

Addressing students' educational aspirations through information provision: evidence from Ecuador

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Abstract

This study explores the gaps in educational aspirations in a sample of public high school students in Ecuador and runs a randomized controlled trial to investigate the impact of information about the returns and costs of education on their aspirations to high school, technical training and university. The results show that the gaps in university aspirations are the greatest among students with low self-confidence levels and among students whose parents lack higher education. Furthermore, the provision of information had no impact on university aspirations on average, but a statistically significant impact on reducing high school aspirations in favor of technical education. Our analysis also highlights the importance of addressing behavioral traits as predominant drivers of aspirations. Finally, it supports the literature showing that mere information provision may barely work to close aspirational gaps, yet it can help disadvantaged students by offering them an alternative post-secondary education degree that might not be familiar to them otherwise.

Keywords: returns, costs, information provision, educational aspirations, socioeconomic background

Data availability statement: Data for this research is deposited in a repository of the funding institution. It can be shared upon reasonable request to the authors.

1. Introduction

Multiple studies have revealed that low socioeconomic background students tend to set low educational aspirations compared to their peers with high socioeconomic background (Agasisti & Maragkou, 2023). These differences are usually stronger in developing countries (Dinkelman & Martínez, 2014). Since aspirations are widely acknowledged to drive real education and labor market outcomes (Fruttero et al., 2024), socioeconomic differences in aspirations are key to understanding the existence of poverty traps (La Ferrara, 2019), and social class persistence (Zimmerman, 2020), making aspirations a key topic in educational equity discussions (Bok, 2010).

Poverty traps refer to the mechanisms through which decisions can lead to the reproduction of poverty (La Ferrara, 2019), while social class persistence refers to the long-lasting and robust association between social class origin and attainment (Zimmerman, 2020). Both concepts are interrelated. In fact, Corak (2020) points out that the persistence of low social class can be addressed as a poverty trap. The role of educational aspirations in these dynamics is that they will affect the students' decisions, which can in turn affect their attainment and, ultimately, their social class.

Setting educational aspirations is associated to socioeconomic status through numerous mechanisms. While some indicate that it is a rational choice exercise, where individuals consider the probabilities of success, the returns and the costs (Breen & Goldthorpe, 1997), others have questioned the rationality of this decision, finding that the economic costs and returns, as well as the chances of success are misperceived, especially by disadvantaged students (Corcoran et al.; 2022; Lergetporer et al., 2021; Peter et al., 2018; Barone et al., 2017). The latter is an

approach where the formation of aspirations is shaped by the environment where the student is involved, therefore acknowledging that unequal and segregated educational structures, may lead to constrained perceptions and aspirations for some students, while these may be expanded for others. Scholars have pointed out the importance of correcting this misperception as a way of promoting higher educational aspirations (Lergetporer et al., 2021; Cheng & Peterson, 2019; Barone et al., 2017).

Our context of study is the city of Cuenca, in Ecuador, a country amongst the least socially mobile in the world (Segovia & Ramos, 2024), characterized by low educational opportunity (Brunori et al., 2023) and important levels of school segregation (Trelles et al., 2025). In the country, a university degree is associated with higher monthly earnings by 58.06 percent with respect to a high school diploma (INEC, 2021a). However, educational attainment remains low, with only 29.59 percent of individuals completing secondary education and only 21.36 percent completing higher education (INEC, 2021a).

Aspirations are formed by a complex interaction between the individual's decision making and the surrounding social, economic and cultural context. In some cases, this context entails rooted barriers for some students while advantages for others, resulting in aspiration gaps. We focus on the gaps between public and private school students. Aspirations are high overall in the country but show marked differences between students from different backgrounds. For instance, the percentage of public-school students who aspire to have a high school degree is more than double that of private school students, and careers in technical education are just as desirable as completing high school only for them. On the other hand, 57 percent of private

school students aspire to obtain a graduate degree (master or PhD), but only 37 percent of public school students report having this aspiration (Segovia et al., 2022).

Public school students usually live in lower income households and attend underfunded schools with respect to their peers from private schools. For instance, public school students are twice as likely to lack a computer, a desk or internet connection to study (Segovia et al., 2022). Furthermore, 11 percent of parents in public school have achieved tertiary education, compared to 38 percent in private schools. Besides this, the latter are twice as likely to score in the top quintile of college entrance exams (INEVAL, 2019).

Taking into consideration the extant literature suggesting that aspirations are a key driver of attainment, this study considers a sample of public high school students to measure and analyze their educational aspirations and apply a randomized intervention with the aim of correcting any misperceptions by providing information about the returns and costs of education. To study their aspirations, we focus our analysis on variables that capture the socioeconomic background (parental income, education and job status) and three behavioral variables that have been claimed to be key (namely, self-confidence, patience and risk aversion).

The remainder of this paper is structured as follows. Section 2 briefly discusses the literature on what drives educational aspirations and on interventions designed to boost them. In Section 3 we present our experimental design, and in Section 4 we explain the empirical strategy we employ to analyze our data. Section five presents our results and some important patterns regarding aspirations and their drivers. We also report the results of the information intervention and its heterogeneous effects. In Section 6, we offer some concluding remarks.

2. Theoretical framework

There are multiple definitions of aspirations, one of the most salient in the past decade has been that established by Gorard et al. (2012). This states that educational aspirations are ‘what an individual hopes will happen in the future’, irrespective of how likely it might be, which can be seen as expectations.

Despite questionings regarding the importance of youth aspirations for later in life outcomes (Cummings et al., 2012), its influence is widely recognized (Agasisti & Maragkou, 2023; Kao & Tienda, 1998). This is because aspirations will drive actions. In disadvantaged households, parents usually face employment instability, limited information and credit constraints that will end up in lower levels of investment. Furthermore, children in disadvantaged households can exert lower levels of effort because they can perceive that higher aspirations are unattainable in highly unequal societies or because they have limited exposure to role models that allow for high aspirations (Ray, 2006). In general, aspirations are linked to outcomes both in terms of education and labor market by shaping the actions, choices and efforts that the individual exerts within the social structure they develop (Fruttero et al., 2021). For instance, aspirations will drive students to opt for a “safer academic option” both in terms of academic complexity and in terms of labor market prospects (Barone et al., 2017) and will impact on whether to adopt technological innovations or not (La Ferrara, 2019).

