Female Leadership and Workplace Climate*

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Abstract

Using data from over 2,000 professionals in 24 large corporations in Turkey, we explore the role of female leadership on the relational culture in the workplace. First, we document that while male and female leaders possess equal cognitive capacity, they diverge in socio-emotional characteristics. Next, we show that female leaders shape the relational dynamics in the workplace differently than male leaders. Male employees form homophilic professional ties under male leadership, but female leadership disrupts this pattern, creating a less segregated workplace. Under female leadership, both male and females establish more links with their female colleagues. Female employees receive more support from their leaders, and are less likely to quit under female leadership. However, female employees working under female leaders report worse workplace satisfaction and meritocracy. Delving into the mechanisms reveals that female employees paint a gloomy picture of the workplace climate in the absence of social support from their female leader. Overall our findings highlight the influential role of social support from leader, and suggest that increasing supportive female presence in leadership positions may be an effective way to foster a more inclusive relational culture in the workplace.

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1 Introduction

Creating and maintaining a healthy workplace climate is essential for employee motivation, well-being, productivity, and the reputation of firms. Central to a healthy work environment is the quality of social interactions among colleagues and the degree of professionalism between leaders and subordinates (Dutton and Ragins, 2017; Kahn et al., 2018). The latter is critical as leaders have a significant role in setting the tone for the relational culture in the workplace (Van den Steen, 2010; Hoffman and Tadelis, 2021). There is now a growing interest in identifying the skills and qualities that would make an ideal leader in terms of shaping employees' experiences in the workplace (Lazear et al., 2015; Deming, 2017; Heinz et al., 2020; Englmaier et al., 2021). In this paper, we explore the gender angle in this endeavor to understand the role of female leadership in shaping the relational culture in the workplace (see, Matsa and Miller, 2013; Bednar and Gicheva, 2014; Adams-Prassl et al., 2022; Lawson et al., 2022; Chakraborty and Serra, 2023).[1] We first explore how male and female team leaders in corporations differ in their cognitive and sociocognitive skills and economic and social preferences. Then, using a plausibly exogenous variation in leaders' gender, we document the impact of female leadership on (i) the inter-gender structure of support networks within firms, (ii) job separations and promotions, and (iii) the workplace climate perceived by employees.

Our study features a data set with detailed information on the characteristics, social networks, and perceived workplace climate of over 2,000 white-collar professionals in 24 large corporations in Turkey. These data - collected using cognitive tests, incentivized behavioral tasks, and surveys - are complemented with administrative data on promotions and separations. To explore the role of female leadership, we rely on the variation in working under a female leader or between-department variation in the share of female leaders within firms. Our key assumption for identification is that the assignment to female leaders is as good as random once we control for the characteristics of departments, nature of the job performed by the employee, and firm fixed effects. To alleviate the room for potential selection at the recruitment stage, we admitted into our study only firms with centralized, transparent, and fair recruitment and fair team formation (leader-subordinate match) practices. To test for observed selection, we present balance in characteristics of employees

[1] A broader literature studies what female managers and their personal management practices imply for their firms. See, e.g., Faccio et al. (2016), Castiglione et al. (2022), and Post et al. (2022). Azmat and Boring (2020) overviews the effectiveness of the recent efforts by corporations and governments aimed at increasing the presence of females in leadership positions.

working under male and female leaders (Chetty et al., 2011). We provide additional credibility to our identification by showing that the robustness of our results the exclusion of covariates. Finally, we apply a simulation-based test (Bietenbeck, 2020) which provides supportive evidence that the leader's gender is exogenous to the characteristics of their subordinates in our firms.

We characterize the relational culture in the workplace using a comprehensive set of outcomes. Our first set of outcomes relates to the structure of support networks and the degree of gender segregation in professional and personal links. We are interested in whether female leaders differ in providing support for their employees in professional and personal matters. Then, following Coleman (1958), we construct department-level segregation indices, i.e., the degree of male and female homophily within departments. Our second set of outcomes contains job separations and promotions, utilizing administrative data we obtained from the firms. Finally, using item-response survey questions, we construct normalized indices of i) workplace satisfaction, ii) perception of firms' meritocratic values, iii) collegiality, iv) job satisfaction, iv) behavioral norms, and v) leader professionalism. We complement these outcomes with data on individual characteristics regarding cognitive and non-cognitive skills and economic preferences. We use these characteristics as control variables and to document the differences between male and female leaders.

Throughout the paper, we define a leader as an employee responsible for multiple employees and acting as their first point of contact for work-related matters. As most large corporations have hierarchical structures, most of the leaders in our data also have their leaders. We start by documenting the characteristics of leaders. While the unconditional gender gap in the probability of holding a leadership position is 4.7% in favor of men in our data, this gap disappears once we control for demographic and department characteristics. We find that fluid IQ, also known as abstract reasoning ability, is the strongest predictor of holding a leadership position, whereas competitiveness and risk tolerance have no predictive power. Interestingly, except for fluid IQ, verbal creativity and altruism, the skill endowments of female leaders are significantly different from that of male leaders: Female leaders are significantly less competitive, more risk averse, and less cooperative. Moreover, they have significantly higher cognitive empathy and hold more modern gender role beliefs than male leaders. These findings imply that progression into leadership positions does not require women to possess male-like attributes such as high competitiveness and risk tolerance.[2]

[2]A prominent literature identifies a series of factors that cause women to shy away from leadership positions, like

We find that female subordinates are 20% (46%) more likely to receive professional (personal) support from female leaders than male leaders. Male employees, however, are equally likely to receive support from male and female leaders. Second, under female leadership, both males and females are more likely to form support ties with their female colleagues. We show that departments with male leadership exhibit significant male homophily, consistent with Cullen and Perez-Truglia (2023), which shows that male leaders tend to interact more with male subordinates. We show that female leadership disrupts this pattern and creates a less gender-segregated workplace. Our findings add further nuance to the existing literature by showing that women, not only men, also benefit from the homophilic effects of being assigned to same sex leaders. We also find that female employees are about 7 percentage points less likely to quit their jobs, implying a 56% reduction in voluntary job separation rates relative to working under male leadership. We find no effect of female leadership on the probability of promotion, neither for females nor for males.

At odds with these positive findings, we find that more than half of the employees in our data prefer to work under male leadership. Employees working with female leaders report significantly lower workplace satisfaction and worse meritocratic values for their firms. Even more striking is that these negative perceptions are driven entirely by female employees. Females report about 0.199 standard deviations lower workplace satisfaction and 0.193 standard deviations lower meritocratic values under female leadership relative to working under male leadership. These results echo the findings of Artz and Taengnoi (2016), who find that women are less satisfied with their jobs when they have a female boss, whereas there is no differential effect for men. Our explanation for this puzzling result is that female employees hold their female leaders to a higher standard than their male leaders. Our results suggest that having a female leader is essential to female workers' well-being in the workplace, but this is conditional on their leader being professionally supportive. We provide suggestive evidence that when the leader provides professional support to their subordinates, the gender of the leader does not matter for the workplace climate perceptions, neither for males nor for females. However, female employees judge workplace conditions much worse than their male colleagues when they do not receive support from their female leaders. These findings are consistent with Abel (2022), who show that negative feedback by female managers decreases job satisfaction and the perceived importance of the task significantly. They are also

lack of competitiveness and risk-taking (see, e.g., Niederle and Vesterlund, 2007; Eckel and Grossman, 2008; Croson and Gneezy, 2009; Fisman and O'Neill, 2009; Furtner et al., 2021), reticence to initiate negotiations (e.g. Bowles et al., 2007; Babcock and Laschever, 2021), or aversion to competitive environments (e.g. Gneezy et al., 2003; Flory et al., 2015; Preece and Stoddard, 2015; Niederle, 2017).

consistent with evidence from Grossman et al. (2019) or Chakraborty and Serra (2023) about female leaders receiving more backlash or being less positively assessed than men.

