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 women's labor force participation, wages, etc, have not experienced a commensurate increase in many developing countries. In this paper, I conduct information and priming experiments with educated female jobseekers on a formal job search platform in urban Pakistan, where female labor force participation is particularly low. The results show that being primed to think about family job search advice decreases women's probability of applying to a job, that receiving information about gender of the supervisor nearly doubles the probability of applying to a job, and that active jobseekers are more likely to apply to a job with a female supervisor than a male supervisor. Furthermore, women who are primed to think about family job search advice are more likely to apply to a job if they receive information about the gender of coworkers, suggesting that they believe that their families are most interested in knowing the gender of the coworkers, while the women themselves are most interested in knowing the gender of their direct supervisor. The results are consistent with women facing extensive and intensive margin costs to working outside the home stemming from social norms, but also show that access to information about workplace attributes through a low-cost intervention allow women to sort into firms which reduce their intensive margin costs.

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1 Introduction

The global ratio of female to male enrollment in secondary education has nearly reached one; in tertiary education, this ratio has surpassed one (UNESCO, 2019a,b). However, women are less likely than men to participate in the labor force, spend more hours than men on unpaid work, and earn less than men around the world (Addati et al., 2016). Furthermore, occupational segregation by gender is a factor in many labor markets (Menon and Rodgers, 2017). Thus, while women's educational attainment has improved globally in the last two decades, this has not been reflected equally in women's labor market outcomes. This empirical fact is concerning as it could reflect inefficient allocation of human capital in the economy, having longer-run implications for economic growth and gender equity.

Educated women might not see returns on the labor market for a few reasons. On the demand side, hiring discrimination can favor men (Altonji and Blank, 1999; Goldin and Rouse, 2000).[1] Women might prefer flexible working hours which are not available at all workplaces (International Labour Office, 2010; World Bank, 2012; Mas and Pallais, 2017). In this paper, I focus on supply-side constraints in developing countries stemming from social stigma against women working outside the home. Taking these social norms as given, I conduct an information experiment and related priming experiment with educated female jobseekers on a formal job search platform to identify whether information can change women's job search behavior. My results show that receiving information about gender of the supervisor on a job posting nearly doubles the job application rate, that active jobseekers are significantly more likely to apply to jobs with female supervisors than male supervisors, and that being primed to think about family job search advice decreases the application rate.

This study is set in Lahore, Pakistan, where women's educational attainment has grown but female labor force participation remains low (Field and Vyborny, 2016; Pakistan Bureau of Statstics, 2018). Women's labor force participation rose from 14% to 25% between 1990 and 2014 (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). Women in

[1] In Pakistan, firms routinely specify whether they seek to hire men, women, or are open to any gender.

Pakistan and other developing country settings can face two types of costs from working outside the home, stemming from social norms.

The first cost is on the extensive margin: stigma attached to working anywhere outside the home. 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). These types of norms, or a belief that others subscribe to such norms, are also found in other countries (World Bank, 2012; Field et al., 2016; Bursztyn et al., 2018).

The second cost is on the intensive margin: women can face additional stigma from the workplace attributes at a job. In this paper, I focus on two workplace attributes: gender composition of the firm and gender of the supervisor at the job. Social norms in Pakistan advocate gender segregation in public spaces. Other mechanisms by which gender composition or gender of the supervisor can impose costs on women's work are supported by studies conducted in both developing and developed countries. Women might be discouraged from male-dominated workplaces due to fears of marital dissolution (McKinnish, 2007; Svarer, 2007). Gender of coworkers and supervisors can play a role due to concerns about safety when working in a male-dominated environment, which has been shown to be psychologically costly (Fitzergald, 1993; Wu, 2017). In an example in the US, women have been shown to prefer jobs with payscales that rely less on competition, independent of gendered workplace attributes (Flory et al., 2014). Other job characteristics such as salary, flexible working hours, and how well a job conforms to one's gender identity, also factor into women's labor supply decisions (Fitzergald, 1993; Akerlof and Kranton, 2000; Mas and Pallais, 2017). Insofar as gender-related workplace attributes are correlated within occupation, the impacts of a preference for working with same-gender employees or for a same-gender supervisor can contribute to occupational segregation by gender (England, 2000; Levanon et al., 2009; World Bank, 2012).

Particularly when most job search is informal as is the case in Pakistan, women do not have enough exposure to other women working outside the home to form an accurate view of labor market conditions, which in turn could keep them from seeking employment. Individuals' beliefs about salaries and long-run outcomes from educational choices have been documented to impact decisions governing education, employment, and occupation even if those beliefs are inaccurate (Jensen, 2012; Stinebrickner and Stinebrickner, 2013; Wiswall and Zafar, 2015; Zafar, 2013; Delavande and Zafar, 2018). Female jobseekers in my setting overestimate occupation-wise salary and underestimate the prevalence of men and male supervisors in occupations in which they are interested. Women seem to know that they face the extensive margin cost of working anywhere outside the home, but do not have accurate information about the labor market to sort into workplaces which might reduce their intensive margin costs. In such an environment where social norms about women's role in public spaces are strong, I hypothesize that beliefs about workplace attributes related to these norms can significantly impact labor supply. Low incidence of women's labor force participation and employment can then be indicative of a low-information and low-employment equilibrium. The challenge is how to shift away from such an equilibrium with low information and low women's employment to one with better-informed jobseekers and higher women's employment. The hypothesized mechanism is that more information about jobs allows women to sort into firms which reduce their intensive margin costs to working outside the home, which can in turn bring more women into the workforce overall.

Taken together, the literature has shown that jobseekers do not have perfect information about labor markets, and that workers have preferences over workplace attributes such as salary and flexible working hours, which can impact employment decisions. Furthermore, family preferences can play a role in women's labor supply decisions, particularly where there is social stigma about women working outside the home.

There are two important gaps in this literature which this paper addresses: the causal impact of information about gender composition and gender of the supervisor on women's job search and beliefs about the labor market, and the causal impact of family involvement in job search on women's

job applications in a setting where social norms oppose women working outside the home. Due to the experimental design, I am able to observe jobseekers making real application decisions in response to actual jobs in the labor market.

I experimentally manipulate the information environment on a formal job search platform, to study how access to accurate information about the labor market impacts educated women's application decisions. In a cross-randomization, I conduct a priming experiment to study the role of family involvement in job search on women's job application decisions. I measure jobseekers' prior and posterior beliefs about gender-related workplace attributes in preferred occupations and measure endline rankings of preferred occupations, to estimate belief updating and the role of beliefs about gender-related workplace attributes on occupational choice. Job search among educated women in this context is very low, consistent with supply-side constraints negatively impacting women's transition from education to the labor market. Thus, the main outcome of interest is job application decisions. Increasing job search itself is of first order importance to improving downstream outcomes such as employment, wages, and firm-jobseeker match quality.

In the framework of costs which I have laid out, women face an extensive margin cost to working outside the home stemming from their family's adherence to social norms. The experimental evidence supports this; priming jobseekers about family job search advice significantly decreases the overall job application rate. The rest of the results focus on the intensive margin costs which depend on workplace attributes.

In this framework, if women have a preference over the gender of their coworkers, in line with social norms about gender segregation, receiving information about gender composition of the firm should significantly increase job application rates, as it allows women to sort into the firms that they prefer. Furthermore, women should be significantly more likely to apply to jobs that are at workplaces with mostly or all female employees compared to workplaces with mostly or all male employees, holding all else constant. The experimental results do not show that information about gender composition has a significant impact on job application rate, and women do not significantly prefer workplaces with mostly

women compared to mostly men. However, those who are primed to think about family job search advice before making their application decisions are more likely to apply to a job if they learn the gender composition of the firm, than otherwise. This is consistent with families having strong preferences about the gender composition of a firm, even if jobseekers themselves do not.

Analogously, if women have a preference over having a female or male supervisor, receiving information about gender of the supervisor should significantly increase the application rates. Furthermore, if women prefer female supervisors, they should be more likely to apply to jobs with a female supervisor than those with a male supervisor, holding all else constant. The experimental results support both of these hypotheses. Receiving information about gender of the supervisor increases the job application rate; active jobseekers in particular are significantly more likely to apply to jobs with a female supervisor than a male supervisor, holding other observable job characteristics fixed. The mechanism does not seem to be family preferences, as women who were primed about family job search advice are not significantly more likely to apply to jobs which they learn have a female supervisor. Finally, in line with lack of information about gender of the supervisor itself being the mechanism, receiving information about gender of the supervisor through the platform significantly updated jobseekers' beliefs about the distribution of the probability of having a male supervisor by occupation, compared to their prior beliefs.

Descriptive rank-ordered logit analysis suggests that women prefer occupations that they believe will have more women in the workplace. Women also prefer occupations which they believe are less likely to hire women - which is consistent with a belief that occupations that will easily hire women are less prestigious (Goldin, 2014).

Taken together, these results show that access to information about workplace attributes, particularly gender of the supervisor, can have a large positive impact on women's job applications in an environment where women's employment and labor force participation rates are very low. While this experiment was a targeted change to the information environment in a formal job search setting, the results have broader implications for the policy environment. Web-based and phone-based job search platforms are becoming increasingly common in developing country settings to match increasing mobile

phone usage. This type of technology greatly reduces costs for firms and platforms to publicize more information about jobs which could in turn improve the information environment and increase women's employment.

With such low women's employment rates, and in many cases, a lack of role models or support within their own families, women must rely on external information to inform their job search and career decisions. Improving the information environment could thus have immediate impacts on women's employment decisions but also larger positive impacts of creating more role models for other women to learn from. This could yield a positive multiplier effect which increases women's employment in a setting where women's human capital gains are already growing.

In the rest of this paper, I describe the labor market platform and experimental design in Sections 2 and 3. I then describe the data in Section 4. Next, I outline the empirical strategy and experimental results in Sections 5 and 6. In Section 7, I describe and estimate a model of how beliefs about workplace attributes inform stated occupational choice. I provide robustness checks for the experimental results in Section 8 and conclude in Section 9.

2 Context

My experiment is conducted on a job search platform called Job Asaan, in Lahore, Pakistan.[2] This platform, supported by a state government agency, seeks to match female jobseekers who hold at least a high school diploma to open job postings at firms throughout Lahore for which they meet basic qualifications. There is no monetary cost to jobseekers or firms for using the service.

2.1 Firms & Ad Listings

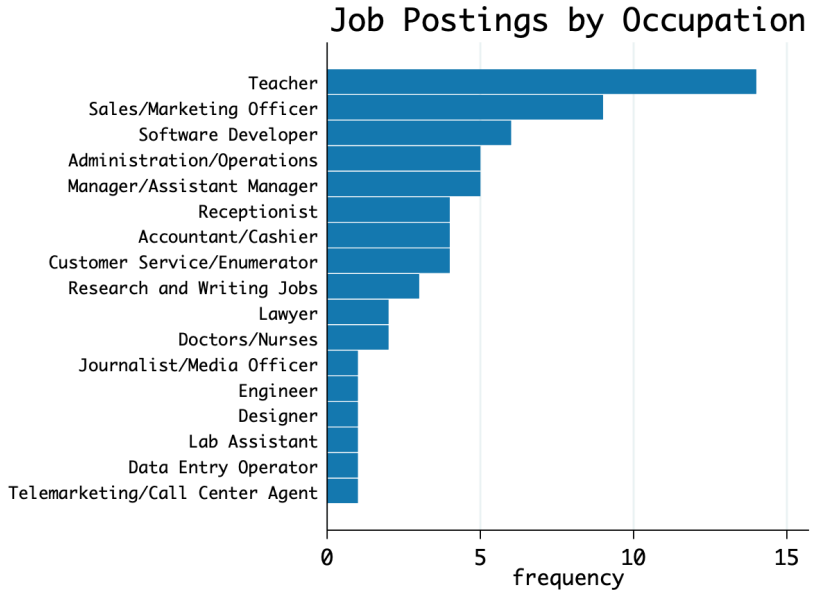
The Lahore metropolitan area was subdivided into administrative zones, and a stratified random sample of firms was drawn. The field team contacted firms, described the Job Asaan service, and offered firms the

[2]This job search platform was created by Erica Field, Rob Garlick, and Kate Vyborny of the Duke University Department of Economics.

opportunity to enroll in the service at no cost. If firms were interested in listing positions, the ad listing survey 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 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 finance, education, high-end retail, and healthcare), which were likely to have open positions for women with a high school diploma or higher education. The combined process yielded a total of 64 jobs that Job Asaan jobseekers matched to over the course of the experiment.[3]

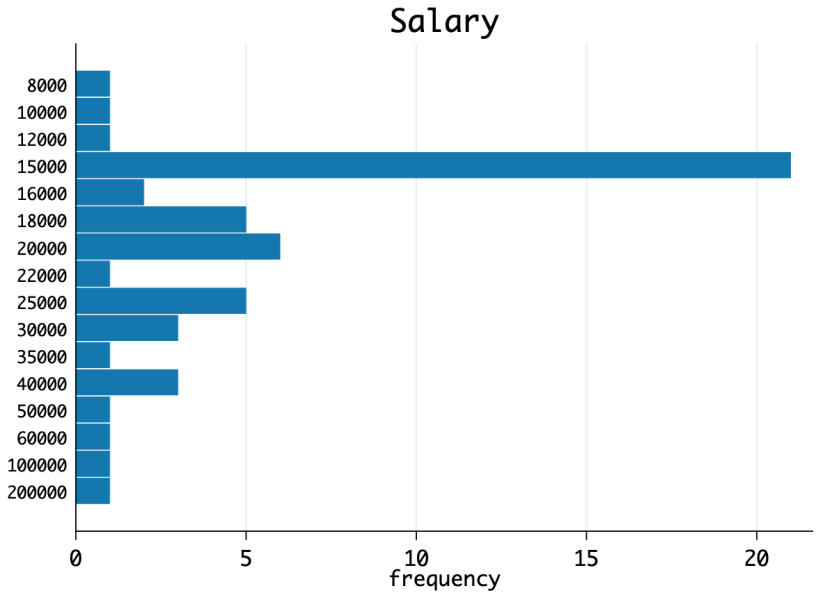
Figure 1: Occupations



Notes: Distribution across job postings in the experiment.

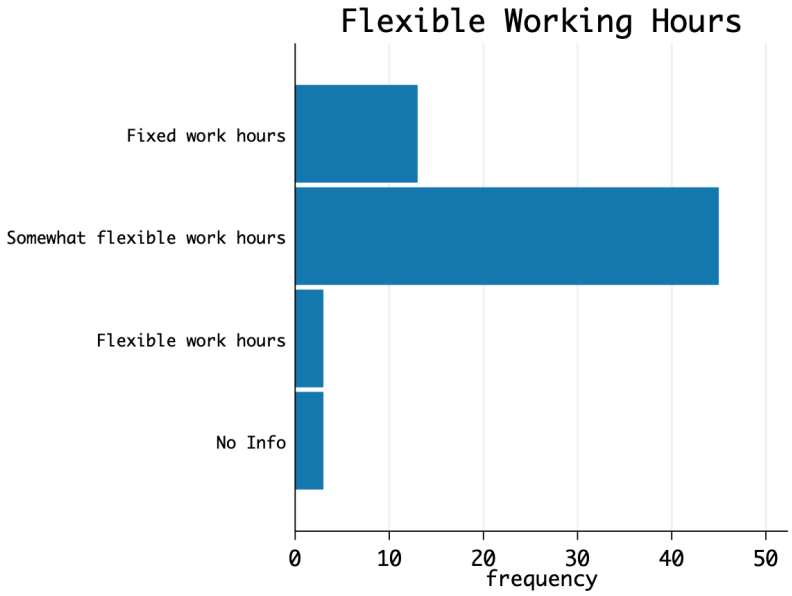
[3]The targeted approach to seeking job postings for Job Asaan started out slow and took a couple of weeks to gain traction. This is reflected in Figure A2 in the Appendix, which shows a slow upward trend in the number of jobs from round 1 onwards, but a steep increase for round 5.

Figure 2: Salary



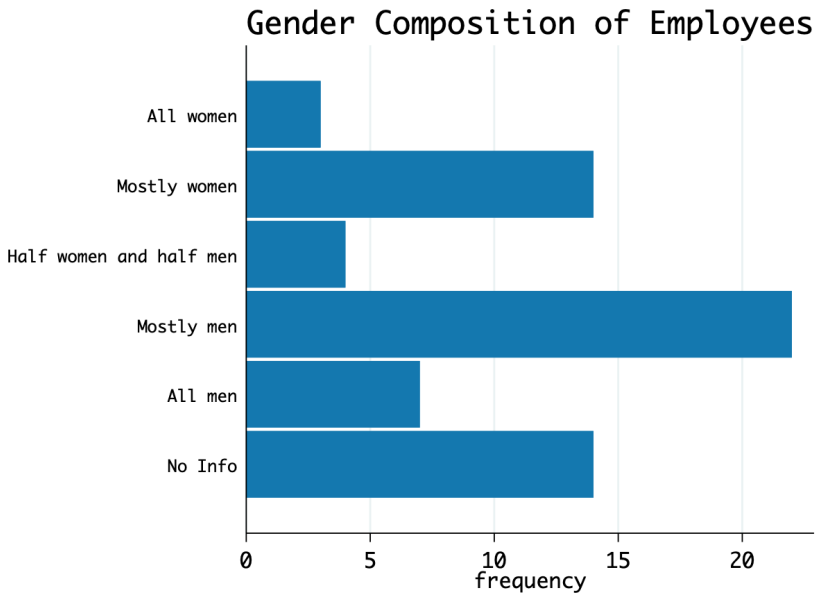
Notes: Distribution across job postings in the experiment.

Figure 3: Work Hours



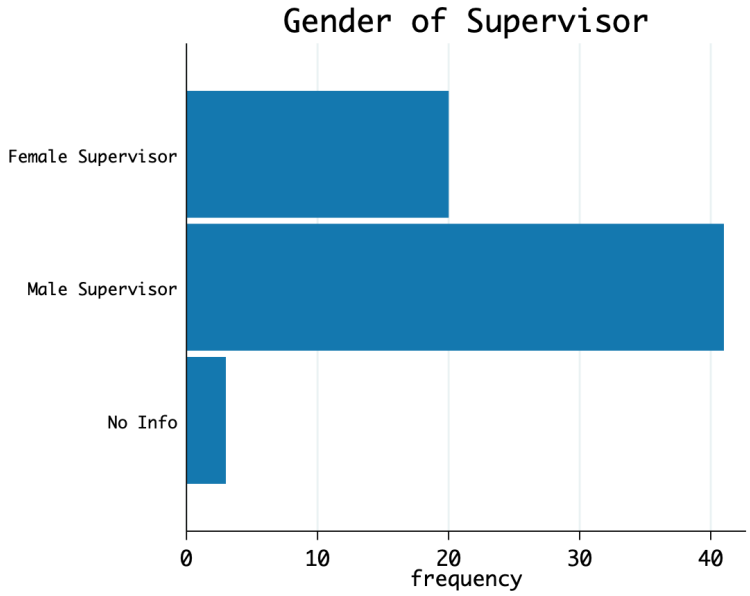
Notes: Distribution across job postings in the experiment.

Figure 4: Gender Composition



Notes: Distribution across job postings in the experiment.

Figure 5: Gender of Supervisor



Notes: Distribution across job postings in the experiment.

Figures 1 through 3 provide distributions of characteristics of these jobs.[4] Many of these job postings were in teaching or sales, though there are seventeen occupations represented overall. Of the 64 jobs to which women in Job Asaan matched, by definition 100% are willing to accept applications from women. The median salary is 18,000 PKR/month (about $180).[5] Fifty-eight percent of these positions have majority male employees, and 67% of the jobs have a male supervisor (among the firms that provided this information). Of the total job postings solicited during the timeframe of the experiment (not restricting to positions that Job Asaan jobseekers were eligible for), 80% are willing to accept applications from women, and the median salary is 15,000 PKR/month (about $150, and the minimum wage in Lahore). Seventy-four percent of these firms have majority male employees, and 77% of the jobs have a male supervisor (among the firms that provided this information).

2.2 Jobseekers

Jobseekers enrolled onto Job Asaan in one of two ways. First, the state government agency conducted a media campaign in July 2018, inviting women with a high school diploma or higher levels of education to sign up for the Job Asaan service. This media campaign covered television, radio, Facebook, etc, and directed interested jobseekers to a websute where they could fill out the Job Asaan sign-up form, which also serves as the baseline survey instrument[6]. 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 training workshop. Job Asaan staff would lead the students in filling out the sign-up form.[7][8]. Both forms of signup

[4]In addition to Job Asaan, these jobs were posted on Job Talash, the name of the broader job search platform that the research team has created in Lahore, Pakistan. Job Talash includes male and female jobseekers of all educational backgrounds, thus firms that seek to hire only men will also receive job postings through that service.

[5]Job Asaan does not match women to any positions that pay less than the minimum wage. The minimum wage in Lahore is 15,000 PKR/month (about $150). The three job postings which offer a lower salary than the minimum wage are internships.

[6]If they needed guidance in filling out the survey information, they were provided with a helpline which they could call, monitored by Job Asaan staff

[7]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 jobseeker passed this initial criteria, they were given the link to the full signup form.

[8]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

yielded a total of 4,081 jobseekers on the Job Asaan platform as of March 2019, when my experiment began. Of these, 2,244 had only completed the initial brief signup form, thus Job Asaan did not have CV information to forward to employers. For the remaining 1,837, Job Asaan had CV information to forward to employers. The job matching process is described in more detail below. While 4,081 total individuals signed up for Job Asaan, only 998 were actively searching on the platform at the time that my experiment began.[9]

A description of these jobseekers is found in Table A1 [10]. The jobseekers are on average 22 years old; 74% are currently enrolled in education. On average, they have less than one year of work experience. Eighty-nine percent have a bachelor's degree or higher; only 9% are currently married. Nine percent of the jobseekers have applied to jobs through Job Asaan prior to the start of my experiment. Jobseekers remain enrolled on the platform until they ask to be removed.

2.3 Matching

The Job Asaan platform works by matching job-seekers with open positions for which they meet the base qualifications. First, Job Asaan enrolls firms with open job postings on a rolling basis. Approximately every week, jobseekers 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 jobseeker expressed interest in being matched with at baseline[11]. Jobseekers who meet these matching criteria receive a batch of text messages (SMS's) 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 jobseekers can call Job Asaan to apply

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.

[9]These 998 individuals are defined as having either initiated calls to apply for jobs, or as having picked up the phone when Job Asaan directly called them about job matches.

