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How Resource Inequalities Among High Schools Reproduce Class Advantages in College Destinations

Joshua Klugman

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Abstract Previous studies argued that high school resources play a modest role in students' postsecondary destinations, but they ignored schools' programmatic resources, which provide opportunities for marks of distinction, such as Advanced Placement courses, and they focused on older cohorts of high school students who entered colleges before competition over admission to selective colleges intensified in the 1980s. Analyses of data on a cohort of students who entered college in the mid-2000s suggest that programmatic and non-programmatic resources found in high schools influence postsecondary destinations and mediates the effect of family socioeconomic status on choices among 4-year colleges.

Keywords High school resources · School resources · College destinations · College choice · College selectivity · Advanced placement · School effects · Stratification · Class

Introduction

There is growing stratification within higher education: some colleges are much more selective than others (Stevens et al. 2008). Selective colleges facilitate superior occupational (Brand and Halaby 2006; Long 2008; Liu et al. 2010; Loury and Garman 1995; Zhang 2008) and marital (Arum et al. 2008) outcomes for their graduates. These benefits of college selectivity are not just limited to the "super-elite" colleges defined by Rivera (2011), but accrue even to graduates of moderately selective colleges such as state flagship universities (Hoekstra 2009).[1]

[1] Some scholars (Black and Smith 2004; Brand and Halaby 2006; Dale and Krueger 2002, 2011) argue that the benefits of selective colleges, or at least the certainty that there are benefits, have been overstated by previous research. Long (2008) demonstrates that the documented benefits of selective colleges survive these methodological challenges.

J. Klugman (✉)
Department of Sociology, Temple University, 1115 W. Polett Walk, Gladfelter Hall 713, Philadelphia 19122, PA, USA
e-mail: klugman@temple.edu

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Why do some high school students enroll in highly selective colleges and others do not? While scholars have paid attention to the roles of race (Espenshade and Radford 2009; Grodsky 2007) and to a lesser extent gender (Persell et al. 1992), they have mainly emphasized the role of class. Families of high socioeconomic status (SES) can pay for college (An 2010; Hearn 1991; Karen 2002; Turley et al. 2007; Davies and Guppy 1997) but they also can also activate their social capital to access information that helps their children (a) realize that enrolling in a selective college is feasible and (b) engage in successful impression management during the application process (Deil-Amen and Tevis 2010; Grodsky and Riegle-Crumb 2010; Hossler et al. 1999; McDonough 1997; Davies and Guppy 1997). Perhaps most importantly, these families have resources to invest in their children's educational careers (Alon 2009; Entwisle et al. 2005; Hearn 1991; Karen 2002; Lareau 1989, 2003; Wildhagen 2009). Selective colleges, acting on their own institutional interests, define what achievements merit admission (Karabel 2005), and social scientists generally agree that upper-class and upper-middle class parents are better able to help their children meet these standards (Bourdieu and Passeron 1990; Lareau 1989). In other words, advantaged parents maximize their children's ability to gain "marks of distinction," the academic and extracurricular achievements valued by gatekeepers such as selective college admissions offices (Kilgore 2009; Stevens 2007).

Researchers disagree over whether or not high schools facilitate these class advantages. Most high schools do not help their graduates pay for college. But the fragmented, localized system of public and private schools in the United States produces inequalities in schools' programmatic, pedagogical, and social resources that may increase students' chances of enrolling in selective colleges through other ways. *Programmatic resources* are particular forms of curricular or extracurricular content that are direct opportunities to gain marks of distinction, such as Advanced Placement (AP) or International Baccalaureate (IB) courses, or participation in extracurricular activities or interscholastic sports. *Social resources*, or social capital, refer to social relations among students, parents, and school staff members (Coleman and Hoffer 1987), which are especially strong in high-SES schools (Wenglinsky 1997; Condron 2009). *Pedagogical resources* are those intended to improve learning, like small class sizes or well-trained teachers, although they can also contribute to better social relationships between teachers and students. Social and pedagogical resources can be sources of encouragement and information important for navigating the college admissions process (McDonough 1997; McDonough and Calderone 2006; Mullen 2009; Perna et al. 2008; Stevens 2007), they can facilitate students' ability and motivation to strive for marks of distinction (Clotfelter et al. 2010; Demareth 2009; Elliott 1998; Greenwald et al. 1996; Grubb 2009; Rumberger and Palardy 2005), and they can help parents instill high educational aspirations in their children (Coleman and Hoffer 1987).

On the other hand, some believe that benefits of schools' resources on college destinations are overstated. Studies of the postsecondary *enrollments* of older cohorts of adolescents (1980 or earlier) suggest that high schools' resources have minimal influence (Alexander and Eckland 1977; Alwin and Otto 1977; Betts 2001; Eide et al. 2004; Hauser et al. 1976; Jencks et al. 1972; McDill et al. 1969; Meyer 1970; Strayer 2002), an argument Espenshade et al. (2005) call the "school context hypothesis". Scholarship on *admissions decisions* for recent cohorts (late 1990s) suggest that attending high schools dominated by high-achieving students can actually hurt a student's chances of obtaining admissions at elite colleges (Attewell 2001; Espenshade et al. 2005), an instance of the "frog pond" effect (Davis 1966). Since these high schools are more likely to be abundant in programmatic, social, and pedagogical resources, the implication is that attending resource-rich high schools may actually hurt students' chances of enrolling in a selective college.

This study is concerned with the role of schools' resources in mediating the effects of family SES on students' postsecondary destinations. It asks if high-SES students' greater ability to enroll in more selective colleges is attributable to their schools having more resources. It also gauges the extent to which the benefits of school resources are mediated by students' marks of distinctions. Whether or not schools' resources influence college destinations is an important question speaking to equality of educational opportunities and the role that school contexts play in the reproduction of class inequality from one generation to the next.

This study contributes to the sparse literature on this topic in three ways. First, it draws attention to schools' programmatic resources, which has not been studied as predictors of college destinations. Second, it uses more recent data than that used by other studies. This is important because since the 1980s competition over admission to selective colleges has intensified (Alon 2009; Geiser and Santelices 2006; Hoxby 2009; McDonough et al. 1998; Bound et al. 2009), raising the possibility that families rely more on schools to help their children enroll in selective colleges. Finally, the role of high school resources as mediators between family background and postsecondary destinations has not been examined in other studies.

Background

Schools and the Role of Family Economic Background in College Destinations

Differences in high schools' resources may play a role in SES inequalities in college destinations. High-SES families and children are better equipped to seek out educational opportunities wherever they exist (Alon 2009; Demareth 2009; Lucas 2001). The fragmented and localized system of education in the United States facilitates this: families sort themselves among communities and schools based on families' demand and ability to pay for 'good' schools (Johnson 2006; Peterson 1981). School officials work to satisfy the demands of affluent parents (Cucchiara and Horvat 2009; Demareth 2009; Eitle 2002; Oakes et al. 1997; Wells and Serna 1996). The combination of sorting processes plus school officials' responsiveness to affluent parents produces inequalities between schools in terms of their programmatic, pedagogical, and social resources available to students (Condron and Roscigno 2003; Condron 2009; Corcoran et al. 2004; Wenglinsky 1997).

In all likelihood, school resources mediate family SES more for choices among 4-year colleges than choices among nonselective outcomes (no college, 2-year college, or 4-year nonselective college). The entrance barriers to 2-year colleges and less selective 4-year colleges are lower than those for selective 4-year colleges (Manski and Wise 1983; Rosenbaum 1998), and thus it is expected that inequalities in high school resources will not explain SES differentials in choices among less selective colleges.

