Money over Merit? Socioeconomic Gaps in Receipt of Gifted Services

JASON A. GRISSOM
Vanderbilt University

CHRISTOPHER REDDING
University of Florida

JOSHUA F. BLEIBERG
Vanderbilt University

In this essay, Jason A. Grissom, Christopher Redding, and Joshua F. Bleiberg investigate the receipt of gifted services based on the socioeconomic status (SES) of elementary school students and their families. Using nationally representative longitudinal data, they show that gaps in the receipt of gifted services between the highest and lowest SES students are profound, and these gaps remain substantial even after taking into account students' achievement levels and other background factors and using school fixed effects to explain school sorting. The authors discuss several potential approaches schools and districts can use to ameliorate the apparent disadvantages students from low-SES families experience in processes surrounding receipt of gifted services.

Keywords: gifted, socioeconomic status, elementary schools, poverty, disproportionality

Gifted programs provide enhancements and supports to academically gifted and talented students whose academic needs may not be met in typical general education settings. Research suggests that gifted services provide important benefits to academically advanced students, including improvements in motivation, self-efficacy, engagement with learning, nonacademic self-concept, and overall stress (Kulik & Kulik, 1982; Kulik & Kulik, 1984; Marsh, Chessor, Craven, & Roche, 1995; Rogers, 2007). Participation in gifted programs can also lead to higher academic performance (Bhatt, 2009; Card & Giuliano, 2014; Delcourt, Cornell, & Goldberg, 2007; Goldring, 1990; Kulik & Kulik, 1984; Rogers, 2007). Research also suggests that the positive impacts of gifted programs can be even greater for low-income students and students of color than

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for their traditionally more advantaged peers (Card & Giuliano, 2014). These benefits motivate the question of whether academically talented students from traditionally disadvantaged and/or historically marginalized groups have equal access to gifted programs.

Studies examining race and ethnicity using national data show that Black and Hispanic students are substantially underrepresented in gifted programs relative to White and Asian students (Donovan & Cross, 2002; Grissom & Redding, 2016; Grissom, Rodriguez, & Kern, 2017; US Department of Education, 2016). Black students in particular remain underrepresented even when comparing students with similar measures of achievement and other background characteristics (Grissom & Redding, 2016). A relatively large literature has investigated the reasons for these gaps, including neighborhood segregation that affects the likelihood that students from different groups attend a school with a gifted program, differences in teacher expectations that influence referral across student subgroups, narrow evaluation procedures, and test biases that favor White students (Grissom & Redding, 2016; Card & Giuliano, 2015; Donovan & Cross, 2002; Ford, 1998; McBee, 2006).

However, less attention has been paid to gaps by income or related measures of socioeconomic status (SES), at least on a national scale. This inattention is perhaps in part because a primary source of data on the composition of gifted programs nationwide, the US Department of Education's (2016) Civil Rights Data Collection, does not include information on gifted program enrollment by student family income measures. Studies using state or district data sets suggest that lower-income students are less likely to receive gifted services. For example, Hamilton and colleagues' (2018) analysis of data from three states finds that third, fourth, and fifth graders who were eligible for free or reduced-price lunch (FRPL) were substantially less likely to receive gifted services than similarly achieving non-FRPL students. Similarly, McBee's (2006) study of data from Georgia shows that FRPL-eligible students were more than four times less likely to be nominated and to test as gifted than other students. In Card and Giuliano's (2015) study, conducted in an unnamed urban district, just 2 percent of FRPL-eligible students participated in the districts' gifted program, compared to 5.5 percent of more affluent students. Several other studies examining district or state samples support the finding that students eligible for FRPL are less likely to receive gifted services (Peters & Gentry, 2010; Siegle, McCoach, Gubbins, Callahan, & Knupp, 2015; VanTassel-Baska, Feng, & Evans, 2007; Warne, Anderson, & Johnson, 2013). Research suggests a number of reasons for these differences, including lower scores for lower-income students on test-based measures of academic ability (Plucker & Makel, 2010; Plucker & Peters, 2017) and teacher biases against low-income students in the gifted referral process (Nicholson-Crotty, Grissom, Nicholson-Crotty, & Redding, 2016; Ford, 1998; McBee, 2006).

A limitation of the use of FRPL status to proxy SES is that it dichotomizes students into two groups: those from a family whose annual income falls below

an arbitrary threshold (about $45,000 for a family of four, as of 2015) or those from a family whose income is higher.[1] This operationalization does not permit analysis of whether the observed greater likelihood of gifted identification among non-FRPL students just reflects differences between the lowest-SES students and others or whether advantages continue to accrue as family SES moves further and further above the FRPL cutoff. For example, one possibility is that students from low- and middle-income families face similar likelihoods of gifted identification, but group-mean differences between FRPL and non-FRPL students are driven by big advantages for students from very-high-income families. Investigating differences in gifted service receipt over a broader distribution of SES is important both for research on the drivers of income-related gaps and for the design of policies aimed at reducing them.

This study looks at gaps in gifted services receipt by family SES nationally and examines the student and school characteristics associated with those gaps. We argue that such gaps in service receipt can arise through multiple channels, with lower-income students facing potential disadvantages in access to schools with gifted and talented programs, in the gifted referral process, in evaluation procedures, and in retention in gifted programs after identification. Economic, social, and cultural capital provide a conceptual lens for understanding why such gaps may exist, as greater levels of family capital in higher-SES families provide advantages in access, identification, and retention.

We use nationally representative data on public elementary school students to answer two main research questions: To what extent does a student's socioeconomic status predict the likelihood that he or she will receive gifted services? To what extent do achievement measures, measures of observable background factors (e.g., race/ethnicity), and the school a student attends explain any observed SES gaps? Importantly, the SES measures we employ move beyond dichotomous FRPL/non-FRPL categorizations of SES to cover a more complete range of relative family socioeconomic advantage.

For the main analysis, we utilize data from the Early Childhood Longitudinal Study, Kindergarten cohort (ECLS-K). The original ECLS-K provides individual-level, longitudinal data on a nationally representative cohort of students who began kindergarten in 1998–1999. We supplement this with a preliminary exploration of data from the more recent 2010–2011 ECLS-K cohort, for which data through third grade have been released. In both cases, we take advantage of rich background information, including student achievement scores, to investigate the connection between SES and the receipt of gifted services.

Student Socioeconomic Status and Receipt of Gifted Services

Although there is no consensus on a precise definition of the concept, *gifted and talented* generally refers to students whose abilities or accomplishments are significantly greater than is typical for their age (McBee & Makel, 2019).

States and districts vary in how giftedness is operationalized and identified and in the services they provide to meet the needs of gifted students.[2] Most commonly, gifted programs are offered onsite at the child's school and involve some grouping with other gifted students, with about 40 percent of programs featuring "pull-out" classes that remove students from the regular classroom environment to engage in gifted-specific activities, which vary widely given local control over gifted programming (Bhatt, 2011). Given this variation, it is unsurprising that research shows that specific programs' impacts on student academic outcomes also vary (Bui, Craig, & Imberman, 2014; Card & Giuliano, 2014). Studies of national patterns, however, suggest positive average effects of gifted programs on student achievement (Bhatt, 2011), and research documents positive influences of gifted program participation on such outcomes as student self-esteem, self-efficacy, and engagement with school (Hertzog, 2003; Marsh et al., 1995). Identification of a high-ability student as gifted opens an opportunity to realize these benefits.

We link socioeconomic gaps in receipt of gifted services to access to gifted and talented programs, the gifted referral process, evaluation procedures, and retention in gifted programs once a child has been identified for services. We apply insights from research on parental engagement and families' access to different forms of capital to explain the advantages of students from higher-SES families in processes that determine receipt of gifted services (Alameda-Lawson & Lawson, 2016; Barton, Drake, Perez, St. Louis, & George, 2004; Bourdieu, 1986; Coleman, 1988; Lareau, 1987, 2011; Lee & Bowen, 2006).

Families of different levels of socioeconomic status have access to different levels of economic, social, and cultural capital. *Economic capital* refers to availability of financial resources that can impact student educational experiences in numerous ways, including permitting parents to choose neighborhoods that determine attendance at specific schools, facilitating tutoring or educational supplements for students, and granting access to a wide range of extracurricular experiences (Bourdieu, 1986). Economic capital can also be converted into other kinds of capital by facilitating mobility and gaining access to new social settings. *Social capital* refers to the social networks, including families, friends, and community members, that enable groups to mobilize resources in a manner that benefits all participating individuals (Coleman, 1988). Families can leverage their relationships with other like-minded parents to marshal information, expert knowledge, and community leadership to achieve their goals (Horvat, Weininger, & Lareau, 2003). Middle- and upper-class parents tend to have higher levels of social capital, which provides them with useful information about the functioning of schools and facilitates relationships with teachers and other school personnel (Lareau, 1987; Lareau & Horvat, 1999). *Cultural capital* refers to institutionalized beliefs (e.g., norms, understandings of customs, behaviors, credentials) that are broadly accepted and used to signal a high status (Lamont & Lareau, 1988). Families with high levels of cultural capital pursue a series of parenting approaches to support

the development of their children's cognitive and social skills, and these forms of dominant cultural cultivation are those that are rewarded in gifted identification. For example, children from these homes participate in more activities organized by adults (e.g., sports, clubs, religious activities) and have greater engagement with cultural pastimes (e.g., art, writing, museums) (Lareau, 2002). These parents also equip their children with positive self-assessments and class-based strategies that can be activated in school to gain benefits over their peers (Heath, 1983). Teachers and other school personnel may then attribute this accumulated cultural capital to high preexisting levels of intellectual capacity that were, in fact, strategically developed (Bourdieu, 1986).