Our contribution is twofold. First, we show that male and female professionals who hold leadership positions in large and competitive corporations have different skill endowments. While both genders possess high cognitive capacity, female leaders are not as competitive and risk-tolerant as their male counterparts but possess significantly higher emotional intelligence (cognitive empathy). We offer a comprehensive documentation of gender differences in the characteristics of corporate leaders. Second, we show how female leadership shapes the relational culture differently from male leadership in the workplace. In our context, we can ensure conditionally random leader-subordinate matches at the team level and exploit our rich data set on social support networks. This allows us to identify the effect of working under female leadership on the structure of social networks and, in particular, inter-gender support links in the workplace. Given that gender homophily in networks explains a significant part of the gender gap in earnings and promotions (Mengel, 2020; Zeltzer, 2020; Cullen and Perez-Truglia, 2023) or punishment (Egan et al., 2022), our results have clear implications for policies that aim at reducing these gender gaps.

Our paper contributes to several strands of the literature. First, it closely relates to the new and growing literature on the nexus between leadership, social interactions, and workplace climate. Cullen and Perez-Truglia (2023), for example, show that male employees who socialize more with their male managers get promoted more quickly than their male colleagues who are assigned to female leaders. On the contrary, the career progression of females is not affected by the leader's gender. While Cullen and Perez-Truglia (2023) focus on vertical social interactions between managers and subordinates, we also consider horizontal interactions among subordinates. Moreover, while they study the effects of these vertical relationships on the gender pay gap and promotions, we focus instead on the relational atmosphere and perceived workplace climate within the firms, as well as on employee separations. Abel (2022) documents with US-data that negative feedback from leaders decreases workers' job satisfaction and perceived importance of the task, whereas praises from leaders do not have any effect. The adverse effect of negative feedback doubles when it is received from a female leader. Using the same research design, Abel and Buchman (2020) reports that feedback effects do not differ between workers assigned to male and female leaders among gig economy workers in India. Our paper advances this nascent literature by showing that female leadership changes the structure of social networks in the workplace and helps employees form more

social connections with their leaders and female colleagues. Moreover, by distinguishing between supportive and unsupportive leaders, we can uncover an asymmetry of how men and women react to these two different types of leaders. Overall, we present a comprehensive portrayal of gender effects in corporate leadership, extending beyond outcomes that are typically captured in workplace climate studies such as turnover and promotions.

Second, we contribute to the literature on self-selection into leadership roles. This literature documents consistent gender differences in self-selecting into leadership positions and strives to understand the factors explaining this difference. Much of this literature utilizes controlled lab settings and points to gender differences in specific attributes, such as confidence, responsibility aversion, fear of backlash, aversion to competition and risk-taking, in explaining the documented gender gap in the willingness to become a leader (see, e.g., Coffman (2014), Chen and Houser (2019), Bordalo et al. (2019), Alan et al. (2020), Born et al. (2020), Haegele (2022)). We advance this literature by showing for 24 large corporations that actual female leaders do not necessarily share male attributes. Instead, our results strongly suggest that women bring their own style of leadership to corporate life and manage interpersonal relationships differently than men, which accords well with the findings of Matsa and Miller (2013) and Bednar and Gicheva (2014).[3]

Finally, our paper speaks to the literature that strives to identify the impact of female leadership on gender-related personnel decisions. This literature produced mixed results. Matsa and Miller (2011), Kurtulus and Tomaskovic-Devey (2012), Kunze and Miller (2017), and Battaglini et al. (2023), for instance, show that when there are more female bosses in the higher ranks, women have a significantly higher likelihood of career-advancing. Flabbi et al. (2019) documents the positive effects of female executives on the top of the female wage distribution and the negative effects on the bottom. Bertrand et al. (2019) find no effect of female presence in corporate boardrooms on other women beyond the women who made it to the boardrooms. Bagues et al. (2017) and Bagues and Esteve-Volart (2010) report that the share of females in hiring committees does not change the likelihood of females getting hired or even decreases it. A few recent studies consider the effect of female managers on gender bonus and promotion gaps through gender discrepancies in subjective employee evaluations. Benson et al. (2021) and Holub and Drechsel-Grau (2021)

[3]Matsa and Miller (2013) show that the increased presence of female managers due to a board quota in Norway reduces workforce reduction and short-term profits. Bednar and Gicheva (2014) instead consider the female friendliness of athletic directors in a non-corporate setting. Our paper, instead, offers insights into how female leadership affects relational culture in a corporate setting.

show that male managers rate male employees higher, while female managers rate both males and females lower, contributing to gender gaps in bonus payments and promotions. We complement this literature by showing that female leadership reduces voluntary job separations among female employees significantly without affecting their promotion probabilities.

Overall, our results suggest that the fair representation of female leadership may have benefits beyond efficiency and social justice concerns by creating a less segregated workplace, stronger professional support links, and less voluntary quits by female employees. Recent work by Azulai et al. (2020) and Alan et al. (2023) shows that organizational and relational culture can be improved via training programs. Yet, cultural transformations may be painfully slow. Innovative training programs notwithstanding, increasing female presence in decision-making positions and improving support by leaders may be a faster and higher-return approach to establishing a healthy relational culture in the workplace.

The rest of the paper is organized as follows. Section 2 provides the background and the context for the study. Section 3 describes our data collection protocol and outcomes of interest. Our descriptive results are presented and discussed in Section 4. Section 5 details our empirical framework and identification and reports our main results. Section 6 concludes.

2 Background and Context

In 2019, we enlisted 24 large corporations in Turkey to study workplace culture from the point of view of the relational atmosphere in the corporate world. Our main criterion to include a firm in our study was that the firm had centralized and transparent subordinate-leader matching practices whereby the sole criterion to appoint a leader to a department or a unit in a department was their qualifications, and these qualifications were clearly stated both in the external and internal platforms used. As we elaborate below, satisfying this criterion was the first step to achieving internally valid results. The study had two objectives, resulting in two distinct projects. The first project explored whether a particular training program can effectively improve the relational atmosphere in large corporations. This project involved a randomized controlled trial (RCT) covering 20 of the initially recruited corporations; see Alan et al. (2023). The current project aims to understand whether female leadership has different implications for the workplace climate than male leadership, in particular, for the relational atmosphere in the workplace.

