CEDR Working Paper WP #2015-11



# "(Un)informed College and Major Choice": Verification in an Alternate Setting

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### 1 Introduction

The decision to pursue formal education has significant labor market implications. To approach the decision rationally, a student must consider the costs and benefits of each available option. However, mounting empirical evidence suggests that reported expectations of costs and benefits are uncertain and vary across students.

Hastings et al. (2015) (hereafter HNRZ) provide a basic theoretical framework for differences in student beliefs based on the costs of information gathering. Students who value financial outcomes less or who must pay a high cost to gather information are likely to gather less information.

Based on this model, HNRZ highlight five predictions, detailed in the next section. Each prediction is an implication of differing costs of information across groups or student preferences. HNRZ evaluate these predictions using Chilean data and find support for them. As they note, there is a need for the model to be tested in alternate settings. In this paper I evaluate four of these predictions using the data set from Huntington-Klein (2015) (hereafter HK), which comes from a 2012 survey of 1,224 high school juniors and seniors near Seattle, Washington and focuses on differing levels of education rather than major choice. More details about survey design, survey administration, and response rates are in Huntington-Klein (2015).

I find strong support for two of the predictions, partial support for another two, and also find differences in informational access across groups as expected.

# 2 Evaluating the HNRZ Predictions

(1) Students who face higher search costs (e.g. students from low-SES, college-inexperienced families, neighborhoods, or schools) should have less accurate expectations about college characteristics.

Mimicking Table 2 in HNRZ, I report errors in student expectations across socioeconomic status (SES) in the HK sample in Table 1. SES is measured by whether the student has ever been a Free or Reduced Price Lunch (FRPL) recipient. Results are very similar if instead comparing students with above-or below-median self-reported GPA, or students with or without a parent

<sup>&</sup>lt;sup>1</sup>Their fifth prediction, concerning college dropout, cannot be tested using the HK data because it does not follow students through college.

Table 1: Errors in Earnings and Cost Expectations

-	% Did Not	Median	IQR	N			
	Respond	Error					
(A) Tuition expectation errors, first-choice institution							
All students	20.2	40.6	131.2	282			
Low-SES	31.2	38.6	153.4	125			
High-SES	10.7***	44.9	110.0***	149			
(B) Tuition expectation errors							
All students	24.1	70.4	193.3	1,224			
Low-SES	33.9	70.4	238.0	531			
High-SES	14.7***	70.4	158.0***	650			
(C) Earnings errors, typical graduate at first-choice education level							
All students	7.7	38.1	92.2	1,199			
Low-SES	10.5	23.5	96.8	514			
High-SES	4.8***	47.1***	83.2***	643			
(D) Earnings errors, own earnings at first-choice education level							
All students	6.3	56.8	113.3	1,077			
Low-SES	8.2	46.3	116.9	438			
High-SES	4.8**	64.6***	104.4***	606			

<sup>\*/\*\*/\*\*\*</sup> indicates statistical difference from the number directly above at the 10/5/1% level, determined by 5,000 bootstrap iterations. Students with missing data were dropped from the relevant analysis.

with a bachelor's degree. HNRZ suggests these students have higher barriers to information, an assertion examined directly in the *Information Sources* subsection below. In all cases, error is calculated as  $100 \times (\text{Student report -benchmark})/\text{benchmark}$ .

Panels A and B compare student expectations of tuition, fees, and book costs at four local university systems against the actual in-state listed charges. Panel C compares earnings expectations for the "typical Washington State thirty-year old" graduate with their first-choice level of education with National Longitudinal Survey of Youth (NLSY) 1997 cohort respondents aged 29-31 in Washington State with that same level of education. Panel D compares expectations for one's own earnings with their first-choice level of education against NLSY respondents, matched by education, gender, and GPA

quintile.

Students overestimate charges at their first-choice institution by 40.6% at the median, much higher than in HNRZ. However, differences between students are consistent with HNRZ, who suggest low-SES students, who face barriers to information, should be less confident and have more dispersed beliefs. Low-SES students are more likely to skip the tuition question and exhibit a wider spread of responses, reported as the inter-quartile range (IQR) of the error distribution.

Students overestimate typical-graduate earnings, and their own earnings to a higher degree.<sup>2</sup> Again, low-SES students show greater spread in their responses. As a caveat, it is not clear from these differences that the high-SES students are necessarily better-informed. The distribution is tighter, but this comes along with higher levels of overestimation.

(2) Students who place relatively low value on earnings or costs in college choice should also have less accurate expectations about those attributes.