There are multiple approaches for the theorization of aspirations. These provide explanations of how aspirations are formed and how aspirational gaps are created across groups. Overall, they state that aspirations are the result of social and individual circumstances (Fruttero

et al., 2023). Two dominant theoretical frameworks are the status attainment model and the relative risk aversion model. The former claims that differences in aspirations are formed depending on the class differentials in norms, values and attitudes in the social class of origin (Zimmermann, 2020; Kao & Tienda, 1998). Under this lens, students' aspirations are shaped by the demands and expectations of their significant others. Aspirations are key in the model as they are associated with educational attainment, which in turn determines the achievement of socioeconomic status. On the other hand, the risk aversion model of education posits that educational aspirations are primarily shaped by the aversion to losing social status (Breen & Goldthorpe, 1997). Decisions will be taken to ideally improve status or at least keep it. Key elements in this model are the costs, benefits and probabilities of success that are considered in light of rational decision making (Zimmermann, 2020). Other approaches include the theorization of aspirations as a cultural capacity by Appadurai (2004), where gaps in aspirations reflect a lack in the capacity to aspire in the disadvantaged, which is limited by the social, cultural and economic experiences available in the students' environment.

An alternative approach is by Ray (2006), who states that gaps in aspirations could reflect that despite disadvantaged individuals have the capacity to aspire, they fail to attain their aspirations due to how society works. The author defines "an aspirations window", which is comprised by the similar or attainable individuals to a person. Comparison with these attainable peers will help shape aspirations. In this respect, the author also points out that similarity is "contextual" and therefore, how society works matters for aspirations. Elements such as the level of social mobility, geographic segregation and economic inequality will define what role models a person is exposed to and, furthermore, what is perceived as "attainable". The emphasis on the

structural and social barriers is also common to the blocked opportunities framework, as described by Kao and Tienda (1998).

All in all, these theoretical approaches that guide our study emphasize through different mechanisms the importance of the student's family, social and economic environment in the formation of aspirations. Furthermore, they have been theoretically and empirically discussed, which has led to the conclusion that they are not competing paradigms and that, in fact, they share complementary features and can empirically explain aspirations (see for example Kao and Tienda, 1998; Zimmermann, 2020).

Given the importance of the student's background in the formation of aspirations, aspiration gaps in education have been especially focused on groups characterized by different socioeconomic backgrounds. This is defined as having a tripartite nature based on parental income, parental education, and parental occupation (Erola et al., 2016). Some authors claim that these variables are different or complementary measures of background; therefore, we intend to use the three of them in our study (on at the time).

Socioeconomic background is associated with multiple habits and experiences that will shape the student's aspirations to education. For instance, economically advantaged families can have higher expectations for their children, which may entail more parental involvement in the children's academic activities, more cognitive stimulation, and providing regular feedback and guidance (Bozick, et al., 2010; James, 2002). Furthermore, high socioeconomic background families tend to find higher value in education (James, 2002, Alloway 2009). This is due to their familiarity with the university system and its labor market returns, which will push parents to

create interest or build attraction for college education. Furthermore, through role modeling, this aspiration is easily transmitted to their children. Aspirations are also formed as a realization of the student having the economic chances of those pathways. Undoubtedly, higher socioeconomic status households will drive higher realizations given the wider arrange of material and financial resources that they provide to children (Davies & Kandel, 1981; Agasisti & Maragkou, 2023). Conversely, lower income households often face financial pressures, which may guide children to have a stronger interest in earning an income as soon as they leave school (James, 2002).

In addition to socioeconomic background, other elements such as behavioral traits can act as drivers of aspirations. According to Koch et al. (2015), one important trait is self-confidence, which refers to a feeling of certainty, allowing the student to be assured of what he can achieve academically (Dureja & Singh, 2011). Through a randomized controlled trial, Reuben et al. (2017) found that people with high levels of self-confidence have higher job and earnings expectations, which leads them to aspire to higher levels of education.

Outreville (2015) finds that patience is another behavioral element that is positively and significantly related to higher educational aspirations. This is because educational costs are generated before returns. Hence, if an individual has a lower present bias (preferring to study rather than work) they can expect to obtain, and thus aspire to, higher educational degrees. In fact, Perez-Arce (2017) finds that more patient students achieve higher levels of education. In this respect, it should not be neglected that structural influences such as poverty and necessity may force economically disadvantaged students to choose a short-term educational path, if any (Suarez & Cameron, 2020; Vuletich, 2020).

According to Altonji (1993) and Reuben et al. (2017), a third behavioral factor to consider are risk preferences, since educational decisions are characterized by uncertainty about whether a degree will be completed and whether the returns will materialize. Therefore, individuals with lower levels of risk tolerance might reach lower levels of education. Lergetporer et al. (2021) find that adults who achieve lower levels of education indeed show greater risk aversion.

However, some of these explanations have received important criticisms since the cultural, social and economic mechanisms that they entail might generate biased beliefs. In practice, this means that economically advantaged households will provide a different flow of information and experiences to students (Agasisti & Maragkou, 2023) not only due to the multi-generational university experience they have, but to the information networks available to them (Bok, 2010). For disadvantaged students, on the other hand, it means that they will have either incomplete or a lack of information about how the system works, as well as about existing resources and requirements (Khattab, 2015). Furthermore, it can result in over or underestimation of the returns and costs of education (Lergetporer et al., 2021) or about the probabilities of success associated with the educational paths they aspire to. These beliefs may be positive or negative to aspirations (James, 2002). For example, underestimation of the returns of university education can undermine this aspiration (Barone et al., 2017).

