Encouraging Female Graduates to Enter the Labor Force: Evidence from a Role Model Intervention in Pakistan

HAMNA AHMED
Lahore School of Economics

MAHREEN MAHMUD
University of Exeter

FARAH SAID
Lahore University of Management Sciences

ZUNIA TIRMAZEE
Lahore School of Economics

I. Introduction

Countries across the developing world—and in South Asia, in particular—have low female labor force participation rates.[1] Pakistan has gender parity

The study was funded by a Private Enterprise Development in Low-Income Countries Exploratory Grant and Phase IV of the Growth and Labor Markets in Low Income Countries program of the Institute of Labor Economics (IZA) and the Department for International Development (DFID). The views expressed are not necessarily those of DFID, IZA, or the Centre for Economic Policy Research (CEPR). This study would not have been possible without the support of Naved Hamid, Kate Vyborny, Urooj Qaiser, Dareen Latif, Saniya Jillani, Fatima Tanveer, Mahniya Zafar, Fatimah Shah, Azka Mir, Maryiam Haroon, and the Punjab Higher Education Department. We would also to thank the Job Asaan CEPR team, particularly Harmalah Khan and Aeman Farrukh, in facilitating access to data and for coordination on fieldwork. We thank audiences at the IZA/DFID Gender and Labor Markets in Low-Income Countries (GLM | LIC) Research Conference (Michigan, September 2018; Nepal, December 2019; online, December 2020), the Applied Development Economics Conference (Lahore, September 2019), the Annual Economics Conference (Ahmedabad [online], 2021), the Workshop on Gender and Labor (Trier [online], 2021), and seminar audiences at Duke University, the Lahore School of Economics, Lahore University of Management Sciences, German Institute of Global and Area Studies, and University of Göttingen for their valuable comments. All errors are our own. The study has ethics approval from the Lahore School of Economics Research Ethics Review Committee (protocol no. RERC-102018-02) and is registered in the American Economic Association's registry for randomized controlled trials (AEA RCT; AEARCTR-0003221). Contact the corresponding author, Hamna Ahmed, at hamnaa@gmail.com.

[1] Female labor force participation is 36% in Bangladesh, 35% in Sri Lanka, 22% in Afghanistan, 83% in Nepal, 22% in Pakistan, and 20% in India (World Bank 2020).

Electronically published November 9, 2023

Economic Development and Cultural Change, volume 72, number 2, January 2024.

https://doi.org/10.1086/721615

in tertiary enrollment, but the labor force participation rate of female graduates is low and, at 25.9%, almost a third that of male graduates (calculated from the Labor Force Survey 2017–18). Yet many women express a desire to work (Field and Vyborny 2016; Ahmed et al. 2020). Transport, social norms, household dynamics, and access to job opportunities may be significant barriers that keep women from being gainfully employed (Field, Jayachandran, and Pande 2010; Heath and Mobarak 2015; Field and Vyborny 2016; Erten and Keskin 2018; Jayachandran 2020). Internal barriers, in the form of lack of same-gender role models, mentors, and peer support, can be important determinants of labor market outcomes for women (Riise, Willage, and Willén 2022), though these receive less attention in the literature (McKelway 2020). Role models and mentors, in particular, can reduce "stereotype threat" and influence aspirations (Kofoed and McGovney 2017; Mansour et al. 2018; Breda et al. 2020; Lopez-Pena 2020; Porter and Serra 2020).

In this paper, we test whether a low-cost, motivational nudge in the form of stories of female role models can encourage female graduates from low-income households to increase labor force participation. We conducted a randomized controlled trial with 2,500 female undergraduate students in 28 female-only public colleges in Lahore and a low-cost intervention that can be easily scaled up by college administration if proven successful. We alleviated some of the external constraints by giving the entire sample information about Job Asaan, a job search portal that also provides support with CV making and interview preparation. Half of the sample was then individually and randomly selected to watch a 10-minute video showcasing real-world female role models, gainfully employed and from a similar socioeconomic group as the students, followed by a brief discussion with the enumerator on the key messages of the video. These role models were meant to encourage a growth-mindset in the students, motivating them by acting as a "representation of the possible" (Porter and Serra 2020, 227). The other half of the sample students formed the placebo group and watched a video of a similar length on an unrelated topic.

The role model intervention led to a higher growth mindset (Blackwell, Trzesniewski, and Dweck 2007) in the treated group as compared to the placebo group immediately after the video was administered. We find students in the treated group were significantly more engaged with the video, scoring higher on an absorption index (Banerjee, Ferrara, and Orozco 2019). Given the relatively short duration of the this initial interaction, we reinforced the key messages of the video 3 months after the intervention. Treated students remembered the names and occupations of role models before this reinforcement at 3 months and in surveys conducted 18 months after first watching the

video. We collected high-frequency data on job search efforts and outcomes, conducting three follow-up surveys over a period of 18 months after the intervention.[2]

In our sample, 13% are searching for a job before the COVID-19 lockdown, a percentage that drops to about 5% after the lockdown. The treatment does not impact the likelihood of looking for a job, hours of job search, the likelihood of having read a job advertisement, or of using any informal, formal, or online platform over the study period.

We do not find any effects of the intervention on the likelihood of working at 9, 12, or 15 months after the intervention. We can rule out results being driven by differential attrition and low statistical power. At 18 months after the intervention, which coincides with the nationwide lockdown due to the COVID-19 pandemic, students in the treatment group are 4.7 percentage points more likely to be working, which is 24% higher than the placebo mean of 20.1%.[3] However, the treated group are not significantly more likely to be working from home, employed full-time, or earning above median sample wages at 18 months.

We investigate possible mechanisms by exploring heterogeneity. Specifically, we use *k*-means clustering and find support for two groups in our sample—a low-income-education group and a high-income-education group, with the students in the former coming from households with significantly lower incomes and parental education levels than the latter. The average effect of the treatment on the likelihood of working at 18 months is driven almost entirely by an effect of about 11 percentage points for students in the low-income-education group. This group is significantly more likely to report that a primary earner in their household had lost their job or had to shut their business and to report being stressed about loss of income in the household due to the COVID-19 pandemic than those in the treated high-income-education group. This may be a possible mechanism for their higher likelihood of working.

A recent study closely related to ours is by McKelway (2020), who shows that psychosocial discussions designed to engender self-efficacy can lead to significant improvements in female labor force participation in India. In contrast, we find

[2] Attrition is balanced across the treatment and control groups. We present results for the unbalanced panel. The results for a balanced sample of 1,444 respondents are similar and are provided in online app. C. The 18-month follow-up was a phone survey conducted right after the COVID-19 lockdown in March 2020 where we collected information both about the situation before the lockdown in February and after in May 2020, i.e., 15 and 18 months after the intervention, respectively.

[3] Note that this placebo mean of 20.1% is post the COVID-19 lockdown. Before the lockdown, the likelihood of working was higher: 34% in the placebo group, which is in line with national statistics for this age group and education level.

null impacts before the onset of the pandemic, which may be attributable to our relatively lighter-touch intervention compared with the intensive and repeated interactions used by McKelway (2020)

Our study speaks to two broad strands of literature. First, we add to the literature that studies the impacts of aspirational stories from peer groups on adolescent behavior (Appadorai 2004; Ray 2006; DuBois et al. 2011), local female leadership (Macours and Vakis 2014), and social inclusion (Doel 2010), as well as role model effects in influencing behavior toward divorce, fertility, and domestic violence (Jensen and Oster 2009; La Ferrara, Chong, and Duryea 2012). We contribute to this literature by looking at the effect of real-world role models on a yet unexplored outcome: encouraging labor force participation of young female graduates. In doing so, we also contribute to an evolving broader group of studies that investigate the role of psychological interventions in fostering hope; improving health outcomes, academic achievement, and labor market prospects; and impacting earning differences and other important life outcomes (Heckman and Rubinstein 2001; Duckworth and Seligman 2005; Heckman and Kautz 2012, 2013; Kautz et al. 2014; Duckworth et al. 2019; Ashraf et al. 2020; Bhan 2020; Resnjanskij et al. 2021).

Second, this paper also relates to the literature investigating barriers to labor force participation and testing interventions that alleviate these constraints. Socioeconomic background, information on available jobs, and work-seekers' skills can be significant determinants of entry into the labor market (Humphrey et al. 2009; Jensen 2012; Caria, Franklin, and Witte 2020; Carranza et al. 2020); however, studies show modest impacts of job search assistance and skills training on employment and wages (for a review, see McKenzie 2017). Search assistance and training programs, in particular, can suffer from low enrolment (Cheema et al. 2012) and high cost (Adoho et al. 2014; Abebe et al. 2021) and often require specific targeting to be effective (Caria et al., forthcoming). Further, while job search platforms can assist in reducing information frictions, they fail to reduce search costs incurred by job applicants or change their self-beliefs (Wheeler et al. 2022). In this study, we provide evidence on a low-cost intervention that can complement conventional training and assistance programs to promote employment. We can infer from our results that this intervention was insufficient to alleviate binding constraints faced by women in the labor market, though it did prove to be effective for those who experienced high stress during the pandemic.

Our paper proceeds as follows. In section II, we present the experimental setting and the sample details. In section III, we present the experiment design. In section IV, we share the results. Section V presents a discussion on spillovers, and we conclude in section VI.

II. Experimental Setting and Sample

A. Setting

The province of Punjab (Pakistan) enjoys high female enrollment rates, with 44% of women in urban areas having attained higher-secondary (grade 12) or higher education. In tertiary education, enrolment rates are lower, at approximately 9%, but there is gender parity—with enrolment rates at 8.5% for women compared with 9.6% for men (World Economic Forum 2020). At the same time, the labor force participation rate among female graduates aged 25–35 is 32%, only one-third of that of men (96%; calculated from the Labor Force Survey 2017–18). As the second-largest city of the country and the provincial capital, Lahore is an important policy center of Pakistan. The low female labor force participation rate in the city is despite the availability of a large number of jobs. For instance, at any given point in time, there are nearly 1,800 Lahore-based job openings advertised on Rozee.pk (the largest online job portal of Pakistan), with an average of 20 new job advertisements posted daily.

There are 37,000 students enrolled in the district of Lahore, half of whom are women, providing us with a large population for drawing the study sample (PDS 2018). Educational institutions are often segregated in Pakistan due to social and cultural norms. We limit our sample to women-only colleges in the city of Lahore. We exclusively focus on students with liberal arts majors, across 28 public colleges. Figure A1 below shows the location of these colleges across a population map of the city.

Focus group discussions conducted in 2018 with 100 female undergraduate students from our sample colleges confirm that women face a range of impediments consistent with those identified in the literature in participating in the labor market. Nearly a third mention informational constraints and issues with traveling to work, but a much larger proportion—approximately 60% of the sample—expressed concerns about navigating social norms, women's mindsets, and lack of confidence and family support. In spite of these substantial barriers to working, nearly half expressed a desire to be working even 3–5 years after graduating. A third of the sample (31%) viewed their mothers as a their role models, yet only 6% of the students have working mothers. While students in this sample have access to the internet and may be exposed to famous, successful women, it appears that they may not have had exposure to relatable role models who are successful in the labor market.

B. Sample

We conducted a baseline survey with 2,499 female final year undergraduate students between October 2018 and February 2019. Of them, 1,224

(49%) were randomly assigned to the treatment group. The intervention was reinforced between February and May 2019 (intervention reinforcement). The respondents were interviewed again between August and September 2019 (follow-up 1), December 2019 and January 2020 (follow-up 2), and then finally between May and June 2020 (follow-up 3). Online appendix figure A1 displays the study time line, and online appendix A provides details of each round.

