The Leaky Pipeline: When Career Expectations Meet Social Norms*

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Abstract

Despite rising educational attainment for young women, traditional gender norms in developing countries limit women's labor force participation. This study, in urban India, examines how career exploration during secondary school impacts students' expectations about women's labor force participation and views on whether women having higher education or earnings than their husbands causes marital problems. We find that the expectation to work in the future is almost universal for girls when marriage and childbearing are not mentioned but declines sharply when these life-changing events are mentioned for a similarly situated girl. Further, over one-third of students perceive that educational or income advantages for women relative to their husbands can lead to marital problems. The career exploration program causally increases labor force participation expectations post-childbearing and reduces concerns about marital problems potentially challenging traditional gender norms.

Keywords: gender norms, inequality, female labor force participation, career guidance, India
JEL codes: O10, O15, C93, I26, J13, J16

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1 Introduction

Gender norms and expectations around women's roles within the household and labor market influence women's labor market outcomes. A growing body of literature suggests that societal expectations about gender roles influence women's participation in the labor market, particularly in developing countries where rigid gender norms are prevalent (Xiao and Asadullah, 2020; Kabeer, 2021). Anderson and Eswaran (2009) emphasize how patriarchal norms create barriers for women, shaping the expectation that women prioritize household duties over professional aspirations and defining that women's primary role is within the household, especially after marriage and childbearing (Jayachandran, 2020; Pande, 2012). As a result, young women may feel restricted in their career choices, and their labor force participation has been shown to decline after marriage and childbearing (Afridi, Dinkelman and Mahajan, 2018; Jha and Bhat, 2017). While still a majority of unmarried women is engaged in the labor force, this drops to only about 20% for married women (PLFS 2019-2020).

Gender norms do not only influence whether women work but can also limit girls' aspirations and desire to have high-skilled and well-paid jobs. When it comes to marriage related outcomes, women's professional aspirations can be seen as a disadvantage: Folke and Rickne (2020) show how leadership positions increase the likelihood of divorce for women but not for men and Bertrand, Kamenica and Pan (2015) provide empirical evidence for gender identity leading to an "aversion to the situation in which the wife earns more than her husband". It seems as if men do not appreciate women's intelligence or ambition - especially when it exceeds their own (Fisman et al., 2006). Such norms on gender roles may limit girls' aspirations to pursue careers in relatively high-skilled and well-paid jobs. Despite increasing education levels among women in India, Kashyap, Esteve and García-Román (2015) document that only in 13% of all marriages, women are married to a man of a lower social status as opposed to 36.2% of men marrying a woman of a lower social status. Research further shows that women who desire to work after getting married are penalized in the marriage market and women who are willing to give up work are rewarded (Afridi et al., 2023). This is also closely related to earlier findings showing that in regions with stronger traditional gender norms, women's economic participation is often constrained due to expectations of assuming domestic responsibilities and limited mobility after marriage (Heath and Jayachandran, 2016; Nussbaum, 2011; Jejeebhoy, 2000).

Existing evidence shows that female labor force participation is the lowest among urban women who have completed secondary education but not tertiary education (Fletcher, Pande and Moore, 2017). The U-shaped relationship between education and female labor

force participation is more pronounced in urban than rural India. Women with lower levels of education are more likely to work due to economic necessity and women with higher education are more likely to work due to the relatively high returns to labor force participation. Interestingly, about one third of the non-working women report that they would like to work but often in occupations for which they did not complete the required qualifications(Fletcher, Pande and Moore, 2017). We therefore focus on the target group of young urban women finishing secondary education to examine how exploring career options may impact their views on FLFP. We first provide novel descriptive evidence on girls' expectations for labor force participation for themselves and a girl like them, as well as girls' and boys' views on whether women having higher education or earnings than their husbands would lead to problems in marriage.

Using a vignette approach, our results show that girls think more optimistically about their labor force participation than about the labor force participation of a girl like them. 96% of the female students see themselves working in the future when marriage and childbearing are not mentioned. This drops to 73% of the students seeing a girl like them working before marriage and declines further to 40% after marriage and to 25% after bearing the first child. Boys seem to have even more conservative expectations. While 98% of the boys expect to be working in the future, 56% of the boys expect a girl of the same age and going to a similar school to be working before marriage, 29% of the boys expect the same girl to be working after marriage and only 23% of the boys expect the girl to be working after childbearing.

Further, more than one-third of girls and boys believe that if a woman has higher earnings or education than her husband, this will "almost certainly" lead to problems in their marriage, implicitly constraining aspirations of women who have such beliefs. Career guidance may have the potential to shift social norms and to familiarize students of a critical age with professional opportunities that they may want to pursue also after marriage and childbearing. Our results show that it increases the share of girls expecting a girl like them to work after having her first child and reduces the share of students, both girls, and boys, who believe that earnings or educational differences would lead to marital problems (Barker and Moraes, 2014).

This study contributes to three strands of literature. First, our study speaks to the literature on the career-family trade-off, which can explain theoretically and empirically gender differences in the labor market (e.g. Zhang and Zou, 2023; Adda, Dustmann and Stevens, 2017). The consequences of such a trade-off might be even more severe in contexts with rigid gender norms. Second, our findings contribute to the literature on how social norms in India impact women's labor force participation and constrain career as-

pirations (Khanna and Sinha, 2015; Bernhardt et al., 2018). Third, we contribute to the literature on how career guidance, mentoring interventions or simple information treatments can potentially support young women's aspirations and career choices (Kingdon and Unni, 2009; Schwartz, 2015; Kessel, Mollerstrom and Van Veldhuizen, 2021).