[10]Table A1 includes summary statistics for the full set of 4081 jobseekers and the 998 active jobseekers, showing that the samples are similar on many observable characteristics.

[11]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 jobseekers to job postings that seek female applicants or seek applicants from any gender.

to any job postings that they received in the last week. Of the 4,081 jobseekers in the experiment, 1,837 had completely filled out CVs with Job Asaan prior to the start of the experiment. This subsample of 1,837 jobseekers is called the Priming Experiment Sample, and they received a call from Job Asaan each week asking if they were interested in applying to any of the job matches that they had received that week.[12] Each job match SMS notes the jobseeker'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.[13] 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.

3 Experimental Design

There are two parts to the experimental design. The first is the information experiment; the second is the priming experiment. Both experiments were conducted simultaneously and cross-randomized on the Job Asaan platform, over a period of five matching rounds. Figure 6 depicts the timeline of events. All randomizations were stratified on education level, whether the jobseeker had previously received calls from Job Asaan to apply for jobs (versus being in the group that was assigned to call Job Asaan to apply for jobs), whether the jobseeker had previously applied to any jobs, whether the jobseeker had completed the full signup instrument, whether the jobseeker had completed CV information, the number of matches that the jobseeker had received thus far on the platform, and whether the jobseeker indicated at baseline that she could access the Job Asaan office (as a rough indicator of mobility)[14].[15][16]

[12]The 2244 individuals who did not complete the full signup form with the CV information 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.

[13]Including the jobseeker's name in the SMS is particularly useful since mobile phones are often shared among family members in this context.

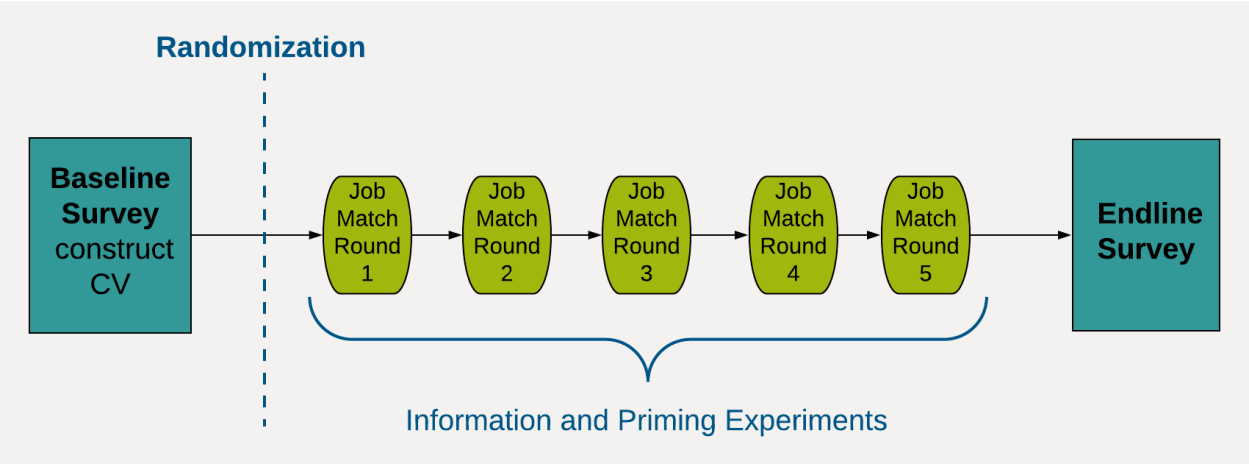
[14]Education level was defined as highest education achieved, or exact institution if more than 20 individuals were currently enrolled at that institution (indicating that the signup was from a college outreach event)

[15]The exact number of individuals in each treatment arm is depicted in Table A1 in the Appendix.

[16]Table A2 in the Appendix has the main balance table, split into the relevant subsamples used for analysis. Table A3 in the Appendix performs joint tests for orthogonality of balance variables on each treatment separately. Years of experience is

The experiment was conducted over five consecutive matching rounds in March and April 2019, each roughly a week apart.[17]

Figure 6: Timeline of Experiment



3.1 Information Experiment

There are two cross-randomized information treatments: A random selection of 50% of job-seekers received information about the gender composition of the firm. A cross-randomized 50% of job-seekers received information about the gender of the direct supervisor. The randomization is at the individual level, meaning that each individual received the same categories of information about each job match. However, the actual information they receive will differ by position/firm.

Gender composition of the firm was presented as five categories:

- All women employees
- Mostly women employees
- Half women and half men employees
- Mostly men employees

imbalanced for the information about gender composition treatment. This is controlled for in all experimental analysis.

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

- All men employees

If the firm did not disclose the gender composition, then the jobseeker received a message "We do not have gender of the employees at this firm." This was the case for 14 out of 64 job postings, accounting for 16% of all matches. Twenty-nine job postings were at firms with mostly or all male employees, accounting for 36% of matches. Seventeen job postings were at firms with mostly or all female employees, accounting for 41% of matches. Four job postings were at firms that reported exactly half male and half female employees; these job postings accounted for 7% of matches.

Gender of the supervisor was presented as two categories:[18]

- Female supervisor
- Male supervisor

If the firm did not disclose the gender of the supervisor, then the jobseeker received a message "We do not have gender of the supervisor at this position." This applied to three out of 64 job postings, amounting to less than three percent of all matches. Female supervisors accounted for 20 out of 64 job postings, but made up 55% of all matches. This reflects the fact that teaching positions are disproportionately likely to have female supervisors and are an occupation in which jobseekers overwhelmingly indicated interest and thus received matches.

Through Job Asaan, all job postings include the job title (which signals the occupation), location of the job within the city (addressing mobility constraints), and the salary (addressing information that the jobseeker might infer about wages through the gender composition). In addition, over the course of this experiment, all jobseekers receive information about whether the position allows flexible working hours to address that women could have a preference for flexible working hours and a statement that "Company accepting female applicants." to address the fact that jobseekers might interpret gender composition or gender of the supervisor as a signal of whether the firm is actually willing to consider applications from women. The structure of the SMS is denoted in Figure 7. All information presented to

[18]The ad listing survey allowed for transgender supervisors, but this option was not used by any firm in the data.

jobseekers is completely factual.[19] The variation in workplace attributes comes from true variation as reported by firms in Lahore.

Figure 7: SMS Structure - Control Group

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

3.2 Priming Experiment

The priming experiment is cross-randomized against the information experiment. The Priming Experiment Sample (described earlier) received calls from Job Asaan with each set of matches asking if the jobseeker wanted to apply to any of their matches. This experiment manipulates the salience of family job search advice before the jobseeker made application decisions, but was not designed to impact the content of family job search advice.

Fifty percent of jobseekers in the Priming Experiment Sample were randomly selected to receive a prime at the beginning of the phone call, before they heard the list of jobs to which they were matched and before they were asked whether they wanted to apply to any of these jobs. Specifically, they 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?" The possible responses are "Yes", "No", or "I do not wish to answer". This question was designed to prime the jobseeker about her family's job search advice before she decided whether to apply to the job matches that she received that round.

[19] If a jobseeker in a control group asks for information that she is not randomly selected, she is told that Job Asaan cannot disclose that information.

4 Data

4.1 Baseline

The Job Asaan signup instrument also served as the baseline survey for this study. The first portion of the form collected detailed information about educational background and work experience, and was used by Job Asaan to make the jobseeker's CV to send to firms as the job application.[20] I added additional questions to the baseline for analysis.[21] First, the jobseeker ranked her top three most preferred occupations at baseline. Then, she provided beliefs over the following parameters for a typical job in that occupation: 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.[22]

4.2 Outcomes

4.2.1 Application Decisions

The main experimental outcome is whether the jobseeker chose to apply to each given job with which she was matched; measured through the administrative Job Asaan data. For the Priming Experiment Sample, Job Asaan has administrative data for each individual in each round in which she received matches. On these calls, Job Asaan asked the jobseeker if she was interested in applying for the given job, and if yes, whether she would attend the job interview if invited. Only if she responded yes to this latter question

[20]This CV information includes their educational history (the institutions at which they studied, the subjects they took, their grades, and any noteworthy projects that they completed) and any employment history (names of previous employers, length of employment at each previous job, and job responsibilities). The CV portion of the form also collects the rest of the information necessary to facilitate matching, including the list of occupations in which they are interested, and contact information. The remainder of the baseline questionnaire asks questions about their self-perception of their skills, demographic background, and questions about prevalence of and attitudes towards women working outside the home, amongst their family and friends. Respondents have the option to complete the form in either English or Urdu. The majority of respondents chose to complete the form in English.

[21]There are two cases where the jobseeker would have CV information, but not the rest of the baseline questionnaire. The first is if they signed up on the webform early in summer 2018 during the pilot phase when only the CV portion of the form was live. The second is if they signed up as part of a college outreach event with hard copy forms, and only completed the CV portion of the form and not the survey portion of the form.

[22]The exact question wording is included in the Appendix and draws from the literature in measuring subjective expectations (Manski, 2004; Hurd, 2009; Bruin and Fischhoff, 2017; Delavande and Zafar, 2018; Dominitz and Manski, 2017, 2011; Attanasio, 2009; Delavande, 2008; Delavande et al., 2009; Dominitz and Manski, 2007, 1997).

does Job Asaan forward their CV to the firm as a job application.[23] For the remaining jobseekers, Job Asaan has administrative data on calls they made to apply to job matches that they received in a given round.[24]

4.2.2 Endline

The endline survey was conducted by phone within two months of the completion of the experiment (between five and eleven months after baseline depending on when the jobseeker signed up). First, jobseekers who provided their rankings and priors about occupations they were most interested in at baseline, were asked to re-rank their interest in those same three occupations, and asked about their updated beliefs about the same parameters for these occupations: mean salary, minimum, mean, and maximum percentage of men at the job, minimum, mean, and maximum probability that the supervisor would be male, and the probability that the job would hire a woman. Then, all jobseekers were asked to rank their top three overall occupations, to capture if their preferred occupations changed over the course of their time searching through Job Asaan. If there were new occupations that they were now interested in, which they were not previously interested in, they were asked their beliefs about those occupations. Finally, they were asked if they have worked anywhere since they enrolled onto the service. The endline survey was not incentivized, and had a response rate of 23%. As indicated in the last column of the balance table, there was no differential attrition by treatment.

[23] The responses to the question about job interest and whether they would attend the job interview are highly correlated, with only a handful of cases where an individual indicated interest in the job but said that they would not attend an interview.

[24] For the 2,244 jobseekers who did not complete a CV with Job Asaan and were required to call in to apply for jobs, I interpret the job interest question as their decision to apply for the job. If they did indicate interest in a job, Job Asaan asked them to complete their CV information and reminds them that Job Asaan cannot apply for jobs on their behalf without a CV to forward to the firm.

5 Empirical Strategy

5.1 Application Decisions

The primary outcome of interest for the information and priming experiments, is whether the jobseeker chose to apply to a given job. The decision to apply to each job is treated as independent, within jobseeker. This is because jobseekers are encouraged to apply to all jobs they are interested in; applying for a given job does not preclude them from applying to others.[25]

5.1.1 Information Experiment

The outcome of interest Y_{ijk} in this set of analysis is whether jobseeker i chose to apply to job j, which she matched to in match round k. The first specification addresses the treatment on treated impact of receiving information about the given workplace attribute.

$$Y_{ijk} = \alpha_0 + \alpha_1 T_i A_j + \alpha_2 T_i + \alpha_3 A_j + \Gamma W_{ijk} + \varepsilon_{ijk} \tag{1}$$

Here, T_i is the treatment indicator that the jobseeker was randomly selected to receive information about the attribute. A_j denotes whether Job Asaan had information about the workplace attribute to share with the jobseeker.[26] If the firm did not provide the gender composition or the gender of the supervisor, this variable takes a value of zero, and the jobseeker received a message that Job Asaan did not have this information to share with them.[27] In addition, W_{ijk} is a vector of covariates. This includes job-level covariates which every jobseeker receives information about, regardless of treatment arm.[28] This vector also includes an indicator for whether the jobseeker received calls from Job Asaan to apply for

[25]Appendix 2 presents descriptives on matching and application behavior.

[26]In the case of information about gender composition, this omitted category also includes the case that the job has exactly half/half female and male employees, which was the case for only one job posting.

[27]For gender composition, the exact message that the treatment group received was "We do not have gender of the employees at this firm". For gender of supervisor, the exact message that the treatment group received was "We do not have gender of the supervisor at this position".

[28]These include natural log salary, flexible working hours, fixed effects for occupation, and fixed effects for location of the job. In the event that salary or working hours information is missing, these variables take on values of zero, and indicator variables for missing information are included.

jobs, the number of jobs which they matched to in that round, and the treatment indicator for the other information treatment.[29] Finally, the vector includes the individual's completed education and years of work experience, which determine the matches that the jobseeker receives. The parameter of interest is α_1, which denotes the impact of the jobseeker receiving information about the given workplace attribute. This parameter taking a positive value indicates that the jobseeker is more likely to apply to a job when she receives information about that workplace attribute.

In the next specification, I am interested in the impact of receiving information about a female- vs male- dominant workplace.

$$Y_{ijk} = \beta_0 + \beta_1 F_j T_i + \beta_2 U_j T_i + \beta_3 F_j + \beta_4 U_j + \beta_5 T_i + \Gamma W_{ijk} + \varepsilon_{ijk} \tag{2}$$

Here, F_j denotes a female-dominant workplace attribute (ie. majority/all female employees or female supervisor), while U_j denotes that Job Asaan does not have information about the given workplace attribute. The omitted category is then that the workplace is male-dominant (i.e. majority/all male employees or male supervisor). The parameter of interest is β_1, which denotes the impact of receiving information about a female dominant workplace attribute compared to a male dominant workplace attribute.[30] If this parameter is positive, then this indicates that the jobseeker is more likely to apply to a job with a female-dominant workplace attribute than a male dominant workplace attribute, holding all else equal. Standard errors are clustered on the individual (the level of the treatment) and randomization strata are included as fixed effects in all specifications.

[29] Jobseekers receive calls to apply to jobs only if they completed a CV. Otherwise, they still receive the SMS, but have to call Job Asaan to apply for jobs, and at that point are asked to complete the CV so that Job Asaan can apply on their behalf. The covariate for number of matches addresses the salience of each individual job posting. Appendix 2 includes analysis of job application rates as a function of lagged match rates in previous rounds. Only the number of matches in the current round has a significant impact on the application rate, indicating that salience of individual job postings rather than learning about labor market conditions through number of matches is what is driving the application decisions.

[30] In the case of gender composition, there is another category: firms that report that they have exactly 50% male and 50% female employees. In this case, the specification is as follows:

$$Y_{ijk} = \beta_0 + \beta_1 F_j T_i + \beta_2 U_j T_i + \beta_3 F_j + \beta_4 U_j + \beta_5 T_i + \beta_6 H_j T_j + \beta_7 H_j + \Gamma W_{ijk} + \varepsilon_{ijk} \tag{3}$$

. Here, H_j denotes a workplace with exactly 50% male and 50% female employees. The interpretation of β_1 the same as the case for gender of the supervisor.

Both specifications are repeated for the full sample of jobseekers (4081 individuals) and the set of jobseekers who were active on the platform prior to randomization for this experiment (998 individuals). The information was likely more salient for active jobseekers since they had already been engaged with the platform through both SMS and phone calls; however the sample size for these regressions is smaller since not all those who signed up for the platform actively searched for jobs.[31]

5.1.2 Priming Experiment

I estimate the causal impact of priming with the following equation. Again, Y_{ijk} denotes whether jobseeker i chose to apply to job j, which she matched to in match round k.

$$Y_{ijk} = \gamma_0 + \gamma_1 P_i + \Gamma W_{ijk} + \varepsilon_{ijk} \tag{4}$$

P_i indicates whether jobseeker i was randomly selected to receive priming about family involvement in job search.[32] I again repeat the analysis separately for all jobseekers and those who were active on the platform prior to randomization. γ_1 being negative would indicate that priming about family job search involvement decreases the application rate of educated female jobseekers. This is consistent with a family stigma cost.

5.2 Belief Updating

As jobseekers received matches through Job Asaan, they gained information about the types of jobs that are available in the labor market in Lahore. In this section, I explore three ways to estimate whether the information they received during the experiment impacted jobseekers' beliefs about occupations at endline, holding fixed their beliefs about the same occupations at baseline.

[31] Figure A3 in the Appendix depicts that across occupations, active jobseekers apply to a larger proportion of their matches than the full sample.

[32] Note that W_j is identical to that in Specification 2, except it does not include the indicator for whether the jobseeker received calls from Job Asaan to apply for jobs. This is because the sample for this regression is only those who filled out a CV through Job Asaan. They received a call each round asking to which jobs they were interested in applying; the prime was given at the beginning of this call. The vector also includes treatment indicators for each of the information treatments; this is possible since the priming experiment sample is a subsample of the information experiment sample.

Here, the unit of observation is at the level of individual, occupation, and job attribute. The main specification is as follows:

$$E_{ilm} = \beta_0 + \beta_1 T_{ilm} + \beta_2 B_{ilm} + \Gamma X_i + \mu_m + \varepsilon_{ilm} \tag{5}$$

where i denotes individual, l denotes attribute (such as percentage male employees or probability of male supervisor) and m denotes the occupation for which beliefs are recorded. To address that matches are based on educational level and experience, these are controlled for in the vector X_i. The different measures of the endline belief (described below) are regressed on a measure of treatment and the prior belief constructed in a parallel manner to the endline belief for that specification. The specification includes occupation fixed effects (μ_m) and standard errors are clustered at the individual level. The coefficient of interest is β_1 which indicates the impact of treatment on endline beliefs (denoted E_{ilm}), holding constant baseline beliefs (B_{ilm} which are constructed analogously to E_{ilm}).

There are three measures of E_{ilm} which I employ in this analysis. First, is the measured endline, as described previously: expected percent men, expected probability of a male supervisor, expected salary, and expected probability of a woman being hired for the job. In addition to the expectations, for the percent of employees at a job who are male and the probability of the job having a male supervisor, I assume a triangular distribution for the beliefs, and use this to construct the standard deviation of the individual's belief.[33] B_{ilm} is the parallel measure from the baseline survey for each endline belief.

In order to capture accuracy of beliefs, I construct two sets of measures, which are relative to measures calculated from job postings on Job Asaan. The first is the absolute value of the deviation of the jobseeker's belief from the true measure of the parameter using job postings on Job Asaan, denoted γ_{im}. Here, α_{ilm} is individual i's belief at endline about attribute l for occupation m; $\hat{\theta}_{lm}$ denotes the expected value of the attribute l in occupation m, as measured using all ads posted during through the service.

[33] In cases of clear violation of the triangular distribution, the standard deviation is not calculated, and the observations are omitted from analysis.

$$\gamma_{ilm} = \left|\alpha_{ilm} - \hat{\theta}_{lm}\right| \tag{6}$$

The final measure of endline belief accuracy is a pseudo-zscore constructed for each of the expected value beliefs (but not for the standard deviations), denoted by ζ_{ilm}. This is identical to the previous measure, except that it is divided by the standard deviation of the attribute l in occupation m, as measured through the firm survey.

$$\zeta_{ilm} = \left|\frac{\alpha_{ilm} - \hat{\theta}_{lm}}{\hat{\sigma}_{lm}}\right| \tag{7}$$

In both cases, I construct a parallel measure using the priors measure instead of endline belief in the calculation to capture baseline accuracy to use for B_{ilm} in equation 5.

Conditional on expressing interest in an occupation, education, and experience (the variables used for matching), the matches that the jobseeker receives is determined by the distribution of firms that are hiring, not by the individual's beliefs. Thus, I use the number of matches (by occupation) as exogenous variation in explaining the jobseeker's beliefs about the probability of a woman being hired for a job posting in the given occupation. Second, I interact the treatment indicator for receiving information about gender of the supervisor with this measure of number of matches (by occupation) as a source of exogenous variation in explaining the jobseeker's beliefs about the distribution of the probability of having a male supervisor. Third, I interact the treatment indicator for receiving information about gender composition with this measure of number of matches (by occupation), and use this as a source of exogenous variation in explaining the jobseeker's beliefs about the distribution of male employees. Fourth, the priming experiment about family involvement in job search is interacted with this measure of number of matches (by occupation), and used as exogenous variation in explaining the jobseeker's beliefs about salary.

6 Experimental Results

6.1 Application Decisions

6.1.1 Information Experiment

Table 1 denotes the results of Specification 1 for gender composition in Panel A and gender of the supervisor in Panel B. The results in Panel A show that for the full sample and the active jobseekers, receiving information about gender composition does not have a large or statistically significant impact on the decision to apply for a job. However, in Panel B, it is evident that receiving information about gender of the supervisor nearly doubles the application rate for the full sample and for active jobseekers. The first row in Panel B shows the impact of being selected to receive information about gender of the supervisor and that the jobseeker actually received the information (in that Job Asaan had the information from the firm to share with the jobseeker). The second row has a negative and significant coefficient; this is picking up that individuals in the treatment group became used to receiving information about gender of the supervisor. When it was not provided because the firm did not provide the information to Job Asaan, they were less likely to apply than their control group counterparts who were not used to receiving this information at all.[34]

[34]Table A7 in the Appendix denotes the Intent to Treat results. Here, the specification is simply

$$Y_{ijk} = \delta_0 + \delta_1 T_i + \Gamma W_{ijk} + \varepsilon_{ijk} \tag{8}$$

. The results show essentially null results, including for gender of the supervisor. This is because of the countervailing effects of jobs where Job Asaan does and does not have information to give to the jobseeker on the jobseeker's application decisions.