Previous Research on the Benefits of High School Resources

Few studies examining how high school resources affect postsecondary destinations focus on the selectivity of 4-year colleges students enroll in; most examine whether or not students enroll in college or intend to do so. These studies, most of which examine cohorts of high school students from the 1950s through the early 1980s, document at best small benefits to schools' social resources (measured as average school SES) and pedagogical resources (namely, pupil–teacher ratios, teacher salaries, and teacher education) on students' chances

of enrolling in college (Alwin and Otto 1977; Hauser et al. 1976; Jencks et al. 1972; Meyer 1970; McDill et al. 1969; Betts 2001; Strayer 2002; Riegle-Crumb 2010). The implication of this school context hypothesis is that students' postsecondary destinations are structured mainly by immediate contexts, such as families and peers. In contrast, some studies of recent cohorts of high school students (1990s and 2000s) indicate that attending a high school with other affluent students can substantially increase students' chances of enrolling in 4-year colleges or earning baccalaureate degrees (Engberg and Wolniak 2010; Owens 2010). There is also some evidence that attending private schools—especially Catholic ones—is beneficial for enrolling in 4-year colleges (Kim and Schneider 2005), which could reflect the programmatic and social resources those schools possess (Coleman and Hoffer 1987; Lee et al. 1998). Additionally, some studies find that high schools' pedagogical and social resources are relevant for students' college grades or persistence (Johnson 2008; Wolniak and Engberg 2010), suggesting that high school resources could be relevant in postsecondary contexts.

A handful of studies actually examine how high schools affect the selectivity of the colleges students enroll in.[2] Alexander and Eckland (1977) found small benefits of high school SES on college selectivity and argued that the school effects they observed were "uniformly modest" (p. 184). In contrast, Roderick et al.'s (2008) analysis of Chicago Public School seniors who graduated in 2005 found substantially large effects of high school's "college-going culture" on students' chances of enrolling in a "match" college—a college where student's academic qualifications are matched with the institution's selectivity level.

Research looking at other resources of high schools has mixed findings. Eide et al.'s (2004) analysis found no benefit of having smaller pupil–teacher ratios, but they did uncover small benefits to having a greater number of teachers with advanced degrees. There is also evidence of moderate benefits of attending some kind of private school on college selectivity (Eide et al. 2004; Kim and Schneider 2005; Moller et al. 2011; Stearns et al. 2010). This is consistent with arguments that private schools have more programmatic and social resources in the form of more narrow college-preparatory curricula and intense academic climates (Coleman and Hoffer 1987; Lee et al. 1998; Carbonaro and Covay 2010) as well as well-informed guidance counselors who maintain ties to admissions officers at selective colleges (McDonough 1997; Persell and Cookson 1985; Stevens 2007). There is also some evidence that graduates of schools in rural areas are somewhat disadvantaged in the selectivity of colleges they attend (Karen 2002; Kim and Schneider 2005), which could reflect the fact that schools in rural areas have less pedagogical, programmatic, and social resources (Roscigno et al. 2006).

While these previous studies have made important contributions, they cannot fully address the questions set out in this study. First, some of these studies use fairly old data, such as Alexander and Eckland (1977) who used data on high school sophomores in 1955, and Eide et al. (2004), who used data on a cohort of high school sophomores in 1980. This is problematic because rankings of colleges have become more nationally salient (the U.S. News and World Report rankings of colleges first appeared in 1983) and competition over admission to selective colleges intensified in the 1980s (Bastedo and Jaquette 2011; Bound et al. 2009), as indicated by selective colleges' increased reliance on test scores (Alon and Tienda 2007) and AP courses (Geiser and Santelices 2006). Given the growing importance of marks of distinction in enrolling in selective colleges, it is possible that the effects of schools' social, pedagogical, and especially programmatic resources have also grown.

[2] This discussion omits studies that examined the effects of school resources on students' postsecondary outcomes but did not fully control for either student SES or students' academic ability, even though the authors of these studies may have had valid reasons for their designs (Halpern-Manners et al. 2009; Martin et al. 2005; Niu and Tienda 2008; Niu et al. 2006).

Moreover, none of these studies gauge the exact benefits—if any exist—of programmatic resources. This is important because research suggests that these marks of distinction increase students' chances of enrolling in selective colleges (Attewell and Domina 2008; Espenshade and Radford 2009; Kaufman and Gabler 2004; but see Stearns et al. 2010). Whether or not a student takes an AP course or participates on an interscholastic sports team depends in large part on whether or not his or her high school offers them.

Finally, previous research in this vein has not examined the role of schools' programmatic, pedagogical, and social resources as a mediator of the effect of family SES on college destinations.[3] The previously cited scholarship showing minimal effects of social and pedagogical resources implicitly suggested that substantial mediation is not occurring. However, it is worth revising this conclusion in a study that addresses the other two unanswered questions—the role of programmatic resources and the role of high school resources in general since the intensification of competition over selective college admissions.

Previous Research on the Negative Effects of High School Resources

Recent studies, looking at cohorts of high school students in the late 1990s, have shown that because selective colleges evaluate applicants in comparison to others from the same school, students are, ceteris paribus, less likely to gain admission to a selective college if they attend a high school with other academically successful students (Espenshade et al. 2005; Attewell 2001). This frog pond effect, which is more likely to be found in affluent high schools, is exacerbated even more by these high schools adopting "winner-take-all" organizational practices that make it harder to obtain good grades or restrict access to AP and other advanced courses (Attewell 2001). The implication of these studies is that, while high schools' programmatic, pedagogical, and social resources do not have negative effects per se, they are associated with organizational practices that hurt students' chances of enrolling in selective colleges.

These studies have been invaluable in documenting the frog pond effect, but they have not examined the effects of school resources in a thorough way. The study of Espenshade et al. (2005) comes close, but their study's strengths preclude it from addressing the matter at hand. Confining the analysis to just applicants to selective colleges ignores the substantial self-selection among college applicants (Higher Education Research Institute 2009; Karen 1991; Manski and Wise 1983) and thus any potential influence high schools have on this self-selection. Moreover, since they analyze applicants at only three elite colleges, their study cannot speak to whether or not students enroll in selective colleges in general.

Data/Methods

The data for this study comes from the Educational Longitudinal Study of 2002 (ELS), which is a nationally-representative probability sample of tenth graders in the United States in 2002, with follow ups conducted in 2004 and 2006. This survey was commissioned by the National Center for Education Statistics (NCES). The sample is restricted to students who were in the 2006 follow-up, who never dropped out of high school, who attended the same high school in the tenth and 12th grades, who graduated from high school in 2004 or

[3] Some studies have documented that track placement and course sequences mediate the effect of family background on enrolling in a 4-year college (Rosenbaum 1980; Schneider 2003; Schneider et al. 1998), but these studies do not address how high schools' *advanced curricula offerings* mediate the effect of family background on the *selectivity* of the colleges students enroll in.

afterward, and who participated in the high school transcript study in 2004. This leaves a sample of 10,070 cases in 710 schools.[4] Cases with missing values on the dependent variables were dropped, leaving a sample of 9,880 students in 710 schools.[5] The school sample sizes ranged from less than 10 to 40. Variables calculated by aggregating values within schools (the average SES and test scores of other students in the high school) were based on *all* sampled students in the school, regardless if they were included in the final sample. These school-aggregated variables were calculated from school samples which averaged 22 cases, and 99 % of students were in schools that provided samples of at least 10. Multiple imputation routines in Royston et al. (2009) ice package for Stata were used to create and analyze ten imputed datasets to address missing values in predictors.[6] Summary statistics of all variables used in the analysis are presented in Table1.

