Economics of Education Review 48 (2015) 75–85

Contents lists available at ScienceDirect

Economics of Education Review

journal homepage: www.elsevier.com/locate/econedurev

The relationship between siblings' college choices: Evidence from one million SAT-taking families ☆

Joshua Goodman [a,*], Michael Hurwitz [b], Jonathan Smith [b], Julia Fox [b]

[a] Harvard University, Harvard Kennedy School, 79 JFK St., Cambridge, MA 02140, United States
[b] College Board, 1919 M Street NW, Suite 300, Washington, DC 20036, United States

ARTICLE INFO

Article history:
Received 9 September 2014
Accepted 8 May 2015
Available online 3 June 2015

JEL Codes:
I20
I24
D19
J24

Keywords:
College choice
College enrollment
Siblings
Four-year colleges
Selective colleges
Targeting interventions

ABSTRACT

Recent empirical work has demonstrated the importance both of educational peer effects and of various factors that affect college choices. We connect these literatures by highlighting a previously unstudied determinant of college choice, namely the college choice made by one's older sibling. Data on 1.6 million sibling pairs of SAT-takers reveals that younger and older siblings' choices are very closely related. One-fifth of younger siblings enroll in the same college as their older siblings. Compared to their high school classmates of similar academic skill and with observably similar families, younger siblings are about 15–20 percentage points more likely to enroll in 4-year colleges or highly competitive colleges if their older siblings do so first. These findings vary little by family characteristics. Younger siblings are more likely to follow the college choices of their older siblings the more they resemble each other in terms of academic skill, age and gender. We discuss channels through which older siblings' college choices might causally influence their younger siblings, noting that the facts documented here should prompt further research on the sharing of information and shaping of educational preferences within families.

> The truth is that if Princeton hadn't found my brother as a basketball recruit and if I hadn't seen that he could succeed on a campus like that, it never would have occurred to me to apply to that school, never.
>
> –Michelle Obama

1. Introduction

For decades, researchers from various disciplines have tried to model how students make college enrollment decisions. Such disciplines include economics (Fuller, Manski, & Wise, 1982), sociology (Hearn, 1991), and education (Jackson, 1978). The modeling problem has, however, proven difficult, for at least three reasons. First, there are thousands of colleges, each with numerous attributes. Second, students have heterogeneous preferences for college enrollment and for those college attributes. Third, students differ in the extent to which they have accurate information about potential colleges. Many of these factors are unobservable to the econometrician modelling college choice.

A few unsurprising characteristics of college have emerged from this literature as important to the college decision. First, the cost of college and the availability of financial aid are important factors in students' decisions, particularly for low-income students (Avery & Hoxby, 2004; Dynarski, 2003; Hurwitz, 2012). Second, proximity to colleges increases the likelihood that students enroll as students, and particularly low-income students, prefer colleges closer to

☆ This research reflects the views of the authors and not their corresponding institutions.

* Corresponding author. Tel.: +1 6174969720.
E-mail addresses: joshua_goodman@hks.harvard.edu (J. Goodman), mhurwitz@collegeboard.org (M. Hurwitz), jsmith@collegeboard.org (J. Smith), jfox@collegeboard.org (J. Fox).

http://dx.doi.org/10.1016/j.econedurev.2015.05.006
0272-7757/

home (Hossler, Braxton, & Coppersmith, 1989; Leppel, 1993; DesJardins, Dundar, & Hendel, 1999). Third, college quality has become an increasingly important determinant of students' enrollment choices (Long, 2004), with small changes in college rankings affecting the number of applicants to a given college (Luca & Smith, 2013). Fourth, the quality of college amenities, such as dormitories and student activities, also matters to many students, with only high-achieving ones exhibiting demand for academic quality (Jacob, McCall, & Stange, 2013).