Enlisting these firms meant their full cooperation in allowing us to collect detailed individual information from their white-collar professionals of all ranks on demographics, cognitive and non-cognitive skills (fluid IQ, emotional intelligence, verbal creativity), social networks, economic and social preferences, perceived workplace climate, and HR-data on separations and promotions. Recruitment of the firms involved multiple meetings with their CEOs, HR officials, and compliance departments to make sure they fit our criteria and eventually signing confidentiality agreements and research collaboration protocols with each of them.[4] Out of 30 corporations with which we interacted through several meetings, we secured the collaboration of 24 companies from 6 sectors that met our criteria.[5] A number of these firms are large multinationals operating in Turkey, and the majority of them are companies that belong to large conglomerates. Therefore, our final sample of firms covers significant players with large market shares in their sectors: defense, chemical, energy, finance, construction, and textile.

The effect of female leadership on the workplace climate can be identified if the practice of matching leaders with subordinates does not involve any selection mechanism other than matching on observable characteristics. Our key assumption for identification is that the assignment to female leaders is as good as random once we control for the share of females in the department, the nature of the job performed by the employee, and firm fixed effects. There is a threat to identification if (i) employees can sort into teams based on leader gender, (ii) leaders could select their subordinates for their teams, or (iii) HR officers use a selective allocation mechanism based on leader gender or individual characteristics that may be correlated with gender. To the extent that these practices were correlated with the outcomes of interest, our results could not be given causal interpretations.

As mentioned above, we ruled out this threat at the recruitment stage. We set our primary criterion to join our study as having to declare centralized, transparent, and fair recruitment and team formation practices through compliance departments based solely on individual qualifications required for the task at hand. In addition to obtaining these declarations, we ran an extensive survey asking HR officials to provide a detailed account of their firm's hiring and subordinate-leader

[4]Each formal document was signed by the relevant company's CEO, and the president of Kadir Has University. We obtained ethics approval from Kadir Has University Institutional Review Board.

[5]Among these 24 firms, we removed one defense firm based on the indication that they forced their employers to participate in the program. However, the firm management asked us to collect the baseline data anyways, and we did to maintain our relationships with them. They then underwent a significant structural change, so we did not ask for their admin data and never offered them to join our RCT project. Our RCT study was offered to 23 firms and accepted by 20. This paper uses all the data collected from all 24 firms, covering more than 2,000 white-collar professionals at baseline (Fall 2019). Note that our findings are robust to the exclusion of this defense company.

matching practices. We confirm the initially declared as-good-as random matching mechanisms, conditional on the qualifications required for the respective job. Only one out of 24 firms declared that the gender of the leader might sometimes play a role in forming teams.[6] The officials confirmed in the rest of the firms that recruitment, team formation, and leader-subordinate match practices are never based on gender, always based on qualifications for the task at hand.[7]

In Section 5.1, we use our rich data to provide evidence that the leader's gender is exogenous to the characteristics of their subordinates in our firms, conditional on the nature of the job performed, the proportion of female employees in the department, and firm fixed effects. We also show that measured subordinate characteristics are balanced across male and female-led teams in Section 5.1.

3 Data Collection and Characterization of Workplace Climate

3.1 Data Collection Protocol

In Fall 2019, we visited each firm in person, gathered employees and team leaders, department by department, in meeting rooms, and collected our data. An average data collection session lasted about 3 hours, and we had three sessions, each of which started with a brief introduction.[8] In the first session, we played incentivized games to elicit social and economic preferences (in lab-in-the-field experiments). Complementing our goal to elicit individual characteristics, we conducted three major cognition tests in the second session. This was followed by a detailed social network elicitation in the third session. At the latter's end, participants were directed to a detailed online survey about workplace climate. Preventing participants' communication with other departments for the incentivized games was our most important logistical challenge in large firms. To overcome this, we conducted our incentivized experiments in parallel using different meeting rooms. Participants used their smartphones to access our data collection platforms, following our instructions step by

[6] In addition, one firm did not respond to the survey (the defense company previously mentioned). Our results are robust to excluding either or both of these companies from the sample.

[7] None of the corporations we approached had a match practice based on gender. However, some corporations with an interest in participating declared that supervisors (team leaders) might be consulted in choosing subordinates for some tasks on some occasions. We took this as an indication of selection and did not include these firms in our study.

[8] Designated HR coordinators informed all white-collar workers before our visit, and only those who wanted to participate in the study came to meeting rooms. We made sure that companies informed their workers that participation was voluntary and that not participating would not have any consequences for them. On average 63% of the professionals participated in our Fall 2019 data collection sessions.

step. We provided tablets and internet to participants when needed.

3.2 Outcomes: Characterization of Relational Climate in the Workplace

In characterizing the relational culture in the firm, we consider several indicators. Our primary outcomes relate to the nature of social networks, in particular, the degree of inter-gender interactions and support. We also utilize administrative data to add more objective measures to our outcome space, including job separations and promotions. We elaborate on these measures below.

3.2.1 Social Networks

Supportive networks are markers of a healthy workplace climate and are important to achieve job satisfaction, develop a sense of belonging to the firm, and boost solidarity with colleagues (Srivastava et al., 2018; Guadalupe et al., 2020). We collected social network data in two domains of interactions, professional and personal. For the former, participants were asked to list up to 3 colleagues they regularly consult when they need professional (work-related) help. For the latter, they were asked to nominate up to 3 colleagues they consulted in personal matters, allowing for overlaps across both domains. Using these nominations, we construct individual (node) level and department-level outcome measures that characterize the nature of social interactions established in the firm.

Our node-level network measures use out-degree ties, that is, the nominations made by a participant. The minimum value of out-degree is 0, corresponding to no nomination, whereas the maximum possible value is set to 3 colleagues. In a healthy workplace, we expect leaders to provide professional and personal help to their subordinates. Therefore, our main focus is whether a team leader is nominated by their subordinates. We are also interested in the gender composition of nominations. For this, we construct a measure that gives the share of female colleagues nominated by a participant.

Our second set of network measures includes department-level gender homophily indices. For this, we follow Coleman (1958) and construct a homophily index for females and males separately. Coleman's Homophily Index summarizes the degree to which the members of a group form links with the members of the same group (referred to as inbreeding), and it is constructed as follows:

Let F and M denote groups of females and males in a department, respectively. Let us also denote the number of intra-gender links formed by group i in department j as s_{ij}, and the total number of links formed by group i in department j as t_{ij}, where $i \in \{F, M\}$. The ratio $\frac{s_{ij}}{t_{ij}}$ then gives us the share of within-group (homophilic) ties for group i.

Denoting w_{ij} as the expected proportion of within-group links of group i if the links are formed at random, the excess homophily of group i is defined as $\frac{s_{ij}}{t_{ij}} - w_{ij}$. To make this index invariant to department size and gender composition, following Coleman (1958), we normalize excess homophily by $1 - w_{ij}$, which is the maximum possible excess homophily that can be observed for group i. If, however, excess homophily is negative (forming more links with the out-group compared to in-group), we then normalize the excess homophily index by w_{ij}. This ensures that the measure takes values between -1 and +1. Consequently, Coleman's Homophily Index for group i in department j is given by:

$$C_{ij} = \begin{cases} \frac{\frac{s_{ij}}{t_{ij}} - w_{ij}}{1 - w_{ij}} & if \qquad \frac{s_{ij}}{t_{ij}} - w_{ij} \geq 0 \\ \frac{\frac{s_{ij}}{t_{ij}} - w_{ij}}{w_{ij}} & if \qquad \frac{s_{ij}}{t_{ij}} - w_{ij} < 0 \end{cases}$$

We compute Coleman's Homophily Index separately for females and males in both professional and personal support domains.