Variables

Outcomes: College Destinations

In the 2006 follow-up, respondents detailed their history of postsecondary enrollments. ELS lists the first "real" college respondents attended (this excludes colleges attended during summer before attending a different college). College destinations are classified into a similar five-category scheme used by Alon and Tienda (2007) and Alon (2009): no postsecondary education, 2-year colleges, 4-year non-selective colleges ("nonselective colleges"), 4-year selective colleges ("selective colleges"), and 4-year more-selective colleges ("more selective colleges"). The selectivity of the 4-year institutions is based on the "Admissions Competitiveness Index" used by the 2004 edition of *Barron's Profiles of American Colleges*. Colleges coded as "more selective" were rated by Barron's as being "highly" or "most competitive" and tended to have a median SAT of at least 1240. Colleges coded as "selective" were rated as being "competitive" or "very competitive" with an average SAT between 1000 and 1240. Colleges coded as "non-selective" were rated as being "less competitive" (average SAT score below 1000) or "noncompetitive" (open admissions).

Independent Variables

Socioeconomic Status

Student SES is a composite measure, provided by NCES, of parents' education levels, occupations, and family income, measured when students were in the tenth grade.

[4] Restricting the sample this way introduces the possibility for bias. Using sample weights minimizes bias caused by attrition (e.g., students who did not participate in the 2006 wave) and by the omission of students who did not participate in the transcript study. Dropping students because they changed high schools between the 2002 and 2004 waves introduces the possibility of biased results because the number is fairly large (1,240). In a supplemental analysis is available upon request from the author, these students were retained and data on their high school resources were, if possible, based on the averages of the high schools attended (if data on multiple high schools were not available, data from one high school was used). The results are very similar to the main analyses presented here.

[5] All sample sizes reported in this study are rounded to 10s, in compliance with NCES requirements for users of restricted-use data.

[6] I created ten imputations for student-level variables, and ten imputations for school-level variables, and merged the imputations together. School-level variables were used to impute student-level variables, and student-level variables were aggregated at the school-level and used to impute school-level variables.

Table 1 Summary statistics

Variable	Mean	SD	Range	Source
Outcomes				
Destinations				
None	0.17	–	–	ELS follow-up 2 (2006)
Two-year	0.28	–	–	
Four-year nonselective	0.09	–	–	
Four-year selective	0.35	–	–	
Four-year more selective	0.10	–	–	
Predictors				
Student characteristics				
SES	0.00	1.00	−3.0–2.4	ELS base year
AP subject-taking	0.81	1.57	0.0–12.0	ELS follow-up 1
				Transcript study
IB subject-taking	0.05	0.48	0.0–10.0	ELS follow-up 1
				Transcript study
Activities	1.45	1.45	0.0–7.0	ELS follow-up 1
Sports participation	0.37	0.48	0,1	ELS base year and follow-up 1
Honors	1.19	1.06	0.0–4.0	ELS base year
SAT score				
None	0.16	–	0,1	ELS follow-up 1
				Transcript study
0–25th percentile	0.20	–	0,1	
26th–50th percentile	0.19	–	0,1	
51st–75th percentile	0.23	–	0,1	
76th–90th percentile	0.14	–	0,1	
91st–100th percentile	0.09	–	0,1	
Race				
Other	0.05	–	0,1	ELS base year
Asian	0.10	–	0,1	
Black	0.11	–	0,1	
Hispanic	0.12	–	0,1	
White	0.61	–	0,1	
Male	0.48	–	0,1	
Tenth grade tested ability	0.00	1.00	−3.3–3.0	ELS base year
GPA	−0.71	0.89	−3.9–1.2	ELS follow-up 1
				Transcript study
Educational expectations				
Less than BA	0.15	–	0,1	ELS base year
BA	0.40	–	0,1	
Post-BA degree	0.45	–	0,1	
Parents' educational expectations				
Less than BA	0.12	–	0,1	ELS base year
BA	0.41	–	0,1	ELS base year
Post-BA degree	0.47	–	0,1	ELS base year

Table 1 continued

Variable	Mean	SD	Range	Source
Algebra	0.23	–	0,1	ELS follow-up 1 Transcript study
School characteristics				
School AP subjects	8.07	6.30	0.0–28.0	ELS follow-up 1 Transcript study
School IB subjects	0.39	1.98	0.0–16.0	ELS follow-up 1 Transcript study
School sports offerings	10.71	2.91	0.0–16.0	ELS base year
Proportion teachers w/graduate degrees	0.45	0.22	0.0–1.0	ELS follow-up 1
Pupil–teacher ratio	16.41	4.69	5.3–57.4	CCD/PSS 2001-2004
Public school	0.73	–	0,1	ELS base year
Catholic school	0.17	–	0,1	ELS base year
Other private school	0.10	–	0,1	ELS base year
Other students' SES	0.00	1.00	−2.6–3.0	ELS base year
Other students' test scores	0.00	1.00	−3.3–3.4	ELS base year
Log enrollment	6.84	0.83	3.8–8.4	CCD/PSS 2001-2004
Location				
Rural	0.18	–	0,1	ELS base year
Suburb	0.52	–	0,1	ELS base year
Urban	0.30	–	0,1	ELS base year
Region				
Northeast	0.19	–	0,1	ELS base year
Midwest	0.26	–	0,1	ELS base year
South	0.35	–	0,1	ELS base year
West	0.20	–	0,1	ELS base year

Programmatic School Resources

School AP Subjects and *School IB Subjects* are counts of the number of unique AP and IB courses offered in the high school. These come from the ELS Course Offering File, which contains course-level data on all courses offered in high schools participating in the transcript study. The Course Offering File made distinctions among 31 different AP courses, and 28 different IB courses. *Sports offerings* is a count of the number of different extracurricular sports teams at the school. The ELS administrator questionnaire asked if a variety of different sports were offered (baseball, softball, basketball, football, soccer, swim, ice hockey, field hockey, volleyball, lacrosse, tennis, cross-country, track, golf, gymnastics, and wrestling). Unfortunately, the ELS did not ask administrators about their non-sports extracurricular offerings. Sports offerings is used as a proxy for extracurricular activities in general, but the sports offerings themselves can also be an opportunity for students to earn marks of athletic distinction that make them appealing to colleges, even selective ones (Golden 2006; Mullen 2010; Stevens 2007; Espenshade et al. 2004). High schools reported offering between 0 to 16 different kinds of sports.

Pedagogical School Resources

The *proportion of teachers with graduate degrees* was collected by the ELS researchers and *pupil–teacher ratios* are the average of the pupil–teacher ratios reported in the Common Core of Data (CCD, a census of public schools collected by the National Center for Education Statistics) and the Private School Universe Survey (PSS, the counterpart to the CCD for private schools) for the school years 2000–2001, 2001–2002, 2002–2003, and 2003–2004.

Social School Resources

Social resources are measured with two variables: *Other students' SES* and *other students' test scores* is the average SES and average tenth grade standardized math and reading test scores of all the other ELS respondents in the respondents' high school in 2002.

School Typologies

Some aspects of schools, such as *school sector* (public, Catholic, other private) and *location* (urban, suburban, rural), do not fit neatly in the categories of programmatic, pedagogical, and social resources. Since there may be inequalities on all three types of resources based on sector or location, these predictors are treated as distinct from the others.

Marks of Distinction

AP Subject-taking and *IB Subject-taking* are the number of AP and IB subjects the student enrolled in, according to the transcript file. *Activities* is the number of extracurricular activities students reported doing in their senior year. Possible activities that students could indicate are orchestra, play/musical, student government, academic honor society, newspaper/yearbook, service club, and any kind of academic club. *Sports participation* is a dummy indicator for participating in interscholastic sports in both the sophomore and senior year. *Grades* is the student's z-standardized high school grade point average. Finally, *SAT* scores is the student's SAT scores as reported on the student's transcript. For students who took the ACT instead of the SAT, ELS converted their scores into the SAT metric. SAT scores were treated as a categorical variable, to deal with students who do not have a reported ACT/SAT test score and who indicated that they did not intend to take either of these exams (about 11 %).