The remainder of this paper is structured as follows. Section 2 describes the context and the experimental design, Section 3 describes our empirical strategy, Section 4 presents our results, and Section 5 concludes.

2 Background and experimental design

2.1 Context

To examine how career exploration may impact young women's expectations to work in the future, especially regarding life-changing events such as marriage and childbearing, we use data from a randomized control trial conducted in 45 schools without fees, where the career exploration program was implemented in 22 randomly selected schools. We work with students in the 12th grade as they are close to making life-changing decisions. We further focus on girls as they face the risk of belonging to a group of women with intermediate levels of education that have been shown to have the lowest rates of female labor force participation, especially in urban settings (Fletcher, Pande and Moore, 2017).

Students in the RCT are primarily female and from economically vulnerable households who are either from the low-income class or from the lower-middle income class where the male breadwinner norm and home production are valued shaping the expectations for women to earn less than their husbands and to assume domestic responsibilities.

Representative data from 2016 from the National Family Health Survey (NFHS) shows that young women between 18 and 30 years of age, similar to our target group, 66% continue higher education, and only 20% of them enter the labor force (International Institute for Population Sciences , IIPS). Further, when women who want to work are asked to the type of jobs they prefer, they tend to state occupations which allow them to balance work and household responsibilities (Fletcher, Pande and Moore, 2017).

2.2 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 our partnership with a local NGO that has been working with 11th graders and 12th graders in and outside secondary schools

since 2016. For this study, we focus 12th grade students in schools where the partner NGO previously did not work and schools of intermediate size as proxied by the number of sections in the 12th grade, i.e. having between 4 and 6 sections. [1]

The career exploration program consists of 15 sessions, each lasting 40-45 minutes, and is implemented in the classrooms during school hours in 22 randomly selected schools. The program aims to guide and encourage students to identify their strengths, interests, and talents, consider their barriers and constraints, identify suitable careers, make plans to pursue a career path, and identify people who can support them. 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 their strengths and interests, 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 or professional sports players. The facilitators motivate students to have a backup plan if they choose competitive or risky career paths.

Apart from the activities led by the facilitators, students also obtain personalized access to an online platform created by the NGO which provides information on many career paths and sectors of work as well as videos and interviews from people who already work in occupations of interest. Students in small groups of 2-3 students are provided tablets during the sessions to jointly explore careers on the platform.

Facilitators always work in pairs, with one facilitator leading the session and the other supporting in the background. In co-educational schools, facilitators are a mixed-gender pair; in single-sex schools, facilitators have the same gender as the students. Facilitators are, on average, five years older than the students, typically enrolled in tertiary education but from a similar community as the students. This helps the students to relate to the facilitators. In addition to the in-person meetings, facilitators also used WhatsApp groups to interact with the students and allow the students to interact with each other. Further, facilitators had bilateral conversations with the students. The NGO provided online materials on various career paths for all participating students, and students created

[1] In the Indian context, 12th grade is the final year of secondary school, after which students transition to career paths such as university education, vocational training, entrance exams for further studies, or to the labor force. This grade is particularly critical as the structured and protected school environment ends here. For girls, this transition can be especially challenging, as they may face restrictions on continuing their education or labor force participation due to factors such as mobility constraints, societal expectations, or early marriage.

[2] For instance, access to specific subjects at university requires completing secondary school in a particular stream, such as the "Commerce stream" for studying Economics or the "Science stream" for studying medicine or engineering.

their own personal and password-protected profiles in one of the first sessions.

2.3 Theory of change

The career exploration program aims to address lack of self-awarenesss, incomplete information, resource constraints, low aspirations and lack of role models as underlying **problems**. The program with its **inputs** encourages self-awareness, provides information sources, guides students' career exploration through relatable facilitators and encourages students to communicate with people around them including potential supporter and gatekeepers.

The **main outcomes** are that students better know their strengths and interest, are more aware of career paths and returns to skill formation, share their career plans among peers, consider facilitators as mentors or role models and share their career plans with people around them and identify potential supporters.

Given these expected outcomes, we would then expect to observe as **impacts** that students feel familiarized with the idea of women working, are more likely to express and pursue their own career objectives seeing also other girls around them exploring career options and less likely to support traditional gender roles in which men have higher education/earnings than their wives. On the one hand this could stem from developing own aspirations for a career and being more open-minded about the type of career, on the other hand it may also be that the career exploration program reduces young women's and young men's consideration of women's pursuit of a career as an "undesirable trait" in the marriage market as documented in existing literature (Bursztyn, Fujiwara and Pallais, 2017; Fisman et al., 2006).