3.2.2 Perceived Workplace Climate

In the final part of the data collection session, participants were directed to an online survey platform. The survey included detailed questions on demographics and a rich set of item-response questions to measure workplace climate (see the Online Appendix D for all questions). We focus on six proxies for workplace climate: i) workplace satisfaction, ii) meritocracy, iii) collegiality, iv) job satisfaction, v) behavioral norms, and vi) leader professionalism.[9] We extract common factors

[9] An example for each proxy is as follows: i) Workplace satisfaction: "I am very pleased to have chosen to work at this company.", ii) Meritocracy: "I believe if I work hard and perform well here, I will be promoted very quickly.", iii) Collegiality: "Everyone's ideas are listened to and taken into consideration in our department.", iv) Job satisfaction: "I am happy to have chosen this job.", v) Behavioral norms: "How often do you observe your department colleagues in the following situations? Helping someone/Protecting someone else's rights/etc.", vi) Leader professionalism: "I completely trust our department leader's professionalism."

through principle component analysis to construct each of these measures, and they are constructed so that higher values represent favorable indicators. In addition to these proxies, which we use as our primary outcomes, we construct a gender norms index using several item-response questions, with higher values indicating more modern (equal) gender role beliefs (Specific items are listed in the Online Appendix D).

3.3 Administrative Data

We were able to complement our rich data from the incentivized games and surveys with the official records of job separations and promotions. Initially, we had planned to collect these data for the second half of 2020. However, the COVID-19 pandemic compelled us to halt the project for a few months. Finally, we were granted access to individual-level data on layoffs and quits between July 1, 2021, and November 30, 2021. The time window was chosen to exclude the firing ban that the Turkish government had passed in response to the COVID-19 pandemic. This ban was legislated on April 16, 2020, and lasted until June 30, 2021, ruling out any involuntary job separations in this period. In addition to data on separations, we also obtained individual-level data on promotions for the same period.

3.4 Individual Characteristics: Economic and Social Preferences, Cognitive and Sociocognitive Skills

We elicited economic and social preferences relevant to describing the workplace climate. We elicited competitiveness using a version of Niederle and Vesterlund (2007). The first stage involved participants completing as many additions as possible in 2 minutes, applying a piece rate scheme of 3TL (equivalent of $0.5 in September 2019) per correct answer. The tournament stage involved randomly forming three-person groups (anonymously) within the department and applying a tournament scheme. A participant would earn three times the piece rate (9TL) per correct answer if and only if they came first in the group (with ties being broken randomly). Otherwise, they received no payment. Finally, participants were asked to self-select into a payment scheme, piece rate, or tournament. In the latter case, their performance would be compared to their group members' stage 2 (tournament) performances. The binary indicator of tournament choice in the final decision is our measure of competitiveness.

To measure risk attitudes, each participant received a 30TL endowment that could be invested in a risky venture (Charness and Gneezy, 2010). The venture tripled the initial investment with a 50% chance and wiped it out entirely otherwise. The participants were told that the amount they did not invest in the risky venture remained safe. The amount of investment into the risky venture is our measure of a participant's risk tolerance, which lies between 0 and 30TL.

To measure cooperation, we played a simple public goods game (Fischbacher et al., 2001). In this game, participants were randomly assigned to 3-person anonymous groups within their departments and were given a 30TL endowment, which they could contribute to a joint project. The project provided a 100% certain return so that the computer doubled the total contributions within each group. The doubled contributions were then divided equally among all three group members, regardless of their initial contribution. Our measure of cooperation is the amount contributed to the project, which lies between 0 and 30TL.

After having played these three games, participants were asked what fraction of their experimental earnings from these games they were willing to donate to disadvantaged children in Eastern Turkey.[10] The fraction they stated (between 0 and 100%) is our measure of altruism. This game completed our Part 1. Detailed instructions for the incentivized games are provided in the Online Appendix.

We also measured participants' cognitive and non-cognitive abilities. To measure fluid IQ, we implemented Raven's Progressive Matrices (Court and Raven, 1962). Raven's test provides a measure of abstract reasoning ability, which is typically considered "innate". We also measured verbal creativity (Mednick, 1962; Reiter-Palmon and Illies, 2004; Hughes et al., 2018). For this, participants were given three unrelated words and asked to find a single word that turns all three into meaningful phrases when added to the end or the beginning of all three words. Our final measure of cognitive capacity is also known as a socio-cognitive ability, cognitive empathy. To measure this, we implemented the "Reading the Mind in the Eyes Task" developed by Baron-Cohen et al. (2001) and Baron-Cohen et al. (1997). In this test, participants were given pictures of different people's eyes and asked to pick the correct emotion reflected in those eyes by choosing one of the four options presented. This test is known to measure emotional intelligence (cognitive empathy), also referred to as perspective-taking ability. Perspective-taking ability is considered

[10]Their donation decisions were implemented, and participants were informed about this before they decided on their donation amount.

one of the most important socio-cognitive skills that regulates one's social relationships, and it is likely to be an important leadership quality (Wolff et al., 2002; Bourke et al., 2020). Detailed instructions regarding the measurement of cognitive and non-cognitive abilities are provided in the Online Appendix.

In addition to helping us assess the internal validity of our results, these rich individual data allow us to show the gender differences in a battery of important skills amongst corporate professionals. To the best of our knowledge, our paper is the first to show the gender differences in cognitive, sociocognitive, and economic and social preferences amongst actual corporate leaders.

Overall, we have data on more than 2,000 white-collar professionals in unprecedented detail to characterize the relational atmosphere within a firm. We conjecture that female leaders create a different relational climate than male leaders. If this is the case, we expect to see differences in the structure of support networks, workplace climate perceived by employees, job separations, and promotions under female leadership. We also hypothesize that the impact of female leaders on the workplace climate may differ for female and male employees.

4 Data and Descriptive Results

4.1 Sample Characteristics

Table 1 summarizes our individual-level measures, separately for females and males, and split into different panels. The last two columns in each panel provide the gender difference and p-values obtained from the test of equality of means across gender, controlling for firm fixed effects and clustering the standard errors at the firm level.

About 34.7% of our sample consists of female professionals. This number closely reflects the female representation in leading companies in Turkey in 2016 of 41% (McKinsey&Company, 2016). From Panel I of Table 1, we see that female employees are, on average, two years younger than male employees and less likely to be married. While fluid IQ does not differ across gender, women performed significantly better in our emotional intelligence (cognitive empathy) test, and men performed better in the verbal creativity test. Panel II presents the differences in economic and social preferences across gender. Consistent with most of the experimental literature, female professionals in our sample are significantly more risk averse and (Borghans et al., 2009; Croson and Gneezy,

2009) and less competitive (Niederle and Vesterlund, 2007). We also find female professionals to be less cooperative than males[11], but we observe no gender differences in altruism. Strikingly, female professionals hold a much more pessimistic view of their workplace environment than their male colleagues, as Panel III shows. Women report significantly lower job and workplace satisfaction and worse behavioral norms than their male colleagues.

