

---

# Contextual Explanations of School Choice

**Douglas Lee Lauen**

*University of North Carolina at Chapel Hill*

Participation in school-choice programs has been increasing across the country since the early 1990s. While some have examined the role that families play in the school-choice process, research has largely ignored the role of social contexts in determining where a student attends school. This article improves on previous research by modeling the contextual effects of elementary schools and neighborhoods on high school enrollment outcomes using population-level geocoded administrative data on an entire cohort of eighth graders from one of the largest urban school districts in the United States. The results of hierarchical multinomial logistic models suggest that the contextual effects of percentage black, poverty, and neighborhood concentrated disadvantage reduce the likelihood of students attending private or elite public high schools. Students in schools with high average achievement are less likely to attend selective-enrollment magnet schools, perhaps because of a "frog pond" effect. Finally, the study found evidence of peer effects on attending non-neighborhood schools. Together, these findings suggest a new way of conceptualizing the causes of school choice at a time when such programs are becoming more prevalent.

---

**T**hroughout most of the 20th century in the United States, home address essentially determined where a child attended school. Beginning with school desegregation efforts in the 1960s, mandatory and voluntary school reassignment policies (e.g., busing and magnet schools) weakened the connection between residence and schooling. Today, increasingly large fractions of students are opting out of neighborhood schools for alternatives such as charter schools, distance learning, home schooling, and private schools funded by public vouchers, (Bielick & Chapman 2003).

The erosion of support for the neighborhood school model of student enrollment is a result of policies to promote racial integration and to encourage innovation in an educational system that has been subject to constant criticism and demands for reform (Berliner & Biddle 1997). In turn, the deregulation of schooling assignment policies means less pre-

dictability and more mobility for both families and organizations within a school system. The mobility of individuals can have consequences for organizations and relationships (Coleman 1988), schools (Hirschman 1970), and public finance (Peterson 1981; Tiebout 1956). Finally, it is also perhaps an indication that schools, like neighborhoods, are becoming communities of "limited liability" (Janowitz 1967) in which families engage with institutions and form relationships but are quick to exit if their needs are not met. The decline of the neighborhood school model suggests a new role for students in a school system—one in which students are treated less as subjects in a one-size-fits-all system and more as clients whose individual needs must be addressed by a wide variety of schooling options that maximize freedom of choice and multiple pathways to social mobility.

The increasing deregulation of the educational sector raises the question of how to

explain the causes of school selections. The answer to this question is critical in understanding the different ways in which school-choice policy may affect students in particular communities and the implications for between-school segregation and achievement variation. One approach to the school-selection question is to focus on the preferences and actions of families. It could be, for example, that in a struggle for status, parents and students compete for advantageous placements in an educational marketplace, a game in which those with higher status, higher income, better education, and more information would likely win.

Another approach to explaining school selections is to analyze how students' propensities to exit neighborhood schools vary in different contexts. It could be that students in particular types of neighborhoods or schools may be more likely to attend alternatives to their assigned neighborhood schools. It has been argued, for example, that students in disadvantaged neighborhoods would be likely to benefit from the expansion of school choice because such students would be given the opportunity to escape substandard schools (Friedman 1955).

The family plays an important role in providing resources to children within the household (Conley 2004) and managing children's educational careers (Furstenberg et al. 1999), but as children reach adolescence, schools, neighborhoods, and peers become increasingly salient. Schools, through various socialization and sorting mechanisms, shape the educational careers of students, providing them with course-taking and extracurricular opportunities, which, in turn, affect the students' ability to access high-status destinations (e.g., elite high schools, four-year colleges, and high-wage jobs). Neighborhoods also shape the educational careers of students through access to criminal subcultures, extrafamilial mentors and youth advocates, peer groups that have been educationally and occupationally successful, and geographic centrality that may permit feasible commutes to a wide range of schools.

Although there have been numerous studies of school and neighborhood effects on students' achievement and attainment

(Ainsworth, 2002; Bryk, Lee, and Holland 1993; Harding, 2003; Lee and Burkam 2003), little is known about how schools and neighborhoods shape the school-selection process. This article presents a study whose goal was to test the ability of contextual explanations to account for schooling enrollment outcomes. In other words, the study asked whether the same child from the same family would attain a different high school destination if her or his elementary school or neighborhood of residence were changed. Specifically, controlling for student and family covariates, it tested the adequacy of both elementary school and neighborhood contextual factors in explaining variation in the high school destinations of an entire cohort of eighth graders. The data for this analysis came from the 2000 census and population-level geocoded administrative data on schoolchildren from Chicago, a large city with a rapidly expanding menu of educational options, high residential segregation, and a predominately disadvantaged student population. The study improved on previous school-choice research by using population-level data in a multinomial multilevel model to increase the efficiency of variance estimates.

This article begins with a summary of previous research on school choice. It then turns to a discussion of the features of the social context that could be theoretically relevant to the study of school choice.

## **SCHOOL CHOICE AND CONTEXTUAL EFFECTS**

Evaluations of school-choice experiments have been numerous and hotly contested (Green, Peterson, and Du 1997; Howell and Peterson 2002; Krueger and Zhu 2004; Rouse 1998; Witte 2000). Studies on Chicago schools that have attempted to estimate the effect of attending a school of choice net of selection effects have presented mixed results. A study of three charter schools found some positive results in the early grades but not in the later grades (Hoxby 2005). Students who were lotteried into a Chicago

magnet high school or program were no more likely to graduate, have higher gains in test scores, or have higher credit-accumulation rates, but were less likely to be arrested and less likely to report disciplinary incidences (Cullen, Jacob, and Levitt 2003). With the exception of career academy students, those who participated in the city's extensive open enrollment program were no more likely to graduate from high school net of selection effects (see Cullen et al. 2005). Although these studies suggested that there may be some benefit from attending a school of choice in Chicago, research has suggested that there are racial, ethnic, and class disparities in the propensity to choose schools. A consistent finding from the choice-disparity literature is that the disadvantaged are less likely to exercise school choice. For example, one study found that low-income and minority parents are less aware of magnet programs (Henig 1995). Another found that among low-income parents, those with higher educational levels are more likely to exercise school choice for their children (Lee, Croninger, and Smith 1996). Still another study found that parents with higher socioeconomic status and white parents are more likely to exercise school choice (Teske and Schneider 2001).

One reason why disadvantaged families are less likely to exercise school choice is that minority and low-income parents may have limited access to useful information about schools through their social networks (Teske and Schneider 2001). More advantaged parents, on the other hand, generally have better knowledge that is relevant to choosing schools (Archbald 2000) and about objective measures of school quality (Schneider et al. 1998). Another reason why the disadvantaged may be less likely to attend non-neighborhood schools may be that middle-class white parents, by virtue of their cultural capital, face an advantage when negotiating educational bureaucracies and in relating to teachers (Lareau 1989).

This research suggests that the family plays a central role in negotiating the school-choice process. Because of the decentralized nature of the U.S. educational system, parents are free to shop for school districts through resi-

dential mobility and to advocate on behalf of their children for favorable course and school placements. Transition points, such as those between primary and secondary school, are critical junctures when choices and family interventions become particularly important (Baker and Stevenson 1986). As a result, the influence of particular family management strategies (Furstenberg et al. 1999) on the school-choice process is likely to be particularly salient during the transition from elementary to secondary school. Research has found, for example, that parents who exert a high degree of control over the management of their children's educational careers are more likely to be successful in placing their children in non-neighborhood schools and in keeping them in these schools once they are enrolled (Wells and Crain 1997).

While past research addressed the family as an important context from which to analyze school-choosing behavior, the role that neighborhood and school contexts play in shaping schooling enrollment outcomes has largely been unaddressed. This omission assumes that the school-choice process is purely a family affair—that factors, such as school staff, geographic location, school and neighborhood poverty and segregation, and transportation constraints, are inconsequential.<sup>1</sup> By controlling for the wide variance in the availability of public non-neighborhood choice options across rural, suburban, and urban school districts in a nationwide sample, Schneider, Schiller, and Coleman (1996) found that black and Hispanic students and those whose parents have lower educational levels have a higher propensity to attend public nonassigned schools. This finding suggests that taking into account the geographic variance in the opportunity to exercise school choice may overturn some widely held beliefs about the role that race, ethnicity, and parental education plays in the school-choice process.

Allocation theory provides an important lens through which to view the influence of schools and neighborhoods on the selection of high schools (Kerckhoff 1976). At the individual level, guidance counselors and teachers place students in course-taking levels on the basis of test scores, behavior, and grades.

Parental social status (Lareau 1989; Oakes 1985; Rosenbaum 1976) and older peers can influence the aspirations of adolescents (Shaw and McKay 1942). At the institutional level, scholars have analyzed institutional effects once the effects of individual characteristics have been taken into account (Dreeben 1994; Kerckhoff 1976). Here, it is important to distinguish between compositional and contextual effects. Compositional effects are differences between subgroups that are based on the characteristics of the individuals. Contextual effects are differences between subgroups that are attributable to emergent group-level properties (such as social interaction that reinforces norms of behavior), holding compositional differences between subgroups constant.

Schools and neighborhoods are two contexts that are especially relevant to the educational development of adolescents. While identifying school and neighborhood effects on outcomes for adolescents is methodologically challenging and a matter of extensive scholarly debate, because these contexts provide various levels of access to influential adults, peers, and structures of opportunity, one may expect that schools and neighborhoods should influence students' enrollment outcomes. The following section presents a theoretical account of how particular features of school and neighborhood contexts affect school choice.

## **RELEVANT FEATURES OF THE SOCIAL CONTEXT**

Previous research on school, peer, and neighborhood effects on student outcomes, such as academic achievement, teenage pregnancy, and academic attainment (Browning, Leventhal, and Brooks-Gunn 2005; Bryk and Thum 1989; Harding 2003; Lee and Bryk 1988), has suggested that social contexts matter for adolescents' development. Here, I highlight three features of the social context that are relevant to the study of school choice: social and economic disadvantage, academic press, and peer effects.