Table 1: Information Experiment: Main Results

Panel A: Information Experiment: Gender Composition

VARIABLES	(1) Applied for job	(2) Applied for job
Treat Info X Have Info Gender Comp	0.00654	0.0142
	(0.00719)	(0.0131)
Treat Info Gender Comp	-0.00370	-0.0134
	(0.00688)	(0.0131)
Have Info Gender Comp	0.0280*	0.0297
	(0.0163)	(0.0251)
Observations	20,650	8,110
Sample	All	Active
Number of Jobseekers	3661	958

Panel B: Information Experiment: Gender of the Supervisor

VARIABLES	(1) Applied for job	(2) Applied for job
Treat Info X Have Info Gender Sup	0.0463**	0.0652*
	(0.0220)	(0.0369)
Treat Info Gender Sup	-0.0473**	-0.0671*
	(0.0220)	(0.0371)
Have Info Gender Sup	-0.0347	0.00412
	(0.0470)	(0.0674)
Observations	20,650	8,110
Sample	All	Active
Number of Jobseekers	3661	958

Notes: Includes job covariates for natural log salary, flexible working hours, occupation fixed effects, and area fixed effects. Also includes covariates for the number of matches in that round of matching, indicator for receiving calls from Job Asaan to apply for jobs (i.e. complete CV), treatment indicator for opposite information treatment, and strata FE. SE are clustered on individual, and reported in parentheses. Mean application rate in the pure control group is 0.051 for all jobseekers, and 0.067 for jobseekers active before the experiment. *** p<0.01, ** p<0.05, * p<0.1

Table 2 provides the results of Specification 2, which denotes the impact of information about a female versus male dominant workplace attribute. For ease of interpretation, β_1 and β_5 are reported in the table, which denote respectively the impact of information about a female versus male dominant workplace attribute, and the impact of information about a male dominant workplace attribute, holding

fixed that Job Asaan has information about that workplace attribute. In Panel A, it is evident that the probability of applying for the job upon learning that the job has majority or all female employees is greater than for majority or all male employees, but that these differences are very small and not statistically significant. In Panel B, for gender of the supervisor, the difference is much larger and statistically significant for active jobseekers (Panel B column (2)). This indicates that active jobseekers are more likely to apply to job with a female supervisor than a male supervisor. Importantly, due to the specification, these results show that active female educated jobseekers are more likely to apply to a job with a female supervisor than a male supervisor, holding constant occupation, whether the job has flexible working hours, where in the city the job is located, and salary.

Table 2: Information Experiment: Gender of Workplace Attribute

Panel A: Information Experiment: Gender Composition

VARIABLES	(1) Applied for job	(2) Applied for job
Receiving Info About Mostly/All Female VS Mostly/All Male Emp	0.00677	0.000993
	(0.00572)	(0.00971)
Receiving Info About Mostly/All Male Emp	0.000503	0.00103
	(0.00504)	(0.00861)
Observations	20,650	8,110
Sample	All	Active
Number of Jobseekers	3661	958

Panel B: Information Experiment: Gender of

VARIABLES
Receiving Info About Female VS Male Sup
Receiving Info About Male Sup
Observations
Sample
Number of Jobseekers

Notes: Includes job covariates for natural log salary, flexible working hours, occupation fixed effects, and area fixed effects. Also includes covariates for the number of matches in that round of matching, indicator for receiving calls from Job Asaan to apply for jobs (i.e. complete CV), treatment indicator for opposite information treatment, and strata FE. SE are clustered on individual, and reported in parentheses. Mean application rate in the pure control group is 0.051 for all jobseekers, and 0.067 for jobseekers active before the experiment. *** p<0.01, ** p<0.05, * p<0.1

Across specifications, the results show that receiving any information increases the application rate, supporting a model where a low-information environment contributes to low female labor force participation and employment.[35] To test specific mechanisms, I conduct heterogeneity analysis for Specification 1, which looks at the impact of receiving information (regardless of whether it is of a

[35]Table A4 in the Appendix contains analysis of the distribution of matches that the jobseeker received, by information treatment status, controlling for education and years of experience. Overall, the matches are balanced, with an exception that active jobseekers in the gender of supervisor treatment matched to a lower percentage of matches with flexible working hours, and that jobseekers in the gender of supervisor treatment in general matched to slightly fewer occupations overall. Match-level indicators for occupation and flexible working hours are included in all specifications in this section.

female- or male- dominant workplace attribute).[36] Tables 3 and 4 display the results of this analysis. Panel A in each table has results for the full sample, and Panel B has results for those active before the randomization.

[36]In the heterogeneity specification, the heterogeneity variable is interacted with each of the covariates which are also all included as levels, as is the heterogeneity variable.

Table 3: Information Experiment: Gender Composition - Heterogeneity

Panel A: All Jobseekers

VARIABLES	(1) Less Accurate Beliefs about Labor Market	(2) Correct Priors about Gender Comp	(3) Currently Enrolled	(4) Employed Start of Exp	(5) Received Info - Female Sup	(6) Flex Hours	(7) Above Min Wage
Treat Info X Info Exists Gender Comp X Heterogeneity Var	0.00595	0.00563	0.0123	0.0298	0.0120	-0.0177	0.00330
	(0.0389)	(0.0152)	(0.0226)	(0.0583)	(0.0151)	(0.0185)	(0.0169)
Treat Info Gender Comp X Heterogeneity Var	0.0122		0.00167	-0.0482	-0.000229	0.0216	0.00573
	(0.0376)		(0.0224)	(0.0543)	(0.0139)	(0.0179)	(0.0152)
Have Info Gender Comp X Heterogeneity Var	-0.0124	-0.304	-0.000776	0.0193	-0.00876	0.0202	-0.0157
	(0.0272)	(0.309)	(0.0142)	(0.0386)	(0.0119)	(0.0439)	(0.0301)
Observations	4,608	3,891	11,058	4,205	20,650	20,650	15,388
Number of Jobseekers	1038	904	1413	746	3661	3661	3599

Panel B: Active Jobseekers

VARIABLES	(1) Less Accurate Beliefs about Labor Market	(2) Correct Priors about Gender Comp	(3) Currently Enrolled	(4) Employed Start of Exp	(5) Received Info - Female Sup	(6) Flex Hours	(7) Above Min Wage
Treat Info X Info Exists Gender Comp X Heterogeneity Var	0.0270	0.0227	0.0207	0.0398	0.0344	-0.0362	-0.00670
	(0.0597)	(0.0264)	(0.0349)	(0.0937)	(0.0287)	(0.0302)	(0.0294)
Treat Info Gender Comp X Heterogeneity Var	-0.0497		0.00438	-0.0599	-0.0180	0.0324	0.0289
	(0.0592)		(0.0367)	(0.0871)	(0.0251)	(0.0291)	(0.0261)
Have Info Gender Comp X Heterogeneity Var	-0.0226	-0.549	-0.000869	0.00399	-0.0236	0.0655	0.0203
	(0.0458)	(0.497)	(0.0211)	(0.0693)	(0.0203)	(0.0708)	(0.0533)
Observations	1,943	1,614	5,242	1,788	8,110	8,110	6,443
Number of Jobseekers	393	340	539	203	958	958	939

Notes: Regression estimates include job covariates for natural log salary, flexible working hours, occupation fixed effects, and area fixed effects. All regressions include a covariate of the number of matches that the jobseeker received in that round of matching, treatment indicator for opposite information treatment, and indicator for receiving calls from Job Asaan to apply for jobs. Strata fixed effects are included. Correct priors can only be defined for jobs where Job Asaan has information about the workplace attribute, hence the collinearity in Column (2). SE are clustered on individual, and reported in parentheses. Mean application rate in the pure control group is 0.051 for all jobseekers, and 0.067 for jobseekers active before the experiment. *** p<0.01, ** p<0.05, * p<0.1

Table 4: Information Experiment: Gender of Supervisor - Heterogeneity

Panel A: All Jobseekers

VARIABLES	(1) Less Accurate Beliefs about Labor Market	(2) Correct Priors about Gender of Sup	(3) Currently Enrolled	(4) Employed Start of Exp	(5) Received Info - Maj/All Female Emp	(6) Flex hours	(7) Above Min Wage
Treat Info X Have Info Gender Sup X Heterogeneity Var	0.180	-0.000563	-0.109	0.00778	0.000732	-0.0509*	0.0579**
	(0.159)	(0.0145)	(0.0662)	(0.164)	(0.00633)	(0.0269)	(0.0237)
Treat Info Gender Sup X Heterogeneity Var	-0.150		0.0933	-0.0169		0.0489*	-0.0532**
	(0.159)		(0.0658)	(0.163)		(0.0264)	(0.0238)
Have Info Gender Sup X Heterogeneity Var	-0.140	-0.0426	0.0537	0.104	-0.344	1.009***	0.0412**
	(0.113)	(0.291)	(0.0530)	(0.124)	(0.314)	(0.0522)	(0.0164)
Observations	4,608	3,873	11,058	4,205	20,650	20,206	15,388
Number of Jobseekers	1038	915	1413	746	3661	3612	3599

Panel B: Active Jobseekers

VARIABLES	(1) Less Accurate Beliefs about Labor Market	(2) Correct Priors about Gender of Sup	(3) Currently Enrolled	(4) Employed Start of Exp	(5) Received Info - Maj/All Female Emp	(6) Flex Hours	(7) Above Min Wage
Treat Info X Have Info Gender Sup X Heterogeneity Var	0.0549	0.0100	0.0466	0.390	-0.00375	-0.0584	0.00437
	(0.135)	(0.0222)	(0.0998)	(0.252)	(0.0130)	(0.0460)	(0.0123)
Treat Info Gender Sup X Heterogeneity Var	-0.0450		-0.0925	-0.279		0.0502	
	(0.135)		(0.0994)	(0.260)		(0.0450)	
Have Info Gender Sup X Heterogeneity Var	0.0249	-0.634	-0.0508	-0.0984	-0.440	0.271	0.0419
	(0.0723)	(0.471)	(0.0804)	(0.220)	(0.481)	(0.286)	(0.0273)
Observations	1,943	1,653	5,242	1,788	8,110	8,110	6,443
Number of Jobseekers	393	346	539	203	958	958	939

Notes: Regression estimates include job covariates for natural log salary, flexible working hours, occupation fixed effects, and area fixed effects. All regressions include a covariate of the number of matches that the jobseeker received in that round of matching, treatment indicator for opposite information treatment, and indicator for receiving calls from Job Asaan to apply for jobs. Strata fixed effects are included. Correct priors can only be defined for jobs where Job Asaan has information about the workplace attribute, hence the collinearity in Column (2). All job postings where Job Asaan does not have information about gender of the supervisor have majority/all male employees, hence the collinearity in Column (5). All job postings that active jobseekers in the information treatment group matched to that did not have information about gender of the supervisor had salary above minimum wage, hence the collinearity in Column (7). SE are clustered on individual, and reported in parentheses. Mean application rate in the pure control group is 0.051 for all jobseekers, and 0.067 for jobseekers active before the experiment. *** p<0.01, ** p<0.05, * p<0.1

The first mechanism explored is whether those who have less accurate overall beliefs about the labor market respond differently to receiving information about a gender-related workplace attribute.[37] The results show positive coefficients in both tables for those who have less accurate beliefs (having the priors accuracy measure being above the median in the sample, indicating that beliefs are a greater deviation from the truth), indicating that those with less accurate beliefs are more likely to apply when their information level improves, compared to those who already have a more accurate understanding of the labor market. However, these results are not statistically significant. Active jobseekers whose prior was correct about gender composition are more likely to apply when they receive information that conforms with their prior than those whose prior was incorrect; while the magnitude is large relative to the control mean, this impact is not statistically significant. The magnitudes are much smaller for the analogous analysis for gender of the supervisor. Those who are currently enrolled or who are employed when the experiment began, both measures indicating that the jobseeker is not currently unemployed, are more likely in most specifications than their counterparts to apply to a job if they learn information about gender of coworkers or supervisor, but these effects are not significant.

In the final set of heterogeneity analysis, I look at related job characteristics. Jobseekers are more likely to apply to a job when they learn that it has a female supervisor and receive information about the gender composition of the firm than if they do not learn that it has a female supervisor, however this effect is not statistically significant. The opposite relationship: whether the jobseeker is more likely to apply to a job when she learns that it has majority or all female employees versus not receiving that information, has magnitudes very close to zero and again insignificant. Jobseekers are *less* likely to apply

[37] To measure accuracy, I use the priors data collected at baseline, and construct the following measure based on a pseudo-z-score. This is the sum by individual of baseline equivalents (ω_{ilm}) of the ζ_{ilm} measures constructed for the learning analysis.

$$\eta_i \equiv \sum_{m \in M} \eta_{ilm} = \Big| \sum_{m \in M} \sum_{l \in L} \frac{\omega_{ilm} - \hat{\theta}_{lm}}{\hat{\sigma}_{lm}} \Big| \tag{9}$$

Here, L denotes the four expected value parameters that are captured in the baseline survey: expected salary, expected percent of male employees at a firm, expected probability of hiring a woman. These are captured for each of three occupations which the respondent ranked as most desirable at baseline, denoted here by M. The expected value and standard deviation for the truth are defined using the firm survey data. For heterogeneity, this η_i variable is divided into those who have below and above median knowledge of the labor market. This analysis can only be conducted on the sample which provided prior beliefs in the baseline survey.

to a job when they learn that it has flexible working hours or and more likely to apply to a salary above minimum wage, compared to other jobs when they learn the gender composition; again these impacts are not statistically significant. Jobseekers are significantly less likely to apply to a job that has flexible working hours than one without flexible working hours, when they learn the gender of the supervisor. This is consistent with the jobseeker interpreting that a job that has the information to provide about gender of the supervisor is particularly organized, and that flexible working hours indicate that the supervisor will mandate that the jobseeker must be flexible enough to work whenever demanded. Finally, jobseekers who receive information about gender of the supervisor are more likely to apply to jobs that are above minimum wage, which could be an indicator of a more coordinated firm overall: one that knows who the supervisor will be, and pays well, could indicate a position with growth opportunities.

6.1.2 Priming Experiment

Table 5: Priming Experiment

	(1)	(2)
VARIABLES	Applied for job	Applied for job
Treat: Prime	-0.0119**	-0.0184*
	(0.00571)	(0.0103)
Observations	12,503	5,877
Sample	All	Active
Number of Jobseekers	1664	620

Notes: Includes job covariates for natural log salary, flexible working hours, occupation fixed effects, and area fixed effects. Also includes covariate of the number of matches in that round of matching and treatment indicators for information treatments. Sample is all matches who completed a CV (and thus received calls from Job Asaan to apply for jobs). Strata fixed effects are included. Mean application rate in the pure control group is 0.051 for all jobseekers, and 0.067 for jobseekers active before the experiment. SE are clustered on individual, and reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

The overall results to the priming experiment are displayed in Table 5. In both the full sample and the sample of jobseekers active before randomization, the results show that being primed to think about

family involvement in job search decreases the application rate by about 25%. This causal estimate is consistent with descriptive survey evidence that women in Pakistan report that their families are a constraint in their labor supply decisions.[38]

[38]Table A5 displays the distribution of matches that those in the priming treatment group received compared to those in the priming control group. These distributions are balanced, except that even controlling for number of occupations in which the jobseeker indicated interest, education, and experience, active jobseekers in the treatment group received fewer matches on average than active jobseekers in the control group. This is addressed in the specifications by controlling for the number of matches in each matching round.

Table 6: Priming Experiment - Heterogeneity

Panel A: All Jobseekers

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	Less Accurate Beliefs about Labor Market	Employed Start of Exp	Received Info - Female Sup	Received Info - Gender Sup	Received Info - Maj/All Female Emp	Received Info - Gender Comp	Prior Work Exp
Treat: Prime X Heterogeneity Var	-0.0169	0.188***	-0.000105	-0.000514	0.000313	0.0216*	-0.0274**
	(0.0176)	(0.0712)	(0.0104)	(0.0126)	(0.0122)	(0.0113)	(0.0125)
Observations	4,517	2,260	12,503	12,503	12,503	12,503	12,503
Number of Jobseekers	1018	288	1664	1664	1664	1664	1664

Panel B: Active Jobseekers

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	Less Accurate Beliefs about Labor Market	Employed Start of Exp	Received Info - Female Sup	Received Info - Gender Sup	Received Info - Maj/All Female Emp	Received Info - Gender Comp	Prior Work Exp
Treat: Prime X Heterogeneity Var	-0.0373	0.400***	0.0220	0.0213	0.0410**	0.0564***	-0.0613***
	(0.0310)	(0.112)	(0.0159)	(0.0211)	(0.0184)	(0.0191)	(0.0232)
Observations	1,892	1,263	5,877	5,877	5,877	5,877	5,877
Number of Jobseekers	384	122	620	620	620	620	620

Notes: Regression estimates include job covariates for natural log salary, flexible working hours, occupation fixed effects, and area fixed effects. All regressions include a covariate of the number of matches that the jobseeker received in that round of matching, and treatment indicators for information treatments. Sample is all matches for all jobseekers who completed a CV (and thus received calls from Job Asaan to apply for jobs). Mean application rate in the pure control group is 0.051 for all jobseekers, and 0.067 for jobseekers active before the experiment. SE are clustered on individual, and reported in parentheses. Strata fixed effects are included. *** p<0.01, ** p<0.05, * p<0.1

To test specific mechanisms, I conduct heterogeneity analysis, based on Specification 4; results are reported in Table 6.[39] Those with less accurate beliefs about the labor market are less likely than their counterparts to apply when primed about family involvement in job search, but this is not statistically significant. Those who were employed before the experiment began are more likely to apply to jobs when primed about family involvement in job search (column (2)), but those who have any prior work experience are less likely than their counterparts to apply when primed (column (5)). This is consistent with those who have ever worked outside the home before having had bad experiences either on-the-job, or in convincing their families that they should work outside the home. Jobseekers who are primed to think about family job search advice are also more likely to apply to jobs when they have information about gender composition of the workplace, indicating that families have advice about the type of workplace that the jobseeker should choose. Information about gender composition allows women to sort along the preferences of their families, even if they themselves do not have strong preferences over gender composition. The revealed preference for workplaces with majority/all female employees is consistent with families adhering to social norms surrounding social segregation of men and women.

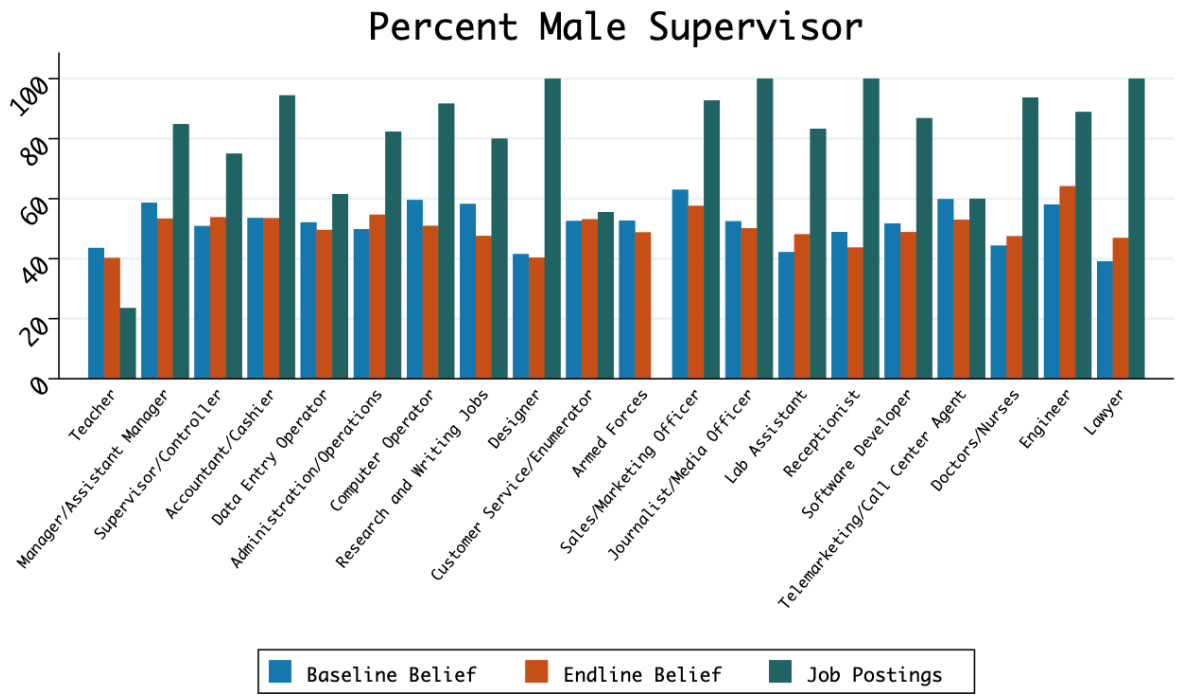
6.2 Belief Updating

Before turning to the regression results, Figures 8 through 11 indicate the simple averages of the baseline beliefs (blue bars) and endline beliefs (orange bars) against the relevant averages from the postings on Job Asaan (green bars). Except for teaching positions and slightly for call center positions, jobseekers vastly underestimate the proportion of men working in their desired occupations. However, between baseline and endline, the average belief in the sample approaches the true value among job postings. This pattern is similar for the proportion of positions with a male supervisor, except that at both baseline and endline the average belief of having a male supervisor in a teaching position is much higher than the actual average probability. In the job postings, most schools which are willing to hire female teachers are schools with female supervisors for those teachers. What is different here, is that endline beliefs

[39] The heterogeneity variable is interacted with each of the variables in Specification 4, which are also all included as levels, as is the heterogeneity variable.

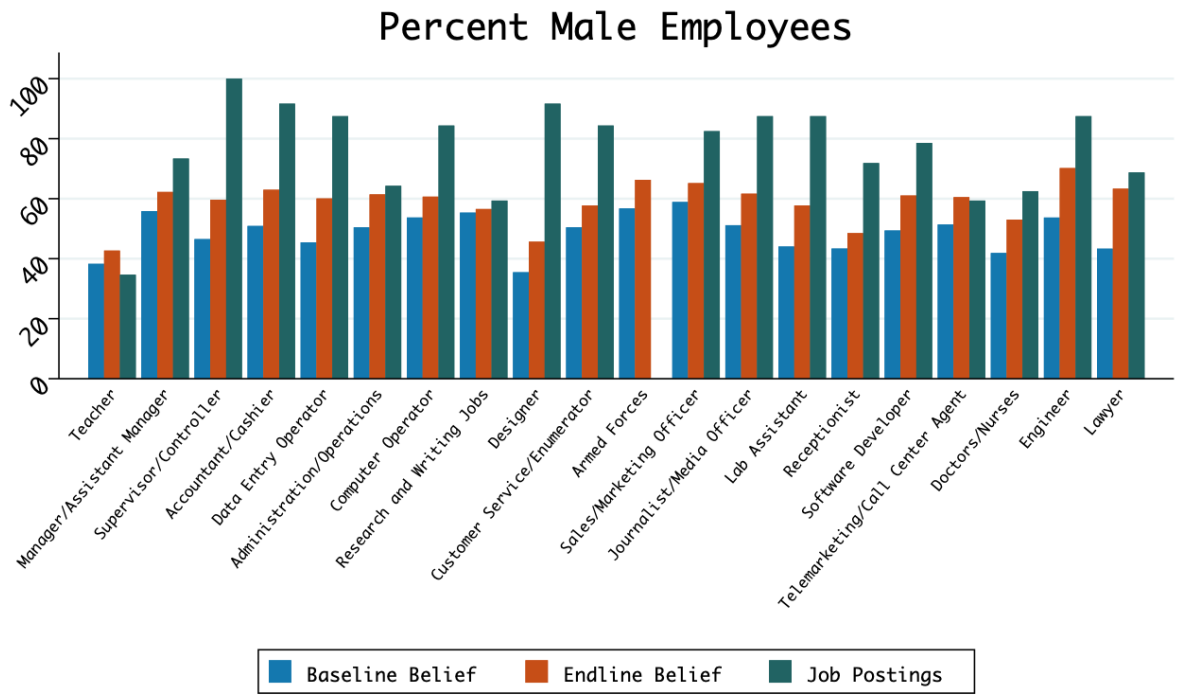
about the probability of having a male supervisor are actually less accurate than baseline beliefs for many occupations. Combined with the results on application behavior, it is possible that gender of the immediate supervisor is a particularly salient attribute about which jobseekers might be overcorrecting their beliefs. Consistent with data in other settings, jobseekers overestimate salary in most occupations. The final graph in this series shows that between baseline and endline, jobseekers decrease their estimate of how likely it is that a firm will hire a woman. While the gray bars for this graph are fairly large, they depict the proportion of job postings in that occupation which are willing to accept applications from women, rather than depicting the proportion that eventually hire women, thus serving as an upper bound.