Table 1: Individual Level Characteristics

Panel I: Individual Characteristics

	N	Males	Females	Difference (F-M)	P-value of Difference
Age	2774	35.579	33.878	-1.861	0.000***
Married	2774	0.529	0.427	-0.101	0.006***
Tenure	2774	6.562	5.911	-0.410	0.264
Fluid Cognitive Ability	2774	0.059	-0.065	-0.055	0.202
Cognitive Empathy	2774	-0.097	0.190	0.293	0.000***
Verbal Creativity	2774	0.016	-0.010	0.068	0.003***

Panel II: Incentivized Outcomes

	N	Males	Females	Difference (F-M)	P-value of Difference
Risk Tolerance	2774	0.122	-0.204	-0.308	0.000***
Competitiveness	2774	0.576	0.402	-0.165	0.000***
Cooperation	2774	0.087	-0.132	-0.200	0.000***
Altruism	2774	-0.029	0.061	0.058	0.160

Panel III: Survey Outcomes

	N	Males	Females	Difference (F-M)	P-value of Difference
Job Satisfaction	1883	0.085	-0.144	-0.169	0.002***
Workplace Satisfaction	1800	0.099	-0.157	-0.245	0.005***
Collegiality	1915	0.025	-0.059	-0.088	0.143
Behavioral Norms	1856	0.023	-0.057	-0.114	0.047**
Leader Professionalism	1879	0.021	-0.041	-0.073	0.279
Meritocracy	1747	0.010	-0.074	-0.085	0.260

Panel IV: Leader Variables

	N	Males	Females	Difference (F-M)	P-value of Difference
Leader	2774	0.162	0.130	-0.041	0.002***
Under Female Leader	1961	0.225	0.393	0.100	0.009***
Professional Support from Leader	1908	0.591	0.577	-0.013	0.611
Personal Help from Leader	1908	0.485	0.388	-0.112	0.003***

Reported statistics under *Females* and *Males* headings use the female and male subsamples of the full sample. Cognitive test scores, incentivized outcomes other than competitiveness, and survey outcomes are standardized. *Difference (F-M)* column reports the coefficient of female dummy in regressions of variables in first column on female dummy and firm fixed effects. Standard errors are clustered at firm level in these estimations. *P-value* column reports p-values for the estimates in the previous column. Asterisks indicate that coefficient is statistically significant at the 1% ***, 5% **, and 10% * levels.

[11] Although this result might seem running counter to the previous work on the topic, a recent study by Furtner et al. (2021) suggests that beliefs of females might be more malleable and sensitive to subtle social cues and to the social context when it comes to conditional cooperation. Coupling this with the finding that females are less satisfied in environments where the share of males is larger (Lordan and Pischke, 2022), it is not very surprising that females appear to be less cooperative in this particular setting.

The word "leader" in our study refers to an employee responsible for multiple white-collar employees. Therefore, a leader is the first point of contact for the team's employees regarding reporting and receiving feedback. With this definition, while some (small) departments have a single leader, larger departments have multiple leaders in our data. Note also that due to the hierarchical nature of most firms, most leaders have their leaders as well. We make a strong distinction between a leader and a subordinate by referring to the former as someone who is responsible for several employees, regardless of their number. The latter is an employee who has no supervisory and leadership duties in the firm. Panel IV then presents leadership variables, showing that 13.0% of females and 16.2% of males hold leadership positions in our sample. In Panel IV, we see that 39.3% of females work in female-led teams as opposed to 22.5% for males. While 57.7% (38.8%) of females state that they receive professional (personal) support from their leaders, these proportions stand at 59.1% (48.5%) for males (with the difference for personal support being significantly different across gender).

Table 2 presents the summary statistics on departmental characteristics. The average department size in our sample is 22, with a minimum of 2 and a maximum of 181 white-collar workers. The share of females in departments exhibits substantial heterogeneity, with a mean value of 37.7%, with some departments having almost exclusively male and others exclusively female leaders. Importantly for our study, departmental homophily indices indicate significant male homophily in both professional and personal support domains, with substantial variation across departments. Female homophily is much lower, and in the realm of professional support even negative.

Table 2: Department Level Characteristics

	Mean	SD	Min	Max	N
Department Size	22.026	20.162	2.000	181.000	233
Share of Females	0.377	0.221	0.040	0.909	233
Proportion of Female Leaders	0.283	0.337	0.000	1.000	224
Coleman Male Homophily-Professional	0.214	0.560	-1.000	1.000	195
Coleman Female Homophily-Professional	-0.017	0.590	-1.000	1.000	168
Coleman Male Homophily-Personal	0.244	0.622	-1.000	1.000	193
Coleman Female Homophily-Personal	0.196	0.639	-1.000	1.000	170

Reported statistics use the full sample and present department level characteristics. *Coleman Male Homophily-Professional, Coleman Female Homophily-Professional, Coleman Male Homophily-Personal, Coleman Female Homophily-Personal* indicate the Coleman homophily index for each gender in the professional and personal support networks.

4.2 Characteristics of a Corporate Leader

Here we examine the characteristics of corporate leaders. Table 3 presents the predictive power of demographics, cognitive and non-cognitive abilities, and of economic and social preferences on the probability of being a corporate team leader. Controlling for firm fixed effects, females are 4.7% less likely to be in a leadership position, as we see in column (1).[12]

Table 3: Characteristics of a Corporate Leader

	Holding a Leadership Position			
	(1)	(2)	(3)	(4)
Female	-0.047***	-0.017	-0.008	-0.002
	(0.015)	(0.019)	(0.019)	(0.017)
Age		0.014***	0.016***	0.016***
		(0.002)	(0.002)	(0.002)
Married		0.021	0.031**	0.031**
		(0.014)	(0.014)	(0.014)
Tenure		0.002	0.003	0.003
		(0.003)	(0.003)	(0.003)
Log Department Size		-0.013	-0.012	-0.012
		(0.012)	(0.012)	(0.012)
Department Female Share		0.069	0.057	0.052
		(0.077)	(0.078)	(0.076)
Fluid Cognitive Ability			0.074***	0.070***
			(0.012)	(0.012)
Cognitive Empathy			0.002	0.003
			(0.013)	(0.013)
Verbal Creativity			0.024**	0.021*
			(0.011)	(0.011)
Risk Tolerance				0.007
				(0.010)
Competitiveness				0.021
				(0.019)
Cooperation				0.012
				(0.011)
Altruism				0.014
				(0.009)
Modern Gender Role Beliefs				0.002
				(0.009)
N	1703	1703	1703	1703
R^2	0.036	0.130	0.168	0.173

Reported results are obtained from ordinary least squares (OLS) regressions on the full sample. Dependent variable is a binary indicator of being a leader. All regressions control for firm fixed effects. Standard errors are clustered at firm level. Asterisks indicate that coefficient is statistically significant at the 1% ***, 5% **, and 10% * levels.

Adding age, tenure in the firm, marital status, department size, and the proportion of females in

[12] Eckel et al. (2020) provide an excellent review on gender gaps in leadership, drawing on a plethora of experimental studies.