### ***Social and Economic Disadvantage***

Decades of sociological research on social and economic isolation have shown that segregation is associated with higher rates of crime, unemployment, and teenage childbearing and lower academic attainment (Bursik 1988; Elliott et al. 1996; Harding 2003; Shaw and McKay 1942). The associations between concentrated disadvantage and such social problems have been attributed to social disorganization (Bursik 1988; Shaw and McKay 1942), industrial restructuring (Wilson 1987), and the lack of interracial contact (Massey and Denton 1993). In Wilson's (1987) account, concentrated disadvantage creates the conditions in which inner-city residents become disconnected from access to useful information about jobs, hiring requirements, and the relevance of education to chances for mobility. Moreover, schools, as social institutions that are sustained by middle-class culture, deteriorate as the class structure of the neighborhood changes.

By this account, I can posit that concentrated disadvantage would be negatively associated with the propensity to exercise school choice: In socially isolated neighborhoods, students would lack the social resources to seek, apply for, and travel to schools of choice owing to the tenuous connection between schooling and social mobility in such neighborhoods. Because schools in disadvantaged neighborhoods are likely to be perceived as being of low quality, however, students in disadvantaged neighborhoods would perhaps have a greater incentive to exercise choice than would students in more affluent neighborhoods. In fact, a central thesis of the school-choice literature is that students in disadvantaged communities may access educational opportunity by choosing to attend schools in more affluent communities (Friedman 1955). This thesis suggests that concentrated disadvantage would be positively associated with the propensity to exercise school choice.

### ***Academic Press***

Educational research has stressed the association between "academic press" and student

outcomes, such as the achievement of test scores and graduation from high school. Research on Catholic schools, for example, has called attention to how a constrained academic curriculum and the normative dimensions of schooling affect students' motivations to learn (Bryk et al. 1993; Lee and Bryk 1988; Lee et al. 1998). In schools with a strong academic press, teachers and administrators set high expectations, eliminate low-level courses, and restrict students' curricular choice. Students in schools with greater access to more rigorous curricula are likely to be better prepared for more selective high school placements. Moreover, students from competitive schools could translate into not only higher achievement for a particular student, but a higher likelihood of exercising school choice. For example, high-achieving peers could push students to take algebra in the eighth grade or to apply to "reach" high schools.

Increasing academic press could, however, have the unintended consequence of reducing some students' chances of attending high schools of their choice. It is possible that the scramble for advantageous high school placements could be subject to the same "frog pond" effects (Davis 1966) that are present in the graduate school and college admissions process. Research has found that students in elite public high schools are at a disadvantage because of the emphasis placed on class rank in the admissions process (Attewell 2001). In elementary schools with a surplus of qualified candidates for elite high schools, therefore, teachers and guidance counselors may neglect students who would be academic stars in other schools. Moreover, students in elite elementary schools may suffer blows to their self-esteem that they would not experience in less elite settings. In sum, research suggests that not only a student's academic potential, but her or his position in a pecking order, is predictive of academic success.

### **Peer Effects**

Economic theory would predict that families make schooling decisions for their children on the basis of a rational assessment of the costs and benefits of the various options that are

open to them. A shortcoming of the standard economic approach to decision making is that it ignores the endogeneity of preferences—that students' preferences are socially constructed through interaction with peers and other significant persons. A key finding of the Coleman report (Coleman et al. 1966) was that students' achievement is strongly related to the educational backgrounds and aspirations of other students. Status attainment research has demonstrated the important role that peers' aspirations play in shaping students' aspirations (Hout and Morgan 1975; Sewell, Haller, and Portes 1969). An emerging field of economic theory addresses how social influence shapes decision making (Brock and Durlauf 2001; Manski 1993b). A finding from this field suggests that adolescent econometricians make schooling decisions on the basis of the experience of their predecessors (Manski 1993a). Therefore, one may view the school-choice aspirations and mobility histories of students as a form of social capital (Coleman 1988) that students may use when they make their own school-enrollment decisions.

In summary, research has shown that certain features of the social context are relevant to educational aspirations and outcomes. Social and economic disadvantage, academic press, and peer effects are all hypothesized to affect students' school-choice enrollment outcomes. Therefore, the analysis presented here estimates the size and direction of these contextual effects net of student-level covariates.

## **DATA AND METHODS**

Data for this study came from geocoded population-level confidential administrative data on children in the Chicago Public Schools. This article focuses on a cohort of students who were eighth graders in the spring of 2000 and who, according to administrative records, were enrolled in a Chicago public or private<sup>2</sup> high school in spring 2001. Virtually all students in the eighth grade in 2000 were enrolled in an elementary school (elementary education in Chicago is predominately from kindergarten to Grade 8; there were only 15 middle schools at the time of the study).

Because the purpose is to predict high school choices in Chicago, the study omitted students whose choice of high school was constrained or predetermined (e.g., students who were retained in grade for low academic performance). Student-level data about this cohort were matched through administrative records with the characteristics of each student's elementary school, neighborhood high school, and the high school that the student actually attended. In addition, students' records were linked to 2000 census data through the census tract in which the students resided. After sample-selection rules were applied, the data that were available for analysis represented 60 percent of the eighth graders in the Chicago Public Schools, living in 84 percent of the census tracts, and attending 91 percent of the public elementary schools in Chicago during spring 2000.<sup>3</sup>

### **Dependent Variable**

To test whether contextual factors predict enrollment in different types of destinations, I divided high school choices into four mutually exclusive categories: private school,<sup>4</sup> public selective-enrollment high school, non-neighborhood high school,<sup>5</sup> and neighborhood high school.<sup>6</sup> The descriptive results indicate that 6 percent of this cohort attended private Chicago high schools, 10 percent attended public selective high schools, 43 percent attended non-neighborhood schools, and 41 percent attended their assigned neighborhood high schools. Because students are sometimes chosen by high schools on the basis of individual characteristics (e.g., test scores and race-ethnicity) and their families' willingness and ability to pay, I included these individual-level controls to avoid biasing the contextual effects. I discuss the rationale for including these controls and describe the school and neighborhood contextual effects in the next section. Descriptive statistics for all the variables are presented in Table 1.

### **Independent Variables**

#### **Student and Family Characteristics**

Because previous research (Reay and Ball 1997; Saporito and Lareau 1999) indicated

that participation in school choice varies by race, ethnicity, and class, I included a vector of indicators for whether a student was white, black, Latino, or Asian and whether the student's family income was low enough to qualify him or her for a free or reduced-price lunch. These characteristics can play several different roles in the choice process. Some schools and programs market themselves to parents of "at-risk" youths (black or Latino youths, for example), and magnet schools must achieve court-ordered racial balancing imperatives.<sup>7</sup> Students who receive a free or reduced-price lunch may have a more difficult time accessing private schools, for example, because of the lack of parental resources. In addition to these factors, research has shown that regardless of social background, parental motivation is particularly salient in predicting participation in school choice (Wells and Crain 1997). Therefore, to proxy for prior parental motivation to manage the child's educational career, I controlled for whether a student opted into his or her elementary school. Finally, I controlled for the number of schools a student had attended in the previous five years to capture the extent of social and economic disruption in a student's family.

Since students with particular learning or emotional disabilities are less likely to participate in school-choice programs or may be more likely to choose one school over another, depending on the types of services that are provided, I controlled for whether a student received special educational services. I also controlled for students' academic confidence and achievement through two measures: (1) whether the student was aged 14 or older in the eighth grade (a measure of whether the student had been held back or started school late) and (2) the student's score on the eighth-grade mathematics test.<sup>8</sup> Being old for one's grade is likely to inhibit social adjustment and self-confidence, which may reduce the chances of participating in school choice. High test scores, on the other hand, can be viewed as an indication of academic motivation, which may enhance students' and parents' willingness to take academic and social risks. In addition, test scores are highly predictive of attending selective-enrollment schools because such schools choose students largely on the basis of such

Table 1. Descriptive Statistics of the Variables Used in the Analysis

Name of Variable	Description	Number	Mean	SD	Minimum	Maximum
<i>Students' Characteristics</i>						
High school type	High school destination (4 category variable)	18,477	2.20	0.84	0.00	3.00
Black	Black student	18,477	0.52	0.50	0.00	1.00
White	White student	18,477	0.11	0.32	0.00	1.00
Hispanic	Hispanic student	18,477	0.33	0.47	0.00	1.00
Asian	Asian student	18,477	0.04	0.19	0.00	1.00
Male	Male student	18,477	0.49	0.50	0.00	1.00
Poverty	Student receives free/reduced-price lunch	18,477	0.83	0.37	0.00	1.00
Special education	Student receives special education services	18,477	0.17	0.37	0.00	1.00
Old for grade	Old for eighth grade	18,477	0.17	0.38	0.00	1.00
Math achievement	Eighth-grade ITBS math score (grade-level equivalent scale)	18,477	8.36	1.54	0.80	12.70
Elementary chooser	Student opted into his or her elementary school	18,477	0.35	0.48	0.00	1.00
Number of school moves	Number of schools attended in the past three years	18,477	0.35	0.62	0.00	4.00
<i>Neighborhood High School Characteristics</i>						
% poor	% low income of neighborhood high school	18,477	0.87	0.11	0.45	0.98
Size	Size of neighborhood high school (in thousands)	18,477	1.48	0.53	0.30	3.01
% at norms	% of neighborhood high school students at the national norms in test-score achievement	18,477	0.28	0.12	0.13	0.67
<i>Elementary School Characteristics</i>						
Elementary magnet	Elementary school is a magnet	399	0.08	0.26	0.00	1.00
% high school choice	% non-neighborhood public high school (average of previous three cohorts)	399	0.66	0.18	0.20	1.00
% elementary choosers	% of enrollment who opted into elementary school	399	0.39	0.32	0.00	1.00
% mobility	Elementary school's mobility rate	399	0.25	0.12	0.01	0.79
Average math achievement	Average eighth-grade ITBS math achievement	399	8.32	0.73	3.52	11.24
% poor	% receiving free/reduced-price lunch	399	0.84	0.20	0.07	1.00
% black	% black students	399	0.59	0.42	0.00	1.00

Table 1. Continued

Name of Variable	Description	Number	Mean	SD	Minimum	Maximum
<i>Census Tract Characteristics</i>						
% private enrollment	% of students attending private elementary or high school	697	0.17	0.16	0.00	0.90
% high school choice	% non-neighborhood public high school (average of previous three cohorts)	697	0.65	0.19	0.00	1.00
% elementary choosers	% of public school students in tract attending a non-neighborhood public elementary school	697	0.38	0.22	0.00	1.00
Tenure	Measure of home ownership and residential stability	697	-0.09	1.04	-2.83	2.39
Concentrated disadvantage	Measure of concentrated disadvantage	697	-0.06	1.06	-1.37	3.23
Concentrated affluence	Measure of concentrated affluence	697	0.28	1.33	-1.66	5.26
Average math achievement	Average math achievement of public school students	697	8.44	0.64	6.37	10.76
% black	% black residents	697	0.50	0.44	0.00	1.00

scores. Finally, I controlled for gender because studies have shown that adolescent boys, particularly those from minority groups, lag behind adolescent girls on some measures of academic achievement and attainment (Leventhal and Brooks-Gunn 2004).