Figure 8: Beliefs about Gender of Supervisor



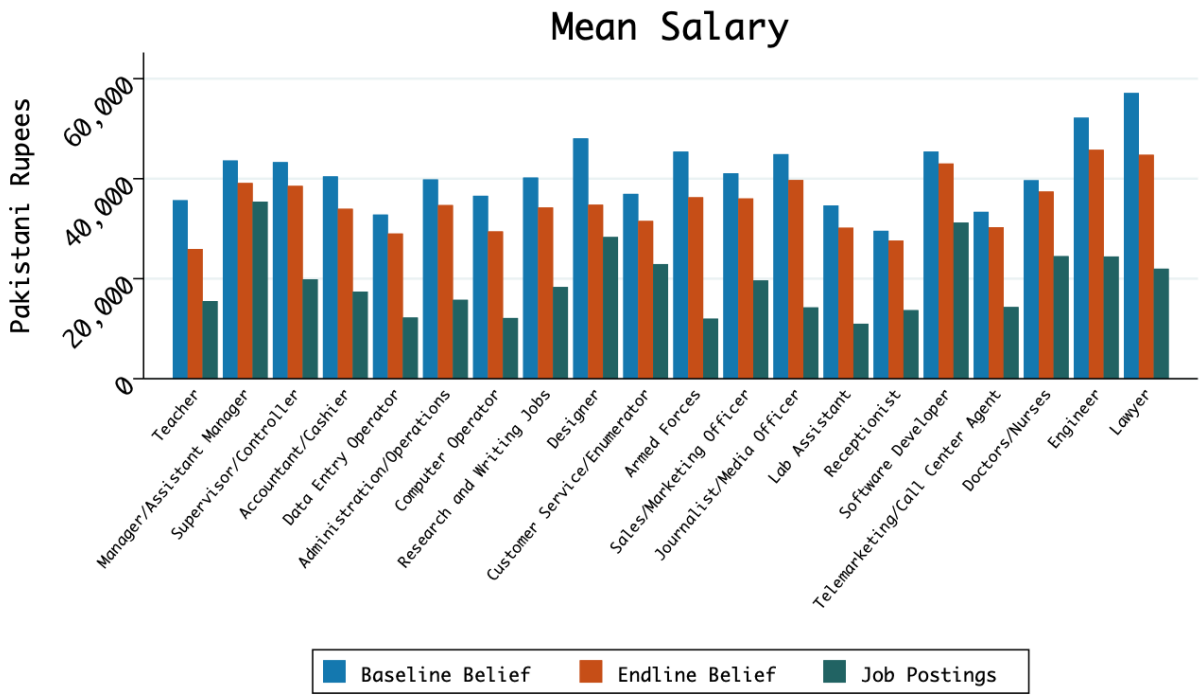
Notes: Blue bars indicate average prior beliefs (measured at baseline) and orange bars indicate average endline beliefs. Green bars indicate averages from job postings on Job Asaan. No bar indicates that there were no job postings in that occupation which provided the information to be aggregated.

Figure 9: Beliefs about Gender Composition



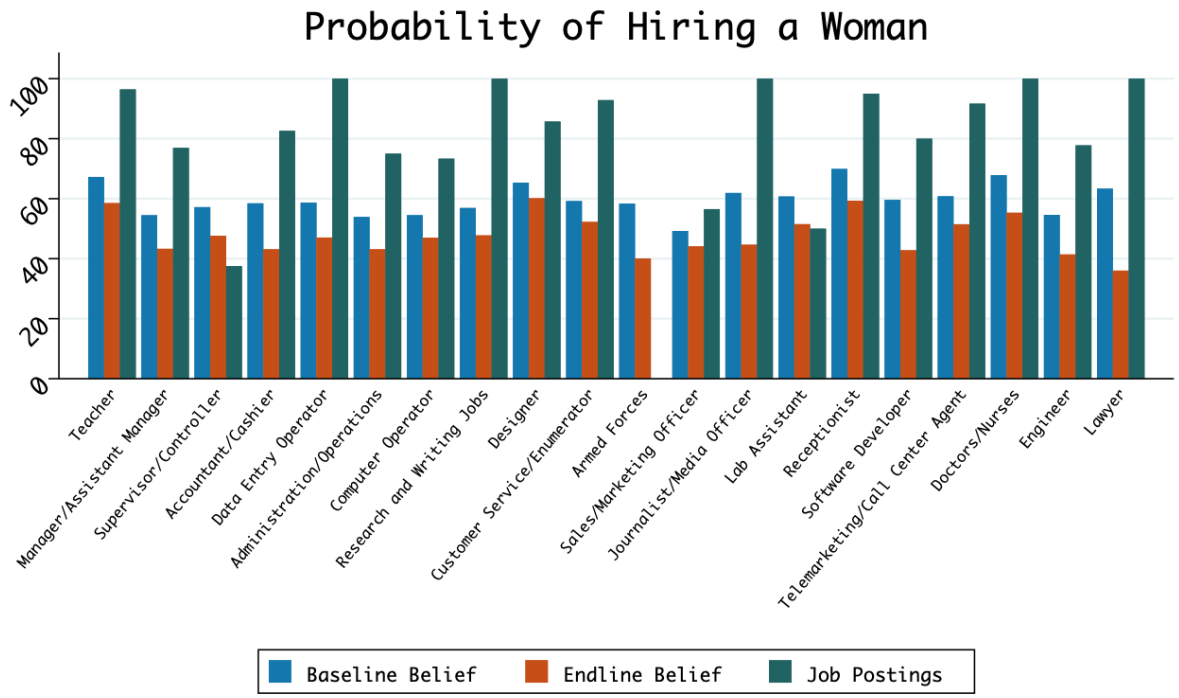
Notes: Blue bars indicate average prior beliefs (measured at baseline) and orange bars indicate average endline beliefs. Green bars indicate averages from job postings on Job Asaan. No bar indicates that there were no job postings in that occupation which provided the information to be aggregated.

Figure 10: Beliefs about 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 11: 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.

The results in the following tables show whether and how jobseekers updated their beliefs about supervisor gender, gender composition, salary, and probability that a woman would be hired, by occupation. In Tables 7 and 8, Columns (1) and (2) present results for Specification 5 for the mean and standard deviation respectively, Columns (3) and (4) present results for Specification 6 for the mean and standard deviation respectively, and Column (5) presents results for Specification **??** for the mean. Table 7 presents results for updating beliefs about supervisor gender. Across specifications, the information treatment does not significantly shift the endline belief of the probability of having a male supervisor. However, the exception is that the standard deviation of the belief about the probability of having a male

supervisor in the given occupation is significantly higher by about 0.3 percentage points (in terms of probability of having a male supervisor) by each additional match received for individuals who receive information about gender of the supervisor, as seen in Column (2). Furthermore, the results in Column (4) show that this led to a decrease in the absolute value of the difference between the belief and the distribution of male supervisors across matches on the platform, indicating that the information treatment brought the endline belief closer to the "truth" of the distribution of jobs on the platform. Furthermore, this latter result in particular persists even when p-values are adjusted for multiple inferences.

Table 7: Belief Updating about Supervisor Gender

VARIABLES	(1) Mean: Endline Belief	(2) SD: Endline Belief	(3) Mean: Absolute Value of Difference	(4) SD: Absolute Value of Difference	(5) Mean: Pseudo Z-score
Num Matches (by occ)	0.496	0.319**	-0.253	-0.337**	-0.00748
X Treat Info Supervisor Gender	(0.663)	(0.151)	(0.378)	(0.150)	(0.0101)
	[0.6]	[0.12]	[0.67]	[0.09]	[0.67]
Prior	0.131**	0.115***	0.111	0.131***	0.106
	(0.0638)	(0.0339)	(0.0683)	(0.0340)	(0.0866)
Observations	766	361	746	348	684
Control Mean	50.01	6.841	31.92	29.02	0.838

Notes: The unit of observation is at the level of individual and occupation. Sample is all such occupation/individuals where priors and endline beliefs are both completed. "Prior" refers to the belief at baseline constructed analogously to the specific outcome endline measure. Fixed effects at occupation level; standard errors clustered on individual. Standard errors reported in parentheses. Westfall-Young mult. inf. adj. p-values in square brackets. *** p<0.01, ** p<0.05, * p<0.1, referring to unadjusted p-values.

Table 8 presents results for belief updating about the percentage of male employees that the jobseeker expects in a given occupation. Here, the information treatment did not significantly update jobseekers' beliefs in any specification.

Table 8: Belief Updating about Gender Composition

VARIABLES	(1) Mean: Endline Belief	(2) SD: Endline Belief	(3) Mean: Absolute Value of Difference	(4) SD: Absolute Value of Difference	(5) Mean: Pseudo Z-score
Num Matches (by occ)	0.219	-0.0645	-0.169	0.0702	-0.00528
X Treat Info Gender of Coworkers	(0.405)	(0.146)	(0.299)	(0.143)	(0.0110)
	[0.92]	[0.92]	[0.92]	[0.92]	[0.92]
Prior	0.164***	0.0952***	0.136***	0.0400	0.153*
	(0.0420)	(0.0364)	(0.0501)	(0.0381)	(0.0786)
Observations	781	353	758	343	698
Control Mean	55.20	7.360	20.31	18.46	1.107

Notes: The unit of observation is at the level of individual and occupation. Sample is all such occupation/individuals where priors and endline beliefs are both completed. "Prior" refers to the belief at baseline constructed analogously to the specific outcome endline measure. Fixed effects at occupation level; standard errors clustered on individual. Standard errors reported in parentheses. Westfall-Young mult. inf. adj. p-values in square brackets. *** p<0.01, ** p<0.05, * p<0.1, referring to unadjusted p-values.

Tables 9 and 10 present results about belief updating about salary and the probability that a woman would be hired, by occupation. The priming experiment and matches receiving through the platform do not significantly shift jobseekers' beliefs about either parameter.

Table 9: Belief Updating about Salary

VARIABLES	(1) Endline Belief	(2) Absolute Value of Difference	(3) Pseudo Z-score
Num Matches (by occ)	-47.08	-103.4	0.00146
X Treat Prime	(166.8)	(151.2)	(0.0120)
	[0.9]	[0.62]	[0.9]
Prior	0.236***	0.248***	0.207***
	(0.0626)	(0.0434)	(0.0662)
Observations	747	747	718
Control Mean	31435	13483	1.811

Notes: The unit of observation is at the level of individual and occupation. Sample is all such occupation/individuals where priors and endline beliefs are both completed. "Prior" refers to the belief at baseline constructed analogously to the specific outcome endline measure. Fixed effects at occupation level; standard errors clustered on individual. Standard errors reported in parentheses. Westfall-Young mult. inf. adj. p-values in square brackets. *** p<0.01, ** p<0.05, * p<0.1, referring to unadjusted p-values.

Table 10: Belief Updating about Probability of Hiring a Woman

VARIABLES	(1) Endline Belief	(2) Absolute Value of Difference	(3) Pseudo Z-score
Num Matches (by occ)	0.317	-0.254	-0.0128
	(0.430)	(0.426)	(0.0202)
	[057]	[0.57]	[0.57]
Prior	0.0714*	0.100**	0.105
	(0.0387)	(0.0416)	(0.0671)
Observations	803	803	687
Control Mean	46.97	38.32	1.184

Notes: The unit of observation is at the level of individual and occupation. Sample is all such occupation/individuals where priors and endline beliefs are both completed. "Prior" refers to the belief at baseline constructed analogously to the specific outcome endline measure. Fixed effects at occupation level; standard errors clustered on individual. Standard errors reported in parentheses. Westfall-Young mult. inf. adj. p-values in square brackets. *** p<0.01, ** p<0.05, * p<0.1, referring to unadjusted p-values.

Overall, the sample sizes for these analyses are low, as the sample is restricted to jobseekers who completed both the full baseline and full endline surveys. The results show that indicators for receiving additional information at the job-level or priming themselves did not shift jobseekers' beliefs about occupations substantially from their baseline prior for most parameters.[40] The notable exception is that across specifications, the treatment led jobseekers to update their beliefs accurately about the variance (standard deviation) of the probability of having a male supervisor, by occupation.

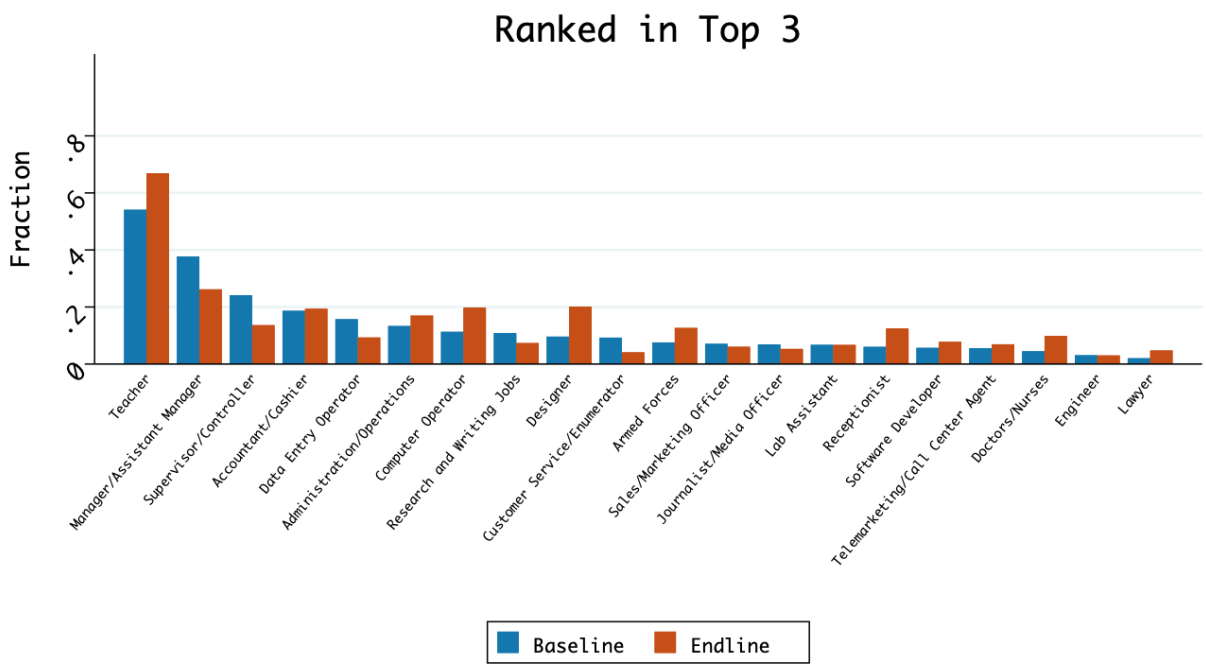
7 Occupational Choice

Just as workplace attributes impact job application decisions, they can also impact occupational choice. In this section, I explore the role of beliefs about workplace attributes on women's stated preference

[40]At the end of each matching call, the respondent was asked her belief about expectation of men within the occupation (rounds 1-3) or expectation of probability of having a male supervisor (rounds 4-5) for every occupation with which she matched in that round. Table A8 in the Appendix estimates a simple specification of regressing this belief on treatment indicators, including occupation fixed effects. The responses only includes respondents who completed a phone call to apply for a job, and thus the sample size is comparatively low. There are small differences between information treatment and control groups, but none are statistically significant.

ranking over occupations, as a measure of occupational choice. Figure 12 depicts which occupations jobseekers are most interested in being matched with at baseline and at endline.

Figure 12: Occupational Rankings



Notes: Blue bars indicate baseline and orange bars indicate endline. Each bar denotes the percentage of respondents that ranked the given occupation as within their top three most preferred occupations.

At baseline, about 55% of jobseekers ranking 'teacher' in their top three most preferred occupations, which is consistent with teaching being a very culturally accepted profession for women. About 25% of jobseekers ranking 'manager/assistant manager' in their top three most preferred occupations, showing that while the majority of respondents are just beginning their careers, their stated occupational preferences are ambitious. The overall distribution is fairly similar at endline.

The first set of analysis tests whether the information or priming treatment directly had an impact on endline rankings. The first outcome is whether the individual changed their set of rankings from baseline to endline within occupation, controlling for education and experience (the matching criteria), among jobseekers who completed both the baseline and endline questionnaires. The second

and third outcomes are respectively whether the respondent ranked "Manager/Assistant Manager" and "Teacher" as their most preferred outcome at endline. These are the two occupations which jobseekers were most interested in at baseline.

The specifications for the information experiment and priming experiments are both straightforward. In the information experiment specification, S_i denotes being randomly selected to be in the treatment group to receive information about gender of supervisor, and C_i denotes being randomly selected to be in the treatment group to receive information about gender composition.

$$Y_{im} = \gamma_0 + \gamma_1 S_i + \gamma_2 C_i + \gamma_3 S_i C_i + \Gamma W_i + \varepsilon_i \tag{10}$$

In the priming experiment specification, P_i denotes being randomly selected to be in the treatment group to receive priming about family job search advice.

$$Y_{im} = \rho_0 + \rho_1 P_i + \Gamma W_i + \varepsilon_i \tag{11}$$

Beliefs about workplace attributes can drive individuals' rankings over occupations. To study this relationship, I specify a simple utility function (Zafar, 2013; Attanasio and Kaufmann, 2014). In the following, i indexes the individual and m indexes the occupations. Utility is assumed to depend on the jobseeker's beliefs about four parameters of the occupation: the 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.[41]

The utility gained for jobseeker i from occupation m is thus:

$$U_{im} = \sum_{l \in L} \beta_l E_{ilm} + \beta_5 \rho_{im} + \varepsilon_{im} \tag{12}$$

In this specification, L denotes the set of four parameters of the occupation: the salary, the

[41] In the endline and baseline surveys, I ask about percentage of employees that would be men and probability of having a male supervisor. To maintain consistency across directions of beliefs, I subtract those values from 100 to get the percentage of female employees and the probability of a female supervisor

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 endline expected value about parameter l for occupation m. In addition, the utility function includes the number of matches that the jobseeker received for that occupation which had flexible working hours, ρ_{im}. This is not a parameter on which endline beliefs were collected, however it is likely to be an important workplace attribute which can impact women's occupational choice. I also estimate a version of this utility function which includes endline standard deviation belief about the percentage of employees in a typical job in that occupation that would be women, and the endline standard deviation belief about the probability that the job would have a female supervisor.

The jobseeker is assumed to rank preferred occupation by maximizing utility. Using the endline data on rankings and beliefs, I estimate the utility function in Specification 12 as a rank ordered logit regression, assuming that the stochastic term ε_{im} follows an extreme value distribution (Beggs et al., 1981). This estimation of the values of each β represents the importance of that belief parameter on occupational choice. However, the belief at endline is endogenous: the jobseeker learns about the occupations that she indicated interest in at baseline, through her job search. Thus, I require a set of instruments which are correlated with her endline beliefs but otherwise exogenous. Since the final specification is a nonlinear model, I cannot estimate the equation as a standard two-stage least squares estimation. Rather, I implement a control function approach to address this endogeneity (Petrin and Train, 2009; Wooldridge, 2014; Hotz et al., 2018). The details and results from this estimation are presented in Appendix A6.

7.1 Occupational Choice: Results

Table 11 contains the analysis for whether the information or priming treatments impacted whether individuals changed their ranking of preferred occupations between baseline and endline, and whether it changed whether they ranked being a manager or teacher as their top preference. The results show

that neither treatment directly impacted stated occupational rankings.

Table 11: Occupational Rankings

Panel A: Information Experiment

VARIABLES	(1) Changed Ranking	(2) Rank 1: Sales/Marketing Officer	(3) Rank 1: Manager/ Assistant Manager	(4) Rank 1: Teacher
Treatment: Information about Gender of Supervisor	0.00108	0.00302	-0.0111	-0.00368
	(0.0194)	(0.0106)	(0.0277)	(0.0604)
Treatment: Information about Gender Composition	-0.0162	0.00223	-0.00525	0.0452
	(0.0157)	(0.0103)	(0.0273)	(0.0572)
Treatment: Both Information Treatments	-0.0250	0.00304	0.00535	-0.0133
	(0.0295)	(0.0186)	(0.0389)	(0.0849)
Observations	4,180	924	924	924
R-squared	0.088	0.332	0.534	0.312
Control Mean	0.137	0.0500	0.0500	0.0500

Panel B: Priming Experiment

VARIABLES	(1) Changed Ranking	(2) Rank 1: Sales/Marketing Officer	(3) Rank 1: Manager/ Assistant Manager	(4) Rank 1: Teacher
Treatment: Prime	-0.0175	-0.0379	-0.0132	0.0177
	(0.0150)	(0.0279)	(0.0549)	(0.0979)
Observations	3,780	355	355	355
R-squared	0.093	0.601	0.754	0.655
Control Mean	0.137	0.0500	0.0500	0.0500

Notes: Unit of observation is occupation and individual. Standard errors clustered on individual. Controls include education and years of experience. Fixed effects for occupation and randomization strata. First column depicts impact of information on whether the individual changed their top three rankings, among respondents who completed both baseline and endline rankings. Column (2) and (3) restrict the sample to one observation for each individual who completed endline rankings. The outcomes are whether the individual ranked "Manager/Assistant Manager" or "Teacher" as most preferred, respectively. These are the two most preferred occupations from baseline. Standard errors reported in parentheses.*** p<0.01, ** p<0.05, * p<0.1

Table 12 displays the results of the occupational choice analysis. In the empirical results, I report an expanded rank-ordered logit which includes the standard error belief parameters as explanatory variables without addressing endogeneity of beliefs and the basic rank-ordered logit (as described in the previous section) without addressing endogeneity. The results accounting for endogeneity are presented in Appendix A6, though they should be interpreted with caution since the first stages are underpowered.