C. *Descriptive Statistics*

The sample is balanced across a range of individual and household characteristics at baseline for the full sample (table 1).[4] It comprises students from households with an average monthly income of approximately US$315, which is close to the provincial average of US$368 for urban households (calculated from the Household Integrated Economic Survey 2015–16).[5] The majority live in households that are owned by their family. The households are large, with seven members on average.

The proportion of the sample that desires to work after they graduate is very high at 84%. The majority want a salaried job, with only 2% who want to set up an enterprise. The average response is that it is highly possible for an educated woman like them to work. Four-fifths of the sample (80%) think there would be hindrance in finding a job, with one-third mentioning difficulties in traveling for work and a fourth citing difficulty receiving permission from family/in-laws. Consistent with the focus group discussions, students are most likely to identify mothers as their role models, yet a very low proportion of their mothers currently work.[6] A small proportion of individuals at the baseline are married (8%).

A fifth of the sample are already doing some part-time work as they are studying, mostly giving tuition at home, and those who work earn about US$81.2 a month on average (the table reports the unconditional mean). On average, the students spent about 4.3 hours studying and approximately 3 hours doing housework every day. Not surprisingly, given the baseline was conducted nearly a year before graduation, there is very little job search: less than 5% search, and the time spent on average is less than 1 hour in the past 4 months.

[4] Column 4 in table 1 reports observations for each baseline characteristic, all of which were collected before treatment implementation. A similar table for the balanced sample is provided in online app. table C.1. For some outcomes, we have missing values due to respondent refusal to answer. The refusal rates are uncorrelated with treatment status (results are available on request).

[5] We use the exchange rate at the time of the study baseline in 2018, US$1 = PKR 123.12 throughout the paper.

[6] Note that the question regarding role models, and those on whether the respondent was currently working mentioned in the next paragraph, was added toward the end of the baseline survey, so we only have 121 observations for them.

TABLE 1
DESCRIPTIVE STATISTICS

	Placebo (1)	Treated (2)	Difference (3)	Observations (4)
	A. Household Characteristics			
Monthly household income (USD)	312.892	319.991	7.100	2,283
	(206.632)	(225.340)	(9.043)	
Dummy: own house	.836	.823	−.012	2,494
	(.371)	(.382)	(.015)	
Household size	6.533	6.595	.061	2,499
	(1.957)	(1.928)	(.078)	
Father's years of education	9.462	9.186	−.276	2,499
	(5.013)	(5.171)	(.204)	
Mother's years of education	7.691	7.407	−.284	2,499
	(5.077)	(5.173)	(.205)	
Dummy: mother works	.084	.068	−.016	2,432
	(.277)	(.252)	(.011)	
	B. Own Characteristics			
Dummy: want to work after graduation	.835	.837	.002	2,497
	(.371)	(.370)	(.015)	
Dummy: married	.080	.085	.005	2,499
	(.271)	(.279)	(.011)	
Hours of study per day	4.332	4.389	.057	2,493
	(2.948)	(3.057)	(.120)	
Hours of housework per day	2.969	2.892	−.077	2,498
	(2.283)	(2.269)	(.091)	
Dummy: searched for a job	.047	.045	−.002	2,499
	(.212)	(.207)	(.008)	
Hours of job search in past 4 months	.249	.231	−.019	2,497
	(2.216)	(1.702)	(.079)	
Monthly personal income (USD)	28.460	25.885	−2.575	2,456
	(87.811)	(82.146)	(3.435)	
Observations	1,275	1,224	2,499	

Note. Columns 1 and 2 show the mean value of the variable in the row for the placebo and treatment sample, respectively. Column 3 reports the difference in means between the placebo and treated sample; and col. 4 displays the total number of observations for each variable. Standard deviations are reported in parentheses. Panel A provides outcome measures at the household level, and panel B provides average characteristics of the respondent.

D. Attrition

Online appendix figure A1 displays the round-wise rate of attrition in parentheses. We were able to successfully interview 87.4%, 87.5%, 69.8%, and 64.5% of respondents at the time of reinforcement intervention at 3 months and follow-up surveys 9, 12, and 18 months after baseline, respectively. Reassuringly, attrition is not related to treatment status—there is no statistically significant difference between the attrition rate in the treatment and the control group in any of the rounds of data collection (table 2).

In table 2 columns 2, 4, 6, and 8, we include controls for baseline covariates, as well as the interaction of these covariates with the treatment

TABLE 2
ATTRITION BY SURVEY ROUND

	Months since Baseline							
	3		9		12		18	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treated	.016	.112	.007	.091	.009	.174	.008	.097
	(.013)	(.078)	(.013)	(.084)	(.018)	(.114)	(.019)	(.116)
Controls	No	Yes	No	Yes	No	Yes	No	Yes
p (*F*-statistic)		.13		.09		.70		.30
Mean	.13	.13	.12	.12	.30	.30	.35	.35
Observations	2,499	2,183	2,499	2,183	2,499	2,183	2,499	2,183

Note. Columns 1 and 2 report attrition from the intervention reinforcement survey (3 months after baseline), cols. 3 and 4 from follow-up 1 (9 months after baseline), cols. 5 and 6 from follow-up 2 (12 months after baseline), and cols. 7 and 8 from follow-up 3 (18 months after baseline). Columns 2, 4, 6, and 8 report results from a saturated regression with controls for household characteristics (monthly household income, dummy for own house, household size, father's years of education, mother's years of education, and dummy for mother works) and respondents' own characteristics (dummies for whether one wants to work after graduation and is married, hours of study and housework per day, and dummy for whether searched for job, hours of job search in past 4 months, and monthly personal income) and the interaction of these controls with the treatment dummy. All covariates are collected before the intervention is implemented. Observations in cols. 2, 4, 6, and 8 are lower due to missing observations in baseline characteristics. A detailed version of this table displaying all observable covariates in cols. 2, 4, 6, and 8 can be found in table A1. "*p* (*F*-statistic)" refers to the *p*-value of *F*-statistic from a test of joint significance of the interaction of treatment status and baseline characteristics. Robust standard errors are presented in parentheses. "Mean" refers to the average level of attrition in each round.

status.[7] Attrition is correlated with some individual characteristics collected at baseline (before treatment implementation): in different rounds, we find attrition to be predicted by the household living in its own house, father's education, mother's work status, and whether the respondent looked for a job before intervention implementation (table A1). However, the interaction of covariates with treatment status are largely insignificant, with some exceptions. For instance, mother's work status at 9 months and mother's work status and hours of job search positively and significantly predict attrition in the last survey round at 18 months. However, a joint test of significance reveals treatment status, and the group of individual covariates interacted with treatment status does not predict attrition in the last round and is only marginally significant at 9 months. In addition, attrition is not predicted by work status and does not arise because of respondents finding work and refusing to participate in subsequent rounds. Results are available in online appendix table B.1.

Our main analysis utilizes data from the full, unbalanced panel. We show robustness of our main results in two ways. First, we report Lee (2009) bounds on

[7] All regressions control for the college a student is enrolled in. College does not predict attrition: the *F*-statistic from a test of joint significance of college and treatment status interaction has a *p*–value of .971, .756, .626, and .958 for surveys 3, 9, 12, and 18 months after baseline, respectively. Results available on request.

all estimates of main treatment effects. Second, in online appendix C, we report results from running all analyses using a balanced panel of 1,444 women interviewed in all rounds.

III. Design

A. Intervention Motivation

The study intervention is motivated by Blackwell, Trzesniewski, and Dweck (2007) and Dweck's work on the importance of growth mindset (Dweck 2007, 2012) in improving performance in the classroom (Paunesku et al. 2015; Yeager et al. 2016, 2019), social settings (Walton and Wilson 2018), and reducing stereotype threat (Aronson, Fried, and Good 2002). A growth mindset encourages individuals to view intellect as malleable with sustained efforts to learn, to be open to challenges, and to endure in the face of adversity. Growth mindset interventions address beliefs about intellect and challenge the view that intellect is fixed. This view may be particularly important in settings where individuals are led to believe they may be naturally lacking talent or skills required to succeed. One such setting is that of women facing a host of social, cultural, and psychological barriers to their labor market participation. Beliefs about success in the face of adversity can influence their goals and extent of perseverance in the face of difficulties (Locke and Latham 1990).

A second source of motivation for the intervention comes from literature on human psychology that argues that human beings primarily model their behavior on others, with the human mind influenced by beliefs and actions of those around us (Lieberman 2014). Indeed, recent evidence suggests representation and role models can be very effective in changing the beliefs and actions of others around them (see, e.g., Chong and Ferrara 2009; Jensen and Oster 2009; La Ferrara, Chong, and Duryea 2012). Real-world role models have been found to positively affect aspirations and occupation choices (Beaman 2012). For instance, face-to-face interaction with women who have majored in male-dominated fields has encouraged female undergraduate students to do the same (Porter and Serra 2020). Others have shown similar success in changing beliefs and performance using inspirational videos (Bernard et al. 2014) and movies (Riley 2022b).

The intervention video combines elements from these two strands of literature by exposing women to relatable, real-world women who have successfully handled challenges faced in the labor market. The aim is to encourage a growth mindset (Dweck 2012) by emphasizing that women can also secure gainful employment and have successful careers if they persist in the pursuit of employment. The intervention video shows the challenges role models faced and how they successfully handled those challenges with effort and perseverance in the face of hardship. This is aimed to encourage a growth mindset, drawing

inspiration from the experiences of role models seen in the video. Individuals with a growth mindset are expected to be motivated and, hence, better equipped to handle the challenges of the labor market and succeed in realizing their labor market goals.

B. Intervention Details

The intervention consists of a documentary video on real educated women from public colleges in Lahore who have been successful in the labor market, in that they have secured a job and are satisfied in their current jobs. We collaborated with the administrations of sample colleges to identify successful alumni. We identified five women, all of whom were public college graduates belonging to a socioeconomic group similar to that of the sample respondents. These five women (the names of whom cannot be disclosed due to confidentiality) belonged to different occupations: lawyer, curator at a library, lecturer at a public university, assistant curator at an art gallery, and police officer. We chose a mix of professions, including both common and rare occupations for women, such as a lecturer and a police offer, respectively. We show female role models because it has been found that women tend to respond better to same-gender role models (Lockwood 2006).

We worked with ContentCreatorZ, a Lahore-based private media company, to film interviews with the five role models for the documentary. Before the interviews were filmed, the research team met with each of the role models in a separate ice-breaking session to explain to them the purpose of these interviews. For making the final documentary, the media company used notes from the ice-breaking sessions to draft the script and prepared the documentary by meeting the role models once again to film their responses to our listed questions. The focus of the interviews were on four dimensions: (i) challenges faced by the women in acquiring an education and a job, (ii) how they overcame these challenges, (iii) how their families feel about their success, and (iv) a piece of advice or a lesson they learned from their struggles that they would like to share with young women. We also included in the documentary where possible clips of family members to show family support and how they felt about the struggles and the eventual success of the role model.

The interviews were then combined into a 10-minute-long video highlighting specific themes across the interviews, with background music, voice-overs, and shots from women's workplaces and homes. The video was not just a question-and-answer session with the role models but a well-integrated narrative highlighting the need for self-belief, confidence to face problems and to not run away, focusing on goals, dreaming big, working hard, and remaining steadfast to achieve these dreams. It also highlighted that it is possible to balance

household and work responsibilities with shots of women with their children at home.