### **Quality of the Neighborhood High School**

Because the quality of the assigned neighborhood school (the “default” choice) is likely to be related to a student’s propensity to attend a non-neighborhood school, I controlled for the percentage of students at national norms, the percentage of students who received free or reduced-price lunches, and the size of the student’s assigned neighborhood high school (the number of students enrolled in Grades 9–12).<sup>9</sup>

### **Elementary School Characteristics**

To measure the contextual effects of elementary school on the probability of attending a non-neighborhood high school, I entered a vector of elementary school characteristics as predictors to capture salient features of a student’s “sending school” experience. The percentage of students receiving free or reduced-price lunches was used as a predictor of the socioeconomic context. Also included was a measure of the mobility of the school’s student population (the number of enrollments in and transfers out of a school after October 1, 2000, divided by membership on October 1, 2000). The average mathematics test score was used as a proxy for school academic press. The analyses included an indicator variable for whether the student attended a magnet school in the eighth grade, which may be considered another measure of elementary school academic press because these types of schools are academically selective. Finally, two variables were introduced to capture the extent to which attendance at a non-neighborhood school is or is not a normative activity: (1) a measure of high school choice in the “sending” elementary school among previous cohorts of graduates (the average percentage of students who attended a nonassigned public high school from the previous three cohorts (1997–98, 1998–99, and 1999–2000) and (2) the percentage of students who opted into the elementary school as elementary school choosers in the first place.

### **Neighborhood Characteristics**

To test whether the neighborhood context predicts the probability of attending a non-neighborhood school, I introduced tract-level predictors to measure the level of (dis)advantage of a neighborhood; residential mobility; and whether attending non-neighborhood schools, both public and private, is socially normative. Specifically, the analyses included measures of concentrated disadvantage (Wilson 1987) and concentrated affluence (Brooks-Gunn et al. 1993) to capture the social and economic environment of neighborhoods. Both measures were constructed from data from the 2000 census. Concentrated disadvantage is the average of the z-scores of the percentage below poverty, percentage receiving public assistance, percentage unemployed, percentage of female-headed households with children, and percentage black. Concentrated affluence is the average of the z-scores of the percentage of families with incomes higher than \$75,000, the percentage of adults with a four-year college degree, and the percentage of the civilian labor force who were employed in professional or managerial occupations. Also on the basis of census data, the analysis included a measure of residential mobility and housing tenure. This measure is the average of the z-scores of the percentage of residents aged 5 or older who resided in the same house in 1995 and the percentage of owner-occupied homes.<sup>10</sup>

The analysis used two measures to indicate whether attendance at non-neighborhood schools is socially normative. The first measure, from the 2000 census, is the percentage of elementary- and high school-aged children who attended a private school. The second measure, from the Chicago Public Schools administrative files, is the average percentage of students who resided in the census tract from the previous three cohorts who attended nonassigned public high schools.

### **Analytical Strategy**

The study used a multilevel modeling approach to estimate contextual effects (Goldstein 2003; Raudenbush and Bryk 2002). Although it is possible to estimate

unbiased and efficient estimates of coefficients using ordinary least-squares (OLS) regression, standard errors of estimates are typically too conservative because the dependence of grouped observations is ignored. Better estimates of standard errors are produced by an OLS between-groups regression analysis, but since the designs depart from a perfect balance, estimates of fixed effects become less and less efficient relative to those in multilevel models. In addition, multilevel methods provide superior estimates of variance relative to OLS regression (Raudenbush and Bryk 2002).

To estimate the relationship between contextual factors and schooling-enrollment decisions, I controlled for student-level factors, such as test-score achievement, parental motivation, and income, to reduce the bias in organizational-level effects that would occur if such factors were uncontrolled. Random intercept models were estimated to examine the reduction in between-context (i.e., school or neighborhood) variance,  $\tau_{00}$ , that is attributable to compositional and contextual factors. Because of the complexity of this analysis and computational limitations, all slope effects are fixed (i.e., they are not allowed to vary).

To facilitate comparison and statistical testing of the likelihoods of attending one type of school over another, I used multinomial regression analysis with a logit link.<sup>11</sup> For each alternative category  $m = 1, 2, 3$ , of the dependent variable, I model

$$\eta_{mij} = \log\left(\frac{\varphi_{mij}}{\varphi_{mij}}\right) = \log\left(\frac{\text{Prob}(R_{ij} = m)}{\text{Prob}(R_{ij} = 4)}\right)$$

or the log-odds of falling into one of  $m$  categories relative to the base category  $M$ . The analysis modeled the log-odds of attending one of three alternatives—(1) a private high school, (2) a selective-enrollment public high school, and (3) a non-neighborhood public high school—to the assigned neighborhood school, which is coded 4, or the base category:

$$\begin{aligned} \text{Prob}(R_{ij} = 1) &= \varphi_{1ij} = \text{private high school} \\ \text{Prob}(R_{ij} = 2) &= \varphi_{2ij} = \text{selective enrollment} \\ &\quad \text{public high school} \end{aligned}$$

$$\begin{aligned} \text{Prob}(R_{ij} = 3) &= \varphi_{3ij} = \text{non-neighborhood} \\ &\quad \text{public high school} \\ \text{Prob}(R_{ij} = 4) &= \varphi_{4ij} = \text{assigned public} \\ &\quad \text{neighborhood high} \\ &\quad \text{school} \end{aligned}$$

The analysis estimated two models. First, there is a model of students nested within elementary schools:

$$\begin{aligned} \eta_{mij} = \beta_{0j(m)} &+ \sum_{a=0}^{A_m} \beta_{aj(m)}(X_{aj} - \bar{X}_{..}) \\ &+ \sum_{b=0}^{B_m} \alpha_{bj(m)}(X_{bj} - \bar{X}_{..}) \\ &+ \sum_{c=0}^{C_m} \gamma_{cj(m)}(W_{cij} - \bar{W}_{c.}) \\ &+ u_{0j(m)} \end{aligned}$$

where  $\beta_{aj(m)}$  are the coefficients of students' characteristics;  $\alpha_{bj(m)}$  are the coefficients of neighborhood high school characteristics;<sup>12</sup>  $\gamma_{cj(m)}$  are the coefficients of elementary school characteristics;  $u_{0j(m)}$  are school-specific random effects; and  $m$  indexes categories of the dependent variable,  $i$  indexes students,  $j$  indexes schools, and individual and school-level variables are centered on their grand means.

Second, there is a model of students nested within neighborhoods:

$$\begin{aligned} \eta_{mik} = \beta_{0k(m)} &+ \sum_{a=0}^{A_m} \beta_{ak(m)}(X_{aik} - \bar{X}_{..}) \\ &+ \sum_{b=0}^{B_m} \alpha_{bk(m)}(X_{bik} - \bar{X}_{..}) \\ &+ \sum_{c=0}^{C_m} \gamma_{ck(m)}(W_{cik} - \bar{W}_{c.}) \\ &+ u_{0k(m)} \end{aligned}$$

where  $\beta_{ak(m)}$  are the coefficients of students' characteristics;  $\alpha_{bk(m)}$  are the coefficients of neighborhood high school characteristics;  $\delta_{dk(m)}$  are the coefficients of neighborhood characteristics;  $u_{0k(m)}$  are neighborhood-specific random effects; and  $m$  indexes categories of the dependent variable,  $i$  indexes students,  $k$  indexes neighborhood, and individual and neighborhood-level variables are centered on their grand means.

In both the school and neighborhood models, random effects are assumed to be normally distributed with means of zero and the following variance/covariance structure:

$$\begin{pmatrix} u_{oj(1)} \\ u_{oj(2)} \\ u_{oj(3)} \end{pmatrix} \sim N \left[ \begin{pmatrix} 0 \\ 0 \\ 0 \end{pmatrix}, \begin{pmatrix} \tau_{00(1)00(1)} & \tau_{00(1)00(2)} & \tau_{00(1)00(3)} \\ \tau_{00(2)00(1)} & \tau_{00(2)00(2)} & \tau_{00(2)00(3)} \\ \tau_{00(3)00(1)} & \tau_{00(3)00(2)} & \tau_{00(3)00(3)} \end{pmatrix} \right]$$

Centering variables on their grand means results in an average effect across contexts that adjusts for compositional differences between schools and neighborhoods. Grand-mean centering also allows one to compare the within-group student effect  $\beta_{\text{within}}$  with the group-level contextual effect  $\beta_{\text{context}}$  (Raudenbush and Bryk 2002).

## RESULTS

By grand-mean centering both the student- and contextual-level predictors, I estimate the adjusted log-odds of attending one of the three destinations relative to a neighborhood school for the average student in the average school. Table 1, which presents descriptive statistics of the variables in the analysis, shows that 18,477 students nested within 399 schools and 697 census tracts are available for this analysis.