Controls for Selection into High Schools

One problem with studying the effects of high schools is the possibility that students who are predisposed to enroll in selective colleges attend resource-rich high schools, and thus any estimated benefits of high school resources on college destinations are spurious. Controlling for students' early achievements and motivations will attenuate, at least partially, this selection problem. Ideally, coefficients for family SES will reflect parents' practices, behaviors, and resources that occur (or were "invested") during students' high school careers, although this rests on the assumption that the cumulative effect of SES on pre-high school investments can be captured with observed measures of early achievements and motivations.

Unfortunately, since the ELS data traces a cohort of tenth graders, it is impossible to obtain good measures of the students' abilities and predispositions prior to entering high school. Instead, measures collected in the tenth grade are used.[7] Students' *tenth grade test scores* is the student's composite IRT-scaled score on the math and reading tests administered in the tenth grade. Pre-high school track placement is measured with an indicator for students who did not take Algebra I during high school but did take a math course that follows Algebra I (e.g., geometry, trigonometry, Algebra II, calculus); such students in all likelihood took *eighth grade algebra*. Students' tenth grade *educational expectations*, are measured with dummy indicators for less than a BA degree, BA degree, and post-BA degree; the same measures are used for parents' educational expectations for the student (reported in the tenth grade).

Other Controls

Student race is measured using dummy indicators for *Asians*, *Blacks*, *Hispanics*, *Whites*, and *Other*; sex is controlled for as an indicator variable for *males*. At the school level, I control for logged school *enrollment*, which are the reports from the CCD and PSS databases averaged from 2000–2001 to 2003–2004, and for region, measured as dummy variables for *Northeast, Midwest, South,* and *West.*

Plan of Analysis

Figure 1 diagrams the causal arguments tested here. The effect of family SES on college destinations is partially mediated by high school resources. Given plentiful evidence that high-SES families directly target their involvement and resources at their children (e.g. Demareth 2009; Lareau 1989, 2003), it is expected that family SES will have some direct effect on students' marks of distinction and postsecondary destinations, even after controlling for school resources. The model also specifies that students' marks of distinction mediate high school resources. It allows for high school resources to affect college destinations independent of marks of distinction; these effects are assumed to be unmeasured mechanisms such as access to information and encouragement, or marks of distinction that are difficult to observe. These unmeasured variables and their effects are represented by dashed lines.

This study proceeds in three steps. First, SES disparities in high school resources are gauged by regressing each of the resources on student's family SES. Second, the influence of family SES on students' marks of distinction is estimated, controlling for school size, tenth grade test scores, student and parental educational expectations, and track placement. The extent to which school resources mediate the effect of family SES on these marks of distinction is also estimated. Third, multinomial logistic regression is used to examine students' postsecondary destinations.

To deal with design effects involved in the ELS data, I used the svy command in Stata to account for the stratified sampling techniques used to college ELS data. All analyses are weighted using the weight variable F2QTSCWT, which was designed for analyses

[7] Using tenth grade measures risks downwardly biasing the effects of high school resources, since the tenth grade measures are potentially influenced by high school resources. In all likelihood, this is not a substantial problem; similar analyses were performed using eighth grade (pre-high school) measures from the National Education Longitudinal Study (NELS), which tracked a cohort of 1988 eighth graders. The results (not presented) are substantially similar to the ones presented here.

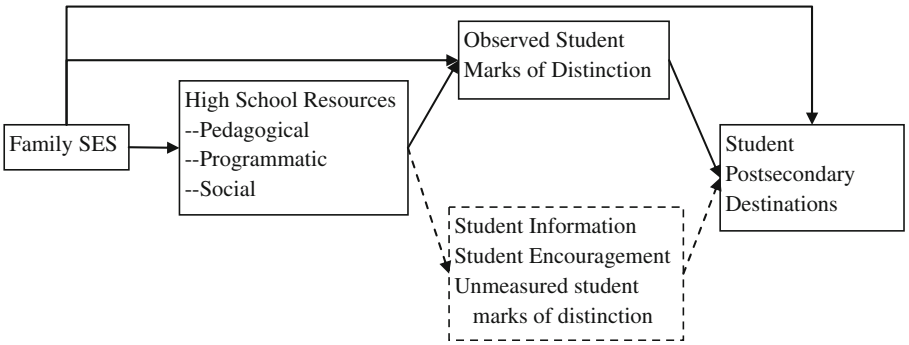

Fig. 1 Causal diagram (*dotted lines* represent unmeasured variables)

involving the 2006 wave and the high school transcript data file. Finally, since students are clustered in high schools, there is a possibility that there will be dependence among the residual terms, violating the assumption that residual terms are not correlated with each other. Consequently estimates of standard errors will be artificially suppressed leading to inflated *t*-scores and hence Type I error. To deal with this assumption, standard errors are adjusted for the clustering of the cases in high schools using the svy command in Stata. Hierarchical linear modeling (HLM) is an alternative specification that would deal with the clustering of cases by estimating intercepts for each high school in the data. Unfortunately, this approach is not practical to analyze a nominal outcome with five categories, as is done in this study. Doing so would either require that four intercepts be estimated for each school (necessitating many more cases per school than is present in the data), or require the analyst to arbitrarily select some comparisons to have a random intercept and others to not have a random intercept, defeating the purpose of using HLM. Additional drawbacks to using HLM are that doing so precludes accounting for the stratified sample design of ELS, as well as testing for mediation.

Using multiple-imputed datasets complicates the data analysis in some minor ways. Measures of model fit (R^2s for continuous outcomes and adjusted count R^2s for nominal outcomes) are calculated for each imputation and then aggregated over all imputations.[8] Tests for mediation are done by comparing the effect of family SES on marks of distinction and college selectivity, with and without controls for school resources. A significant decline in the effect of family SES after controlling for school resources indicates mediation is occurring. Stata's SUEST routine is used to test the null hypothesis that the effect of family SES in a model controlling for school resources is equal to the effect of family SES in a baseline model with no controls for school resources. These tests were done for each imputation and the number of imputations where the null hypothesis is rejected (i.e., supporting claims of mediated effects) is listed as a superscript.

[8] For analyses of continuous outcomes, I use Harel's (2009) method for averaging R^2s, which entails converting each imputation's R^2 into a z score, taking the average of the z's, and then converting the average z back into R^2. Unfortunately there is no such equivalent for the adjusted count R^2. The adjusted count R^2's reported here are averages of each imputation's adjusted count R^2, in unweighted analyses, since it is impossible to calculate an adjusted count R^2 when sampling weights are used in Stata.

Results

School Resources

Since the argument tested in this paper is that affluent families' advantage in getting their children into selective colleges works at least partially through school resources, it is necessary to gauge the extent to which children from high-SES families attend schools that are abundant in pedagogical, social, and programmatic resources. Table 2 presents regressions of high school resources on family SES, controlling for race and gender.

The results show high-SES students attend high schools advantaged in programmatic resources such as AP and IB subjects and sports offerings; the pedagogical resource of teachers with graduate degrees; and social resources in the form of high-SES and high-ability student bodies. In addition, family SES is positively associated with attending a private school (either Catholic or non-Catholic) over a public one, and is negatively associated with attending a high school in a rural area (and positively associated with attending a high school in a suburban area). A one standard deviation increase in students' SES increases the number of AP subjects offered at the school by 1.40, the number of IB subjects by .12, the number of sports offerings by .61, the percentage of teachers who have graduate degrees by 3.8 %age points, and the SES and test scores of other students by .39 and .29 standard deviations, respectively.