Under this reasoning, educational aspirations and decisions may be biased, therefore, criticism has surged with regard to the rationality of the decision making that some theories, such as the relative risk aversion theory, predict (Barone et al., 2017). In fact, research indicates that students do not engage in active search of reliable information when establishing their aspirations, but they adopt the information available in their close social circles. Of course, this

information will be constrained in a stratified society where school segregation is present. As a result, scholars have called for the need to expose students to new information or new role models, so that they can “revise their goals” (La Ferrara, 2019).

3. Literature review

The simple model of expectation formation described by Delavande and Zafar (2019) and Wiswall and Zafar (2015) proposes a way of influencing behavior – or aspirations, in our case – through exposure. According to this model, for an update of beliefs to take place, the information must meet two criteria: (i) it must be new and credible and (ii) it must be relevant, so that individuals incorporate it in the formation of their beliefs. By fulfilling these criteria, exposure to information can have an impact on aspirations.

Interventions based on these precepts have been carried out in various contexts. In what follows, we review some of the interventions designed to expose individuals to new information to change aspirations. This has been extensively done through the exposure to role models and the returns and costs of education.

With respect to role models, Porter and Serra (2019) exposed university students to women role models who majored in economics and raised females’ aspiration to choose this major. Similarly, Bernard et al. (2014) exposed parents to the experience of other locals who were able to entrepreneur, which increased parental investment in children’s education. Success stories of disadvantaged individuals have been usually employed. Examples of this are the study by Riley (2019) and the study by Kipkech and Porter (2021), which resulted in an increase in aspirations, among other results. The impact of these success stories is often linked to

identification, as seen in Nguyen's work, where showing stories of successful people that previously lived in poverty to students living in poverty showed an impact on aspirations (Nguyen, 2008). In addition, Beaman et al. (2012) raised educational aspiration in parents and children by modifying gender stereotyped beliefs through exposure to experiences of gender quotas in public institutions.

Apart from exposure to new information through role models, interventions have provided information of the returns and costs of education. In a study conducted by Bleemer and Zafar (2017), the head of households in the United States were given this information of returns and costs through a consumer expectations survey. The researchers found that while information about education costs had little effect, presenting returns information led to a significant rise on college attendance rates. Similarly, addressing the issue of biased perceptions about the value of tertiary education has demonstrated power to promote increased college enrollment (Barone et al., 2017)., correcting them through.

Taking a more multifaceted approach, Cheng and Peterson (2019) design a three-treatment experiment that looked at the separate and combined effects of information on the costs and returns of education. Their results suggest that combined information on costs and returns do not cause a significant effect on aspirations and highlight that this result may be driven by perceptions of high costs given the context of the study the United States. Providing only information on educational costs decreased the probability of choosing a university level of education, while information about the returns has no significant effect on university aspirations.

In a different context, Lergetporer et al. (2021) use the provision of information in Germany. Their results mirrored earlier studies by showing a positive effect on aspiration for both high and low socioeconomic background individuals. Yet despite this success, they pointed out that the gap in aspirations between these groups remained, highlighting the challenge that this entails.

Authors such as Dinkelman and Martinez (2014) mention that in addition to publicizing the costs of education, it is crucial to offer information on financing options, especially in contexts where families have strong financial constraints. Other authors mention that, in those contexts where university application processes and funding programs are long and complex, it is important to complement the information with further guidance. For example, Bettinger et al. (2012) find a significant impact on the likelihood of attending college by providing information on financial aid available from the government while also providing assistance and a simplified process for completing student aid applications. In the same line, the use of automated and personalized text messaging campaigns and mentors of similar age to the individual are considered low-cost behavioral interventions that manage to increase college access (Castleman and Page, 2015).

4. Experimental design

Our experimental design consisted of a randomized block design with three groups: two treatment groups, one given information on returns and one given information on costs, and a control group that did not receive any information. Students within blocks of classrooms were randomly assigned a number from one to three that assigned them to either a treatment group

or the control group. This resulted in three similarly sized segments of the sample, as shown in Table 1.

The two treatment groups were provided with different types of information through two-minute videos designed for each treatment group. Both were voice over videos that started by indicating that after high school, they have the options: to continue studying or to go into the labor market. Within the educational path, they are informed about the two options: university and career and technical education. In both videos we used background images of students while overlapping text with the information of returns and costs that was given. At the end of the video, the information they were walked through was summarized in one image.

Our treatment involved providing information on the average monthly earnings and the unemployment rate in 2021 for three education levels: university, career and technical education (CTE), and high school. This information was obtained from the Encuesta Nacional de Empleo, Desempleo y Subempleo, or ENEMDU (INEC, 2021b). As this is data collected after the pandemic due to COVID-19, we made sure to compare it with the figures of the ENEMDU 2019 and found out no remarkable differences. In particular, we did not find the sharp declines in employment and earnings that were observed in the 2020 wave of the survey. This allows us to believe that the 2021 provides a more reliable picture of the labor market.

The cost treatment informed students about the tuition fees for attending a university semester or CTE training, in addition to information on scholarships and grants offered by institutions. The latter complements the cost information with details about financial support as a counterbalance strategy, suggested by Dinkelman and Martínez (2014). The cost information

was obtained by averaging the tuition fees from the three main institutions in the city, as detailed on their respective web pages.

The experiment was conducted between May and June 2022 in the urban area of Cuenca, in the south of Ecuador. The study group comprised students from 25 public urban high schools. These schools were all co-ed public schools offering full-time study and have courses with at least 40 students. The intervention was delivered by two members of the research team, a man and a woman, plus two assistants. The videos were projected to the whole class. No other material or resources were used to deliver the information.