The HK survey asked about "good reasons for you to attend a college." 20.1% did not choose "Get a better paying job" as a good reason. 65.5% chose it as a good reason. A further 14.4% selected it as the most important reason. I compare the errors in earnings expectations across these three groups.

The HNRZ prediction is supported by the HK data: caring more about earnings is associated with fewer typical-graduate questions skipped (19.6% vs. 3.7% vs. 2.2%), lower errors (medians of 37.1 vs. 12.2 vs. 20.9), and tighter distributions (IQRs of 110.5 vs. 88.6 vs. 84.4). Results are similar for own earnings, and the lowest category is in all cases significantly different at the 1% level.

(3) Students should have more knowledge of degree programs closer to their own interests.

I test predictions 3 and 4 using first-choice institution and education level rather than major. The true between-student variance for each of these costs and benefits is likely to be greater than for college major, but the prediction should still hold.

Errors in tuition estimates (see Table 1) are smaller for first-choice institutions than any institution. The IQR is also smaller, 125.9 for first choices

<sup>&</sup>lt;sup>2</sup>Overestimation may be somewhat accounted for if, unprompted, students are incorporating inflation into expectations to account for the twelve years between NLSY earnings at the time of the survey and earnings when they themselves are thirty, but at an inflation rate of 2% this only addresses 26.8% of overestimation.

vs. 193.3 for all four.

The same pattern does not emerge for financial aid (Huntington-Klein and Blume, 2013) or for earnings expectations. For typical-graduate earnings expectations, the IQR is 92.2 for first-choice vs. 91.6 for any education level. For one's own earnings, the IQR is 113.3 vs. 112.4.

(4) Students who have less accurate expectations about earnings or costs or who do not value these outcomes when making degree choices should be more likely to enroll in degree programs where past students have performed poorly along these dimensions.

For students who chose a Washington State four-year public college as their first choice, I regress the earnings of the first choice (average quarterly earnings of graduates in the first year after graduation from Unemployment Insurance data) on quartile indicators for typical-graduate earnings errors, and on earnings emphasis as described for prediction 2. Results are robust to the inclusion of gender, GPA, and FRPL controls.

The prediction is mildly supported. Students with lowest- or highest-quartile errors choose lower-earnings colleges than those in the middle two quartiles, (approx. \$300 difference between any of 1st/4th and 2nd/3rd, p < .1, N = 253). Since lowest-quartile errors are the most accurate, unusual errors, rather than large errors, are associated with low-earnings institutions. I do find that those with more emphasis on earnings attend higher-earnings colleges (\$105/\$347 difference for a good reason and most important reason, respectively, N = 258), but the difference is not statistically significant.

(Additional Prediction) Information Sources

Table 2, an analogue of HNRZ's Table 5, reports rate of use for sources of information about college. Results are similar when looking at sources of information about work.

In line with the HNRZ model, students with higher SES or higher GPAs make use of more sources of information than their peers. In general, differences are larger for background-specific sources such as family, friend group, access to the internet, and the opportunity to visit colleges. Differences are lower for school-based resources likely to be more equitably distributed across groups.

Table 2: Sources of College Information

	All	Low-SES	High-SES			
	Students					
Source of Information about College						
Parent	70.5	55.9	83.5***			
Other family	50.0	44.1	55.2***			
Teacher	69.7	68.4	71.5			
Other school staff	53.2	51.6	55.1			
College rep.	45.0	46.0	45.1			
Other adult	47.3	40.9	53.1***			
Friend	58.1	50.3	64.9***			
College fair/event	37.2	37.9	37.1			
Visit to a college	51.1	44.6	56.9***			
Printed materials	35.9	28.6	42.9***			
Internet	52.9	41.6	63.1***			
TV or movies	23.6	21.8	25.7			
Observations	1,224	531	650			

<sup>\*/\*\*/\*\*\*</sup> indicates statistical difference from the number immediately to the left at the 10/5/1% level, determined by 5,000 bootstrap iterations.

#### 3 Discussion

Educational choice is an area in which many of the participants are facing complex decisions for the first time and are unlikely to have full information about the consequences of their actions. While empirical results concerning both the beliefs of students and how barriers to information have been accumulating, there has been little useful theory.

HNRZ offer a model that is likely to prove useful in future study of student beliefs, and bring attention to information deficiencies among disadvantaged students. The predictions are applicable to a broad range of educational settings, which allow the model to be tested in the HK data. There is room for additional tests in other contexts, and potential revision based on the weak evidence for predictions 3 and 4 here. However, I find that these predictions largely hold up in this alternate setting.

## References

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