That more affluent families use their uneven financial, social, and cultural capital to improve their children's chances of being referred for gifted programs is not to suggest that lower-income families do not invest in their children's educational development. But the "returns" from lower-income families' investments in their children's future are not commensurate with those obtained by wealthier families. Recent work on parental involvement with schools suggests that the specific types of capital that parents bring to social interactions with school personnel or other parents are critical to understanding how various forms of capital are actually enacted within school settings (Barton et al., 2004). Work by Alameda-Lawson and Lawson (2012, 2016) indicates that the mobilization of low-income parents' material, social, and cultural resources can form the basis of parents' social-cultural engagement with schools, including the navigation of formal institutional features, such as accessing gifted and talented programs.

Access to Schools with Gifted and Talented Programs

A fundamental way that higher economic resources may impact receipt of gifted services is by giving families choices over which schools children attend through increased control over where they live (Hoxby, 2007). High-SES parents can choose schools with gifted programs, while high-poverty schools are less likely to have gifted programs (Hamilton et al., 2018). More subtly, high-SES parents may choose schools in which their children have a higher chance of being admitted to gifted programs. To this point, recent research and media accounts describe how schools in New York City used gifted programs to attract White middle-class families to choose and remain in neighborhood schools (Roda, 2017; Taylor, 2017).

Referral for Gifted Evaluation

The path to receiving gifted services typically starts with a referral for evaluation, most often from the student's classroom teacher. Referral may be an informal recommendation based on the teacher's perception that the student might be gifted, or, in some districts, it may require more formal documentation, such as use of checklists or rating scales aimed at identifying potential giftedness (Donovan & Cross, 2002; McClain & Pfeiffer, 2012). Teacher discre-

tion is key to this process, and numerous studies argue that factors which influence teachers' perceptions of giftedness, including their own biases regarding giftedness in students with different characteristics, affect which students are identified (Ford, 1998; Nicholson-Crotty, Grissom, & Nicholson-Crotty, 2011; Nicholson-Crotty et al., 2016). In a study of data from Georgia, McBee (2006) found that teachers referred FRPL-eligible students for gifted evaluation only a third as often as other students.

Family SES can inform the referral process in multiple ways, including through indirect influence on teacher perceptions. Economic resources enable parents to choose extracurricular and supplemental educational activities for their children that strengthen their case for identification for gifted services (Reardon & Portilla, 2016). Activities that lead high-SES students to increase their general or cultural knowledge advantage those students because teachers are more likely to construe such knowledge as signs of high intelligence or giftedness (Bourdieu, 1986; Callahan, Tomlinson, Moon, Tomchin, & Plucker, 1995). Similarly, skill in an extracurricular area signals prestige that a teacher could conflate with strong academic aptitude (Lareau, 2002). For example, the apparent musical skills of a student who has taken years of violin lessons may signal intellectual talent to a teacher, advantaging that student in gifted identification relative to a student who has not had opportunities to develop such extracurricular expertise.

Moreover, evidence shows that middle- and upper-class parents participate in school activities (e.g., volunteering, parent-teacher conferences) at higher rates than working-class families (Lareau & Horvat, 1999). The depressed school involvement of low-income parents is commonly linked to time constraints that emerge from ongoing challenges finding housing, health care, food, and employment, though families from nondominant racial and class backgrounds may face other difficulties as well (e.g., language differences, unfamiliarity with school structures). An extensive body of qualitative research indicates that participating in school activities helps build parental social networks and improve their capacity to influence school processes, including the receipt of gifted services (Lareau & Horvat, 1999; McNeal, 1999; Mickelson, 2003). Lareau (1987) observed that high-SES parents have more frequent and substantive conversations about their children's academic progress and are more likely to request that school personnel place their child in a gifted program. In addition, high-SES parents may also be better positioned to manage the referral process because they can leverage their social networks to access knowledge about school bureaucracies (Horvat et al., 2003; Lareau, 1987; Lareau & Horvat, 1999; McNeal, 1999), and they may also be more likely to challenge teacher decision-making and advocate for their child in the face of nonreferral (Horvat et al., 2003; Lareau, 1987; Lareau & Horvat, 1999).

With less access to these dominant forms of capital, lower-income families often turn to alternative social and cultural resources (Alameda-Lawson & Law-

son, 2016; Yosso, 2005). Yosso (2005) describes six forms of cultural wealth, at least three of which are relevant to the gifted referral process. *Aspirational capital* refers to parents' and other guardians' beliefs that their children have the potential to pursue high levels of academic attainment, regardless of present circumstances. To the extent that parents link future academic attainment with participation in a gifted program (Roda, 2017), aspirational capital may drive low-income families to advocate for their children to be referred. To this point, Yosso develops *navigational capital* as a means by which families from nondominant racial and class backgrounds navigate school bureaucracies structured with middle-class families in mind. Regardless of low-income parents' ability to activate navigational capital, administrators and teachers at schools serving high concentrations of students living in poverty may be less receptive to the engagement of parents (Barton et al., 2004; Diamond & Gomez, 2004).

In addition, it is worth pointing out that the low rates of low-income students' referral for gifted services may also reflect to some extent *resistant capital* insofar as low-income families opt to not have their children referred for gifted evaluation given a preference for exposing their children to classroom and school diversity that may not be found in gifted programs in some school contexts (Roda, 2017; Yosso, 2005). Roda's (2017) study of parent perceptions of the gifted admissions process in New York City describes two types of resistance. First, parents of color were skeptical of the need for costly tutoring as a step for preparing a child to be identified as gifted, which some described as invalidating the "gifted" label. Second, parents of color resisted the idea of having their child participate as one of the only students of color in a gifted program that disproportionately served White and Asian students. In addition, parents may feel stigmatized or undervalued by school staff and therefore be reluctant to trust that school staff will make referral decisions that positively support their children's personal and academic development.

Finally, in some school districts, parents are able to directly nominate their children to be evaluated (Roda, 2017). High-SES families typically report higher confidence in the abilities of their children (Lareau, 2011), and research on referral sources shows that higher-income parents are much more likely than lower-SES families to refer their children for gifted evaluation (McBee, 2006).

Gifted Evaluation

Following referral, school personnel formally assess giftedness, typically using standardized assessments that evaluate intellectual or cognitive talent, though there may also be assessments of other criteria, such as creativity (the "multiple criteria method"). Researchers have raised concerns that these assessments are biased against or unfair to low-SES students who, for example, are more likely to be English learners and therefore have lower language comprehension skills (Carman & Taylor, 2009; Carman, Walther, & Bartsch, 2018;

Frasier et al., 1995; Joseph & Ford, 2006; McBee, 2006, 2010). Tests may also be unfair to the extent to which success requires knowledge of mainstream US culture or language, which children from nondominant class or racial backgrounds may be less likely to possess (Joseph & Ford, 2006). Studies of both the Naglieri Nonverbal Ability Test (NNAT) and the Cognitive Abilities Test (CogAT) 7, which are commonly used to assess giftedness in elementary schools, have found significant negative correlations between scores and FRPL eligibility, even after controlling for a variety of student characteristics and other measures of academic achievement (Carman & Taylor, 2009; Carman et al., 2018). Scholars have raised concerns that many existing approaches are particularly ill-suited to identifying giftedness in low-income students of color (Goings & Ford, 2018), suggesting the need to look for potential interactions between socioeconomic status and race/ethnicity in examining which students are designated as gifted.

Family economic and cultural capital may also play a role in advantaging high-SES students at the evaluation stage. Wealthy parents can hire private psychologists outside of the school system to test or retest their child for giftedness, which can be prohibitively expensive for low-income families (Card & Giuliano, 2015; Horvat et al., 2003; Mickelson, 2003). Second, enriching activities that affluent children disproportionately access, such as music lessons or art classes (Lareau, 2011), may help them develop aptitudes (or evidence of aptitudes) that are valued in the gifted evaluation process—perhaps especially so in school districts that rely on a multiple criteria approach that values such capacities as creativity, artistic talents, and leadership skills.