It is worth mentioning here that when interviewing the role models, we specifically wanted to highlight the constraints to entering the labor market identified during the focus group discussions with 100 students enrolled in April–May 2018 and to show real-life examples of women who managed to overcome these challenges and were now successfully employed. The documentary emphasizes that setbacks are an opportunity to learn, that the process of learning is enjoyable in itself, and that economic empowerment can help both women's standing in the household and household welfare.

The video screening was followed by 2–3 minutes of discussion on the content of the video to reinforce the message. The discussion script is in online appendix D. The respondents were reminded what they can learn from these women, the importance of persistence and perseverance highlighted, the possibility of balancing work and family life, and that they need to step out of their comfort zone if they want to achieve anything. At the end, they were encouraged to think about what they need to do in order to be successful. The key messages of the videos were reinforced only to the treatment group by the enumerators approximately 3 months later.[8] At the time of this intervention reinforcement, the enumerators had 5–10 minutes of discussion reminding them of the role models and the key challenges and lessons from their stories. The respondents were given a postcard mentioning these lessons as a keepsake to remind them of the intervention.

The students were shown the videos individually on a tablet. We decided to not involve the families of these students in order to reduce the possibility of backlash from family members (e.g., as hypothesized by McKelway 2020) and in order for the intervention to be scaled up in colleges at low cost. Before we rolled out the study, the intervention video was piloted with 25 out-of-sample college students to see whether the video and the survey could be conducted with each student within a reasonable length of time during college hours. Students in the placebo group watched a video of the same length as the treatment group. This was deliberately chosen to be on a completely unrelated subject to the treatment.[9] The data collection for this study took place in five rounds as shown in the study time line (online app. fig. A1).

[8] We had originally planned to have experimental variation in whether a student is treated once or twice, but after the initial intervention, we decided that given its light-touch nature, we will not be powered for this analysis. Therefore, we proceeded with giving everyone in the treatment group a repeat intervention message. The preanalysis plan for the follow-up rounds was lodged before any data were analyzed to reflect this. With the placebo group, we only administer a follow-up survey at 3 months.

[9] Link to the documentary shown to the placebo group: https://www.dailymotion.com/video/x35wwat.

Focus group discussions revealed that students are concerned about the lack of preparedness to enter the labor market—65% did not know how to make a CV, and only 13% believed teachers could help in making one. Meanwhile, 32% said they lacked guidance related to job applications. They identified key ways help might be provided, with 23% citing notification of job openings and 38% interview skills training. In order to address these constraints, all students, in both the treatment and placebo arm received information about Job Asaan, an existing job search portal that connects job seekers with employers in metropolitan Lahore. That is, all the sample was provided with similar access to information on existing jobs in Lahore. A Job Asaan flyer with the link to register on the portal along with other basic information regarding the Job Asaan services printed on it was handed over to all participants (see online app. E).

The intervention cost US$9.77 per respondent. This includes the fixed cost of video development and the postcards given at follow-up (US$4.45) and field costs associated with implementation of the intervention (US$5.22) per respondent.[10] The development costs consists mainly of a fixed cost of video development, with per unit costs expected to fall for larger samples. The implementation costs include salaries of the enumerator team. Part of these unit costs, such as those incurred in piloting and training, can also be expected to be fixed and decrease for larger samples. Appendix B below provides details of costs incurred.

Sample selection and treatment assignment. To select the sample for the study, we asked the college administration for a list of students enrolled in their final year of the bachelor's program. We identified the proportion of the total working sample to be drawn from each college on the basis of enrollment data. We randomly selected 70% of the working sample to be the actual sample and kept 30% as a replacement sample to be contacted if a sample student is not located or if she refuses to participate in the survey. We collected all survey data on tablets using SurveyCTO (www.surveycto.com). At the time of the baseline data collection, the software assigned each student to either the treatment or placebo group with equal probability.

C. *Empirical Strategy*

Our basic estimating specification is

$$y_{it} = \beta_1 \times T_i + y_{i0} + X_i + \mu_c + \epsilon_{it}, \tag{1}$$

where y_{it} is an outcome variable, T_i is a dummy variable capturing exposure to treatment, y_{i0} is the outcome of interest measured at baseline if available, and μ_c

[10] Note that we do not include cost of researcher time input into the development of the videos.

denotes college fixed effects. The main hypothesis we propose to test is that exposure to the treatment, that is, female role models, has no effect; $H_0 : \beta_1 = 0$.

We estimate the impact of the intervention immediately after the intervention was administered on a measure of absorption and on growth mindset. At 9, 12, 15, and 18 months after baseline, we look at two key outcomes: job search and likelihood of working. Job search is a binary indicator equal to 1 if the woman looked for work in the past month. In line with recent studies from developing country contexts (e.g., Groh et al. 2016a, 2016b; Franklin 2018; Caria et al., forthcoming), we take a broad definition of "work" as being gainfully employed for pay. This includes full-time and part-time work, salaried work, or day labor and other work, such as providing tuition to students, where income is fixed monthly or per hour. In what follows, we present results using data on an unbalanced panel of women interviewed in each survey round. The results for the balanced panel interviewed in all survey rounds are qualitatively similar and available in online appendix C.

The analysis follows a preanalysis plan.[11] There is one key departure: we had specified a job search index created out of a binary variable measuring likelihood of searching for a job and additional variables capturing job search intensity. For ease of exposition, we focus on the binary indicator in the main analysis, but we show treatment effects on the additional job search intensity measures in table A3.[12]

IV. Results

A. Intervention Engagement and Retention

We first test whether the video was effective in engaging the respondents. Measures immediately after the intervention were reassuring: 97% of the respondents said they found the video to be interesting, 99% believed the video documented the experiences of real women, and 65% felt they could relate to the women in the video (table 3). Three months later, at the time of the intervention reinforcement, 99% of the treated respondents remembered having seen the video. Two-thirds of them were able to correctly answer questions about the video, and an even larger proportion reported having reflected on the messages of the video and having discussed it family members. At 18 months after

[11] We have three preanalysis plans: for the outcomes immediately after the intervention, for the first phone follow-up survey at 9 months, and for the last phone follow-up survey at 18 months. A PAP report for all prespecified analysis is available at https://drive.google.com/file/d/19HQfD0g3_vUskdEpoD2ZtKUK1Vxps0c-/view?equals;sharing.

[12] In the trial registry, we specified looking at academic performance as an intermediary outcome. We were not able to collect this data due to the closure of colleges in March 2020 because of the COVID-19 pandemic. Colleges were reluctant to disclose final year exam marks from the previous academic year once they reopened. This was not included in any preanalysis plan.

TABLE 3
INTERVENTION ENGAGEMENT AND RETENTION AT BASELINE AND FIRST FOLLOW-UP (TREATED GROUP ONLY)

	Observations	Mean	SD	Min	Max
	A. Baseline				
Video was interesting	1,222	97.1	16.7	.0	100
Videos captured "real stories"	1,211	99.3	8.6	.0	100
Related to characters	1,219	65.1	47.8	.0	100
	B. First Follow-Up (4 Months after Baseline)				
Remembers video	1,059	99.1	9.7	.0	100
Recalls characters	1,049	1.5	1.0	.0	5.0
Correctly answers quiz question 1	990	61.5	48.7	.0	100
Correctly answers quiz question 2	993	71.7	45.1	.0	100
Discussed video with family	1,048	73.2	44.3	.0	100
Reflected on video's message	1,059	79.5	40.4	.0	100

Note. This table presents data on respondent attention and absorption at baseline, i.e., immediately after the intervention was implemented, and recall at the time of the first follow-up, 4 months after the intervention was first implemented. In panel A, "video was interesting" is defined as an indicator variable for whether the respondent finds the video somewhat or very interesting, "videos captured 'real stories'" is an indicator variable for whether the respondent thought the role models in the videos were real, and "related to characters" is defined as an indicator variable for whether the respondent reports completely relating with at least one character. In panel B, "remembers video" is an indicator variable for whether the respondent reports remembering the video, "recalls characters" is a sum of the number of character names (out of a total of five characters) the respondent could recall, "correctly answers quiz questions" are indicator variables for whether the respondent correctly answered questions about specific aspects of the role model stories, and "discussed video with family" and "reflected on video's message" are indicator variables for whether the respondent answered yes.

baseline, 88% of the treatment group still remembered watching the video, with two-thirds also correctly remembering the profession of at least one of the role models. Overall, survey measures reveal a relatively high degree of respondent attentiveness.

We test whether respondent engagement and reaction to the videos differ by treatment status through two immediate checks: One, we construct a transportation index to test whether respondents watching the treatment video were more engaged with the video than the respondents who viewed the placebo video. This index is constructed using principal component analysis (PCA) on four items to capture absorption, following Banerjee, Ferrara, and Orozco (2019). The four items include whether the participant was distracted by surrounding activities or their own thoughts, whether they were affected emotionally, and/or whether they were intrigued to learn more about the characters in the video. We find that participants who watched the role model video were transported to a greater degree, with average transportation index almost two times higher than the placebo group mean of -0.332 (table 4, col. 1). This difference, reassuringly, is driven by the treatment group being more emotionally engaged and wanting to know more about the characters in the video as compared to the placebo group.

TABLE 4
POSTINTERVENTION TREATMENT EFFECTS

	Transport Index (1)	Growth Mindset (2)
Treated	.677***	.068*
	(.049)	(.040)
Observations	2,491	2,491
Mean (placebo)	−.332	−.034

Note. This table displays results from an ordinary least squares regression testing treatment effects on outcomes measured after intervention implementation. "Transportation index" is an index created using principal component analysis measuring respondents absorption with the video, following Banerjee, Ferrara, and Orozco (2019). Eight respondents did not answer one of the questions on which this index is based and were dropped from the analysis. "Growth mindset" is a standardized index created out of the Implicit Theories of Intelligence Scale by Blackwell, Trzesniewski, and Dweck (2007). "Treated" is a binary variable equal to 1 for respondents who viewed the role model video and 0 for those who viewed the placebo videos. "Mean (placebo)" is the average value of the dependent variable for the placebo group. Robust standard errors are presented in parentheses.
* $p < .10$.
*** $p < .01$.

Second, we quantify the extent to which the treatment video was able to engender a growth mindset. We do this by using a validated Implicit Theories of Intelligence Scale (Blackwell, Trzesniewski, and Dweck 2007), implemented immediately after students watched the assigned video. This involved aggregating responses on a series of statements aimed at assessing the extent to which participants consider their ability is fixed or malleable. We find that the role model video led to a significant increase of around 0.1 standard deviation in the growth mindset of treated women. This indicates that immediately after watching the video, treated respondents were more conducive to acquiring knowledge and less likely to believe that they were limited by their intrinsic level of intelligence than respondents who watched the placebo video (table 4).[13] These immediate checks reveal that the role model video was successful in engaging respondents and in changing their mindset, at least immediately after they first watched the video.

B. Effect on Labor Market Outcomes after Graduation

Next, we test whether the treatment video was successful in changing respondent behavior with respect to their job search efforts and work status. We collect information on these outcomes at 9, 12, and 18 months after baseline. At 18 months, we collect retrospective information from before the onset of the

[13] The effect on having a growth mindset is no longer significant at the first follow-up 3 months later. On the other hand, we find significantly higher "locus of control" (Rotter 1966) among treated respondents 3 months after the intervention, though this effect also dissipates over time. Results are available in online app. table B.2.

