American Economic Review: Papers & Proceedings 2015, 105(5): 514–517
http://dx.doi.org/10.1257/aer.p20151027

What High-Achieving Low-Income Students Know About College[†]

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The decisions that young people make about college—where to apply, where to attend, how to pay, and what course of study to pursue—can greatly affect whether they achieve their earnings, career, and other life goals. Even among those with strong academic preparation, low-income students have poorer college outcomes than their more affluent peers. It is at the application stage—not admissions or matriculation—where low-income high achievers diverge from their higher-income counterparts (Hoxby and Avery 2013).

The Expanding College Opportunities (ECO) project is an intervention designed and implemented by the authors to test the hypothesis that low-income, high achievers find it hard to digest the mountain of complex information on colleges' net prices, attributes, and application processes and apply it to their individual circumstances. In a large randomized controlled trial, the comprehensive ECO intervention—henceforth, ECO-C—caused students to apply to, be admitted to, and matriculate at schools with richer instructional resources, higher graduation rates, and better prepared peers (Hoxby and Turner 2013). This paper uses ECO's rich survey data to get "inside the black box" and evaluate how ECO-C affects students' knowledge and decision-making.

I. Design, Implementation, and Evaluation

ECO-C gave low-income high achievers information on applying to colleges, what they would actually pay at various colleges, colleges' graduation rates and instructional resources, and no-paperwork fee waivers. Materials were customized to provide information specific to each student's family circumstances and location. ECO-C did *not* recommend colleges but, rather, provided information that was relevant and in context.

The target students (i) scored in the top decile of SAT I or ACT takers; (ii) had estimated family income in the bottom third of the income distribution for families with a twelfth grader; (iii) did not attend a "feeder" high school.[1]

Our findings on enrollment and degree attainment can be based on administrative data from the National Student Clearinghouse, but we obtained rich survey data to evaluate students' knowledge and decision-making. 66.9 percent of students answered the survey, and there is no differential response between the treatment and control groups.[2]

A. *Results: College Choice*

ECO-C's treatment-on-the-treated effects were substantial.[3] Relative to the controls, treated students submitted 48 percent more

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† Go to http://dx.doi.org/10.1257/aer.p20151027 to visit the article page for additional materials and author disclosure statement(s).

[1] We also tested the intervention on some nontarget students. Hoxby and Turner (2013) describes the interventions, survey, and results in detail.

[2] We test for differential response using both pre-experiment background characteristics and National Student Clearinghouse data.

[3] Because the materials were distributed by an unknown organization and many families therefore discarded them, the treatment-on-the-treated estimates are what are relevant for future policies (which are being conducted by highly reputed college organizations). We count a student as being treated if he or she could simply recall receiving (not

applications and were 56 percent more likely to apply to a peer college (or better).[4] They applied to colleges with 17 percent higher graduation rates and 55 percent higher instructional spending. Treated students were admitted to 31 percent more colleges and were 78 percent more likely to be admitted by a peer college. They were admitted at colleges with 24 percent higher graduation rates and 34 percent higher instructional spending. Treated students enrolled in colleges that were 46 percent more likely to be peer institutions, whose graduation rates were 15 percent higher, and whose instructional spending was 22 percent higher.

II. Understanding Why ECO Worked

Revealed preference—students making different choices when treated—suggests that the intervention made them better off. ECO's rich survey data help us understand why.

A. *Information on Net Price*

Price is perhaps the most salient dimension of any large investment like a car, home, or college education, yet low-income high achievers may have a particularly difficult time learning it. The most selective and resource-rich colleges have high "sticker" prices but these are irrelevant. Owing to generous financial aid, low-income students typically pay *less* to attend such schools than they would pay to attend non-selective schools that have far fewer instructional resources. However, net prices are not obvious because a student only receives a financial aid offer after she applies and is admitted. ECO-C helps students form accurate expectations by giving them examples of net prices for students with similar family income at schools known to be salient in their area, other in-state schools, and a random sample of peer institutions outside their state. The intervention also explains the value of different forms of aid and the aid application process.

In one set of questions, the survey asked students what factors made them more likely to apply to a college. The choices were "No difference," "Somewhat more likely to apply," "Much more likely to apply." Table 1 shows treatment-on-the-treated effects on some relevant responses.[5] Treated students increased the weight they placed on financial aid when making decisions. Relative to the control group, they said 39 percent more often that they were "much more likely to apply" if "I could tell from the college's materials that I would get enough financial aid to attend." They said 43 percent more often that they were "much more likely to apply" if "The college advertised that it admits students without regard to financial need."

B. *Information on Typical Outcomes*

Low-income students may lack information on the differences among colleges in students' outcomes. Students and their families may believe that "college is college." Yet, graduation rates and other outcomes vary dramatically. Some four-year colleges have on-time graduation rates well below 10 percent while resource-rich schools often have rates above 85 percent.

ECO-C prominently displays typical outcomes for schools known to be salient in a student's area, other in-state schools, and a random sample of peer institutions outside the state. ECO-C also explains, in simple terms, how graduating on time affects a person's lifetime return on the college investment.

This information apparently has an effect. Table 1 reveals that treated students say 40 percent more often that they were "much more likely to apply" if "The college has a high graduation rate."