Retention in Gifted Programs

Although less often a subject of research, receipt of gifted services also requires students to stay in gifted programs once assigned. Thus, differential attrition rates between high- and low-SES students may contribute to lower rates of gifted participation among less advantaged students. Students from low-SES families may find few peers in gifted programs with similar backgrounds (Ford, 1998; Olszewski-Kubilius & Clarenbach, 2012; Shumow, 1997). The resulting isolation could prompt low-SES students to leave gifted programs, which in turn causes future students to make a similar decision or to never enroll in the first place. Peers and teachers may perpetrate microaggressions against students from low-SES families in gifted programs (Stambaugh & Ford, 2015). Indeed, Davis and colleagues (2010) found that students above the FRPL cutoff were more likely to remain in gifted programs than FRPL-eligible students.

To summarize, families with higher socioeconomic status have access to numerous forms of capital that provide schooling advantages to their children, and existing research supports the expectation that these advantages translate into higher receipt of gifted services by giving high-SES students a leg up at the referral, evaluation, and retention stages.

Data, Measures, and Methods

Our analysis uses data from the ECLS-K, which contains a nationally representative sample of 21,260 students who attended kindergarten in the fall of 1998 (Tourangeau, Nord, Lê, Sorongon, & Najarian, 2009). The National Center for Education Statistics (NCES) collected follow-up data on these students until the completion of eighth grade. We focus on the elementary school years for public school students, including observations from kindergarten and first, third, and fifth grades. These years include 50,950 student-by-year observations. The analytic sample is reduced to 29,080 observations (in our preferred model) by missing data, due primarily to sample attrition in later waves and incomplete standardized testing data.

We also conducted supplemental analyses using the ECLS-K: 2011, which followed a new cohort of kindergarten students beginning school in 2010–2011. At the time of this study, these data were only available through third grade. Since most students are assigned to gifted programs later in elementary school, we focus our analysis on the more complete data from the first ECLS-K, though we replicate the patterns from our main analysis using the ECLS-K: 2011 to provide evidence on whether the patterns identified in earlier years are present for the more recent cohort.

The dependent variable is receipt of gifted services in a school year. In each wave, ECLS-K administered a survey to teachers with questions about each child, including whether or not they received gifted services. Teachers could respond that students received gifted services in either reading or mathematics. We coded a binary gifted services receipt variable that is equal to 1 if a student received gifted services in a given grade in either reading or math, and 0 otherwise.[3] Receipt of gifted services was observable for 16,110 students in kindergarten, 13,540 students in first grade, 11,960 students in third grade, and 9,330 students in fifth grade.

Student Socioeconomic Status

The main independent variable is student socioeconomic status. ECLS-K includes a continuous SES measure comprised of five components: mother's education, father's education, mother's occupational prestige, father's occupational prestige, and household income. The education measures describe the highest education level achieved by each parent. The occupational prestige measures are scores assigned by matching the parent's reported occupation with the average prestige score for an occupation based on prestige ratings from respondents to the 1989 General Social Survey.[4] The household income variable aggregates all reported sources of income in the household. Due to nonresponse in the parent survey, missing data are a significant problem for each of these variables. In the base year of the survey, 28 percent of the household income data, 11 percent of the occupational prestige data, 2 percent of mother's education data, and 4 percent of father's education data suffer from

item nonresponse. To address this, NCES employed hot-deck imputation to impute missing values for each of the SES components, which it then standardized and averaged (Tourangeau et al., 2009). In the ECLS-K: 2011, the SES variable was created using the same procedure (Tourangeau et al., 2015).

In both survey rounds, NCES also created a categorical SES measure from the continuous measure. This variable takes on five values that approximate quintiles of the continuous SES distribution.[5] We focus our analysis on this SES quintile measure to allow for examination of nonlinearities in the relationship of SES to receipt of gifted services.

Student and School Characteristics

ECLS-K includes detailed measures of students' academic performance, student characteristics, and school context. To operationalize student achievement, we used lagged criterion-referenced composite scale scores for the mathematics and reading tests, which were vertically equated for longitudinal analysis and standardized within each year (Pollack, Narajian, Rock, Atkins-Burnett, & Hausken, 2005).[6] Student characteristics include race and ethnicity, gender, number of siblings, parent's report of the child's health, English language learner (ELL) status, and the child's age in months at entry to kindergarten. The child's health measure is on a five-point Likert scale, which we reverse-coded so that higher values indicate greater health.[7]

To account for the nonrandom distribution of students across schools, we controlled for several school characteristics, including locale type, region of the US, school enrollment, mean school test scores (math and reading), the proportion of students eligible for FRPL, and the proportions of Black, Hispanic, and Asian students. We also included an indicator for whether or not a school has a gifted program, as captured by the school administrator survey.[8]

Methods

Our descriptive analysis of the relationship between SES quintile and participation in gifted programs includes reporting on differences in the rates of receiving gifted services for the five SES quintiles across different racial/ethnic groups and deciles of student test performance. We constructed a series of multivariate models that estimate the probability that a student receives gifted services in a given grade, with controls for student and school characteristics. Equation 1 describes the general form of these models:

$$\Pr(gifted)_{ijt} = \beta_0 + \beta_1 SES_{it} + \beta_2 C_{it} + \beta_3 S_{jt} + \gamma_t + \varepsilon_{it} \qquad (1)$$

where SES_{it} is a vector of dummy variables for SES quintiles for student I in school j in year t, C is a vector of child characteristics for student i in year t, and S_{it} is a vector of characteristics for school j in year t. A wave fixed effect γ_t accounts for unobserved factors associated with receiving gifted services each year. We estimated linear probability models with standard errors clustered at

the student level, given the panel design of the data.[9] We used longitudinal survey weights in all analyses to recover population estimates.

In some models, we replaced the vector of school characteristics (S_{jt}) with a school fixed effect, δ_j, to account for unobserved school-level factors and school selection by making comparisons among students of different SES within the same school. A school fixed effect adjusts for time-invariant school factors, such as school resources and (presumably) the school's gifted assignment processes and procedures, that may be correlated with both student SES and the likelihood of receipt of gifted services.[10]

Results

Differences in the Receipt of Gifted Services by Socioeconomic Status

Table 1 shows descriptive statistics for students in each grade and across years. The first row displays the percent of students receiving gifted services for the analytic sample. Approximately 2–3 percent of students participate in gifted programs in kindergarten and first grade. In third and fifth grades, this fraction increases to 10–12 percent. Overall, approximately 7 percent of elementary school students (K–5) receive gifted services in the typical year in this sample, which is similar to proportions described using other national data sets (e.g., Grissom et al., 2017).

Figure 1 plots the receipt of gifted services by SES quintile for the full sample.[11] It shows that as SES increases, the proportion of students receiving gifted services increases substantially. Just 2 percent of students in the bottom SES quintile receive gifted services, yet in the top quintile 13 percent of students do; that is, a student in the top 20 percent of SES is nearly seven times more likely to receive gifted services than a student in the bottom 20 percent.[12]

Table 2 compares student and school characteristics across SES quintiles, with tests of significance between the lowest quintiles (Q1) and remaining quintiles (Q2–Q5). The first row examines the proportion of students who receive gifted services, replicating the results in figure 1. Remaining rows show that low- and high-SES students and the schools they attend also differ on many other dimensions as well. As compared to higher-SES students, low-SES students have lower achievement scores and are more likely to identify as Black or Hispanic. For example, White students make up 81 percent of the top quintile but only 28 percent of the bottom quintile. In contrast, Black and Hispanic students each make up only 6 percent of the top quintile but 24 percent and 40 percent of the bottom quintile, respectively. In addition, low-SES students have lower health ratings and are much more likely to be English language learners.

