

Unlocking young women's potential? The impact of a low-cost career guidance program*

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Abstract

Insufficient reflection regarding own interests while choosing a career path can lead to poor labor market outcomes for young people. Particularly young women in contexts with rigid gender norms face restrictive gender norms and are at risk of not joining the labor force. Exploring own interests and career options during secondary school could help mitigate these challenges. We conducted a school-level clustered randomized controlled trial to assess the impact of a low-cost, 10-hour career exploration program conducted during school hours. Our pre-registered analysis shows that this program effectively motivates students to plan their transition to further skill development and prioritize their interests when choosing a career path.

Keywords: female labor force participation, career choices, gender norms, India

JEL codes: O10, O15, C93, I26, J13, J16

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1 Introduction

Low female labor force participation (FLFP) constrains economic growth, women’s economic empowerment, and agency, which are essential for women and closely linked to the well-being of their households and their children (Duflo, 2012). India is one such country where FLFP has been decreasing for the last decades and was as low as 24 percent in 2022 (International Labour Organization, 2022).¹

Despite various opportunities in urban settings, FLFP has traditionally been lower in urban compared to rural areas and is particularly low for urban women who completed their secondary education but did not attain further skill formation (Fletcher, Pande and Moore, 2017). Unlike in many other countries, where low FLFP is often linked to women exiting the labor force due to childbearing (Dex et al., 1998; Klasen, 2019), in India, most women never enter the labor force (NSSO, 2023).

Why do Indian women not participate in the labor force? Both demand-side and supply-side factors contribute to low FLFP. On the demand side, these include gender-based discrimination in hiring (Riach and Rich, 2006; Carlsson, 2011; Kuhn and Shen, 2013), laws restricting women’s access to work in certain industries and to work at night as well as gender wage gaps (Deshpande, Goel and Khanna, 2018; Duraisamy and Duraisamy, 2016). On the supply side, rigid gender norms restrict women’s mobility (Mehta and Sai, 2021) and define women’s role as caregivers and caretakers of the household (Sudarshan and Bhattacharya, 2009), potentially discouraging them from pursuing and completing skill formation. Many women further lack the education and skills for the jobs that they would prefer. More than 50 percent of the non-working women who want to work state that they would like to work in professions for which they lack the required qualifications (Fletcher, Pande and Moore, 2017).

Both young men and women face challenges in making career choices during the transition from school to further skill formation. However, the implications of suboptimal educational and career choices differ by gender in contexts with rigid gender norms. While men might pursue careers misaligned with their strengths and interests, women might not choose any career path, not complete skill formation, and not enter the labor force.

Focusing on supply-side factors, we aim to understand how students can be supported in transitioning from secondary education to further skill formation. Information on career options through targeted programs can mitigate market failures such as imperfect information, low aspirations, and lack of role models, which lead to the suboptimal allocation

¹More recent data shows a slight upward trend in FLFP but the debate on whether this due to changes in measurement or other more structural factors is going on and not conclusive yet (Link).

of human capital. We investigate whether a low-cost, scalable career guidance program can increase the number of students planning for a professional career and making relevant choices by taking entrance exams and enrolling in courses or training. Our primary focus is on young women from disadvantaged socio-economic backgrounds. To minimize demand-side frictions like job availability and career options, we conduct the study in a metropolitan city where many career opportunities are accessible.

To identify the causal impact of the career guidance program, we use a school-level clustered randomized controlled trial working with all 12th graders in 45 secondary schools without fees, resulting in an approximate sample size of 6000 students. Our data collected until now allows us to assess the program’s causal impact on students’ future plans and preparedness for career choices. We can further examine how the number of sessions attended per student plays a role in the causal impacts we observe and which mechanisms are most pertinent. Later, the results presented here will be complemented with an analysis focused on students’ choices after secondary school, as captured in a recently completed follow-up survey.

Our primary contribution lies in shedding light on how career guidance in school can facilitate students’ career choices for a particularly vulnerable group - young women from lower-income backgrounds in a resource-constrained setting with rigid gender roles. Existing causal evidence on the impact of career guidance stems primarily from developed countries and focuses on one choice at a time, such as choosing an academic track (Carlana, La Ferrara and Pinotti, 2022), college enrollment (Bettinger and Evans, 2019), or major choice (Baker et al., 2018). We instead focus on a relatively low-cost career exploration program (CEP) in which, in contrast to career counseling, students play an active role but are guided by young facilitators while exploring career options corresponding to their interests and talents.

Our results indicate that the CEP in secondary school can effectively prepare students for their transition to further skill formation. It increases significantly the share of students planning to take entrance exams for tertiary education and considering their interests to be the most important factor in choosing a career path. The impacts are stronger for students who participated in sessions regularly underscoring the need for institutional support provided by schools. Further, mediation analysis reveals that the observed impacts are primarily driven by the additional information provided by the program and the facilitators serving as role models.

The remainder is structured as follows: Section 2 describes the existing literature and our contribution, section 3 provides the relevant background information and explains

the experimental design, section 4 presents the data and the empirical strategy. Section 5 describes our results, and section 6 discusses preliminary policy implications and the next steps for extending our analysis from the short-term to the medium-term.

2 Literature

The relevance of alleviating information constraints for women’s choices has been documented in the existing literature. Exposure to information on working opportunities has been shown to increase investments in education, marriage and childbearing age, and female labor force participation (Jensen, 2010; Heath and Mobarak, 2015). More specifically focused on the impact of career guidance, research has shown that it can be particularly effective when provided at a time when students make their first career choice (Perdrix et al., 2012) and when provided to more disadvantaged students (Bettinger and Evans, 2019; Carlana, La Ferrara and Pinotti, 2022). Research from the US shows that more time needs to be devoted to students by career guidance counselors (Avery, Howell and Page, 2014; McDonough, 2005), that students who need career guidance the most are the least likely to seek and receive it (Zafar, 2019; Lee and Ekstrom, 1987). This corresponds to the situation we observe in urban India, where most schools with high fees provide career counseling sessions to students. Governments are also working on implementing career guidance in public schools, but human resources are very limited, and qualified counselors who work with all grades have very little time for career-focused interactions.

We make four important contributions to the existing research: First, we focus on career exploration instead of only providing information (Wiswall and Zafar, 2015) or providing expensive career counseling (Perdrix et al., 2012). The CEP actively engages the students, facilitates them to explore a variety of career options, has relatively low costs, and is scalable, reaching many more students in the future, which is particularly important for resource-constrained contexts.

Second, we focus on a context with rigid gender norms and strong parental/societal expectations, which may make it harder for young individuals to pursue careers according to their interests and skills. Understanding the impact of a CEP on young, educated women in the Indian context is essential as, overall, the share of skilled laborers in society is only 21.2 percent (Baumann, 2021), especially young, educated women’s potential remains unused. While the government is implementing various measures to change this under the program “Skilling India”, reaping benefits from investments in education and training will be more likely if young women feel passionate about their careers and are

motivated to join the labor force.