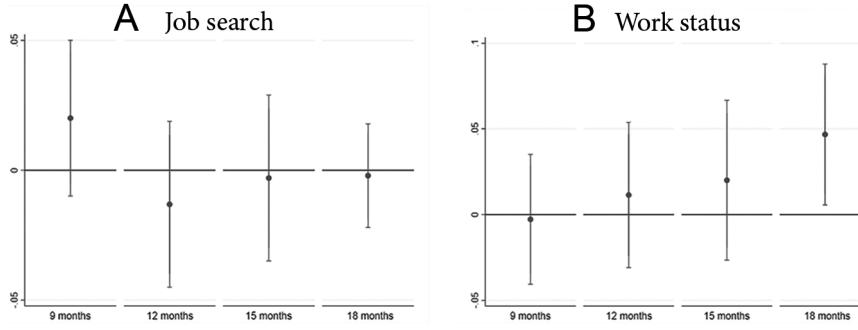

Figure 1. Treatment effects on job search effort (*A*) and work status (*B*) over time. Shown are treatment effect coefficients from an ordinary least squares regression run separately for each survey round; 9, 12, 15, and 18 months refer to the number of months since the baseline and intervention when the dependent variable was measured. "Job search effort" is a binary indicator equal to 1 if the woman looked for work in the past month. "Work status" is a binary indicator equal to 1 if the woman in engaged in any type of work, whether full or part time. The coefficients shown are for the "treated" variable, which is a binary indicator equal to 1 for respondents who viewed the role model video and 0 for those who viewed the placebo video. The average value of the dependent variable for the placebo group in panel *A* is 0.17, 0.15, 0.13, and 0.05 at 9, 12, 15, and 18 months, respectively. The number of observations is 2,189, 1,746, 1,614, and 1,614 at 9, 12, 15, and 18 months, respectively. The corresponding average value of the dependent variable for the placebo group in panel *B* is 29%, 28%, 34%, and 20%. The number of observations is 2,186, 1,744, 1,614, and 1,614 at 9, 12, 15, and 18 months, respectively. A table version of this figure with Lee bounds can be found in table A2.

COVID-19 pandemic, providing us with data approximately 15 months after the intervention.

In line with national statistics, a third of all graduates (35%) were working before pandemic-related lockdown in February 2020. This number drops to 22% in May 2020, after the lockdown. Among all women who are working, 65% are tutors, of which (81%) provide tuition from home earnings of an average US$59.28. A fifth (20%) are employed in other, full-time salaried work, earning a higher salary of US$105.57, 13% are working part-time work, and a small proportion (3%) are self-employed, providing beauty, stitching, or embroidery services. They earn an average income of US$77.15.

Figure 1*A* present the intent-to-treat effects on the likelihood of searching for a job among the full, unbalanced sample of women in the study.[14] Results show that treated women are not significantly more likely than the placebo group to engage in job search during the study period. At 9 months, immediately after they graduated, there was some indication of higher likelihood of job search (2 percentage points more) in the treated group, but in subsequent periods,

[14] We look at a number of other dimensions of job search and do not find any impact of the treatment (table A3).

the effect sizes are smaller. Our confidence intervals show that we can rule out large effects in all periods except at 9 months, where the upper bound of the 95% confidence interval is 0.05. We consider whether we are underpowered to detect small effects by constructing minimum detectable effect (MDE) sizes, following Haushofer and Shapiro (2016). Even the largest effect size at 9 months of 0.020 is half that of the MDE size for that period (table A2, cols. 1–4). In addition, there results are robust to attrition—the lower and upper Lee bounds are insignificant at all time periods.

Treatment effects on work status are shown in figure 1*B*. The effect size is very small initially but increases over time. In the initial period, our effects are much smaller than the MDE size (table A2, cols. 5–7). However, at 18 months, women in the treated group are 4.7 percentage points more likely to be working as compared to the placebo group, an effect that is statistically significant.[15] This coincides with the COVID-19-related lockdown, when it appears that the labor market may have become more challenging. We see a drop in overall employment rates for our sample across all occupations, including home tuition, with no difference by treatment status ($p = .36$). A decrease in household incomes may have driven this effect. We discuss this in section IV.C.1.

All role models shown in the intervention were working outside the home. Once we condition on working, we do not observe a significantly different likelihood of work from home (table A4, panel A) or of being employed in full-time work (table A4, panel B) between the treated and placebo women. We also test whether treatment led to greater likelihood of working in higher-income jobs. We do this by analyzing whether they are more likely to be earning above the sample median monthly income of US$81.21. We find some indication that this is the case 15 and 18 months after the intervention. However, the effect is only marginally significant at 15 months (table A4, panel C).

We had phone follow-up discussions with the sample to understand why we see effects on work status at 18 months but not on job search. Women in our sample revealed a strong preference for work at or near their homes, consistent with evidence found in the literature in similar settings (Said et al. 2022; Cheema et al. 2023). Therefore, it is likely that our measures of search, which relate to formal jobs, do not capture efforts made to find such jobs. Indeed, two-thirds of those employed at the last follow-up are working as tutors and their job search efforts involve using informal networks to find students in the neighborhood to teach.

[15] These results are robust to differential attrition. The upper and lower bounds are insignificant before the last follow-up at 18 months, after which they range from 4.5 to 4.9 percentage points and are statistically significant.

C. *Heterogeneity*

1. Heterogeneity by Household Income-Education Status

Our sample is quite homogeneous in terms of respondent aspirations, future plans, age, and other characteristics. This is not surprising since the sample is selected from women enrolled in public colleges in a major urban city in Pakistan and not representative of a broader population. Nevertheless, we do observe certain household characteristics along which there is considerable heterogeneity at baseline. For instance, one-fifth of the sample have fathers who have studied up to grade 5; fathers of another third of the sample have at least 10 years of education. We explore whether the impact of the treatment varied by the participants' personal, parental, and household characteristics.

This analysis was not specified in our preanalysis plan. For this reason, we employ an unsupervised machine learning technique, *k*-means clustering, to define subgroups in our sample, rather than selecting the dimensions along which we define subgroups ex post. We classify participants into groups on the basis of the following baseline characteristics: age, parental education, household income, and family size.[16] The *k*-means clustering algorithm finds groups in the data with similar characteristics, minimizing the squared Euclidean distance and ensuring that the sum of the distances for observations in a cluster are minimized. The aim is to find the "natural" groups of students with similar characteristics at baseline. In order to identify the optimal number of clusters, we adopt the methodology followed by Riley (2022a), using both the sum of within-cluster distance and the pseudo-*F* index. Based on these measures, we find support for two groups among our respondents. These are defined across the income and education of the student's parents. In subsequent analysis, we refer to these groups as low-income-education and high-income-education households, with a sample of 919 and 1,364 women, respectively. We have good balance across the treatment and placebo groups within these two subgroups (online app. tables B.3 and B.4).

Women from the low-income-education household category belong to households where the average monthly household income and father's education are lower relative to women from the high-income-education households (online app. table B.5): the average household income in low-income-education households is US$254 compared with US$359 in high-income-education households, and the average education of fathers in the low-income-education households is

[16] We standardize these variables to avoid high variation in a variable from being overweighted in the analysis. At baseline, 216 respondents did not report household income. Instead of making assumptions about the nature of missing values and doing imputations, we drop these individuals from this analysis. Reassuringly, the likelihood of missing data at baseline is balanced across the treatment and placebo groups.

6 years relative to 12 years in the high-income-education household category. Mothers are more educated, on average, in the high-income-education group, with 11 years of education, relative to 3 years of education for mothers in the low-income-education group. The high-income-education households are smaller and the likelihood of the respondent's mother working in the high-income-education group twice that of respondents in the low-income-education group. The low-income-education group could relate more (28%) to the constraints faced by the role models as compared to the high-income-education group (23%).

The effect of the treatment on the likelihood of working in the high-income-education group is very small and insignificant in all periods (fig. 2*B*). In the low-income-education group, there is a similar pattern initially, with some indication of higher (but not significantly different) likelihood of working at 15 months. At 18 months, after the start of the COVID-19 pandemic, they are approximately 11 percentage more likely to be working compared to women in this subgroup who were assigned to watch the placebo video (fig. 2*A*). These findings suggest that the average effect on work status at 18 months discussed in section IV.B may be driven by the low-income-education group. In part, this may be due to the treated low-income-education subgroup being 9.2 percentage points more likely to respond that they are (very) often stressed about loss of own and household income due to the COVID-19 pandemic compared to the treated high-income-education group ($p = .02$). Further, a primary earner in their household is

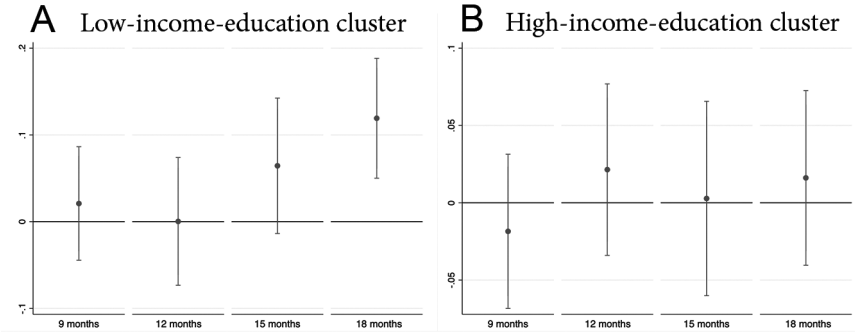

Figure 2. Treatment effects on work status for the low-income-education (*A*) and high-income-education (*B*) clusters over time. Shown are treatment effect coefficients from an ordinary least squares regression run separately for each survey round; 9, 12, 15, and 18 months refer to the number of months since the baseline and intervention when the dependent variable was measured. The dependent variable "work status" is a binary indicator equal to 1 if the woman in engaged in any type of work, whether full or part time. The coefficients shown are for the "treated" variable, which is a binary indicator equal to 1 for respondents who viewed the role model video and 0 for those who viewed the placebo video. Panel *A* reports results for the low-income-education sample (defined in sec. IV.C) and panel *B* for the high-income-education cluster sample. The average value of the dependent variable for the placebo group in panel *A* is 0.314, 0.324, 0.319, and 0.167 with a sample size of 800, 620, 580, and 580 at 9, 12, 15, and 18 months, respectively. The corresponding average value of the dependent variable for the placebo group in panel *B* is 0.279, 0.253, 0.343, and 0.225 with a sample size of 1,195, 969, 887, and 887 at 9, 12, 15, and 18 months, respectively. A table version of this figure with a fully interacted model is in cols. 5–8 of table A5.

