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Workplace Attributes and Women's Labor Supply Decisions: Evidence from a Randomized Experiment

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Abstract

Women's educational attainment has increased substantially but labor market outcomes have not experienced a commensurate increase in many developing countries. Through experiments with educated women on a job search platform in Pakistan, I find that salience of family job search advice decreases women's job application rates by 20%; these effects are mitigated when women receive information about coworker gender. A broader set of results on job search and occupational choice elucidates that access to information about workplace attributes through a low-cost intervention allows women to direct their job search in a way that could mitigate costs associated with social norms.

JEL Codes: J16, J24, J40, D83, O10
Key Words: Job Search, Information, Workplace Attributes, Gender, Development, Experiment

1 Introduction

Women have made gains relative to men in terms of educational attainment globally, but women are less likely than men to participate in the labor force, spend more hours than men on unpaid work, earn less than men, and often work in different occupations than men in many settings (Addati et al., 2016; UNESCO, 2019a,b; Menon and Rodgers, 2017; Heath and Jayachandran, 2017). Some factors contributing to these patterns are legal or based in discrimination on the hiring demand side (Hyland et al., 2020; Altonji and Blank, 1999; Goldin and Rouse, 2000). This paper focuses on supply-side constraints to women's labor supply decisions in Pakistan, a setting where women are attaining higher levels of education over time, but where women's engagement with the labor force remains low (Field and Vyborny, 2016). This is also a setting where social norms prescribe the role of women as within the home, and the separation of men and women in public spaces. These norms, often imposed by the family, also exist in other settings in North Africa, the Middle East, and South Asia, which collectively are the regions with the lowest levels of female labor force participation (Addati et al., 2016; Papanek, 1971; Jayachandran, 2020; Afridi et al., 2018). A preference for working in female-dominated work environments could constrain women's labor supply decisions leading women to self-select out of job search and contribute to low female employment and further exacerbate occupational segregation by gender (England, 2000; Levanon et al., 2009; World Bank, 2012). This paper seeks to identify how perceived family pressure and information about gender-related workplace attributes influence women's job search and revealed occupational preferences.

  I report findings from two related experiments with educated women on a formal job

search platform in Lahore, Pakistan. I conduct a priming experiment to understand the impact of salience of family job search advice on the decision to apply for jobs. In a second experiment, I experimentally manipulate the information environment, providing treated women with access to information about gender-related workplace attributes to identify how this information impacts job application decisions and occupational choice. I cross-randomize both experiments to identify which gender-related workplace attributes women believe their families are most concerned with. I focus on application decisions at the vacancy level as an outcome since job search is the first step to employment and the application decision gives a direct revealed preference over workplace attributes. Individuals' beliefs about salaries and long-run outcomes from educational choices impact decisions governing education, employment, and occupation even if those beliefs are inaccurate (Jensen, 2012; Stinebrickner and Stinebrickner, 2014; Wiswall and Zafar, 2015; Zafar, 2013; Delavande and Zafar, 2019). Similarly, beliefs about gender-related workplace attributes could impact occupational choice, thus I also measure beliefs to examine the relationship between these beliefs and occupational rankings.

The results highlight that family pressure is a significant constraint on women's job search, holding fixed all attributes of the job, but are also consistent with women believing that their families want to know the gender of potential coworkers at the job. Being reminded about conversations with their families about job search decreases the likelihood that a woman applies to a given vacancy by 20%. For women who do not receive information about coworker gender through the information experiment, this effect is 35% and statistically significant; for women who receive information about coworker gender, the priming treatment effect is positive,

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small in magnitude, and statistically insignificant. Within the structure of the empirical strategy, I am able to rule out that the effect is due to concerns about flexible working hours, salary, occupation, or location of the job (Mas and Pallais, 2017; Wiswall and Zafar, 2018; Flory et al., 2015; Murray-Close and Heggeness, 2019; Wasserman, nd). Potential remaining mechanisms for family disapproval (i.e. origins of the social norm) could be concerns about safety, propriety, or marital dissolution (McKinnish, 2007; Svarer, 2007). This primary result is driven by married women.

Given the low job application rate through the platform (consistent with low female labor supply in this context), the impacts of different types of information are underpowered, though consistent with women preferring to work in female-dominant environments, all else equal. Women randomized to receive information about supervisor gender who match to jobs with female supervisors and women randomized to receive information about coworker gender who match to jobs with majority female coworkers have a higher application rate compared to other individual-vacancy matches; however these results are not statistically significant at conventional levels due to a baseline low application rate on the platform.

Information about gender-related workplace attributes and salience of family job search advice also shifted applications differently for the most preferred occupations. In stated preference, women are most interested in teaching positions, which conform to gender roles expected of women (Papanek, 1971; Akerlof and Kranton, 2000). Women in my sample also stated expectations of a relatively high share of female employees, likelihood of female supervisor, lower salary, and comparatively high expectation of hiring a woman in teaching

positions. Women randomized to receive information about coworker gender matched to teaching positions had a 41% higher application rate than the control mean. Eighty percent of matches to teaching positions were positions with mostly female coworkers; thus, even in an expected female-dominant environment, women prefer to work with other women. The negative effect of family job search advice was similar for teaching and non-teaching job matches.

The second most preferred occupation is management-related positions which connote prestige, but also (as reported in baseline beliefs), a lower likelihood of hiring a woman, higher salary, and a higher probability of a male-dominated work environment, compared to teaching positions. Over 70% of matches to management positions had female supervisors although the majority of fellow employees at these jobs were men. This pattern is likely because women only matched to positions that advertised their willingness to recruit women in such roles. Consistent with this new information compared to ex-ante beliefs, the job application rate among women randomized to receive information about supervisor gender matched to management positions was 50% higher than the control mean. However, the negative effect of family job search advice is 40% for management positions, suggesting that women do not believe that their families would be supportive of such roles, even if they themselves are ambitious about their careers.

This paper contributes to two sets of literature addressing women's labor supply. First, a growing literature shows that family disapproval of women working negatively impact women's labor supply in settings with low female labor force participation (Bernhardt et al., 2018; Bursztyn et al., 2020; Dean and Jayachandran, 2019; Field et al., 2021; McKelway, 2020). Second, a literature in labor economics addresses the role of supervisor gender (and

less frequently, coworker gender or imperfect signals about gender in job ads) on women's job search, gender wage gaps, and job commitment primarily in high-income settings, finding mixed results (Bednar and Gicheva, 2014; Flabbi et al., 2019; Matsa and Miller, 2011; Cardoso and Winter-Ebmer, 2010; Sicilian and Grossberg, 2013; Lee and Peccei, 2007; Rizvi Jafree et al., 2015; Flory et al., 2015; Chaturvedi et al., 2021; Maida and Weber, 2020).

I contribute to the literature by identifying the impact of salience of family advice on women's job search in a context where social norms can make gender-related workplace attributes particularly relevant to labor supply, and how gender-related workplace attributes and family job search advice can shift women toward or away from ex-ante preferred occupations. Furthermore, I am able to study both occupational choice and job applications across a real set of jobs seeking to hire women. That these results are in Pakistan is notable, as Pakistan is geographically, culturally, and economically illustrative of the regions where women's engagement with the labor force is particularly low. To the best of my knowledge, this is the first causal estimate of how women make job search decisions as a response to direct information about gender-related workplace attributes, especially in conjunction with making salient relevant social norms about family job search advice.

Formal mobile and internet based job search platforms are becoming increasingly prevalent in Pakistan and worldwide, e.g. Rozee.pk in Pakistan, Naukri and others in India, and LinkedIn in many countries. Access to information about gender-related workplace attributes (usually requiring prior knowledge of the firm through one's social network or advancement to the interview stage) can be costly. My results show that receiving information about coworker

gender through this low-cost intervention mitigates the negative effect of salience of family job search advice at the job application stage and can help women make more knowledgeable decisions at the early stages of job search. Through this methodology, I also contribute to a recent and growing body of literature studying how people search for jobs on job search platforms (Ben Dhia et al., 2022; Kelley et al., 2021; Jones and Sen, 2022; Wheeler et al., 2022; Belot et al., 2022, 2018; Kircher, 2020).

In the remainder of the paper, I first describe the context of the study including the job search platform in Section 2. I then describe the administrative and survey data in Section 3 and the experimental design in Section 4. I discuss the empirical strategy and results related to salience of family job search advice in Section 5, related to information about gender-related workplace attributes in 6 and related to occupational choice in Section 7. Section 8 concludes.

2 Context

Women's labor force participation rose from 14% to 25% between 1990 and 2014 in Pakistan (Field and Vyborny, 2016). However, four times as many men as women in urban parts of Punjab province (where Lahore is located) worked for pay in the last month (Pakistan Bureau of Statistics, 2017). Like much of the broader region where female labor force participation is low, social norms likely play a role. About 75% of women in urban areas of Punjab province report that other household members made the decision about whether they could work outside the home, and that the women themselves had no say (Pakistan Bureau of Statistics, 2017). Across Pakistan, a quarter of women who are not currently working report that the reason they are not

working is because their husband or father has not given them permission (Pakistan Bureau of Statistics, 2017).

This experiment is conducted on a job search platform called Job Asaan, in Lahore, Pakistan.[1] This platform matches female individuals who are at least in their final year of high school (on track to earn a diploma) with open job postings at firms in Lahore for which they meet basic qualifications. There is no monetary cost to individuals or firms for using the service.

The platform matches job-seekers with open positions for which they meet the base qualifications: education, work experience, gender, and whether the individual indicated at sign-up that she was interested in being matched to jobs in the given occupation. First, Job Asaan enrolls firms with open job postings on a rolling basis. Approximately every week, individuals are matched to these job postings based on whether they have the appropriate level of education and years of experience that the firm seeks for the job, whether the firm is willing to receive applications from women, and whether the job posting is for an occupation that the individual asked to be matched with.[2] Individuals who meet these matching criteria receive a batch of text messages (SMS) with the jobs they have matched to in the given matching round. The SMS with the information about job postings for the given match round includes the Job Asaan phone number, and the date by which they must call to apply. All individuals can call Job Asaan to apply to any job postings that they received in the last week.

Individuals enrolled onto Job Asaan in one of two ways. First, a state government agency conducted a media campaign in July 2018, inviting women with a high school diploma or

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[1]More information about the platform and its conception is detailed at Delcuvellerie et al. (2019).

[2]In practice in Lahore, firms often advertise whether they are looking for male or female applicants. Job Asaan asks firms whether they are willing to accept applications from female applicants, male applicants, or any gender and matches individuals to job postings that seek female applicants or seek applicants from any gender.

higher levels of education to sign up for the platform. This media campaign covered television, radio, Facebook, etc, and directed interested individuals to a website where they could fill out the Job Asaan sign-up form, which also serves as the baseline survey instrument[3]. Second, Job Asaan conducted outreach events at colleges and universities in Lahore. Here, women who were in their final year of high school or final year of college were invited by their college or university to attend a Job Asaan-sponsored CV workshop. Job Asaan staff would lead the students in filling out the sign-up form for the service which also created a CV for them.[4][5]. The signup process yielded a total of 4,081 participants as of March 2019, when the experiment began. Of these, 2,244 had only completed the initial brief signup form, meaning a lack of full baseline characteristics, though enough information provided to conduct matching.

Table A1 describes the participants. The individuals are nearly 22 years old on average, and have less than a year of work experience on average. Among those who completed a CV, 76% are enrolled in education at baseline, and 9% are married. Nearly 90% are at least in their final year of a bachelor's degree or have higher education. Gender-related workplace attributes matter to the individuals, at least in stated preference. In a set of vignette exercises conducted at enrollment, individuals were asked which of two firms they would accept an offer from. The firms and job offers were otherwise identical (including in salary) and individuals were

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[3]If they needed guidance in filling out the survey information, they were provided with a helpline which they could call

[4]Since the form is lengthy, it was effectively divided into 2 parts. The initial form had just a few short questions to determine whether the individual was eligible for the service, which was determined by highest education level, gender, being a resident of Lahore, and being over the age of 18 or providing parental permission if aged 17. If the individual passed this initial criteria, they were given the link to the full signup form.