Third, existing studies tend to focus either on earlier choices, such as the choice of the high school track or the completion of the secondary school (Loyalka et al., 2013; Gehrke, Lenel and Schupp, 2023; Carlana, La Ferrara and Pinotti, 2022), or on choices while attending college, such as the choice of a major (Baker et al., 2018; Porter and Serra, 2020). In contrast, our study will capture an important transition period and focus on whether students continue skill formation. It is designed to track students beyond secondary school to capture changes in students’ plans and behavior.

Fourth, we contribute to the growing literature on aspirations shaped by individual experience and social determinants. As Genicot and Ray (2020) frame it, “[p]references are deeply molded by the society in which individuals reside” (p. 716). The so-called “cognitive neighborhood” influences individuals’ objectives based on which they make future choices. While aspirations can fuel individual growth, unrealistic aspirations can backfire and lead to frustration. The program examined here considers this and aims to encourage students to have realistic aspirations and make attainable plans while considering financial and other constraints.

3 Background and experimental design

3.1 Context

To alleviate potential demand-side constraints, we designed this study to take place in a large urban labor market with various career options. We, therefore, conduct the RCT in a large metropolitan area in Northern India.

Representative data from the National Family Health Survey (NFHS) for the same context from 2016 shows that in our target group, young women between 18 and 30 years of age, 66 percent of those who completed secondary education continue to higher education, but only 20 percent of those who continued to higher education entered the labor force (International Institute for Population Sciences , IIPS). National Sample Survey data further shows that out of the urban women between 18 and 30, 64 percent of the women who have completed at least secondary education are not in education, employment or training. The here examined intervention aims to reduce the percentage of women who are not in any form of employment by exposing primarily female students to the variety of career options right before they make the relevant choices.

3.2 Intervention

We collaborate with the local school authorities for school access and a local NGO for the intervention. We obtained official approvals from the competent authorities to carry out the project in 45 secondary schools through the Inclusion Economics India Centre research initiative at the Institute of Financial Management and Research. Our partner NGO designed the intervention in 2014-2015 and has been implementing and enhancing the program working primarily with 11th and 12th graders in schools located in low-income neighborhoods in urban areas.

The CEP consists of 15 sessions, each lasting 40-45 minutes, and is implemented in the classrooms during school hours. The program aims to guide and encourage students to identify their strengths, interests, and talents, consider their barriers and constraints, learn about and identify suitable careers, identify people who can support them, and make plans to pursue a career path.

The program takes a student through a 5-step process leading them to make a choice aligned with their interests and skills.

1. **Start to think** - Thinking early about making a choice lets one take charge of their career pathway, giving time at hand to explore.
2. **Think openly** - Not limiting yourself to a few conventional careers, but thinking openly, for, e.g., thinking of the healthcare sector instead of just being a doctor, opens one up to a variety of options to choose from.
3. **Understand yourself** - Experiencing different types of work, getting feedback, and reflecting on those experiences to find which careers align more with yourself.
4. **Prepare to succeed** - Creating a plan of action to reach the chosen goal, including the research of where to go and how and steps to prepare oneself for the same.
5. **Thrive in your chosen path** - Taking continuous action- reflection cycles to up-skill and succeed in the work.

Throughout these five stages the program uses a comprehensive virtual portal designed to provide students with a comprehensive learning experience about careers. The program ends with an event called “show-case” in which all students present their chosen career plans and the entailed next steps.

The program is designed to set realistic expectations based on constraints, such as financial constraints, academic ability, or regulations specific to the education system in India.² The facilitators encourage students in a structured manner to consider the situation they are living in and the financial constraints they are facing. Facilitators are also trained to be transparent about the competitiveness of specific career paths, such as becoming civil servants. The facilitators motivate students to have a backup plan if they choose competitive or risky career paths. We provide more detailed information about the program in Appendix B. Facilitators are of the same gender as the students (i.e. female in girls schools, male in boys schools and mixed-gender teams in co-educational schools), on average, 5 years older than the participating students, typically enrolled in tertiary education and from a similar community as the participating students. This helps the students to relate to the facilitators. In addition to the in-person meetings, facilitators also use WhatsApp groups to interact with the students and allow the students to interact with each other. Further, facilitators will have bilateral conversations with the students. The NGO provides online materials on various career paths for all participating students, and students create their own personal and password-protected profiles in one of the first sessions.

3.3 Theory of change

Figure 1 shows our theory of change for the impact of the CEP on students' career intentions and choices. As highlighted in the introduction, we focus on imperfect information, low aspirations and lack of role models as market failures leading to suboptimal labor supply and imperfect allocation of human capital in the labor market. The underlying **problems** (see first row of Theory of Change) that we aim to address are that students typically lack awareness of their interests and strengths, implying that they may choose careers that are not aligned with their interests. Given that there is very little provision for career guidance in low-cost schools, students choose careers with imperfect information, especially from socio-economically disadvantaged households. Typically, these students are also at risk of starting to work at an early age due to financial constraints and not being fully aware of the returns to education. At the same time, parents and society influence students by pushing them in one direction or another, with certain occupations being well respected and desired, such as working as a teacher or a civil servant, and others degraded. Further, strong social norms restrict women's career choices defining women as primarily responsible for domestic responsibilities and discouraging young women from pursuing a career objective. They tend to lack inspiration and aspirations

²For example university entrance for several subjects requires having taken a corresponding stream in secondary school.

for a career objective due to a lack of role models and may set up their priors accepting the prime responsibility for the household.

CEP will address these problems with a variety of **inputs**. As visualized in the second row, facilitators leading the CEP sessions address these problems in various ways. In the initial sessions, the facilitators encourage students to identify their interests and strengths and understand the value of human capital formation while exploring various career options, often in small groups. Students are encouraged to consider existing constraints while making plans, and the facilitators support students in preparing an action plan, communicating the plans with their parents, and identifying supporters in their surroundings. At the end of the CEP, students present their plans of action for pursuing a chosen career. All sessions take place in a classroom setup during school hours and are led by relatable facilitators, typically college or vocational training students of the same gender.

As **outputs**, we expect that students know more about their strengths, interests, and constraints, are more aware of returns to education, have more information about different career options, discuss their insights and plans with their peers, consider the facilitators as mentors, and share their plans with their parents or other supporters in their surroundings.

These outputs will occur if our underlying **assumptions** are correct: We assume that students want to know more about themselves, career options, and returns of education, that students value sharing insights and plans with peers, that students can relate to their facilitators, and that students can speak to their parents and/or other people around them about their career plans.

These outputs are then expected to translate into short-term and medium-term **outcomes** to be measured right after the program when students are still in school and about one year later when most students are expected to have made some career choices. In the short term, we expect the outputs to enable students to plan to enroll in a course/training, take an entrance exam, and work in the future. Further, we expect that students who participated in the program are more likely to believe in inter-generational mobility. For the medium term, we would then expect that students' intentions lead to actual behavioral change, with students who participated in the program being more likely to enroll in a course/training, take an entrance exam, and complete shorter courses for skill formation (such as English or computer courses).