Given the program's design, we expect that the impacts could be driven through five mediators that we explain in more detail below:

(i) Alleviation of information constraints

(ii) Raising aspirations regarding educational achievements of future earnings

(iii) Peer effects

(iv) Family/community support

(v) Facilitator as a role model

2.4 Research procedures and timeline

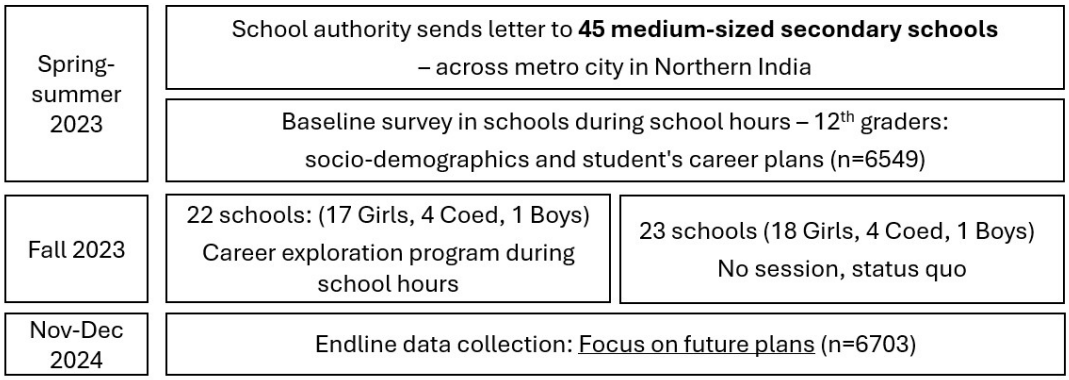
We chose a school-level randomized controlled trial to minimize the probability and extent of spill-over effects (Muralidharan, 2017). Given that school-specific activities occur frequently in this context, we expect any spill-over effect to be unlikely and small and, if at all, lead to an attenuation bias for the measured impact. 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.

Based on these considerations, in spring 2023, the local school authority sent out letters to 45-medium-sized secondary schools without fees across a metropolitan city in Northern India. The letters described the data collection requirements for all schools and if in the treatment group, the practical requirements for the implementation of the career exploration program sessions. Once schools had received, the letters our team contacted the schools and fixed dates for the baseline data collections in schools which focused on students socio-demographic information and students' career plans.

After the baseline, in fall 2023, the implementing partner organization conducted the career exploration program during school hours in 22 schools of which 17 were girls schools, 4 co-educational schools and 1 boys school. In the control group schools, no program was implemented.

In November-December 2023, we collected endline data on students future plans, expectations and views. The research procedures are visualized in Figure 1.

Figure 1: Research procedures and timeline



3 Data and empirical strategy

3.1 Data

We use baseline and endline data from a pre-registered field experiment on how a career exploration program guidance can improve students career choices. These data are further complemented by administrative data provided by our partner NGO. The baseline and endline surveys were filled out by students on tablets provided by our team in the classroom. We surveyed approximately 75% of all registered students, corresponding to average attendance rates in this type of school setting (Baruah, 2022).

Our baseline data contain socioeconomic information of the students, a module to measure social desirability, and current access to career guidance privately and in school. The endline survey captures students' career plans in general as well as their expectations and attitudes. **For this study, we focus on expectations regarding future labor force participation and how these expectations are linked to marriage and childbearing as well as the attitudes towards marital problems.**

We examine how students view their own future labor force participation and the labor force participation of a girl who goes to a similar school and lives in a similar neighborhood, building on our ongoing work on how career guidance impacts students' career choices. We subsequently asked students for their view on the statement that women having higher earnings or higher levels of education would "almost certainly" cause marital problems.

3.2 Hypotheses

Based on our theory of change (Section 2.3), we examine the following hypotheses:

We expect to see descriptively a downward slope in students' expectations once marriage and childbearing are mentioned as these are closely linked with the expectation of women assuming domestic responsibilities. Based on this, we formulate our first hypothesis.

H1 - descriptive: Students' expectations for future labor force participation are highest when they are asked about themselves and marriage and childbearing are not mentioned but are lower for a similarly situated girl when marriage and childbearing are mentioned.

In India, the male-breadwinner norm is prevalent implying that men are primarily responsible for household's expenses, while women are expected to manage household chores. Relatedly, even if there is no specific gender norm, there is a perception that men dislike if their wife is more educated than themselves and perceive this as a potential source of

marital problems.

H2 - descriptive: We expect a substantial share of students to agree with the statement that a woman having higher earnings/education than her husband would almost certainly lead to marital problems.

CEP encourages the students to explore different career options and to prepare a plan of action to pursue their career objectives. This may make their expectations regarding working in the future more concrete and may increase the share of female students who see themselves working in the future. We do not expect any impact for male students as already in the status quo all male students are expected to be working in the future.

H3 - causal: CEP increases the share of female students who see **themselves working in the future**.

Participation in CEP also involves being together with other students exploring different career options. Hence, students see their peers doing so and may imagine that similar activities may also happen at other schools. We expect this to increase the likelihood of expecting other young women to be working both one year before marriage (H3) and one year after marriage (H4).

H4 - causal: CEP increases the share of students who see **a similarly situated girl before marriage** working.

H5 - causal: CEP increases the share of students who see **a similarly situated girl after marriage** working in the future.

Turning now to working three years after childbearing as our outcome of interest, CEP may encourage students to reflect on how domestic responsibilities including caring for children and labor force participation could be managed in the future. We focus on three years after childbearing as this allows parents to access kindergarten and pre-schools. An alternative mechanism could be that girls see themselves getting married to a different type of spouse who is either willing to share the childcare responsibilities or supportive of using kindergarten and pre-school facilities.

H6 - causal: CEP increases the share of girls who see **a similarly situated girl three years after childbearing** working in the future.

Finally, as girls and boys explore career options, they are familiarized with the idea that both genders can pursue high-skilled and well-paid occupations which in turn makes them less likely to agree to a statement on women having higher earnings or education as a cause of marital problems.

