child** would **attend a 4-year college** in the future if they attended: [list of focal schools with sliders]
Stated preferences over focal schools 1 and 2	Now imagine that you had to choose between [**Name of focal school 1**] and [**Name of focal school 2**]. What is the percent chance you would choose [**Name of focal school 1**]: [slider]
Stated preferences over focal schools 3 and 4	Now imagine that you had to choose between [**Name of focal school 3**] and [**Name of focal school 4**]. What is the percent chance you would choose [**Name of focal school 3**]: [slider]
Policy experiment vignette	Now imagine that [District Name] changed the rules they use to decide which students go to which [middle/high] schools. Imagine this meant that students enrolled in [**Name of focal school 1**] were **similar to students enrolled at your child's [elementary/middle] school in terms of social class and racial/ethnic background.**
Population beliefs asked again after policy vignette	[Shown on the same page as the policy experiment vignette] Taking this into account, what do you think would be the **percent of students at [Name of focal school 1]** who are [first slider] low-income (eligible for free/reduced-price lunch) [second slider] the same race as your child

Beliefs about own-child outcomes asked again after policy vignette	Again imagine that students enrolled in [**Name of focal school 1**] were **similar to those enrolled at your child's [elementary/middle] school**. Taking this into account, if **your child were to attend [Name of focal school 1]**, what do you think is the percent chance that they would (Note: the sliders start at the answers you gave previously) [first slider] Feel safe at school [second slider] Have a good group of friends at school [third slider] Attend a 4-year college
Beliefs about own-child test scores asked again after policy vignette	Again imagine that students enrolled in [**Name of focal school 1**] were **similar to those enrolled at your child's [elementary/middle] school**. Taking this into account, what do you think **your child** would score in [8/11]th grade if they attended []**Name of focal school 1**] from [6/8]th grade through [8/11]th grade: (Note: the slider starts at the answers you gave previously) [slider]
Stated preferences asked again after policy vignette	Again imagine that students enrolled in [**Name of focal school 1**] were **similar to those enrolled at your child's [elementary/middle] school**, but that nothing changed at [Name of focal school 2]. Taking this into account, what is the percent chance you would choose [**Name of focal school 1**] over [**Name of focal school 2**]: (Note: the slider starts at the answers you gave previously) [slider]

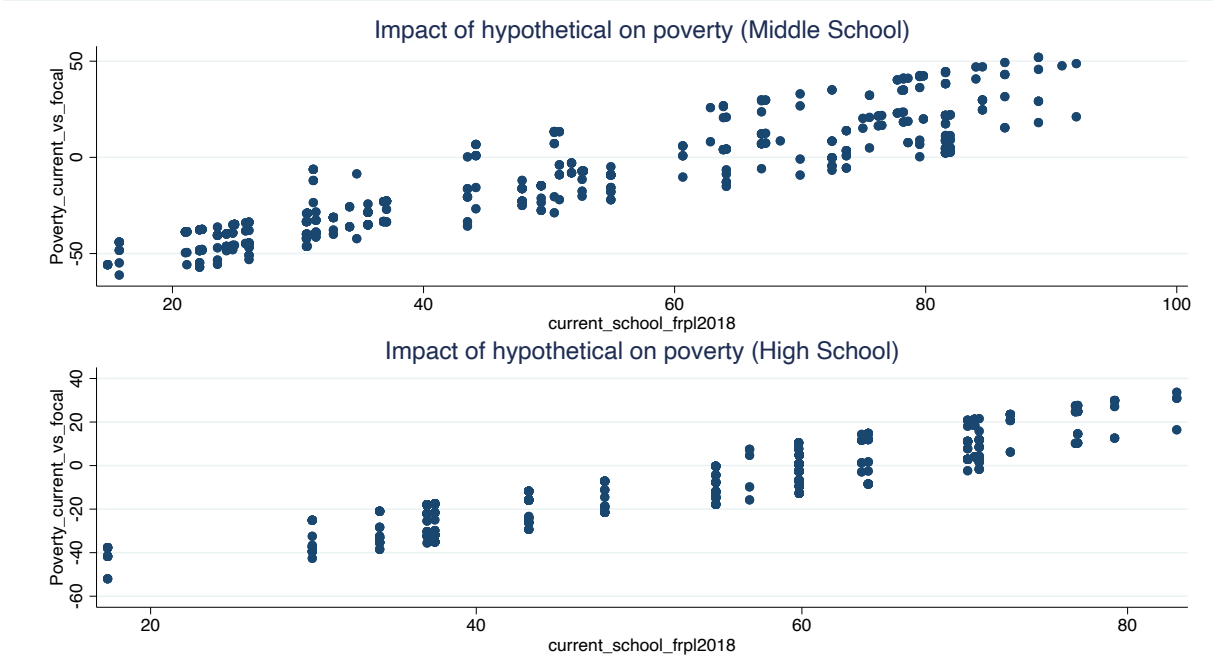
Appendix Figures

Figure A1 True impacts of vignette experiment on performance



Notes: The top panel plots the difference between current (i.e., elementary) school performance and focal middle school performance against current (i.e., elementary) school performance. The figure illustrates, for example, that for students attending high-performing elementary schools, the vignette experiment will improve performance in the focal middle school. The bottom panel plots the analogous figure for students applying to high school.

Figure A2 True impacts of vignette experiment on poverty rates



Notes: The top panel plots the difference between current (i.e., elementary) school poverty (i.e., % FRPL) and focal middle school poverty against current (i.e., elementary school) poverty. The figure illustrates, for example, that for students attending low-poverty elementary schools, the vignette experiment will "improve" composition in the focal middle school. The bottom panel plots the analogous figure for students applying to high school.