The students were first told that they would be taking part in a decision-making study in separate groups, with each group working with the investigators for approximately ten minutes. In addition to the welcome and introduction time, the total time of the experiment was approximately forty minutes, i.e., the duration of a classroom period in Ecuador.

The experiment consisted of two stages for the treatment groups and one for the control group. The first stage involved administering a survey to obtain socioeconomic, academic, and behavioral information, as well as the students' beliefs about the costs and returns to education. At this point, the stage is finished for the treatment group, but the control group is administered a survey on educational aspirations, which ended the study for them. Stage two involved only the treatment groups and consisted of delivering the information intervention through the two-minute videos designed for each of them.

After the video, the students were asked to complete the educational aspirations survey and the study ended for them. To minimize potential spillovers of information, especially

between the treatment groups, we ensured that the groups did not have any personal contact by having support staff lead one group out while the other was simultaneously invited into the classroom. The design of our intervention comprises a short-term evaluation. We did not plan for follow up surveys. Following the lead of Cheng and Peterson (2019), we only assess the impact of the information immediately after providing it.

Through our survey, we measured three behavioral traits suggested to drive the educational aspirations of students: i) risk aversion, ii) self-confidence and iii) patience, as assessed through present bias. These traits were measured on a 0 to 5 Likert scale. The following are the questions used to measure each trait: (i) "Are you a person who is generally willing to take risks?", (ii) "How confident are you that you will be able to finish the career you selected and earn your college degree?" and (iii) "I am willing to start working and earning money once I finish high school instead of pursuing a university degree".

5. Empirical strategy

Our main purpose was to examine the effect of the provision of information about the returns and costs of education on student aspirations. This was undertaken using Equation 1:

$$y_i = \alpha_0 + \delta' X_i + \sum_{k=1}^2 \alpha_1^k T_{ik}^k + \varepsilon_i, \quad (1)$$

where y_i is a dummy variable indicating whether individual i aspires or not to an educational degree. T_{ik} is a dummy variable that takes a value of 1 if student i received treatment k . X_i is a vector of covariates including sex, academic performance, socioeconomic status, and the behavioral traits of patience, risk aversion, and self-confidence. ε_i is an error term.

The dependent variable can take one of three possible binary outcomes separately: high school, a career in technical education (CTE), or university. That is, we run three separate linear probability models, one for the aspiration of each educational degree. In all the estimations we employ fixed effects at the school level, since we have one classroom per school, and robust standard errors. We also estimated multinomial models with the three-category variable and found that the results did not substantially differ. Although this would be preferred in econometric terms, we rely on linear probability models for ease of interpretation.

We then investigated the heterogeneous effects of our treatment conditions, using the standard approach for this (see for instance, Cheng & Peterson, 2019; Lergetporer et al., 2021), as detailed in Equation 2:

$$y_i = \beta_0 + \sum_{k=1}^2 \beta_1^k T_i^k + \beta_2 C_i + \sum_{k=1}^2 \beta_3^k (T_i^k C_i) + \eta_i, \quad (2)$$

where C_i is an indicator for characteristic i , which defines the subgroups for the heterogeneous effects analysis. Specifically, our characteristics -subgroups- are defined by the socioeconomic background (parental income and education) and the behavioral traits of the student (the student's patience, risk-aversion, and self-confidence level). Therefore, taking parental income as a characteristic of the subgroup, β_2 captures the association between background and aspirations in absence of the treatment. That is, the gap in aspirations due to socioeconomic background, proxied by parental income. β_1 represents the effect of the treatment when C_i – parental income – takes a value of 0, that is, when the student comes from a family with low-income. Consequently, $\beta_1 + \beta_3$ represents the opposite, i.e., when C_i has a value of 1: when the student comes from a high-income background, and β_3 can be seen as the differential effect of the treatment between the two subgroups.

6. Results

The sample consisted of a total of 1,073 high school students between the ages of 16 and 17 years. Table 1 displays summary statistics for the control and treatment groups (Columns 1-3) and the balance F-test across groups (Column 4). The differences in these variables across groups are small and statistically non-significant for the most part. Only academic performance is significant at the 5% level (Column 4).

[Insert Table 1. Summary statistics and balance check]

Following De Vellis (2016), academic performance, socioeconomic and behavioral variables were broken down into categories, which eases the interpretation and its later use in the identification of heterogeneous effects. Academic performance was divided into two categories, satisfactory and non-satisfactory, based on the four-category classification of the Instituto Nacional de Evaluación Educativa INEVAL (2019). We group the two top categories (8-to-10-point average) under the label *satisfactory* and the bottom two under *non-satisfactory* (0-to-7.99-point average). Parental education and job status were coded to capture whether at least one parent has university education or is employed, respectively. Income is classified by calculating terciles of income and combining the bottom and middle groups into the low category, which has an upper boundary of \$750 and approaches the urban median income of \$783 in Ecuador (Banco Central del Ecuador, 2022). The top tercile is labeled as high income. Parental education and job status are divided into two categories: (i) none and (ii) at least one parent has a university degree or is employed, respectively. Following the shape of their

distribution (De Vellis, 2016), the variables of risk aversion, self-confidence, and patience are categorized as low (0 to 2) or high (3 to 5 points).

The final sample is mainly composed of mestizo students (91%) whose parents lack tertiary education (76%) and have a low household income (68%). Most students reported *satisfactory* academic performance and were characterized by high self-confidence, patience, and risk aversion.

6.1. Differences in aspirations

Our study is theoretically grounded on the premise that a student's socioeconomic background and behavioral traits influence the formation of aspirations through several mechanisms. As a result, students from different backgrounds will differ in their educational aspirations. Figure 1 explores this premise on a descriptive level. Panel A shows students' aspirations according to the variables representing socioeconomic status (Erola et al., 2016) in the following order: (i) parental education, (ii) parental job status, and (iii) parental income. The figure shows that there is indeed a gap in educational aspirations based on socioeconomic status. Although subtle, this gap indicates that aspirations to a university degree are associated with high-income households and households where parents have a university degree or are employed. In contrast, student aspirations for high school and CTE training decrease with socioeconomic background and this difference is somewhat stronger with regard to the aspirations to high school.