H7 - causal: CEP reduces the likelihood that a student agrees with the statement that a woman having higher earnings/education than her husband would almost certainly cause marital problems.

3.3 Operationalization

To examine these hypotheses, we first elicit students' own expectation regarding their labor force participation in the future without referring to marriage or childbearing and subsequently use a vignette a approach to elicit their labor force expectations for a similarly situated girl. All outcome variables analyzed in this paper were collected during our endline survey in fall 2023.

Expectation to work in the future We ask students whether they see themselves working in the future.

After this, we ask students at what age they see themselves getting married (X_G) and male students at what age they think a similarly situated girl should get married (X_B).[3] For the vignette questions, we then introduce "Sameera" who goes to a similar school and is from a similar neighbourhood as the student.

Expectation that Sameera would work before marriage / after marriage: We inform the student that Sameera gets married at age X and subsequently ask the students whether they see Sameera working at age X-1 and at age X+1. X is equal to X_G for girls and X_B for boys. In case girls or boys oppose marriage, we use the average marry age as computed from the National Family Health Surveys 2015/2016.

Subsequently, we ask the students at what age they see Sameera having her first child (Y) and continue asking questions about Sameera.[4] We inform the student that Sameera has her first child at age Y.

Expectation that Sameera would work three years after childbearing: We ask whether the student sees Sameera working three years after having her first child.

To elicit students' views on women having higher earnings or education than their husbands, we ask randomly selected 50% of the students to indicate their view on the earnings-related statement and the remaining 50% of the students to share their views on the education-related statement:

[3]Students can also indicate that they do not seem themselves getting married or that they think a similarly situated girl would not get married (only X% of the girls and X% of the boys).

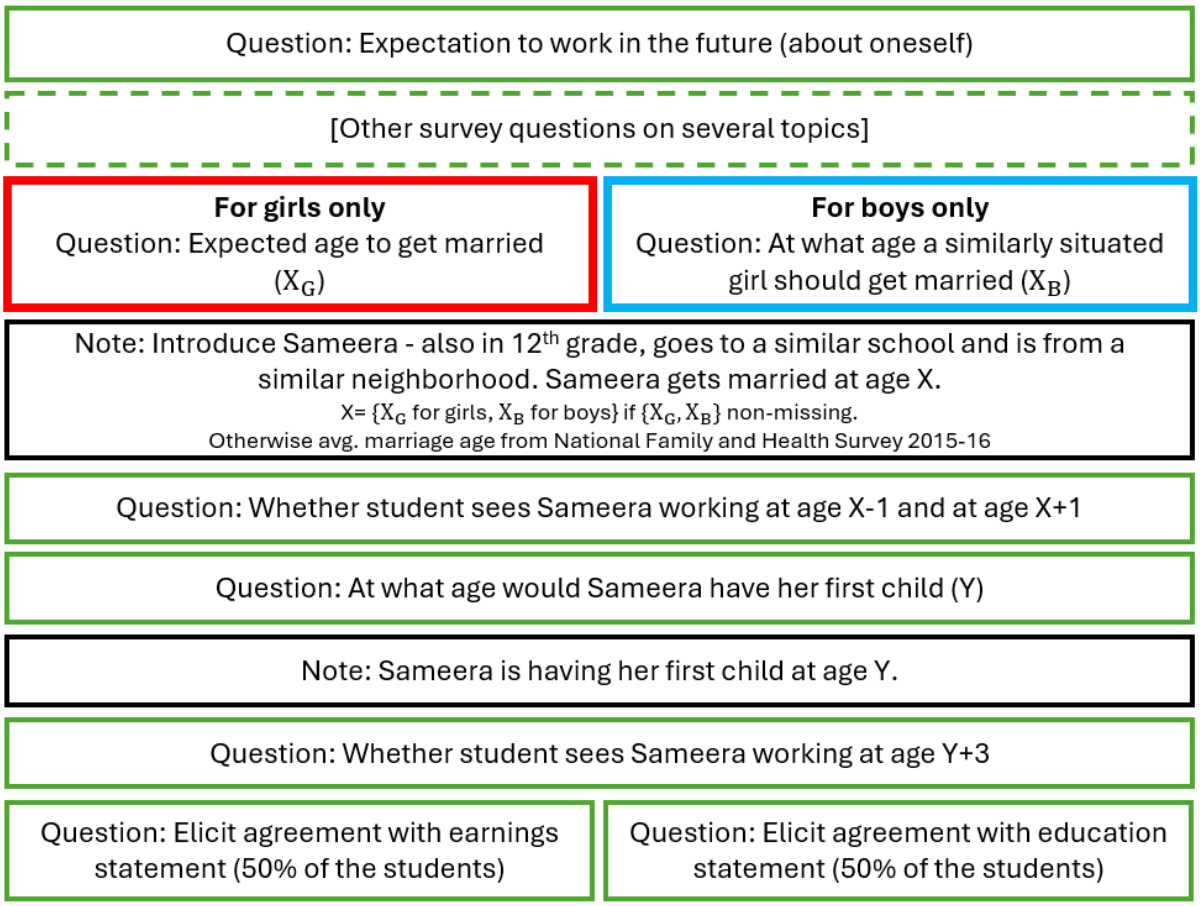
[4]It would not have been appropriate to ask students directly about their own childbearing age and therefore, we continued with framing the questions around what Sameera would be doing.