### Modeling Variance in High School Destination

A fully unconditional model with no predictors indicates that there is a great deal of between-school and between-neighborhood variance in high school destinations to explain. All the variance components ( $\tau_{00}$ ) are close to or above 1, indicating that about four logits separate 95 percent of schools or neighborhoods. The variance components in the elementary model for private, selective-enrollment, and non-neighborhood schools, respectively, are 1.74, 1.78, and 1.05. The same components from the neighborhood model are, respectively, 1.11, .92, and 1.13.

Although these variance components appear to be large, it is useful to decompose total variance into its between and within portions. The fact that high school choice is a

categorical dependent variable, however, complicates the interpretation. I cannot decompose the within and between variance of a categorical variable, but I can instead estimate an uncertainty index  $H = \sum_i p_i \log \frac{1}{p_i}$

(Shannon 1948) and decompose this measure to a between and within component (Teachman 1980).

Assuming that population events can be grouped on two dimensions,  $X$  with  $I$  categories and  $Y$  with  $J$  categories, and probabilities  $p_{ij}$ ,  $i = 1 \dots I$  and  $j = 1 \dots J$ , subject to the constraint that  $\sum_i \sum_j p_{ij} = 1$ , I can define the within and between sums of squares:

$$H_{wss} = \sum_i \sum_j p_{ij} \log \left( \frac{p_{ij}}{p_{i.}} \right)$$

$$H_{BSS} = H_{TSS} - H_{wss} = \sum_i \sum_j p_{ij} \log \left( \frac{p_{ij}}{p_{i.} p_{.j}} \right)$$

And the proportion of uncertainty that lies between groups:

$$PRU_{x,y} = \frac{H_{BSS}}{H_{TSS}}$$

Using these formulas, I estimate that 20 percent of the uncertainty in high school enrollment outcomes lies between elementary schools. The proportion of uncertainty ( $PRU_{x,y}$ ) that lies between neighborhoods is also 20 percent. Because a significant proportion of uncertainty in enrollment outcomes lies between school and neighborhood contexts and there is a wide range of outcomes across schools and neighborhoods, it appears that modeling context effects will be fruitful.

If elementary and neighborhood context are unrelated to high school destinations, the inclusion of contextual-level factors would fail to reduce between-school and between-neighborhood variance over and above that accounted for by student-level predictors. Controlling for student-level characteristics, such as race/ethnicity, gender, and test-score achievement, accounts for between one-tenth and one-half the between-school and between-neighborhood variance in high school destinations (see Tables 2 and 3). Including predictors of elementary school and neighborhood context further reduces

between-context variance by an additional 17 to 38 percentage points, however, evidence that schooling decisions are driven by more than just student-level factors. Given that school and neighborhood contexts reduce variance in high school destinations, these contexts matter. I now turn to which features of schools and neighborhoods are the most relevant in explaining where a student attends high school.

### ***Disadvantaged Contexts Depress the Propensity for Choice***

Net of compositional factors, the contextual effects of percentage black, poverty, and affluence are associated with at least one enrollment outcome.<sup>13</sup> For example, schools with higher percentages of blacks are less likely to send students to selective-enrollment high schools, net of school composition and student-level covariates (see Table 2). A 10-percentage-point increase in the percentage black in an elementary school reduces the odds of attending a selective-enrollment school by 11 percent (see Table 4, column 3). The corresponding figure in the neighborhood selective equation is 8 percent (see Table 4, column 4).

Like the effect of percentage black, the effects of poverty and mobility both inhibit the likelihood that a student will attend a private or selective-enrollment high school. A 10-percentage-point increase in the poverty level of an elementary school reduces the odds of attending either a private or a selective-enrollment school by about 10 percent (see Table 4, columns 1 and 3). A one-unit increase in concentrated disadvantage (which is a little less than 1 standard deviation) reduces the likelihood of attending either a private or a selective-enrollment high school by about one-quarter and one-third, respectively (see Table 4, columns 2 and 4).

Relative to students of other racial ethnic backgrounds, white students are the most likely to attend private schools. Hispanics and Asians have roughly equal chances of attending private schools, whereas blacks have the lowest predicted probabilities relative to the other racial/ethnic groups. The predicted probabilities of attending a private school in a

more advantaged neighborhood (-1 standard deviation in concentrated disadvantage) for white, Hispanic, Asian, and black students, respectively, are 28 percent, 15 percent, 14 percent, and 9.5 percent. In less advantaged neighborhoods (+1 standard deviation in concentrated disadvantage), the predicted probabilities of attending a private school for white, Hispanic, Asian, and black students, respectively, are 18 percent, 9 percent, 9 percent, and 6 percent.

### ***High-Achieving Schools and Neighborhoods Depress Choice***

Whereas students' math achievement exerts a positive effect on the propensity for choice, average elementary school and average neighborhood math achievement are negatively associated with it. Specifically, after students' background characteristics and the quality of the assigned neighborhood high school are controlled, the average student in a school with a one-unit higher average math achievement (a one grade-equivalent increase), faces 36 percent lower odds of attending a selective high school. The average student in a neighborhood with one-unit higher average math scores has 28 percent lower odds of attending a selective high school.

One explanation for the negative contextual effect of achievement on transition probabilities is the frog-pond effect (Davis 1966), in which it is better to be a big frog in a small pond than a small frog in a big pond. For example, a student whose math score is at the ninth-grade level who attends an elementary school in which the average math score is at the seventh-grade level (i.e., a big fish in a small pond) has about a 25-percent chance of attending a selective-enrollment school. A student whose math score is at the seventh-grade level and who attends an elementary school in which the average math score is at the ninth-grade level (i.e., a small fish in a big pond) has only a 1-percent chance of attending a selective-enrollment school.

Despite this paradoxical achievement effect, students in elementary magnet schools enjoy a selective school advantage net of school and student achievement. That students in elementary magnet schools have 79

Table 2. Multinomial Logit Models Predicting Attendance at Non-Neighborhood High Schools, Students Nested Within Elementary Schools (robust standard errors in parentheses)

	Private versus Neighborhood School		Selective Public versus Neighborhood School		Non-Neighborhood Public versus Neighborhood School	
	1	2	3	4	5	6
<i>Fixed Effects</i>						
Intercept	-2.27** (0.068)	-2.34** (0.070)	-2.45** (0.090)	-2.50** (0.088)	0.09 0.046	0.12** (0.038)
<i>Elementary School Characteristics</i>						
Average math achievement		0.08 (0.142)		-0.45** (0.157)		-0.12 (0.074)
% poor		-1.05* (0.456)		-1.21* (0.476)		0.42 (0.305)
% high school choice		2.01** (0.431)		2.22** (0.444)		3.31** (0.279)
% elementary choosers		-0.08 (0.307)		0.40 (0.288)		-0.47** (0.150)
% black		-0.53 (0.288)		-1.22** (0.232)		-0.02 (0.160)
% mobility		-1.49 (0.794)		-1.17 (0.661)		-0.36 (0.350)
Elementary magnet		0.38 (0.276)		0.58* (0.283)		0.16 (0.160)
<i>Students' Characteristics</i>						
White	1.52** (0.153)	1.25** (0.191)	0.46** (0.154)	0.18 (0.163)	0.06 (0.114)	0.11 (0.120)
Hispanic	0.64** (0.151)	0.46* (0.191)	0.11 (0.119)	-0.13 (0.134)	-0.50** (0.088)	-0.39** (0.098)
Asian	0.62** (0.228)	0.36 (0.256)	0.47* (0.199)	0.21 (0.199)	0.16 (0.149)	0.22 (0.150)
Male	-0.01 (0.084)	-0.01 (0.084)	-0.34** (0.065)	-0.34** (0.066)	-0.22** (0.038)	-0.22** (0.038)
Poverty	-1.12** (0.101)	-0.96** (0.105)	-0.68** (0.094)	-0.57** (0.097)	-0.16** (0.062)	-0.16* (0.062)
Special education	0.25* (0.127)	0.17 (0.126)	-0.25 (0.179)	-0.29 (0.180)	0.16* (0.065)	0.15* (0.065)

Table 2. Continued

	Private versus Neighborhood School		Selective Public versus Neighborhood School		Non-Neighborhood Public versus Neighborhood School	
	1	2	3	4	5	6
Old for grade	-0.57** (0.119)	-0.55** (0.118)	-1.00** (0.144)	-0.99** (0.144)	-0.36** (0.053)	-0.36** (0.053)
Math achievement	0.36** (0.036)	0.32** (0.037)	1.28** (0.044)	1.28** (0.045)	0.33** (0.020)	0.33** (0.021)
Elementary chooser	0.57** (0.107)	0.37** (0.129)	0.47** (0.092)	0.29** (0.104)	0.63** (0.066)	0.63** (0.071)
Number of school moves	-0.19** (0.074)	-0.17* (0.073)	-0.25** (0.070)	-0.25** (0.070)	-0.12** (0.033)	-0.12** (0.033)
<i>Neighborhood High School Characteristics</i>						
% poor	-1.32* (0.607)	-0.92 (0.595)	-0.18 (0.652)	-0.15 (0.697)	0.03 (0.541)	0.04 (0.510)
Size	-0.20 (0.120)	-0.19 (0.120)	-0.21 (0.112)	-0.27** (0.111)	-0.52** (0.123)	-0.44** (0.118)
% at norms	-1.95** (0.601)	-2.05** (0.604)	-3.09** (0.713)	-2.95** (0.689)	-4.58** (0.638)	-3.86** (0.587)
<i>Variance Components</i>						
$\tau_{00}$	0.836**	0.546**	1.209**	0.858**	0.589**	0.310**
% change in $\tau_{00}$	51.88	68.60	32.05	51.80	43.81	70.43

\* $p < .05$ , \*\* $p < .01$  (two-tailed tests).