[Insert Figure 1. Educational aspirations and student characteristics]

Focusing on university aspirations, it appears that parental education entails the strongest gap in this aspiration. This is in line with authors such as Erola et al. (2016), who point out that parental education is the most important predictor of children's outcomes. As such, we observe that among students whose parents have a university degree, 89% report university aspirations. That is, they are 9.1% more likely to aspire to university than those whose parents do not have this education level. In contrast, parental income (and job status) indicates a gap of only 2.9% between students from low and high socioeconomic households. These gaps are smaller than the gaps found in Germany, for instance, where parental university education represents a gap in aspirations of about 24% (Lergetporer et al., 2021). However, this may be due to the targeted nature of our intervention, which was aimed at disadvantaged schools rather than the general population.

Panel B in Figure 1 displays how behavioral traits are related to student aspirations. As expected, high self-confidence and patience – low present bias – are associated with higher educational aspirations. Specifically, we observe that approximately 46% of students with low levels of confidence aim to only obtain a high school diploma, while this figure drops to nearly 8% among the students with high confidence levels. Furthermore, students with high confidence are almost twice as likely to aspire to a university degree as those with low self-confidence.

With regard to patience, we observe that approximately 6 out of 10 low-patience students aspire to university, while nearly 9 out of 10 students characterized by high patience

report this aspiration. As expected, low (high)-patience students are more (less) likely to aspire to high school and CTE degrees.

The relationship between aspirations and risk aversion is the weakest among the behavioral traits, yet important patterns emerge. We observe that risk aversion is especially related to high school aspirations. For instance, highly risk-averse students are almost twice as likely as low risk-averse students to aspire to a high school degree only. On the other hand, students who are less risk-averse are more likely to aspire to a university degree, as well as to a CTE degree.

Overall, at a descriptive level student self-confidence is the trait most strongly related to aspirations. On the other hand, socioeconomic status does not show strong patterns, but this might be explained by the fact that our sample was intentionally selected from vulnerable schools generally characterized by low socioeconomic background students, hence there is little variation in this variable.

6.2. The impact of information provision

Table 2 shows the impact of the provision of information on the returns (Panel A) and costs of education (Panel B) on student aspirations. The results are presented with and without the inclusion of control variables. As expected, the latter barely changes the magnitude or the significance of the treatments. Overall, we find that our treatments had a statistically significant impact on aspirations, especially for high school and CTE education levels.

[Insert Table 2. Impact of information-provision treatments on educational aspirations]

Panel A shows that the returns treatment increases aspirations to CTE, while it decreases aspirations to a high school degree. The strongest effect is found for high school aspirations, with information about the returns decreasing the share of respondents who want to obtain this degree by approximately 7 percentage points. Knowing about the returns to education increases CTE aspirations by about 4 percentage points. University aspirations, on the other hand, show no statistically significant effect.

Lergetporer et al. (2021) found a 4% increase in university aspirations when parents are given information on returns to education. However, when adolescents were included in the sample, the impact doubled. In contrast, the impact of our information treatment on university aspirations was not as strong to reflect a statistically significant effect.

Our results also show that a student's sex and behavioral traits are statistically significant drivers of aspirations, although the direction of the effect depends on the education level aspirations. For instance, females are less likely to opt for high school or CTE and are more likely to aspire to a university degree than males. The results regarding behavioral traits parallel the discussion in Section 5.1, with greater confidence and patience associated with higher educational aspirations. Risk aversion has no significant relationship. Socioeconomic background, measured by parental income, has no significant impact in the evaluation of the returns' treatment.

Next, we turn our attention to the costs treatment, as detailed in Panel B of Table 2. We observe that in this case, providing information about costs increases aspirations to a CTE degree and decreases high school and university degree aspirations, although the latter is statistically not significant. Again, university aspirations are the least affected by the information treatment. On the other hand, CTE aspirations are the most impacted, with nearly 6% of students shifting their preferences toward this degree. This result is driven by high school aspirations decreasing in favor of CTE training. Finally, the control variables display similar relationships as in Panel A, with an interesting difference that in this case socioeconomic background predicts a decrease in CTE aspirations and an increase in university aspirations.

Overall, our results reveal that both the returns and cost information treatments nudge aspirations away from high school education and shift preferences towards a CTE degree. University aspirations are not affected both by the returns and costs of education that it entails.

In the main results, our primary measure of socioeconomic background is parental income. As complementary tests of our models, we repeat the analysis in Table 2 capturing the students' socioeconomic background through parental education and job status instead of income, one at the time. We also tested our results by introducing academic performance, socioeconomic and behavioral variables as continuous variables. Overall, we observe that the treatment effects remain the same. These results can be made available upon request to the authors.

6.3. Heterogeneous effects

We also explored the heterogeneous effects of information provision across subgroups defined by socioeconomic background and behavioral traits. This analysis is based on Equation 2, and the results are displayed in Figure 2. We omit the analysis for subgroups based on parental job status since the vast majority in our sample are employed. Treatment heterogeneity was overall low, which could partially be due to a generalized effect of information or to the highly homogeneous nature of the sample.

However, there are some heterogeneous effects across subgroups only for the returns treatment. These effects are especially statistically significant in terms of aspirations to a CTE degree. In some subgroups, we are also able to distinguish a shift toward CTE and even to university aspirations. The differential effects are, however, for the most part, statistically non-significant.

[Insert Table 3. Heterogeneous effects]

Focusing on the returns treatment, statistically significant impacts are observed for all aspiration levels in some subgroups. For high school and university aspirations, we found a heterogeneous effect across subgroups by parental education and risk aversion, respectively. Furthermore, for CTE degree aspirations results show two differential effects with the greatest difference in self-confidence. Indeed, information provision shifts aspirations towards CTE by approximately 18 percentual points in students with low self-confidence, which is almost five

times the overall effect (3.7%), and more than eight times the effect for those with high self-confidence (2.2%). This effect is followed by the difference across risk aversion subgroups.