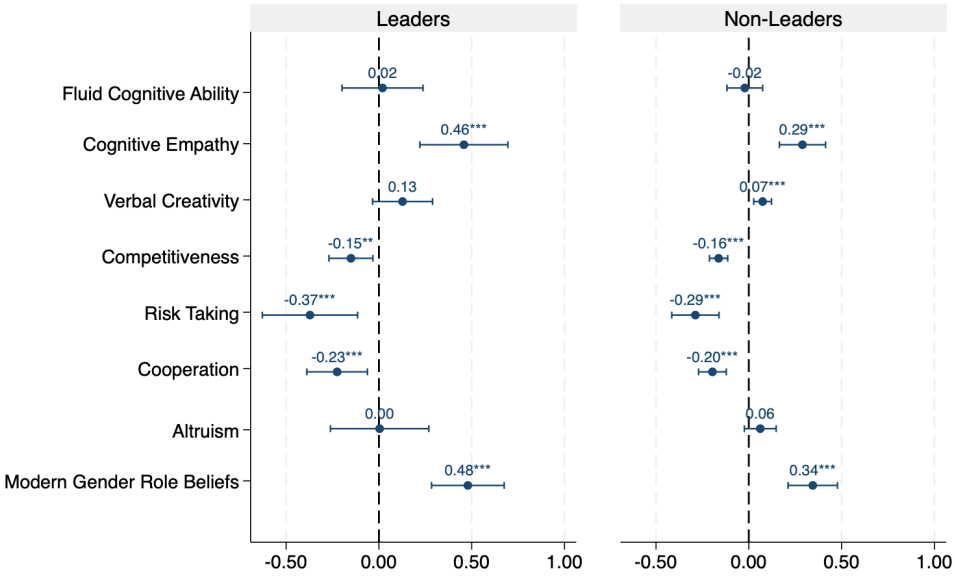
the department eliminates the gender gap in leadership. Based on the rich specification in column 4, we observe that older and married professionals and those with higher fluid IQ and verbal creativity are significantly more likely to be in a leadership position in a corporation.

As the more prominent predictor, a one standard deviation increase in fluid IQ is associated with a 7.0 percentage points increase in the likelihood of being a leader. Contrary to the extensive literature that links competitiveness and risk tolerance to holding leadership positions, we find no evidence that risk tolerance and competitiveness are associated with the probability of having a leadership position.

The next question is whether there are gender differences in these skills and attitudes amongst corporate professionals. Figure 1 plots gender differences in cognitive abilities, social and economic preferences, and gender role beliefs among leaders and non-leaders (subordinates). The first thing to note in this figure is that the gender differences within the leader and non-leader samples follow the same pattern. Controlling for firm fixed effects, female leaders stand out as significantly more risk-averse, less willing to compete, and less cooperative. They hold more progressive gender role beliefs than their male counterparts and exhibit higher emotional intelligence (cognitive empathy). We detect no gender differences in fluid IQ in either leaders or subordinates. These findings suggest that except for fluid IQ, verbal creativity, and altruistic tendencies, the skill set of females who hold leadership positions is not the same as males who have similar positions.

The figure, therefore, shows that female leaders do not necessarily possess more male-like characteristics than non-leader females. On the contrary, the gender differences in characteristics are even more pronounced for the leader sample. The most notable difference is cognitive empathy. Female leaders have significantly higher cognitive empathy than male leaders (0.46 sd, significant at the 1% level). This finding again challenges the view that "male-like" characteristics such as risk tolerance and competitiveness are requisites for leadership positions. Instead, these findings are consistent with those of Adams and Funk (2012), who find that female and male directors differ in their core values and attitudes. Given that their skill endowments exhibit massively differential patterns, it is plausible to expect female leaders to shape social interactions and the relational atmosphere in their firm differently than their male counterparts.

Figure 1: Gender Differences in Cognitive Skills and Economic Preferences of Leaders and Non-Leaders



The figure plots the estimated gender differences (females-males) in fluid cognitive ability, cognitive empathy, verbal creativity, risk taking, competitiveness, cooperation, altruism, and holding modern gender role beliefs. *Leader* heading indicates the leader sample, *Non-Leaders* heading indicates the subordinate sample. Coefficients are obtained from ordinary least squares (OLS) estimations by regressing the indicated variable in y-axis on a female dummy, and controlling for firm fixed effects. 95% confidence intervals are based on standard errors clustered at the firm level. Asterisks indicate that coefficient is statistically significant at the 1% ***, 5% **, and 10% * levels.

5 Female Leadership and Workplace Climate

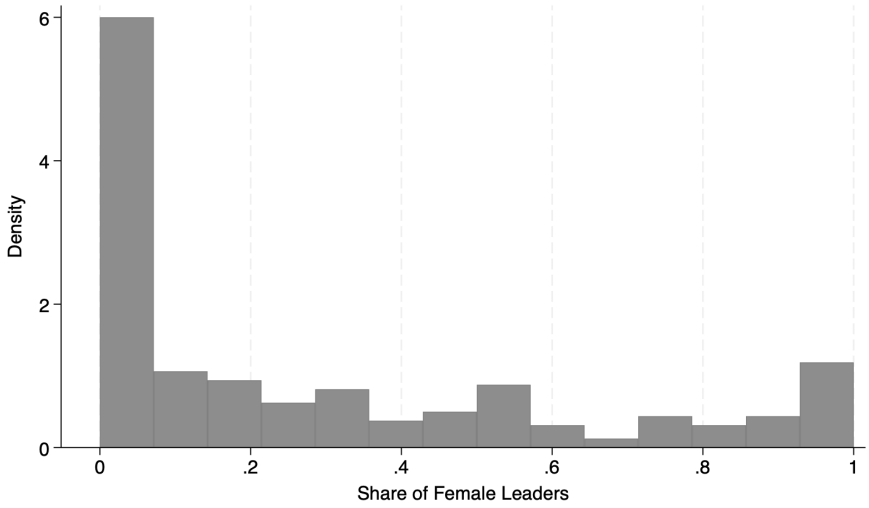
We now turn to exploring the influence of female leadership on social networks and perceived workplace climate as well as its effect on job separations and promotions. Before presenting our results, we first discuss our identification strategy, present evidence of internal validity and describe our empirical model.

5.1 Internal Validity

Our main empirical specification relates working in a female-led team to social networks and workplace climate outcomes. Figure 2 displays the distribution of the proportion of female leaders within departments. While 91 (41%) departments have no female leaders and 18 departments have no

male leaders (8%), there is quite a lot of heterogeneity in the proportion of female leaders in the remaining 115 departments.

Figure 2: Distribution of Female Leadership at Department Level



The figure plots the distribution of female leaders at department level. Y-axis is the number of departments. X-axis is the share of female leaders at department level. Bin width is 0.07.

To identify the effect of female leadership, we exploit variation in the team leader's gender, or the department level variation in the gender composition of leaders. As mentioned in Section 2, we enlisted only the firms with highly centralized and transparent hiring and worker allocation practices to ensure that a selection mechanism does not drive our results. These practices oversee that (i) workers are not allowed to choose their team leaders, (ii) team leaders are not allowed to choose their subordinates, and (iii) HR officials do not consider gender in forming teams and leader-subordinate matching. We provide qualitative evidence confirming the absence of selective allocation mechanisms via an extensive survey we gave to the HR officials. In the absence of a controlled experiment which randomly allocates leaders to teams, credibly identifying the effect of female leadership requires that within a firm, working under a female leader is exogenous to relevant employee characteristics. In the following, we empirically test the plausibility of our identification assumption.