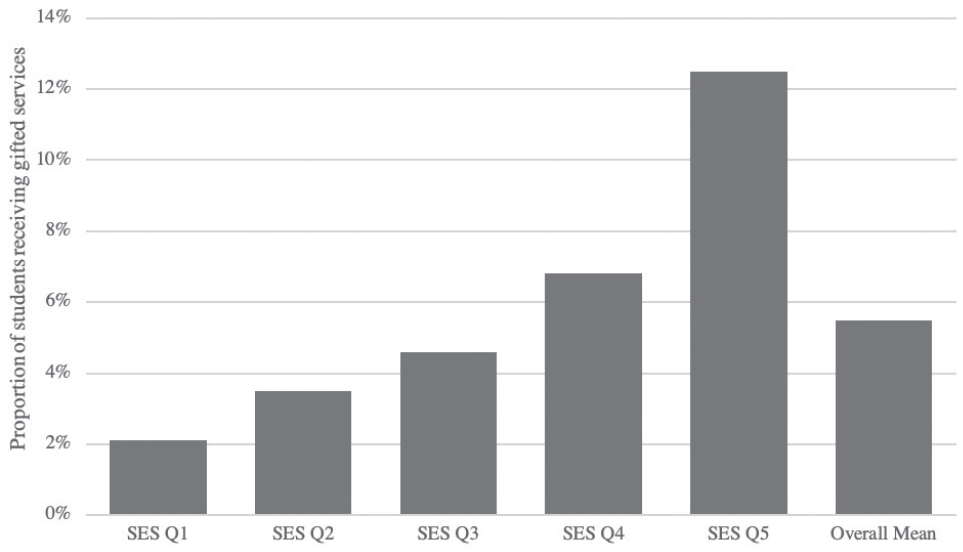
Low-SES students are also more likely to live in urban settings and attend schools with larger numbers of students who are Black and Hispanic and who are eligible for the subsidized lunch program. They also attend schools with

TABLE 1 *Mean sample characteristics by grade level*

	Kinder-garten	*First grade*	*Third grade*	*Fifth grade*	*All years*
Student receives gifted services	0.02	0.03	0.10	0.12	0.07
SES quintiles					
SES Q1	0.15	0.15	0.16	0.18	0.17
SES Q2	0.23	0.21	0.22	0.21	0.22
SES Q3	0.22	0.22	0.21	0.21	0.22
SES Q4	0.20	0.21	0.21	0.20	0.20
SES Q5	0.20	0.20	0.20	0.19	0.19
Student characteristics					
Standardized math achievement	0.05	0.04	0.01	0.01	0.01
Standardized reading achievement	–0.02	–0.01	–0.02	0.01	–0.03
Female	0.49	0.50	0.49	0.51	0.49
White	0.68	0.67	0.65	0.59	0.63
Black	0.15	0.13	0.14	0.15	0.14
Hispanic	0.12	0.14	0.15	0.20	0.16
Asian	0.02	0.02	0.02	0.03	0.02
Number of siblings	1.44	1.50	1.50	1.55	1.50
Parent's rating of health	4.35	4.37	4.34	4.27	4.31
Age (months) at start of kindergarten	66.29	66.18	66.16	66.08	66.14
ELL	0.06	0.07	0.08	0.12	0.09
School characteristics					
Urban	0.27	0.23	0.28	0.32	0.29
Suburban	0.45	0.45	0.44	0.44	0.44
Rural	0.29	0.31	0.28	0.24	0.27
Midwest	0.24	0.23	0.25	0.23	0.24
South	0.43	0.41	0.41	0.38	0.41
West	0.15	0.18	0.19	0.22	0.19
Northeast	0.17	0.17	0.15	0.17	0.16
School size (100s)	5.25	5.36	5.18	5.39	5.29
FRPL eligible	0.33	0.30	0.34	0.37	0.35
Fraction White students	0.71	0.68	0.65	0.61	0.65
Fraction Black students	0.15	0.15	0.15	0.03	0.13
Fraction Hispanic students	0.09	0.11	0.14	0.03	0.10
Fraction Asian students	0.03	0.04	0.04	0.04	0.03
School mean reading score	88.26	89.02	89.21	90.73	88.69
School mean math score	71.77	72.19	72.31	73.40	71.86
School offers gifted program	0.75	0.81	0.83	0.84	0.81
Observations	4890	5100	5190	5570	20750

Notes: Estimates adjusted using grade-level probability weights for each year. Sample includes only public schools. Standardized test scores are lagged by one wave. Sample size rounded in accordance with NCES nondisclosure rules.

FIGURE 1 *Students receiving gifted services, by SES*



Note: Sample is 31,840 student-by-year observations.

lower average math and reading achievement scores. Counter to our expectations, however, they are not less likely to attend a school with a gifted program.

Given the unequal distribution of students from different racial and ethnic backgrounds across SES quintiles, we describe the receipt of gifted services by SES quintile for different racial/ethnic groups. Figure 2 shows that across racial/ethnic classifications, students in the top SES quintile have the most frequent gifted program participation.[13] This pattern is strongest among White and Asian students, with 13 percent of White students and nearly 20 percent of Asian students participating. The SES gradient is the least pronounced for Black students; just over 5 percent of Black students in the highest-SES group are receiving gifted services, suggesting that the "return" to increased SES descriptively is not as high for Black students. Interestingly, although Black students have the lowest service receipt probability in every SES quintile, their rates are very similar to White students' in quintiles 1 and 2 and do not become dissimilar until quintile 3. Across SES quintiles 3, 4, and 5, about twice as many White students as Black students receive gifted services.

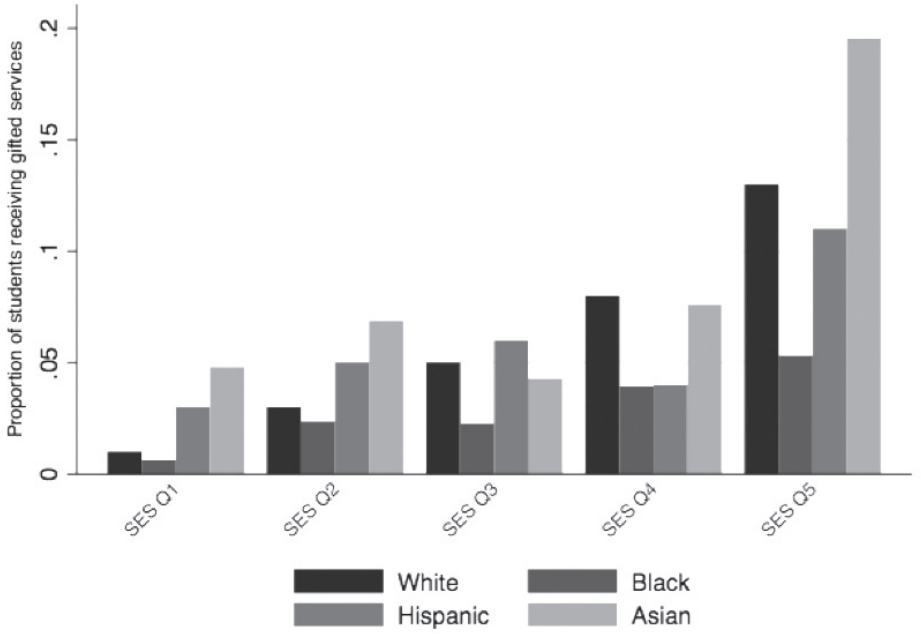
Figure 3 displays gifted services participation by SES at different levels of student achievement in reading and math, grouped in deciles. As expected, higher-achieving students are more likely to be in gifted programs. Yet, even among the top 10 percent of students, a pronounced SES gradient exists, with students in the two highest quintiles much more likely to receive services.

TABLE 2 *Comparing student and school characteristics by SES quintile*

	SES Q1	*SES Q2*	*SES Q3*	*SES Q4*	*SES Q5*
Student receives gifted services	0.02	0.04***	0.05***	0.07***	0.13***
Student characteristics					
Standardized math achievement	–0.7	–0.28***	–0.03***	0.22***	0.57***
Standardized reading achievement	–0.67	–0.28***	–0.06***	0.14***	0.51***
Female	0.48	0.47	0.48	0.49	0.49
White	0.28	0.53***	0.61***	0.71***	0.81***
Black	0.24	0.18***	0.15***	0.11***	0.06***
Hispanic	0.4	0.23***	0.16***	0.12***	0.06***
Asian	0.02	0.02	0.02**	0.03	0.04***
Number of siblings	1.85	1.52***	1.45***	1.38***	1.44***
Parent's rating of health	3.98	4.19***	4.35***	4.44***	4.54***
Age (months) at start of kindergarten	66	65.94**	66.01***	66.04***	65.81
ELL	0.33	0.14***	0.09***	0.07***	0.05***
School characteristics					
Urban	0.44	0.35***	0.32***	0.29***	0.25***
Suburban	0.29	0.37***	0.42***	0.49***	0.59***
Rural	0.27	0.28***	0.26***	0.22	0.16***
Midwest	0.17	0.23***	0.25***	0.26***	0.26***
South	0.44	0.39***	0.36***	0.34***	0.31***
West	0.28	0.22***	0.21***	0.21***	0.19***
Northeast	0.11	0.16***	0.17***	0.19***	0.24***
School size (100s)	5.93	5.56***	5.55***	5.68***	5.93**
FRPL eligible	0.53	0.42**	0.34*	0.27***	0.19***
Fraction White students	0.42	0.58	0.64	0.7**	0.75*
Fraction Black students	0.18	0.14	0.12**	0.1***	0.07***
Fraction Hispanic students	0.19	0.12	0.1*	0.08***	0.06***
Fraction Asian students	0.03	0.03	0.03**	0.04*	0.04***
School mean reading score	81.78	84.7***	87.94***	92.02***	97.49***
School mean math score	64.83	68.23***	71.24***	74.83***	79.41***
School offers gifted program	0.77	0.79	0.77	0.77	0.78

Notes: Estimates adjusted using grade-level probability weights for each year. Statistical significance based on a *t* test comparing students in the first SES quintile to the other groups. Public schools with gifted programs only. Standardized test scores are lagged. School mean test scores are standardized IRT scale scores. Sample size rounded in accordance with NCES nondisclosure rules. *p < .05. **p < .01. ***p < .001.