Earnings statement: If a woman earns more money than her husband, it is almost certain to cause marital problems.

Education statement: If a woman has a higher level of education than her husband, it is almost certain to cause marital problems.

Figure 2 visualizes the survey flow and the survey questions are shown in Appendix A.

Figure 2: Survey flow



3.4 Empirical specification

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 ($t = 0$) of respondent i from school s regressed on the treatment status that varies at the school level and district fixed effects γ_d since we stratify at the district level with standard errors clustered at the school level:

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

Next, we will present the descriptive evidence on students' expectations for their labor force participation and for the labor force participation of another similarly situated girl, as well as the distributions of the views ranging from strong disagreement to strong agreement on whether earnings or educational differences between wife and husband would cause marital problems. We focus here on the control group students to demonstrate students' expectations and views who are by design unaffected by the intervention.

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

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

The estimations of causal impacts from the treatment follow our pre-analysis plan regarding specifications and covariates. As covariates, we include the gender of the student, age, in which stream they are studying, having siblings, having an older sister, having an older brother, having received career counseling before CEP, household size, and total number of assets owned by the household, social desirability index, whether the student goes to a co-educational school and a district fixed effect.

We further estimate the local average treatment effect (LATE) indicating the impact of CEP for those students who participated regularly in the sessions which we define as participating at least in 10 sessions corresponding to the median number of sessions attended by students in our sample.

3.5 Mediation analysis

As outlined above, different mechanisms could explain the program's impact on students' expectations regarding labor force participation and attitudes regarding women having higher earnings/education than their husbands. 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.[5]

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 primary outcome variables. Informed by our theory of change, these mediators focus on information, aspirations, peer effects,

[5]For the here followed application of the mediation analysis, see (Resnjanskij et al., 2024).

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:

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

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

$$M_{is}^k = \alpha_o^k + \beta_1^k T_{is} + \delta_1^k X_{0is} + \gamma_{0_s} + v_{is} \tag{4}$$

Therefore, the kth 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:[6]

$$ShareM_k = \theta \frac{\beta_1^k}{\beta_1} \tag{5}$$

The analysis will, therefore, allow us to understand to what extent the overall impact on labor force participation expectations and attitudes regarding women having higher earnings/education than their husbands is driven by one of these five mechanisms, each addressing the underlying problems of the imperfect human capital allocation in the labor market:

> **Information**: Students can explore different career options and learn about the pathways to achieving their career objectives. This can inform students' expectations and attitudes. 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

[6]This 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.

familiarity with that sector. Evidence for this mechanism would imply that CEP improves students' expectations and attitudes by alleviating imperfect information on career options. If this mechanism plays a role, it implies that students adjust their expectations regarding labor force participation due to additional information obtained on career options.

Education and salary aspirations: As students explore different careers independently and jointly with their peers and are exposed to young women as facilitators a few years ahead of them who have already made relevant career choices, they may have higher educational and income aspirations which may then translate into more progressive expectations and attitudes. We measure this by asking students for their aspired level of education and salary expectations for their first job. We distinguish between education and salary aspirations.

Peers: 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. We measure this potential peer effect by capturing whether "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. Evidence for this mechanism would imply that CEP affects students' expectations and attitudes through the discussion of career plans with peers.

Community: CEP encourages students to share their career objectives with family members and/or community members to identify potential supporters. This addresses the possible 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' expectations and views by encouraging students to obtain support from their families and or people in their community.

Facilitators: 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' expectations and attitudes by providing a role model.

4 Results

4.1 Balance checks

Table 1 shows that 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.[7] We, therefore, account for this minor age difference in all specifications.

Students in our sample are primarily female (89%) and close to 17 years of age. Most students are in the Arts Stream. Most students have an older brother or sister (or both). The students are from households with, on average, 5.45 household members that own, on average, 3 out of 6 assets. About 52.5 percent of the students received formal or informal career guidance before, and about 15% of the students go to a co-educational school. As it is typical for this age group, students tend to give socially desirable answers with an index of 4.4 out of 6.

From the administrative data at the school level in Table 2, we observe that school-level variables on the offered streams, being a girls or co-educational school, number of 12th graders, number of students per section and number of sections in the 12th grade, our data from 45 schools are also balanced for control and treatment group.

[7]Due to organizational issues, the survey teams conducted the baseline in the control group about six weeks later than the baseline in the treatment group causing an instead 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	0.882	-0.018	5,138
	(0.299)	(0.322)	(0.071)	
Age	16.831	16.712	-0.119***	5,138
	(0.748)	(0.748)	(0.038)	
Stream: Arts	0.701	0.691	-0.010	5,138
	(0.458)	(0.462)	(0.055)	
Stream: Commerce	0.203	0.222	0.019	5,138
	(0.403)	(0.416)	(0.034)	
Has a sibling	0.978	0.979	0.001	5,138
	(0.147)	(0.143)	(0.004)	
Older brother	0.459	0.431	-0.027	5,138
	(0.498)	(0.495)	(0.021)	
Older sister	0.448	0.433	-0.015	5,138
	(0.497)	(0.496)	(0.021)	
Household size	5.492	5.412	-0.080	5,138
	(1.689)	(1.787)	(0.092)	
Nr. of assets out of 6	3.000	3.070	0.070	5,138
	(1.466)	(1.539)	(0.129)	
Received guidance before	0.521	0.535	0.015	5,138
	(0.500)	(0.499)	(0.035)	
Co-educational school	0.170	0.143	-0.027	5,138
	(0.376)	(0.350)	(0.113)	
Social desirability index (1-6)	4.414	4.365	-0.048	5,138
	(1.101)	(1.134)	(0.039)	
Observations	2,826	2,312	5,138	