[5]In a small number of cases, Job Asaan used hard copy versions of the form at these events owing to technology limitations. Then, staff entered the information onto the webform after the event. At some colleges, the allocated time for the event was too short to guide students through the full form. In these cases, the team had the students fill out the initial signup form at the event, and staff called them back to complete the full signup form over the phone.

instructed to consider that the offers were for the occupation that they were most interested in being matched to through the platform, but varied by supervisor gender and coworker gender. In the first case, holding fixed mostly female coworkers, approximately 68% of respondents preferred a female supervisor over a male supervisor. In the second case, holding fixed a male supervisor, approximately 85% of respondents preferred mostly female coworkers to male coworkers. Approximately 83% of respondents preferred having both female coworkers and a female supervisor to having both male coworkers and a male supervisor, in the final case. Respondents were also asked how their parents would advise them in choosing between the firms. In all three cases, respondents reported an average higher probability by about (statistically significant though small) 1-5 percentage points, that they believed that their parents would advise them to choose the firm with the female coworkers and/or supervisors. These descriptive stated preference results highlight that the majority of female individuals state a preference for female coworkers and/or a female supervisor, and that on average, they believe their families would be even more supportive of them choosing a female-dominant workplace than they themselves might be.[6].

    The field team contacted firms from a stratified random sampling across administrative zones of the Lahore metropolitan area, described the Job Asaan service, and offered firms the opportunity to enroll in the service at no cost. If firms were interested in listing vacancies, the team collected information regarding the basic educational and experience qualifications necessary to be eligible for the position, wage, the gender composition of the firm, the gender of the supervisor for the open position, and how flexible the hours were for the open position. Jobs

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[6]Details of vignette data collection in Appendix A2

were posted on a rolling basis. In addition to the set of jobs listed through the random sampling procedure, jobs were also listed through targeted approaches to firms in neighborhoods or industries (such as banking, education, high-end retail, and healthcare), which were likely to have vacancies that could be filled by women with a high school diploma or higher education.[7]

The combined process yielded a total of 64 vacancies that Job Asaan individuals matched to over the course of the experiment.[8] Figure A1 provides the distribution of occupations that these 64 vacancies span. Many of these vacancies were in teaching or sales, though there are seventeen occupations represented overall. Of these 64 vacancies to which women in Job Asaan matched, by definition 100% are willing to accept applications from women. Among the vacancies that posted a salary, the median salary was 18,000 PKR/month, against a minimum wage of 15,000 PKR/month (approximately $150 USD). The minimum was 8,000 PKR/month (an internship), and the maximum was 200,000 PKR/month. Forty-five of the vacancies (70%) allowed some amount of flexibility with work hours. Seventeen vacancies (27%) were at firms with majority female employees, four vacancies (6%) reported an exactly even split of female and male employees, and 29 vacancies (45%) were at firms with majority male employees. Since these are all real vacancies (rather than a controlled audit study), a further 14 vacancies (22%) were at firms that did not report their gender composition of employees. Twenty vacancies (31%) had a female supervisor, 41 vacancies (64%) had a male supervisor, and three vacancies (5%) were at firms that did not report the gender of the direct supervisor for the open position. Since this is not a controlled audit study, there are vacancies

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[7]Firms that seek to hire men can post job postings through a related job search service coordinated by the same field team, which facilitates job search regardless of gender.

[8]For cost reasons, the entire experiment was restricted to five matching rounds (described below), and thus the job vacancies posted at that time.

that do not report gender-related workplace attributes that I study in this paper; however this also reflects the reality of scaling up to making gender-related workplace attributes publicly available as there would be noncompliance on the part of firms.

Of the 4,081 individuals who signed up for the service prior to the experiment, 1,837 had complete CVs with Job Asaan prior to the start of the experiment. This subsample of 1,837 individuals is referred to below as the Priming Experiment Sample, and they received a call from Job Asaan each matching round asking if they were interested in applying to any of the job matches that they had received that week, in addition to the SMS.[9] Each job match SMS notes the individual's name to indicate that the match is specifically for her, and includes the following information about the job posting: job title, firm name, minimum salary, location of the firm within Lahore, whether the position has flexible working hours, and a statement clarifying that the position is open to applications from women. The SMS also specifies the date by which the individual should apply for the position and the Job Asaan helpline number that she can call to apply for the job. The control mean application rate overall is 0.0361: meaning that there is a less than 4% chance that a given individual-vacancy match will convert to a job application.[10] In the pure control group, individuals apply for approximately 0.07 applications per month. This is in the range of person-month application rates on other job platforms in low- and middle- income countries, but unlike other contexts, the sample in this paper focuses specifically on highly educated women in a context where women's labor force participation and employment rates are very low (Banfi et al., 2019; Wheeler et al., 2022).

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[9]The 2244 individuals who did not complete a full CV still received the SMS's with the jobs to which they matched, but they did not receive a call from Job Asaan asking them to which jobs in that batch they wanted to apply. Individuals in either category can always call Job Asaan directly to apply for jobs at no cost.

[10]Within the priming experiment subsample, the control mean application rate is higher at just under 5%.

Table A2 juxtaposes respondents' beliefs about the proportion of male employees, probability of male supervisor, and salary with the distribution of vacancies to which respondents matched during the study. At baseline, respondents are fairly accurate in their belief about proportion of male employees when compared to vacancies weighted by the number of respondents who matched to them during the study, but underestimate compared to the unweighted mean. Respondents at baseline overestimate the probability of a male supervisor compared to the weighted vacancies, but underestimate compared to the unweighted mean. In line with the other studies across contexts, respondents overestimate salary. The endline beliefs (pooling those treated and untreated) show a similar pattern, barring that respondents report a belief of higher proportion of male employees compared to the baseline sample, and are thus closer to the unweighted mean.

3 Data

3.1 Administrative Data

There are two types of administrative data used in this project. First, all 4,081 individuals in the starting sample completed a short enrollment form which took their work experience, education level, occupations they were interested in being matched with, date of birth, and contact information.[11] This was the basic information necessary to match individuals with open vacancies. Next, all 4,081 individuals were asked to complete their CV, including details

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[11]Individuals had the option to complete their enrollment, CV, and surveys in either English or Urdu; individuals overwhelmingly chose English.

about degrees, training, specific projects that the indivdiual wanted to highlight, and details of their work history. Forty-five percent (1,837 individuals) completed a CV with the platform, meaning that as soon as they expressed interest in applying to a job, the platform was prepared to immediately submit an application on their behalf.[12]

The second type of administrative data comes from the matching rounds: each of the 4,081 individuals was matched to open vacancies. Over the five matching rounds when this experiment was conducted, 3,644 individuals matched to 64 vacancies, yielding 20,540 individual-vacancy pairs. For each pair, in addition to the treatment status and other individual-level characteristics, I observe characteristics of the job, such as salary, location, whether the job allowed flexible working hours, and occupation.

3.2   Surveys

A baseline and endline survey complement the administrative data to understand mechanisms. In the baseline survey, the respondent provided basic demographic information, ranked her top three most preferred occupations, and provided her beliefs over the following parameters for a typical job in each of those top three occupations: mean salary, minimum, mean, and maximum percentage of men at the job, minimum, mean, and maximum expectation that the supervisor would be male, and the probability that the job would hire a woman.[13] The individual also responded to a series of contingent valuation vignettes to measure her stated preferences over

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[12]Twenty-three individuals out of the 4,081 did not provide details of their date of birth, and thus the service was not able to verify that they were either over the age of 18, or that they were over the age of 17 with parental consent. Those 23 individuals are dropped from all analysis.

[13]The exact question wording is included in Appendix A1.3 and draws from the literature in measuring subjective expectations (Manski, 2004)

coworker and supervisor gender, and how her family would advise her to make those decisions. Thirty-six percent of the full sample was administered the baseline survey (1,468 individuals): those who enrolled and completed a CV with the platform after the initial pilot. There was also nonresponse on some questions of the baseline survey. The endline survey replicated the questions about ranking occupations and beliefs about those occupations. The endline survey was attempted with all individuals in the initial sample; it was completed by 947 individuals, meaning a 23% response rate. Neither the baseline nor endline survey were incentivized, beyond that individuals already had free access to this job search platform. Incentives were not used to avoid causing expectations of receiving an incentive to use the (free) platform itself.

4 Experiment

The information experiment and priming experiments were conducted on the Job Asaan platform over five consecutive matching rounds in March and April 2019, each matching round roughly a week and a half apart.[14] Randomization of each experiment was at the individual level, stratified on measures of activity on the platform prior to randomization and education.

4.1 Priming Experiment

The priming experiment was conducted on a subsample of individuals who had completed their CV with the platform prior to the randomization; this subsample is referred to as the Priming Experiment Subsample. When restricted to those that actually received matches over the course

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[14]The match dates were March 13, March 24, April 2, April 10, and April 22, 2019.

of the experiment, this subsample amounts to 1,655 individuals; 828 were ex-ante randomly selected to be in the priming control group; 827 were ex-ante randomly selected to be in the priming treatment group. In this analysis sample, randomization is balanced on observable characteristics except for age and whether the individual had at least a bachelor's degree (see Table A3); these are controlled for in analysis of the priming experiment.[15] Every individual in the Priming Experiment Subsample received a phone call with each matching round in which she received matches (in addition to the SMS's) asking the individual to which of the jobs to which she matched, she wanted to apply.[16] At the beginning of the phone call, immediately before expressing an interest to apply to any of the vacancies with which she matched in that round, those in the priming treatment group were asked "We are also interested in understanding how women make decisions about their jobs. Have you discussed your job search with your family in the last week?" In Pakistan and more broadly in South Asia, decisions surrounding labor supply are very much taken with family advice in consideration, so the question was not likely to spur the individual to go and talk to their family, rather this question was designed to make previous conversations that the individual had already had with her family salient in her mind at the time of making decisions about whether to apply to jobs, and if so, which jobs to which to apply. While the information experiment's (described below) information delivery depends also on the jobs that the individual matches to, the priming experiment does not.

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[15]In the full sample of all individuals, including those who did not receive matches over the course of the experiment, only years of experience is imbalanced, as seen in Table A4, and is controlled for in analysis.

[16]The priming experiment was conducted on a subsample for budgetary reasons.

4.2 Information Experiment

In the information experiment, individuals were ex-ante randomized to receive information for each match about supervisor gender, coworker gender, both, or neither. The main outcome of interest is whether an individual chose to apply to a given vacancy with which she was matched. Thus, for analysis at the individual-vacancy match level, I restrict the sample to individuals who matched with at least one vacancy during the course of the experiment; this brings the sample to 3,644 individuals. Within this sample, 894 received information about only coworker gender, 914 received information about only supervisor gender, 910 received information about both coworker and supervisor gender, and the remainder were in the control group who did not receive any additional information. In this analysis sample for specifications estimated at the individual-vacancy level, randomization is balanced on observable characteristics except for the years of experience and number of matches that the individual received on the platform prior to randomization; these are controlled for in analysis of the information experiment (see Table A3). [17]

Among the individual-vacancy matches analyzed in the experiment, 2% were for vacancies with all female employees, 39% were for vacancies with mostly female employees, 7% were for vacancies with an even split of female and male employees, 29% were for vacancies with mostly male employees, and 7% were for vacancies with all male employees. For analysis,

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[17]The full sample of 4,081 individuals was randomized into the information experiment. The treatment assignment determined what additional attributes about gender-related workplace attributes the individual received about each of her job matches. 1,011 received additional information about only coworker gender, 1,022 received information about only supervisor gender, 1,020 received information about both coworker gender and supervisor gender, leaving 1,028 individuals receiving no additional information. In the full sample, only years of experience is imbalanced (see Appendix Table A4).

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these are grouped into three categories: women (encompassing all or mostly female employees), half and half, and men (encompassing all or mostly male employees). A further 16% of the matches were with vacancies where the firm did not provide information about coworker gender; in these cases an individual in a treatment arm where she should usually receive information about coworker gender would receive a message that the platform did not have information on the gender of the employees at the firm. Analogously, 55% of matches were for vacancies with a female supervisor; 42% of matches were for vacancies with a male supervisor, and only 2% of matches were for vacancies without information about supervisor gender. Individuals in a treatment arm where they would usually receive information about supervisor gender would then instead receive a message that the platform did not have information about supervisor gender at that position.

Through Job Asaan, all job postings included the job title (which signals the occupation), location of the job within the city (addressing mobility constraints), and the salary (addressing information that the individual might infer about wages through the gender composition). Individuals might also have preferences over flexible working hours or concerns about whether the position was actually accepting applications from women (since firms in Pakistan often advertise whether they are looking for a woman or man to fill the position, or if they received information through the experiment that the position had a male supervisor and/or mostly male employees). To address this, job postings through the platform also included information on whether the position allowed flexible working hours and a statement specifying that the company was accepting female applicants. The structure of the SMS is denoted in

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Figure A3. All information presented to individuals was completely factual.[18] The variation in workplace attributes comes from true variation as reported by firms in Lahore.