FIGURE 2 *Students receiving gifted services by SES quintiles and race/ethnicity*

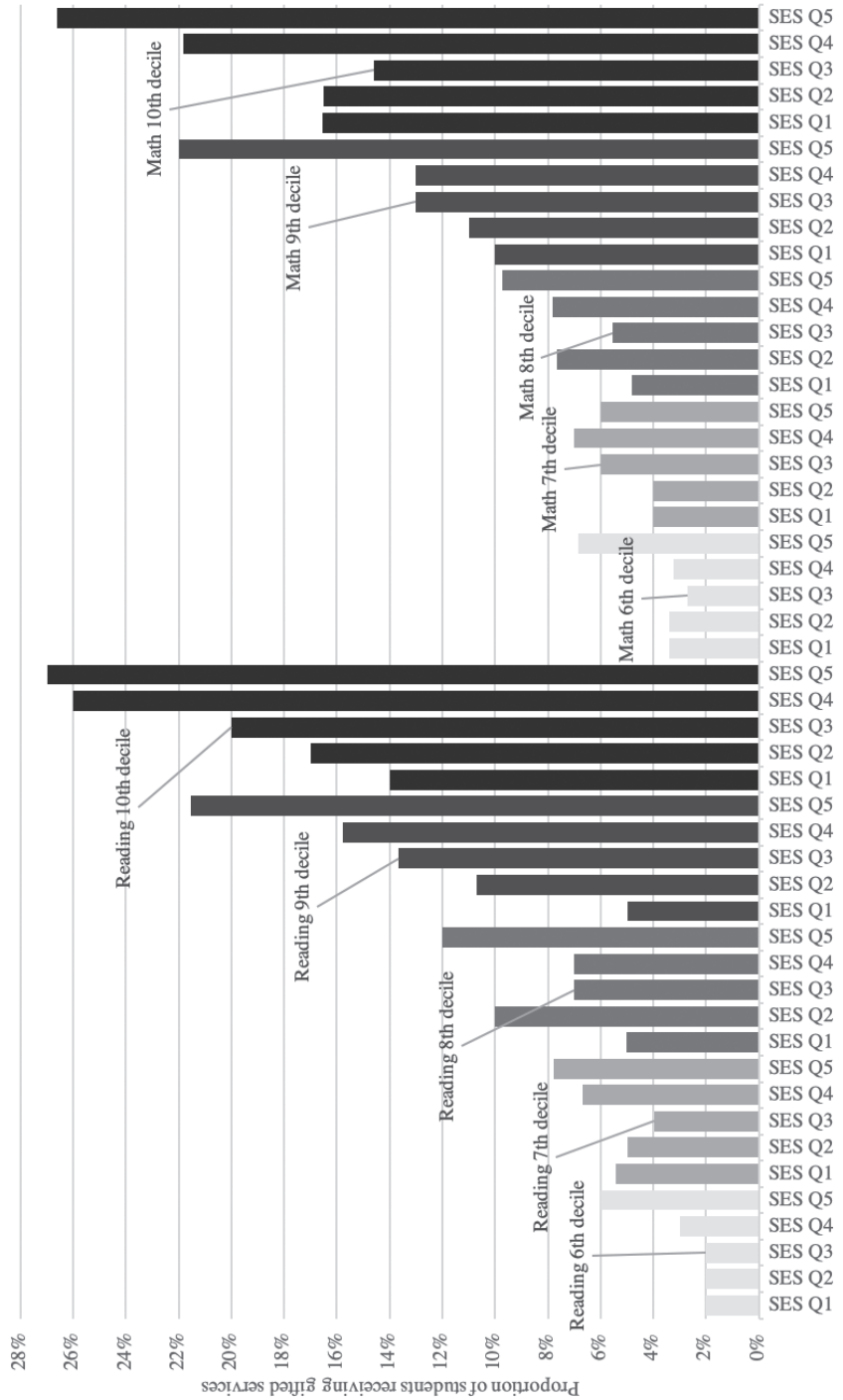


Among students in the top decile of reading scores, for example, those in the top SES quintile are almost twice as likely to participate in a gifted program as students in the bottom quintile.

Figure 4 homes in on students at the very top of the achievement distribution, showing the probabilities of receiving gifted services just among the top 5 percent and top 1 percent of students in math and reading achievement. Although small cell sizes make this analysis merely suggestive, in both cases we find that even among the very highest achievers, gifted receipt is more common among high-SES students than low-SES students in both subjects. For example, among students in the top 1 percent of math scores, the probability that a student in the highest SES quintile will receive gifted services is about thirteen percentage points greater than students in the first quintile. In reading, the difference is seven percentage points (a larger difference is present for students in quintile 2). These numbers suggest that many high-achieving, low-SES students are overlooked by gifted programs.

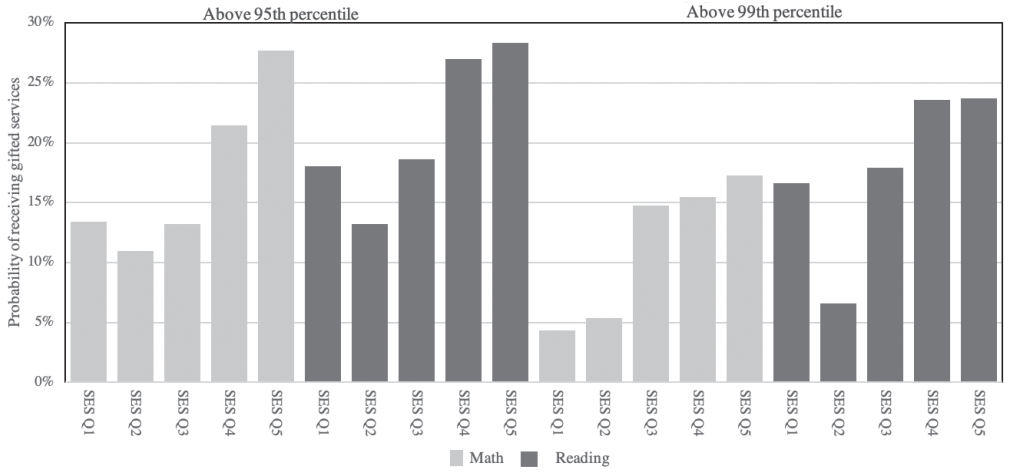
It is possible that the mean differences in receipt of gifted services across student demographic characteristics reported to this point can be explained by other student characteristics or characteristics of the schools that students attend. Table 3 shows the main results from the linear probability models of

FIGURE 3 *Students receiving gifted services by SES quintiles and test score deciles (math and reading)*



Note: Approximately 3,000 student-by-year observations are contained in each subject-by-decile.

FIGURE 4 *Receipt of gifted services by SES quintiles for students with high test scores, mean probabilities*



Note: Estimates are shown for students with test scores above the 95th and 99th percentiles. Public schools with gifted programs only.

receipt of gifted services each year, pooled across grades, based on various student and school covariates. Column 1 includes only the SES quintiles (quintile 1 is the reference category), essentially replicating the finding in table 2 (though with the inclusion of a grade fixed effect). As before, there is a sharp contrast in gifted services receipt between the highest- and lowest-SES students, with an estimated difference of ten percentage points, on average. From quintiles 1 to 4, the probability of gifted services increases almost monotonically, with a noticeable jump for quintile 5. Column 2 adds controls for lagged standardized reading and math test scores to adjust for differences in achievement levels across the SES distribution. As expected, achievement is a strong predictor of gifted services. Adding achievement reduces the difference between the highest and lowest SES quintile to 3 percentage points ($p < 0.01$), though this difference remains substantively meaningful given the very low rate of gifted identification in the sample. With the inclusion of achievement, quintiles 1 through 4 now look very similar to one another in receipt probability; the gap remains only between students in the top 20 percent of SES and other students. Column 3 adds other student-level characteristics, including race/ethnicity, parental rating of student health, and age at entry to kindergarten. Asian and "other race" students have higher predicted probabilities of gifted services receipt than White students; coefficients among White, Black, and Hispanic students are statistically indistinguishable. Adding these variables does not affect the giftedness-SES relationship.