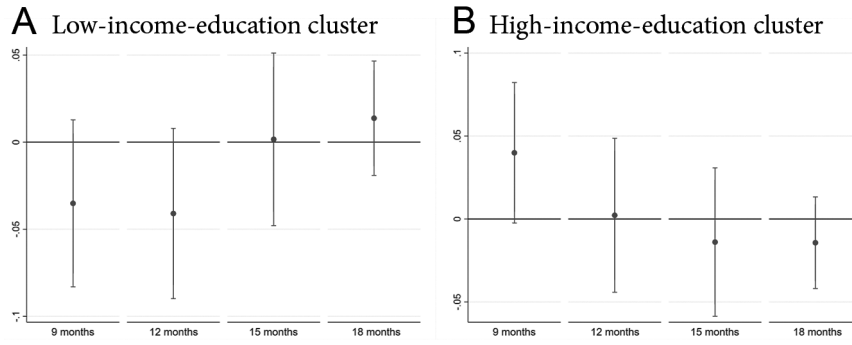

Figure 3. Treatment effects on job search effort for the low-income-education (*A*) and high-income-education (*B*) clusters over time. Shown are treatment effect coefficients from an ordinary least squares regression run separately for each survey round; 9, 12, 15, and 18 months refer to the number of months since the baseline and intervention when the dependent variable was measured. The dependent variable "job search effort" is a binary indicator equal to 1 if the woman looked for work in past month. The coefficients shown are for the "treated" variable, which is a binary indicator equal to 1 for respondents who viewed the role model video and 0 for those who viewed the placebo video. Panel *A* reports results for the low-income-education sample (defined in sec. IV.C) and panel *B* for the high-income-education cluster sample. The average value of the dependent variable for the placebo group in panel *A* is 0.178, 0.141, 0.104, and 0.028 with a sample size of 802, 622, 580, and 580 at 9, 12, 15, and 18 months, respectively. The corresponding average value of the dependent variable for the placebo group in panel *B* is 0.178, 0.168, 0.143 ,and 0.056 with a sample size of 1,196, 969, 887, and 887 at 9, 12, 15, and 18 months, respectively. A table version of this figure with a fully interacted model is in cols. 1–4 of table A5.

8.9 percentage points more likely to have lost their job or to have had to shut their business due to the pandemic ($p = .018$).

Further, consistent with the null average effects on job search and potential reasons discussed, we do not find any significant difference at 18 months in job search effort (fig. 3). We also do not find any resulting heterogeneity in the likelihood of earning above median income (i.e., greater than US$81.21 per month; online app. table B.6).

2. Heterogeneity by Enrollment Status

We have information on enrollment in a master's (postgraduate) program at 9, 12, and 18 months. We find that a little over one-third of our sample proceed to enroll in a master's program after graduation. This may be motivated by a desire for better job market outcomes: at baseline, respondents expected master's graduates to be able to earn twice as much as undergraduates. Four out of the five working women showed in the treatment video had an advanced degree. While their degrees were not explicitly mentioned (except for one), there were references to them being highly educated, and this could also be inferred from their jobs. On the other hand, the treatment may have pushed the women to join the labor force immediately, at the cost of pursuing a master's. Therefore, we test whether the treatment led to a differential likelihood of enrollment in a master's

program. We find null treatment effects on the likelihood of enrollment (table A6, panel A).

We explore treatment effects among women who are not currently enrolled in graduate studies and are therefore available to work. Despite no treatment effects on likelihood of enrollment, this analysis with a selected sample was not prespecified and is based on status measured posttreatment and so should be interpreted with caution. The treatment effects on job search and work status are reported in table A6, panels B and C, only for women not enrolled in a master's program at the time of that survey round. We find no treatment effects on job search in all periods and on work status at 9 and 12 months. Consistent with the average effects, among women who do not pursue graduate study, we observe a significant effect of the role models' treatment intervention on being gainfully employed postpandemic only at 18 months after the intervention (table A6, panel C, col. 3). Treated women have a 6 percentage points greater chance of having a job, which is approximately 30% higher than the placebo group mean.

3. Heterogeneity by Other Characteristics

We also test whether graduates with a social science major—such as economics, finance, psychology, and mathematics—are more likely to be working than graduates majoring in humanities (e.g., language and religious studies). We find no clear indication of heterogeneity in treatment effects for job search or likelihood of working by the subject they majored in (online app. tables B.7 and B.8).

We also consider whether the treatment effects varied by the college where the respondent studied. Findings suggest that treatment effects on working 18 months after baseline may vary by the college the student was enrolled in at the time of the baseline: The *p*-value (*F*-test) of a test of the joint significance of treatment and college interactions is .01. Given the choice of college is not random but a function of respondent characteristics, such as parental income, this finding is in line with the overall patterns observed in heterogeneity by income and parental education discussed in section IV.C.1.

We had prespecified a series of analyses on other dimensions of heterogeneity such as the Big 5 personality assessment. We find no significant effects on the job search or work status by these characteristics at any of the follow-up rounds.[17]

D. Additional Outcomes

1. Marital Status

Our data allow us to determine whether the marital status of the respondents changed over the study time period, though we do not have data on the match

[17] These results are available in the PAP report (https://drive.google.com/file/d/19HQfD0g3_vUskdEpoD2ZtKUK1Vxps0c-/view?equals;sharing).

quality. At baseline, as shown in table 1, there was no significant difference in the marital status of respondents in the placebo and the treatment group. At the last follow-up, 18 months later, the proportion of respondents who are married had increased, but this proportion does not vary significantly by treatment status: 11.7% of the treated individuals are married at endline compared with a slightly higher 14.3% in the placebo group.

2. Job Asaan Database Outcomes

Respondents were informed about Job Asaan, a job search portal, on the day the baseline survey and intervention were administered. All respondents agreed to complete the first stage of signing up for the service at baseline, which was done for them by the enumerator. They had to subsequently complete a second sign-up process that required logging on and providing information on expectations around jobs. At this second sign-up stage, the Job Asaan portal collected detailed information related to applicants' job preferences and provided information on the different services that Job Asaan offers.

We were able to match 1,087 of our 2,500 respondents with the Job Asaan database using data received in September 2019 (coinciding with the 9-month follow-up). Two hundred thirty-six of these 1,087 respondents had fully completed the second stage of the sign-up. We find no effect of the treatment on the likelihood of completing the second sign-up stage (table A7). In the data reported on the Job Asaan portal, respondents in our sample who completed the second sign-up expect to take 4 months to find work, for a monthly wage of US$263.93, with no significant difference between the treatment and placebo groups. Consistent with self-reported measures, we do not find any effect of the treatment on various measures of job search in the Job Asaan administrative data.

The Job Asaan portal also collects data on applications made for job matches on the portal. We do not find any effect on this on average or by the income-education subgroups discussed in section IV.C.1.

IV. Spillover Effects

Information spillover is possible with individual-level randomization. It is even more likely when information provided to the treated group is easy to communicate—for instance, information about a job site that has a large listing of jobs. In contrast, we expect ex ante that motivational nudges and psychological constructs (e.g., aspirations and motivation) would be more difficult to pass on in comparison to objective information about job search sites and resume making, thus reducing the spillover of aspirational and motivational nudges. However, if spillovers do occur, they can bias the measurement of treatment effects toward zero, while increasing the cost effectiveness of the intervention by diffusing the

benefits, if any, of the intervention to a larger group of people at little or no cost.

We follow methodology proposed by Banerjee, Ferrara, and Orozco (2019) to estimate spillover effects by following the behavior of network friends. We asked all participants, in both the treatment and placebo groups, to name five network friends from the same college with whom they communicate regularly. During the follow-up survey at 9 months, we also surveyed the network friends to observe the effect (if any) of the treatment on network friends.

We were able to successfully contact 503 of these network friends spread across all colleges surveyed.[18] We find that friends of respondents in the treated group are 9 percentage points more likely to enrol in a master's program as compared to friends of those in the placebo group (table A8). While we do not find any treatment effect on the likelihood of enrolling in a master's program for the main study sample (shown in table A6), for the subsample for whom we have data on friends, the main sample women are also significantly more likely to be enrolled (by 20 percentage points, $p = .019$; table not shown but available on request). Hence, we are cautious in interpreting the spillover results since these seem to be friends of a selected sample.

We look at spillover effects on three job-related outcomes: if they created a CV, if they searched for a job in the past month, and if they had a job. We find no evidence of a spillover effects of the treatment on work status or job search effort (table A8). We also try to disentangle results by the main respondents' personal and household characteristics, as we have done in the section IV.C.1, and test whether friends with those in the low-income-education group are more likely to be affected by their treated friends (online app. table B.9). We see no heterogeneity by this aspect.

VI. Conclusion

In this paper, we test whether an intervention involving role models can encourage female graduates from low-income households to enter the labor force. We find that participants who were administered a 10-minute video and brief discussion showcasing successful working women from similar socioeconomic backgrounds—role models—demonstrated an immediate improvement in growth mindset and high recall of the video content 4 and 18 months later. However, we do not find any meaningful improvement in the likelihood of looking for work or of working postgraduation up to 15 months after the intervention.

[18] Out of these, 286 were friends with the respondents in the placebo group and 217 were friends with the treated respondents.

We estimate and show Lee bounds to rule out differential attrition and ex post MDEs to address concerns about low statistical power.

We find a moderate increase of 4.7 percentage points in the likelihood of working 18 months after the intervention among the treatment group. The 18-month results coincide with a nationwide lockdown, when the labor market conditions may be expected to be different from normal. This effect is being driven by women belonging to households with lower parental education and household incomes. A possible mechanism is that these women were significantly more likely to experience the primary earner of their household losing their job or shutting down their business and being stressed about this lost household income due to the COVID-19 pandemic.

The lack of average treatment effects (before COVID-19) are consistent with recent literature that highlight binding constraints to female labor force participation, such as limited safe transport options, restrictive social norms (Field and Vyborny 2016; McKelway 2020; Cheema et al. 2023), lack of interpersonal skills, and the ability to interact effectively with family member's opposition (Dean and Jayachandran 2019; McKelway 2020) that the intervention tested in this study did not directly target. In addition, it is possible that the light-touch nature of the intervention was insufficient encouragement for women to overcome these constraints.

Appendix

A. Additional Figures and Tables

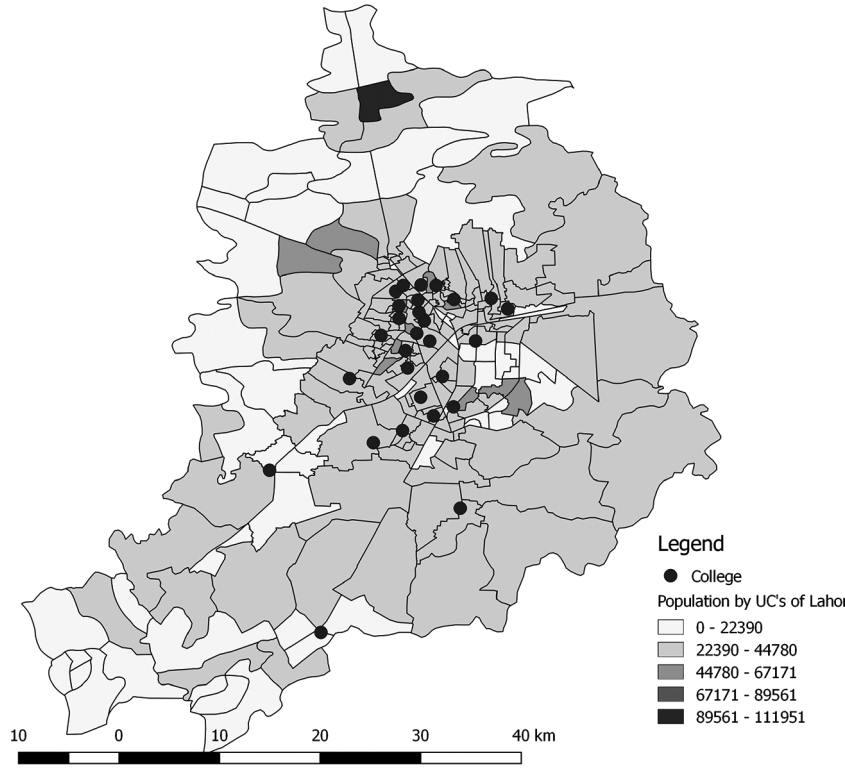

Figure A1. Location of women-only public colleges in Lahore.