Behind our causal chain from outputs to outcomes, we see five potential **mechanisms** that may jointly explain the changes in outcomes due to the program that we plan

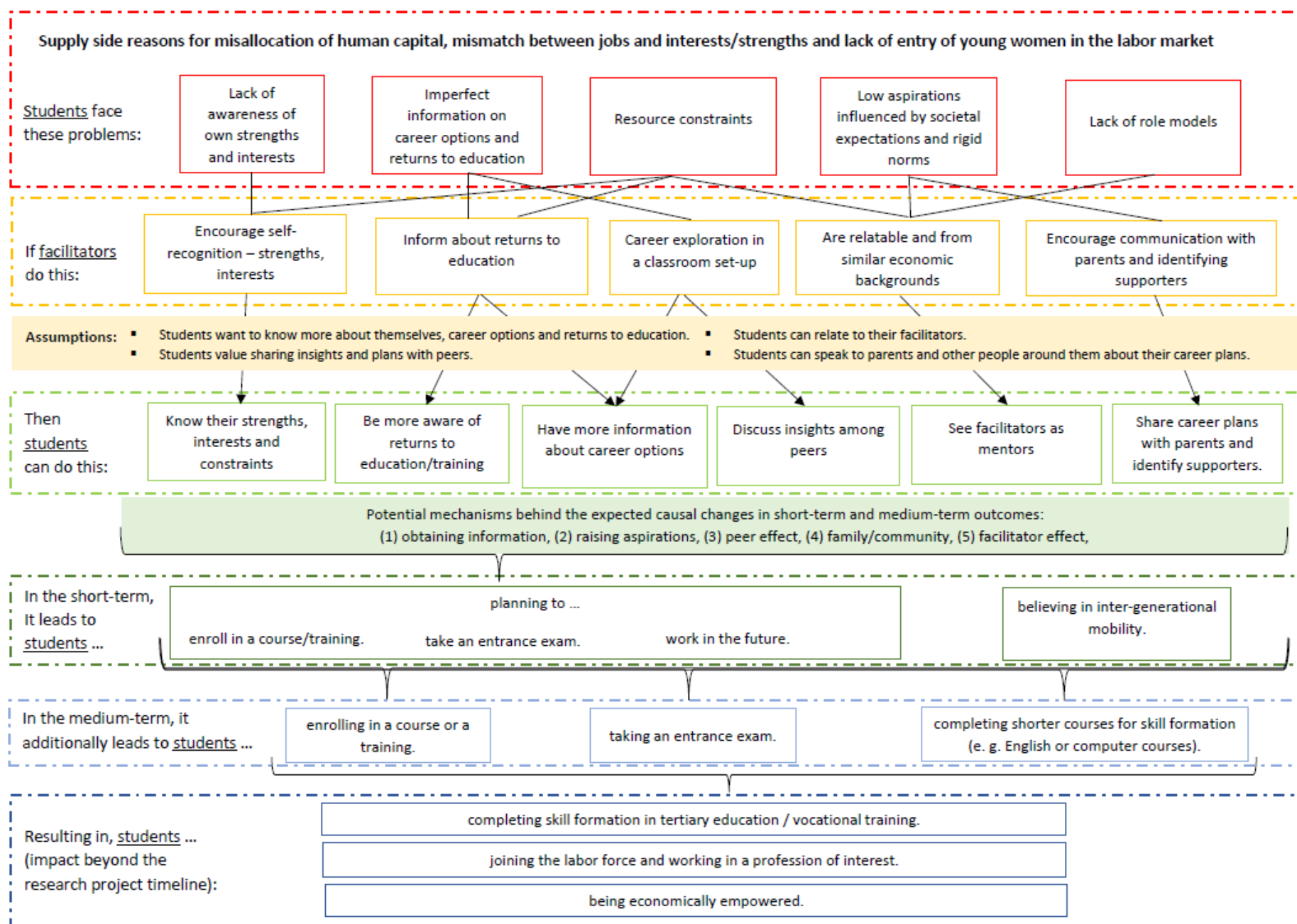
to disentangle and test empirically: Students are more likely to make choices for their professional careers for the following reasons:

1. CEP provides the students with information on career options that they were previously lacking.
2. CEP encourages students to have higher aspirations than before.
3. CEP encourages students to discuss career plans with their peers.
4. CEP encourages students to get support from their parents and other people around them.
5. CEP facilitators act as mentors and role models for the students.

Given the importance of understanding how the CEP improves young women's career choices, potentially enabling better use of their potential in the labor market, we describe in more detail how we plan to test for these mechanisms empirically in the analysis section.

If these medium-term outcomes occur, we expect to observe long-term **impacts** (beyond the current research project timeline) showing that the CEP can support students in completing their skill formation, joining the labor force, working in a profession of interest, and being economically more empowered (see Figure 1).

Figure 1: Theory of change



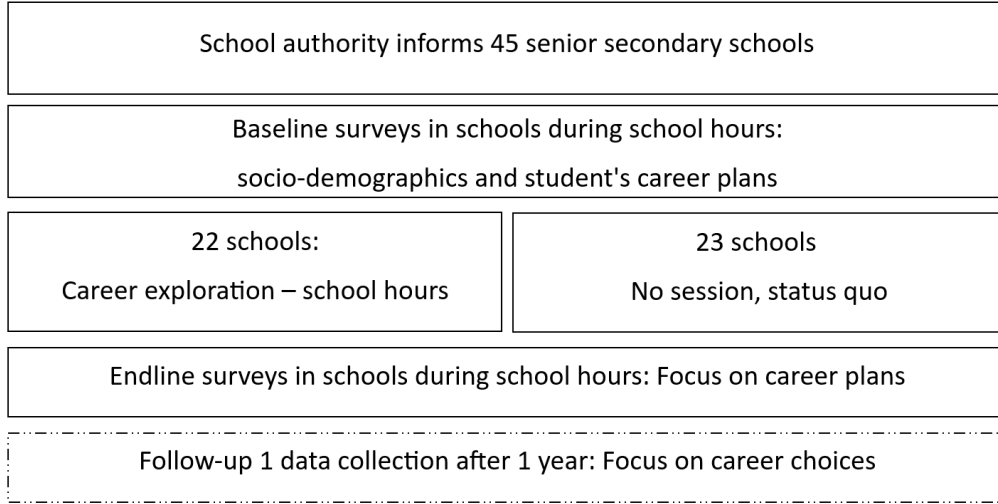
3.4 Experimental design and randomization

We conduct a school-level clustered randomized controlled trial in collaboration with the local school authorities and our partner NGO. This collaboration enables us to work with 45 schools – the number of schools needed according to our power calculations. The randomization is stratified by school type (girls, boys, and co-educational school), with 22 schools in the treatment group and 23 schools in the control group. The flowchart in Figure 2 visualizes our procedures.