C. *Information on a College Fitting their Desires*

Low-income high achievers are well aware that their achievement is unusual for students of their background. They know they have learned much more than many of their classmates. They report being eager to enroll where their preparation for college will pay off. They say they want to attend schools that have resources to instruct

necessarily reading) the materials. See Hoxby and Turner (2013) for a detailed discussion.

[4] A "peer college" is one in which the median student's college assessment score is within 5 percentiles of the student's own.

[5] We show treatment-on-the-treated effects to be consistent with the results mentioned above. To obtain intention-to-treat effects, multiply by 0.4.

Table 1— Determinants of Students' College Application Decisions

How important were each of the following factors in your decision about where to apply?	Control mean of "Much more likely to apply if … "	ECO-C treatment effect	Treatment effect as percentage of control mean
I could tell from the college's materials that I would get enough financial aid to attend.	0.402	0.156***	38.8
The college advertised that it admits students without regard to financial need.	0.225	0.096*	42.7
The college's average student has test scores and a GPA like mine.	0.320	0.133**	41.6
The college has a high graduation rate.	0.258	0.104**	40.3
The college's academic programs have a very good reputation.	0.785	0.068	8.7
Students with an income background similar to mine are well-represented at the college.	0.046	−0.016	−34.8

Notes: The comprehensive ECO treatment-on-the-treated effect is from a regression of the "Much more likely to apply" indicator on treatment status, scaled by the probability of being treated (see text).

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Source: Authors' calculations using the 2011–2012 ECO cohort. See Hoxby and Turner (2013) for additional details.

them intensively and curricula for students with their preparation. Yet, they do not necessarily know which schools these are. ECO-C informs students about schools' instructional resources and student bodies. It also tells them how to use reliable sources, like the US Department of Education's College Navigator, to find schools that fit their desires.

It appears that this makes a difference. Treated students are 42 percent more likely to say that they are "much more likely to apply" when "The college's average student has test scores and a GPA like mine." We do *not* find statistically significant evidence that treated students are more likely to say that they "are much more likely to apply" if a "college's academic programs have a very good reputation." However, the control group is very (79 percent) likely to say this even though they *routinely* apply to schools with weak academics.[6] Thus, we believe this (non) result arises because ECO-C causes students to find schools that really are academically strong but also causes them to learn that schools that they believed to be strong are actually weak.

[6] See Hoxby and Avery (2013); Hoxby and Turner (2013).

D. *Clearing Up Misimpressions*

Do low-income high achievers suffer from misimpressions about colleges more generally and does the intervention rectify them? One survey item asked students why they chose not to attend specific types of colleges. They were offered several answers, none of which, naturally, contained a falsehood. Students often picked the "other" category and provided a very revealing open-ended response.

"Other" was picked by 36 percent of students who did not apply to a liberal arts college, 15 percent who did not apply to a most selective private university, and 24 percent who did not apply to a flagship public university. Notably, treated students were less likely to choose "other" than control students.

Liberal Arts Colleges.—Low-income, high achievers seriously misunderstand liberal arts colleges. Numerous students express a lack of familiarity with the basic model:

"What is a private liberal arts college?"
"I don't know what this is."
"I am not liberal."

Moreover, an overwhelming number do not understand that the liberal arts include mathematics and science. Indeed, engineering majors are often offered by the liberal arts colleges that are peer schools for high achievers. Students often believe that "liberal arts" means "humanities" or even just "art":

"I don't like art/art related subjects."
"I'm a math/science guy. I'm not very good at liberal arts."
"Liberal arts is for people who aren't good at math."
"Liberal arts colleges typically do not have mathematics majors."

In several hundred cases, a student who replied that she did not apply to a liberal arts college because it "does not offer my major" had an intended major that is *always* offered: politics, biology, mathematics, economics, physics, psychology, and even English.

Further, students often believe that attending a liberal arts college will prevent them from attending graduate school later:

"I plan on attending medical school."
"I plan on grad school later."

Flagship Public Universities.—One might suppose that the selective school most salient to low-income high achievers would be their state's public flagship university. Such schools not only offer a wealth of academic opportunities, they often have merit scholarships and honors programs for high achievers. Yet, many low-income high achievers fail to apply to their flagship.

This is not because, as is sometimes supposed, the students prefer to stay close to home. This answer is rarely picked. Instead, their responses suggest that it is not the academic riches of the flagships that are salient but non-academic characteristics that are *off-putting* to low-income high achievers:

"My flagship school is too focused on sports and partying, and too big."
"Students too focused on the party scene (I don't mind parties)"
"Too much party and not enough academics."
"I was not interested in attending an institution with such a sports-centered atmosphere"

The flagship's excess size, sports, and parties were consistent themes. Students who made such comments often did not apply to academically rigorous colleges but, instead, to ones much less selective than the flagship.

III. Conclusion

The ECO survey allows us to get "inside the black box" of low-income high achievers' decision-making. Students in the control group lack information about net prices, instructional resources and rigor, student bodies, and curricula. The comprehensive ECO intervention improves their knowledge. This may explain why treated students made different application and matriculation choices than control students.

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