TABLE 3 *Predicting receipt of gifted services by student SES*

	(1)	(2)	(3)	(4)	(5)
SES quintiles					
SES Q2	0.01**	–0.01**	–0.01*	–0.01	–0.01
	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)
SES Q3	0.02***	–0.01*	–0.01	–0.00	–0.00
	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)
SES Q4	0.04***	–0.00	–0.00	0.01	0.02**
	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)
SES Q5	0.10***	0.03***	0.03***	0.05***	0.05***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Student characteristics					
Standardized math achievement (lagged)		0.02***	0.03***	0.03***	0.03***
		(0.00)	(0.00)	(0.00)	(0.00)
Standardized reading achievement (lagged)		0.04***	0.04***	0.04***	0.04***
		(0.00)	(0.00)	(0.00)	(0.00)
Female			–0.00	–0.00	–0.00
			(0.00)	(0.00)	(0.00)
Black			–0.00	–0.03***	–0.03***
			(0.00)	(0.01)	(0.01)
Hispanic			–0.00	–0.03***	–0.03***
			(0.00)	(0.01)	(0.01)
Asian			0.03*	0.03*	0.03*
			(0.01)	(0.02)	(0.01)
Other race			0.02*	0.00	–0.01
			(0.01)	(0.01)	(0.01)
Parent's rating of health			0.00	0.00	0.00*
			(0.00)	(0.00)	(0.00)
Age (in months) at start of kindergarten			–0.00	–0.00***	–0.00
			(0.00)	(0.00)	(0.00)
ELL			0.00	–0.00	0.01
			(0.01)	(0.01)	(0.01)
School characteristics					
Urban				0.03***	
				(0.01)	
Rural				–0.00	
				(0.01)	
Midwest				0.01	
				(0.01)	
South				0.03***	
				(0.01)	
West				0.01	
				(0.01)	
School size (1000s)				–0.03**	
				(0.01)	

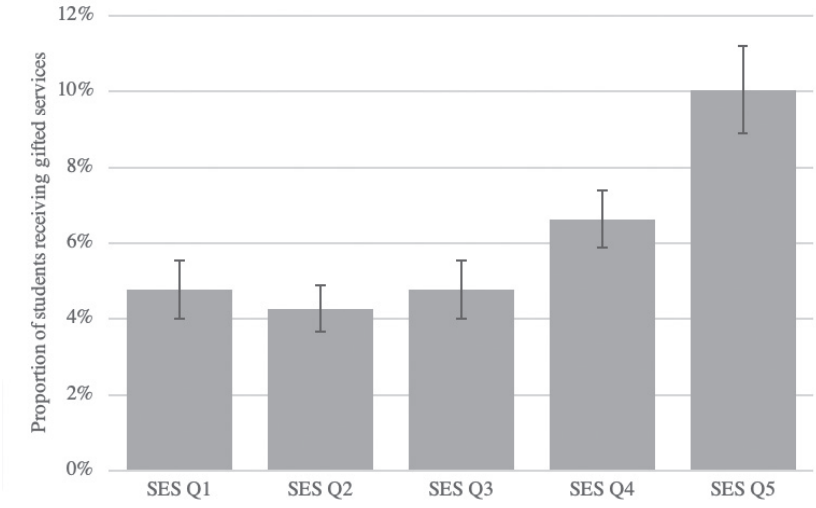
FRPL eligible				0.03**	
				(0.01)	
Fraction Black				0.01	
				(0.01)	
Fraction Hispanic				0.04*	
				(0.02)	
Fraction Asian				–0.02	
				(0.02)	
School mean reading score				0.00	
				(0.00)	
School mean math score				–0.00	
				(0.00)	
School offers gifted program				0.05***	
				(0.00)	
Constant	–0.01**	0.03***	0.06	0.12**	0.01
	(0.00)	(0.00)	(0.03)	(0.05)	(0.07)
Observations	31840	29660	29090	20900	29080
R-squared	0.05	0.10	0.11	0.13	0.22

Note: Coefficients reported as estimated probabilities. All models include grade indicators; column 5 includes a school fixed effect. Estimates adjusted using cohort probability weights. Sample includes only public schools. Standardized test scores are lagged. Reference category is White for race/ethnicity, suburban for locale type, and Northeast for region. Standard errors in parentheses are clustered at the child level. Sample size rounded in accordance with NCES nondisclosure rules. *p < 0.05. **p < 0.01. ***p < 0.001.

Column 4 adjusts for school characteristics. Several of the school covariates are associated with receiving gifted services. In particular, students attending schools with a formal gifted program in the South and in urban areas are more likely to participate, as are students in smaller schools, based on other factors. Accounting for school characteristics, Black and Hispanic students are less likely to participate in gifted programs than are White or Asian students. Also, accounting for school characteristics amplifies the difference in gifted services receipt between the top and bottom SES quintiles, with students in the top quintile seeing an advantage of five percentage points over the bottom group.

The final column of table 3 replaces the school covariates with a school fixed effect. Model fit improves, suggesting that the school fixed effect further controls for unobserved school-level differences not captured by the school characteristics in column 4. The coefficient for SES quintile 5 is unchanged. The coefficient for quintile 4 increases slightly to two percentage points ($p < 0.05$). Figure 5 graphs the predicted probabilities. The continued advantage of high-SES students in this model suggests that the higher rate of gifted services participation for affluent students cannot be fully explained by the nonrandom sorting of students across schools. In other words, even when

FIGURE 5 *Receipt of gifted services by SES quintiles, marginal probabilities*

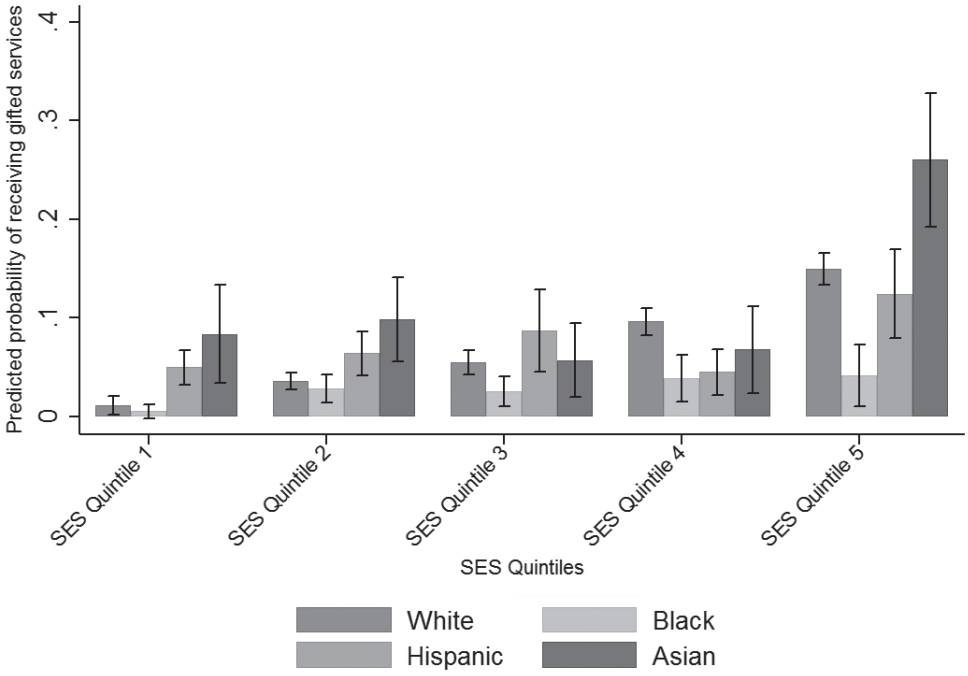


Note: Marginal predictions from the model estimated in table 3, column 5.

comparing students within the same schools, the probability that a student in the highest SES quintile will receive gifted services is five percentage points greater than for students in the first quintile, holding other factors in the model constant.[14]

Given prior research on student race/ethnicity as a factor in gifted identification (Grissom & Redding, 2016; Ford, 1998), we also investigate how student race/ethnicity intersects with SES in predicting the probability of receipt of gifted services. For this analysis, we include an interaction term between each race/ethnicity category and each SES quintile in a model that corresponds to the one shown in column 4 of table 3 (see figure 6).[15] The figure provides evidence of a substantively important interaction between race/ethnicity and SES: SES is a more important predictor of gifted services receipt for students from some racial/ethnic groups than for others. For example, Black and White students have similar predicted probabilities in SES quintiles 1 and 2, but the predicted probability of gifted services of White students becomes significantly higher than for Black students in quintiles 3, 4, and 5. Moreover, the gap grows as SES increases. Within SES quintile 3, the size of the predicted gap in the probability of receiving gifted services between White and Black students is about three percentage points; within SES quintile 5, this predicted gap in receiving gifted services is about ten percentage points. Indeed, White, Hispanic, and Asian students see much higher probabilities in quintile 5 than in quintile 4, though there is no evidence of a change for Black students.

FIGURE 6 *Receipt of gifted services varies by SES quintile and race/ethnicity*



Differences in Receipt of Gifted Services by Components of SES

To this point, the analysis has focused on the relationship between the composite SES variable and gifted program participation. Table 4 shows results of models predicting the receipt of gifted services by the components of this SES measure (family income, parental education, and parents' occupational prestige), allowing us to examine whether there may be differential associations with gifted services for these different component measures. Column 1 describes the results from a model that includes just the components of SES and a grade fixed effect. Column 2 adds lagged test scores and other student characteristics. Column 3 includes school characteristics. Column 4 substitutes a school fixed effect for school covariates.