In Spring 2023, the competent school authority informed all 45 senior senior secondary schools about the data collection procedures and if in the treatment group about the requirements for the program implementation. Subsequently in Summer 2023, the baseline surveys were conducted in all schools focused on students’ socio-demographics and career plans. The CEP was implemented in 22 schools during school hours and the no intervention was implemented in the remaining 23 schools. The endline surveys focused on students career plans were conducted in November-December 2023 and finally the follow-up data collection was completed as a phone survey approximately one year after the intervention implementation in October-November 2024. Appendix A provides the project timeline as well as crucial events in the timeline from a student’s perspective.

We chose school-level randomization to minimize the probability and extent of spill-over effects (Muralidharan, 2017). School principals, teachers, and students were not informed about the study’s objectives and the research-specific assignments into treatment and control groups. We implement this by informing school principals and teachers only about what will happen in their school and our broader motivation for data collection to assess the need for career guidance in low-cost schools. Given that school-specific activities happen frequently in this context, we expect any spill-over effect to be unlikely and small and, if at all, lead to an attenuation bias for the measured impact.

Figure 2: Research procedures



Source: Authors' visualization.

4 Empirical strategy

4.1 Data

Our analysis uses two main data sources, baseline and endline data of the students and administrative data provided by schools and our partner NGO. The baseline and endline surveys were filled out by students on provided tablets in the classroom. The response rate in each survey is approximately 75 percent, corresponding to regular attendance rates in this type of school setting. A recently completed follow-up survey on students' actual choices with a similarly high response rate will allow us to add mid-term results on the effectiveness.

Our baseline data contains socioeconomic information of the students, a module to measure social desirability, and current access to career guidance privately and in school. The endline survey focuses on students' career plans and potential mechanisms such as increasing information, aspirations, and social support.

We use our endline data to examine whether students in the treatment group, compared to the control group, are more likely to plan their continuation of skill formation, intend to work outside their home in the future, select their profession based on their interests, and believe in inter-generational poverty. We pre-registered the following hypotheses that we can examine with our endline data:

Building on our theory of change in Section 3.3, we expect that CEP in the short-term increases the probability that a student plans to enroll in a course or training (H1), that a student plans to take an entrance exam (H2), that a student plans to work outside

the home for pay (H3), that a student reports selecting a profession based on interests (H4) and that a student believes in inter-generational mobility (H5).³ Medium-term impacts are currently analyzed. Furthermore, we examine the channels through which these impacts may occur and whether students report being better informed have different aspirations or social support.

4.2 Regression analysis

All our estimations follow our pre-analysis plan if not indicated otherwise. We start our analysis with balance checks comparing the baseline variables for individuals in treatment schools and control schools using the following specification with covariates X at the baseline with time t being ($t = 0$) of respondent i from school s regressed on the treatment status that varies at the school level and district d with district fixed effects γ_d since we stratify at the district level with standard errors clustered at the school level:

$$X_{0isd} = \alpha + \beta T_s + \gamma_d + \epsilon_{is} \quad (1)$$

Next, we will estimate the intention to treat effect regressing the outcomes of interest measured for individual i in school s on the treatment status and district fixed effects γ_d comparing those assigned to the treatment to those not assigned to the treatment. Standard errors are clustered at the school level:

$$Y_{is} = \alpha_1 + \beta_1 T_s + \delta X_{0is} + \omega_{is} \quad (2)$$

In addition to the intention to treat impact, we also estimate the local average treatment effect to assess the impact of the program on those students who participate regularly. We define regular participation as above-median number of completed sessions. In our case this corresponds to having participated in at least 10 sessions. We use the randomized treatment assignment at the school-level to predict regular participation in the first stage and then regress the same outcomes of interest on the predicted value of regular participation.

4.3 Mediation analysis

We see the alleviation of information constraints as the most important potential mechanism through which we expect the impact of the CEP to operate. However, besides

³In our pre-analysis plan, these are numbered from 5 to 9. We are numbering the research hypotheses temporarily from 1 to 5 as we do not have the follow-up data yet.

information, there could be several other mechanisms explaining the program’s effectiveness in supporting young women’s continuation of skill formation and career choices, addressing the imperfect allocation of human capital in the labor market, with many young women not entering the labor market and/or choosing career paths neglecting their strengths and interests. We conduct a mediation analysis following the approach developed by Heckman, Pinto and Savelyev (2013) and Heckman and Pinto (2015) to measure the relevance of potential channels for the treatment effect.⁴ This mediation analysis enables us to decompose how much of the program impact can be attributed to different observable mechanisms called mediators. We focus on five mediators that can explain the impact on the main outcome variables. These mediators are alleviating information constraints, raising aspirations, peer effects, family/community support, and facilitator effects as the relevant channels for the impact. With this method, we will decompose the impact into six shares, of which five will be attributed to these expected mediators, and one share will remain as the unexplained remainder of the treatment effect.

Assuming that the outcome can be expressed as a linear combination of the $k = 5$ mediators M_i^k and a vector of baseline demographic characteristics X_{0is} , we can write the baseline equation as:

$$Y_{is} = \alpha + \beta^{\text{residual}} T_{cs} + \sum_k \theta^k M_i^k + \delta X_{0is} + \gamma_s + \varepsilon_{is} \quad (3)$$

The effect that the mediation analysis cannot capture is captured by the coefficient β^{residual} , and the share of the treatment effect explained by combined changes in the mediators that we can observe is $1 - \frac{\beta^{\text{residual}}}{\beta}$. We further estimate the effects of the treatment on the respective mediators such that:

$$M_{is}^k = \alpha_o^k + \beta_1^k T_{is} + \delta_1^k X_{0is} + \gamma_{0s} + v_{is} \quad (4)$$

Therefore, the k th mediator’s contribution to the share of the overall treatment effect is the direct effect of the mediator, θ^k , weighted by the proportion of the treatment effect on the mediator and the total treatment effect, that is:⁵

⁴For the here followed application of the mediation analysis, see (Resnjanskij et al., forthcoming).

⁵This estimated effect is an upper bound of the mediator effect since the mediation effect relies on the assumption that the error term including any unobserved mediators is orthogonal to the included mediators.

$$ShareM_k = \theta \frac{\beta_1^k}{\beta_1} \quad (5)$$

The analysis will, therefore, allow us to understand to what extent the overall impact on career choices is driven by one of these five mechanisms, each addressing the underlying problems of the imperfect human capital allocation in the labor market:

Obtaining information: Students can explore different career options, understand the value of education, and learn the pathway to achieving their career objectives. This helps increase the likelihood of continuing education and diversifying their career options while considering financial constraints. We measure this by asking students which sector they know most about and to state up to three professions in that sector to capture their familiarity with that sector. Evidence for this mechanism would imply that CEP improves students' career choices by alleviating imperfect information on career options.

