The Importance of Information Targeting for School Choice Decisions

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While school choice programs are common, researchers know little about the underlying decision-making process and the transfer of information across agents. We typically model the household as a unitary decision maker, yet the preferences and information sets of students and their guardians can differ.[1] Knowing who ultimately decides and how the information available to each agent affects the decision has crucial implications for the design of school choice systems, policies to increase participation in such schemes, and the most effective information dissemination strategies. The key barriers to understanding the decision-making process and the role of information are a lack of data and the endogenous allocation of information. In this study, we experimentally varied the provision of information about school quality, admissions standards, and application strategies to students and their guardians to observe changes in behaviors and the decision maker's identity.

In Ghana, and elsewhere, tremendous scope exists to improve information access and thus students' schooling decisions. First, poorly informed choices lead to inefficient and expensive ex post sorting and sub-optimal matching. Second, even high ability students make choice errors, and these errors are more common among marginalized groups (Lai et al. 2009 in Beijing, Lucas and Mbiti 2012 in Kenya, Ajayi 2013 in Ghana). Third, in settings with optional school choice, low income or low education households might be excluded (Walters 2014).

Increasing engagement, especially among guardians, could inexpensively reduce these inefficiencies in the schooling market and improve student outcomes. Previous research that

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[1] In Ghana most guardians are parents (In our sample, 93% of guardian respondents were parents.). We use the more inclusive category of guardian to account for alternative household structures.

sought to inform both parents and students targeted students and then encouraged them to share the information with their parents (Dinkelman and Martinez 2014 on higher education financing in Chile) or only targeted students as parents proved too difficult to target (Hoxby and Turner 2012 on university applications in the US). Giustinelli (2016) modeled the decision process based on survey and choice information, but did not experimentally vary information provision. We build on these studies by experimentally varying whether guardians were direct recipients of information and testing the resulting behavior. Further, we are one of the few studies that directly interviewed guardians, the notable exception being Banerjee et al. (2010).

To test the effect of information and the identity of its recipient on school decisions, we created an information booklet and video that we delivered in a school-based information session. We tested the effects through a 900-school randomized controlled trial in Ghana, a country with universal senior high school choice, admissions based on stated preferences and test scores, and limited knowledge among students of crucial school characteristics. We randomly allocated each junior high school in the sample to one of three arms: information session for students, separate information sessions for students and guardians, and control.

Based on data collected from a survey of guardians, we find that our intervention increased the likelihood that guardians reported both helping with and having the final vote in the selection process. In addition, we find that specifically targeting guardians led to significantly larger changes. This involvement is borne out in their information set, as guardians from schools in which they were specifically targeted were more likely to know the order of the schools their child listed. We do not find evidence that the intervention made guardians dictators, as they were no more likely to report being the only decision maker.

Our findings build on earlier work examining school choice decisions and the importance of the decision maker. Our paper is the first to test for changes in behaviors and the identity of the decision maker, uncovering the mechanisms behind observed school choices.

I. Background and Setting

In Ghana, at the end of grade 9, students apply to four senior high schools through a centralized system that admits students to at most one school based on their choices and test scores. This is the only official avenue through which students apply to senior high schools that follow the national curriculum.[2] Most students in government junior high schools have limited information about senior high schools even though parents and students state that school attributes like admission probability and historical performance are important considerations. This information deficit is particularly acute among otherwise marginalized students (Ajayi 2013).

II. Conceptual Framework and Empirical Strategy

The key conceptual difficulty in identifying the effect of information on guardian and student involvement in the school choice process is the non-random allocation of information. To identify this effect, we performed a randomized controlled trial of an information intervention for 9th grade students across 900 government schools in the Ashanti region of Ghana. Our three study arms were (1) an information session for students, (2) treatment one plus an information session for parents, and (3) control. During the information session, students received a booklet we created with information about application strategies and the quality and admissions criteria of all senior high schools in the region, watched a video we created that dramatized the school selection process, and participated in a question and answer period with a trained enumerator.

[2] Separate admissions occur for the small, expensive private school sector that follows an international curriculum and caters primarily to non-Ghanaian nationals.

For schools in treatment 2, in addition to the student session, guardians were invited to the school to attend a session specifically for guardians where the same video was screened and a question and answer period occurred.

To identify the overall effect of the intervention, we estimate the following equation

$$Y_{is} = \alpha + \beta T_s + \boldsymbol{X}_{is}'\boldsymbol{\gamma} + \epsilon_{is} \quad (1)$$

where Y_i is the outcome for individual *i* in school *s*, T_s is an indicator equal to 1 if school *s* was a treatment school (combining both treatments 1 and 2), and X_i' is a vector of control variables including the age of the respondent and dummy variables for district, the gender of the respondent, whether the respondent was the student's guardian, the gender of the student, and whether the home language was Twi. The error terms are allowed to be correlated within a school but are assumed uncorrelated across schools. In this equation, the primary coefficient of interest is β, the combined effect of the two information arms on outcomes.