Table 3. Multinomial Logit Models Predicting Attendance of Non-Neighborhood High Schools, Students Nested Within Census Tracts (robust standard errors in parentheses below estimates)

	Private versus Neighborhood School		Selective Public versus Neighborhood School		Non-Neighborhood Public versus Neighborhood School	
	1	2	3	4	5	6
<i>Fixed effects</i>						
Intercept	-2.22** (0.057)	-2.18** (0.055)	-2.34** (0.070)	-2.31** (0.070)	0.09* (0.038)	0.07* (0.031)
<i>Census Tract Characteristics</i>						
% high school choice		2.62** (0.316)		3.02** (0.295)		3.84** (0.227)
Concentrated disadvantage		-0.27* (0.113)		-0.43** (0.102)		-0.09 (0.061)
Concentrated affluence		0.13* (0.056)		0.29** (0.054)		0.00 (0.042)
Tenure		0.03 (0.052)		-0.18** (0.047)		0.03 (0.031)
Average math achievement		-0.17 (0.113)		-0.33** (0.103)		-0.12 (0.071)
% private enrollment		0.12 (0.446)		-1.44** (0.500)		-1.58** (0.357)
<i>Students' Characteristics</i>						
White	1.61** (0.141)	1.29** (0.178)	0.62** (0.140)	0.35* (0.156)	0.06 (0.102)	0.07 (0.115)
Hispanic	0.70** (0.136)	0.54** (0.174)	0.17 (0.112)	-0.04 (0.132)	-0.50** (0.088)	-0.39** (0.100)
Asian	0.75** (0.237)	0.45 (0.264)	0.79** (0.167)	0.45* (0.177)	0.22 (0.141)	0.21 (0.145)
Male	-0.01 (0.073)	-0.01 (0.073)	-0.31** (0.061)	-0.32** (0.061)	-0.21** (0.038)	-0.22** (0.038)
Poverty	-1.22** (0.093)	-1.12** (0.095)	-0.85** (0.081)	-0.78** (0.082)	-0.19** (0.062)	-0.17** (0.062)
Special education	0.33** (0.111)	0.31** (0.112)	-0.22 (0.159)	-0.23 (0.161)	0.16* (0.060)	0.16* (0.060)

Table 3. Continued

	Private versus Neighborhood School		Selective Public versus Neighborhood School		Non-Neighborhood Public versus Neighborhood School	
	1	2	3	4	5	6
Old for grade	-0.59** (0.110)	-0.59** (0.110)	-1.05** (0.132)	-1.04** (0.131)	-0.35** (0.047)	-0.35** (0.047)
Math achievement	0.39** (0.035)	0.38** (0.036)	1.25** (0.039)	1.26** (0.040)	0.33** (0.018)	0.33** (0.018)
Elementary chooser	0.79** (0.080)	0.82** (0.081)	0.80** (0.070)	0.78** (0.069)	0.67** (0.047)	0.67** (0.047)
Number of school moves	-0.24** (0.068)	-0.25** (0.069)	-0.24** (0.061)	-0.26** (0.062)	-0.12** (0.031)	-0.12** (0.032)
<i>Neighborhood High School Characteristics</i>						
% poor	-2.08** (0.548)	-1.29* (0.509)	-0.87 (0.619)	-0.74 (0.560)	-0.08 (0.578)	0.00 (0.411)
Size	-0.36** (0.126)	-0.22 (0.128)	-0.11 (0.118)	0.02 (0.100)	-0.68** (0.144)	-0.38** (0.109)
% at norms	-1.08 (0.598)	-0.60 (0.602)	-2.83** (0.799)	-2.27** (0.787)	-4.11** (0.858)	-1.95** (0.733)
<i>Variance Components</i>						
$\tau_{00}$	1.113**	0.327**	0.808**	0.462**	0.604**	0.273**
% chg in $\tau_{00}$	52.69	70.61	12.37	49.91	46.55	75.90

\* $p < .05$ , \*\* $p < .01$  (two-tailed tests).

Table 4. Odds Ratios of Statistically Significant School and Neighborhood Contextual Effects<sup>a</sup>

Variable	Private versus Neighborhood School		Selective Public versus Neighborhood School		Non-Neighborhood Public versus Neighborhood School	
	1	2	3	4	5	6
<i>Sociodemographic</i>						
% Black <sup>b, c</sup>			0.89	0.92		
Poverty <sup>b</sup> /disadvantage <sup>d</sup>	0.90	0.76	0.89	0.65		
Affluence <sup>d</sup>	NT	1.14	NT	1.34	NT	
<i>Academic Climate</i>						
Average math achievement <sup>d</sup>		NT	0.64	0.72		
Magnet school <sup>d</sup>			1.79	NT		NT
<i>Neighborhood High School Quality</i>						
% low income <sup>b</sup>		0.88				
% at national norms <sup>b</sup>			0.74	0.80	0.68	0.82
<i>Enrollment Flows</i>						
% public high school choice <sup>b</sup>	1.22	1.30	1.25	1.35	1.39	1.47
% elementary choosers <sup>b</sup>					0.95	
% private school choice <sup>b</sup>	NT		NT	0.87	NT	0.85

<sup>a</sup>Values reported in cells are changes in the odds ratios for an increase in an independent variable reported only for coefficients with a p-value <0.05. NT denotes that a relationship was not tested. All the results were computed from coefficients in the relevant intercept as the outcome model (i.e., with both student controls and contextual effects).

<sup>b</sup>Change in the odds ratio for a 10 percentage-point increase in the independent variable.

<sup>c</sup>Findings for the percentage of the census tract that is black are not shown in Table 3 because % black is an item in the concentrated-disadvantage measure. The results of a separate regression (not shown) that replaces concentrated disadvantage with % black in the students-within-neighborhoods equation results in % black effects of .49 (NS) in the private equation, -.86 (p < .05, two tailed) in the selective equation, and -.08 (NS) in the non-neighborhood equation.

<sup>d</sup>Change in the odds ratio for a one-unit increase in the independent variable.

<sup>e</sup>Measures of neighborhood high school quality are entered as student, not Level 2, effects.

percent higher odds of attending a selective-enrollment school suggests that features of school organization besides academic press, such as feeder-pattern relationships, may be at work.

### ***Choice Flows Tend to Persist Over Time***

The history of public school choice outflows in an elementary school or neighborhood exerts a residual effect when compositional effects and the contextual effects of percentage black, poverty, mobility, academics, and quality of the neighborhood high school are controlled. I tested the effects of three types of previous enrollment flows, percentage of public high school choice from previous cohorts, percentage of elementary choosers, and percentage of the census tract that attends a private elementary or secondary school. The enrollment experience of previous cohorts is among the strongest and most consistent predictors of 2001 enrollment patterns. A 10-percentage-point increase in the percentage who chose a public high school of choice increased the odds that a member of the 2000–01 cohort would attend a public or private school choice by between one-quarter and one-half.

Two other enrollment-flow measures, the percentage of students who opt into their elementary school and the percentage who choose a private school, are negatively related to attending selective and non-neighborhood schools. A 10-percentage-point increase in elementary choosers decreased the odds of attending a non-neighborhood high school by 5 percent. (These analyses do not estimate a similar effect for private and selective high schools.) A 10-percentage-point increase in the percentage who choose a private school in the census tract reduces the likelihood of attending a selective or non-neighborhood high school by about 15 percent.

### ***High-Quality Assigned Schools Depress Choice***

The quality of students' assigned school affect the propensity for choice (see Table 4). Students who are assigned to high schools with high levels of achievement are less likely

to exercise choice (odds of choice fall between one-fifth and one-third).<sup>14</sup> The effects of the poverty of the neighborhood high school are less consistent. Higher levels of poverty of a neighborhood high school reduce the odds of attending a private high school, but the results from the other equations are not statistically significant and are, in some cases, in the opposite direction as this result.

## **DISCUSSION**

In the study, I investigated whether elementary school and neighborhood context influence students' propensities to exercise high school choice. The high school destinations of an entire eighth-grade cohort of Chicago Public School children were divided into four categories: assigned public, nonassigned public, public selective, and private. By estimating contextual effects within a multilevel modeling framework, I tested hypotheses that move beyond sociological theories that focus on students and families to focus on the role that schools and neighborhood play in the choice process.

While the racial disparities in participation in the choice process vary somewhat by destination, the contextual effects of percentage black and poverty on attending private and selective public high schools are more consistent. Attending a predominantly black elementary school, living in a predominantly black neighborhood, or living in a neighborhood with a high degree of concentrated disadvantage decreases the chances of attending a selective-enrollment school. Affluence has the opposite effect, enhancing students' chances of attending a selective school.

Second, neighborhoods have various levels of school quality, which partially explains whether a student exercises school choice. Students who live in neighborhoods with high-quality neighborhood schools, for example, are less likely to attend a choice school outside their attendance area. This finding suggests that, as in research on immigration and residential mobility, one must consider not only the characteristics of the

individuals, but the “push” and “pull” factors that are relevant to their decision making.

Finally, the results suggest that peer and within-school institutional effects are new avenues for research on school choice. Both the experience of previous cohorts with school choice and the achievement level of peers are relevant. While the effects of individual math achievement are strong and consistently positive, attending a high-achieving elementary school can actually hurt students’ chances of attending a selective or non-neighborhood public high school. There are several possible explanations for the seemingly paradoxical effect of average math achievement on attending a selective-enrollment high school.

First, if there were quotas on the number of students who were accepted from any one elementary school, students in high-achieving elementary schools would be at a relative disadvantage compared with those in low-achieving schools.<sup>15</sup> Second, students may self-select themselves out of contention for slots in elite high schools because their status in the academic pecking order suggests a low probability of success. Third, elementary school teachers and counselors may informally select students for slots in elite high schools on the basis of a relative ranking of students. Students who are at the top of the academic pecking order may receive extra attention and favorable recommendation letters, for example. Alternatively, students in elite elementary schools may face stiffer grading standards, which may hurt them in competition with elementary schools with more lax grading standards because seventh-grade course marks are used in the selective-enrollment admissions process. These explanations are consistent with research that has shown that students in elite public high schools are at a college admissions disadvantage because of the emphasis placed on class rank in the admissions process (Attewell 2001). Finally, neighborhoods with higher achieving schools and communities may confer noneducational benefits that may inhibit the likelihood that students will leave their neighborhoods and risk weakening these other positive attachments.

Although relative ranking among a set of current peers may be a disadvantage for

some students, attending an elementary school in which high school choice is the norm has a strong and positive effect on the propensity for choice. Whether a function of peer effects or informal institutional relationships, the percentage of prior cohorts who attended a school of choice is an important form of social capital that increases students’ likelihood of exercising school choice.