Raising aspirations: As students explore different careers independently and jointly with their peers and are exposed to same-gender facilitators a few years ahead of them who have already made relevant career choices, they may have higher educational and income aspirations. We measure this by asking students for their aspired level of education and salary expectations for their first job.

Peer effects: Given the program implementation in the classroom, students are encouraged to discuss their career plans with their peers and explore different career options jointly. These interactions among students increase the likelihood of students attending sessions, exploring different careers, and reflecting on them. It can also foster teamwork and fill the gaps in their knowledge as students are expected to share complementary information with each other. We measure this potential peer effect in two ways. First, we explore if “talking to peers” is a relevant source of information for their choices in the future and if talking about the future is a topic of discussion among their peers. Second, having elicited students' friends in the baseline, we count the number of friends who “plan to continue” (endline) or “continue” (follow-up) skill formation. Evidence for this mechanism would imply that CEP affects students' career choices through peer effects and that students in their networks can more effectively process and use information than individual students.

Family/community support: CEP encourages students to share their career objectives with family members and/or people in their community to identify potential

supporters. This addresses the potential lack of social support in pursuing a career objective. We measure this by asking students whether they get any relevant information from a family member or someone in their community and whether they get support from a family member or someone in their community to achieve their professional objectives. Evidence for this mechanism would imply that CEP improves students' career choices by encouraging them to obtain support from their families and or people in their community.

Facilitator effects: The facilitators leading the CEP sessions are from similar backgrounds and schools but have already made career decisions. They may act as role models, helping students update their beliefs about their ability to pursue certain career paths. We ask students whether there is someone around them who inspires them whom they know personally, with one of the answer options referring to the CEP facilitator. Evidence for this mechanism would imply that CEP improves students' career choices by providing a role model similar to role model interventions in other settings (Lafortune, Riutort and Tessada, 2018; Porter and Serra, 2020).

4.4 Heterogeneity

We pre-registered to examine the following heterogeneous effects thinking primarily about female students who may be constrained by prevailing norms. We therefore conduct this analysis only for the female students in our sample.

- (i) Students from families with less rigid patriarchal gender norms benefit more from the CEP than those with more patriarchal gender norms.

We categorize households as less patriarchal if the student reports that a woman has been working for pay in the last two years.

- (ii) More mobile students (i.e., those who go to more places on their own) benefit more from the CEP than less mobile students.

We categorize students as more mobile if they are allowed to go to two or three out of three places, i.e. if a students' mobility is greater than the mobility of the median student.

- (iii) Students with meritocratic beliefs benefit more from the CEP than those who do not.

We categorize students as having more meritocratic beliefs if their agreement with a belief in meritocracy is higher than of a median student.

5 Results

5.1 Balance checks

As shown in the balance checks in Table 1, all variables are balanced when comparing the treatment and control group except for the age of the students, which is 0.12 years higher in the control group than in the treatment group at the time of the baseline.⁶ We, therefore, account for this age difference in all specifications.

Students in our sample are primarily female (89 percent) and close to 17 years of age. Most students have an older brother or an older sister (or both), and 32 percent are the most educated in their households. Almost all students use smartphones (92 percent), but only 20 percent of the students own a smartphone. Students report having, on average, 5 friends among all 12th graders in their school and report being both risk-taking (7 out of 10) and patient (7.6 out of 10). Typically, for the age group, students give socially desirable answers (4.4 out of 6) and report believing in meritocracy (8.6 out of 10). Most students believe that women’s role goes beyond taking care of the house and the family (63 percent) and that preference should not be given to men when jobs are scarce (70 percent).

The students are from households with, on average, 5.45 household members that own, on average, 3 out of 6 assets. 16 percent of the students reported that the head of the household is a woman, and only 39 percent of the students reported that in their household, any woman had been working for the last two years. Students’ parents tend to be less educated than the students themselves, with their mothers having, on average, 6.4 years of education and their fathers having 8.7 years of education.

From the administrative data in Table 2, we observe that most students are studying in the arts and humanities stream (67 percent), fewer in the commerce stream (23 percent), and very few in the science stream (9 percent). However, the low percentages of students being enrolled in science and commerce is likely due to supply issues with schools without fees offering commerce streams only to a minority of well-performing students and science stream only in a few schools (Nouman, 2022). Given our focus on young women, 78 percent of students in our sample go to a girls school, 17.4 percent go to a co-educational school, and 4 percent go to a boys school.

⁶Due to organizational issues, the survey teams conducted the baseline in the control group about 6 weeks later than the baseline in the treatment group causing a rather mechanic difference in the age of treatment and control group students.

Table 1: Balance table - Student surveys

Variable	(1) Control	(2) Treatment	(3) Difference (C-T)	(4) Observations
Female	0.901 (0.299)	0.882 (0.322)	-0.018 (0.071)	5,138
Age	16.831 (0.748)	16.712 (0.748)	-0.119*** (0.038)	5,138
Older brother	0.459 (0.498)	0.431 (0.495)	-0.027 (0.021)	5,138
Older sister	0.448 (0.497)	0.433 (0.496)	-0.015 (0.021)	5,138
Self most educated	0.319 (0.466)	0.325 (0.469)	0.006 (0.017)	5,134
Career guidance before	0.521 (0.500)	0.535 (0.499)	0.015 (0.035)	5,138
Uses smartphone	0.926 (0.261)	0.915 (0.279)	-0.011 (0.012)	5,138
Owns smartphone	0.210 (0.408)	0.205 (0.404)	-0.005 (0.019)	5,138
Number of friends across sections	5.380 (0.995)	5.349 (0.977)	-0.031 (0.068)	5,138
Risk preference	7.054 (2.787)	7.126 (2.701)	0.073 (0.139)	5,138
Patience	7.587 (2.767)	7.608 (2.724)	0.021 (0.119)	5,138
Social desirability index	4.414 (1.101)	4.365 (1.134)	-0.048 (0.039)	5,138
Belief in meritocracy (1-10)	8.580 (2.535)	8.607 (2.455)	0.027 (0.085)	5,138
Women more than housewives	0.627 (0.484)	0.628 (0.483)	0.001 (0.026)	5,138
Women access to jobs	0.701 (0.458)	0.710 (0.454)	0.010 (0.020)	5,138
Household size	5.492 (1.689)	5.412 (1.787)	-0.080 (0.092)	5,138
N of assets out of 6	3.000 (1.466)	3.070 (1.539)	0.070 (0.129)	5,138
Female head of household	0.159 (0.365)	0.164 (0.371)	0.006 (0.012)	5,138
Any woman works	0.377 (0.485)	0.402 (0.490)	0.025 (0.024)	5,138
Mother's education in years	6.296 (4.630)	6.565 (4.629)	0.269 (0.403)	4,876
Father's education in years	8.652 (4.136)	8.791 (3.990)	0.139 (0.332)	4,826
Observations	2,826	2,312	5,138	

Standard errors are shown in parentheses. Source: Baseline survey conducted in summer 2023.