With regard to the costs treatment, we do not observe any statistically significant differential effect, although there are effects for some specific subgroups. Concerning high school aspirations, the highest subgroup effect is found for students with low-self-confidence. On the other hand, for CTE aspirations the highest subgroup effect is for students with high risk aversion. Indeed, cost information treatment for students with high-risk aversion increases the aspiration to CTE by 10.5 percentual points. Compared to the returns treatment, the costs treatment does not impact university aspirations in any subgroup.

7. Discussion

Our results show that there are important gaps in socioeconomic and behavioral variables in our sample. Differences in parental education and self-confidence entail the largest gaps in aspirations, which aligns to past research (Agasisti & Maragkou, 2013; Erola et al., 2016). Our study also reveals that behavioral traits are statistically significant and robust predictors of aspirations. Even when controlling for socioeconomic status, self-confidence, patience, and risk aversion are important drivers of the potential choices that students make. This presents valuable information for stakeholders involved in the education process as these traits may also be associated with other important educational indicators such as dropout and completion rates.

Treatment effects mainly show that neither information on returns nor costs have a statistical effect on aspirations to university in our sample. However, information consistently decreased aspirations to only obtain a high school degree and increased the desire to acquire a

CTE degree. These results have some implications. First, although we only focus on public school students, these are substantially more likely to aspire to a high school education than their peers in private institutions. Hence, a downward shift in this aspiration (with a simultaneous increase in aspirations for post-secondary degree such as CTE) could help bridge the gap in final attainment between these two groups of students and, consequently, the returns they enjoy in the labor market. As a result, CTE training emerges as a key post-secondary alternative. Not only we find treatment effects, but it is more affordable and has the potential for other positive effects. Indeed, in countries where vocational education is widespread and strengthened, it has been shown to promote upward intergenerational mobility precisely by providing an opportunity for students from poorer backgrounds (Chuard & Grassi, 2020).

Second, the absence of a statistically significant effect in university aspirations may reflect the presence of deeply engrained perceptions in students. As discussed in our theoretical background, the structural characteristics of the country shape aspirations through the social and economic environment in which the student forms them. Specifically, features of the education system in Ecuador, such as socioeconomic segregation, imply that students from lower socioeconomic backgrounds are more likely to attend under resourced schools with lower instructional quality, fewer academic enrichment opportunities and less experienced teachers (Trelles et al., 2025). This involves weaker development of academic skills, and a lack of peer networks that encourage and support university aspirations. Therefore, even if engaged with the opportunity to go into higher education, these students may have inadequate preparation to succeed. Indeed, studies show remarkably low social mobility in the country for those from the lowest socioeconomic backgrounds (Segovia & Ramos, 2024). Beyond this, two other barriers are

the limited availability of public university places, and the strong credit market constraints. Together, these structural obstacles may create an environment where many disadvantaged students do not even see university as a possibility, making our information strategy not itself a very effective approach. This can be backed by past evidence showing how the social and economic context shapes what is attainable to the student (see for instance Browman et al., 2019; Chavous et al., 2003; Molla & Gale, 2024; Stoddard et al., 2015; Zimmerman, 1995).

The latter underscores the pressing need to think about strategies that extend beyond individual focused efforts to the structural factors. Systemic reforms that reduce segregation, for instance, involve expanding institutional support for disadvantaged students, enforcing policies that improve school quality and integration. Therefore, in what follows we discuss how the heterogenous effects found in this study may guide such efforts, thinking in adolescents in high school.

First, we found different effects across levels of self-confidence. The impact of information on low self-confidence students is up to nine times the effect on high self-confidence students (18 % against 2% for the returns treatment). This effect is important not only due to its magnitude, but also because, according to Agasisti & Maragkou (2023), low self-perception of academic potential can be especially strong in low socioeconomic background students. Therefore, if changes in aspirations are observed as a result of interventions, those who have lower self-confidence will, in general, get more benefit from it. This is valuable information for the school directors as well as policy makers as those students will in general be at risk of disengaging from the educational system. Therefore, targeting interventions at them may not only have a pronounced impact but may also be socially desirable.

Agasisti and Maragkou (2023) state that educational aspirations will be low if students perceive low academic potential in their future. The provision of information may change that by providing a clear connection between effort and outcomes and pushing students towards greater persistence and motivation. Schools that recognize this can implement tailored interventions to foster a more motivated and resilient student body. For these efforts to lead to structural changes, interventions in this domain can include fostering policies in the education system, where curricula and teaching focus on strengths rather than in weaknesses such that low confidence students are taken into consideration.

A second finding from the subgroup analysis relates to the impact of the returns treatment on highly risk-averse students. Recall from Section 5.1. high-risk-averse students were less likely to aspire to university compared to low risk-averse students. Our results show that this gap is shortened by the return treatment which increases university aspirations for highly risk-averse students by 10.4% (Figure 2). This is in line with evidence by Barone et al. (2017), who find that for risk-averse individuals, the provision of information may guide aspirations toward the less risky degree in terms of their payoff, which in Ecuador is indeed university education.

Acknowledging this can be useful for schools and policy makers as risk-averse individuals will usually focus more on immediate risks than on long-term benefits. Therefore, designing and targeting programs for them can foster a more forward-looking mindset by mitigating the uncertainty these individuals associate with delayed returns, helping them make more informed, rational decisions about their futures in educational and other areas such as finances. Embedding initiatives within broader educational policies such as integrating financial literacy and career guidance into school curricula and strengthening institutional support for post-secondary

transitions can contribute to change in the education structure, hopefully in the direction of more and better opportunities for students.