One challenge to identification arises mechanically because female leadership and the share of female employees are higher in female-dominated sectors and "female-type jobs". In our data, the percentage of female employees ranges from 20% in the construction sector to 51% in the finance

sector. Mechanically, female leadership is more prevalent in sectors and firms employing a higher share of females. We are also more likely to observe more female leaders and female employees in departments dealing with administrative tasks, such as human resources (HR) departments, in contrast to departments related to production. To the extent that social networks and employees' perception of workplace climate relates to these facts, our estimates may be biased. Therefore, we control for firm fixed effects to account for firm-specific characteristics. We further control for the nature of the job performed to account for the variation driven by "female-type jobs". Our variable for the nature of the job performed maps the task description reported by the employee onto the International Standard Classification of Occupations (ISCO-08) by the International Labour Organization.[13] ISCO-08 classifies all jobs in the world into groups based on their similarity in skill level and skills required for the job. Finally, we control for the share of female employees in the department. Therefore, our identification relies on the weaker assumption that the assignment to female leaders is as good as random once we control for variables that are mechanically related to working under female leadership.

For the identification assumption to be plausible, employees working under female leaders should not systematically differ from those working under male leaders in any predetermined characteristics (Chetty et al., 2011). To provide further support for the internal validity of our results in this respect, Table 4 reports the balance of demographics and cognitive skills, as well as economic and social preferences, across male and female-led teams. The last column reports whether the mean difference in the respective characteristic is statistically significant conditional on the share of females in the department, the nature of the job performed, and firm fixed effects. Overall, we see a reasonable balance. Out of the 12 characteristics considered, only competitiveness seems unbalanced, although the proportion of employees who opted for the tournament scheme looks similar across male and female-led teams (48%).

[13]We exclude certain categories of ISCO-08 which are irrelevant for our data, such as agricultural workers and artists. We map our variable for the nature of the job performed onto the following ten categories: engineers, operations staff (e.g., technicians, quality control staff, etc.), IT, C-suite managers, service staff (sales, marketing, etc.), administrative staff, finance, professionals (e.g., firm lawyer, doctor, etc.), logistics, and R&D.

Table 4: Balance Tests with Individual Characteristics

	N	Under Male Leader Mean	Under Female Leader Mean	P-value of Difference
Female	1892	0.372	0.550	0.988
Age	1892	34.784	33.612	0.197
Married	1892	0.631	0.556	0.720
Tenure	1892	6.962	5.752	0.422
Fluid Cognitive Ability	1721	-0.107	-0.136	0.403
Cognitive Empathy	1726	-0.110	0.030	0.169
Verbal Creativity	1726	-0.135	-0.172	0.231
Competitiveness	1720	0.476	0.485	0.012**
Risk Tolerance	1724	0.002	-0.119	0.158
Cooperation	1724	-0.046	-0.141	0.534
Altruism	1724	-0.071	-0.053	0.799
Modern Gender Role Beliefs	1494	-0.012	0.066	0.819

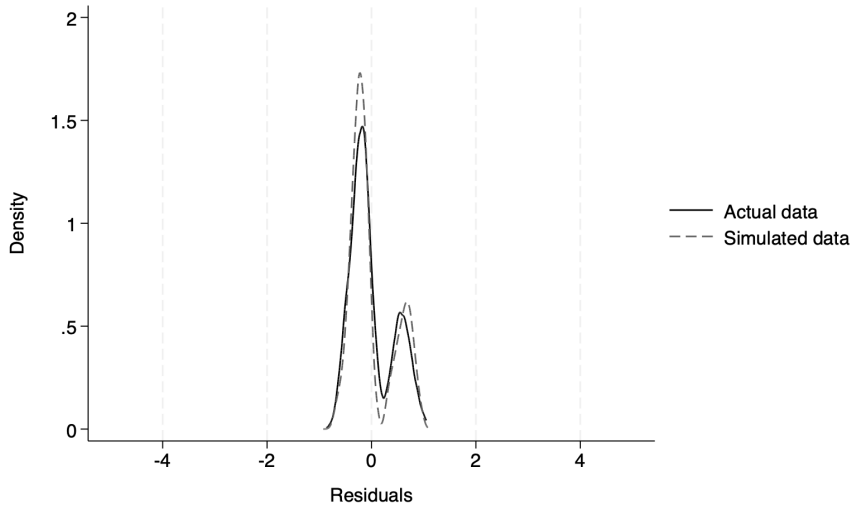
Reported statistics use the subordinate sample. Columns 2 and 3 report unconditional means. The last column reports p-values associated with the coefficient of working under a female leader, obtained from regressions of each characteristic on a binary indicator of working under a female leader, controlling for the share of females within department, nature of the job performed, and firm fixed effects. Standard errors are clustered at firm level. Asterisks indicate that coefficient is statistically significant at the 1% ***, 5% **, and 10% * levels.

If the identification assumption holds, then the inclusion of covariates should not change the results beyond reducing the noise in the estimates. In the Appendix, we report all our individual-level analyses without the individual-level covariates, only conditioning on the share of females in the department, the nature of the job performed, and firm fixed effects. Demonstrating that our results are robust to the exclusion of the individual level characteristics provides compelling evidence alleviating concerns related to observed selection.

Finally, to test for the exogeneity of leader's gender, we conduct a Monte Carlo simulation following Bietenbeck (2020). Specifically, we test whether the within-firm variation in exposure to female leaders (working under female leaders) observed in our data is consistent with a random allocation process. To do so, we randomly assign each subordinate in a firm to a male or female leader, keeping the probability of working under a male or female leader the same as in the actual data. This procedure ensures all other individual and department-level characteristics of the subordinates remain the same as in the actual data. We first estimate a linear probability model of working under a female leader on firm fixed effects, the nature of the job performed, and the share of females in the department using our actual data. We then estimate the same model using simulated data. The residuals obtained from the actual data are then compared to that of simulated data. We repeat this process 1000 times with a new set of simulated data. If the assumption of as-good-as random assignment to female leaders is valid, the distributions of residuals obtained from actual and simulated data should be statistically the same. Figure 3 plots the distribution

of the residuals from 1,000 replications of this exercise, vis-à-vis an equivalent regression using the actual data. The two distributions look very similar. Mann-Whitney equality test, performed 1000 times, yielded a mean p-value of 0.49, with the 5th percentile corresponding to a p-value of 0.09, suggesting that the difference between the two distributions is statistically zero; see the distribution of p-values in Figure 4.

Figure 3: Testing for Unobserved Selection: Actual and Simulated Variation in Working Under Female Leader



Actual and simulated variation in exposure to female leaders. This figure displays the kernel density plots of residuals from regressions of exposure to female leaders conditional on the share of females within department, nature of the job performed, and firm fixed effects. The solid line corresponds to residuals from a single regression using the actual data, whereas the dashed line corresponds to residuals from 1,000 regressions using simulated data in which subordinates are randomly assigned male and female leaders. Density calculations are based on an Epanechnikov kernel with the optimal bandwidth of 0.08 in the actual data.