Since this is not an audit study, the distribution of gender-related workplace attributes are not fixed in a way that maximize power for identifying individuals' responses to specific types of jobs, but rather, how information about gender-related workplace attributes being publicized in a real set of jobs advertising to women in the Pakistani labor market might impact women's job search.

5   Salience of Family Job Search Advice

I begin by estimating whether salience of family job search advice impacts women's job applications directly.

$$Y_{ijk} = \alpha_0 + \alpha_1 P_i + \Lambda W_{ik} + \zeta_j + \varepsilon_i \tag{1}$$

Here, P_i refers to the individual being randomized to receive the priming treatment to make family job search advice salient at the time of the job application decision; thus α_1 is the coefficient of interest. This coefficient indicates the impact of the salience of family job search advice in an environment where the individual might receive information about gender-related workplace attributes through her job search or other channels including the information treatments. The specification controls for the information treatments (treatment indicator for

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[18]If an individual in a control group asked for information that she was not assigned to receive, she was told that Job Asaan could not disclose that information.

coworker gender, treatment indicator for supervisor gender, and the interaction of those two indicators) in W_{ik} since those in the priming experiment subsample were also in the information experiment. The vector W_{ik} also includes an indicator for having a bachelor's education, age, years of experience, and number of matches prior to randomization, which were slightly imbalanced at baseline among the sample that received matches during the experiment; the vector also includes the number of matches in the given match round. Finally, the specification includes vacancy-level fixed effects (ζ_j); this ensures that comparison is between individuals who did and did not receive the priming treatment deciding whether to apply to the same vacancy. For this and all specifications where the unit of observation is the individual-vacancy match, I include fixed effects for randomization strata and cluster standard errors at the level of the individual, since treatment was randomized at the individual level (Abadie et al., 2017).

The results of Specification 1 are reported in Table 1. Salience of family job search advice at the time of the job application decision decreases the job application rate by 1.12 percentage points, which is greater than a 20% decrease from the control mean of 0.05. This is a sizable impact, in a context where women's labor force participation and employment rates are already low.

I explore mechanisms to explain how salience of family job search advice might impact the decision to apply for a job. Specification 2 is based off of Specification 1 with an interaction of each variable with the heterogeneity group variable (denoted by G, allowing for G to be defined at the individual, occupation, or individual-occupation level), and controlling for the heterogeneity group variable.

$$Y_{ijk} = \beta_0 + \beta_1 P_i + \beta_2 P_i \times G + \beta_3 G + \Lambda W_{ik} + \Gamma W_{ik} \times G + \zeta_j + \varepsilon_i \qquad (2)$$

The first set of heterogeneity analysis identifies how the priming treatment effect varies by whether the individual received information about gender-related workplace attributes through the information experiment; these results are reported in Table 2, where $\beta_1 + \beta_2$ is reported in addition to β_1 and β_2 (the former capturing the treatment effect of salience of family job search advice on the group denoted by G). For women receiving information about supervisor gender, the priming treatment effect is approximately a decrease of 24%, though this is not statistically significant at conventional levels; this is reported in the final row with the estimate for $\beta_1 + \beta_2$. The differential priming treatment effect for women who did receive information about supervisor gender is not very large compared to women who did receive information about supervisor gender (β_2). In column 2, among women not receiving information about coworker gender, the priming treatment effect is a statistically significant decrease of approximately 35%. Receiving information about coworker gender greatly changes the magnitude of this effect to approximately and not statistically significant 6.5%. Column 3 shows a similar pattern; women who receive information about both supervisor and coworker gender have a priming treatment effect of about 7% which is not statistically significant. Women who do not receive both types of information have a negative priming treatment effect of about 26%. This result is consistent with women being concerned that their families are most concerned about coworker gender; if they have that information at the time of the application decision, being reminded about discussions about their job search with their family does not

significantly impact their decision to apply to the job. The specification includes vacancy fixed effects, so it is unlikely that coworker gender is signaling to the families whether the position has flexible working hours to allow for the woman to contribute to household production (Mas and Pallais, 2017), nor something about industry, occupation, or location within the city. Coworker gender could signal something to families about risk of marital dissolution (McKinnish, 2007; Svarer, 2007). Families could also be concerned about safety at the workplace stemming from whether the majority of employees are male or female (Chakraborty et al., 2018; Kondylis et al., 2020; Siddique, 2018). These latter mechanisms cannot be fully separated out. Furthermore, information about supervisor gender doesn't mitigate the priming treatment effect in the same way, suggesting that women believe that their families are concerned more with coworker gender.

Table 3 addresses additional heterogeneity analysis. Married women are likely to be thinking of their marital family, while unmarried women (the majority of the sample) would be thinking of their natal family or marriage prospects, when asked about family job search advice at the time of the job application decision. Column 1 of Table 3 shows that the negative treatment effect is nearly negative 70% and statistically significant for married women; for unmarried women, the treatment effect is much lower at negative 15% and not statistically significant. The next four columns of Table 3 identify how women respond to the priming treatment depending on the beliefs that they have about jobs in that occupation; due to the structure of the baseline survey, this sample is restricted to individual-vacancy matches where the individual listed the occupation that the vacancy is in as among her top three most preferred

occupations; thus this sample is among vacancies that the individual was most interested in ex-ante. These estimates compare application decisions of women with different beliefs about the same occupation, deciding about the same vacancy (through vacancy level fixed effects). For job matches where the respondent believed that the occupation would have a greater than 75% chance of having a female supervisor, the priming treatment effect is positive and over 100% (column 3); this is coming through the interaction term, consistent with women believing that their family would support them in applying to occupations that they ex-ante thought would be likely to have a female supervisor. The results could also be consistent with women believing that a female supervisor increases their own chances of promotion, and thus give them more bargaining power within the household (Uckat, 2020). The priming treatment effect is not statistically significant for jobs that women believe are very likely to hire women (column 2: 40% treatment effect on such matches), believe have mostly female employees (column 4: 6% treatment effect on such matches), or might signal a competitive salary structure that they might not prefer (column 5: negative 30% treatment effect on such matches) (Flory et al., 2015; Murray-Close and Heggeness, 2019).

6   Information about Gender-Related Workplace Attributes

Given social norms about social separation of women and men, women could reveal preferences of their own over these gender-related workplace attributes regardless of reminders about family job search advice. To test this, I estimate the following specification in the full sample:

$$Y_{ijk} = \gamma_0 + \gamma_1 S_i + \gamma_2 C_i + \gamma_3 S_i \times C_i + \Lambda W_{ik} + \zeta_j + \varepsilon_i \tag{3}$$

This specification is analogous to Specification 1. Here, S_i indicates the supervisor gender information treatment, C_i indicates the coworker gender information treatment, and $S_i \times C_i$ indicates the interaction. These indicators capture whether or not the individual was randomly selected to receive information at the vacancy-level about the given gender-related workplace attribute. This specification omits the priming treatment indicator (since the priming treatment indicator is only defined for those in the priming experiment subsample), and instead includes a covariate indicating whether the individual was in the priming experiment subsample (within which individuals were randomized into priming treatment ($P_i = 1$) and control ($P_i = 0$)) in W_{ik}. In this specification, W_{ik} additionally includes years of experience and number of matches prior to randomization, which were slightly imbalanced at baseline among the sample that received matches during the experiment; the vector also includes the number of matches in the given match round. The specification includes vacancy-level fixed effects (ζ_j); this ensures that comparison is between individuals who did and did not receive information about the given gender-related workplace attribute(s) and whether or not they decide to apply to the same vacancy. As in the previous specifications, standard errors are clustered at the individual level.

Table 4 reports the results of Specification 3, with column 1 omitting vacancy fixed effects, and column 2 including vacancy fixed effects. Estimates are imprecisely estimated given that only 3.5% of job matches led to an application. However, the direction and magnitude of coefficients relative to the control mean (focusing on Column 2 with vacancy fixed effects)

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suggests that information about supervisor gender alone decreases the job application rate by 16%, information about coworker gender alone decreases the job application rate by 6%, but that information about both supervisor and coworker gender increases the job application rate by 18%, though these results are not statistically significant. Though statistically insignificant, the coefficients indicate complementarity between both sets of information: Among women who receive information about coworker gender, there is a 2.5% positive treatment effect of information about supervisor gender ($\gamma_1 + \gamma_3$); among women who receive information about coworker gender, there is a 12% positive treatment effect of information about supervisor gender ($\gamma_2 + \gamma_3$).

These patterns could mask heterogeneity by the *type* of information received. Women might prefer female-dominant workplaces and avoid male-dominant workplaces, particularly to conform to social norms. To explore this, I conduct heterogeneity analysis based off of Specification 3, as denoted below. In this set of heterogeneity analysis, the group variable (denoted G below) varies at the vacancy level. Thus, the specification omits vacancy-level fixed effects, and instead includes occupation fixed effects, location fixed effects, whether the position has flexible working hours, and salary in W_{ijk}; these are the other attributes observable to the respondent at the time when she must decide whether to apply to a given vacancy.

$$Y_{ijk} = \eta_0 + \eta_1 S_i + \eta_2 C_i + \eta_3 S_i C_i + \eta_4 S_i \times G + \eta_5 C_i \times G + \eta_6 S_i \times C_i \times G + \eta_7 G + \Lambda W_{ijk} + \Gamma W_{ijk} \times G + \varepsilon_i$$

$$(4)$$

Table 5 reports results. Overall, the pattern of results suggests that information about

female-dominated jobs increases the job application rate, though these results are underpowered. Panel A displays heterogeneity analysis by supervisor gender, and Panel B displays heterogeneity analysis by coworker gender. The directions of the results are as expected; women are more likely to apply if they receive information that the vacancy is female-dominated and less likely to apply if they receive information that the vacancy is male-dominated. The direction and magnitude of coefficients suggest that information about a job with a female supervisor increases the job application rate by 12% and information about female coworkers increases the job application rate by 24%; though these are not statistically significant. The direction and magnitude of coefficients suggest that information about a job with a male supervisor decreases the job application rate by under 5%, and information about a job with mostly male coworkers decreases the job application rate by 8%; these results are also not statistically significant. The third category is that the vacancy did not have information about the given attribute. In this case, women are significantly less likely to apply to a vacancy that did not provide information about supervisor gender if they were in the treatment group that received information about supervisor gender; these results are statistically significant and of large magnitude, suggesting that women are penalizing firms that do not provide this information. Since this impact is gender-neutral, one interpretation is that a firm that reports supervisor gender signals that it is well-organized, which might be important for women in a labor market such as Pakistan's, where hierarchy matters a lot in a firm, though the exact role of supervisor gender on employee salary, growth, etc could differ by industry, economy, etc (Matsa and Miller (2011), summary also in Bednar and Gicheva (2014)).