A third interesting finding is identified when using parental education as a proxy for socioeconomic status. The returns treatment had a statistically significant impact on decreasing the aspirations to high school while increasing the aspirations to CTE (3.9%) of students from low parental education backgrounds. The results also show that the aspirations of those with university educated parents are not affected. Overall, this entails that information can contribute to diminishing the aspirational gap between students with different parental education levels, identified in Section 5.1. This finding challenges the prevailing assumption that students from low socio-economic backgrounds families have fixed aspirations that are difficult to modify. Instead, it suggests that they are receptive to information and are able to update their beliefs, accordingly, reshaping their educational and career aspirations. Policymakers can leverage this, for instance, it could be useful to strengthen the promotion of vocational education alongside university alternatives. Such initiatives could help to improve the life prospects of students from disadvantaged backgrounds and could also create more inclusive educational systems that cater to the diverse needs of students.

Moving to a final interpretation of our results, we assess the substantive meaning of the effect sizes. As Bernardi et al. (2016) suggest, this involves moving beyond statistical significance to consider the broader social implications of the results. In this sense the effects of the return's treatment show us that an increase in aspirations for CTE schools by 3.7 percentage points over a baseline of 5.1% (Table 2) represents more than 1.5-fold increase which has a substantive meaning; conversely, the 3.3 percentage point increase in university aspirations, against an 83%

baseline, represents a less than 5% change which is relatively small and also statistical not significant. The same analysis on the cost treatment shows us that an increase of 6.1% on CTE aspirations over a baseline of 5.3% has a substantive meaning while the effect on university aspiration (an increase of 1.4% over a baseline of 82.4%) is not substantial nor significant. These interpretations suggest that a cost-effective intervention on the provision of information should focus on promoting technical education. Overall, the social significance can also be seen in the study implementation close to the time where the students will have to actually make the decision whether to continue their education, meaning that it could have had some influence on real decisions.

8. Conclusions

This study was developed based on the idea that educational aspirations are shaped by the constrained access to information that economically disadvantaged students face in a context where structural barriers such as educational segregation and inequality of opportunity coexist. With this in mind, we designed a randomized controlled trial to test whether the provision of information can impact aspirations.

We find important shifts away from high school diplomas and towards CTE training, but little to no impact on university aspirations. Increased aspirations to CTE might be positive as it can represent a viable post-secondary alternative to lower backgrounds students. Furthermore, national data show that in absence of interventions, CTE degrees are as desirable as high school diplomas, despite the lower economic returns of the latter.

Considering these findings, we conclude that providing information may be valuable; however, its impact may be constrained by broader structural barriers.

In Ecuador, low intergenerational mobility and socioeconomic segregation characterize the education system (Segovia & Ramos, 2024; Trelles et al., 2025). This highlights the need for comprehensive public policies that acknowledge the complex interplay between structural barriers and individual decision-making, ultimately guiding more effective strategies toward dismantling entrenched inequalities. Policies aimed at reducing educational inequality include improving school quality in disadvantaged areas, expanding access to financial aid, and providing tailored support to students from low-income families and underfunded schools. Moreover, broader economic and social policies that lift families out of poverty and reduce economic precarity can have indirect but powerful effects on educational aspirations, by alleviating the constraints that prevent students from envisioning a better future and furthermore, to allow for the attainment of these (Muller et al., 2024).

Limitations in the study include the time frame of the intervention, which collected information about the aspirations of students immediately after delivering the intervention. We cannot predict if these effects will be short-lived but past research has found that the effects prevail even after a period of time such as 6 months to one year (Jensen, 2010; Nguyen, 2008). Even if the effects are modest and temporary, behavioral theory has pointed out that short-term changes may have a lasting impact if followed by continuous support. In this sense, our study lays the groundwork and calls for long-term policy development in the country.

To enrich the study, future research could exploit a longitudinal design and explore other treatments such as combining both the costs and returns information into one. Other strategies that have successfully impacted education aspirations have provided guidance on the procedures for applying to higher education, others have made the students more familiar with campuses and facilities.

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Table 1. Summary statistics and balance check

	Control (1)	Treatment 1 (2)	Treatment 2 (3)	p-value (4)
Sex: female	0.558 (0.497)	0.593 (0.492)	0.577 (0.495)	0.645
Age	16.661 (0.842)	16.612 (0.816)	16.616 (0.779)	0.671
Ethnicity: mestizo	0.911 (0.285)	0.928 (0.259)	0.912 (0.284)	0.653
Academic performance: satisfactory	0.650 (0.478)	0.737 (0.441)	0.676 (0.469)	0.036
Monthly income: >\$750	0.322 (0.468)	0.343 (0.476)	0.347 (0.477)	0.755
Parental education: university (≥ 1)	0.236 (0.425)	0.224 (0.418)	0.188 (0.391)	0.260
Parental job status: employed (≥ 1)	0.986 (0.117)	0.986 (0.117)	0.983 (0.130)	0.922
Self-confidence: high	0.897 (0.304)	0.906 (0.292)	0.864 (0.344)	0.167
Patience: high	0.761 (0.427)	0.748 (0.435)	0.733 (0.443)	0.689
Risk aversion: high	0.350 (0.478)	0.343 (0.476)	0.358 (0.480)	0.921
Observations	360	361	352	

Column (1-3): sample means, standard deviations in brackets (for each group). Column 4: p-value from F-test conducted as a joint test of equality across all treatments.