Further, we augment this equation by replacing our treatment indicator with separate indicators for treatment 1 (students only) and treatment 2 (students and guardians).

For our outcomes of interest, we first test whether guardians of students in treatment schools were more likely to have seen the information booklet or an informational video on the school selection process. Then we test whether the treatment affected self-reported guardian involvement in the process, whether the guardian provided the deciding vote and took others' opinions into account, whether the guardian was more informed, and whether the intervention changed the respondent's aspirations for the student.

III. Data

Even though the entire experiment includes 900 schools, for this study we focus on the 450 schools – evenly divided across the three treatment groups – where we conducted student

baseline surveys.[3] Prior to the intervention, students provided contact information for their guardians (most often their parents) as well as other adults in their household. We randomly selected a subset of students and after the intervention and school selection process attempted to survey their guardians over the phone. In cases in which those individuals could not be reached after multiple attempts, other adults in the household were contacted and surveyed.[4] We reached 6,281 adults who answered questions about their beliefs and preferences and the decision-making processes in their households. Of our sample, 84% of the adults sampled were guardians (of whom 93% were parents), almost all of the remainder were adult relatives, mostly grandparents or siblings, with less than 1% being a non-relative.

Due to budgetary limitations, we were not able to conduct a full baseline sample of these same individuals. For baseline balance we rely on the statistical similarity in time invariant respondent characteristics. Across all three treatment arms, the education level and the likelihood of the respondent being female, the student's guardian, the student's parent, having Twi as the home language, being self-employed, self-describing as low income, being responsible for other grade 9 students, and having another child in senior high school are statistically similar. Respondents are on average 46 years old, but we find that respondents in the student only information arm are statistically older, by about 0.7 years, than the other two arms. Therefore in all of our regressions we control for respondent age.

[3] In order to separate any effect of priming that might occur from a survey on school choice from the information intervention, we only performed the student and guardian surveys in one half of the study sample. We focus on that half of the sample here. Future research based on administrative data will include the entire 900 school sample.
[4] Despite efforts to contact adults in households from each school in the study, in a small number of schools, no adults could be reached due to a lack of mobile phone service in extremely rural areas. Our sample consists of household adults from 436 schools – 143 information to students only, 148 information to students and guardians, and 145 control. From an additional 3 schools we were unable to reach any guardians and spoke only to other adults.

IV. Results

Table 1 presents the effects of the school's treatment status on whether guardians reported having seen a booklet with secondary school information and having seen a video about the school selection process, an estimation of Equation 1 limited only to guardians.[5] All guardians in the guardian information treatment schools were invited to attend the information session, but not all did. The estimates in columns 1 and 3 show that guardians in the two treatment groups were 12 percentage points more likely to report having seen a booklet and 5 percentage points more likely to report having seen a video, a 63% and 118% increase over the control group, respectively.[6] In columns 2 and 4, we split these results by the two treatment groups. Parents of students in the student-information-only group were 10.5 percentage points more likely to have seen the booklet, while those directly targeted were 12.8 percentage points more likely to have seen it. The difference between these two coefficients is not statistically significant, consistent with students being instructed to take the booklet home for study. Further, consistent with the design, the student-information-only treatment did not noticeably increase the likelihood that guardians reported having seen the video. Those targeted by the guardian intervention were 9.6 percentage points more likely to have seen the video, an increase of 223% over the control group mean. For the remaining analysis we provide separate estimates for the two treatments, as we found that the treatment differentially affected the likelihood that guardians saw the video, a measure of exposure to both the video and the implementers.

[Table 1 about here]

[5] The results are similar if we include other respondents, as 84% of the respondents were guardians, or limit the sample to parents only as 93% of guardians are parents.

[6] Guardians in the control group may have seen booklets from the treatment groups or been mistaken. Prior to the start of the study, booklets with any information were rare, and we are not aware of any other videos that provided information.

Table 2 presents the estimated effects of each of the two treatments on guardians' behaviors and preferences. In Columns 1 and 2, we see that the combined student and guardian treatment increased the likelihood of respondents reporting that guardians helped with school selection (7.2 percentage points) and that they had the final vote (5.5 percentage points). One concern with these findings could be that guardians became sole decision makers, ignoring others' preferences or input. In results not presented, we do not find any change in the likelihood that a guardian was the sole decision maker. An additional concern could be that guardians, having participated in the session, were answering the questions in the way they perceived to be correct but had not changed behavior. This is unlikely for at least two reasons. First, the information sessions did not emphasize that guardians should assist in the school selection process, instead that it should be an informed process. Second, guardians demonstrated that they knew more about the choices their child listed. In Column 3 we re-estimate Equation 1 with knowing the order of the choices listed by the child on the official choice sheet as the dependent variable and limiting the sample only to guardians.[7] We find that guardians were 6.2 percentage points more likely to know the order of the students' choices.[8]

[Table 2 about here]

These increases in involvement and knowledge are remarkable since only 32% of guardians in the guardian-information treatment reported having seen a booklet and 14% reported having seen the video. Effects on survey responses of this magnitude suggest a very large Treatment on the Treated effect and/or spillovers across guardians of students in the same schools. Future research will disentangle these effects.