7   Occupations

The analysis thus far has focused on job applications as the main outcome, however family job search advice and gender-related workplace attributes might shift behavior at the stage of occupation choice. At baseline and endline, respondents ranked their three most preferred occupations, and also reported their beliefs about gender-related workplace attributes in those occupations. I first estimate a rank-ordered logit model of the utility received by individual i from occupation m. This estimation is a descriptive association between how an individual ranks her most preferred occupations and her beliefs about attributes of that occupation.

$$U_{im} = \sum_{l \in L} \mu_l E_{ilm} + \varepsilon_{im} \tag{5}$$

In the utility function, L denotes the set of four characteristics of the occupation: the average salary, the probability that an open job posting in that occupation would hire a woman, the percentage of employees in a typical job in that occupation that would be women, and the probability that the job would have a female supervisor; E_{ilm} denotes individual i's belief about characteristic l for occupation m. I also estimate a version of this utility function which includes the standard deviation belief about the percentage of employees in a typical job in that occupation that would be women, and the standard deviation belief of the probability that the job would have a female supervisor. Table 6 presents results of the descriptive rank-ordered logit regression separately for the baseline survey and the endline survey. These descriptive results show that there is indeed a relationship between individuals' beliefs over

gender-related workplace attributes and how they rank occupations, even among their most preferred occupations.[19]

Respondents negatively associate stated preference rank with their stated belief over typical salary in the occupation, with particularly large coefficients at endline. This is consistent with a concern among both married women and unmarried women (80% of whom respond that they expect to be married within five years) that having too high a salary could flout social norms; a high salary might also signal a competitive payscale which women might not prefer (Flory et al., 2015; Murray-Close and Heggeness, 2019). Across the board, women negatively associate stated preference rank with beliefs of a higher proportion of male employees at a typical job, and positively associate rank with more uncertain beliefs over the gender mix of coworkers. The results show a similar pattern for supervisor gender, though only statistically significant (and still of lower magnitude that coworker gender) at endline when both the mean belief and standard deviation of belief are included. Respondents negatively associate stated preference rank with likelihood that a woman would be hired, which could signal a desire to be in a prestigious occupation (Goldin, 2002). This is consistent with many women ranking managerial and supervisory positions in their top three most preferred occupations, but also with women believing that receptionist positions are relatively highly likely to hire women, and ranking those jobs low in their stated preference. Since the sample is restricted to individuals who completed the survey and the three occupations that they each were most interested in,

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[19]Due to survey attrition, the sample that completed both surveys is too small to meaningfully analyze whether information received through the experiment causally shifted occupational rankings through beliefs. However, despite the differences in sample, the pattern of results remains similar at baseline and endline. Table A5 in the Appendix replicates this analysis restricted to the sample that completed both the endline and baseline surveys. The pattern is similar for the mean and standard deviation of each coworker gender and supervisor gender.

the patterns in Table 6 could either reflect that women are ranking occupations based on these prior beliefs, or that they are reporting their rankings of these occupations to be consistent with socially acceptable gender-related workplace attributes.[20]

In the remainder of the section, I focus on job application decisions for teaching and management positions. Teaching and management positions are the occupations that respondents most frequently rank as being in their top three most preferred (see Figure A4). These are also two of the most frequent occupations that respondents are matched to during the experiment, accounting for 45% and 10% of the matches in the full sample, respectively. Table 7 presents the results of Specification 4 for heterogeneity of information experiment treatment effects by occupation. Teaching positions are socially acceptable for women, but coworker gender still matters; approximately 80% of the matches to teaching positions are positions with mostly or all female coworkers. Information about coworker gender and the vacancy being for a teaching job increases the job application rate by 40%; among teaching jobs (column 1). At baseline, women expected a higher probability of a male supervisor for management positions than most other occupations (including teaching); in practice through the platform over 70% of the matches to management-related positions were for vacancies with female supervisors. These positions were often assisting the supervisor. Information about supervisor gender and the vacancy being a management position increases the job application rate by just over 50% (column 2). This pattern of results suggests that even within occupations that women are interested in, information about gender-related workplace attributes can help

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[20]The information treatment could have updated jobseeker beliefs about the distribution of gender-related workplace attributes across occupations. These results are reported in Appendix A1.2.

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shift application rates higher.

In the final set of results, to identify whether salience of family job search advice shifts the likelihood that an individual chooses to apply to teaching and management jobs, I replicate the heterogeneity analysis based on Specification 2 for the priming experiment. Table 8 reports results, but omits vacancy fixed effects and instead conditions on the other observable attributes of the job besides occupation: salary, whether the position has flexible working hours, and neighborhood in Lahore as part of W_{ijk} since vacancy fixed effects would subsume variation in occupation. The negative treatment effect of salience of family job search advice is about 22% for non-teaching jobs, and similar for teaching jobs (column 1). The priming treatment effect is negative and significant for non-management positions at about 20%, but negative 40% for management positions (column 2). At baseline, women have a relatively high expectation of probability of a male supervisor, percentage of male employees and salary, and relatively low expectation that a woman would be hired, in management positions compared to other occupations. These are attributes that they might believe that their families are particularly resistant to. Thus in revealed preference, salience of family job search advice shifts downward the likelihood that women apply to management positions though there is no such shift for teaching positions which are considered to be more socially acceptable for women.

8   Conclusion

Women's advances in the labor market have not been commensurate with progress in women's educational attainment. In certain settings where women's labor force participation is par-

ticularly low, social norms conveyed through families can play an important role in women's labor supply decisions. I implement a priming experiment and information experiment on a formal job search platform to identify the role of family job search advice and gender-related workplace attributes on educated women's job application decisions and occupational choice. The sample, women with a high school diploma or college education who signed up for a job search platform in Lahore, Pakistan, is from the population of interest: educated women who are not searching for work at a high capacity.

When family job search advice is made salient at the time of the job application decision, women are approximately 20% less likely to apply. The pattern of results is consistent with educated women being concerned that their families will not support their job search, and also that they believe their families to be particularly concerned about coworker gender at these jobs. For women who do not receive information about coworker gender, the priming treatment effect is negative 35% and significant, while the priming treatment effect is positive 6.5% but not statistically significant among women who do not receive information about coworker gender.

The direct effects of the information treatment are not statistically significant due to a low control group application rate. However, the pattern of results fits with women incurring lower social norms costs at jobs that are female-dominated; women are more likely to apply to jobs with mostly female coworkers or a female supervisor when they receive that information.

The results highlight that social norms and gender-related workplace attributes can shift application behavior differently in teaching positions, which are generally socially accepted

for women, and management positions, which women express interest in, but where the job attributes themselves often do not conform to social norms. Ex-ante most women expected management positions to have a higher probability of a male supervisor and higher proportion of male employees than other occupations. In practice, women only matched to management -related jobs through the platform that were willing to hire women in these roles. Due to this selection (which exists in the broader Pakistani labor market and some other labor markets where women's labor supply is limited), 70% of the matches to management positions had a female supervisor, even though the firms had mostly male coworkers. Consistent with social norms surrounding gender-related workplace attributes, information about supervisor gender increased the job application rate among management positions by 29% (the interaction effect is statistically significant though this sum is not), and the interaction effect of information about coworker gender and management positions is negative (though not statistically significant). Information about coworker gender increased the application rate among teaching jobs by 15%, though this was not statistically significant (the interaction effect is again statistically significant though this sum is not).

Finally, the negative treatment effect of priming is similar for teaching and non-teaching positions. However, the negative priming effect is much stronger for management positions. While women might prefer these jobs in stated preference, in revealed preference through job applications, they avoid management positions if reminded about family job search advice. This is again consistent with a concern that management jobs have mostly/all male coworkers which their families might not approve of.

Women in this high-socioeconomic status-low female labor force participation setting take into account discussions with their family about job search, but information about gender-related workplace attributes plays an important role particularly in choosing whether to apply to jobs of a given occupation. Many of the women in this experiment are finishing their education and embarking upon both career and family decisions, which in the South Asian context, are often made in consultation with family. In devising policy to address low female labor supply in such communities, policymakers and economic agents must consider the social norms costs that women are navigating and seeking to mitigate in choosing whether to apply to jobs. These results show that women are ex-ante factoring in social norms costs even at the application stage. Providing information about more female-friendly environments, including in a low-cost way through a formal job search platform the likes of which jobseekers the world over are increasingly using to implement their job search, can be a first step to allow women to make informed decisions and can even push them into managerial roles or otherwise up the hierarchy. Receiving information about coworker gender through this low-cost intervention mitigates the negative effect of salience of family job search advice at the job application stage and can help women make more knowledgeable decisions. That result in conjunction with the relatively high magnitudes of the negative effects of priming versus the positive effects of information treatments suggest that policies target families of young women in conjunction with young women themselves would be more successful in increasing young educated women's labor supply rather than solely targeting the young women themselves.

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9 Tables and Figures

Table 1: Priming Experiment: Main Results

	(1)
Prime	-0.01117**
	(0.00564)
Observations	12240
Number of Jobseekers	1630
Control Mean	0.04959

Notes: Unit of observation is individual-vacancy match. Outcome is the individual's decision to apply to the given vacancy. All specifications include fixed effects for randomization strata and vacancy; standard errors clustered at individual level and reported below coefficients. Covariates include years of experience, number of matches prior to the experiment, number of matches in the given match round, age and whether the respondent has a bachelor's degree. Covariates also include supervisor gender treatment indicator, coworker gender treatment indicator, and the interaction of those indicators. Specification is estimated on the priming experiment subsample.

Table 2: Priming Experiment: Heterogeneity by Information Experiment Treatments

	(1)	(2)	(3)
Prime	-0.01027	-0.01780**	-0.01339*
	(0.00916)	(0.00859)	(0.00694)
Prime x Group	-0.00196	0.01445	0.00977
	(0.01349)	(0.01268)	(0.01414)
Observations	12240	12240	12240
Number of Individuals	1630	1630	1630
Control Mean	0.05153	0.05153	0.05153
Proportion in Group	0.48905	0.49461	0.23676
Prime + Prime x Group	-0.01223	-0.00335	-0.00362
	(0.00831)	(0.00838)	(0.01148)
Heterogeneity Group	Information Treatment: Supervisor Gender	Information Treatment: Coworker Gender	Information Treatment: Supervisor Gender x Coworker Gender

Notes: Unit of observation is individual-vacancy match. Outcome is the individual's decision to apply to the given vacancy. All specifications include fixed effects for randomization strata; standard errors clustered at individual level and reported below coefficients. Sample is the Priming Experiment Subsample. Columns specify different groups by which heterogeneity is reported. Column (1) reports heterogeneity for the group defined by the supervisor gender treatment indicator, Column (2) reports heterogeneity for the group defined by the coworker gender treatment indicator, and Column (3) reports heterogeneity for the group defined by the interaction between the supervisor gender treatment indicator and coworker gender treatment indicator. Control variables include years of experience, number of matches prior to experiment, age, whether the individual has a bachelor's degree, and the number of vacancies the individual was matched to on the given matching round.

Table 3: Priming Experiment: Heterogeneity by Individual Characteristics & Priors

	(1)	(2)	(3)	(4)	(5)
Prime	-0.00775	-0.00963	-0.00488	-0.00614	-0.00798
	(0.00642)	(0.01207)	(0.00869)	(0.00932)	(0.01329)
Prime x Group	-0.02892	0.03133	0.06660**	0.00935	-0.00777
	(0.02237)	(0.02179)	(0.03210)	(0.02922)	(0.02506)
Observations	11233	4605	4415	4461	4374
Number of Individuals	1481	1053	1019	1013	1020
Control Mean	0.05283	0.05394	0.05104	0.05364	0.06357
Proportion in Group	0.14395	0.31900	0.14587	0.18449	0.24714
Prime + Prime x Group	-0.03667*	0.02171	0.06173**	0.00322	-0.01575
	(0.02099)	(0.01666)	(0.03109)	(0.02813)	(0.02060)
Heterogeneity Group	Married	Prior: 0.75 Prob of Hiring Woman	Prior: 0.75 Prob of Female Supervisor	Prior: 0.75 Female Employees	Prior: Salary 3x Min Wage

Notes: Unit of observation is individual-vacancy match. Outcome is the individual's decision to apply to the given vacancy. All specifications include fixed effects for randomization strata and vacancy; standard errors clustered at individual level and reported below coefficients. Columns specify different groups by which heterogeneity is reported. Column (1) refers to whether the respondent is married (as indicated in the baseline survey). Columns (2) through (5) refer to the respondent's prior about the given occupation that the vacancy is in: prior that a typical job in the given occupation will be 75% or more likely to hire a woman, that a typical job in the given occupation will be 75% or more likely to have a female supervisor, that a typical job in the given occupation will be at a firm with 75% or more female employee, and that a typical job in the given occupation will pay more than 45,000 PKR/month (triple the minimum wage). Control variables include years of experience, number of matches prior to experiment, age, whether the individual has a bachelor's degree, and the number of vacancies the individual was matched to on the given matching round. Specification is estimated on the priming experiment subsample.

Table 4: Information Experiment: Main Results

	(1)	(2)
Supervisor Gender	-0.00633	-0.00557
	(0.00495)	(0.00492)
Coworker Gender	-0.00279	-0.00215
	(0.00479)	(0.00478)
Supervisor Gender x Coworker Gender	0.00765	0.00644
	(0.00683)	(0.00676)
Observations	20540	20540
Number of Jobseekers	3644	3644
Control Mean	0.03533	0.03533
Supervisor Gender	0.00132	0.00087
	(0.00467)	(0.00461)
Coworker Gender	0.00486	0.00429
	(0.00465)	(0.00460)

Notes: Unit of observation is individual-vacancy match. Outcome is the individual's decision to apply to the given vacancy. All specifications include fixed effects for randomization strata; standard errors clustered at individual level and reported below coefficients. Covariates include years of experience, number of matches prior to the experiment, number of matches in the given match round, and whether the individual is in the priming experiment subsample. Column (2) includes job fixed effects.