Figure 1. Educational aspirations and student characteristics

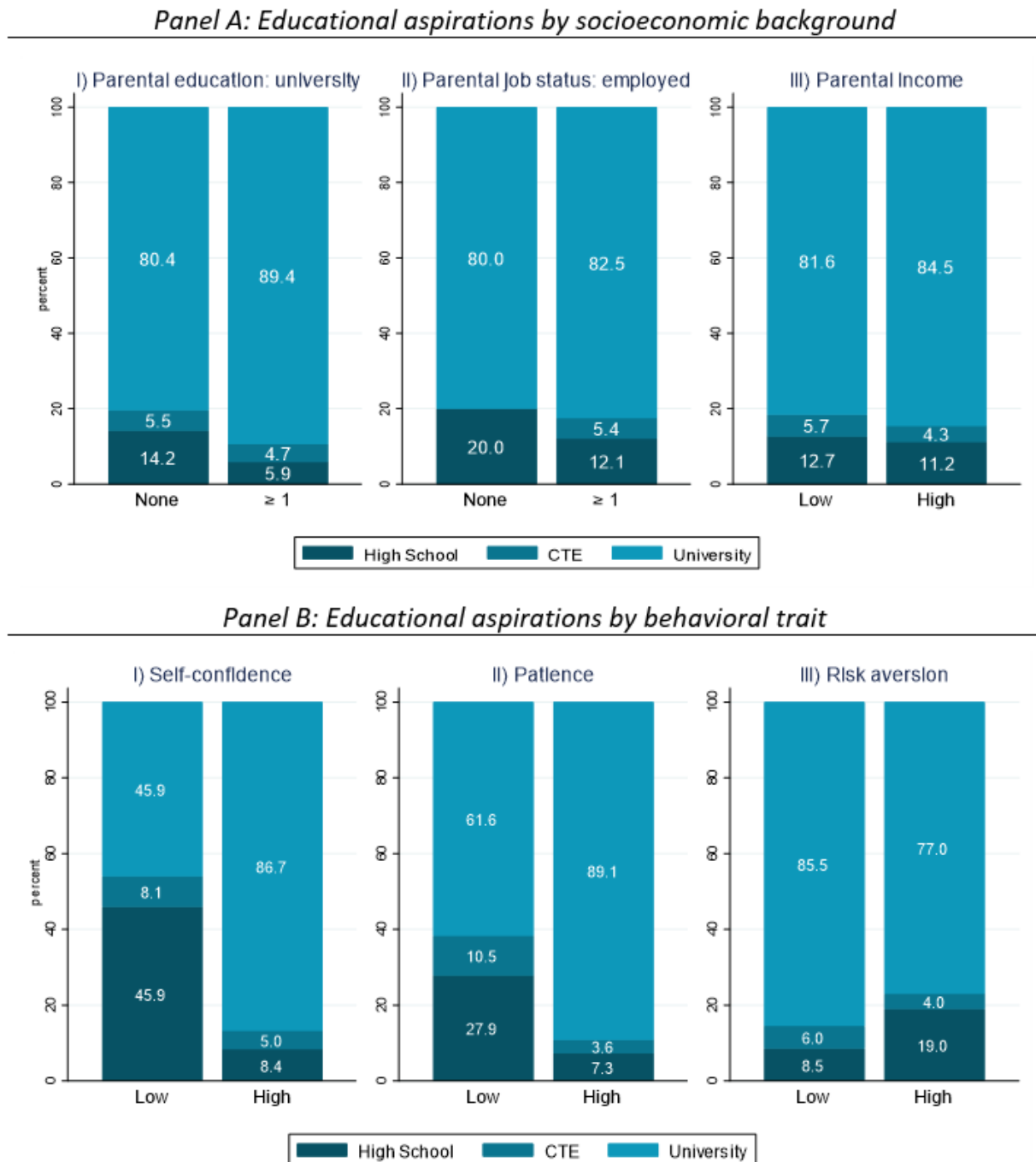


Table 2. Impact of information-provision treatments on educational aspirations

	High School		CTE		University	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Treatment 1: returns						
Treatment	-0.069*** (0.020)	-0.066*** (0.019)	0.037* (0.020)	0.038* (0.020)	0.033 (0.027)	0.027 (0.025)
Sex: female		-0.057** (0.023)		-0.051** (0.020)		0.108*** (0.028)
Academic performance: satisfactory		-0.008 (0.025)		-0.001 (0.023)		0.009 (0.031)
Monthly income: >\$750		-0.022 (0.020)		-0.001 (0.019)		0.024 (0.025)
Self-confidence: high		-0.250*** (0.057)		-0.085* (0.044)		0.335*** (0.057)
				-		
Patience: high		-0.101*** (0.030)		0.090*** (0.028)		0.192*** (0.036)
				-		
Risk aversion: high		0.058** (0.023)		0.060*** (0.018)		0.002 (0.026)
Constant	0.119*** (0.017)	0.445*** (0.061)	0.051*** (0.012)	0.246*** (0.051)	0.830*** (0.020)	0.309*** (0.060)
Observations	721	721	721	721	721	721
R ²	0.061	0.210	0.046	0.106	0.066	0.254
Panel B. Treatment 2: costs						
Treatment	-0.047** (0.022)	-0.058*** (0.020)	0.061*** (0.021)	0.061*** (0.022)	-0.014 (0.029)	-0.003 (0.027)
Sex: female		-0.101*** (0.024)		-0.045** (0.022)		0.146*** (0.030)
Academic performance: satisfactory		0.003 (0.026)		-0.018 (0.024)		0.015 (0.032)
Monthly income: >\$750		-0.012 (0.022)		-0.044** (0.021)		0.056** (0.028)
Self-confidence: high		-0.253*** (0.053)		0.003 (0.039)		0.250*** (0.057)
Patience: high		-0.126*** (0.031)		-0.071** (0.030)		0.196*** (0.039)
Risk aversion: high		0.021		0.004		-0.025

		(0.023)		(0.023)		(0.029)
Constant	0.123***	0.497***	0.053***	0.154***	0.824***	0.349***
	(0.017)	(0.059)	(0.012)	(0.044)	(0.020)	(0.061)
Observations	712	712	712	712	712	712
R ²	0.048	0.213	0.034	0.060	0.041	0.206

***p-value<0.01 **p- value <0.05 *p- value <0.1. Standard deviation in brackets

Figure 2. Heterogeneous effects