Marks of Distinction

It was hypothesized that affluent families facilitate their children obtaining marks of distinction by sending them to high-resource high schools. Model 1 in Table 3 estimates the effects of SES on various marks of distinction—AP and IB subject-taking, extracurricular activities, sports participation, grades, taking the SAT or ACT test, and SAT/ACT scores. All models in Table 3 include controls for race, sex, tenth grade test scores, student and parental educational expectations, pre-high school math placement, school size, and region. The results show significant positive effects of family SES on all marks of

Table 2 Effects of family SES on school resources ($N = 10{,}070$)[a]

Dependent variable	Effect of family SES	R^2	Adjusted count R^2
School AP subjects	1.395**	0.088	
School IB subjects	0.118**	0.008	
School sports offerings	0.610**	0.056	
Pupil–teacher ratio	−0.020	0.052	
Proportion teachers W/graduate degrees	0.038**	0.045	
Other students' SES	0.392**	0.260	
Other students' tenth grade test scores	0.291**	0.231	
Catholic school over public school[b]	0.719**		−0.002
Other private over public school[b]	0.858**		
Suburban school over urban school	0.107*		0.001
Rural school over urban school	−0.346**		

* $p < .05$; ** $p < .01$

[a] All models include controls for race and sex (effects not presented)

[b] Log odds from multinomial logistic regression presented

Table 3 Effects of family SES, race, gender, and school resources on marks of distinction ($N = 10{,}070$)

	AP subject-taking	IB subject-taking	Activities	Sports	Grades	Took SAT/ACT test	SAT/ACT score[a]
Model 1							
Family SES	0.16**	0.01	0.12**	0.27**	0.07**	0.40**	23.65**
R^2	0.29	0.03	0.21	0.10	0.46	0.23	0.70
Model 2							
Family SES	0.13**$^{(10)}$	0.01$^{(0)}$	0.12**$^{(0)}$	0.23**$^{(10)}$	0.09**$^{(10)}$	0.37**$^{(10)}$	15.78**$^{(10)}$
School AP subjects	0.04**			0.01	−0.01		0.50
School IB subjects	−0.03*	0.08**					
School sports offerings				0.05**			0.43
Pupil–teacher ratio					0.01*	−0.03*	−0.14
Proportion teachers w/graduate degrees					−0.11+		4.56
Other Students' SES					−0.02		16.15**
Other students' test scores			−0.06**	0.05	−0.04+		4.16
Catholic school		−0.02*	0.18**			1.12**	7.7
Other private		−0.01	0.21*			0.50	18.54+
Suburb	−0.18**					−0.45**	
Rural	−0.27**					−0.60*	
R^2	0.32	0.18	0.21	0.10	0.46	0.23	0.71

Note: OLS regression used for all outcomes, except for sports participation and ACT/SAT test-taking, where logistic regression is used. All models include controls for race, sex, tenth grade educational expectations, tenth grade parental educational expectations, tenth grade test scores, eighth grade algebra course-taking, log school size, and region. School resource predictors were excluded from the models if they had nonsignificant effects in models testing them one at a time. Superscripted numbers refer to number of imputations (out of ten) where effect of family SES is significantly different from that of model 1

+ $p < .10$; * $p < .05$; ** $p < .01$

[a] Sample limited to those who took the SAT ($N = 8{,}930$)

distinction, except for IB subject-taking. A standard deviation increase in SES increases AP subject-taking by .16 courses, extracurricular activities by .12 activities, SAT scores by 24 points, the odds of sports participation by 31 % [exp(.27) = 1.31], and the odds of taking the SAT test by 49 % [exp(.40) = 1.49].

The associations between school resources and marks of distinction are presented in Model 2. In results not presented, these associations (net of the control variables) were modeled one at a time; only those resources with significant associations are presented in Model 2. Programmatic resources tend to have benefits for specific marks of distinction (e.g. AP subject offerings are positively associated with AP subject-takings; likewise with IB subject offerings and sports offerings). The association between school AP subjects and student AP subject-taking is fairly substantial—a standard deviation increase in AP subject offerings (6.3 subjects) is associated with taking .25 more AP subjects, which is larger than the effect for a standard deviation increase in family SES (.13).

Pedagogical resources do not have any straightforward associations with marks of distinction. Students tend to earn *lower* grades in schools with smaller pupil–teacher ratios and larger shares of teachers with graduate degrees, although smaller pupil–teacher ratios increase the chances of taking the SAT or ACT exam.

Social resources, in the form of the socioeconomic composition of other students, are associated with higher scores on the SAT/ACT exam (an effect which is even larger than that of family SES), but are not associated with any other mark of distinction. The academic abilities of other students produce a frog pond effect, in that higher-achieving peers are associated with reduced participation in extra-curricular activities and grades.

School sector and urban/rural status (representing differences in other unmeasured programmatic, pedagogical, and social resources) are also associated with differences in marks of distinction. Students who attend private schools have higher levels of extracurricular activities, and students in Catholic schools are more likely to take the SAT/ACT exam, while students in non-Catholic private schools score higher on those exams. Students who attend rural and (to a lesser extent) suburban schools have lower levels of AP subject-taking and lower odds of taking the SAT/ACT exam.

School resources significantly mediate the effect of family SES on all marks of distinction, excepting IB subject-taking and extracurricular activities. The extent of the mediation is fairly modest however. Only for SAT scores is the mediation substantial—the effect of family SES is reduced by a third after controlling for school resources.

In short, programmatic and social resources, as well as attending private schools and urban schools, have moderate associations with students' measured marks of distinctions. In some cases, these effects are comparable to those of family SES.

College Enrollments

Table 4 presents multinomial logistic regression results modeling college destinations. In the middle four columns are the log-odds of choosing a particular postsecondary option over a nonselective 4-year college (henceforth "nonselective college"). In the final column on the right are the log-odds of choosing a more selective college over a selective college.

Model 1 shows the effect of SES controlling for students' race, sex, logged school size, region, tenth grade test scores, educational expectations, pre-high school math placement, and parents' educational expectations. These results show that family SES has significant and substantial effects on college destinations. A one-unit increase in SES (which is the same as a standard deviation increase) will increase the odds of enrolling in a more selective college over a nonselective college by 129 % [exp(.830) = 2.29] and the odds of

Table 4 Multinomial logistic regression analysis of enrollments ($N = 9{,}880$)

Variable	Base = four-year nonselective				Base = four-year selective
	No postsecondary education	Two-year	Four-year selective	Four-year more selective	Four-year more selective
Model 1 (AC $R^2 = .247$)					
Family SES	−0.478**	−0.086	0.383**	0.830**	0.447**
Model 2A (AC $R^2 = .250$)					
Family SES	−0.474**$^{(0)}$	−0.087$^{(0)}$	0.361**$^{(2)}$	0.756**$^{(10)}$	0.395**$^{(10)}$
School AP subjects	−0.016	−0.013	0.008	0.071**	0.063**
School IB subjects	−0.010	0.011	0.005	0.018	0.013
School sports offerings	0.017	0.028	0.059+	0.035	−0.024
Model 2B (AC $R^2 = .248$)					
Family SES	−0.483**$^{(0)}$	−0.088$^{(0)}$	0.365**$^{(10)}$	0.798**$^{(8)}$	0.434**$^{(0)}$
Pupil–teacher ratio	−0.008	−0.012	−0.018	−0.061+	−0.043+
Proportion teachers w/grad. degrees	0.123	−0.076	0.793*	0.637	−0.156
Model 2C (AC $R^2 = .254$)					
Family SES	−0.485**$^{(0)}$	−0.118*$^{(0)}$	0.255**$^{(10)}$	0.579**$^{(10)}$	0.324**$^{(10)}$
Other students' SES	0.006	0.109	0.456**	0.783**	0.326**
Other students' test scores	0.005	0.032	−0.027	−0.053	−0.026
Model 2D (AC $R^2 = ..258$)					
Family SES	−0.456**$^{(10)}$	−0.078$^{(0)}$	0.366**$^{(0)}$	0.743**$^{(10)}$	0.377**$^{(10)}$
Catholic school	−1.251**	−0.282	0.242	0.779**	0.537**
Other private	−0.308	0.108	0.138	1.236**	1.098**
Suburb	0.387*	0.574**	0.135	0.255	0.120
Rural	0.140	0.393+	−0.108	−0.221	−0.113