Table 5: Information Experiment: Heterogeneity by Gender-Related Workplace Attribute

Panel A: Supervisor Gender

	(1)	(2)	(3)
Supervisor Gender	-0.00800	-0.00501	-0.00494
	(0.00783)	(0.00498)	(0.00489)
Coworker Gender	-0.00615	0.00018	-0.00197
	(0.00726)	(0.00494)	(0.00478)
Supervisor Gender x Coworker Gender	0.00276	0.00720	0.00744
	(0.01034)	(0.00711)	(0.00672)
Supervisor Gender x Group	0.00408	-0.00166	-0.02067
	(0.00791)	(0.00802)	(0.03161)
Coworker Gender x Group	0.00660	-0.00615	-0.00082
	(0.00743)	(0.00729)	(0.03569)
Supervisor Gender x Coworker Gender x Group	0.00618	-0.00207	-0.04428
	(0.01067)	(0.01058)	(0.04337)
Observations	20540	20540	20540
Number of Individuals	3644	3644	3644
Control Mean	0.03533	0.03533	0.03533
Proportion in Group	0.55448	0.41981	0.02571
Heterogeneity Group	Female Supervisor	Male Supervisor	No Supervisor Information

Panel B: Coworker Gender

	(1)	(2)	(3)
Supervisor Gender	-0.00450	-0.00462	-0.00625
	(0.00626)	(0.00541)	(0.00513)
Coworker Gender	-0.00570	-0.00119	-0.00210
	(0.00584)	(0.00510)	(0.00510)
Supervisor Gender x Coworker Gender	0.00587	0.00541	0.00835
	(0.00847)	(0.00741)	(0.00708)
Supervisor Gender x Group	-0.00236	-0.00263	0.00362
	(0.00744)	(0.00828)	(0.00922)
Coworker Gender x Group	0.00838	-0.00285	-0.00022
	(0.00682)	(0.00769)	(0.01046)
Supervisor Gender x Coworker Gender x Group	0.00123	0.00301	-0.01148
	(0.01019)	(0.01118)	(0.01446)
Observations	20540	20540	20540
Number of Individuals	3644	3644	3644
Control Mean	0.03533	0.03533	0.03533
Proportion in Group	0.40857	0.35871	0.16022
Heterogeneity Group	Female Coworkers	Male Coworker	No Coworker Information

Notes: Unit of observation is individual-vacancy match. Outcome is the individual's decision to apply to the given vacancy. All specifications include fixed effects for randomization strata and vacancy; standard errors clustered at individual level and reported below coefficients. Covariates include years of experience, number of matches prior to the experiment, number of matches in the given match round, and whether the individual is in the priming experiment subsample. Covariates also include occupation, location of the position, salary, and whether the position has flexible working hours. The groups in Panel A refer to supervisor gender at the vacancy level; the groups in Panel B refer to coworker gender at the vacancy level.

Table 6: Occupational Ranking

	(1)	(2)	(3)	(4)
Mean Salary	-0.01358**	-0.00778	-0.03209***	-0.02947***
	(0.00531)	(0.00589)	(0.00588)	(0.00617)
Mean Percent Male	-0.01573***	-0.02401***	-0.01102***	-0.01301***
	(0.00320)	(0.00400)	(0.00242)	(0.00296)
SD Percent Male		0.02275*		0.01948
		(0.01277)		(0.01344)
Mean Prob Male Supervisor	-0.00311	-0.00274	-0.00392	-0.00894***
	(0.00284)	(0.00394)	(0.00248)	(0.00311)
SD Prob Male Supervisor		0.01098		0.03888**
		(0.01171)		(0.01543)
Mean Prob Hire Woman	0.00383	-0.00096	-0.01233***	-0.01259***
	(0.00262)	(0.00316)	(0.00261)	(0.00289)
N	2569	2113	2404	2250
Number of Individuals	1064	944	880	869
Survey	Baseline	Baseline	Endline	Endline

Notes: Descriptive regressions. Rank-ordered logit marginal effects of belief of mean salary, belief of proportion of male employees belief of standard deviation of proportion of male employees, belief of probability of male supervisor, belief of standard deviation of probability of male supervisor, and belief of probability that a woman would be hired by occupation. Column (1) and (2) are from the baseline survey; column (2) excludes respondents whose estimated standard deviation of beliefs were inconsistent with triangular distribution. Columns (3) and (4) are analogous for the endline survey. Standard errors are clustered on individual.

Table 7: Information Experiment: Heterogeneity by Occupation

	(1)	(2)
Supervisor Gender	-0.00748	-0.00776
	(0.00690)	(0.00516)
Coworker Gender	-0.00916	-0.00208
	(0.00662)	(0.00500)
Supervisor Gender x Coworker Gender	0.01180	0.00648
	(0.00951)	(0.00716)
Supervisor Gender x Group	0.00354	0.01794*
	(0.00808)	(0.01036)
Coworker Gender x Group	0.01438*	-0.00458
	(0.00806)	(0.00966)
Supervisor Gender x Coworker Gender x Group	-0.01081	0.00429
	(0.01140)	(0.01454)
Observations	20540	20540
Number of Individuals	3644	3644
Control Mean	0.03533	0.03533
Proportion in Group	0.45190	0.09995
Heterogeneity Group	Teacher	Management

Notes: Unit of observation is individual-vacancy match. Outcome is the individual's decision to apply to the given vacancy. All specifications include fixed effects for randomization strata; standard errors clustered at individual level and reported below coefficients. Covariates include years of experience, number of matches prior to the experiment, number of matches in the given match round, whether the individual is in the priming experiment subsample, and attributes of the vacancy except for occupation: location, salary, and whether the position has flexible working hours. Estimates *do not* include vacancy fixed effects. Columns (1) and (2) refer to heterogeneity by whether the vacancy is for a teaching or managerial position, respectively.

Table 8: Priming Experiment: Heterogeneity by Occupation

	(1)	(2)
Prime	-0.01139*	-0.01050*
	(0.00666)	(0.00601)
Prime x Group	-0.00090	-0.01018
	(0.00927)	(0.00996)
Observations	12240	12240
Number of Individuals	1630	1630
Control Mean	0.05153	0.05153
Proportion in Group	0.36258	0.12345
Priming Treatment on Group	-0.01229	-0.02068**
	(0.00807)	(0.00950)
Heterogeneity Group	Teacher	Management

Notes: Unit of observation is individual-vacancy match. Outcome is the individual's decision to apply to the given vacancy. All specifications include fixed effects for randomization strata; standard errors clustered at individual level and reported below coefficients. Covariates include years of experience, number of matches prior to the experiment, number of matches in the given match round, whether the individual has a bachelor's degree, age and attributes of the vacancy except for occupation: location, salary, and whether the position has flexible working hours. Estimates *do not* include vacancy fixed effects. Columns (1) and (2) refer to heterogeneity by whether the vacancy is for a teaching or managerial position, respectively.

10 Appendix: For Online Publication

A1.1 Tables & Figures

Table A1: Summary Statistics

Panel A: All Individuals

	mean	sd	min	max	count
Age in years	21.82085	3.912172	17	59	4058
Currently enrolled	.7617925	.4261124	0	1	1696
Years of experience	.6348934	1.668038	0	25	4081
At least bachelors	.8882265	.3151267	0	1	4026
Married	.0917647	.2887785	0	1	1700
Number of Interested Occupations	3.550845	2.783869	0	20	4081
Applied to any jobs on Job Asaan prior to experiment	.0860083	.2804107	0	1	4081
Number of matches through Job Asaan prior to experiment	.9382504	.7752987	0	2	4081
Number of Interested Occupations	3.550845	2.783869	0	20	4081
Observations	4081				

Panel B: Priming Experiment Subsample

	mean	sd	min	max	count
Age in years	23.06414	4.602671	17	59	1824
Currently enrolled	.7660468	.4234698	0	1	1667
Years of experience	.9531845	2.09886	0	25	1837
At least bachelors	.903208	.2957562	0	1	1808
Married	.0920578	.2891945	0	1	1662
Number of Interested Occupations	4.342406	3.216043	1	20	1837
Applied to any jobs on Job Asaan prior to experiment	.190528	.3928245	0	1	1837
Number of matches through Job Asaan prior to experiment	1.218291	.7946805	0	2	1837
Number of Interested Occupations	4.342406	3.216043	1	20	1837
Observations	1837				

Panel C: Individuals who Completed Endline

	mean	sd	min	max	count
Age in years	21.76383	4.009782	17	55	940
Currently enrolled	.7972603	.4025921	0	1	365
Years of experience	.6578669	1.722611	0	25	947
At least bachelors	.8851931	.3189599	0	1	932
Married	.0767196	.2664987	0	1	378
Number of Interested Occupations	3.439282	2.784216	0	20	947
Applied to any jobs on Job Asaan prior to experiment	.0982049	.2977487	0	1	947
Number of matches through Job Asaan prior to experiment	.8331573	.7622425	0	2	947
Number of Interested Occupations	3.439282	2.784216	0	20	947
Observations	947				

Notes: Calculations on baseline variables.

Figure A1: Occupations

Job Postings by Occupation
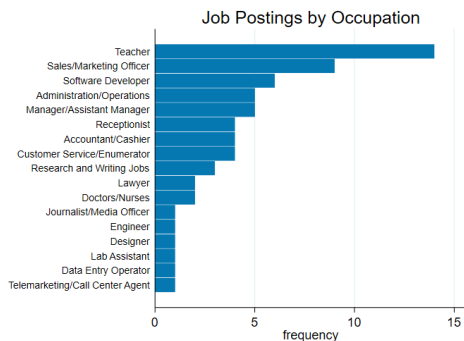
Notes: Distribution across job postings in the experiment.

Table A2: Summary Statistics: Beliefs Compared to Vacancies

	(1) Baseline Priors mean	(2) Vacancies - Weighted mean	(3) Vacancies - Unweighted mean	(4) Endline Beliefs mean
Proportion of Male Employees	49.40882	47.34362	57.6	55.41
Probability of Male Supervisor	52.93609	41.9815	64.0625	48.08022
Salary	38863.07	16443.5	24074.63	32943.59

Notes: Columns 1 and 4 are baseline and endline beliefs, respectively, among respondents who completed each. These responses are aggregated from respondents' beliefs about their top three most preferred occupations. Columns 2 and 3 aggregate the vacancy-level information, only among vacancies that provided the information. Column 2 weights by the number of individual-vacancy matches. All samples (including endline) pool across treatment groups.

Figure A2: Timeline of Experiment
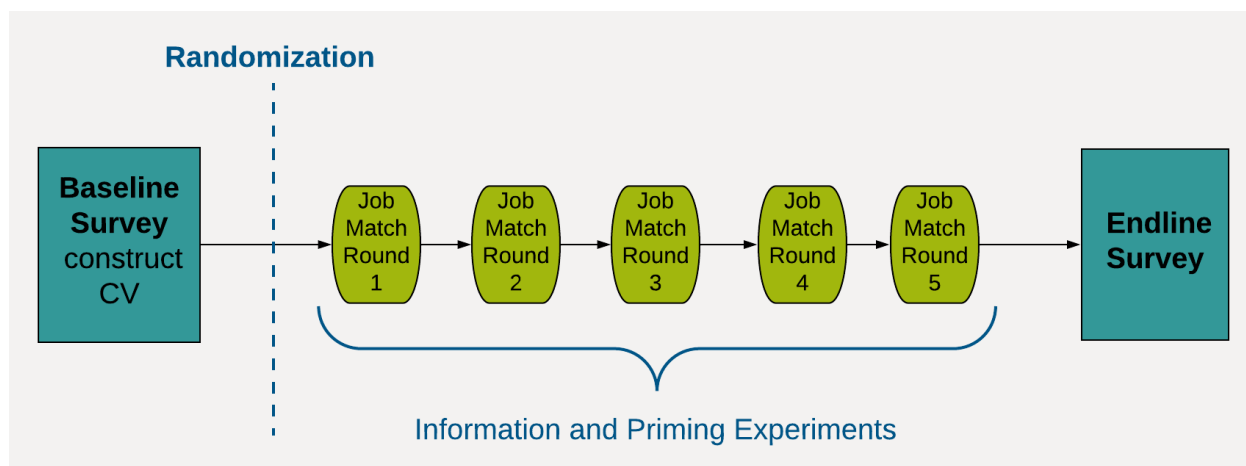
Notes: Sequence of components of experiment.