Table 2: Balance table - Administrative school level variables

Variable	(1) Control	(2) Treatment	(3) Difference (C-T)	(4) Observations
Arts and humanities stream	0.701 (0.458)	0.633 (0.482)	-0.068 (0.070)	5,138
Commerce stream	0.203 (0.403)	0.280 (0.449)	0.077 (0.058)	5,138
Science stream	0.095 (0.294)	0.087 (0.281)	-0.009 (0.043)	5,138
Girls school	0.760 (0.427)	0.819 (0.385)	0.059 (0.125)	5,138
Co-educational school	0.200 (0.400)	0.143 (0.350)	-0.057 (0.116)	5,138
Boys school	0.040 (0.196)	0.038 (0.191)	-0.002 (0.055)	5,138
N of 12th gradeers in school	229.081 (82.885)	214.397 (76.832)	-14.684 (24.879)	5,138
N of students per section	42.034 (10.606)	42.874 (13.175)	0.840 (2.253)	5,138
N of sections per school	5.565 (1.487)	5.267 (1.295)	-0.298 (0.421)	5,138
Observations	2,826	2,312	5,138	

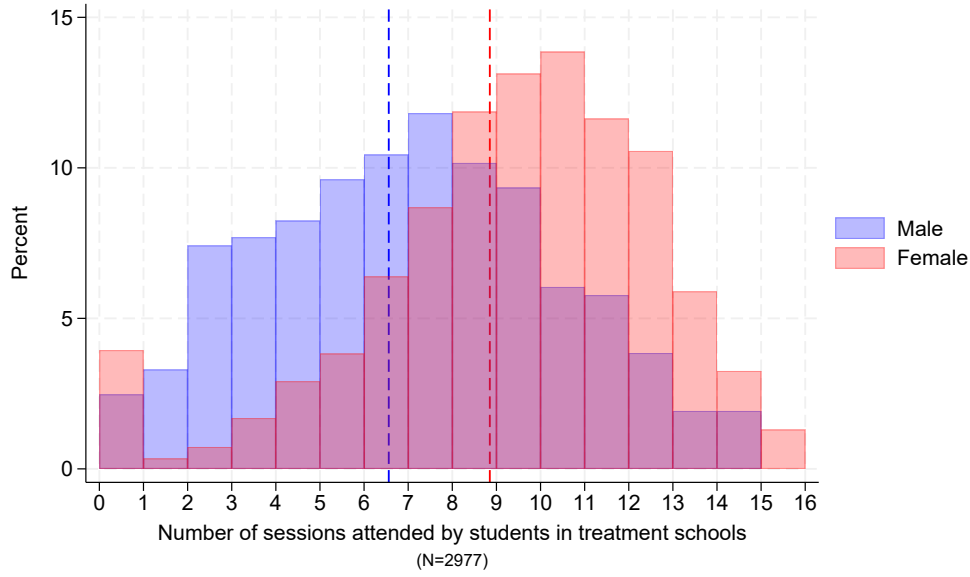
Standard errors are shown in parentheses. Source: Baseline survey conducted in summer 2023.

5.2 Regression results

As pre-registered, we examine our hypotheses on students' future plans, whether they consider interests as important, and their beliefs in inter-generational mobility. In Table 3, we present our main results from intent-to-treat effects (ITT) and from local average treatment effects (LATE).

The LATE becomes relevant as despite of the implementation of the program during school hours, the actual exposure of students to the program depended on students school attendance and even if students attend school on a particular day, it is possible that they are absent in certain periods. The number of sessions attended by each student was noted down by the implementing organization. Girls attended on average 8.85 sessions and boys attended on average 6.56 sessions as shown in Figure 3.

Figure 3: Session attendance by gender in the treatment group



Examining first the ITT, we find that students in the treatment group are 4 percentage points more likely to plan to take an entrance exam for higher education after finishing secondary school and 7 percentage points more likely to consider their interests when selecting their career path compared to students in the control group. Against our expectations, we do not find that students in the treatment group are more likely to plan enrolling in a course or training or to plan to work in the future. Further, we find suggestive evidence that students in the treatment group are 4 percentage points more likely to report believing in intergenerational mobility.

The treatment effects double in the LATE estimations, implying stronger effects for students who attended sessions regularly (i.e., 10 sessions and more). Students who attended CEP sessions regularly are 10 percentage points more likely to plan taking an entrance exam and 16 percentage points more likely to choose an occupation based on their interests. They are also 8 percentage points more likely to believe in intergenerational mobility.

Hence, we find empirical support for our hypotheses on planning to take an entrance exam (H2), interest-based job selection (H4) and intergenerational mobility (H5) with the latter one only significantly impacted for regular participants.

The CEP does not seem to impact students' likelihood of planning to enroll in a course or training or seeing herself/himself working in the future. However, there is little scope of improvement in this variable as 97 percent of the control group students report that they see themselves working in the future.

Table 3: Main results - ITT and LATE accounting for students' attendance

	(1) Course or training (H1)	(2) Entrance exam (H2)	(3) Working in future (H3)	(4) Interest-based job selection (H4)	(5) Intergen. mobility (H5)
<i>Panel A: ITT</i>					
CEP	0.023 (0.016)	0.043** (0.018)	0.002 (0.006)	0.073*** (0.018)	0.036* (0.018)
N	5138	5138	5138	5138	5138
<i>Panel B: LATE</i>					
Regular CEP student	0.050 (0.034)	0.095** (0.040)	0.003 (0.014)	0.162*** (0.038)	0.080** (0.040)
N	5138	5138	5138	5138	5138
Control group mean	0.53	0.45	0.97	0.44	0.53

Notes: As pre-registered, all specifications include baseline covariates. Standard errors are clustered at the school level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

In Table 4, we provide additional exploratory results. While the CEP does not seem to impact the locus of control or self-efficacy, our results show that students are more likely to report having thought about their future, to know their preferred occupation, to feel confident about their objective and to tell their parents about their objectives. Same as for the main results, the effect size is approximately double for the LATE.