Table 12: Occupational Choice

VARIABLES	(1) RO Logit	(2) RO Logit
Endline Belief: Mean Salary	-0.0262***	-0.0288***
	(0.00610)	(0.00580)
Endline Belief: Mean Percent Female	0.0105***	0.00918***
	(0.00293)	(0.00240)
Endline Belief: SD Percent Female	0.0151	
	(0.0133)	
Endline Belief: Mean Prob Female Supervisor	0.00856***	0.00361
	(0.00309)	(0.00249)
Endline Belief: SD Prob Female Supervisor	0.0389***	
	(0.0151)	
Endline Belief: Mean Prob Hire Woman	-0.0132***	-0.0131***
	(0.00287)	(0.00261)
Total Number of Matches w Any Flex Hours	0.114***	0.110***
	(0.0331)	(0.0308)
Observations	2,267	2,421

Notes: Standard errors clustered on individual. Both sets of estimates are rank-ordered logit. Outcome variable is ranking of top three most preferred occupations. The endline belief for mean salary is in units of 1000 PKR (about 10 USD). The endline beliefs for mean percent female, SD percent female, mean probability of female supervisor, SD of probability of female supervisor, and mean probability of hiring a woman are all in percentage point units. Standard errors reported in parentheses.*** p<0.01, ** p<0.05, * p<0.1

In the first column, the results show that beliefs that an occupation has a higher percentage of female employees, higher probability of a female supervisor, higher standard deviation (spread) of having a female supervisor, and more matches with flexible working hours are all associated with higher rank. However, a higher expected salary and higher expected probability that a woman would be hired are associated with a lower rank. This is consistent with female jobseekers preferring a female-dominant workplace. A low expected probability of hiring a woman could be an indicator that the occupation is interpreted as high-prestige, and thus is ranked higher. Finally, higher expected salary is associated with lower ranking. This result is consistent with the fact that about 90% of jobseekers in this sample are not married, and that for those who completed this survey question at baseline, 80% of those not married

expect to be married within five years. They are aware that they are expected to be on the marriage market, and likely know that a high salary will not garner returns on the marriage market (Bertrand et al., 2015; **?**).

The second column presents analogous results but without the standard deviation measures included. The patterns are consistent with the results in the first column. An exception is that when the standard deviations of beliefs about having a female supervisor or the percent of female employees are not included in the specification, a higher mean expected probability of having a female supervisor is not significantly associated with occupational rank.

These descriptive results are mostly consistent with women preferring occupations that they believe will have more women and that are of higher prestige, but not necessarily ranking occupations based on the expected probability of having a female supervisor. The magnitude of the results is consistent with a similar increase in utility from having an additional match in that occupation with flexible working hours and a one percentage point higher expectation of percentage of women in a typical firm hiring for that occupation. A higher expected salary by two thousand PKR is associated with about as much of a decrease in utility as a one percentage point increase in the expected probability that a woman would be hired for that occupation.

8 Robustness Checks

For robustness of the application decision regressions, I estimate additional specifications. The main information experiment robustness results are in Tables 13 and 14. The information experiment robustness results looking at differences in application rates for female- dominant or male- dominant jobs are reported in Tables 15 and 16. I first estimate a simplified model identical to Specification 1 (or analogously Specification 2 and 3), but without the vector of covariates W_{ijk}. The second specification includes job-level fixed effects instead of job-level covariates. The interpretation of the main coefficients then becomes the difference in application rate for individuals who did and did not receive information about gender-related workplace attributes, for the same job posting. Since job-level fixed effects are

included, job characteristics are now omitted from the vector W_{ik}. The third specification includes match round level fixed effects, instead of controlling for the number of matches received in the given round. The interpretation is then comparison across jobs within the same match round. The main results for the information experiment are consistent in magnitude and significance to these robustness checks. The fourth specification restricts the sample for the main specification to those in the Priming Experiment sample; results are consistent.

Table 13: Robustness: Information Experiment: Main Results: Gender Composition

Panel A: All Jobseekers

VARIABLES	(1) Applied for job	(2) Applied for job	(3) Applied for job	(4) Applied for job	(5) Applied to job
Treat Info X Have Info Gender Comp	0.00483	0.00562	0.00557	0.0122	-0.00441
	(0.00727)	(0.00717)	(0.00718)	(0.0107)	(0.0334)
Treat Info Gender Comp	-0.00172	-0.00258	-0.00248	-0.00879	-0.0111
	(0.00693)	(0.00682)	(0.00683)	(0.0101)	(0.0349)
Have Info Gender Comp	0.00188		0.00566	0.0428*	-0.00902
	(0.00471)		(0.0195)	(0.0230)	(0.0496)
Observations	20,650	20,650	20,650	12,503	711
Job FE	No	Yes	No	No	No
Match FE	No	No	Yes	Yes	No
Job Covars	No	No	Yes	Yes	Yes
Number of Jobseekers	3661	3661	3661	1664	410

Panel B: Active Jobseekers

VARIABLES	(1) Applied for job	(2) Applied for job	(3) Applied for job	(4) Applied for job	(5) Applied to job
Treat Info X Have Info Gender Comp	0.0119	0.0128	0.0131	0.0184	0.0453
	(0.0132)	(0.0130)	(0.0131)	(0.0175)	(0.0426)
Treat Info Gender Comp	-0.0104	-0.0112	-0.0114	-0.0185	-0.0508
	(0.0131)	(0.0129)	(0.0129)	(0.0176)	(0.0501)
Have Info Gender Comp	-0.00156		0.0179	0.0524	-0.0272
	(0.00846)		(0.0307)	(0.0341)	(0.0269)
Observations	8,110	8,110	8,110	5,877	387
Job FE	No	Yes	No	No	No
Match FE	No	No	Yes	Yes	No
Job Covars	No	No	Yes	Yes	Yes
Number of Jobseekers	958	958	958	620	184

Notes: First column: No control variables. Fourth column (only completed calls): Regressions include job covariates for natural log salary, flexible working hours, occupation fixed effects, and area fixed effects. Also include covariates for the number of matches in that round of matching, opposite information treatment indicator, and indicator for receiving calls from Job Asaan to apply for jobs. All regressions include strata FE. SE are clustered on individual, and reported in parentheses. Mean application rate in the pure control group is 0.05.

Table 14: Robustness: Information Experiment: Main Results: Gender of Supervisor

Panel A: All Jobseekers

VARIABLES	(1) Applied for job	(2) Applied for job	(3) Applied for job	(4) Applied for job	(5) Applied to job
Treat Info X Have Info Gender Sup	0.0438**	0.0464**	0.0451**	0.0524*	0.0189
	(0.0223)	(0.0219)	(0.0220)	(0.0289)	(0.0163)
Treat Info Gender Sup	-0.0446**	-0.0470**	-0.0457**	-0.0532*	0.0153
	(0.0223)	(0.0220)	(0.0220)	(0.0290)	(0.0124)
Have Info Gender Sup	-0.0667***		-0.0661	-0.0406	0.0679
	(0.0181)		(0.0561)	(0.0657)	(0.0566)
Observations	20,650	20,650	20,650	12,503	711
Job FE	No	Yes	No	No	No
Match FE	No	No	Yes	Yes	No
Job Covars	No	No	Yes	Yes	Yes
Number of Jobseekers	3661	3661	3661	1664	410

Panel B: Active Jobseekers

VARIABLES	(1) Applied for job	(2) Applied for job	(3) Applied for job	(4) Applied for job	(5) Applied to job
Treat Info X Have Info Gender Sup	0.0635*	0.0638*	0.0630*	0.0895*	0.0110
	(0.0374)	(0.0370)	(0.0370)	(0.0475)	(0.0138)
Treat Info Gender Sup	-0.0629*	-0.0631*	-0.0623*	-0.0926*	0.0135
	(0.0377)	(0.0373)	(0.0373)	(0.0481)	(0.0144)
Have Info Gender Sup	-0.0867***		-0.0182	0.0154	0.0324
	(0.0310)		(0.0813)	(0.0910)	(0.0372)
Observations	8,110	8,110	8,110	5,877	387
Job FE	No	Yes	No	No	No
Match FE	No	No	Yes	Yes	No
Job Covars	No	No	Yes	Yes	Yes
Number of Jobseekers	958	958	958	620	184

Notes: First column: No control variables. Fourth column (only completed calls): Regressions include job covariates for natural log salary, flexible working hours, occupation fixed effects, and area fixed effects. Also include covariates for the number of matches in that round of matching and indicator for receiving calls from Job Asaan to apply for jobs. All regressions include strata FE. SE are clustered on individual, and reported in parentheses. Mean application rate in the pure control group is 0.05.

Table 15: Robustness: Information Experiment: Gender of Workplace Attribute - Gender Composition

Panel A: All Jobseekers

VARIABLES	(1) Applied for job	(2) Applied for job	(3) Applied for job	(4) Applied for job	(5) Applied to job
Receiving Info About Mostly/All Female VS Mostly/All Male Emp	0.00604	0.00645	0.00646	0.00743	0.00581
	(0.00573)	(0.00572)	(0.00572)	(0.00935)	(0.0398)
Receiving Info About Mostly/All Male Emp	0.00115	0.000841	0.000880	0.00208	-0.0234
	(0.00508)	(0.00507)	(0.00506)	(0.00755)	(0.0206)
Observations	20,650	20,650	20,650	12,503	711
Job FE	No	Yes	No	No	No
Match FE	No	No	Yes	Yes	No
Job Covars	No	No	Yes	Yes	Yes
Number of Jobseekers	3661	3661	3661	1664	410

Panel B: Active Jobseekers

VARIABLES	(1) Applied for job	(2) Applied for job	(3) Applied for job	(4) Applied for job	(5) Applied to job
Receiving Info About Mostly/All Female VS Mostly/All Male Emp	0.000879	0.00120	0.00156	-0.000537	0.0102
	(0.00968)	(0.00962)	(0.00963)	(0.0136)	(0.0126)
Receiving Info About Mostly/All Male Emp	0.00166	0.00167	0.00160	0.000525	-0.00798
	(0.00858)	(0.00851)	(0.00852)	(0.0118)	(0.0105)
Observations	8,110	8,110	8,110	5,877	387
Job FE	No	Yes	No	No	No
Match FE	No	No	Yes	Yes	No
Job Covars	No	No	Yes	Yes	Yes
Number of Jobseekers	958	958	958	620	184

Notes: First column: No control variables. Fourth column (only completed calls): Regressions include job covariates for natural log salary, flexible working hours, occupation fixed effects, and area fixed effects. Also include covariates for the number of matches in that round of matching, opposite information treatment indicator, and indicator for receiving calls from Job Asaan to apply for jobs. All regressions include strata FE. SE are clustered on individual, and reported in parentheses. Mean application rate in the pure control group is 0.05. Test row displays p-value for test that coefficient on Treat Info x Female is same as coefficient on Treat Info x Male.

Table 16: Robustness: Information Experiment: Gender of Workplace Attribute - Gender of Supervisor

Panel A: All Jobseekers

VARIABLES	(1) Applied for job	(2) Applied for job	(3) Applied for job	(4) Applied for job	(5) Applied to job
Receiving Info About Female VS Male Sup	0.00551	0.00539	0.00549	0.00571	-0.00460
	(0.00543)	(0.00539)	(0.00539)	(0.00826)	(0.0308)
Receiving Info About Male Sup	-0.00402	-0.00374	-0.00383	-0.00387	0.0357*
	(0.00524)	(0.00521)	(0.00523)	(0.00797)	(0.0184)
Observations	20,650	20,650	20,650	12,503	711
Job FE	No	Yes	No	No	No
Match FE	No	No	Yes	Yes	No
Job Covars	No	No	Yes	Yes	Yes
Number of Jobseekers	3661	3661	3661	1664	410

Panel B: Active Jobseekers

VARIABLES	(1) Applied for job	(2) Applied for job	(3) Applied for job	(4) Applied for job	(5) Applied to job
Receiving Info About Female VS Male Sup	0.0188**	0.0199**	0.0198**	0.0249**	-0.00769
	(0.00919)	(0.00912)	(0.00914)	(0.0124)	(0.0126)
Receiving Info About Male Sup	-0.00852	-0.00932	-0.00929	-0.0152	0.0273
	(0.00951)	(0.00945)	(0.00948)	(0.0134)	(0.0260)
Observations	8,110	8,110	8,110	5,877	387
Job FE	No	Yes	No	No	No
Match FE	No	No Job Covars	Yes	Yes	No
Job Covars	No		Yes	Yes	Yes
Number of Jobseekers	958	958	958	620	184
		No			

Notes: First column: No control variables. Fourth column (only completed calls): Regressions include job covariates for natural log salary, flexible working hours, occupation fixed effects, and area fixed effects. Also include covariates for the number of matches in that round of matching, opposite information treatment indicator, and indicator for receiving calls from Job Asaan to apply for jobs. All regressions include strata FE. SE are clustered on individual, and reported in parentheses. Mean application rate in the pure control group is 0.05. Test row displays p-value for test that coefficient on Treat Info x Female is same as coefficient on Treat Info x Male .

Throughout the experiment, while jobseekers were supposed to either call Job Asaan to apply for jobs or pick up the calls from Job Asaan to say that they were not interested or in which jobs they were interested, in practice, jobseekers only called to apply for jobs, and largely picked up Job Asaan's calls only when they wanted to apply for jobs. Thus, not picking up the call and not calling Job Asaan are categorized as not applying for the job. The final specification replicates the main specification for all jobseekers, but treats nonresponse to the call or no call as missing. As expected, given the very low

sample size, and the selection into the call, there are no significant differences in application behavior across treatments in either the main information specification or the specification looking at differences in application rates for female- vs male- dominant workplace attributes.

The robustness checks for application decisions on the priming experiment in Table 17 are similar. The first specification omits all covariates, and simply regresses the application decision on the treatment indicator for being randomly selected to receive priming. The second specification includes job fixed effects. Due to the job fixed effects, the coefficient of interest β_1 now denotes the difference in application behavior between those who received the prime and those who did not, for the same job posting. The results from both of these specifications are very similar in magnitude and significance to the main results. The third set of results replicates the main specification but treats nonresponse to the call, or no call, as missing. Again, the sample size is very small, and there is no significant difference in application behavior across those who received priming and those who did not.

Table 17: Robustness: Priming Experiment

Panel A: All Jobseekers

VARIABLES	(1) Applied for job	(2) Applied for job	(3) Applied for job	(4) Applied to job	(5) Applied for job
Treat: Prime	-0.0126**	-0.0119**	-0.0122**	0.000460	
	(0.00578)	(0.00571)	(0.00577)	(0.00123)	
Received Prime					-0.123**
					(0.0618)
Observations	12,503	12,503	12,503	623	12,503
Job FE	No	Yes	No	No	No
Match FE	No	No	Yes	No	No
Job Covars	No	No	Yes	Yes	Yes
Number of Jobseekers	1664	1664	1664	338	1664

Panel B: Active Jobseekers

VARIABLES	(1) Applied for job	(2) Applied for job	(3) Applied for job	(4) Applied to job	(5) Applied for job
Treat: Prime	-0.0186*	-0.0183*	-0.0182*		
	(0.0105)	(0.0103)	(0.0105)		
Received Prime					-0.176*
					(0.104)
Observations	5,877	5,877	5,877	362	5,877
Job FE	No	Yes	No	No	No
Match FE	No	No	Yes	No	No
Job Covars	No	No	Yes	Yes	Yes
Number of Jobseekers	620	620	620	165	620

Notes: First column: No control variables. Fourth column (only completed calls): Regressions include job covariates for natural log salary, flexible working hours, occupation fixed effects, and area fixed effects. Also includes covariate of the number of matches in that round of matching, indicator for receiving calls from Job Asaan to apply for jobs, and information treatment indicators. Fourth column is IV specification. All regressions include strata FE. SE are clustered on individual, and reported in parentheses. Mean application rate in the pure control group is 0.05. Test row displays p-value for test that coefficient on Treat Info x Female is same as coefficient on Treat Info x Male . F-test for first stage in Panel A (col 4) is 154.30. F-test for first stage in Panel B (col 4) is 65.04. Column (3) of Panel B is fully collinear and cannot be estimated.

Finally, I conduct a two-stage least squares estimation to address that the main specifications all capture an intent-to-treat, since not all jobseekers pick up the phone call from Job Asaan. I create a variable which indicates that the respondent picked up the phone call and received the priming question

from Job Asaan. I instrument for this using the randomly assigned priming treatment. All covariates from Specification 4 are included in the first and second stage. The magnitude of this treatment on treated effect is about ten times larger than the intent to treat (main specification).

9 Conclusion

Women's education levels have risen in Pakistan and in many other developing countries. However, women's labor supply remains low in terms of participation, hours of paid labor (compared to men), and wages. Conducting an experiment on a labor search platform catering to educated female jobseekers in urban Pakistan, I show that the information environment matters for women's job search, and that women face two types of costs. First, women face an initial threshold cost to working anywhere outside the home. Through experimental results, I show that priming about family job search involvement significantly decreases job application rates, consistent with social norms discouraging from women working outside the home.

Second, women face costs and benefits accruing from specific workplace attributes. Educated female jobseekers are far more likely to apply to jobs when they receive information about the gender of the supervisor at that job. Women who are actively searching for work are more likely to apply to a jobs with a female supervisor compared to a male supervisor, holding other job characteristics fixed. However, in a somewhat surprising result given social norms prescribing segregation of men and women in public spaces, educated female jobseekers do not exhibit a significant preference for a workplace with more or fewer female employees.

At baseline, descriptive survey evidence shows that the information environment surrounding workplace attributes in the labor market is poor. Educated women overestimate salary but underestimate the proportion of men working at typical firms and the probability of having a male supervisor, within occupation. Consistent with the information regarding gender of the supervisor having a significant impact on the application rate, this treatment also significantly improved jobseekers' accuracy of beliefs about the distribution of the probability of having a male supervisor across occupations, beyond their

baseline priors. No other belief parameters were significantly shifted by the experiments beyond the baseline priors. Finally, the descriptive analysis of occupational choice is consistent with women preferring occupations where they believe there will be more women in the workplace, including a higher likelihood of a female supervisor.

The results show that improving the information environment greatly improves women's job application rates by allowing women to sort into applying to firms that fit with their preferences over gender of the supervisor. Information about gender composition of the firm did not have as large a magnitude (or statistically significant) impact on job applications, which could be an encouraging sign that social norms about social segregation of men and women are now less relevant for highly educated women in urban Pakistan, though they seem to matter to families. Given that female labor force participation is particularly low in Pakistan, and hasn't risen much in recent decades, this result suggests that such an information intervention might have stronger impacts in settings with less stringent norms about women's work outside the home.

These results are encouraging and suggest that a low-cost information intervention providing accurate information about gender of the supervisor can increase educated women's job application rates on a formal job search platform. This can be an important step in translating women's educational achievements to the labor market. Most job search in Pakistan and other developing country settings is informal, stemming from word-of-mouth recommendations and connections with family and friends. The setting of this study is on a formal job search platform, which is accessible to highly educated women who have access to a phone, and thus the results should be extrapolated to job search among lower socioeconomic status women with caution. However, for this same reason, the results highlight that even for these highly educated women who are searching for jobs through a formal platform, family job search advice can be a deterrent to their search, or can impact the profile of jobs to which women apply. Promoting women to supervisory roles can be one pathway to increasing the number of women actively searching for work, and to hopefully reach a tipping point where there are enough women in the workplace to improve the information environment surrounding women in the labor force and weaken

family pressures against women working.

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A1 Appendix 1: Descriptive Statistics and Balance

The tables below provide descriptive statistics on observable characteristics at baseline for all jobseekers, those actively using the platform before the experiment began, and those who completed the endline survey.