[7] The results are similar if we estimate this over the entire respondent sample or limit it to parents.
[8] In results not presented, we find that these effects do not differ by respondent or guardian education level, indicating that our intervention was able to increase participation of the least educated parents.

In Column 4 we test if aspirations changed as a result of the intervention, something that we did not specifically target. We test whether the respondent reported that he or she wished the student to continue schooling to the university level and find no effect.[9] Of note in this column is the strong negative correlation between the respondent or student being female and university aspirations. Either person being female, holding the other gender constant, reduces the likelihood of university aspirations by about 13 percentage points.

V. Discussion and Conclusions

We find that directly including guardians in a simple information intervention increased their involvement in the school selection process, but did not cause them to ignore the opinions of others. Further, guardians at all education levels more fully engaged in the process. Incidentally, we also find evidence of lower reported ambition among female guardians (regardless of the gender of the student) and on behalf of female students (regardless of the gender of the guardian). Our results suggest that guardians should be targeted directly to increase their involvement in the school choice process. This result has important implications for both mandatory school choice systems, like in Ghana, where the goal is to increase informed decision-making and optional systems in which participation by all groups is sought.

Future research will study whether increased guardian involvement changes submitted preferences, senior high school matriculation and continuation, and senior high school test scores.

[9] The sample size in this column is smaller than in columns 1 and 2 because some respondents answered "don't know." The result is similar if this is considered less than university level. Aspiring to senior high school might be more likely to be changed by information about senior high schools, but over 96% of respondents selected an education level of at least senior high school.

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Table 1: Information Delivery

	Seen Booklet		Seen Video	
	(1)	(2)	(3)	(4)
Information Treatment	0.117***		0.051***	
	(0.015)		(0.008)	
Information to Students Only		0.105***		0.004
		(0.018)		(0.007)
Information to Students and Parents		0.128***		0.096***
		(0.017)		(0.010)
Test of Equality of Treatment Coefficients				
F Statistic		1.41		78.19
p-value		0.24		0.00
Observations	5,272	5,272	5,272	5,272
R-Squared	0.04	0.04	0.01	0.03
Control Group Mean	0.186		0.043	

Notes: Linear probability models. Additional controls: age of the respondent and dummy variables for district, the gender of the respondent, whether the respondent was the student's guardian, the gender of the student, and whether the home language was Twi. Columns 1 and 2: The dependent variable is an indicator for whether the guardian reported "ever see[ing] a booklet or list of all available secondary schools in Ashanti region." Columns 3 and 4: the dependent variable is an indicator for whether the guardian reported "ever see[ing] a video about the school selection process." In columns 1 and 3, we include a single treatment indicator equal to one if the child of the respondent is in either a student information treatment school or a guardian and student information school. In columns 2 and 4, we include a separate indicator for each of the two treatment arms. Standard errors clustered at the school level appear in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 2: Information Use

	Guardians Provide Help in Selection	Guardians Have Final Vote in Selection	Guardian Knows Order of Choices	University Aspirations
	(1)	(2)	(3)	(4)
Information to Students Only	0.029	0.010	0.032	0.007
	(0.020)	(0.019)	(0.022)	(0.021)
Information to Students and Parents	0.072***	0.055***	0.062***	0.001
	(0.020)	(0.019)	(0.023)	(0.021)
Respondent is Female	-0.048***	-0.043***	-0.036***	-0.127***
	(0.013)	(0.013)	(0.014)	(0.013)
Student is Female	0.013	0.008	(0.002)	-0.161***
	(0.012)	(0.012)	(0.013)	(0.013)
Test of Equality of Treatment Coefficients				
F Statistic	4.54	5.22	1.77	0.09
p-value	0.03	0.02	0.19	0.76
Observations	6,281	6,281	5,272	5,418
R-Squared	0.09	0.08	0.03	0.07
Control Group Mean	0.40	0.34	0.25	0.69

Notes: Linear probability models. Additional controls: age of the respondent and dummy variables for district, whether the respondent was the student's guardian, and whether the home language was Twi. Standard errors clustered at the school level appear in parentheses. *** p<0.01, ** p<0.05, * p<0.1.