Figure A3: SMS Structure - Control Group

Job AD for <u>individual Name</u>
<u>Job Title</u>
<u>Firm Name</u>
Salary: <u>Salary</u>
<u>Neighborhood</u> in Lahore
Company accepting female applicants.
<u>FIXED</u>/<u>SOMEWHAT FLEXIBLE</u>/<u>FLEXIBLE</u> work hours.
Apply before: <u>Date until which applications are accepted.</u>
Apply by calling Job Asaan's helpline
Call XXXX-XXXXXX

Notes: Example text for control group SMS.

Figure A4: Percent frequency of Occupations Being Listed as Top Three Most Preferred
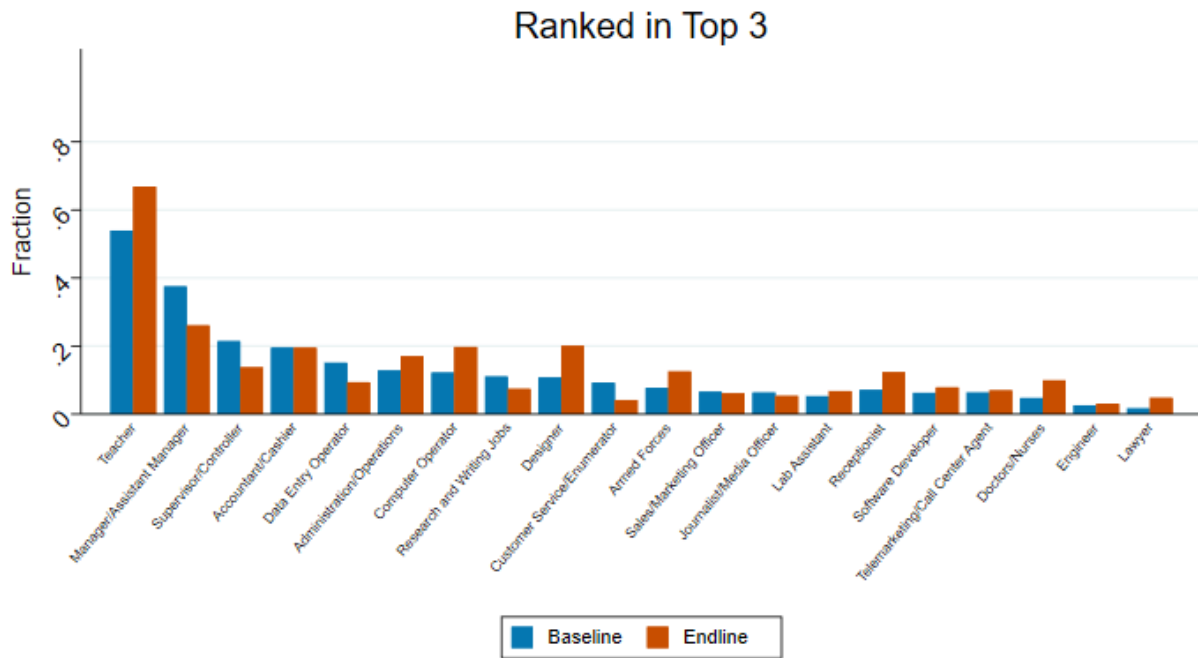
Notes: Includes respondents to baseline survey and endline survey respectively.

Table A3: Balance

Panel A: Information Experiment

VARIABLES	(1) Age in years	(2) Years of experience	(3) At least bachelors	(4) Number of Interested Occupations	(5) Applied to any jobs on Job Asaan prior to experiment	(6) Number of matches through Job Asaan prior to experiment	(7) have any priors data	(8) Has endline data
Coworker Gender	-0.0682	0.211***	0.00396	-0.107	0.00229	0.00369*	0.00281	0.0142
	(0.152)	(0.0769)	(0.00509)	(0.112)	(0.00197)	(0.00197)	(0.0177)	(0.0211)
Supervisor Gender	-0.0288	0.0722	0.00258	-0.0401	0.00226	0.00243	0.0106	-0.0119
	(0.151)	(0.0762)	(0.00504)	(0.110)	(0.00195)	(0.00195)	(0.0176)	(0.0209)
Supervisor Gender x Coworker Gender	0.147	-0.0968	-0.00251	0.0556	-0.00300	-0.00575**	-0.0117	0.0184
	(0.221)	(0.112)	(0.00740)	(0.162)	(0.00287)	(0.00287)	(0.0271)	(0.0308)
Constant	21.93***	0.567***	0.913***	3.756***	0.0918***	0.993***	0.961***	0.222***
	(0.103)	(0.0524)	(0.00347)	(0.0759)	(0.00134)	(0.00134)	(0.0115)	(0.0144)
Observations	3,644	3,644	3,598	3,644	3,644	3,644	1,318	3,644
R-squared	0.509	0.348	0.890	0.493	0.985	0.998	0.317	0.165
Supervisor Gender	0.118	-0.0246	6.25e-05	0.0155	-0.000737	-0.00331	-0.00110	0.00652
SE	0.152	0.0765	0.00510	0.112	0.00198	0.00196	0.0178	0.0210
PValue	0.439	0.750	0.990	0.890	0.718	0.294	0.615	0.758
Coworker Gender	0.0786	0.115	0.00145	-0.0517	-0.000708	-0.00206	-0.00894	0.0327
SE	0.151	0.0772	0.00506	0.111	0.00196	0.00198	0.0180	0.0212
PValue	0.603	0.135	0.775	0.641	0.709	0.0939	0.951	0.120

Panel B: Priming Experiment

VARIABLES	(1) Age in years	(2) Years of experience	(3) At least bachelors	(4) Number of Interested Occupations	(5) Applied to any jobs on Job Asaan prior to experiment	(6) Number of matches through Job Asaan prior to experiment	(7) have any priors data	(8) Has endline data
Treatment: Prime	-0.376*	-0.133	0.0136*	-0.0658	-0.000796	-0.000752	-0.0136	-0.00153
	(0.201)	(0.112)	(0.00749)	(0.148)	(0.00344)	(0.00344)	(0.0116)	(0.0213)
Coworker Gender	-0.229	0.291*	0.0196*	-0.167	0.00627	0.0104*	0.00154	0.0234
	(0.313)	(0.174)	(0.0117)	(0.230)	(0.00535)	(0.00535)	(0.0182)	(0.0332)
Supervisor Gender	-0.221	0.221	0.00615	-0.0642	0.00618	0.00732	0.00943	-0.0167
	(0.308)	(0.171)	(0.0115)	(0.226)	(0.00527)	(0.00526)	(0.0179)	(0.0327)
Supervisor Gender x Coworker Gender	0.136	-0.332	-0.0209	0.104	-0.00876	-0.0169**	-0.0102	0.0286
	(0.476)	(0.265)	(0.0177)	(0.350)	(0.00815)	(0.00814)	(0.0277)	(0.0505)
Constant	23.56***	0.919***	0.916***	4.646***	0.201***	1.297***	0.968***	0.192***
	(0.231)	(0.129)	(0.00862)	(0.170)	(0.00396)	(0.00395)	(0.0135)	(0.0245)
Observations	1,655	1,655	1,630	1,655	1,655	1,655	1,293	1,655
R-squared	0.550	0.368	0.794	0.508	0.983	0.995	0.318	0.327

Notes: Calculations on baseline variables and indicator for having participated in endline survey. All balance regressions include randomization strata FE. Sample restricted to individuals who received at least one vacancy match over the course of the experiment.

Table A4: Balance: All Individuals

Panel A: Information Experiment

VARIABLES	(1) Age in years	(2) Years of experience	(3) At least bachelors	(4) Number of Interested Occupations	(5) Applied to any jobs on Job Assam prior to experiment	(6) Number of matches through Job Assam prior to experiment	(7) have any priors data	(8) Has endline data
Coworker Gender	0.0554	0.196***	0.00251	-0.0916	0.00107	0.00229	0.000480	0.0117
	(0.144)	(0.0704)	(0.00567)	(0.104)	(0.00203)	(0.00203)	(0.0161)	(0.0201)
Supervisor Gender	0.0175	0.0750	-0.00165	-0.0266	0.000327	0.000478	0.00673	-0.0176
	(0.143)	(0.0700)	(0.00563)	(0.103)	(0.00202)	(0.00202)	(0.0160)	(0.0199)
Supervisor Gender x Coworker Gender	-0.0444	-0.0910	-0.00430	0.0705	-0.000244	-0.00267	-0.0127	0.0175
	(0.210)	(0.103)	(0.00826)	(0.151)	(0.00296)	(0.00296)	(0.0245)	(0.0292)
Constant	21.79***	0.523***	0.890***	3.596***	0.0854***	0.939***	0.966***	0.230***
	(0.0987)	(0.0483)	(0.00389)	(0.0711)	(0.00139)	(0.00139)	(0.0106)	(0.0138)
Observations	4,058	4,058	4,007	4,058	4,058	4,058	1,447	4,058
R-squared	0.491	0.333	0.878	0.477	0.980	0.997	0.323	0.151
Supervisor Gender	0.0131	-0.0160	-0.00595	0.0438	8.36e-05	-0.00220	-0.00598	-3.72e-05
SE	0.144	0.0706	0.00564	0.103	0.00204	0.0203	0.0160	0.0201
PValue	0.928	0.821	0.751	0.838	0.683	0.281	0.446	0.143
Coworker Gender	0.0509	0.105	-0.00179	-0.0211	0.000827	-0.000380	-0.0122	0.0293
SE	0.143	0.0702	0.00568	0.104	0.00203	0.0204	0.0162	0.0200
PValue	0.723	0.133	0.295	0.674	0.967	0.851	0.712	0.999

Panel B: Priming Experiment

VARIABLES	(1) Age in years	(2) Years of experience	(3) At least bachelors	(4) Number of Interested Occupations	(5) Applied to any jobs on Job Assam prior to experiment	(6) Number of matches through Job Assam prior to experiment	(7) have any priors data	(8) Has endline data
Treatment: Prime	-0.304	-0.154	0.00928	-0.116	-0.00193	-0.00191	-0.0127	0.00169
	(0.191)	(0.102)	(0.00898)	(0.138)	(0.00356)	(0.00356)	(0.0106)	(0.0206)
Coworker Gender	0.158	0.275*	0.0154	-0.138	0.00254	0.00615	-0.000704	0.0151
	(0.295)	(0.158)	(0.0139)	(0.214)	(0.00552)	(0.00552)	(0.0165)	(0.0319)
Supervisor Gender	-0.0153	0.224	-0.00301	0.00479	0.000829	0.00180	0.00581	-0.0232
	(0.291)	(0.156)	(0.0137)	(0.210)	(0.00544)	(0.00543)	(0.0162)	(0.0315)
Supervisor Gender x Coworker Gender	-0.277	-0.310	-0.0237	0.0534	-0.000662	-0.00785	-0.0115	0.0333
	(0.448)	(0.240)	(0.0211)	(0.324)	(0.00837)	(0.00837)	(0.0250)	(0.0484)
Constant	23.22***	0.862***	0.900***	4.458***	0.190***	1.220***	0.972***	0.204***
	(0.221)	(0.118)	(0.0104)	(0.159)	(0.00412)	(0.00412)	(0.0124)	(0.0238)
Observations	1,824	1,824	1,795	1,824	1,824	1,824	1,419	1,824
R-squared	0.532	0.356	0.749	0.500	0.978	0.995	0.324	0.302