Table A1: Summary Statistics

Panel A: All Jobseekers

Variable	Mean	Std. Dev.	Min.	Max.	N
Age in years	21.714	3.861	17	59	3719
Currently enrolled	0.762	0.426	0	1	1695
Years of experience	0.632	1.664	0	25	4081
At least bachelors	0.888	0.315	0	1	4027
married	0.092	0.289	0	1	1691
Number of Interested Occupations	3.543	2.78	0	20	4081
Applied to any jobs on Job Asaan prior to experiment	0.086	0.28	0	1	4081
Number of matches through Job Asaan prior to experiment	0.938	0.775	0	2	4081

Panel B: Active Jobseekers

Variable	Mean	Std. Dev.	Min.	Max.	N
Age in years	22.921	4.894	17	59	856
Currently enrolled	0.675	0.469	0	1	579
Years of experience	1.112	2.172	0	25	998
At least bachelors	0.914	0.281	0	1	983
married	0.116	0.32	0	1	605
Number of Interested Occupations	4.828	3.391	1	20	998
Applied to any jobs on Job Asaan prior to experiment	0.352	0.478	0	1	998
Number of matches through Job Asaan prior to experiment	1.511	0.546	0	2	998

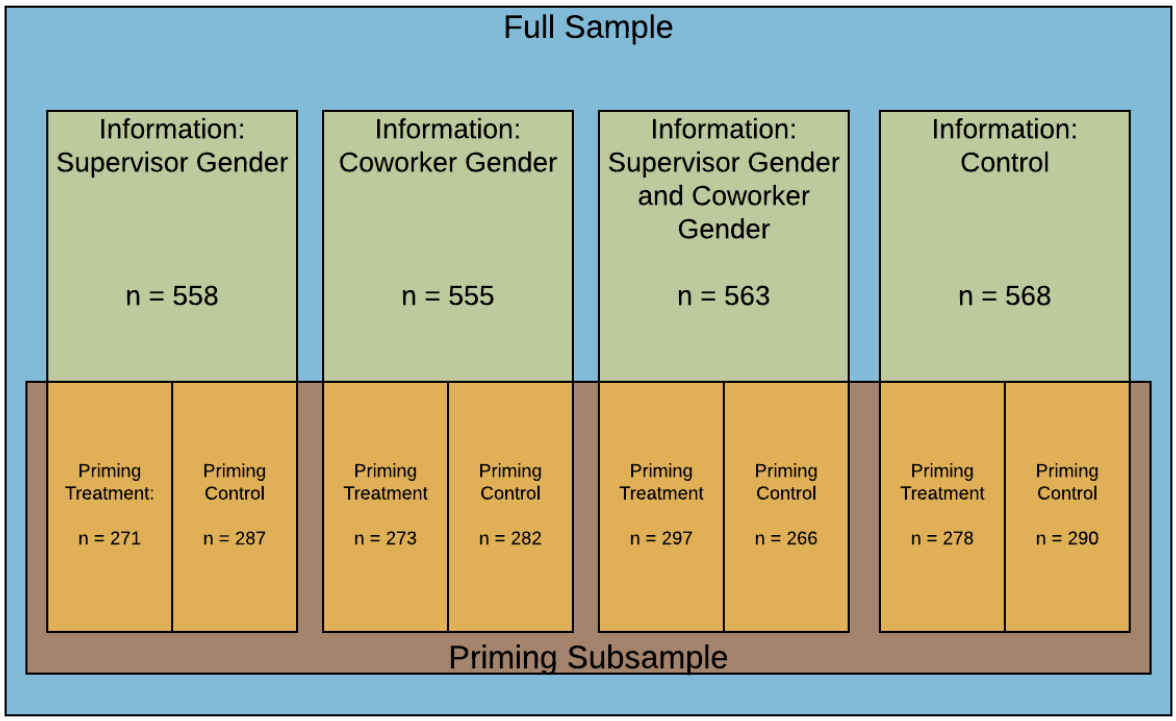
Panel C: Individuals who Completed Endline

Variable	Mean	Std. Dev.	Min.	Max.	N
Age in years	21.629	3.915	17	55	863
Currently enrolled	0.797	0.403	0	1	364
Years of experience	0.649	1.714	0	25	947
At least bachelors	0.885	0.319	0	1	932
married	0.077	0.267	0	1	375
Number of Interested Occupations	3.421	2.776	0	20	947
Applied to any jobs on Job Asaan prior to experiment	0.098	0.298	0	1	947
Number of matches through Job Asaan prior to experiment	0.833	0.762	0	2	947

Notes: Calculations on baseline variables.

This diagram provides a breakdown of the number of jobseekers in each cell created by the randomization structure.

Figure A1: Randomization Structure



The following tables indicate that the treatment and control groups in are similar on observables. The notable exception is years of experience, which is controlled for in analysis.

Table A2: Balance

Panel A: Information Experiment, All Jobseekers

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) Has endline data
Treatment: Information about Gender Composition	0.0797	0.190***	0.00252	-0.0371	0.00106	0.00228	0.00955
	(0.158)	(0.0698)	(0.00564)	(0.0809)	(0.00202)	(0.00202)	(0.0200)
Treatment: Information about Gender of Supervisor	0.0577	0.0717	-0.00136	-0.0433	0.000324	0.000474	-0.0193
	(0.157)	(0.0695)	(0.00561)	(0.0805)	(0.00201)	(0.00201)	(0.0199)
Treatment: Both Information Treatments	-0.0555	-0.0867	-0.00459	0.0465	-0.000239	-0.00266	0.0206
	(0.230)	(0.102)	(0.00823)	(0.118)	(0.00295)	(0.00295)	(0.0292)
Constant	21.59***	0.523***	0.889***	1.990***	0.0854***	0.938***	0.232***
	(0.109)	(0.0479)	(0.00387)	(0.0555)	(0.00139)	(0.00139)	(0.0137)
Observations	3,732	4,081	4,027	4,081	4,081	4,081	4,081
R-squared	0.464	0.335	0.880	0.733	0.980	0.997	0.150

Panel B: Priming Experiment, All Jobseekers

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) Has endline data
Treatment: Prime	-0.276	-0.162	0.00873	-0.101	-0.00203	-0.00203	-0.000397
	(0.231)	(0.102)	(0.00893)	(0.134)	(0.00353)	(0.00353)	(0.0205)
Constant	23.12***	1.034***	0.899***	4.330***	0.192***	1.219***	0.209***
	(0.157)	(0.0694)	(0.00611)	(0.0915)	(0.00242)	(0.00242)	(0.0140)
Observations	1,492	1,837	1,808	1,837	1,837	1,837	1,837
R-squared	0.537	0.355	0.751	0.518	0.978	0.995	0.301

Panel C: Information Experiment, Active Jobseekers

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) Has endline data
Treatment: Information about Gender Composition	0.379	0.243	0.00210	-0.341	-0.00995	-0.00150	0.0403
	(0.407)	(0.202)	(0.0130)	(0.233)	(0.00658)	(0.00742)	(0.0457)
Treatment: Information about Gender of Supervisor	0.143	-0.0110	-0.00491	-0.210	-0.00535	-0.00239	0.0472
	(0.400)	(0.199)	(0.0129)	(0.230)	(0.00649)	(0.00732)	(0.0451)
Treatment: Both Information Treatments	-0.270	-0.197	0.00492	0.243	0.0145	-0.00611	-0.0726
	(0.600)	(0.300)	(0.0194)	(0.347)	(0.00979)	(0.0110)	(0.0679)
Constant	22.73***	1.049***	0.914***	3.561***	0.356***	1.515***	0.217***
	(0.267)	(0.132)	(0.00853)	(0.152)	(0.00430)	(0.00485)	(0.0298)
Observations	856	998	983	998	998	998	998
R-squared	0.657	0.478	0.869	0.762	0.989	0.989	0.313

Panel D: Priming Experiment, Active Jobseekers

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) Has endline data
Treatment: Prime	-0.137	-0.280	0.00194	0.266	0.00207	-0.00276	0.0207
	(0.443)	(0.208)	(0.0144)	(0.260)	(0.00766)	(0.00863)	(0.0384)
Constant	24.13***	1.466***	0.935***	5.014***	0.548***	1.625***	0.219***
	(0.287)	(0.137)	(0.00955)	(0.171)	(0.00505)	(0.00569)	(0.0253)
Observations	496	638	627	638	638	638	638
R-squared	0.698	0.502	0.754	0.601	0.983	0.982	0.414

Notes: Calculations on baseline variables and indicator for having participated in endline survey. We reject in Column (2) of Panel A, owing to imbalance in years of experience across the gender composition information treatment. This variable is controlled for in analysis. All regressions include Strata FE.

Table A3: Balance: Joint Tests

Panel A: All Jobseekers				
	(1)	(2)	(3)	(4)
	Info Gender Composition	Info Gender of Supervisor	All Info	Prime
F-stat	2.489	.306	1.274	1.265
p-value	.029	.909	.272	.277
Panel B: Active Jobseekers				
	(1)	(2)	(3)	(4)
	Info Gender Composition	Info Gender of Supervisor	All Info	Prime
F-stat	1.259	.947	1.409	.985
p-value	.28	.45	.219	.428

Notes: Tests of joint orthogonality of balance variables on each treatment indicator separately. Balance variables: age (in years), years of experience, has at least bachelor's degree, applied to any jobs on Job Asaan prior to experiment, and Number of matches on Job Asaan prior to experiment. Sample size for Columns (1)-(3), Panel A: 3732. Sample size for Columns (1)-(3), Panel B: 856. Sample size for Column (4), Panel A: 1837. Sample size for Column (4), Panel B: 496. We reject in Column (1) of Panel A, owing to imbalance in years of experience across the gender composition information treatment. This variable is controlled for in analysis. All regressions include Strata FE.

Table A4: Distribution of Matches by Information Treatment

Panel A: Information Experiment: Gender Composition, All Jobseekers

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Total Matches During Experiment	Pct of Matches with Mostly/All Female Employees	Pct of Matches with Female Supervisor	Mean Salary (in 1000 PKR) across Matches	Pct of Matches with Flexible Working Hours	Unique Occupations Matched to During Experiment
Treatment: Information about Gender Composition	0.408	0.00515	0.00151	-0.178	0.00180	-0.0449
	(0.272)	(0.00998)	(0.00845)	(0.163)	(0.00588)	(0.0365)
Constant	3.659***	0.674***	0.749***	6.060***	0.602***	-0.0250
	(1.092)	(0.0483)	(0.0409)	(0.791)	(0.0285)	(0.146)
Observations	4,081	3,661	3,661	3,661	3,661	4,081
R-squared	0.704	0.504	0.463	0.460	0.341	0.693

Panel B: Information Experiment: Gender of Supervisor, All Jobseekers

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Total Matches During Experiment	Pct of Matches with Mostly/All Female Employees	Pct of Matches with Female Supervisor	Mean Salary (in 1000 PKR) across Matches	Pct of Matches with Flexible Working Hours	Unique Occupations Matched to During Experiment
Treatment: Information about Gender of Supervisor	-0.113	0.00286	0.00180	-0.0320	0.000951	-0.0205
	(0.272)	(0.00995)	(0.00842)	(0.163)	(0.00586)	(0.0364)
Constant	3.913***	0.675***	0.749***	6.004***	0.603***	-0.0347
	(1.095)	(0.0484)	(0.0409)	(0.792)	(0.0285)	(0.147)
Observations	4,081	3,661	3,661	3,661	3,661	4,081
R-squared	0.704	0.504	0.463	0.460	0.341	0.693

Panel C: Information Experiment: Gender Composition, Active Jobseekers

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Total Matches During Experiment	Pct of Matches with Mostly/All Female Employees	Pct of Matches with Female Supervisor	Mean Salary (in 1000 PKR) across Matches	Pct of Matches with Flexible Working Hours	Unique Occupations Matched to During Experiment
Treatment: Information about Gender Composition	-0.590	0.0174	0.0200	-0.480	-0.00660	-0.192*
	(0.699)	(0.0206)	(0.0185)	(0.379)	(0.0133)	(0.103)
Constant	3.528	0.469***	0.519***	10.04***	0.552***	0.550
	(2.943)	(0.0918)	(0.0825)	(1.686)	(0.0591)	(0.435)
Observations	998	958	958	958	958	998
R-squared	0.754	0.423	0.449	0.418	0.399	0.734

Panel D: Information Experiment: Gender of Supervisor, Active Jobseekers

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Total Matches During Experiment	Pct of Matches with Mostly/All Female Employees	Pct of Matches with Female Supervisor	Mean Salary (in 1000 PKR) across Matches	Pct of Matches with Flexible Working Hours	Unique Occupations Matched to During Experiment
Treatment: Information about Gender of Supervisor	-0.725	0.00755	0.0250	-0.436	-0.0229*	-0.000129
	(0.697)	(0.0205)	(0.0184)	(0.377)	(0.0132)	(0.103)
Constant	3.672	0.472***	0.514***	10.08***	0.562***	0.464
	(2.951)	(0.0921)	(0.0827)	(1.692)	(0.0591)	(0.437)
Observations	998	958	958	958	958	998
R-squared	0.754	0.422	0.449	0.418	0.401	0.733

Notes: Control variables include number of occupations in which the jobseeker indicated interest, education, and years of experience. FE for randomization strata. *** p<0.01, ** p<0.05, * p<0.1

Table A5: Distribution of Matches by Prime Treatment

Panel A: Priming Experiment: All Jobseekers

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Total Matches During Experiment	Pct of Matches with Mostly/All Female Employees	Pct of Matches with Female Supervisor	Mean Salary (in 1000 PKR) across Matches	Pct of Matches with Flexible Working Hours	Unique Occupations Matched to During Experiment
Treatment: Prime	-0.482	-0.00563	0.00800	0.391	-0.00108	0.0174
	(0.542)	(0.0151)	(0.0140)	(0.267)	(0.00960)	(0.0591)
Constant	3.284**	0.606***	0.683***	6.644***	0.640***	-0.763***
	(1.646)	(0.0588)	(0.0544)	(1.037)	(0.0373)	(0.180)
Observations	1,837	1,664	1,664	1,664	1,664	1,837
R-squared	0.698	0.500	0.471	0.492	0.429	0.803

Panel D: Priming Experiment: Active Jobseekers

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Total Matches During Experiment	Pct of Matches with Mostly/All Female Employees	Pct of Matches with Female Supervisor	Mean Salary (in 1000 PKR) across Matches	Pct of Matches with Flexible Working Hours	Unique Occupations Matched to During Experiment
Treatment: Prime	-2.538**	0.0290	0.0210	0.0743	0.00545	-0.134
	(1.047)	(0.0233)	(0.0227)	(0.470)	(0.0163)	(0.126)
Constant	2.733	0.475***	0.556***	8.953***	0.557***	-0.375
	(3.723)	(0.0892)	(0.0868)	(1.795)	(0.0622)	(0.450)
Observations	638	620	620	620	620	638
R-squared	0.752	0.517	0.529	0.493	0.517	0.825

Notes: Control variables include number of occupations in which the jobseeker indicated interest, education, and years of experience. FE for randomization strata. Active jobseekers in the priming treatment received more matches on average than those in the control group, but this is controlled for in the application decision analysis. *** p<0.01, ** p<0.05, * p<0.1