In many respects, these findings conform with the findings of school-choice research that has focused on students’ and families’ disparities in participation. The results presented here suggest that the home environments and school experiences of certain at-risk populations present substantial barriers to exercising school choice. Students with educational disadvantages (being old for their grade level, having low test scores, or having high elementary school mobility) are less likely to attend any choice option. Consistent with prior research on the growing gender gap between males and females in postsecondary attendance (Jacob 2002), the finding revealed that boys are less likely than are girls to exercise public school choice. Moreover, consistent with prior research, the findings indicated that among the student population of Chicago, those with highly motivated parents are better able to succeed in the educational marketplace.

Unlike previous research, which has often found that black students are less likely to take advantage of choice options, however, these findings suggest that a more complex narrative may be necessary to describe the role of race and ethnicity in schooling enrollment decisions. The results revealed that race is an inconsistent predictor of high school destination. In other words, the effect of race depends on the destination in question. While blacks are less likely to attend private schools (when poverty and math achievement are controlled), the role of race in attending a selective-enrollment high school is less clear. Furthermore, blacks are no less likely to attend non-neighborhood high schools than are whites and Asians. In addition, Hispanic students are more likely than are blacks to attend private schools, but are less likely than blacks to attend non-neighborhood public schools.

This study has shown that both school and neighborhood contexts matter for high school enrollment outcomes. This finding raises the question of whether elementary school contextual estimates are biased by the omission of neighborhood contextual controls (and vice versa). A cross-classified model would require a much more parsimonious specification of contextual effects and individual controls. The virtue of the analysis presented here is that it tested some important theoretical concepts on an entire cohort with a fairly rich set of predictors and controls. Explicitly modeling the cross-nesting of students in different contexts is a logical next step for this type of analysis.

Furthermore, while the models presented here account for the nonrandom sorting of students into schools and neighborhoods, a cross-sectional design limits the extent to which a study, such as this one, can make causal inferences. For example, because of school and residential mobility, students have had different levels of exposure to school and neighborhood contexts, which in this article was measured only in the eighth grade. This study was not designed to assess "exposure to treatment" in this sense. That said, school context among mobile students does not vary a great deal. On average, when students in Chicago switch elementary schools, they do not typically go to schools that are much different from the ones they left. Among students in the study who switched schools between fall 1998 and fall 1999, the correlation of each school's poverty level is .35. Among students who switched schools between spring 1998 and spring 1999, the correlation of each school's test score is .45. Therefore, while this study was not designed to test the longitudinal effects of context, I would not expect the results to be substantially different from those in the present study.

The strength of the administrative data used for this study are completeness with respect to coverage of a population. The weakness is that important features of students' background that are often available in survey samples, such as self-esteem, parental education, and sibship, remain uncontrolled. Ideally, this model would include better mea-

asures of family background and more details about the disposition of students' applications. This was a study of realized outcomes, not of students' or families' ambitions. Data limitations prevented this analysis from distinguishing between the factors that influence a student to apply, be accepted, and enroll in a school of choice. Although the outcome probably describes an underlying ambition of a student or parent in most cases, it is possible that the realized ambition is, in fact, a second or third choice. In other words, it is possible that some of the students in this study were "failed choosers" who wanted to attend a non-neighborhood school, but were rejected or ended up in a private school instead of the selective-enrollment school they preferred. Moreover, it is possible that some families who moved out of Chicago between the eighth and ninth grades did so for their children to attend higher-quality schools than they thought were available to their children within the city limits. These mobile families could also have moved exclusively for better-quality housing, proximity to jobs, crime, or a mix of such factors. To assess the effect of school quality on residential mobility decisions would require a different type of data than were available for this study. One would also like to take students' attendance, seventh-grade course grades, and scores on the selective-enrollment entrance test statistically into account. Unfortunately, these data and information about the disposition of individual students' applications were not available to me for this study.

It is possible that the contextual effects on high school destinations could vary by urbanicity. The findings reported here apply only to families who chose to live in the city of Chicago and are likely to be generalizable to other urban areas. It is possible that the implicit exclusion of families who chose to live in suburban areas because of their perception that these areas had higher-quality schools could have biased the contextual effects presented here. The typical solution to this problem is to use national data sets to ensure generalizability. Yet, national samples are not necessarily appropriate for addressing important questions in research on school choice. A downside to using a national data set to study

school choice is that the structure of educational options varies quite a bit across school districts, with some districts offering a wide array of schools that are accessible by public transportation and others with no choices at all.

This study examined school choice in a setting that is rich with options for students and a public transportation system that permits access to many of these options for most students, a regime shared by most of the largest urban districts in the United States. Moreover, it examined the high school choices of the population that is most often targeted with school choice policy: disadvantaged students in urban districts. Although the results may not be generalizable to suburban and rural areas, this is perhaps not a major shortcoming, given that the choices of students in most rural and suburban districts are constrained relative to those in large urban districts and school choice policy is not typically targeted to these populations of students.

An advantage of using geocoded population-level data from one urban school district is robustness. One can have more confidence in the estimates of contextual effects that were presented in this article because of the relatively large within-school and within-neighborhood clusters of students who were available for analysis and the large number of schools and neighborhoods to compare. This type of analysis is often difficult to conduct with national data sets owing to small sample sizes and privacy concerns that prevent the disclosure of geographic identifiers. In sum, studies like the one presented here sacrifice generalizability for robustness and in-depth knowledge of the schools, neighborhoods, and admission procedures in one social system.

It should be noted that students with low achievement are highly unlikely to gain admittance to selective-enrollment high schools. To address this concern, I conducted separate analyses on just the students who were eligible to apply for admission to selective-enrollment schools (i.e., those with scores on the seventh-grade math and reading tests that were above the 40th percentile). In most respects, the results (available from me on request) closely aligned with

the findings of the main analysis. The contextual effects are roughly of the same order of magnitude, and the signs of all statistically significant coefficients are consistent with the analyses on the all-students population.

While estimating students' choice of schools with a multinomial model is preferable from an efficiency standpoint, it is possible that the results presented here violate the independence of irrelevant alternatives assumption of the model. To address this possibility, I also specified a congruent set of binary logistic models. The binary logit results, shown in Appendix Table B1, produced estimates that are almost identical to the results produced by the multinomial specification and did not alter the conclusions of this study in any substantial way.

In closing, this analysis speaks to the complexity of the newly emergent educational marketplace. With the rapid expansion of charter schools and the passage of the No Child Left Behind Act in 2001, which mandates that local school districts allow students in "failing" or "unsafe" schools to take their per-pupil funds to attend better schools (in effect a public school voucher), school choice is becoming a favored policy tool for educational reform. In addition, a 2002 Supreme Court decision, *Zelman vs. Simmons-Harris*, permits publicly supported religious schooling. These recent developments make understanding how students' social contexts influence their ability to negotiate the educational marketplace increasingly relevant.

## NOTES

1. For an important exception, see Saporito (2003).

2. Because administrative records for students who were no longer enrolled in Chicago public schools include the names of the schools to which the school district sent transcripts, it was possible to identify which students attended private high schools in the Chicago area.

3. Descriptive statistics from the analytic cohort with complete data are presented in Table 1. Appendix A outlines the sample-

selection rules that were used for this study. It shows that the analytic sample is comparable to the full cohort of eighth-grade students who were enrolled in the Chicago Public Schools in spring 2000.

4. Most students in this cohort who attended a private school attended a parochial one. Among the private school attendees in this cohort, 82 percent attended Catholic schools, 5 percent attended non-Catholic sectarian schools (e.g., Evangelical or Jewish), 4 percent attended nonsectarian schools, and 9 percent attended schools that are otherwise nonclassifiable. These figures are based on my calculations using data for school-type classifications from the 2000 Private School Survey by the National Center on Education Statistics.

5. This category includes all students who went to charter schools or public military academies; most students who attended career academies, magnet schools, or magnet programs; and all students who simply opted out of their assigned neighborhood schools. Although this is a heterogeneous grouping of school types, previous analyses indicated that similar factors predict the probability of attending charter schools, nonselective magnet schools and programs, military academies, and other non-neighborhood options (analyses available from me on request).

6. One may think of these labels as useful shorthand. Defining neighborhood as a unit of analysis is notoriously difficult. For the purposes of this study, the "neighborhood school" is the one to which a student is assigned. In most cases, this school will be the one closest to a student's residence. In some cases, however, another nonassigned school may be closer. Private and selective schools may also be in a student's neighborhood, for example, but in this analysis, they are considered alternatives to the assigned public school. The difficulty of defining the school-neighborhood nexus stems, in part, from the fact that school boundaries do not correspond with neighborhood boundaries.

7. Policy-driven racial balancing imperatives suggest that the school-choice process is a function not only of family decisions, but of administrative decisions in schools. Because data on such administrative procedures are

scarce, the selection and admission processes are not taken into account in this study. Since stated policies and anecdotal evidence suggest that the criteria by which students are selected at selective-enrollment high schools and magnet programs within high schools (i.e., schools within schools) are represented by control variables (e.g., test scores, race/ethnicity, and gender), this should be a minor shortcoming.

8. Analyses were conducted on the students' scores on both the reading and mathematics tests of the Iowa Test of Basic Skills. Because math and reading scores are highly correlated with each other, this analysis proxies students' academic proficiency with only one score. Using reading scores instead of math scores does not significantly affect the estimation of contextual effects (analysis not shown, but available from me on request).

9. It is rarely the case that a given elementary school sends students to only one or two high schools in Chicago. There were 399 elementary schools in this study and 47 neighborhood high schools. On average, the students of an elementary school were assigned to about 5 different neighborhood high schools, although this number varied from 1 to 20 (Tukey's hinges are 7 and 3). These statistics suggest there is ample within-elementary-school variability in the characteristics of these neighborhood high schools.

10. While using simple aggregations is standard practice in the sociology of education literature, I chose to create measures in the neighborhood models to reflect theoretical constructs in urban sociology. This study replicated the definitions of *concentrated disadvantage*, *concentrated affluence*, and *tenure* in Sampson, Morenoff, and Earls (1999).