Notes: Calculations on baseline variables and indicator for having participated in endline survey. All balance regressions include randomization strata FE.
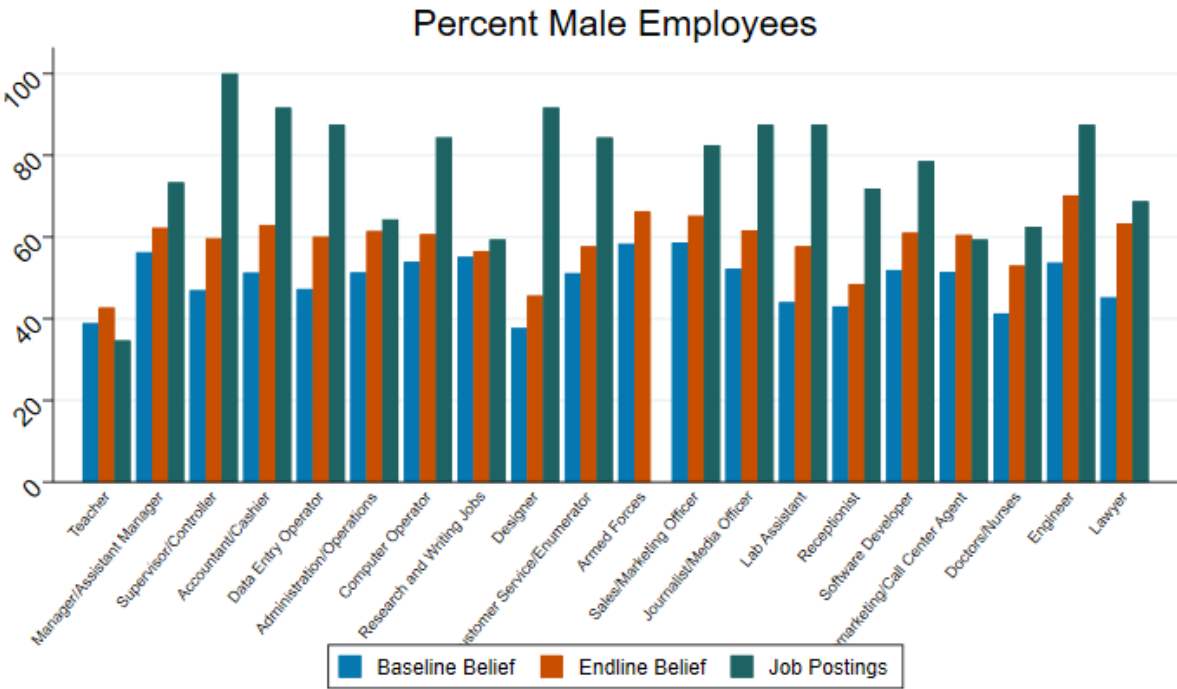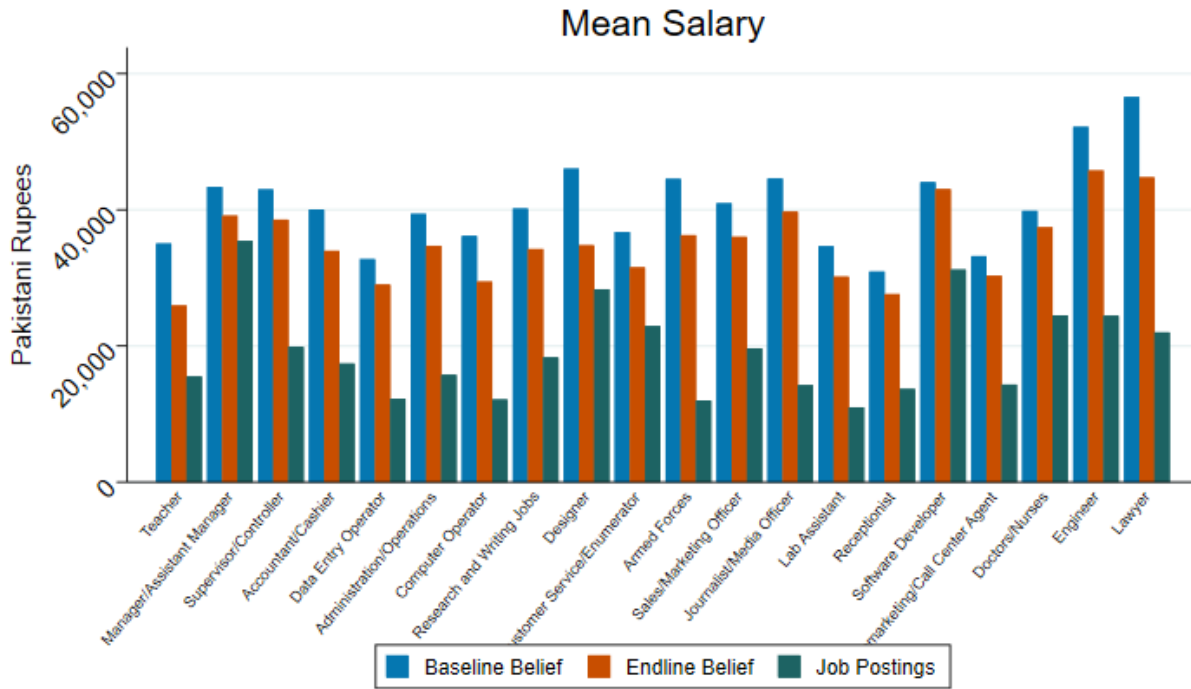
Figure A5: Beliefs about Supervisor Gender
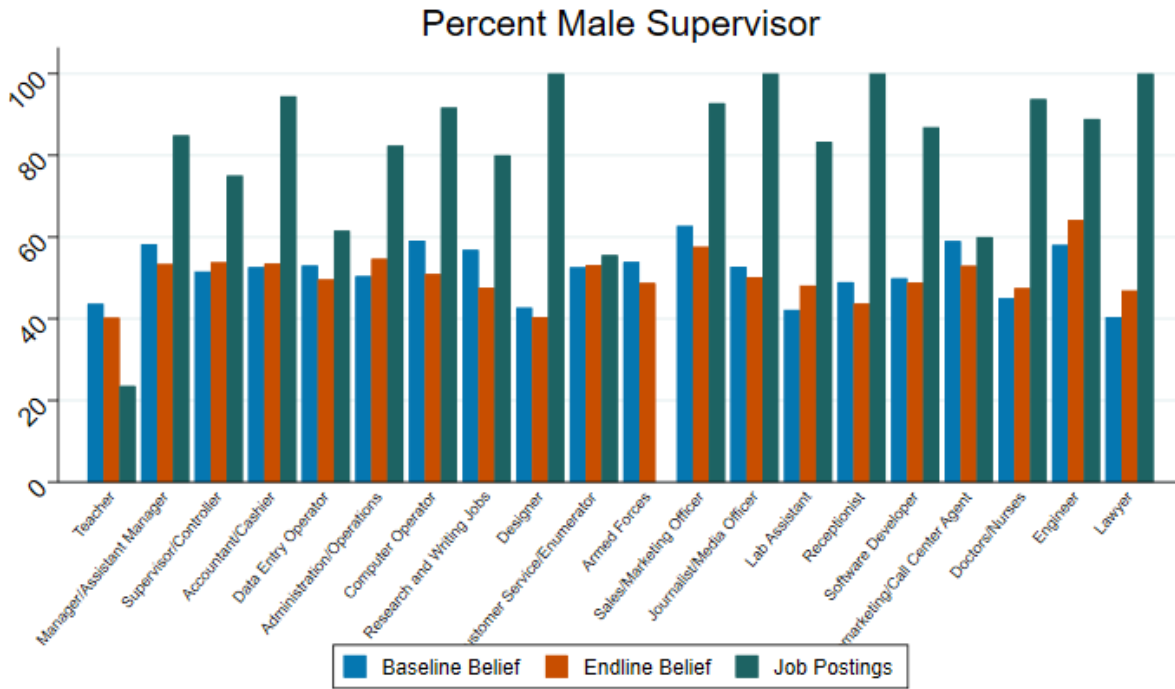
Notes: Blue bars indicate average prior beliefs (measured at baseline) and orange bars indicate average endline beliefs. Green bars indicate averages from job postings on Job Asaan. No bar indicates that there were no job postings in that occupation which provided the information to be aggregated.
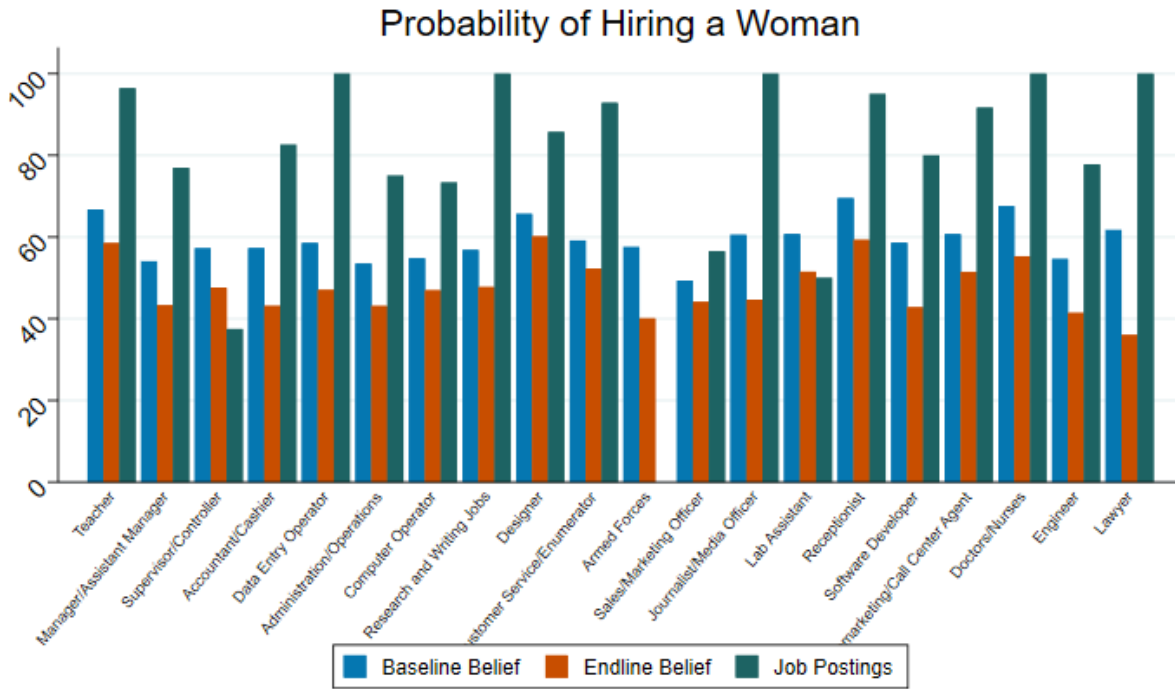
Figure A6: Beliefs about Coworker Gender

Notes: Blue bars indicate average prior beliefs (measured at baseline) and orange bars indicate average endline beliefs. Green bars indicate averages from job postings on Job Asaan. No bar indicates that there were no job postings in that occupation which provided the information to be aggregated.

Figure A7: Beliefs about Salary

Mean Salary

Notes: Blue bars indicate average prior beliefs (measured at baseline) and orange bars indicate average endline beliefs. Green bars indicate averages from job postings on Job Asaan. No bar indicates that there were no job postings in that occupation which provided the information to be aggregated.

Figure A8: Beliefs about Probability of Hiring a Woman

Notes: Blue bars indicate average prior beliefs (measured at baseline) and orange bars indicate average endline beliefs. Green bars indicate averages from job postings on Job Asaan; this is the proportion of jobs posted on the platform that are willing to accept application from women - an upper bound on the proportion that would actually hire women. No bar indicates that there were no job postings in that occupation which provided the information to be aggregated.

Table A5: Occupational Ranking - Joint Sample

	(1)	(2)	(3)	(4)
Mean Salary	0.00422	0.01183	0.01311	0.02556
	(0.01994)	(0.02704)	(0.01706)	(0.01831)
Mean Percent Male	-0.02619**	-0.06277***	-0.01279	-0.00945
	(0.01254)	(0.02057)	(0.00886)	(0.01073)
SD Percent Male		-0.00518		-0.04521
		(0.07165)		(0.05993)
Mean Prob Male Supervisor	0.01036	0.02706	-0.02133**	-0.02300**
	(0.01374)	(0.01790)	(0.00883)	(0.01119)
SD Prob Male Supervisor		0.07723*		-0.04377
		(0.04566)		(0.06465)
Mean Prob Hire Woman	0.01197	0.00108	-0.00505	0.00153
	(0.01185)	(0.01466)	(0.00908)	(0.01034)
Observations	267	212	355	329
Number of Individuals	184	151	229	216

Notes: Descriptive regressions. Rank-ordered logit marginal effects of belief of mean salary, belief of proportion of male employees belief of standard deviation of proportion of male employees, belief of probability of male supervisor, belief of standard deviation of probability of male supervisor, and belief of probability that a woman would be hired by occupation. Column (1) and (2) are from the baseline survey; column (2) excludes respondents whose estimated standard deviation of beliefs were inconsistent with triangular distribution. Columns (3) and (4) are analogous for the endline survey. Standard errors are clustered on individual. Sample includes only respondents who responded to both the baseline and endline survey.