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

Table 2: Balance table - School variables

Variable	(1) Control	(2) Treatment	(3) Difference (C-T)	(4) Observations
Arts stream students	0.708	0.696	-0.013	45
	(0.178)	(0.167)	(0.052)	
Commerce stream students	0.201	0.208	0.007	45
	(0.104)	(0.118)	(0.033)	
Science stream students	0.091	0.096	0.006	45
	(0.132)	(0.152)	(0.042)	
Girls school	0.783	0.773	-0.010	45
	(0.422)	(0.429)	(0.127)	
Co-educational school	0.174	0.182	0.008	45
	(0.388)	(0.395)	(0.117)	
Boys school	0.043	0.045	0.002	45
	(0.209)	(0.213)	(0.063)	
N of 12th graders	180.696	168.818	-11.877	45
	(81.100)	(66.380)	(22.150)	
N of students per section	39.556	40.288	0.732	45
	(8.299)	(7.531)	(2.366)	
N of sections	4.957	4.818	-0.138	45
	(1.581)	(1.402)	(0.446)	
Observations	23	22	45	

Standard errors are shown in parentheses.
Source: Administrative data of schools collected in spring 2023.

4.2 Descriptive statistics

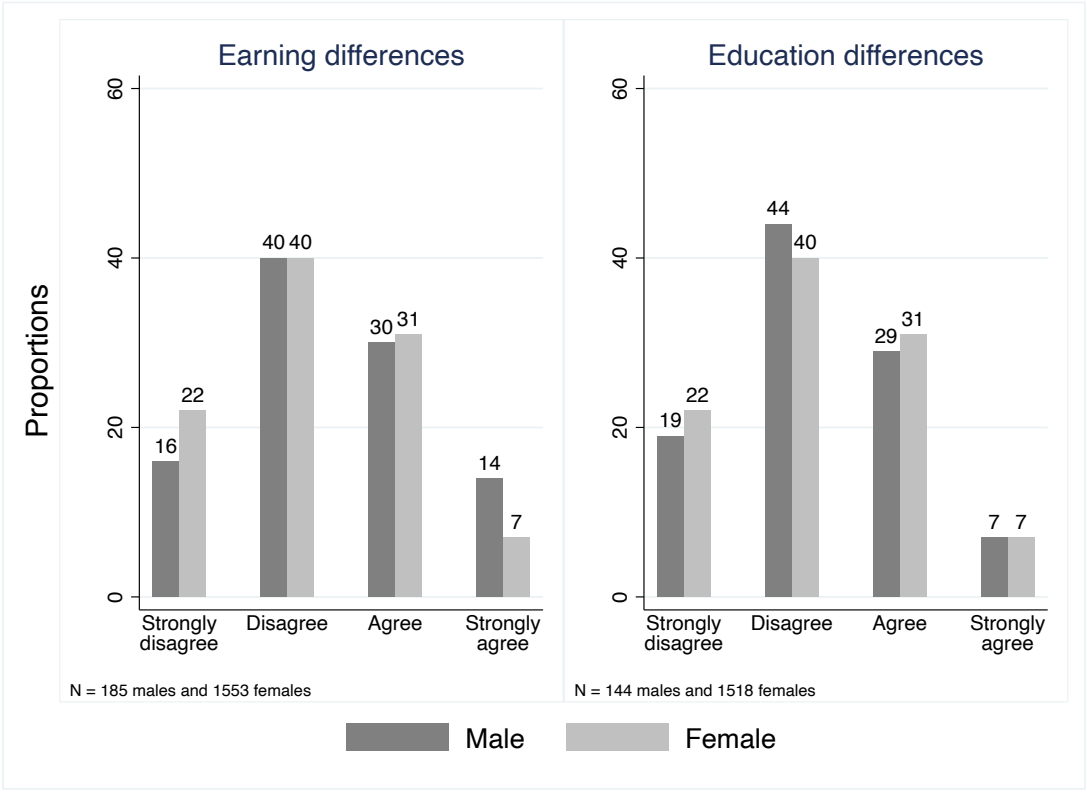
We examine descriptively H1 on how students' expectations regarding girls' labor force participation vary when asked for before marriage, after marriage, and after childbearing. Indeed, expectations regarding labor force participation for another girl are highest before marriage (56% by boys and 73% by boys) and then decrease substantially after marriage (29% and 40%) and after childbearing (23% and 25%). These substantially decreasing expectations on female labor force participation are visible for male and female students, but male students tend to be more pessimistic.

When we examine H2 on students' attitudes regarding a woman having higher earnings or higher education than her husband, among the 12th-grade students surveyed, 44% of the boys and 38% of the girls think that a wife having higher earnings than her husband will cause marital problems. Similarly, 36% of the boys and 38% of the girls believe that a wife being more educated than her husband will cause marital problems. Boys perceive earning differences as worse than educational differences, which aligns with our qualitative insights that women's education is often valued in the marriage market, but it is expected at the

same time that women would not work. This is what we see descriptively in the data: boys are relatively more concerned about the earnings differential than the educational differential leading to marital problems.