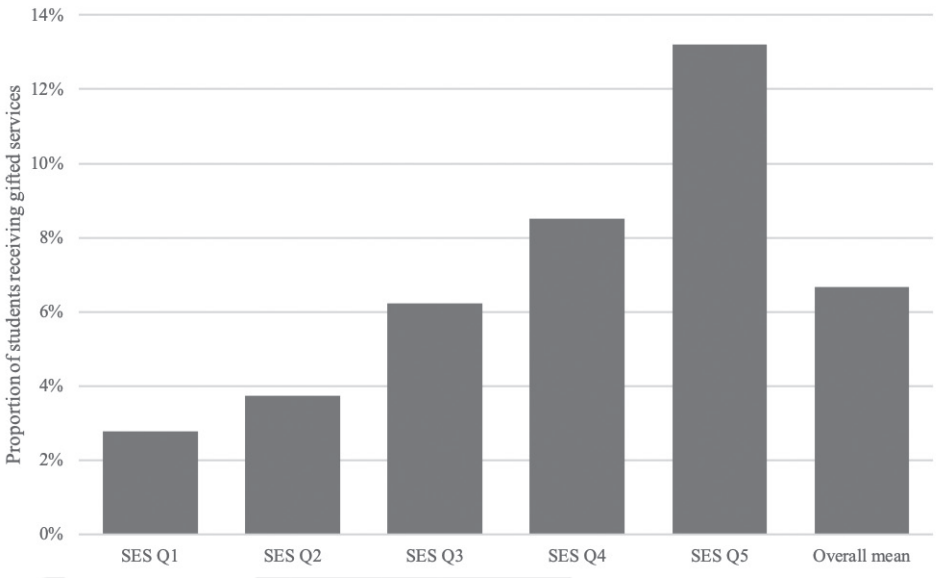
In column 1, income, parental education, and occupational prestige are all positively correlated with receipt of gifted services. For example, a student with at least one parent with a very high prestige occupation has an eight percentage point increase in the probability of receiving gifted services compared to a student whose parents have very low occupational prestige, based on parental income and education. Patterns change somewhat in columns 2 and 3, with occupational prestige remaining the most consistent predictor. In column 4, which compares students within schools, only family income over $200,000

TABLE 4 *Predicting receipt of gifted services with each component of SES*

	(1)	(2)	(3)	(4)
Income				
$15,001–$30,000	0.02**	–0.00	0.00	0.00
	(0.01)	(0.01)	(0.01)	(0.01)
$30,001–$50,000	0.02**	–0.01	–0.01	–0.00
	(0.01)	(0.01)	(0.01)	(0.01)
$50,001–$200,000	0.04***	–0.01	0.01	0.02
	(0.01)	(0.01)	(0.01)	(0.01)
$200,000+	0.06*	0.00	0.05	0.04*
	(0.02)	(0.02)	(0.03)	(0.02)
Education				
High school diploma	–0.01	–0.02*	–0.02	–0.01
	(0.01)	(0.01)	(0.01)	(0.01)
Vocational/Technical degree	0.01	–0.01	–0.00	0.01
	(0.01)	(0.01)	(0.02)	(0.01)
Some college	0.00	–0.03**	–0.02	–0.01
	(0.01)	(0.01)	(0.01)	(0.01)
Bachelor's degree	0.02	–0.03*	–0.02	0.01
	(0.01)	(0.01)	(0.01)	(0.01)
Graduate degree	0.05***	–0.01	–0.00	0.02
	(0.01)	(0.01)	(0.02)	(0.01)
Occupational prestige				
Low prestige	0.03*	0.02	0.02	–0.00
	(0.01)	(0.01)	(0.02)	(0.01)
Medium prestige	0.04***	0.03*	0.04*	0.01
	(0.01)	(0.01)	(0.02)	(0.01)
High prestige	0.06***	0.05***	0.06**	0.02
	(0.01)	(0.01)	(0.02)	(0.02)
Very high prestige	0.08**	0.06*	0.08**	0.05*
	(0.03)	(0.03)	(0.03)	(0.02)
Constant	–0.04***	0.06	0.13*	0.02
	(0.01)	(0.05)	(0.06)	(0.07)
Includes student achievement and other student characteristics		X	X	X
Includes school characteristics			X	
Includes school fixed effect				X
Observations	21750	19220	14200	19220
R-squared	0.05	0.12	0.14	0.23

Notes: Coefficients reported as estimated probabilities. All models include grade indicators. Estimates adjusted using cohort probability weights. Sample includes only public schools. Standard errors, in parentheses, are clustered at the child level. Reference category for income is less than $15,000, for education is no diploma, and for occupational prestige is very low prestige. *p < 0.05. **p < 0.01. ***p < 0.001.

FIGURE 7 *Students receiving gifted services by SES quintiles in ECLS: 2011*



Note: Based on approximately 25,830 student-by-year observations.

(0.04, $p < 0.05$) and very high occupational prestige (0.05, $p < 0.05$) are statistically significant (at conventional levels) predictors of gifted services.[16] Among observably similar students in the same school contexts, those with the highest-income parents and those with parents with the most prestigious occupations enjoy the most apparent advantages in gifted program participation.

Replicating Main Analysis with the ECLS-K: 2011

We replicated the main findings using the more recent cohort of the ECLS data to assess the degree to which high-SES students continue to be advantaged in their likelihood of receiving gifted services, at least for students in kindergarten through third grade. Figure 7 describes the probability of gifted services by SES quintile for the newer cohort. The patterns are qualitatively similar to those shown in figure 1 for the older cohort. In both samples, approximately three times as many students in the highest-SES quintile receive gifted services as do those in the lowest quintile.

Table 5 replicates the main models (as in table 3) with the ECLS-K: 2011 sample. The patterns are similar to those for the older cohort. The association between SES and receipt of gifted services is somewhat attenuated in the more recent sample, with the highest-SES students enjoying only a three percentage point predicted advantage in the school fixed effects model (column 4), though, again, available data culminate in third grade, which is before many

TABLE 5 *Predicting receipt of gifted services, independent variable SES quintiles: ECLS 2011*

	(1)	(2)	(3)	(4)
SES quintiles				
SES Q2	0.01*	–0.01**	–0.01	–0.01
	(0.00)	(0.00)	(0.01)	(0.00)
SES Q3	0.03***	–0.01	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)
SES Q4	0.04***	–0.00	0.01	0.02*
	(0.01)	(0.01)	(0.01)	(0.01)
SES Q5	0.08***	0.01	0.03***	0.03***
	(0.01)	(0.01)	(0.01)	(0.01)
Constant	–0.00	–0.05	–0.05	–0.00
	(0.00)	(0.03)	(0.04)	(0.05)
Includes student achievement and other student characteristics		X	X	X
Includes school characteristics			X	
Includes school fixed effect				X
Observations	33880	23870	18300	23870
R-squared	0.04	0.08	0.10	0.21

Note: Coefficients reported as estimated probabilities. All models include a grade indicator. Estimates adjusted using cohort probability weights. Sample includes only public schools. Covariates are same as in table 3. Standard errors in parentheses are clustered at the child level. Sample size rounded in accordance with NCES nondisclosure rules.

*p < 0.05. **p < 0.01. ***p < 0.001.

students begin receiving gifted services (Grissom & Redding, 2016). We conclude that there is little reason to question that the connection between SES and access to gifted services remains relevant in recent years. More complete ECLS-K: 2011 data in the future will provide a clearer picture of whether the relationship between SES and gifted services receipt has changed in a meaningful way in the years since the first ECLS cohort.

Discussion and Conclusions

Recently, calls have been made to better foster the academic development of high-ability, low-SES students (Cross & Dockery, 2014; Olszewski-Kubilius & Clarenbach, 2012; Plucker & Makel, 2010; Wyner, Bridgeland, & DiIulio, 2007). Access to gifted programs among marginalized populations has received considerable attention in this discussion, as these services are a primary strategy for elementary schools to support such students (Grissom & Redding, 2016).

Our study offers a national look at access to gifted services by student socioeconomic status that moves beyond binary indicators of student economic disadvantage (e.g., FRPL eligibility) to examine gifted program participation across the SES distribution. We make use of a measure of SES not employed in other gifted studies.

Using data from two nationally representative cohorts of elementary school students from the 1990s and 2010s, we find large gaps in the receipt of gifted services between the highest- and lowest-SES students. A student in the top SES quintile is more than six times more likely to receive gifted services than a student in the bottom quintile. These differences appear mostly the result of the substantially higher services receipt among the students in the top 20 percent of the SES distribution relative to the other four quintiles. The SES gap is especially large for White and Asian students.