Other determinants of college choice are harder to explain from a model of fully rational behavior on the part of students. High-achieving low-income students do not apply to or enroll in the same quality colleges as their higher income peers, despite the fact that the students would likely pay very little at these selective institutions (Hoxby & Avery, 2012). Many students apply only to the number of colleges for which it is free to send their test scores, such that even an elimination as small as $6 in cost can substantially change students' college choices (Pallais, 2013). Colleges receive substantially fewer applications when they increase their application fees by a few dollars or add an admission essay (Smith, Hurwitz, & Howell, 2014), but more applications when their sports teams succeed (Pope & Pope, 2009). Relatively small amounts of merit aid can induce students into colleges of dramatically lower quality, harming their own graduation rates (Cohodes & Goodman, 2014). The fact that relatively small interventions, such as information mailings with application fee waivers (Hoxby & Turner, 2013), help with the completion of financial aid forms (Bettinger, Long, Oreopoulos, & Sanbonmatsu, 2012), or mandatory college entrance exams (Goodman, 2013; Hurwitz, Smith, Niu, & Howell, 2015; Hyman, 2014; Klasik, 2013) can increase enrollment suggests that such suboptimal behavior is likely driven by a combination of information gaps and behavioral biases (Dillon & Smith, 2013).

Given the volume of research into determinants of college choice, it is therefore remarkable how little the economics of education literature had focused on the influence of family members themselves. A rich descriptive literature in education does consider the association between parental education, parental involvement and college choice of children (Choy, 2001; Perna & Titus, 2005), though siblings are rarely the focus of such literature. Consideration of families are, of course, implicit in much of the aforementioned economic research, in that most analyses control for or even estimate the impact of family factors such as parental income and education. Some papers exploit family structure in their analyses, using twin or other sibling fixed effects to account for selection bias when estimating returns to college quality (Ashenfelter & Krueger, 1994; Behrman, Rosensweig, & Taubman, 1996; Rouse, 1999; Lindahl & Regner, 2005; Smith, 2013). Yet others study birth order effects on educational attainment, though these often focus on differential sources of parental investment (Behrman & Taubman, 1986; Black, Devereaux, & Salvanes, 2005; Kantarevic & Mechoulan, 2006; Booth & Kee, 2009; Hotz & Patano, 2013).

It is perhaps even more remarkable that little has been written on the particular influence of siblings on each other's educational decisions. Though a fairly extensive literature documents sibling influences on risky behaviors such as smoking and drinking (Altonji, Cattan, & Ware, 2010), we are aware of only three papers that attempt to measure the influence of siblings on each other's educational decisions. Using the NLSY79, Oettinger (2000) argues that older siblings' high school graduation status influences the high school graduation status of younger siblings, addressing endogeneity of the former by instrumenting with gender, family structure and unemployment rates. Loury (2004) estimates that, controlling for a host of other variables, African–Americans' college enrollment rates are substantially higher when they have older siblings who have enrolled in college. Using Danish data, Joensen and Nielsen (2013) show that quasi-experimental variation in older siblings' access to advanced math and science coursework alters the coursework choices of younger siblings.

Effects of other sorts of peers have, of course, been extensively documented (Sacerdote, 2011). The now vast literature on peer effects rarely considers siblings as peers, instead studying interactions between classmates, schoolmates or roommates. That literature most frequently estimates impacts of peers on student achievement or behavior, rarely if ever using college choice as an outcome. We therefore connect the literature on college choice to the literature on peer effects by carefully investigating the relationship between siblings' college enrollment decisions. To do so, we use data on the SAT scores and college choices of the universe of SAT-takers from the 2004–2011 high school graduation cohorts. Among the approximately 10 million students in those cohorts, we identify 1.6 million pairs of siblings by matching students on last names and home addresses. We then analyze simple college choice models in which the younger siblings' enrollment choices are regressed on a rich set of demographic and academic skill controls, as well as on variables measuring the college enrollment choices of their older siblings. We also explore the extent to which the relationship between siblings' college choices varies by siblings' similarities in terms of academic skill, age and gender.

We show that younger and older siblings' choices are very closely related. One-fifth of younger siblings enroll in the same college as their older siblings. Compared to their high school classmates of similar academic skill, younger siblings are about 16 percentage points more likely to enroll in 4-year colleges and 19 percentage points more likely to enroll in highly competitive colleges if their older siblings do so first. The quality of college selected by an older sibling is strongly predictive of the quality chosen by a younger sibling. These findings vary little by family income, race, parental education, or proximity to 4-year colleges. Younger siblings are more likely to follow the college choices of their older siblings the more they resemble each other in academic skill, age and gender. Our hope is that these results may improve the targeting of college choice interventions and, more importantly, prompt further research on the sharing of information and shaping of educational preferences within families.

We turn now to a description of the data. After that, we explain in detail how we estimate the relationship between siblings' college choices and discuss the magnitude of these estimates. We then explore whether such estimates vary by the similarity of the siblings. Finally, we discuss a number of theoretical reasons why siblings' college choices might affect