Figure 3: Expectations - female labor force participation (only control group)

Figure 4: Women having higher earnings/education than husbands causes marital problems (only control group)



4.3 Regression results

Turning now to the analysis testing our causally identified hypotheses in Table 3, we do not find empirical support for the hypotheses on the career exploration program increasing the share of students seeing themselves working in the future (H3) or the share of students seeing another similarly situated girl one year before (H4) or after marriage (H5) working. While there is little scope to improve the expected labor force participation (as it stands already at 96.5%), the lack of an impact of CEP on expected labor force participation one year before goes against our expectations. However, the CEP increases students' expectation of a similarly situated girl to be working three years after childbearing by about 2 percentage points as an intention to treat effect corresponding to an effect size of 8% of the control group mean value, which is sizable. The local average treatment effect for the compliers - those students who attended the CEP sessions regularly - is 4.6 percentage points of 18.4% of the control group mean value. In all specifications, though correlational, female students have higher expectations towards women working, expect for the first one where both girls' and boys' expectations were very close to 100%.

Further, the CEP significantly reduces the share of students who think that earnings or educational differences (H7) would cause marital problems by 5.9% and 4.4% percentage points respectively for the ITT and 13.5% and 9.9% for the LATE. Hence, given the control group mean value, the effect sizes are 15% and 12% of the control group mean for the ITT and 35% and 26% of the control group mean for the LATE. This highlights that CEP can address girls' and boys' perception that earnings or educational differences between wife and husband are perceived as "almost certainly" causing marital problems potentially deterring girls' career choices.

Table 3: Career guidance impact on the expectations to work

	Own	Another girl		
	(1)	(2)	(3)	(4)
	future	before marriage	after marriage	after child
CEP	0.002	0.005	0.005	0.020**
	(0.006)	(0.013)	(0.013)	(0.008)
Female	0.007	0.183***	0.080***	0.063***
	(0.010)	(0.024)	(0.026)	(0.021)
N	5138	5138	5138	5138
Panel B: LATE				
Regular CEP attendance	0.004	0.012	0.011	0.046**
	(0.013)	(0.030)	(0.029)	(0.018)
Female	0.006	0.182***	0.078***	0.057***
	(0.010)	(0.024)	(0.026)	(0.019)
N	5138	5138	5138	5138
Control group mean	0.965	0.717	0.388	0.250

Notes: The dependent variable indicates whether the girl/boy plans to work in the future for pay (1). For model (2), (3), and (4), the dependent variables for girls(boys) indicates whether a girl like her (a girl in a similar school like yours) would work in the future for pay before marriage (2), after marriage (3), and after childbearing (4) respectively. In Panel B, we instrument whether the student attended a higher number of sessions than the median with the school-level random assignment to the treatment group. All specifications include school type fixed effects and baseline covariates. Standard errors are clustered at the school level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 4: Career guidance impact on the perception that earnings and education differences between wife and husband cause marital problems

	(1) Earnings	(2) Education
Panel A: ITT		
CEP	-0.059***	-0.044**
	(0.021)	(0.019)
Female	-0.084**	-0.005
	(0.033)	(0.025)
N	2614	2524
Panel B: LATE		
Regular CEP attendance	-0.135***	-0.099**
	(0.048)	(0.041)
Female	-0.067**	0.010
	(0.032)	(0.026)
N	2614	2524
Control group mean	0.383	0.380

Notes: The dependent variable indicates whether the respondent thinks that a woman with a higher income (1) or higher education (2) than her husband almost certainly causes marital problems. In Panel B, we instrument whether the student attended a higher number of sessions than the median with the school-level random assignment to the treatment group. All specifications include school type fixed effects and baseline covariates. Standard errors are clustered at the school level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Mediation analysis

What drives the results in Tables 3 and 4? Figure 5 highlights the key mediators that explain the impact of CEP on both perceptions of labor force participation after childbearing and marital problems if a woman has higher earnings or higher education than her husband.

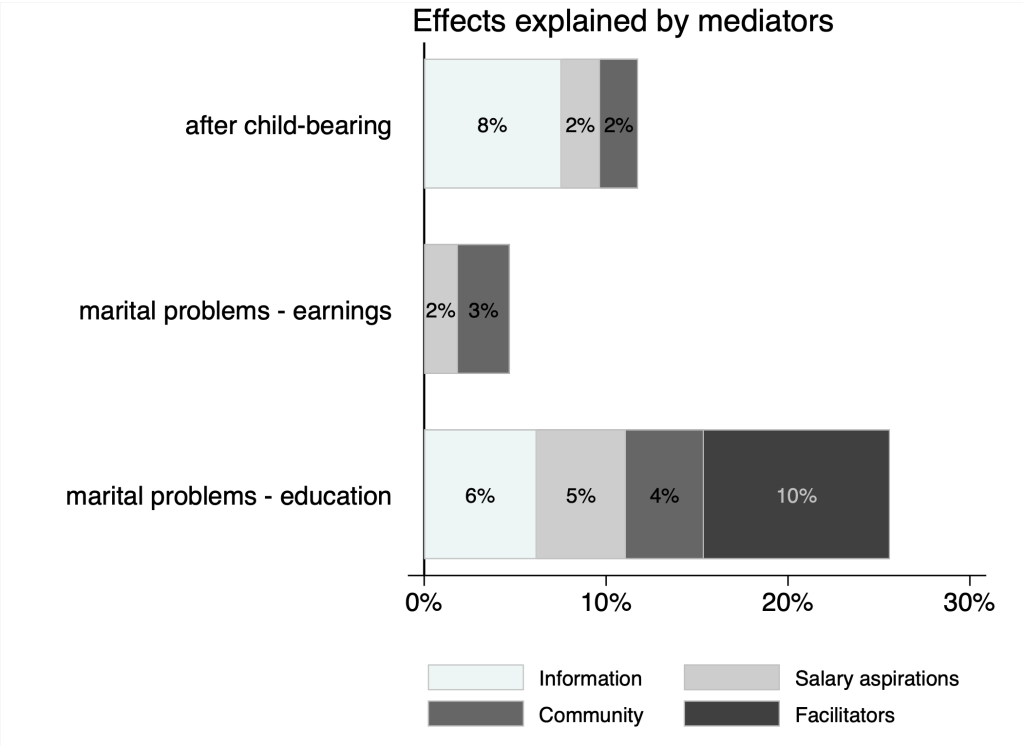
First, information provision drives the impact on seeing a similarly situated girl working after childbearing (8%) and of the reduced agreement of viewing differential educations as a cause of marital problems (6%).