Table 4 continued

Variable	Base = four-year nonselective				Base = four-year selective
	No postsecondary education	Two-year	Four-year selective	Four-year more selective	Four-year more selective
Model 2E (AC R^2 = .257)					
Family SES	−0.470**$^{(0)}$	−0.105+$^{(0)}$	0.260**$^{(10)}$	0.574**$^{(10)}$	0.314**$^{(10)}$
School AP subjects	−0.014	−0.012	−0.008	0.041*	0.049**
Proportion teachers w/grad. degrees	0.006	−0.269	0.401	−0.041	−0.442
Other students' SES	0.095	0.184*	0.467**	0.563**	0.096
Catholic school	−1.386**	−0.492*	−0.329	0.117	0.446*
Other private	−0.481	−0.171	−0.574+	0.340	0.915**
Suburb	0.353*	0.528**	0.008	0.169	0.161
Rural	0.118	0.350	−0.170	−0.212	−0.043
Model 3 (AC R^2 = .340)					
Family SES	−0.417**$^{(7)}$	−0.075$^{(0)}$	0.198**$^{(10)}$	0.375**$^{(10)}$	0.177*$^{(10)}$
School AP subjects	−0.016	−0.012	−0.009	0.016	0.025
Proportion teachers w/grad. degrees	−0.092	−0.351	0.532	0.093	−0.439
Other students' SES	0.026	0.146	0.509**	0.697**	0.189*
Catholic school	−1.291**	−0.481*	−0.340	0.136	0.476*
Other private	−0.357	−0.148	−0.633+	0.365	0.998**
Suburb	0.298+	0.503**	−0.014	0.192	0.206
Rural	−0.046	0.253	−0.159	−0.122	0.037

Table 4 continued

Variable	Base = four-year nonselective				Base = four-year selective
	No postsecondary education	Two-year	Four-year selective	Four-year more selective	Four-year more selective
Student SAT score (ref: 91–100th %tile)					
Missing	0.860	0.900+	−2.598**	−4.025*	−1.427
First quartile	−0.884	−0.046	−1.827**	−2.821**	−0.994*
Second quartile	−1.040+	−0.213	−1.233**	−2.509**	−1.275**
Third quartile	−1.269*	−0.576	−0.995**	−1.962**	−0.967**
76–90th percentile	−0.467	−0.166	−0.464	−0.834*	−0.370*
AP course-taking	−0.123	−0.083	0.079	0.308**	0.229**
IB course-taking	−0.282	0.133	0.321	0.441+	0.120*
Activities	−0.183**	−0.085+	0.043	0.145**	0.103**
Sports	−0.378**	−0.273*	0.303**	0.509**	0.207+
Grades	−0.599**	−0.298**	0.408**	1.028**	0.620**

Note: All models include controls for sex, race, tenth grade tested ability, eighth grade algebra placement, tenth grade educational expectations, tenth grade parents' educational expectations, school enrollment, and region. Superscripted numbers refer to number of imputations (out of 10) where effect of family SES is significantly different from that of model 1. Adjusted count R^2s are listed for each model

+ $p < .10$; * $p < .05$; ** $p < .01$

enrolling in a more selective college over a selective college by 56 % [exp(.447) = 1.56]. In addition, high-SES students are more likely to enroll in a selective college over a nonselective college and are more likely to enroll in a nonselective college over no college.

In models 2A–2D, measures of social, pedagogical, and programmatic resources are included in separate models. In Model 2E, all of the significant school resources in the prior models are introduced. While previous research has not considered the role of programmatic resources in student outcomes, my results show that they can matter. Schools' AP subjects—but not IB subjects or sports offerings—have significant benefits for students' chances of enrolling in more selective colleges (Model 2A). A high school with a high level of AP subjects increases its students' odds of enrolling in a more selective college over a nonselective and selective college. School AP subjects and the other programmatic resources also significantly mediate the effect of SES for the choices between more selective colleges, on the one hand, and nonselective and selective colleges on the other (by around 10 %). Moreover, the significance of the coefficient for school AP subjects survives when other school resources are controlled for, in Model 2E, suggesting that the benefits of AP subjects are not reducible to some other resource.

The relationship between AP subjects and college destinations in Model 2A are graphed in Fig. 2, which presents the predicted probabilities corresponding to a mean-centered two-standard deviation increase in school AP subjects. The probabilities are for a student who is academically successful—he or she is at the 90th percentile for tenth grade test scores, was enrolled in algebra before starting high school, expects to obtain a BA degree, and has parents who also expect him or her to obtain a BA degree—and is average in all other regards. The results show that a student's chances of enrolling in a more selective college grow from around 19–35 %, as a high school's AP subject offerings grow from 2 to 14.

Social resources also have important associations with college destinations. The SES of other students in the school increases the odds of enrolling in a selective college and a more selective college over a nonselective college, as well as the odds of enrolling in a more selective college over a selective one. Figure 3 shows the relationship between other student SES and college destinations for successful students, and, as was the case with AP