A2 Appendix 2: Matches and Job Postings

Figure A2: Number of Job Postings by Match Round

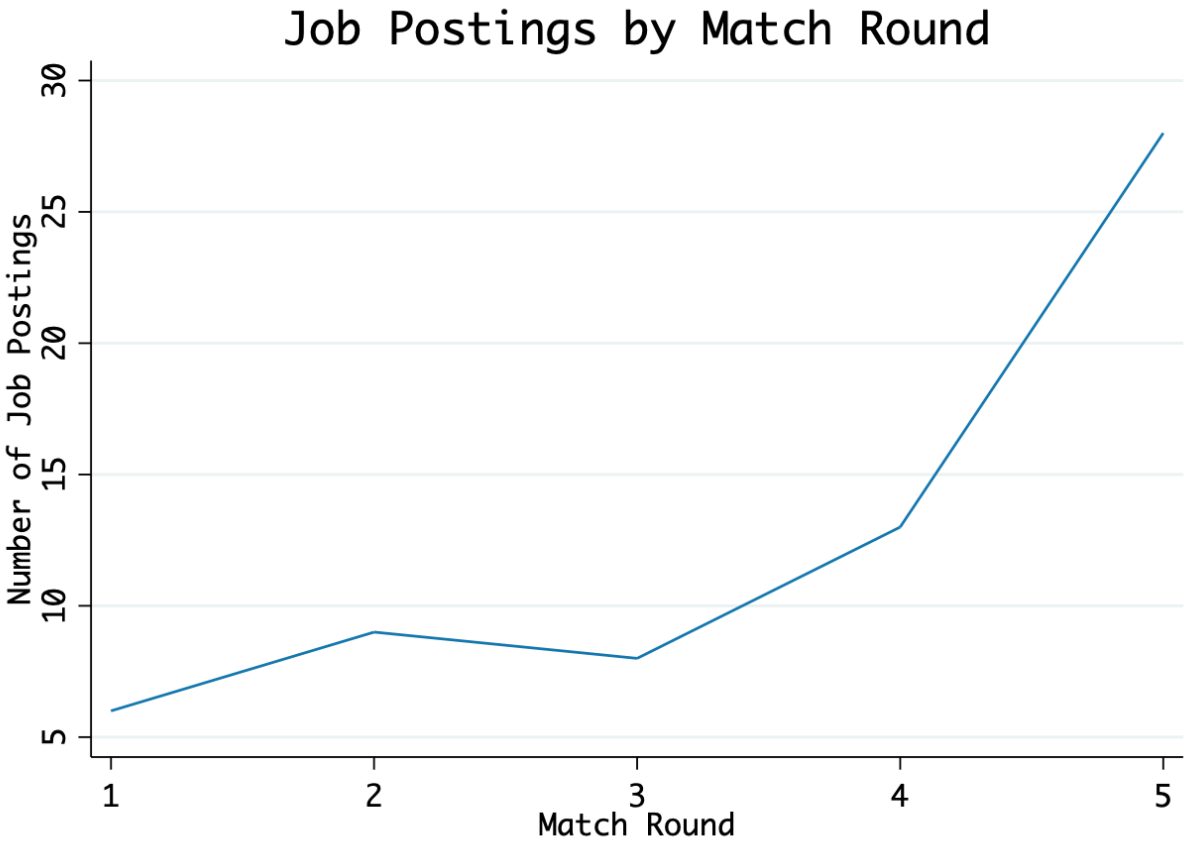


Figure A3: Percentage of Jobs Applied to, by Occupation

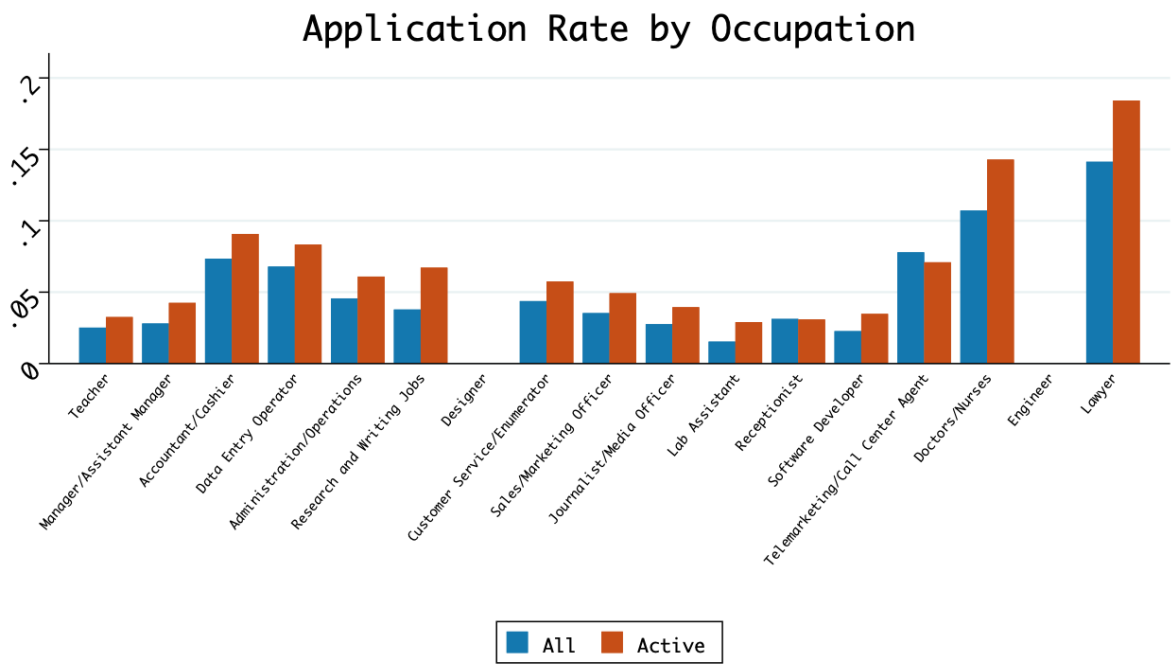


Figure A4: Occupations - Job Postings Requiring High School Diploma or Higher

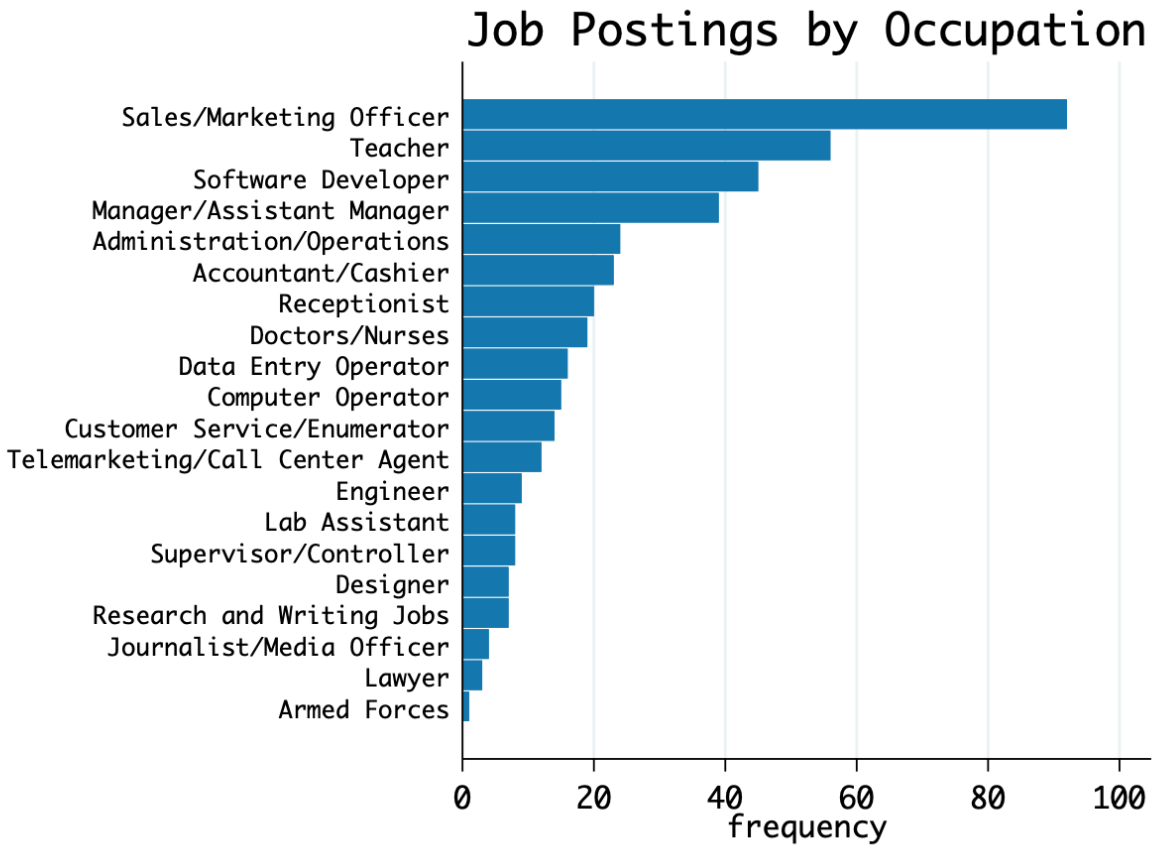


Figure A5: Salary- Job Postings Requiring High School Diploma or Higher

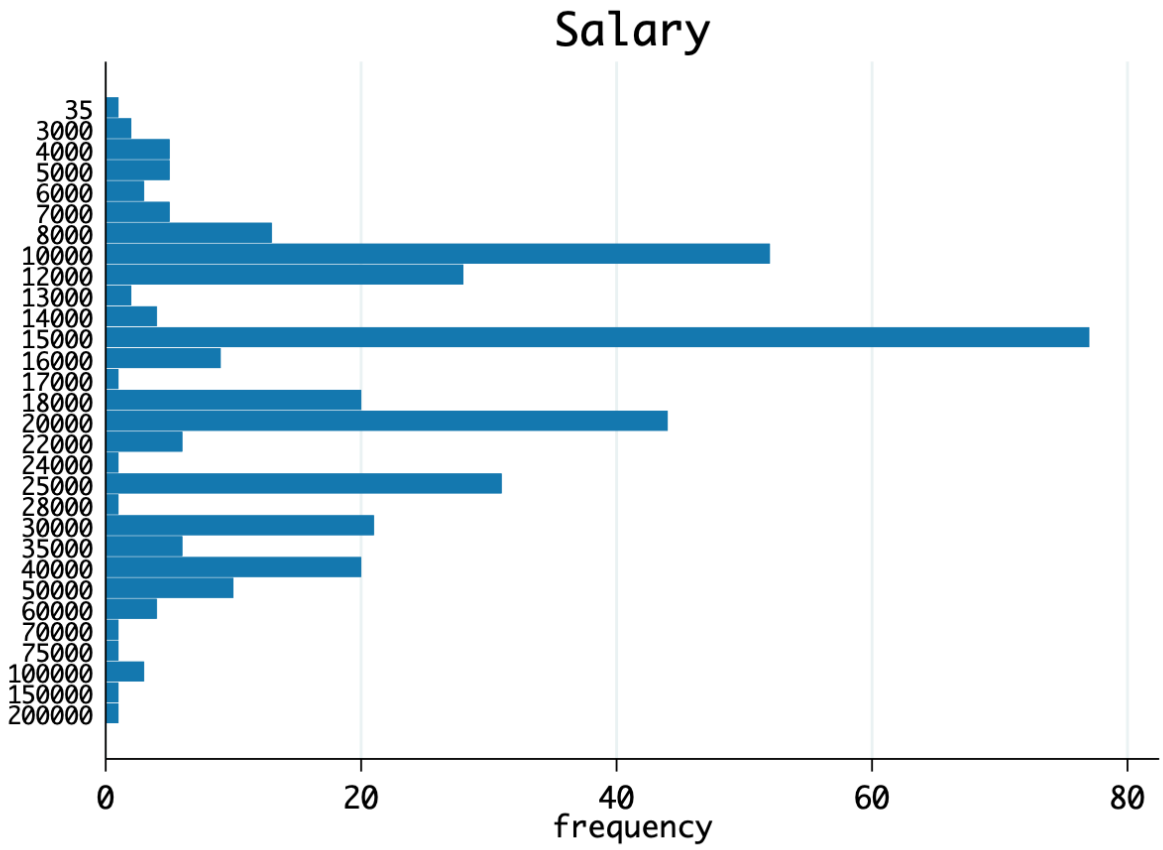


Figure A6: Work Hours - Job Postings Requiring High School Diploma or Higher

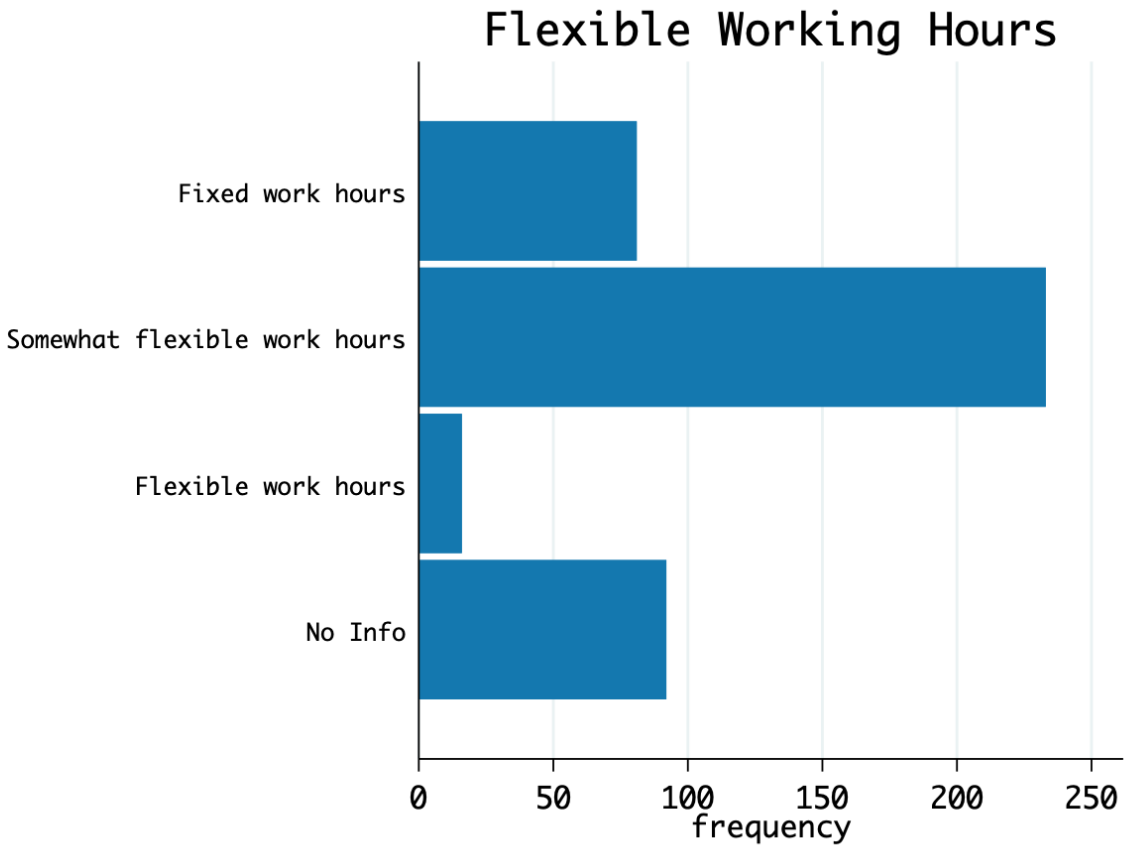


Figure A7: Gender Composition - Job Postings Requiring High School Diploma or Higher

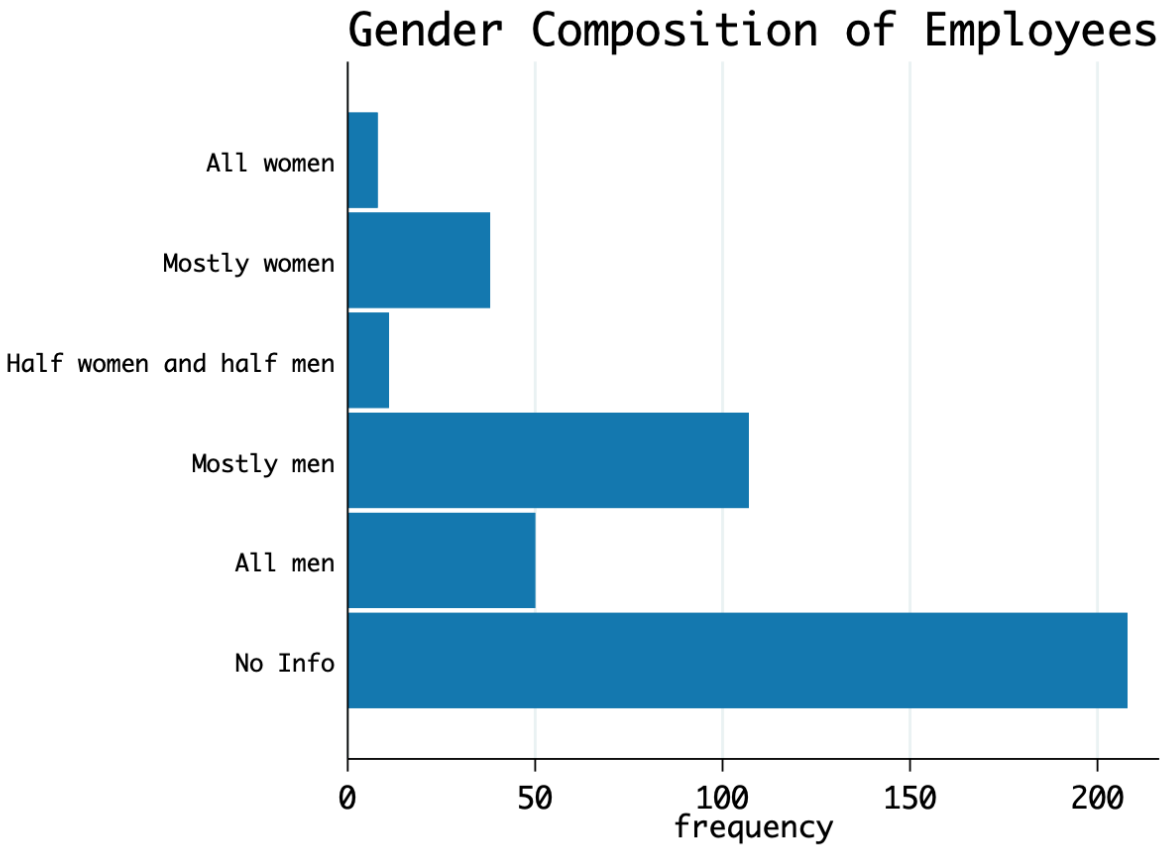
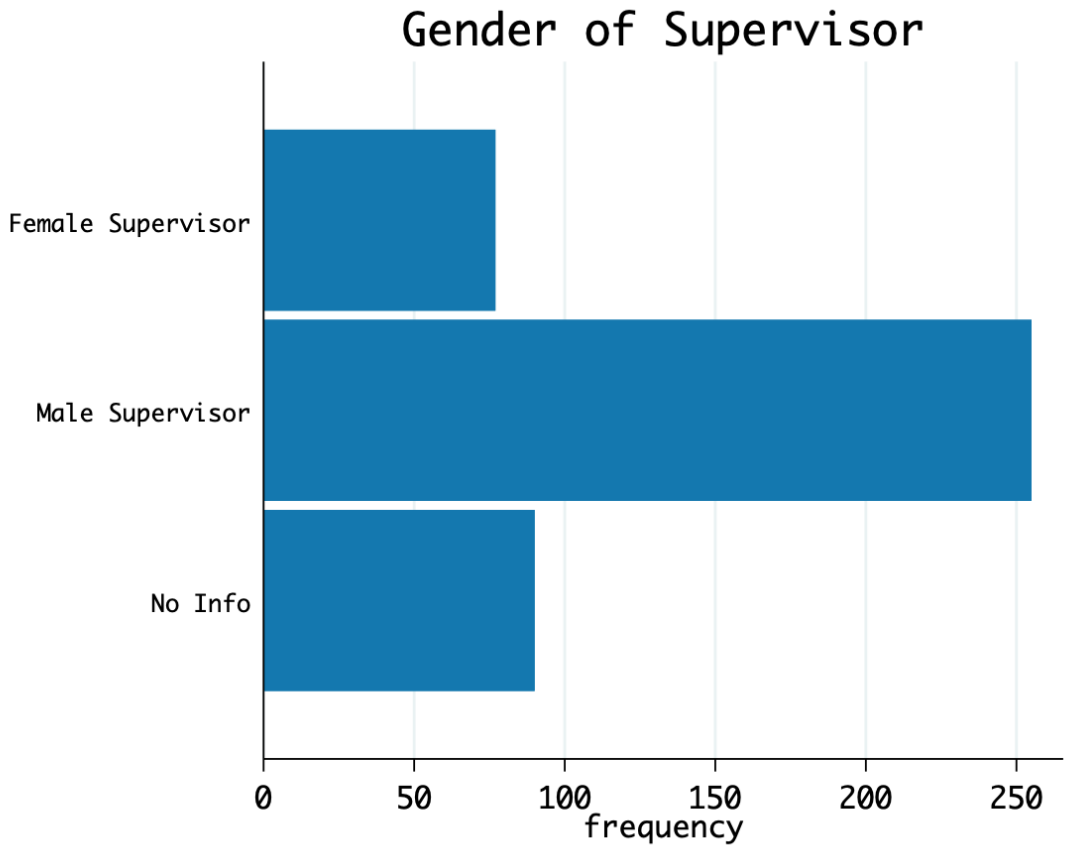


Figure A8: Gender of Supervisor - Job Postings Requiring High School Diploma or Higher



This table provides results of compensating differentials analysis of the minimum salary for open job postings as a function of observable job characteristics of those job postings.

Table A6: Compensating Differentials: Job Postings

VARIABLES	(1) Minimum salary for the position	(2) Minimum salary for the position	(3) Minimum salary for the position	(4) Minimum salary for the position
All female employees	-3,358	-1,698	-3,439*	2,318
	(2,301)	(2,365)	(1,904)	(9,063)
Mostly female employees	-3,539	399.5	-2,047	1,907
	(3,044)	(3,969)	(3,447)	(11,279)
Half female, half male employees	5,519	3,334	1,969	2,940
	(3,631)	(2,793)	(6,031)	(10,030)
Mostly male employees	6,156	5,456	9,033	8,553
	(4,931)	(4,593)	(6,042)	(12,318)
All male employees	-4,092**	-3,226*	-111.9	1,623
	(1,440)	(1,557)	(3,068)	(12,078)
Male supervisor	-1,994	-5,272	-21,357***	-24,306**
	(4,159)	(4,702)	(5,537)	(10,305)
Female supervisor	-9,725	-10,545	-23,396***	-26,329***
	(5,818)	(6,689)	(6,307)	(4,939)
Partially flexible working hours	2,021	3,837	1,836	2,433
	(2,257)	(2,628)	(5,860)	(6,491)
Willing to accept applications from women	3,435**	4,930***		
	(1,638)	(1,608)		
Sales/Marketing Officer		6,122***		-1,945
		(1,883)		(12,909)
Manager/Assistant Manager		20,962***		13,138
		(2,491)		(12,914)
Customer Service/Enumerator		10,580***		127.1
		(3,095)		(14,821)
Telemarketing/Call Center Agent		1,373		-2,885
		(2,779)		(17,832)
Data Entry Operator		-3,343		-1.50e-10
		(2,557)		(3.73e-10)
Teacher		-282.2		-3,600
		(2,831)		(12,400)
Research and Writing Jobs		1,750		3,988
		(2,867)		(7,880)
Accountant/Cashier		3,753		-2,248
		(2,326)		(8,093)
Administration/Operations		2,702		-2,684
		(2,229)		(11,844)
Computer Operator		-1,610		
		(1,940)		
Receptionist		-2,587		-6,350
		(2,232)		(7,903)
Supervisor/Controller		8,210***		
		(1,371)		
Lab Assistant		-4,909**		-11,553
		(2,052)		(12,318)
Software Developer		16,356***		16,946*
		(2,566)		(8,092)
Doctors/Nurses		6,754**		5,093
		(2,865)		(11,279)
Designer		11,920***		13,447
		(2,991)		(12,318)
Engineer		12,514***		8,447
		(3,336)		(12,318)
Lawyer		6,106*		2,093
		(3,430)		(11,279)
Journalist/Media Officer		-4,331		
		(2,831)		
Constant	18,505***	12,000***	40,000	39,873**
	(2,406)	(7.13e-09)		(14,821)
Observations	377	377	53	53
R-squared	0.109	0.328	0.138	0.361

Notes: Columns (1) and (2) include all job postings with salary information. Columns (3) and (4) include job postings included in the experiment with salary information. Standard errors clustered on occupation. One job omitted because it was an outlier with much higher salary than all other job postings, with a salary of 200,000 PKR/month.

A3 Appendix 3: Additional Results

This first table presents results for a simple Intent to Treat for the information experiment. There isn't a significant impact of simply being randomized to receive treatment. This is because individuals in the treatment group are sorting away from jobs without information to jobs with information about the relevant margins, and thus observably similar to the control group in overall behavior.

Table A7: Information Experiment: Intent to Treat

Panel A: Information Experiment: Gender Composition		
	(1)	(2)
VARIABLES	Applied for job	Applied for job
Treat Info Gender Comp	0.00179	-0.00186
	(0.00322)	(0.00698)
Observations	20,650	8,110
Sample	All	Active
Panel B: Information Experiment: Gender of Supervisor		
	(1)	(2)
VARIABLES	Applied for job	Applied for job
Treat Info Gender Sup	-0.00208	-0.00380
	(0.00333)	(0.00726)
Observations	20,650	8,110
Sample	All	Active

Notes: Includes job covariates for natural log salary, flexible working hours, occupation fixed effects, and area fixed effects. Also includes covariates for the number of matches in that round of matching, indicator for receiving calls from Job Asaan to apply for jobs (i.e. complete CV), and strata FE. SE are clustered on individual, and reported in parentheses. Mean application rate in the pure control group is 0.051 for all jobseekers, and 0.067 for jobseekers active before the experiment. *** p<0.01, ** p<0.05, * p<0.1

This table presents treatment effects on beliefs about the gender composition and supervisor gender by occupation at the end of completed calls. The sample size of individuals who stayed on the

call until this point is very low, and given that many respondents are receiving few matches on each call, this analysis does not pick up significant treatment effects.

Table A8: Information Updating

Panel A: Belief about Percent of Employees that are Male, by Occupation

VARIABLES	(1) gc	(2) gc	(3) gc	(4) gc
Treatment: Information about Gender of Supervisor	0.230			
	(1.466)			
Treatment: Information about Gender Composition		-0.869		
		(1.603)		
Treatment: Either Information Treatment			-1.150	
			(1.672)	
Treatment: Prime				-1.397
				(1.574)
Observations	728	728	728	693
R-squared	0.235	0.236	0.236	0.260

Panel B: Belief about Probability of having a Male Supervisor, by Occupation

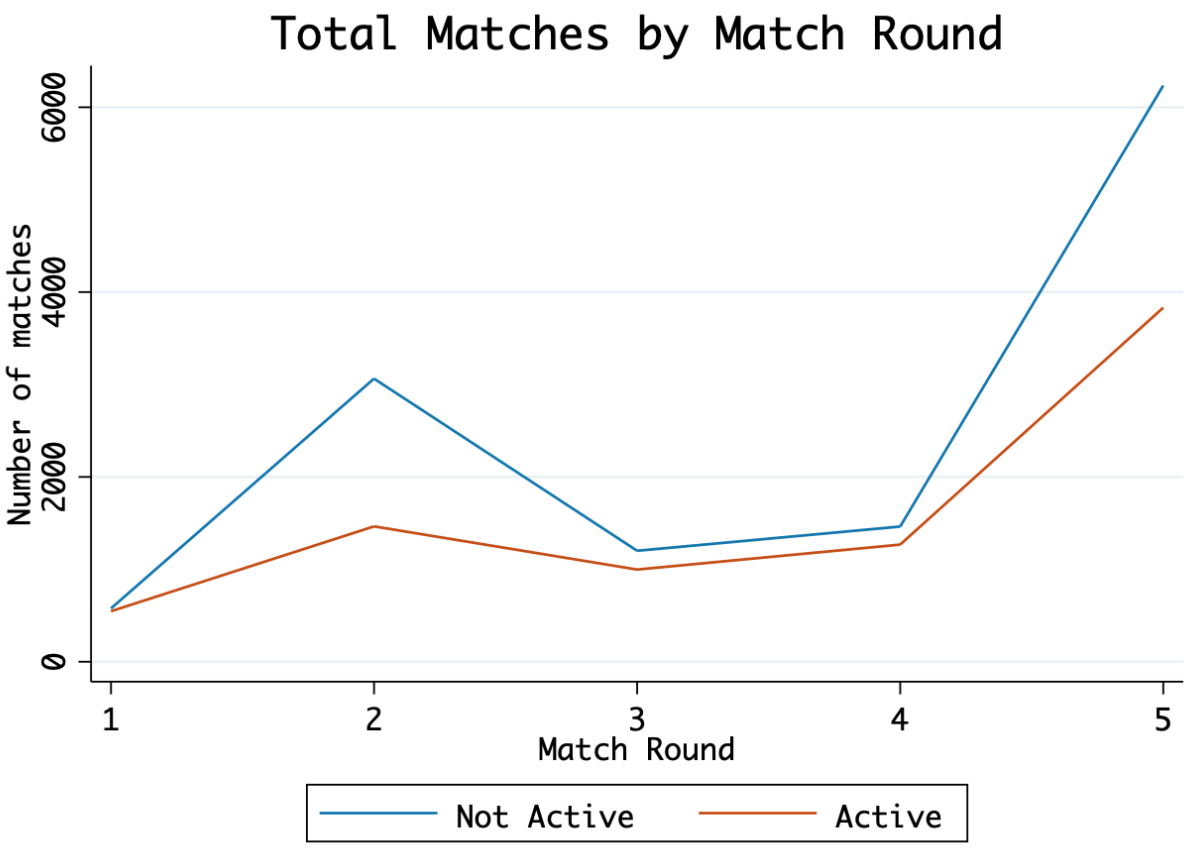
VARIABLES	(1) gs	(2) gs	(3) gs	(4) gs
Treatment: Information about Gender of Supervisor	1.772			
	(1.502)			
Treatment: Information about Gender Composition		-0.560		
		(1.472)		
Treatment: Either Information Treatment			0.533	
			(1.535)	
Treatment: Prime				-0.423
				(1.456)
Observations	1,164	1,164	1,164	1,127
R-squared	0.130	0.128	0.128	0.132

Notes: Regresses belief on treatment indicator; includes occupation fixed effects. Standard errors clustered on individual. This question was asked at the end of the call for every occupation that the individual matched to. Was only asked on completed calls. Panel A conducted on match rounds 1-3. Panel B conducted on match rounds 4-5. Standard errors clustered on individual.