11. This model has been used to analyze choices of colleges and graduate schools (Eide, Brewer, and Ehrenberg 1998; Nguyen and Taylor 2003).

12. Because tract and high school boundaries are noncontiguous, it is not possible to enter neighborhood high school characteristics as level-two effects.

13. This article uses the term *contextual effects* to describe an association of a feature of a neighborhood or school and high school enrollment outcomes, net of compositional

factors. It is important to stress that a cross-sectional design permits only the analysis of associations, not causal inferences in the strict sense of the phrase.

14. All the results are statistically significant

except for the private equation in the neighborhood model.

15. Conversations with admissions directors at selective-enrollment high schools, however, indicated that no such quotas exist.

## APPENDIX A

### *Analytic Sample-Selection Rules*

The goal of the analysis was to estimate contextual effects on students' propensities to choose high schools. Students who were not positioned to choose a high school during spring 2000 were defined as "out of scope" for the purposes of this study. In other words, students who were not "at risk" of exercising high school choice in Chicago were censored from the analysis. Table A1 identifies these students and summarizes the following sample restrictions.

**Table A1. Sample-Selection Summary**

Category	Number
<i>Chicago Public Schools Eighth Graders in Spring 2000</i>	30,624
Moved out of Chicago	2,284
Retained in the eighth grade	605
In a school with an elementary-high school grade span	349
Special population	2,199
Dropout	1,638
Died	14
<i>In-Scope Population</i>	23,535
Deleted due to missing data	5,058
<i>Final Analysis Sample</i>	18,477

1. Students who were enrolled in the Chicago Public Schools in the eighth grade, but then moved to an address outside the city limits were censored from the analysis because it was impossible to track their high school enrollment outcomes.

2. Students who were retained in the eighth grade in fall 2000 were censored from the analysis because their choice of schools was administratively determined.

3. Students who were already in a school that included secondary grades (i.e., those greater than eight) were omitted from consideration because they had chosen a high school before spring 2000.

4. Those who attended schools for students exclusively with special needs (behavioral or learning disabilities, those who were in jail, or those who were in a school for pregnant teenagers) were censored from the analysis because students in such circumstances were generally unable to choose a high school. It is important to note that this sample-definition decision did not omit all students with special needs from the sample. Students with learning disabilities who were enrolled in regular elementary schools were included in the analysis and constituted 17 percent of the final analytic sample.

5. Dropouts were omitted from the analysis because they did not choose a high school.

6. Those who died between spring 2000 and spring 2001 were not included in the analysis.

These sample decision rules resulted in an "in-scope" *N* of 23,535. From this population, 5,058 cases were deleted because of missing student-level data, school or tract identifiers, and/or school or neighborhood covariates, resulting in a final analytic sample of 18,477 students.

Because each of these censoring decisions may be of concern, it is important to understand whether the censoring decisions resulted in an analytic sample that is representative of the underlying population. Table A2 shows the means of the population and analytic sample. Because the analytic sample is large, one-sample z-tests resulted in a number of statistically significant mean differences. That said, the size of these differences is relatively small. The column labeled "Diff (*SD*)" computes the ratio of the mean difference and the pooled standard deviation of each variable. Most of the standardized mean differences are less than one-twentieth of a standard deviation. Two differences are over a tenth of a standard deviation. The students in the analytic sample were less likely to have high values on previous school moves and were less likely to be old for their grade level.



Table A2. Continued

	Students' Characteristics		Neighborhood School Characteristics	
	Population	Sample	Population	Sample
Number of school moves	<b>0.48</b> 0.71	<b>0.34*</b> 0.61	<b>-0.05</b> 0.98	<b>0.00*</b> 1.00
	30,624	18,477	29,815	18,477
			<b>0.02</b> 1.01	<b>0.00*</b> 1.00
			29,815	18,477
			<b>-0.05</b> 0.97	<b>0.00*</b> 1.00
			29,815	18,477
			<b>8.36</b> 0.53	<b>8.36</b> 0.53
			29,815	18,477

Note: Numbers in bold face are means and mean differences.

\* Denotes a statistically significant difference in means ( $p < .05$ , two tailed).

**APPENDIX B*****Binary Logit Results***

An assumption of the multinomial logistic model is the “independence of irrelevant alternatives.” It is possible that the model used in this study was not appropriate for the underlying behavior being modeled. If the school-choice decision process is sequential, for example, this would violate the assumption of the independence of irrelevant alternatives because one’s preference for one school (e.g., a private one) may depend on whether one got into another school (e.g., a selective-enrollment one). While this is certainly plausible, data are not available to adjudicate this kind of claim. Although multinomial models are often preferable for efficient estimation, it turns out that because of the sample sizes in this study, the results of the binary logit HLM models are virtually identical to those obtained from the multinomial logit HLM models. Therefore, the decision of whether to use the multinomial model or an analogous series of binary logits has no effect on the statistical or substantive significance of the findings reported.

Table B1 displays the results of the coefficients and standard errors of the primary contextual effects discussed in the article. All the results are in the same direction and are of approximately the same magnitude. No statistically significant result is rendered statistically insignificant by specifying the comparison as a binary logit.

Table B1. Comparison of Multinomial and Binary Logit Results (robust standard errors reported below the estimates)

Model	School % Black	School Mobility Rate	School % Poor	Neighborhood Disadvantage	School Prior Choice Flow	School Average Math	High School Achievement (Students in Elementary School)
<i>Private versus Neighborhood</i>							
MN beta	-0.53	-1.49	-1.05*	-0.27*	2.01**	0.08	-2.05**
BIN beta	-0.56	-1.47	-1.72**	-0.31**	2.04**	0.11	-2.77**
MN SE	0.288	0.794	0.456	0.113	0.431	0.142	0.604**
BIN SE	0.288	0.815	0.462	0.112	0.433	0.139	0.599**
<i>Selective versus Neighborhood</i>							
MN beta	-1.22**	-1.17	-1.21*	-0.43**	2.22*	-0.45**	-2.95**
BIN beta	-1.01**	-1.43	-1.36*	-0.38**	2.04*	-0.42**	-2.70**
MN SE	0.232	0.661	0.476	0.102	0.444	0.157	0.689
BIN SE	0.246	0.743	0.551	0.115	0.482	0.141	0.818
<i>Non-Neighborhood versus Neighborhood</i>							
MN beta	-0.02	-0.36	0.42	-0.09	3.31**	-0.12	-3.86**
BIN beta	-0.02	-0.44	0.49	-0.10	3.21**	-0.12	-3.85**
MN SE	0.160	0.350	0.305	0.061	0.279	0.074	0.587
BIN SE	0.158	0.351	0.291	0.062	0.270	0.073	0.530

Note: The figures labeled MN are from the tables included in the article. The figures labeled BIN are from a supplementary analysis of binary logit HLMs.

\*\* $p < .01$ , \* $p < .05$  (two-tailed tests).

## REFERENCES

- Ainsworth, James W. 2002. "Why Does It Take a Village? The Mediation of Neighborhood Effects on Educational Achievement." *Social Forces* 81:117–52.
- Archbald, Douglas. A. 2000. "School Choice and School Stratification: Shortcomings of the Stratification Critique and Recommendations for Theory and Research." *Educational Policy* 14:214–40.
- Attewell, Paul. 2001. "The Winner-Take-All High School: Organizational Adaptations to Educational Stratification." *Sociology of Education* 74:267–95.
- Baker, David P., and David L. Stevenson. 1986. "Mothers' Strategies for Children's School Achievement: Managing the Transition to High School." *Sociology of Education* 59:156–66.
- Berliner, David C., and Bruce J. Biddle. 1997. *The Manufactured Crisis: Myths, Fraud, and the Attack on America's Public Schools*. White Plains, NY: Longman.
- Bielick, Stacey, and Chris Chapman. 2003. *Trends in the Use of School Choice, 1993 to 1999*. Washington, DC: Institute of Education Sciences, U.S. Department of Education.
- Brock, William A., and Steven N. Durlauf. 2001. "Discrete Choice with Social Interactions." *Review of Economic Studies* 68:235–60.
- Brooks-Gunn, Jeanne, Greg J. Duncan, Pamela K. Klebanov, and Naomi Sealand. 1993. "Do Neighborhoods Influence Child and Adolescent Development?" *American Journal of Sociology* 99:353–95.
- Browning, Christopher R., Tama Leventhal, and Jeanne Brooks-Gunn. 2005. "Sexual Initiation in Early Adolescence: The Nexus of Parental and Community Control." *American Sociological Review* 70:758–78.
- Bryk, Anthony, Valerie E. Lee, and Peter B. Holland, 1993. *Catholic Schools and the Common Good*. Cambridge, MA: Harvard University Press.
- Bryk, Anthony, and Yeow Meng Thum. 1989. "The Effects of High School Organization on Dropping Out: An Exploratory Investigation." *American Educational Research Journal* 26:353–83.
- Bursik, Robert J. 1988. "Social Disorganization and Theories of Crime and Delinquency—Problems and Prospects." *Criminology* 26:519–51.
- Coleman, James S. 1988. "Social Capital in the Creation of Human Capital." *American Journal of Sociology* 94:S95–S120.
- Coleman, James S., Ernest Q. Campbell, Carol J. Hobson, James McPartland, Alexander J. Mood, Frederic D. Weinfeld, and Robert L. York. 1966. *Equality of Educational Opportunity*. Washington, DC: U.S. Government Printing Office.
- Conley, Dalton. 2004. *The Pecking Order: Which Siblings Succeed and Why*. New York: Pantheon.
- Cullen, Julie B., Brian A. Jacob, and Steven Levitt. 2003, November. "The Effect of School Choice on Student Outcomes: Evidence from Randomized Lotteries" (Working paper 10113). Cambridge, MA: National Bureau of Economic Research. Available online: <http://www.nber.org/papers/w10113>
- . 2005. "The Impact of School Choice on Student Outcomes: An Analysis of the Chicago Public Schools." *Journal of Public Economics* 89:729–60.
- Davis, James A. 1966. "The Campus as a Frog Pond—Application of the Theory of Relative Deprivation to Career Decisions of College Men." *American Journal Of Sociology* 72:17–31.
- Dreeben, Robert. 1994. "The Sociology of Education: Its Development in the United States." Pp. 7–52 in *Research in Sociology of Education and Socialization* (Vol. 10), edited by Aaron M. Pallas. Greenwich, CT: JAI Press.
- Eide, Eric, Dominic J. Brewer, and Ronald G. Ehrenberg. 1998. "Does It Pay to Attend an Elite Private College? Evidence on the Effects of Undergraduate College Quality on Graduate School Attendance." *Economics of Education Review* 17:371–76.
- Elliott, Delbert S., William J. Wilson, David Huizinga, Robert J. Sampson, Amanda Elliott, and Bruce Rankin. 1996. "The Effects of Neighborhood Disadvantage on Adolescent Development." *Journal of Research in Crime and Delinquency* 33:389–426.
- Friedman, Milton. 1955. "The Role of Government in Education." In *Economics in the Public Interest*, edited by Robert Solo. New Brunswick, NJ: Rutgers University Press.
- Furstenberg, Frank F., Thomas D. Cook, Jacquelynne Eccles, Glen H. Elder, Jr., and Arnold Sameroff. 1999. *Managing to Make It: Urban Families and Adolescent Success*. Chicago: University of Chicago Press.
- Goldstein, Harvey. 2003. *Multilevel Statistical Models* (3rd ed.). London: Edward Arnold.
- Green, Jay P., Paul E. Peterson, and Jiangtao Du. 1997. "Effectiveness of School Choice: The Milwaukee Experiment" (Technical report). Cambridge, MA: Harvard University Program in Education Policy and Governance.