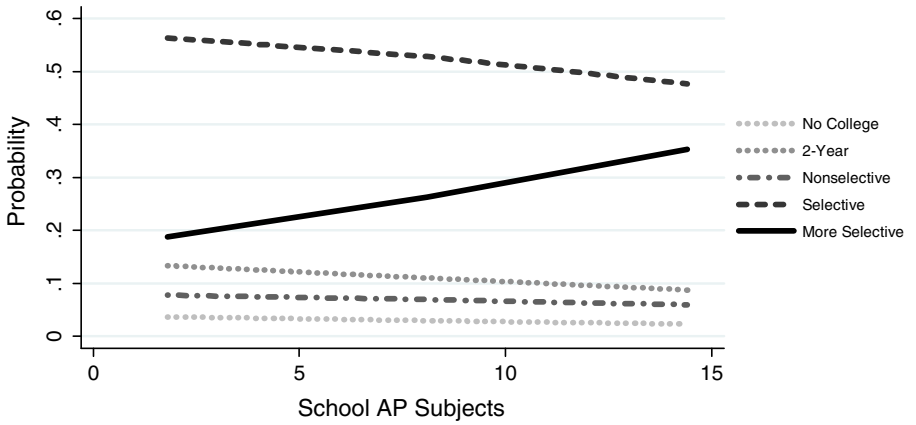

Fig. 2 Effect of school AP subjects on destinations for successful students

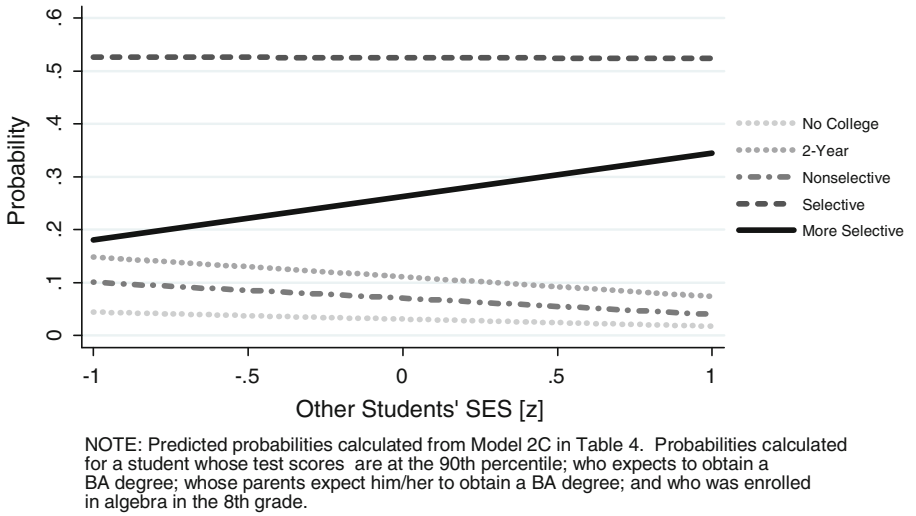

Fig. 3 Effect of other students' SES on destinations for successful students

subjects, a two-standard deviation increase is associated with a doubling of the chances of enrolling in a more selective college, from 18 to 34 %. This association more or less survives in Model 2E, when controls for programmatic and pedagogical resources are introduced (although the association with the choice between more selective colleges and selective colleges becomes non-significant in Model 2E).

Social resources also mediate the effect of family SES; the effect on choices involving selective and more selective colleges is reduced by about a third from Model 1 to Model 2C. On the other hand, other students' tested ability has virtually no association with college destinations.

There is not much evidence for effects of pedagogical resources. Pupil–teacher ratios have a marginally negative association with the odds of choosing a more selective college over a nonselective or selective college, and the proportion of teachers with graduate degrees has a positive and significant association with the odds of choosing a selective college over a nonselective one, but these associations largely dissipate once other school resources are controlled for in Model 2E.

The analyses also give some indications that attending a private school is associated with optimal college destinations. Figure 4 charts these relationships; as can be seen, successful students attending a non-Catholic private school have a substantial advantage in their chances of enrolling in a more selective college. Of those students graduating from such a school, 50 % are expected to enroll in a more selective college, compared to 38 % of successful graduates from a Catholic school and 24 % of successful graduates from a public school. Model 2E suggests that the benefits of private schools are not reducible to the specific programmatic, social, and pedagogical resources tested in this study. The school typologies also mediate the effect of family SES, to a moderate extent (the effect of family SES on choices involving more selective colleges are reduced by 10–16 % from Model 1 to Model 2D). On the other hand, school location has no significant association with choices involving selective or more selective colleges.

I argued that school resources could affect students' college destinations by facilitating their ability to earn marks of distinction. Model 3 controls for various measures of

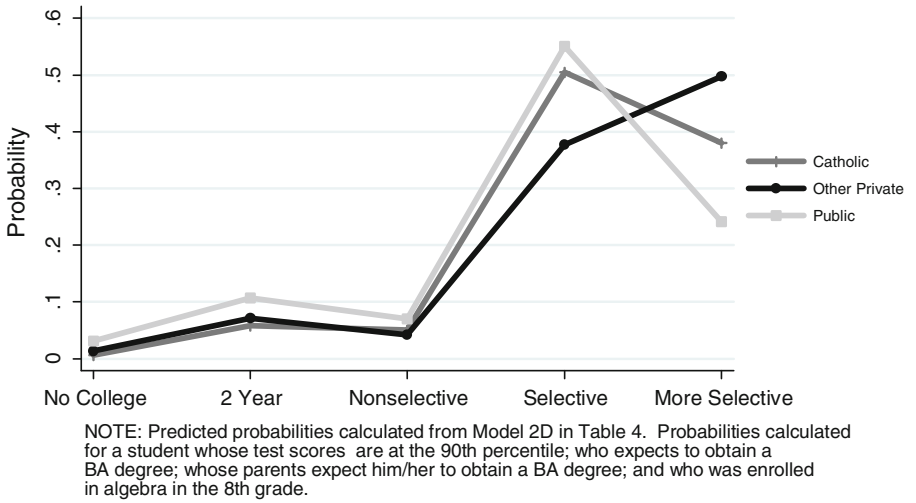

Fig. 4 Effect of school sector on destinations for successful students

students' marks of distinction, and we see that these matter for enrolling in more selective colleges. Students who take more AP subjects, who have high SAT scores, who participated in sports and other extra-curricular activities, and who have high grades are more likely to choose to enroll in a more selective college over a nonselective or selective one.

After introducing these marks of distinction, we see that the association between school AP subjects and choices involving selective colleges are substantially reduced from Model 2E to Model 3. This suggests that schools' AP subjects increase their students' chances of enrolling in selective colleges by expanding opportunities to earn marks of distinction (namely, enrolling in AP courses).

For the other school resources, the estimates of their benefits remain stable or actually increase in magnitude (such as the effects of other students' SES and school sector on choices involving selective and more selective colleges). A reasonable inference is that the associations between these resources and college destinations work through other mechanisms, such as unobserved marks of distinction, or the prevalence of encouragement and information that fosters students' willingness to apply to selective colleges and successfully engage in impression management in their applications.[9]

So far, this discussion has focused on the associations between school resources and choices between nonselective, selective, and more selective colleges, but it is worth mentioning how these resources are associated with the choices between no college, 2-year colleges, and nonselective colleges. The only school predictors associated with these choices are school sector and location. Students attending Catholic schools are more likely to choose a nonselective college over no college, and students in rural and suburban schools are more likely to choose a 2-year college over a nonselective college (although the urban–rural difference is only marginally significant). Suburban students are also more likely to choose no college over a nonselective college. This suburban disadvantage goes

[9] Since many student- and school-level predictors are controlled for in Models 2E and 3, it is important to gauge the extent to which multicollinearity is a problem. When the same predictors are entered into a linear regression, variance inflation factors (VIFs) suggest that multicollinearity is not a problem. In model 2E, the highest VIF is 2.4, for other student SES, and for Model 3, the highest VIFs are 6 and 6.4, for the SAT dummy indicators. These VIFs are well below the threshold of ten proposed by Hocking (2003).

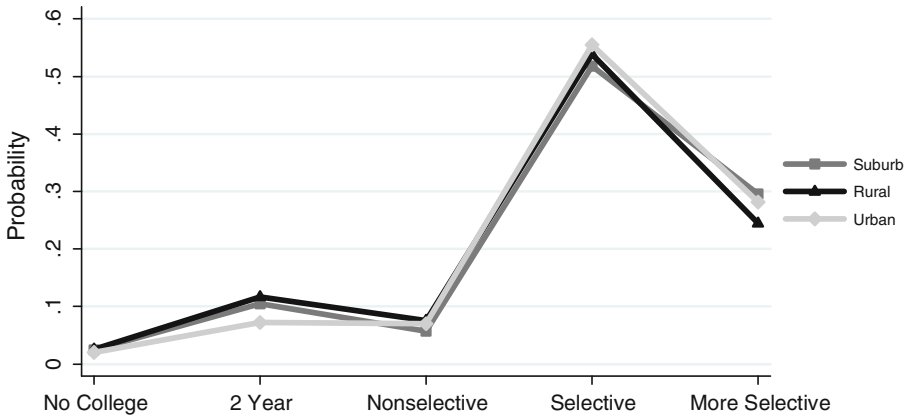

Fig. 5 Effect of school location on destinations for successful students

against expectations—since suburban areas tend to be more affluent (see Table 2)—but it is also quite negligible, as shown in Fig. 5.