Second, raised salary expectations drive three impacts of CEP on seeing a similarly situated girl working after childbearing (2%) and reduced agreement with the statement on differences in earnings/education leading almost certainly to marital problems (3% for differential earnings and 5% for differential education).

Similarly, the mediator of identifying supporters in the community explains the impacts of CEP on all three outcomes variables - 2% for working after childbearing, 3% for differential earnings and 4% for differential education.

Finally, perceiving facilitaors as role models explains 10% of the impact of CEP on the agreement with the educational differences leading to marital problems.

Figure 5: Mechanisms from mediation analysis



Overall, the mediation analysis documents that alleviation of information constraints, adjusted salary expectations, identifying supporters in the community and seeing facilitators as role models are the relevant mediators explaining the previously documented impacts of CEP.

It is worth noting that the mediators for the impact on the agreement with the earnings and educational differences vary substantially. Our interpretation is that societal beliefs deeply drive the norms surrounding income differences between husbands and wives. However, community support may alleviate some of these concerns, as it provides societal validation to girls working in the future. Yet, facilitators acting as role models are the most important mediators in shifting attitudes toward education differences and marital stability. Seeing highly educated, working women from similar backgrounds instills confidence in the girls and helps reduce the perception that education differences between spouses are problematic.

A potential limitation is that the examined mediators here focus on the educational aspects rather than the earning aspects. Therefore, these mediators perform better in explaining the impact on the attitudes regarding the earnings differentials.

5 Conclusion

This study sheds light on how persistent and largely internalized gender norms may affect women's labor force participation in urban India. Our results document a stark contrast between the close-to-universal expectation of girls to be working in the future which declines dramatically for another girl before marriage, after marriage and three years after childbearing with boys having even more conservative expectations than girls. These statistics underscore the powerful influence of societal norms that dictate women's roles, primarily as homemakers, particularly after critical life events like marriage and motherhood. Further, our results indicate that traditional beliefs regarding the consequences of women earning more and having higher education than their husbands remain prevalent, with clearly over one-third of both male and female respondents believing this would cause marital problems. This perception reinforces the constraints on women's career aspirations and highlights the need for targeted interventions that challenge these norms.

The career exploration program (CEP) evaluated in this study is a promising intervention to address these gendered expectations. Although we did not observe significant changes in girls' expectations of their labor force participation or that of similar girls before or after marriage, the CEP increased the likelihood that students would envision a similarly situated girl working three years after having her first child. Moreover, the program significantly reduced the belief that disparities in earnings or education between spouses would lead to marital problems, suggesting that early career-oriented interventions can effectively shift social norms and facilitate more equitable views on gender roles within the family.

This study highlights the critical need for ongoing efforts to challenge and reshape entrenched gender norms to foster a more inclusive labor market for women. While our study provides valuable insights, further research is essential to explore the long-term impacts of interventions like career guidance and/or career exploration and to understand how best to empower young women to navigate and redefine their roles in both professional and domestic spheres.

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Appendix

A Survey questions for outcome variables

Below we provide the survey questions for our outcome variables. All students answered the questionnaire in Hindi which is also the language of instruction at all the schools in the study. The Hindi questionnaire is available upon request.

Survey question	Answer options
Moving ahead, do you see yourself working to earn money?	No — Rather no — Rather yes — Yes
To girls: What is the most likely age for you to get married? (X_G)	Integer value
To boys: Think about a girl in 12th grade in a school similar to yours. At what age do you think she should get married? (X_B)	Integer value
Like you, Sameera is in XIIth grade. She will get married at the age X. What do you think Sameera would be doing in the following situations:	
What do you think Sameera will be doing when she is X-1 years old?	Working for pay/looking for work — Study —
What do you think Sameera will be doing when she is X+1 years old?	Working for pay/looking for work — Study — Household work — Involuntarily unemployed Voluntarily unemployed — Other
Sameera got married at age X. According to you, at what age (Y) should she get her first child?	Integer value
Do you see Sameera working when she is Y+3 years old?	No — Rather no — Rather yes — Yes
If a woman earns more money than her husband, it's almost certain to cause problems.	Strongly disagree — Disagree — Agree — Strongly agree
If a woman has a higher level of education than her husband, it's almost certain to cause problems.	Strongly disagree — Disagree — Agree — Strongly agree