TABLE A1

ATTRITION BY SURVEY ROUND, INCLUDING BASELINE CHARACTERISTICS

	Months since Baseline			
	3	9	12	18
	(1)	(2)	(3)	(4)
Treated	.112	.091	.174	.097
	(.078)	(.084)	(.114)	(.116)
Monthly household income (USD)	.000	.000*	−.000	.000
	(.000)	(.000)	(.000)	(.000)
Dummy: own house	.067***	.023	.033	.100***
	(.020)	(.025)	(.036)	(.035)
Household size	−.006	.001	−.006	−.006
	(.005)	(.006)	(.007)	(.008)
Father's years of education	.002	−.002	.006**	.001
	(.002)	(.002)	(.003)	(.003)
Mother's years of education	−.002	.001	−.004	−.002
	(.002)	(.002)	(.003)	(.003)
Dummy: mother works	−.025	−.091***	.014	−.068
	(.031)	(.026)	(.049)	(.048)
Dummy: want to work after graduation	−.005	.008	.002	.027
	(.028)	(.030)	(.040)	(.041)
Dummy: married	.003	.007	−.028	−.020
	(.036)	(.036)	(.047)	(.052)
Hours of study per day	.000	.002	.004	−.002
	(.005)	(.005)	(.006)	(.006)
Hours of housework	.003	.006	.006	.013*
	(.007)	(.007)	(.008)	(.008)
Dummy: searched for a job	−.075**	−.030	−.083	−.021
	(.031)	(.041)	(.066)	(.071)
Hours of job search in past 4 months	−.002	−.000	.009	−.005
	(.002)	(.005)	(.007)	(.007)
Monthly personal income (USD)	.000	.000	.000	.000
	(.000)	(.000)	(.000)	(.000)
Monthly household income (USD) × T	−.000	−.000	−.000	−.000
	(.000)	(.000)	(.000)	(.000)
Dummy: own house × T	−.046	.017	.006	−.021
	(.031)	(.034)	(.050)	(.050)
Household size × T	−.003	.001	.002	−.002
	(.007)	(.008)	(.011)	(.011)
Father's years of education × T	.002	.002	−.008*	.002
	(.003)	(.003)	(.004)	(.004)
Mother's years of education × T	.000	−.000	.000	−.003
	(.003)	(.003)	(.004)	(.005)
Dummy: mother works × T	.064	.166***	.027	.153**
	(.052)	(.053)	(.074)	(.075)
Dummy: want to work after graduation × T	−.021	−.062	−.063	−.058
	(.041)	(.044)	(.057)	(.057)
Dummy: married × T	.060	.025	.050	.138*
	(.054)	(.053)	(.068)	(.073)
Hours of study per day × T	−.002	−.010	−.010	−.001
	(.006)	(.006)	(.009)	(.009)
Hours of housework per day × T	−.007	−.006	−.003	−.000
	(.008)	(.009)	(.011)	(.012)
Dummy: searched for a job × T	.085	−.018	.010	−.108
	(.081)	(.080)	(.112)	(.113)

TABLE A1 (*Continued*)

	Months since Baseline			
	3	9	12	18
	(1)	(2)	(3)	(4)
Hours of job search in past 4 months × T	.011	.008	.006	.025**
	(.011)	(.013)	(.015)	(.012)
Monthly personal income (USD) × T	−.000	−.000	−.000	−.000
	(.000)	(.000)	(.000)	(.000)
Constant	.091*	.053	.246***	.246***
	(.054)	(.057)	(.079)	(.083)
p (*F*-statistic)	.13	.09	.70	.30
Mean	.13	.12	.30	.35
Observations	2,183	2,183	2,183	2,183

Note. Column 1 reports attrition from the intervention reinforcement survey (3 months after baseline), col. 2 from follow-up 1 (9 months after baseline), col. 3 from follow-up 2 (12 months after baseline), and col. 4 from follow-up 3 (18 months after baseline). All results are from a saturated regression with controls for household characteristics (monthly household income, dummy for own house, household size, father's years of education, mother's years of education, and dummy for mother works) and respondents' own characteristics (dummies for whether one wants to work after graduation and is married, hours of study and housework per day, dummy for whether searched for job, hours of job search in past 4 months, and monthly personal income) and the interaction of these controls with the treatment dummy (T). All covariates are collected before the intervention is implemented. Observations are lower due to missing observations in baseline characteristics. Robust standard errors are presented in parentheses. We use "*p* (*F*-statistic)" to refer to the *p*-value of *F*-statistic from a test of joint significance of the interaction of treatment status and baseline characteristics. "Mean" refers to the average level of attrition in each round.

* $p < .10$.

** $p < .05$.

*** $p < .01$.

TABLE A2

EFFECT ON JOB SEARCH AND WORK STATUS OVER TIME

	Job Search				Work Status			
	9 Months (1)	12 Months (2)	15 Months (3)	18 Months (4)	9 Months (5)	12 Months (6)	15 Months (7)	18 Months (8)
Treated	.020	−.013	−.003	−.002	−.003	.011	.0200	.047**
	(.015)	(.016)	(.016)	(.010)	(.019)	(.022)	(.024)	(.021)
MDE	.042	.0448	.0448	.028	.053	.062	.067	.059
Lower bound	.015	−.018	−.004	−.003	−.008	.008	.015	.045
	(.017)	(.018)	(.015)	(.011)	(.019)	(.024)	(.023)	(.017)***
Upper bound	.023	−.006	.000	.001	−.000	.020	.019	.049
	(.018)	(.023)	(.023)	(.016)	(.021)	(.025)	(.030)	(.025)**
Observations	2,189	1,746	1,614	1,614	2,186	1,744	1,614	1,614
Mean (placebo)	.171	.154	.128	.0461	.290	.277	.338	.201

Note. This table displays results from an ordinary least squares regression testing treatment effects on job search efforts and work status. The dependent variable in cols. 1–4 is a binary variable equal to 1 if the respondent looked for work in the past month. The dependent variable in cols. 5–8 is a binary variable equal to 1 if the respondent is working at the time of the survey. "Treated" is a binary variable equal to 1 for respondents who viewed the role model video and 0 for those who viewed the placebo videos. The lower and upper bounds refer to the treatment effect bounds constructed using the Lee (2009) procedure. "MDE" refers to ex post minimum detectable effect size at a significance level of .05 and power of 80%. "Mean (placebo)" is the average value of the dependent variable for the placebo group. Robust standard errors are presented in parentheses.

** $p < .05$.

*** $p < .01$.

TABLE A3

EFFECT ON JOB SEARCH INDEX COMPONENTS (CONDITIONAL ON SEARCHING)

	Time after Intervention			
	9 Months (1)	12 Months (2)	15 Months (3)	18 Months (4)
	A. Job Search Hours			
Treated	−.0509	.736	2.564	7.700
	(1.084)	(.859)	(3.709)	(11.91)
Observations	393	255	205	72
Mean (placebo)	10.04	7.130	7.623	10.29
	B. Read Job Ads			
Treated	−.0320	.0772	−.0969	−.0355
	(.0438)	(.0652)	(.0715)	(.152)
Observations	393	255	205	72
Mean (placebo)	.229	.406	.425	.395
	C. Search via Informal Networks			
Treated	−.00696	.0853	.0658	.0382
	(.0428)	(.0518)	(.0600)	(.153)
Observations	393	255	205	72
Mean (placebo)	.802	.783	.764	.684
	D. Online Job Search			
Treated	.00332	−.0264	−.0246	.0194
	(.0484)	(.0651)	(.0726)	(.128)
Observations	393	255	205	72
Mean (placebo)	.531	.587	.575	.763
	E. Formal Job Search			
Treated	.0124	−.00387	−.0750	−.0538
	(.0525)	(.0646)	(.0729)	(.148)
Observations	393	255	205	72
Mean (placebo)	.469	.493	.575	.316

Note. This table displays results from an ordinary least squares regression testing treatment effects on job search efforts on sample of students who appear in each round and report having looked for a job in the past 4 weeks. The dependent variable in panel A is the approximate number of hours they spent on job search during the past 4 weeks, the dependent variables in panels B–E are binary variables for different activities the respondents undertook to look for a job where "read job ads" is a binary indicator variable for respondents who have read job advertisements while looking for a job over the past 4 weeks; "search via informal networks" is an indicator variable for respondents who have asked family members, friends, colleagues, etc., for a job; "online job search" is an indicator variable for respondents who have searched for or responded to job advertisements online while looking for a job over the past 4 weeks; and "formal job search" is an indicator variable for respondents who have contacted potential employers, temporary employment agencies, or the public employment service while searching for a job over the past 4 weeks. "Treated" is a binary variable equal to 1 for respondents who viewed the role model video and 0 for those who viewed the placebo videos. Robust standard errors are presented in parentheses.

TABLE A4

EFFECT ON WORKING AT HOME, FULL TIME, AND EARNING ABOVE MEDIAN INCOME (CONDITIONAL ON WORKING)

	Time after Intervention			
	9 Months (1)	12 Months (2)	15 Months (3)	18 Months (4)
	A. Effect on Working at Home			
Treated	.0297	.0411	−.0154	−.0279
	(.0365)	(.0447)	(.0429)	(.0532)
Observations	629	493	559	361
Mean (placebo)	.692	.540	.459	.590
	B. Effect on Working Full Time			
Treated	.003	.002	.009	.003
	(.012)	(.013)	(.027)	(.038)
Observations	629	493	559	361
Mean (placebo)	.975	.976	.889	.867
	B. Effect on Earning Above Median Income (US$81.21)			
Treated	.0243	.00614	.0715*	.0567
	(.0304)	(.0449)	(.0419)	(.0540)
Observations	603	456	554	349
Mean (placebo)	.158	.427	.378	.377

Note. This table displays results from an ordinary least squares regression testing treatment effects on type of work, conditional on the woman working. The dependent variable in panel A is a binary variable equal to 1 if the respondent is working at home at the time of the survey, in panel B is a binary variable equal to 1 if the respondent is working full time at the time of the survey, and in panel C is a binary variable equal to 1 if the respondent's monthly income is equal or more than the median sample income of PKR 10,000 (US$81.21), all conditional on being employed at the time of the survey. "Treated" is a binary variable equal to 1 for respondents who viewed the role model video and 0 for those who viewed the placebo videos. "Mean (placebo)" is the average value of the dependent variable for the placebo group. Robust standard errors are presented in parentheses.

* $p < .10$.