Not only are the associations between school resources and nonselective choices more subdued than they are between school resources and selective choices, but high school resources do not mediate the effect of SES on nonselective choices as they do for selective ones. In Model 2E, where all of the significant school resources are controlled for, the effect of family SES on the nonselective choices is not significantly mediated by school resources, but it is for all of the selective choices. For the choices involving selective and more selective colleges, the effect of family SES is reduced by around 30 % from Model 1 to Model 2E.

Conclusion

The school context hypothesis suggests that high schools have little bearing on their graduates' college destinations. Recent research on the frog pond hypothesis implies that attending a high school with many resources could actually hurt students' chances of enrolling in selective colleges (to the extent those resources are associated with exclusionary practices of high schools). Both hypotheses would suggest that the fact that students from high-SES families attend high schools with more resources cannot help us understand why these students are more likely than low-SES students to enroll in selective colleges.

The evidence in this paper suggests otherwise. These arguments underestimated the potential of school resources—particularly programmatic ones—to increase the chances of enrolling in more selective colleges. Schools' AP subject curriculum substantially structures students' postsecondary choices. So do social resources (namely the SES of other students). Prior research showed these predictors modestly increase college selectivity (Alexander and Eckland 1977; Eide et al. 2004) for high school students in the mid-1950s and early 1980s. Using data on a cohort of high school students in the 2000s, after the

intensification of competition in admissions to selective colleges, I show they shape students' menu of postsecondary destinations.

Moreover, prior research (Espenshade et al. 2005) implies that attending high schools with other academically successful students hurts one's chances of admission to specific elite colleges, but it was not clear if such frog pond effects posed substantial barriers to enrolling in selective colleges in general. The results in this study show that they do not. To the extent that there is a frog pond effect in being able to enroll in more selective colleges, it is canceled out by other school resources (namely, having a large presence of high-SES peers).

I argued that high school resources can structure students' postsecondary destinations in several ways; one way was by facilitating their gaining marks of distinction. After controlling for students' own marks of distinction, we see that this does explain high school resources to some extent—the association between school AP courses and selective college choices appear to be entirely explained by students' marks of distinction, but the other school resources matter for other reasons. High schools serving affluent students, or private high schools may increase students' chances of enrolling in more selective colleges through increasing students' sense of their own worthiness of attending a selective college or spreading information about how to successfully apply to these colleges. In addition, such schools may have proactive guidance counselors who have connections with admissions officers at selective colleges; researchers show that such guidance counselors can influence admissions officers' decisions (Persell and Cookson 1985; Stevens 2007).[10]

Contrary to the implications of previous studies, the results here show that high school resources substantially mediate the effect of family SES on the choices between selective colleges and nonselective colleges, between more selective colleges and nonselective colleges, and between more selective colleges and selective colleges. School resources mediate to a lesser extent the effect of family background on choices involving nonselective options. These results suggest that high-SES families use schools with AP subjects, schools with affluent student bodies, and private schools to help their children gain admission to more selective colleges. Resourceful high schools are not necessary to help a high-SES child enroll in a nonselective 4-year college.

In short, this study demonstrates that the fragmented secondary school system in the United States is an avenue for affluent parents to seek relative advantages for their children in terms of reportable marks of distinction (namely AP course-taking and high SAT scores) and also in terms of social influences that lead to successful applications to selective colleges. Inequalities between schools substantially explain inequalities in college destinations based on family socioeconomic status. Affluent parents aim to get their children into selective colleges, and in order to do so their children need marks of distinction. That leads parents to use their resources to select high schools that provide opportunities to cultivate such distinctiveness. One can speculate if this dynamic will expand (or has already expanded) even further into lower levels of education.

While this study does not directly document parents' strategizing their school choices, the findings are in line with other accounts of affluent parents selecting their children's schools in order to provide them with educational advantages (Devine 2004; Holme 2002; Johnson 2006). Admittedly, the ability to choose schools is probably limited to affluent

[10] In analyses not presented here, the effects of the guidance-counselor-to-student ratio were estimated. This resource had no significant association with college destinations. It is entirely plausible that this non-effect owes more to the difficulty of measuring the quality of the services guidance counselors provide, as opposed to these services having no influence at all.

parents living in urban areas; parents of limited economic means are probably more constrained in their ability to choose schools.

One limitation of this study is that it assumes all variables influencing high school resources *and* postsecondary destinations are taken into account. It is possible that this assumption has not been met, and that the effects of high school resources are spurious. I attempted to meet this assumption by controlling for proxies of pre-high school predispositions (tested ability, pre-high school algebra placement, educational expectations). Nonetheless it is impossible to verify that all relevant predictors are observed with certainty. One possible solution is to conduct sensitivity tests gauging the strength of a hypothetical unobserved variable that, once controlled, would render the effects of an observed predictor insignificant, such as Frank's (2000) impact threshold for a confounding variable, which is only applicable to least squares regression, but no analogs have been devised for multinomial logistic regression.

On the other hand, it is important to note that my estimates of the effects of school resources are potentially conservative because not all relevant aspects of high schools are measured. Prior research emphasizes the motivation and willingness of high-SES families to obtain distinctions for their children (Lucas 2001), but an unstated corollary is that these social processes will complicate the measurement of marks of distinction and thus prevent a full accounting of how contexts structure opportunities for educational advancement. The problem is that the competitiveness of the application process compels students to earn unusual and exceptional marks of distinction; surveys such as the ones used in ELS will not be able to capture these kinds of distinctions when they ask students about their accomplishments. Consequently, researchers will inevitably underestimate the importance of unequal opportunities to earn marks of distinction in producing SES differentials in college destinations. Despite this problem, this study has documented how opportunities for marks of distinction vary from high school to high school, how these opportunities translate into unequal likelihoods of enrolling in selective colleges, and furthermore how these stratified opportunities perpetuate class differences in college choices.

The policy implications of this paper are not straight-forward. Policy-makers could implement various interventions to smooth out school inequalities in students' chances of enrolling in selective colleges, such as maintaining existing efforts to expand access to the AP curriculum (Klopfenstein and Thomas 2010). An alternative approach is suggested by evidence that affirmative action policies in college admissions decisions promotes applications from minority students (Brown and Hirschman 2006; Long 2004). An aggressive governmental effort to make selective colleges more affordable (either through grants to students or through reduced tuition at selective state colleges) may have the benefit of increasing student awareness of the feasibility of enrolling in selective colleges, which would go some way to counteract between-school inequalities in social resources.

These efforts would probably result in improving some adolescents' chances of enrolling in a selective college. On the other hand, it is possible that aggressive attempts to equalize *between*-school inequalities would be offset by affluent parents intensifying their struggles *within* schools to obtain special advantages for their children (Oakes et al. 1997; Wells and Serna 1996). In that case, perhaps the best way to deal with inequalities in opportunities to enroll in selective colleges would be best addressed by modifying those colleges' admissions decisions. The most direct way to circumvent affluent parents from hoarding educational opportunities would be for selective colleges to adopt explicit, transparent standards indicating a student will be successful at their institutions. The transparency of the standards would ideally reduce the self-selection that is responsible for inequalities in application behaviors. Moreover, these standards should be static over time.

When the number of applicants who meet the standards exceed the number of admissions slots available at a particular college, the admissions office would use a lottery system to make admissions decisions. This would, of course, be a radical departure for selective colleges, which tend to evaluate their applicants relative to each other in ways that are not easily quantifiable (Stevens 2007).

Since it is unlikely that selective colleges would adopt this policy, it is probable that access to opportunities promoting access to selective colleges will be stratified, both within- and between-schools. Identifying those disparities will be a continuing challenge for social scientists in the future.

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