Table 4: Results on additional mechanisms (exploratory)

	(1) Locus of control	(2) Self efficacy	(3) Thought about future	(4) Knows occupation	(5) Confident objective	(6) Tells parents
<i>Panel A: ITT</i>						
CEP	0.015 (0.017)	0.003 (0.008)	0.025** (0.011)	0.063*** (0.013)	0.062*** (0.012)	0.034** (0.016)
N	5095	5095	5095	5095	5095	5095
<i>Panel B: LATE</i>						
Regular CEP student	0.032 (0.037)	0.006 (0.018)	0.056** (0.025)	0.139*** (0.033)	0.136*** (0.031)	0.076** (0.034)
N	5095	5095	5095	5095	5095	5095
Control group mean	0.41	0.93	0.90	0.74	0.73	0.65

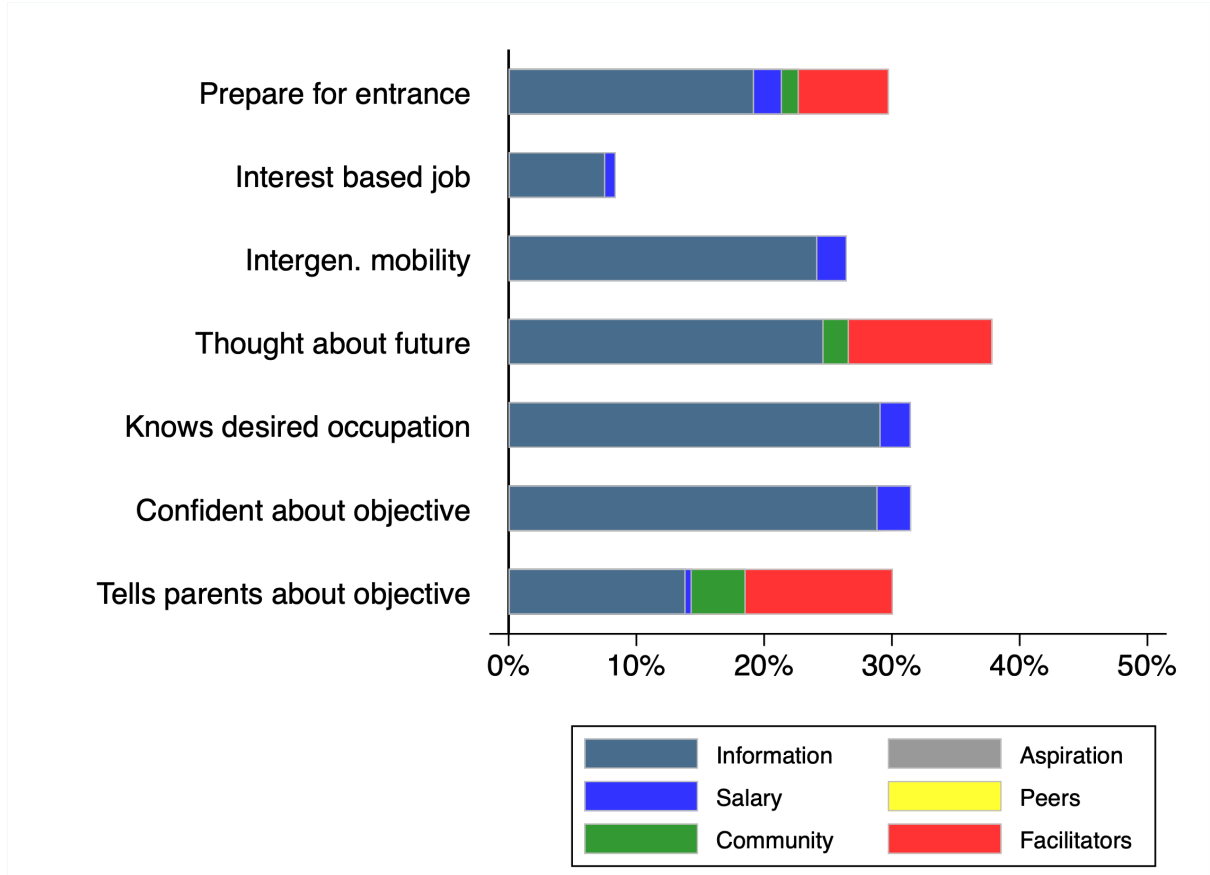
Notes: Exploratory analysis. All specifications include baseline covariates. Standard errors are clustered at the school level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

5.3 Mechanisms

What drives these results? Using the decomposition analysis proposed by Heckman and Pinto (2015), Figure 4 shows through which mediators or channels the observed impacts occur. All impacts in our main results and exploratory results are primarily driven by the alleviation of information constraints through CEP. Further, for planning to take an entrance exam, thinking about the future and telling parents about the career objective, the facilitator effect captured through a variable indicating whether a student considers the facilitator as source of inspiration and information is another relevant mediator.

Alleviating information constraints information explains approximately between 10% and 30% of all the effects we see in both the primary and the exploratory outcomes. Facilitator effects appear to be important, too, explaining up to 10% of the observed impacts. Other pre-registered mediators do not appear to be relevant for explaining the observed impacts.

Figure 4: Mechanisms from mediation analysis



5.4 Heterogeneous treatment effects

In our analysis of heterogeneous treatment effects, we focus on whether students live in patriarchal households, whether students are more or less mobile in terms of being allowed to go to different places and students' belief in meritocracy.

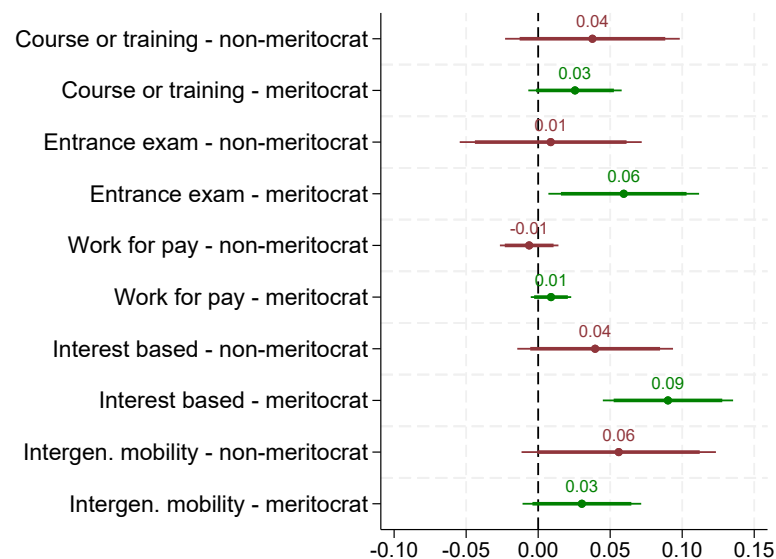
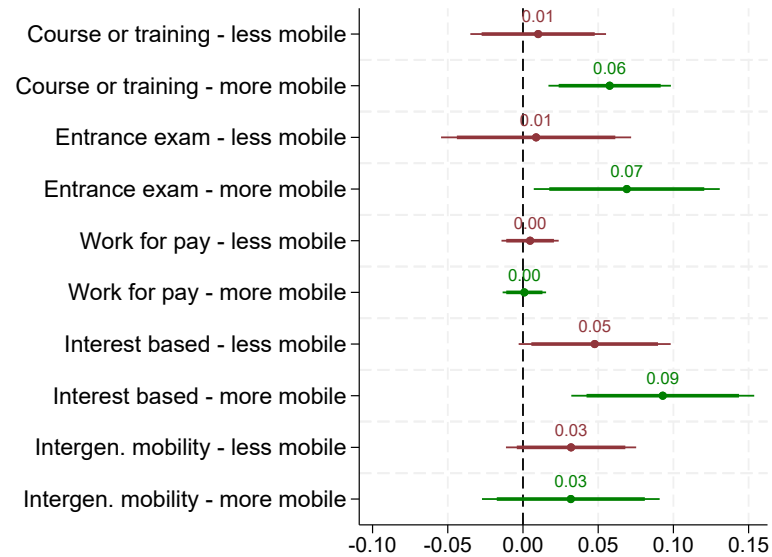
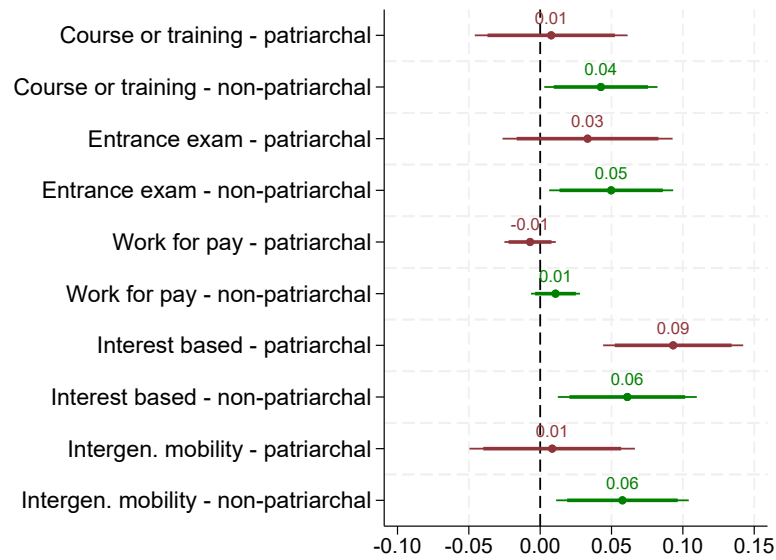
39% of the students are living in households where a woman has been working (non-patriarchal) and 61% live in households where no woman has been working (patriarchal) for the past two years.