A4 Appendix 4: Matches and Application Behavior

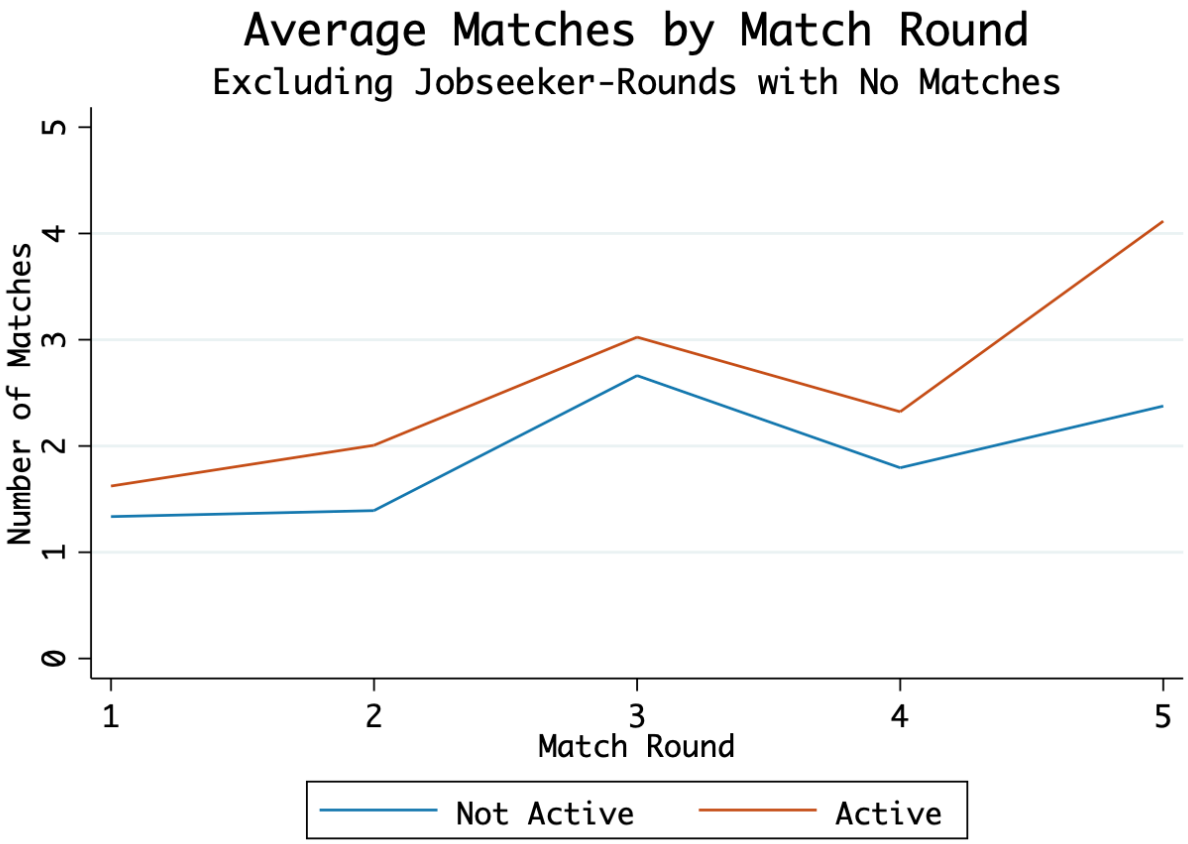
Commensurate with the distribution of job postings over the match rounds, the total number of matches is also highest in round 5, as seen in Figure A9.

Figure A9: Total Number of Matches by Match Round



Round 2 exhibits a large number of job matches as well, consistent with the fact that there were many job postings for teachers in that round, an occupation in which about half of Job Asaan jobseekers are interested.

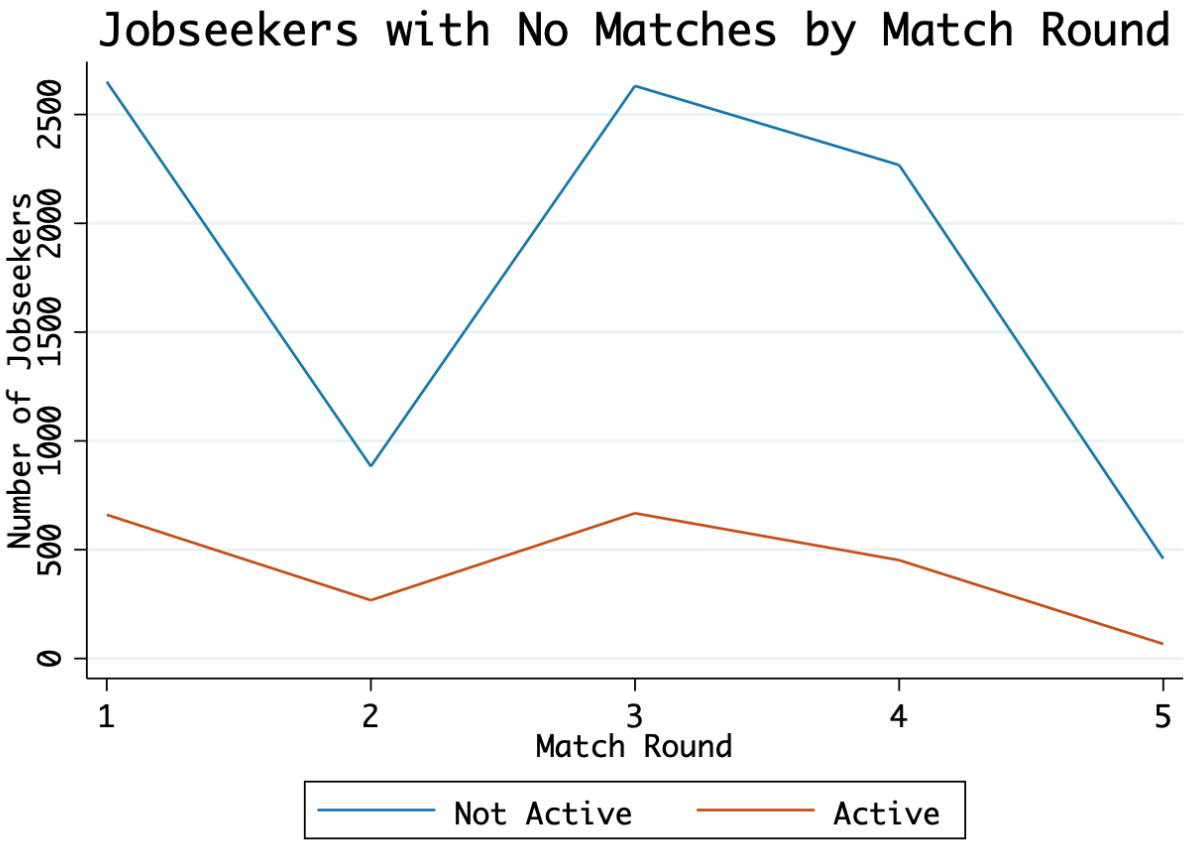
Figure A10: Average Number of Matches by Match Round



Notes: Excludes jobseekers with no matches in that round.

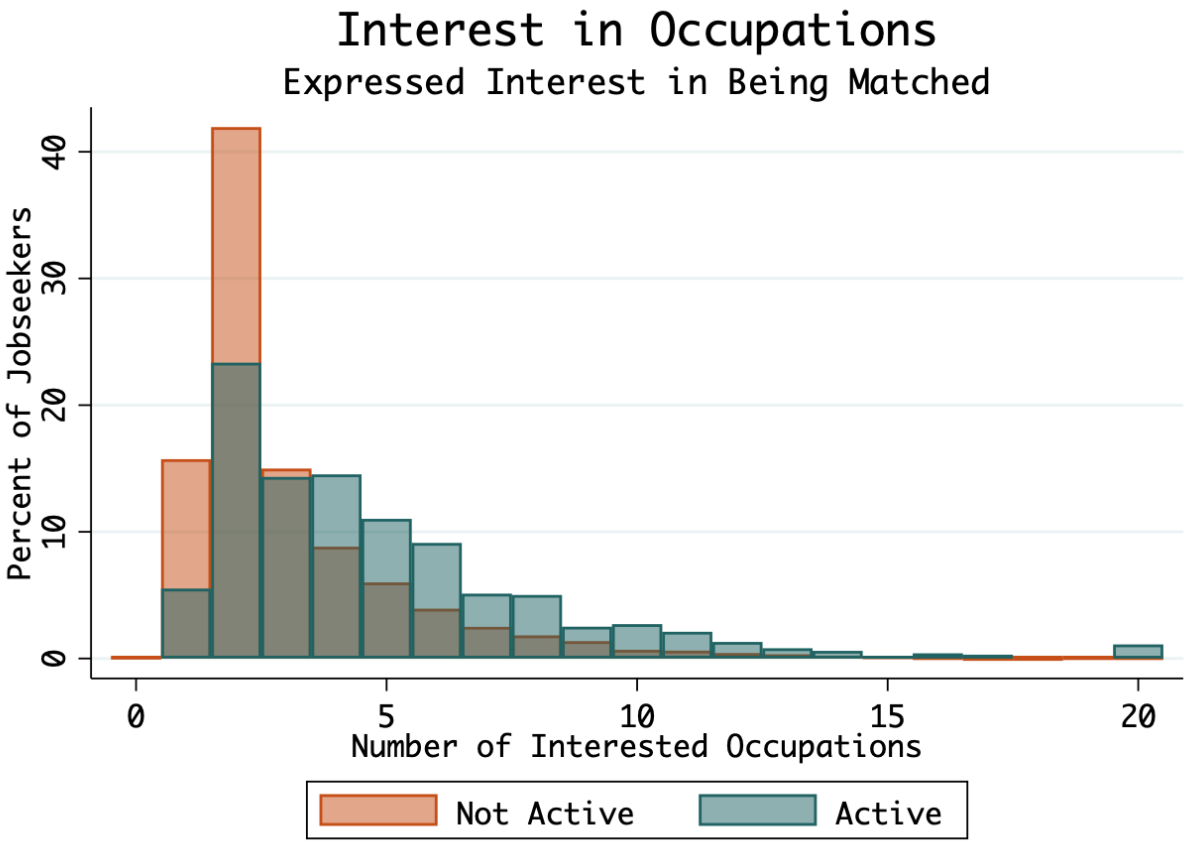
Figure A10 shows that the distribution of number of matches is also similar for jobseekers who were inactive or active prior to the experiment. Dropping jobseekers who have no matches in a given round, jobseekers receive on average 1-3 matches in a round, except in match round 5, where this increases to 4 matches on average, for active jobseekers. Inactive jobseekers are more likely to have received no matches in a given round, than active jobseekers, as seen in Figure A12.

Figure A11: Number of Jobseekers with Zero Matches by Match Round



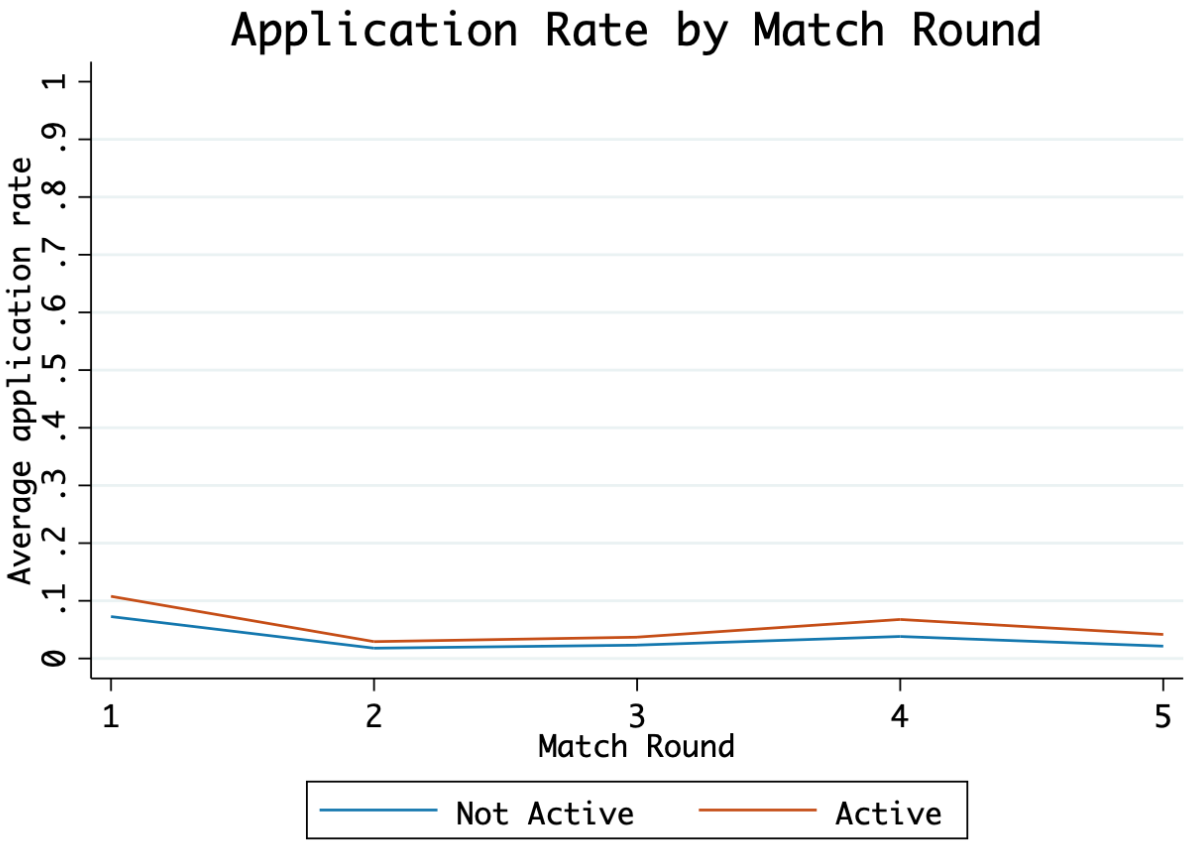
This is due in part to the fact that active jobseekers expressed interest in being matched to twice as many occupations on average as inactive jobseekers at baseline, as seen in Figure **??**.

Figure A12: Number of Occupations in which Jobseeker Expressed Interest



Furthermore, 50% of inactive jobseekers did not express interest in being matched with any of the twenty broad occupations. Thus mechanically, they would not have matched to any jobs, as we explicitly stated to them at sign up that we would not contact them about job matches other than in occupations in which they expressed interest in matching.

Figure A13: Application Rate by Round



Regardless, the trends in application rate are similar across inactive and active jobseekers, conditional on being matched as seen in Figure A13. However, for every match round, the application rate during the experiment among jobseekers active before the experiment began, is higher than for jobseekers inactive before the experiment began. The highest application rate is in the first round of matching, when jobseekers also received only one to two matches in the round, on average. The application rate decreases for subsequent rounds when the number of matches is higher. This is consistent with multiple job matches either signaling a booming labor market, and thus returns to waiting and seeing the next round of matches before applying, or simply that a larger batch of matches is harder for the jobseeker to parse through.

To address whether jobseekers are behaving in a way that suggests that jobseekers are interpreting the number of matches as a signal of labor market opportunities, I regress the decision to apply to a match on the number of matches that the respondent received in that round, and an increasing set of lags for up to five rounds prior (using the number of matches in the match round previous to the experiment as the final lag). The results are reported in Table A9. Here, across all specifications, there is a negative association between the number of matches that the jobseeker received in the given round, and the decision to apply. However, the lagged number of matches have an insignificant statistical relationship with the decision to apply. The one exception is the second column, where fourth and fifth round application decisions are also significantly associated with lagged number of matches, though the signs vary, and the coefficients are less significant than for the number of matches in the given round. Thus, in empirical analysis of application behavior, I condition only on the number of matches in the given match round. This is consistent with the idea that a larger number of matches is harder for the jobseeker to process.

Table A9: Application Rate by Number of Matches

VARIABLES	(1) Applied for job	(2) Applied for job	(3) Applied for job	(4) Applied for job	(5) Applied for job	(6) Applied for job
Number of Matches in Current Round	-0.00376	-0.00585***	-0.00355***	-0.00245***	-0.00321***	-0.00304***
	(0.00260)	(0.00158)	(0.00116)	(0.000915)	(0.000869)	(0.000630)
Number of Matches in Lag 1 Round	0.00419	0.00113	-0.00210	-0.000665	0.000452	
	(0.00411)	(0.00334)	(0.00218)	(0.00192)	(0.00159)	
Number of Matches in Lag 2 Round	-0.00441	-0.00516	-0.000306	0.00103		
	(0.00921)	(0.00406)	(0.00297)	(0.00226)		
Number of Matches in Lag 3 Round	0.00554	0.00806**	0.00482*			
	(0.00703)	(0.00349)	(0.00291)			
Number of Matches in Lag 4 Round	0.00238	0.00637				
	(0.00673)	(0.00502)				
Number of Matches in Lag 5 Round	-0.00377					
	(0.00868)					
Constant	0.0563***	0.0689***	0.0646***	0.0565***	0.0636***	0.0639***
	(0.00825)	(0.00719)	(0.00679)	(0.00575)	(0.00587)	(0.00597)
Observations	3,832	5,100	6,098	7,563	8,110	8,110
R-squared	0.005	0.008	0.005	0.003	0.004	0.004

Notes: SE are clustered on the individual, and reported in parentheses. Sample is all matches for all active jobseekers (defined before randomization) during the five rounds of the experiment. *** p<0.01, ** p<0.05, * p<0.1

A5 Appendix 5: Priors and Rankings

The rankings and priors questions are structured in the same way at baseline and endline. First, the jobseeker 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[42]. 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[43]
13. Lab Assistant
14. Software Developer/Graphic Designer/IT Specialist
15. Doctors/Nurses[44]
16. Designer
17. Engineer
18. Lawyer

[42]In practice, the responses in the 'other' category fit into the preexisting categories, but were used by the jobseeker to emphasize to us which occupation she was most interested in.

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

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

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 jobseeker 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.

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 jobseekers 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 jobseekers 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:

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

A6 Appendix 6: Control Function Estimation of Occupational Choice

This estimation requires a total of four instruments, to instrument for the four endogenous belief measures. As described in Section 5, the matches within occupation are exogenous to the jobseeker's behavior and choices, conditional on experience, education, and the fact that the jobseeker expressed interest in that occupation. Thus, the number of matches by occupation is the first instrument. Next, the percent of jobs in the occupation to which the jobseeker matched with mostly or all female employees, interacted with the treatment indicator for being randomly selected to receive information about gender composition is the second instrument. The percent of jobs in the occupation to which the jobseeker matched with a female supervisor, interacted with the treatment indicator for being randomly selected

to receive information about gender of the supervisor is the third instrument. Finally, the total salary across all matches in that occupation that the jobseeker received is the fourth instrument. This is taken as exogenous since the matches by occupation is exogenous to the jobseeker's decisions, conditional on her initial experience, education, and that she expressed interest in being matched to jobs in that occupation.

In the first stage, each of the four endline beliefs are regressed on the four instruments, a vector X_i which includes covariates on education and work experience (which were used to match jobseekers to job postings). Standard errors are clustered on the individual. The residuals from these four equations (one for each endogenous belief) are included as covariates in the estimation of Specification 12 as a second stage to implement the control function estimator. Standard errors in this second stage are also clustered on individual, and are bootstrapped as a single process across both stages. The sample for this analysis is all responses to the endline survey where the respondent provided rankings over most preferred occupations and beliefs data (described previously).

Table A10: Occupational Choice: First Stages

VARIABLES	(1) Endline Belief: Mean Salary	(2) Endline Belief: Mean Percent Female	(3) Endline Belief: Mean Prob Female Supervisor	(4) Endline Belief: Mean Prob Hire Woman
Mean Prob Mostly/all Female Employees in Matches X Treat Info Gender Comp	-5.585***	8.874***	6.111***	7.145***
	(0.959)	(1.644)	(1.787)	(1.407)
Total Salary Across all Matches (1000 PKR)	0.0692***	-0.0978***	-0.125***	-0.0763**
	(0.0222)	(0.0362)	(0.0454)	(0.0300)
Total Number of Matches	-0.637**	0.400	0.503	0.611*
	(0.247)	(0.360)	(0.381)	(0.331)
Mean Prob Female Supervisor in Matches X Treat Info Gender Sup	-0.884	3.758**	0.231	0.113
	(1.017)	(1.475)	(1.674)	(1.283)
Total Number of Matches w Any Flex Hours	-1.309***	2.117***	1.797***	1.512***
	(0.315)	(0.571)	(0.660)	(0.533)
Observations	2,421	2,421	2,421	2,421
R-squared	0.061	0.059	0.028	0.039
F	25.57	18.80	7.456	11.33

Notes: Standard errors clustered on individual.

Table A11: Occupational Choice

VARIABLES	(1) RO Logit	(2) RO Logit	(3) RO Logit - w Control Function
Endline Belief: Mean Salary	-0.0263***	-0.0288***	-0.0164
	(0.00611)	(0.00581)	(1.283)
Endline Belief: Mean Percent Female	0.0105***	0.00918***	0.233
	(0.00294)	(0.00241)	(0.742)
Endline Belief: SD Percent Female	0.0151		
	(0.0133)		
Endline Belief: Mean Prob Female Supervisor	0.00858***	0.00357	-0.250
	(0.00309)	(0.00249)	(1.107)
Endline Belief: SD Prob Female Supervisor	0.0393***		
	(0.0151)		
Endline Belief: Mean Prob Hire Woman	-0.0132***	-0.0131***	0.0101
	(0.00287)	(0.00261)	(1.414)
Total Number of Matches w Any Flex Hours	0.112***	0.108***	-0.0761
	(0.0329)	(0.0307)	(0.876)
Observations	2,267	2,421	2,421

Notes: Standard errors clustered on individual. First stages for control function estimates in Column (3) are reported in Appendix Table A10. For Mean Salary: F-stat is 25.57. For Mean Percent Female: F-stat is 18.80. For Mean Prob Female Supervisor: F-stat is 7.456. For Mean Prob Hire Woman: F-stat is 11.33. Column (3) includes bootstrapped standard errors, clustered on individual. All estimates are rank-ordered logit. Outcome variable is ranking of top three most preferred occupations. Standard errors reported in parentheses.*** p<0.01, ** p<0.05, * p<0.1

The results from the control function estimator are included in Table A11 in the Appendix. The first two columns are identical to what is presented in the main text, without controlling for endogeneity. The third column includes the analysis with the control function estimator. Table A10 in the Appendix reports the first stage estimates. Owing to the low sample size due to low response on the endline survey, the first stages are relatively underpowered. This is reflected in the second stage estimates (column 3) which have high standard errors. Overall, with the endogeneity of beliefs addressed in this specification, believing that the occupation is likely to have more women in the workplace or has a higher expected probability of hiring a woman is associated with a higher rank of the occupation. However, a higher expected salary, higher expected probability of having a female supervisor, and greater number of matches with flexible working hours are all associated with a lower rank. These results should be

interpreted with caution since the first stage is underpowered.