Table A6: Information Experiment: Heterogeneity by Gender-Related Workplace Attribute - Priming Subsample

Panel A: Supervisor Gender

	(1)	(2)	(3)
Supervisor Gender	-0.01039	-0.01106	-0.00886
	(0.01240)	(0.00962)	(0.00920)
Coworker Gender	-0.00858	-0.00506	-0.00501
	(0.01135)	(0.00941)	(0.00890)
Supervisor Gender x Coworker Gender	0.00375	0.01499	0.01291
	(0.01682)	(0.01442)	(0.01329)
Supervisor Gender x Group	0.00099	0.00280	-0.02729
	(0.01183)	(0.01209)	(0.04386)
Coworker Gender x Group	0.00504	-0.00168	-0.02322
	(0.01115)	(0.01089)	(0.04587)
Supervisor Gender x Coworker Gender x Group	0.01421	-0.00894	-0.04203
	(0.01634)	(0.01617)	(0.05656)
Observations	12443	12443	12443
Number of Individuals	1655	1655	1655
Control Mean	0.05190	0.05190	0.05190
Proportion in Group	0.49482	0.47408	0.03110
Heterogeneity Group	Female Supervisor	Male Supervisor	No Supervisor Information

Panel B: Coworker Gender

	(1)	(2)	(3)
Supervisor Gender	-0.00784	-0.01024	-0.01043
	(0.01007)	(0.01057)	(0.00967)
Coworker Gender	-0.00856	-0.00735	-0.00491
	(0.00932)	(0.00982)	(0.00950)
Supervisor Gender x Coworker Gender	0.00993	0.01109	0.01449
	(0.01420)	(0.01518)	(0.01401)
Supervisor Gender x Group	-0.00519	0.00162	0.00292
	(0.01243)	(0.01257)	(0.01367)
Coworker Gender x Group	0.00860	0.00390	-0.00510
	(0.01136)	(0.01142)	(0.01540)
Supervisor Gender x Coworker Gender x Group	0.00361	-0.00008	-0.01642
	(0.01749)	(0.01716)	(0.02148)
Observations	12443	12443	12443
Number of Individuals	1655	1655	1655
Control Mean	0.05190	0.05190	0.05190
Proportion in Group	0.32790	0.41252	0.17954
Heterogeneity Group	Female Coworkers	Male Coworkers	No Coworker Information

Notes: Unit of observation is individual-vacancy match. Outcome is the individual's decision to apply to the given vacancy. All specifications include fixed effects for randomization strata; standard errors clustered at individual level and reported below coefficients. All specifications condition on years of experience, number of matches prior to the experiment, number of matches in the given match round, and whether the individual is in the priming experiment subsample. Columns (1), (3), and (5) do not include vacancy fixed effects; columns (2), (4), and (6) include job fixed effects. The groups in Panel A refer to supervisor gender at the vacancy level; the groups in Panel B refer to coworker gender at the vacancy level. Sample is priming experiment subsample.

A1.2 Belief Updating

The information treatment, randomly varying which individuals received information about gender-related workplace attributes, could impact endline beliefs about the mean and distribution of these attributes by occupation and thus drive the endline rankings. The specification is analogous to Specification 3, but the unit of analysis is the individual-occupation.

$$E_{ilm} = \beta_0 + \theta_1 S_i + \theta_2 C_i + \theta_3 S_i \times C_i + \Lambda W_i + \rho_m + \varepsilon_i \tag{6}$$

In this specification, the outcome E_{ilm} is individual i's belief about characteristic l in occupation m. The treatment indicators S_i, C_i, and $S_i \times C_i$ are as before. The vector W_i includes an indicator for being in the priming experiment subsample and the individual's years of experience (due to slight imbalance by treatment at baseline). The specification includes fixed effects for occupation and randomization strata and standard errors are clustered on individual. The sample is occupations that respondents ranked as their top three most preferred, among respondents who completed the endline survey. The standard deviation measure here assumes a triangular distribution for beliefs; observations are dropped for respondents whose reported minimum, maximum, and mean values were in clear violation of a triangular distribution (Attanasio and Kaufmann, 2014).

Table A7 reports these results. Most notably, among those receiving the coworker gender information treatment, those receiving the supervisor gender information treatment report a 4.85 percentage point higher probability that an occupation will have a male supervisor compared to those not receiving that information, which is a 10% increase (the sum of $\theta_1 + \theta_3$,

not reported separately in the table). Other than in the teaching profession, respondents vastly underestimated the probability of having a male supervisor overall (see Appendix Figure A5), so this brought the treatment group closer to an accurate measure of the true distribution. For the other characteristics, the magnitudes of the treatment-control differences are small relative to the control means, and are not statistically significant. This pattern of results is consistent with the implementation of the experiment and variation of information that came from the true mix of jobs on the platform. A smaller percentage of vacancy-individual job matches were missing information about supervisor gender compared to coworker gender. The information treatments also did not vary whether individuals received information about salary or the message that the position was accepting applications from women.

Table A7: Endline Beliefs

	(1) Prob Male Supervisor	(2) SD - Male Supervisor	(3) Mean - Male Coworkers	(4) SD - Male Coworkers	(5) Mean - Salary	(6) Prob Hire Woman
Supervisor Gender	0.63757	-0.05991	1.92782	0.29324	334.62928	1.48292
	(2.22206)	(0.39642)	(1.58282)	(0.35405)	(1446.29782)	(1.56058)
Coworker Gender	-0.55441	-0.62314	1.42932	0.08410	747.21642	0.85968
	(2.13754)	(0.39807)	(1.51167)	(0.34799)	(1326.07715)	(1.51945)
Supervisor Gender x Coworker Gender	4.20927	0.62122	-1.67628	-0.28776	-1514.26732	-0.54635
	(3.17048)	(0.59001)	(2.20695)	(0.52800)	(1866.23784)	(2.23312)
Observations	3157	2685	3189	2753	3220	3168
Number of Individuals	891	883	911	900	928	899
Control Mean	46.18113	6.64993	53.16459	7.29727	32578.49197	49.71554

Notes: Sample is endline respondents. Control variables include years of experience, indicator for whether the individual is in the priming experiment subsample, occupation fixed effects, and randomization strata fixed effects. Standard errors are clustered on individual and reported below the coefficient. Outcome variables (specified in column headers) are endline stated beliefs. Standard deviation measures assume a triangular distribution for beliefs, constructed using reported minimum, mean, and maximum.

A1.3 Priors and Rankings

The rankings and priors questions are structured in the same way at baseline and endline. First, the respondent is asked to which occupations she is interested in being matched. She can select as many positions as she wants, and can specify 'other' if she wants to pursue an occupation not available on the list[21]. The full list of occupations is as follows:

1. Sales/Marketing Officer

2. Manager/Assistant Manager

3. Customer Service Officer/Enumerator

4. Telemarketing Officer/Call Center Agent

5. Data Entry Operator

6. Teacher

7. Research and Writing Jobs: Content Writer/Research Assistant/Analyst

8. Accountant/Cashier

9. Administration/Operations Officer/Clerk

10. Computer Operator

11. Receptionist/Front desk officer/Telephone Operator

12. Supervisor/Controller[22]

13. Lab Assistant

14. Software Developer/Graphic Designer/IT Specialist

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[21]In practice, the responses in the 'other' category fit into the preexisting categories, but some respondents used it to emphasize which occupation they were particularly interested in.

[22]This type of position would oversee more blue-collar work than a Manager/Assistant Manager.

15. Doctors/Nurses[23]

16. Designer

17. Engineer

18. Lawyer

19. Journalist/Media Officer

20. Armed Forces - Police, Army, Firemen, Security Guard, etc

At baseline, the ranking questions were phrased as follows: "Which are your top 3 most preferred job titles? Please rank the following job titles.". They were then asked for their "Most preferred (Rank 1)", "Second most preferred (Rank 2)", and "Third most preferred (Rank 3)" occupations. If the respondent had selected three or more occupations with which to be matched, she was only shown those occupations to rank. If she selected fewer than three occupations, she was shown the full list to rank.

At endline, the ranking question was reworded slightly to function better over the phone. The rankings questions were phrased as follows: "In the following list, which types of job are you most interested in?". They were then asked "Which type of job would you be most interested in joining, from this list? (Rank 1)", "Of the remaining jobs in the list, which would you be most interested in joining? (Rank 2)", and "Of the remaining jobs in the list, which would you be most interested in joining? (Rank 3)". The same filtering of occupations was applied, with the exception that if they selected only one or two occupations at the beginning of the form, they are reminded of those occupations when ranking. Finally, the order that the occupations are presented in, is randomized at endline.

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[23]This category is a catch-all for the medical field.

For the early version of the signup form, rankings were not asked, but rather, priors were asked for six specific occupations reflecting the most common occupations that individuals wanted to be matched to, and the most common occupations that sought to hire women with a high school diploma or higher: Sales/Marketing Officer, Manager/Assistant Manager, Telemarketing Officer/Call center agent, Teacher, Computer Operator, and Receptionist/Front desk officer/Telephone Operator. For the small number of respondents who filled out this version of the signup form, the endline survey asks them to rank these occupations, and provide their beliefs on these occupations.

In each case when beliefs are asked, the questions are structured in the following way:

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1. What salary would you expect to receive each month for a job with job title XX?

   Suppose that an average firm in Lahore with an opening for XX has 100 employees across all positions.

2. How many of these 100 employees would you expect to be male?

3. What is the smallest number of male employees you would expect at the firm?

4. What is the largest number of male employees you would expect at the firm?

   Across different firms, suppose there are 100 open positions for a XX in Lahore, which are all currently hiring.

5. Of these 100 open positions, how many do you think would hire a woman?

6. How many of these 100 positions do you believe will have a male supervisor?

7. What is the smallest number of these 100 positions that you believe would have a

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> 8. What is the largest number of these 100 positions that you believe would have a male supervisor?

A2 Vignettes

At baseline, when respondents signed up for Job Talash, they were additionally asked a series of vignettes, originally intended to measure a contingent valuation of trading off salary against coworker and/or supervisor gender. The module began with the following text:

> Suppose you receive offers from two jobs with the job title that you are most excited about. One is at Company A and one is at Company B. Both Company A and Company B are located in the same area, and you have a way to get to both jobs every day. Both jobs have similar hours, and neither company allows employees to change their working hours.
>
> In the questions that follow, you will learn whether the majority of your coworkers would be women or men, whether your supervisor would be a woman or a man, and the salary, at Company A and Company B. You will be asked which offer you would take: the offer from Company A or the offer from Company B.

Following the description were three groups of questions, each presenting a separate case

Case 1

Company A: mostly female employees, female supervisor. Salary: Rs 20,000/Month.

Company B: mostly female employees, male supervisor. Salary: Rs 20,000/Month.

Case 2

Company A: mostly female employees, male supervisor. Salary: Rs 20,000/Month.

Company B: mostly male employees, male supervisor. Salary: Rs 20,000/Month.

Case 3

Company A: mostly female employees, female supervisor. Salary: Rs 20,000/Month.

Company B: mostly male employees, male supervisor. Salary: Rs 20,000/Month.

The omitted group here in the comparisons is a workplace with majority male coworkers and a female supervisor. After each of these cases, the respondent is asked which firm's offer they would choose.

In each of these cases, if the respondent chooses Company A (the option with more women in the workplace), the respondent is then shown the same case, but with a higher salary for Company B. Furthermore, for each case, the individual is asked "Would your parents recommend that you take the offer from Company A or Company B?".

Respondents were randomly selected to either be asked about their own decision or their parents' job search advice first. Respondents were also randomly selected to see a salary of 25,000 Rs/Month or 30,000 Rs/month if they chose Company A in any of 6 cases (the 3 cases where they indicate their own decision, and the 3 cases where they indicate how they believe their parents would advise them.)

In earlier versions of the form without firm-side data on wages available, the base salary was set at 30,000 Rs/month. In earlier versions of the form, respondents were asked about their father's, mother's, and husband's responses on the vignettes separately. However, the length of the survey module was too long, and relatively few of the respondents are married, thus, this was simplified to just asking about parents' job-search advice.

These contingent valuation exercises were intended to be conducted through a web-based form with a more thorough contingent valuation structure. However, with the shift to phone-based and in-person large-group enrollment, the module had to be cut significantly, and complete contingent valuation could not be completed. Thus, the data for the contingent

valuation portion of the vignettes has been omitted from the main analysis reported in the

paper.