16% of the students are allowed to go to three places, 20% of the students are allowed to go to two places, 26% of the students are allowed to go to one place and 38% of the students are not allowed to go to any of the three places. We categorize students as more mobile who are allowed to go to at least two out of three places (36%) and as less mobile if they are allowed to go to only one place or none (64%).

There is little variation in students' beliefs in meritocracy with 68% of the students selecting a 10 which stands for strongly believing that hard work will pay off. We therefore categorize students as believing in meritocracy if they rate it with 10 and 0 otherwise.

Our results document for all three potential sources of heterogeneities that the estimates of the ITT effects are typically larger for the hypothesized subgroup of girls (except for interest-based job selection for girls from patriarchal families) but as the confidence intervals are overlapping we cannot conclude that the effects are significantly different from each other.

Figure 5: Heterogeneity - marginal effects for subgroups



6 Discussion and outlook

This study presents the short-term results of a pre-registered field experiment, which assesses the causal impacts of a low-cost, scalable career exploration program in secondary schools for students in urban areas of Northern India. Consistent with our pre-registered hypotheses, we provide evidence that career exploration in secondary school encourages students to plan for taking entrance exams for higher education and to choose professions based on their interests. Additionally, we demonstrate that some of our pre-registered mechanisms namely alleviation of information constraints and seeing facilitators as a source of information and inspiration are the relevant driving forces behind these impacts. Exploratorily we further show that students are more likely to feel fully informed about one career, report support from their families or communities, and be strongly inspired by the career exploration facilitators. This underscores the potential importance of students being able to relate to the facilitators in the program.

While these promising short-term results highlight the potential of a low-cost, scalable career guidance program, we also observe that the program does not increase the share of students planning to enroll in a course a training, planning to work in the future and their locus of control or self-efficacy. It seems that while important variables showing students' career readiness are impacted, other outcomes remain unaffected.

Given the different nature of the program and the resource-constrained contexts, with rigid gender norms we contribute with our research to several strands of literature including research on career guidance, mentoring and information provision to support young people's career choices. Our next steps include examining the medium-term impacts of the program on students' actual choices and exploring the role of facilitators' characteristics.

Beyond contributing to the existing literature, the results of this study are relevant for policymaking in urban India and beyond. As NGOs and state governments plan to expand career guidance in low-cost schools, complementing the work of highly qualified school counselors, understanding whether and how scalable career programs work can inform the design of future career guidance initiatives at scale.

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Appendix

A Timeline

2022: Piloting of surveys, randomization and implementation

May-July 2023: Baseline surveys

June-November 2023: Implementation of CEP in schools

November-December 2023: Endline data collection in schools

April-May 2024: Final senior secondary school exams

August 2024: Enrollment for higher education courses takes place

October-November 2024: Follow-up 1 data collection

B Intervention description

The CEP envisions empowering young adults (15-21years) to pursue interest-aligned learning and career opportunities. It aims to equip students with the skills, knowledge, and mindsets and a clear plan that enables them to feel confident about working towards a career they choose. It enables students to explore career options aligned with their interests, experience them through tasks, and prepare a plan of action toward reaching their career goals. The program takes a student through a 5-step process leading them to make a choice aligned with their interests and skills.

1. **Start to think!** - Thinking early about making a choice lets one take charge of their career pathway, giving time at hand to explore.
2. **Think openly!** - Not limiting yourself to a few conventional careers, but thinking openly, for, e.g., thinking of the healthcare sector instead of just being a doctor, opens one up to a variety of options to choose from.
3. **Understand yourself!** - Experiencing different types of work, getting feedback, and reflecting on those experiences to find which careers align more with yourself.
4. **Prepare to succeed!** - Creating a plan of action to reach the chosen goal, including the research of where to go and how and steps to prepare oneself for the same.
5. **Thrive in your chosen path!** - Taking continuous action- reflection cycles to up-skill and succeed in the work.

Throughout these five stages the program uses a comprehensive virtual portal designed to provide students with a wholesome learning experience about careers. It hosts career information in the form of courses.

1. **Career expert video** – A short video of a contextual role model sharing their experience about the work done in the career, skills required on the job, and how to prepare for it

2. **Career path** - Broad pathway consisting of courses, internships, and jobs to reach an avg salary of Rs. 30k-40k
3. **Quizzes** - Every learning content is followed by a small quiz (4-5 objective questions) to check students' understanding and create an opportunity for the student to recollect their learning
4. **Home challenge** - A home-based activity designed to give students an experience of how the work in a career would look like. It is based on the core skills required for the job.
5. **Reflection form** - Set of detailed reflective questions to help students synthesize their experience of the career explored.

Apart from the 50+ career courses currently hosted on the portal, courses on introducing the concept of career exploration, creating a plan of action, and entrepreneurial skills like communicating your idea, planning your finances, navigating uncertainties, etc., are also available to help students build the necessary mindset.

These videos have been taken from interviews of high-achieving personalities like Sudha Murthy, Ruma Devi, and Rohit Thakral, who are initially from financially constrained backgrounds similar to the students participating in the program. The virtual portal allows students to pursue independent exploration at their own pace after registration.