TABLE A5

HETEROGENEOUS TREATMENT EFFECTS ON JOB SEARCH AND WORK STATUS OVER TIME

	Job Search				Work Status			
	9 Months (1)	12 Months (2)	15 Months (3)	18 Months (4)	9 Months (5)	12 Months (6)	15 Months (7)	18 Months (8)
Treated	−.0325	−.0389	.00530	.0163	.0233	−.00776	.0542	.107***
	(.0244)	(.0251)	(.0251)	(.0159)	(.0331)	(.0372)	(.0396)	(.0345)
High-income-education	−.0558**	−.0266	.00486	.0168	−.0582*	−.0989***	.00858	.0549*
	(.0234)	(.0253)	(.0242)	(.0143)	(.0297)	(.0331)	(.0357)	(.0296)
High-income-education × treated	.0730**	.0420	−.0196	−.0310	−.0451	.0278	−.0512	−.0933**
	(.0327)	(.0343)	(.0339)	(.0215)	(.0418)	(.0467)	(.0508)	(.0449)
Observations	1998	1591	1467	1467	1995	1589	1467	1467
Mean high income (placebo)	.178	.168	.143	.056	.279	.253	.343	.225
Mean low income (placebo)	.178	.141	.104	.028	.314	.324	.319	.167

Note. This table displays results from an ordinary least squares regression testing treatment effects on job search efforts and work status. The dependent variable in cols. 1–4 is a binary variable equal to 1 if the respondent looked for work in the past month. The dependent variable in cols. 5–8 is a binary variable equal to 1 if the respondent is working at the time of the survey. "Treated" is a binary variable equal to 1 for respondents who viewed the role model video and 0 for those who viewed the placebo videos. "High-income-education" is a binary variable equal to 1 if the respondent belongs to the high-income-education cluster defined in sec. IV.C. "High-income-education × treated" is an interaction of "high-income-education" and "Treated" group, equal to 1 when the respondent is part of the treated sample and belongs to the high-income-education subsample. "Mean high income (placebo)" and "mean low income (placebo)" are the average value of the dependent variable for the high- and low-income placebo groups, respectively. Robust standard errors are presented in parentheses.

TABLE A6

TREATMENT EFFECTS ON ENROLLMENT, JOB SEARCH, AND WORK STATUS OVER TIME OF THOSE NOT CURRENTLY ENROLLED

	At 9 Months (1)	At 12 Months (2)	At 18 Months (3)
	A. Effect on Enrollment		
Treated	−.0149	−.00264	−.00273
	(.0198)	(.0213)	(.0234)
Observations	2,178	1,744	1,614
Mean (placebo)	.343	.296	.348
	B. Effect on Job Search for Those Not Enrolled		
Treated	.0175	−.00987	−.00514
	(.0198)	(.0206)	(.0134)
Observations	1,453	1,236	1,056
Mean (placebo)	.198	.172	.0502
	C. Effect on Work Status for Those Not Enrolled		
Treated	.00147	.0192	.0598**
	(.0235)	(.0266)	(.0264)
Observations	1,451	1,236	1,056
Mean (placebo)	.283	.305	.203

Note. This table displays results from an ordinary least squares regression testing treatment effects on enrollment in master's programs and on job search efforts and work status for those not currently enrolled in a master's program. We have data on enrollment status at 9, 12, and 18 months after the intervention. The dependent variable in panel A is a binary variable equal to 1 if the respondent is enrolled in a master's program at 9 (col. 1), 12 (col. 2), and 18 months (col. 3). The sample for results in panels B and C is restricted to those not enrolled in a master's program at 9, 12, and 18 months. The dependent variable in panel B is a binary variable equal to 1 if the respondent looked for work in the past month. The dependent variable in panel C is a binary variable equal to 1 if the respondent is working at the time of the survey. "Treated" is a binary variable equal to 1 for respondents who viewed the role model video and 0 for those who viewed the placebo videos. "Mean (placebo)" is the average value of the dependent variable for the placebo group. Robust standard errors are presented in parentheses.

** $p < .05$.

TABLE A7
JOB ASAAN OUTCOMES

	Control Group (1)	Treatment Group (2)	Difference (3)	Count (4)
Job Asaan sign-up	.215	.220	.005	1,087
	(.411)	(.414)	(.025)	
Access EFH	3.253	3.537	.284	194
	(1.380)	(1.165)	(.184)	
Expected time to attaining work (months)	3.846	4.741	.895	176
	(3.621)	(4.405)	(.606)	
Expected wage US$/month	263.93	263.93	.002	210
	(.02)	(.02)	(.002)	
Dummy for job search effort:				
Applied to prospective employer	.085	.078	−.008	233
	(.281)	(.269)	(.036)	
Checked at work sites, factories markets	.103	.043	−.059*	233
	(.305)	(.204)	(.034)	
Sought assistance from network	.085	.112	.027	233
	(.281)	(.317)	(.039)	
Placed or answered advertisements	.043	.043	.000	233
	(.203)	(.204)	(.027)	
Registered with an employment agency	.034	.034	.000	233
	(.182)	(.183)	(.024)	
Applied to any job that individual was matched to by Job Asaan	.442	.456	.014	216
	(.499)	(.501)	(.068)	
Applied to a job by socioeconomic group:				
Low-income-education	.457	.594	.137	67
	(.505)	(.499)	(.123)	
High-income-education	.462	.387	−.074	127
	(.502)	(.491)	(.088)	

Note. Columns 1 and 2 show the mean value of the variable for the placebo and treatment sample, respectively. Column 3 reports the difference in means between the placebo and treatment, and col. 4 displays total number of observations for each variable. We were able to match 1,087 out of the 2,500 respondents in our sample with the Job Asaan database extract received in September 2019. "Job Asaan sign-up" is a dummy variable for whether the respondent completed the second-stage sign-up; 236 had completed the second-stage sign-up. The measures reported are based on the information stored for these 236 individuals in the Job Asaan database. "Access EFH" is a scale from 1 to 5 that asks how easy is it for the respondent to come to the facility where Job Asaan's employment facilitation hub is located, 1 being extremely likely and 5 being not likely at all. "Expected time to attaining work (months)" is the number of months a respondent said they expected to get a job offer. "Expected wage" is the expected salary respondents expect to get on their next job. "Applied to prospective employer," "checked at work sites, factories, markets," "sought assistance from network," "placed or answered advertisements," and "registered with an employment agency" are all dummy variables for whether the respondent undertook these measures for finding a job in the past month. "High-income-education" is a binary variable equal to 1 if the respondent belongs to the high-income-education cluster, and "low-income-education" is a binary variable equal to 1 if the respondent belongs to the low-income-education cluster. These clusters are defined in sec. IV.C.

* $p < .10$.

TABLE A8
TREATMENT EFFECTS ON THE SPILLOVER GROUP

	Enrolled in Master's Program (1)	Has Created a CV (2)	Job Search in Past Month (3)	Has Job (4)
Friends with treated	.089**	−.001	.002	.034
	(.042)	(.043)	(.033)	(.045)
Observations	503	503	503	503
Mean (placebo)	.329	.584	.146	.402

Note. This table displays results from an ordinary least squares regression testing spillover effects of the intervention on job market outcomes of networks friends. The dependent variable in col. 1 is a binary variable equal to 1 if the respondent is enrolled in a master's program at the time of the survey. In col. 2, the dependent variable is also a binary variable equal to 1 if the respondent has ever created a CV. In col. 3, the dependent variable is a binary indicator equal to 1 if the individual in the past 4 weeks has searched for a job, and the dependent variable in col. 4 is a binary variable equal to 1 if the respondent is working at the time of the survey. "Friends with treated" is a binary variable equal to 1 for respondents who are friends with those who viewed the role model video and 0 for those who are friends with those who viewed the placebo videos. The network friends were interviewed in December 2019, i.e., 9 months after baseline. "Mean (placebo)" is the average value of the dependent variable for the placebo group. Robust standard errors are in parentheses.
** $p < .05$.

B. Cost of the Intervention

Table B1 provides a summary of intervention costs. Development costs include the total costs of video development, including payments made to the media company, ContentCreatorZ, and the costs of reminder postcards provided at the time of the reinforcement of the main messages of intervention. To provide per-respondent costs, we divide the cost of the video by the number of participants who were assigned to the treated group at baseline (N = 1,275) and the total cost of the postcards provided to respondents treated at the reinforcement (N = 1,092). The total development costs is approximately US$4.54, of which a large portion—that of the video development—is a fixed cost. The per unit cost is expected to fall with a larger sample. As such, we assume these estimates to provide an upper limit of the costs that can be incurred with a larger group of participants.

TABLE B1
ACTIVITY-BASED COST BREAKDOWN PER STUDY PARTICIPANT (US$2018)

	Video	Postcards	Total
Development	4.26	.28	4.45
	Baseline	Reinforcement	Total
Implementation	4.25	.97	5.22
Total			9.77

Note. This table summarizes the per-unit cost of the intervention, which has been divided into two types: development and implementation. The intervention was implemented twice, first with video at the start of the study (baseline) and then reinforced 3 months later (reinforcement). The cost of development involved developing the video at baseline and providing postcards at the time of reinforcement. All costs are converted to US dollars using PKR 123.12 = 1 USD at the time of baseline in 2018.

The video and reminder interventions were implemented by a team of enumerators. The enumerators also collected baseline and follow-up data in the same visit that the video and reminder interventions were implemented. We estimate that a fourth of the time and resources of the field team at baseline and a sixth of their time of the second visit were spent on intervention implementation. Included in field team costs are the costs of training and piloting as well as the salaries of enumerators and field supervisors. We assume that the total time spent with treated and placebo participants is not meaningfully different and divide the total costs of implementation at each round by the total number of participants contacted in each round. We estimate that the per-participant costs amount to US$4.3 at baseline and US$0.97 at the time of the repeat intervention, for a total of US$5.23. Overall the intervention development and implementation cost a total of US$9.76 per participant.

References

Abebe, G. T., S. Caria, M. Fafchamps, P. Falco, S. Franklin, and S. Quinn. 2021. "Anonymity or Distance? Job Search and Labour Market Exclusion in a Growing African City." *Review of Economic Studies* 88, no. 3:1279–310.

Adoho, F., S. Chakravarty, D. T. Korkoyah, M. Lundberg, and A. Tasneem. 2014. *The Impact of an Adolescent Girls Employment Program: The EPAG Project in Liberia*. Washington, DC: World Bank.

Ahmed, H., M. Mahmud, F. Said, and Z. Tirmazee. 2020. "Undergraduate Female Students in Lahore: Perceived Constraints to Female Labour Force Participation." CREB Policy Paper no. 20-1, Center for Research in Economics and Business, Lahore.

Appadorai, A. 2004. *The Capacity to Aspire: Culture and the Terms of Recognition*. Stanford, CA: Stanford University Press.

Aronson, J., C. Fried, and C. Good. 2002. "Reducing the Effects of Stereotype Threat on African American College Students by Shaping Theories of Intelligence." *Journal of Experimental Social Psychology* 38, no. 2:113–25.

Ashraf, N., N. Bau, C. Low, and K. McGinn. 2020. "Negotiating a Better Future: How Interpersonal Skills Facilitate Intergenerational Investment." *Quarterly Journal of Economics* 135, no. 2:1095–151.

Banerjee, A., E. La Ferrara, and V. Orozco. 2019. "The Entertaining Way to Behavioral Change: Fighting HIV with MTV." NBER Working Paper no. 26096, National Bureau of Economic Research, Cambridge, MA.

Beaman, L. 2012. "Social Networks and the Dynamics of Labour Market Outcomes: Evidence from Refugees Resettled in the US." *Review of Economic Studies* 79, no. 1:128–61.

Bernard, T., S. Dercon, K. Orkin, and A. Taffesse. 2014. "The Future in Mind: Aspirations and Forward-Looking Behaviour in Rural Ethiopia." CSAE Working Paper no. 2014–16, Centre for the Study of African Economies, University of Oxford.

Bhan, P. C. 2020. "Do Role Models Increase Student Hope and Effort? Evidence from India." Working paper, Business School–Economics, University of Glasgow.