Although attenuated, these SES gaps persist even in comparisons of students with similar achievement levels and, moreover, in comparisons of students with similar achievement and other background characteristics in the same schools. This latter result demonstrates that disparities in access to gifted services for low-SES students are not driven by differential sorting of students by SES across schools; within-school differences in access are large, a finding consistent with other recent evidence (Yaluma & Tyner, 2018). Accounting for these other factors, higher SES appears to benefit White and Asian students more than other students in gifted selection processes. Except at the very lowest level of SES, Black students experience similar likelihoods of receiving gifted services across the SES distribution, a pattern that deserves further research attention. Finally, these SES gaps persist in the more recent ECLS cohort, though they are slightly smaller, a finding that may reflect a sample limited to kindergarten through third-grade students or, perhaps, downwind benefits associated with the slight narrowing of socioeconomic gaps in early childhood parental investment and school readiness (Bassok, Finch, Lee, Reardon, & Waldfogel, 2016; Reardon & Portilla, 2016).

The size of the advantage to high-SES students of similar achievement levels over their low-SES peers in the same school is startling. As shown in figure 5, students in the highest SES quintile are twice as likely to receive gifted services than observationally similar peers—again, *in the same school*—in the first, second, or even third SES quintiles. These differences are even larger than (conditional) Black-White gaps in gifted services documented in other research (Grissom & Redding, 2016). The systematic denial of gifted services to low-income students and students of color in the United States constitutes a civil rights problem that requires policy intervention (Gallagher, 1995).

What policy interventions will be most successful depends on the mechanisms that drive SES gaps in gifted services receipt. Our study shows that two potential explanations—differences in the schools attended by high- and low-SES students and differences in their academic achievement—are, at best, only one part of the story. We explored the ECLS-K data for opportunities to

test other mechanisms suggested by theories of family capital but found that the data set lacked many key data elements necessary for these tests, such as whether parents had discussed gifted services with teachers or others in their social networks and whether families accessed outside psychologists for testing. The data also are missing any information related to gifted evaluation processes or what assessments are used. The data do contain some potentially useful measures, such as measures of how involved parents are in school activities in general and classroom teachers' assessments of student behavior and academic engagement, but we did not find evidence that these measures mediated the association between student SES and gifted services receipt once achievement scores were accounted for.[17] Analysis of data sets with more specific information about parent and teacher engagement in gifted referral, schools' gifted evaluation processes, and other aspects of service receipt would provide additional insight into mechanisms.

Still, prior research identifies a number of potential targets for policy intervention. One is teacher referral. Teachers' roles in their students' lives uniquely position them to speak to a child's talents across a number of domains (Peters & Gentry, 2010). At the same time, research suggests that teachers refer low-SES students for gifted testing at lower rates than their more affluent peers (McBee, 2006). Training for teachers that emphasizes mindfulness of giftedness among nondominant groups, be they low-SES or racially or ethnically diverse students, alongside strategies for identifying giftedness in such populations could be a way to combat underreferral (Ford, Moore, & Scott, 2011).

A different approach that holds promise for overcoming the inequitable allocation of gifted services by socioeconomic status is the implementation of universal gifted screening procedures that reduce the role for parent involvement and teacher discretion in placement processes. Universal screening bypasses unsystematic referral processes by assessing all students, either to identify giftedness directly or to identify the potential for giftedness that is evaluated further in a second stage. Studies suggest that universal screening can increase identification rates of low-income students (Card & Giuliano, 2015; Rowe, 2017), though such screening incurs time and resource costs and is thus not in widespread use.

Importantly, making referral more equitable through teacher training or screening will close SES gaps only insofar as those gaps arise at the referral stage. If tests used for gifted evaluation are biased against low-SES students, for example, moving to new assessments may be necessary to increase equity. To this point, some gifted advocates contend that the identification process can also be made more inclusive through use of a multiple criteria approach that incorporates numerous markers of giftedness beyond simplistic IQ or other testing (Bernal, 2001; Borland, 2004; Callahan et al., 1995; VanTassel-Baska, Johnson, & Avery, 2002). Such an approach may help close gaps, as long as it does not introduce criteria that high-SES families are better positioned to prepare their children to satisfy. An additional concern is that multiple criteria

identification procedures risk becoming more complicated to complete, leaving more affluent families better able to navigate the process. In other words, enumerated criteria and greater complexity may open new avenues for well-off families to exercise advantage. Thus, without safeguards in place, more inclusive criteria might in fact not equalize rates of gifted program participation across SES groups.

We conclude by noting that although existing literature identifies gifted referral and evaluation processes as the most likely sources of gifted-SES gaps among similarly able students, retention may also be an important contributor. Less systematic evidence exists about how students along the SES continuum identified as gifted may differentially engage with gifted programming as they move through schooling, and what factors might lead to such differential engagement. This topic is one that deserves additional research attention. More generally, our study points out the need to better understand differential access to educational resources by student SES, both within and across schools.

Notes

1. This income threshold is set at 185 percent of the federal poverty guideline. See Michelmore and Dynarski (2017) for a discussion of the subtleties of FRPL eligibility and the challenges of using it to proxy student poverty.
2. See McBee and Makel (2019) for a discussion and comparison of common definitions of giftedness employed in the field.
3. The operationalization of the dependent variable is identical in the ECLS-K and the ECLS-K: 2011 (Tourangeau et al., 2015).
4. ECLS-K respondents could choose one of twenty-two occupations. On the General Social Survey, respondents rated the prestige of hundreds of occupations in 1989 from 0 to 100. Those scores were averaged for the occupation categories that appear in the ECLS-K. Relatively low-prestige occupational categories included production workers and service occupations, while relatively high-prestige categories included social scientists, lawyers, registered nurses, pharmacists, natural scientists, and mathematicians.
5. The ECLS SES quintile variables (*WKSESQ5, W1SESQ5, W3SESQ5, and W5SESQ5*) explained in Tourangeau et al. (2009) assume a normal distribution. Across all waves, there are somewhat fewer students in the lowest SES quintile than in the other quintiles due to skew in these variables.
6. This includes same-year achievement instead of lagged achievement produced similar results.
7. Students were defined by ECLS-K as ELL based on scores on the Oral Language Development Scale.
8. Teachers could report that a student received gifted services even in a school in which the school principal did not report a formal gifted program. Such a case might occur if teachers provide gifted students with enrichment or accelerated coursework within the general classroom environment.
9. Under straightforward assumptions, linear probability models are sufficient for estimating marginal effects from binary choice models (Angrist & Pischke, 2008) and are preferred to logit or probit approaches in later models that include a large number of fixed effects.
10. One concern about the estimation of school fixed effects models is that segregation of students by SES may mean that students from different groups may be found in the

same school too infrequently to produce meaningful estimates. Fortunately, there is sufficient integration of students by SES in the ECLS-K cohort. As an illustration, the data show that the probability that a student from the lowest SES quintile has at least one student from the highest SES quintile in his or her school is 54 percent, and, conversely, 67 percent of students in the fifth SES quintile attend a school with at least one student in the first SES quintile.

11. The percentage of students reported as receiving gifted services differs slightly in figure 1 and in the first row of table 1. Table 1 uses only the analytic sample; figure 1 uses all observations for which receipt of gifted services information is available.
12. We also experimented with operationalizing the gifted services receipt variable as "ever receiving services in any grade." About 12 percent of students ever receive services in any elementary school grade. The monotonic increase across SES quintiles, however, is similar. In particular, only about 6 percent of students in the first quintile ever receive services, compared to 24 percent of students in the fifth quintile.
13. We also examined the distributions of gifted services receipt by SES for boys and girls. These distributions were statistically indistinguishable.
14. As an alternative, we also estimated cross-sectional models predicting the probability that a student ever received gifted services through fifth grade as a function of achievement scores and student and school characteristics as of kindergarten entry rather than year-by-year. Patterns were similar to those shown in table 3. In a model with school fixed effects, students in the highest SES quintile were seven percentage points more likely to receive gifted services at some point in elementary school than students in the first quintile in the same school who were otherwise observationally similar. Results available on request.
15. Including school fixed effects produces similar results, though given the distribution of race/ethnicity and SES across schools, we could not estimate precise coefficients for all cells. Tabulated results are available on request.
16. We also estimated models with each component of SES entered separately. Patterns were similar. Results are available on request.
17. We found that SES predicted parental school involvement and teacher subjective assessments, as well as some other variables, such as parental involvement in home activities, student extracurricular engagement, and the number of books in the home. Several of these variables (e.g., parental involvement at school, teacher assessments, number of books) were associated with gifted services receipt even after conditioning on other student and school characteristics. However, there was only very slight evidence of mediation of these variables in our exploratory analysis (Baron & Kenny, 1986), suggesting that other mechanisms that we cannot measure are driving our results.

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