- Harding, David J. 2003. "Counterfactual Models of Neighborhood Effects: The Effect of Neighborhood Poverty on Dropping Out and Teenage Pregnancy." *American Journal of Sociology* 109:676–719.
- Henig, Jeffrey R. 1995. "Race and Choice in Montgomery County, Maryland, Magnet Schools." *Teachers College Record* 96:729–34.
- Hirschman, Albert O. 1970. *Exit, Voice, and Loyalty: Responses to Decline in Firms, Organizations, and States*. Cambridge, MA: Harvard University Press.
- Hout, Michael, and William R. Morgan. 1975. "Race and Sex Variations in the Causes of the Expected Attainments of High School Seniors." *American Journal of Sociology* 81:364–94.
- Howell, William G., and Paul E. Peterson. 2002. *The Education Gap: Vouchers and Urban Schools*. Washington, DC: Brookings Institution Press.
- Hoxby, Caroline M. 2005, March. "Competition Among Public Schools: A Reply to Rothstein (2004)" (Working paper 11216). Cambridge, MA: National Bureau of Economic Research. Available online: <http://www.nber.org/papers/w11216>
- Jacob, Brian A. 2002. "Where the Boys Aren't: Non-Cognitive Skills, Returns to School and the Gender Gap in Higher Education." *Economics of Education Review* 21:589–98.
- Janowitz, Morris. 1967. *The Community Press in an Urban Setting: The Social Elements of Urbanism* (2nd ed.). Chicago: University of Chicago Press.
- Kerckhoff, Alan C. 1976. "The Status Attainment Process: Socialization or Allocation?" *Social Forces* 55:368–81.
- Krueger, Alan B., and Pei Zhu. 2004. "Another Look at the New York City School Voucher Experiment." *American Behavioral Scientist* 47:658–98.
- Lareau, Annette. 1989. *Home Advantage: Social Class and Parental Intervention in Elementary Education*. New York: Falmer Press.
- Lee, Valerie E., and Anthony Bryk. 1988. "Curriculum Tracking as Mediating the Social Distribution of High School Achievement." *Sociology of Education* 61:78–94.
- Lee, Valerie E., and David T. Burkam. 2003. "Dropping Out of High School: The Role of School Organization and Structure." *American Educational Research Journal* 40:353–93.
- Lee, Valerie E., Todd K. Chow-Hoy, David T. Burkam, Douglas Geverdt, and Becky A. Smerdon. 1998. "Sector Differences in High School Course Taking: A Private School or Catholic School Effect?" *Sociology of Education* 71:314–35.
- Lee, Valerie E., Robert G. Croninger, and Julia B. Smith. 1996. "Equity and Choice in Detroit." Pp. 70–94 in *Who Chooses? Who Loses?* edited by Bruce Fuller and Richard F. Elmore. New York: Teachers College Press.
- Leventhal, Tama, and Jeanne Brooks-Gunn. 2004. "A Randomized Study of Neighborhood Effects on Low-Income Children's Educational Outcomes." *Developmental Psychology* 40:488–507.
- Manski, Charles F. 1993a. "Adolescent Econometricians: How Do Youth Infer the Returns to Schooling?" Pp. 43–60 in *Studies of Supply and Demand in Higher Education*, edited by Charles Clotfelter and Michael Rothschild, Chicago: University of Chicago Press.
- Manski, Charles F. 1993b. "Identification of Endogenous Social Effects: The Reflection Problem." *Review of Economic Studies* 60:531–42.
- Massey, Douglas S., and Nancy A. Denton. 1993. *American Apartheid: Segregation and the Making of the Underclass*. Cambridge, MA: Harvard University Press.
- Nguyen, Anh Ngoc, and Jim Taylor. 2003. "Post-High School Choices: New Evidence from a Multinomial Logit Model." *Journal of Population Economics* 16:287–306.
- Oakes, Jeannie. 1985. *Keeping Track: How Schools Structure Inequality*. New Haven, CT: Yale University Press.
- Peterson, Paul E. 1981. *City Limits*. Chicago: University of Chicago Press.
- Raudenbush, Stephen W., and Anthony S. Bryk. 2002. *Hierarchical Linear Models: Applications and Data Analysis Methods* (2nd ed.). Thousand Oaks, CA: Sage.
- Reay, Diane, and Stephen J. Ball. 1997. "'Spoilt for Choice': The Working Classes and Educational Markets." *Oxford Review of Education* 23:89–101.
- Rosenbaum, James E. 1976. *Making Inequality: The Hidden Curriculum of High School Tracking*. New York: John Wiley & Sons.
- Rouse, Cecilia E. 1998. "Private School Vouchers and Student Achievement: An Evaluation of the Milwaukee Parental Choice Program." *Quarterly Journal of Economics* 113:553–602.
- Sampson, Robert J., Jeffrey D. Morenoff, and Felton Earls. 1999. "Beyond Social Capital: Spatial Dynamics of Collective Efficacy for Children." *American Sociological Review* 64:633–60.
- Saporito, Salvatore. 2003. "Private Choices, Public Consequences: Magnet School Choice and Segregation by Race and Poverty." *Social Problems* 50:181–203.
- Saporito, Salvatore, and Annette Lareau. 1999.

- "School Selection as a Process: The Multiple Dimensions of Race in Framing Educational Choice." *Social Problems* 46:418–39.
- Schneider, Barbara, Kathryn S. Schiller, and James D. Coleman. 1996. "Public School Choice: Some Evidence from the National Education Longitudinal Study of 1988." *Educational Evaluation and Policy Analysis* 18:19–29.
- Schneider, Mark, Paul Teske, Melissa Marschall, Michael Mintron, and Christine Roch. 1998. "Shopping for Schools: In the Land of the Blind, the One-eyed Parent May Be Enough." *American Journal of Political Science* 42:769–93.
- Sewell, William H., Archibald O. Haller, and Alejandro Portes. 1969. "The Educational and Early Occupational Attainment Process." *American Sociological Review* 34:82–92.
- Shannon, Claude. 1948. "A Mathematical Theory of Communications." *Bell System Technical Journal* 27:397–423, 623–56.
- Shaw, Clifford Robe, and Henry Donald McKay. 1942. *Juvenile Delinquency and Urban Areas: A Study of Rates of Delinquents in Relation to Differential Characteristics of Local Communities in American Cities*. Chicago: University of Chicago Press.
- Teachman, Jay D. 1980. "Analysis of Population Diversity." *Sociological Methods and Research* 8:341–62.
- Teske, Paul, and Mark Schneider. 2001. "What Research Can Tell Policymakers About School Choice." *Journal of Policy Analysis and Management* 20:609–31.
- Tiebout, Charles M. 1956. "A Pure Theory of Local Expenditures." *Journal of Political Economy* 64:416–24.
- Wells, Amy Stuart, and Robert L. Crain. 1997. *Stepping over the Color Line: African-American Students in White Suburban Schools*. New Haven, CT: Yale University Press.
- Wilson, William J. 1987. *The Truly Disadvantaged: The Inner City, the Underclass, and Public Policy*. Chicago: University of Chicago Press.
- Witte, John F. 2000. *The Market Approach to Education*. Princeton, NJ: Princeton University Press.

**Douglas Lee Lauen, Ph.D.**, is Assistant Professor, Department of Public Policy, University of North Carolina at Chapel Hill. His main fields of interest are school choice, inequality, and school effects. He is currently estimating the effects of school choice on students' graduation rates, examining the role that teachers' working conditions play in students' gains in test scores, and investigating how changes in state-level accountability policies affect teachers' and students' incentives to focus instruction on particular subgroups of students.

The author thanks Andrew Abbott, Tony Bryk, Charles Bidwell, Jeffrey Henig, Susan Mayer, Dan McFarland, Brian Powell, and Kazuo Yamaguchi for their comments and advice on previous drafts of the article. A preliminary version of this article was presented at the meeting of the American Educational Research Association, April 13, 2004, San Diego, CA. The author gratefully acknowledges support from the Alfred P. Sloan Center on Parents, Children, and Work; the Data Research and Development Center; the Consortium on Chicago School Research; and a Spencer Foundation dissertation fellowship. The views expressed in this article are solely the responsibility of the author. Direct all correspondence to Douglas Lee Lauen, Department of Public Policy, University of North Carolina at Chapel Hill, Abernethy Hall, CB 3435, Chapel Hill, NC 27599; e-mail: dlauen@email.unc.edu.