Blackwell, L. A., K. H. Trzesniewski, and C. S. Dweck. 2007. "Theories of Intelligence and Achievement Across the Junior High School Transition: A Longitudinal Study and an Intervention." *Child Development* 78, no. 1:246–63.

Breda, T., J. Grenet, M. Monnet, and C. V. Effenterre. 2020. "Can Female Role Models Reduce the Gender Gap in Science? Evidence from Classroom Interventions in French High Schools." IZA Discussion Paper no. 13163, Institute of Labor Economics, Bonn.

Caria, S., S. Franklin, and M. Witte. 2020. "Searching with Friends." IZA Discussion Paper no. 13857, Institute of Labor Economics, Bonn.

Caria, S., M. Kasy, S. Quinn, S. Shami, and A. Teytelboym. Forthcoming. "An Adaptive Targeted Field Experiment: Job Search Assistance for Refugees in Jordan." *Journal of the European Economic Association*.

Carranza, E., R. Garlick, K. Orkin, and N. Rankin. 2020. "Job Search and Hiring with Two-Sided Limited Information about Workseekers' Skills." Policy Research Working Paper no. 9345, World Bank, Washington, DC.

Cheema, A., A. Khwaja, M. Naseer, and J. Shapiro. 2012. "Skills Intervention Report: Results of First Round of Voucher Disbursement and Strategies for Improving Uptake." Technical report, Punjab Economic Opportunities Program, Pakistan.

———. 2023. "Glass Walls: Experimental Evidence on Access Constraints Faced by Women." Working paper, Harvard University.

Chong, A., and E. L. Ferrara. 2009. "Television and Divorce: Evidence from Brazilian Novelas." *Journal of the European Economic Association* 7, nos. 2–3:458–68.

Dean, J. T., and S. Jayachandran. 2019. "Changing Family Attitudes to Promote Female Employment." *AEA Papers and Proceedings* 109:138–42.

Doel, M. 2010. "The Impact of an Improvised Social Work Method in a School: Aspirations, Encouragement, Realism and Openness." *Practice* 22, no. 2:69–88.

DuBois, D., N. Portillo, J. Rhodes, N. Silverthorn, and J. Valentine. 2011. "How Effective Are Mentoring Programs for Youth? A Systematic Assessment of the Evidence." *Psychological Science in the Public Interest* 12, no. 2:57–91.

Duckworth, A. L., A. Quirk, R. Gallop, R. H. Hoyle, D. R. Kelly, and M. D. Matthews. 2019. "Cognitive and Noncognitive Predictors of Success." *Proceedings of the National Academy of Sciences of the USA* 116, no. 47:23499–504.

Duckworth, A. L., and M. E. Seligman. 2005. "Self-Discipline Outdoes IQ in Predicting Academic Performance of Adolescents." *Psychological Science* 16, no. 12: 939–44.

Dweck, C. S. 2007. *Mindset: The New Psychology of Success*. New York: Ballantine.

———. 2012. "Mindsets and Human Nature: Promoting Change in the Middle East, the Schoolyard, the Racial Divide, and Willpower." *American Psychologist* 67, no. 8:614–22.

Erten, B., and P. Keskin. 2018. "For Better or for Worse?: Education and the Prevalence of Domestic Violence in Turkey." *American Economic Journal: Applied Economics* 10, no. 1:64–105.

Field, E., S. Jayachandran, and R. Pande. 2010. "Do Traditional Institutions Constrain Female Entrepreneurship? A Field Experiment on Business Training in India." *American Economic Review* 100, no. 2:125–29.

Field, E., and K. Vyborny. 2016. "Female Labor Force Participation in Asia: Pakistan Country Study." Technical report, Asian Development Bank, Mandaluyong, Philippines.

Franklin, S. 2018. "Location, Search Costs and Youth Unemployment: Experimental Evidence from Transport Subsidies." *Economic Journal* 128, no. 614:2353–79.

Groh, M., N. Krishnan, D. McKenzie, and T. Vishwanath. 2016a. "Do Wage Subsidies Provide a Stepping-Stone to Employment for Recent College Graduates? Evidence from a Randomized Experiment in Jordan." *Review of Economics and Statistics* 98, no. 3:488–502.

———. 2016b. "The Impact of Soft Skills Training on Female Youth Employment: Evidence from a Randomized Experiment in Jordan." *IZA Journal of Labor and Development* 5, no. 9. https://doi.org/10.1186/s40175-016-0055-9.

Haushofer, J., and J. Shapiro. 2016. "The Short-term Impact of Unconditional Cash Transfers to the Poor: Experimental Evidence from Kenya." *Quarterly Journal of Economics* 131, no. 4:1973–2042.

Heath, R., and A. Mobarak. 2015. "Manufacturing Growth and the Lives of Bangladeshi Women." *Journal of Development Economics* 115(C):1–15.

Heckman, J. J., and T. Kautz. 2012. "Hard Evidence on Soft Skills." *Labour Economics* 19, no. 4:451–64.

———. 2013. "Fostering and Measuring Skills: Interventions That Improve Character and Cognition." NBER Working Paper no. 19656, National Bureau of Economic Research, Cambridge, MA.

Heckman, J. J., and Y. Rubinstein. 2001. "The Importance of Noncognitive Skills: Lessons from the GED Testing Program." *American Economic Review* 91, no. 2.

Humphrey, N., A. Lendrum, M. Wigelsworth, and A. Kalambouka. 2009. "Implementation of Primary Social and Emotional Aspects of Learning Small Group Work: A Qualitative Study." *Pastoral Care in Education* 27, no. 3:219–39.

Jayachandran, S. 2020. "Social Norms as a Barrier to Women's Employment in Developing Countries." Technical report, National Bureau of Economic Research, Cambridge, MA.

Jensen, R. 2012. "Do Labor Market Opportunities Affect Young Women's Work and Family Decisions? Experimental Evidence from India." *Quarterly Journal of Economics* 127, no. 2:753–92.

Jensen, R., and E. Oster. 2009. "The Power of TV: Cable Television and Women's Status in India." *Quarterly Journal of Economics* 124, no. 3:1057–94.

Kautz, T., J. J. Heckman, R. Diris, B. ter Weel, and L. Borghans. 2014. "Fostering and Measuring Skills: Improving Cognitive and Non-Cognitive Skills to Promote Lifetime Success." NBER Working Paper no. 20749, National Bureau of Economic Research, Cambridge, MA.

Kofoed, M. S., and E. McGovney. 2017. "The Effect of Same-Gender and Same-Race Role Models on Occupation Choice: Evidence from Randomly Assigned Mentors at West Point." *Journal of Human Resources* 54, no. 2:430–67.

La Ferrara, E., A. Chong, and S. Duryea. 2012. "Soap Operas and Fertility: Evidence from Brazil." *American Economic Journal: Applied Economics* 4, no. 4:1–31.

Lee, D. S. 2009. "Training, Wages, and Sample Selection: Estimating Sharp Bounds on Treatment Effects." *Review of Economic Studies* 76, no. 3:1071–102.

Lieberman, M. 2014. *Social: Why Our Brains Are Wired to Connect*. New York: Crown.

Locke, E. A., and G. P. Latham. 1990. *A Theory of Goal Setting and Task Performance*. Englewood Cliffs, NJ: Prentice-Hall.

Lockwood, P. 2006. "Someone like Me Can Be Successful: Do College Students Need Same-Gender Role Models?" *Psychology of Women Quarterly* 30, no. 1:36–46.

Lopez-Pena, P. 2020. "Managing the Second Shift: The Impact of Noncognitive Skills on Female Entrepreneurs' Time Allocation and Mental Health." Working paper, Queen's University.

Macours, K., and R. Vakis. 2014. "Changing Households' Investment Behaviour through Social Interactions with Local Leaders: Evidence from a Randomised Transfer Programme." *Economic Journal* 124, no. 576:607–33.

Mansour, H., D. I. Rees, B. Rintala, and N. Wozny. 2018. "The Effects of Professor Gender on the Post-Graduation Outcomes of Female Students." IZA Discussion Paper no. 11820, Institute of Labor Economics, Bonn.

McKelway, M. 2020. "Women's Employment in India: Intra-Household and Intra-Personal Constraints." Working paper. https://api.semanticscholar.org/CorpusID:219178193.

McKenzie, D. 2017. "How Effective Are Active Labor Market Policies in Developing Countries? A Critical Review of Recent Evidence." *World Bank Research Observer* 32, no. 2:127–54.

Paunesku, D., G. Walton, C. Romero, E. Smith, D. Yeager, and C. Dweck. 2015. "Mind-Set Interventions Are a Scalable Treatment for Academic Underachievement." *Psychological Science* 26, no. 6:784–93.

PDS (Punjab Development Statistics). 2018. *Punjab Development Statistics 2018*. Bureau of Statistics, Government of the Punjab.

Porter, C., and D. Serra. 2020. "Gender Differences in the Choice of Major: The Importance of Female Role Models." *American Economic Journal: Applied Economics* 12, no. 3:226–54.

Ray, D. 2006. *Aspirations, Poverty, and Economic Change*. Oxford: Oxford University Press.

Resnjanskij, S., J. Ruhose, S. Wiederhold, and L. Woessmann. 2021. "Can Mentoring Alleviate Family Disadvantage in Adolescence? A Field Experiment to Improve Labor-Market Prospects." CESifo Working Paper no. 8870, CESifo, Munich.

Riise, J., B. Willage, and A. Willén. 2022. "Can Female Doctors Cure the Gender Stem Gap? Evidence from Exogenously-Assigned General Practitioners." *Review of Economics and Statistics* 104, no. 4: 621–35.

Riley, E. 2022a. "Resisting Social Pressure in the Household Using Mobile Money: Experimental Evidence on Microenterprise Investment in Uganda." Working paper.

———. 2022b. "Role Models in Movies: The Impact of Queen of Katwe on Students' Educational Attainment." *Review of Economics and Statistics*, 1–48.

Rotter, J. 1966. "Generalized Expectancies for Internal versus External Control of Reinforcement." *Psychological Monographs: General and Applied* 80, no. 1:1–28.

Said, F., M. Mahmud, G. d'Adda, and A. Chaudhry. 2022. "Home-Based Enterprises: Experimental Evidence on Female Preferences from Pakistan." *Economic Development and Cultural Change* 71, no. 1:185–221.

Walton, G. M., and T. D. Wilson. 2018. "Wise Interventions: Psychological Remedies for Social and Personal Problems." *Psychological Review* 125, no. 5:617–55.

Wheeler, L., R. Garlick, E. Johnson, P. Shaw, and M. Gargano. 2022. "LinkedIn(to) Job Opportunities: Experimental Evidence from Job Readiness Training." *American Economic Journal: Applied Economics* 14, no. 2:101–25.

World Bank. 2020. World Development Indicators. https://databank.worldbank.org/source/world-development-indicators.

World Economic Forum. 2020. "Global Gender Gap Report 2020." Technical report, World Economic Forum, Cologny, Switzerland.

Yeager, D. S., P. Hanselman, G. M. Walton, J. S. Murray, R. Crosnoe, C. Muller, E. Tipton, et al. 2019. "A National Experiment Reveals Where a Growth Mindset Improves Achievement." *Nature* 573, no. 7774:364–69.

Yeager, D. S., C. Romero, D. Paunesku, C. S. Hulleman, B. Schneider, C. Hinojosa, H. Y. Lee, et al. 2016. "Using Design Thinking to Improve Psychological Interventions: The Case of the Growth Mindset during the Transition to High School." *Journal of Educational Psychology* 108, no. 3:374–91.