5.2 Empirical Model

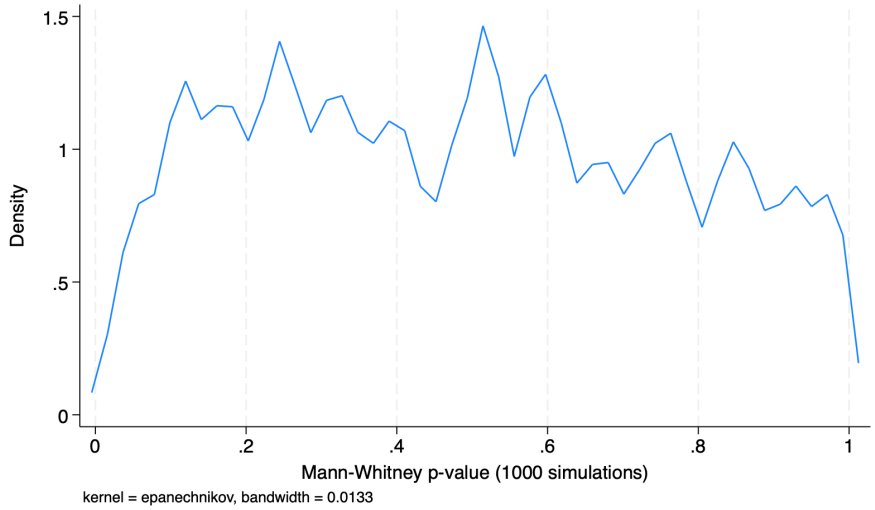
Our basic empirical specification for individual-level outcomes is as follows:

$$y_{ijf} = \alpha_0 + \alpha_1 \text{FemLead}_{ijf} + \text{IC}'_{ijf}\beta + \gamma \text{FemShare}_{jf} + \delta_f + \varepsilon_{ijf}, \tag{1}$$

where y_{ijf} is the outcome of interest for worker i in department j in firm f. FemLead_{ijf} is the binary indicator of working under a female leader. IC_{ijf} is a vector of individual characteristics for worker i in department j in firm f that are likely predictive of the outcome y, in addition to the nature of the job performed. FemShare_{jf} is the share of female workers in the department. Finally,

δ_f represents firm fixed effects. The coefficient of interest in this basic specification is α_1, which we interpret as the effect of working under a female leader. The above specification is modified as appropriate to conduct various heterogeneity analyses.

Figure 4: Testing for Unobserved Selection: Distribution of Mann-Whitney P-values



This figure displays the kernel density plots of p-values corresponding to the Mann-Whitney test statistics obtained from comparing the actual and simulated distributions of residuals from regressions of exposure to female leaders conditional on the share of females within department, firm fixed effects and nature of the job performed. The mean p-value is 0.49, with 5^{th} percentile corresponding to a p-value of 0.09.

Our department-level empirical specification is as follows:

$$y_{jf} = \alpha_0 + \alpha_1 \text{ShareFemLead}_{jf} + \gamma \text{FemShare}_{jf} + \delta_f + \varepsilon_{jf}, \tag{2}$$

where y_{jf} is a department-level outcome of interest (for example, an index for male homophily), ShareFemLead_{jf} is the share of female leaders in department j in firm f. Recall that larger departments may have multiple leaders in our data. Therefore, our department-level analyses use the "share of female leaders" in the department as the variable of interest. Variable FemShare_{jf} is the share of female workers in the department. Finally, δ_f denotes firm fixed effects.

In all analyses, we cluster standard errors at the firm level. Because the sample contains a small number of clusters (24 corporations), in addition to clustered robust standard errors, we also present wild bootstrapped p-values adjusted for the small sample. We chose our covariates by post-double-selection LASSO. We defined gender, share of females in the department, nature of the

job performed, and firm fixed effects as partialled-out covariates so that they were not penalized by the LASSO. In the individual-level regressions, our covariate set includes gender, fluid cognitive ability, verbal creativity, and cooperation, in addition to the share of females in the department, the nature of job performed and firm fixed effects. Our department-level covariate set includes the share of females in the department and firm fixed effects.

5.3 Female Leadership and Relational Dynamics in the Workplace

Table 5 reports whether working under a female leader affects nominating the leader in one's professional support network. Recall that participants were asked to nominate three colleagues in full discretion as professional support providers and another three as personal support providers. We asked them to consider the entire firm in answering this question and provided the names in a separate document with assigned random id numbers. The nomination involved finding the person to be nominated, then recording their id number.

Table 5: Leader's Gender and Support from Leader

	Professional Support			Personal Support		
	Pooled	Females	Males	Pooled	Females	Males
Under Female Leader	0.028	0.110***	-0.045	0.075**	0.152***	-0.002
	(0.041)	(0.039)	(0.056)	(0.032)	(0.031)	(0.035)
Wild Bootstrap P-value	0.489	0.018	0.439	0.036	0.000	0.956
Mean (Under Male Leader)	0.594	0.547	0.621	0.431	0.333	0.488
N	1604	658	946	1604	658	946
P-Value (Male=Female)		0.007			0.000	

Reported results are obtained from ordinary least squares (OLS) regressions for the subordinate sample. Dependent variable is a binary indicator of nominating leader in the network. *Females* columns use the female subsample. *Male* columns use the male subsample. *P-Value (Male=Female)* rows test whether a gender gap exists in receiving support from female leaders. Covariates selected via post-double-selection LASSO, include gender, fluid cognitive ability, verbal creativity and cooperation, as well as the share of females within department, nature of the job performed and firm fixed effects. Standard errors are clustered at firm level, and wild bootstrapped p-values, adjusted for the small sample, are provided. Asterisks indicate that coefficient is statistically significant at the 1% ***, 5% **, and 10% * levels.

In a positive relational climate, we expect team leaders to be nominated as professional and personal support providers. As seen in Table 5, about 59% (43%) of the employees who work under male leaders nominate their leader as a professional (personal) support provider. Considering the pooled sample, we observe that those who work under a female leader are no more likely to

nominate their leader as a professional support provider but significantly more likely to nominate their leader as a personal support provider. The effect of female leadership on the probability of receiving personal support is 7.5 percentage points, representing a 17.4% effect of working under female leadership. Columns 2 to 6 show that these effects are driven entirely by female employees. For female subordinates, working under a female leader increases the probability of nominating the leader as a professional (personal) support provider by 11 (15.2) percentage points, representing an about 20% (46%) higher effect size relative to working under a male leader. The gender of the leader has no effect on receiving support from the leader for male employees. This heterogeneity is significant at the 1% level. Appendix Table A.1 confirms that the results are robust to the exclusion of individual level covariates.

The effect of female leaders on the structure of support networks can be seen further in Table 6. The table presents the effect of working under a female leader on the percentage of non-leader female colleagues nominated as professional and personal support providers. As seen from the table, having a female leader increases the social ties between male and female employees. Both males and females have a higher proportion of female colleagues in their professional and personal support networks under female leadership. The effect sizes are striking. Under male leadership, 23.7% of all nominations are extended to female (non-leader) colleagues. This value more than doubles under female leadership. Furthermore, these effects do not exhibit gender heterogeneity. Both male and female subordinates have more social ties with their female colleagues under female leadership, with estimated values ranging between 21 and 28 percentage points. As can bee seen in Appendix Table A.2, the estimated coefficients are very similar when we exclude the individual level characteristics.

These results suggest that the gender of the leader has a significant impact on the relational dynamics in the workplace. Female leadership seems to increase inter-gender social ties in both professional and personal domains in the workplace. To provide further evidence on these inter-gender relationships, we also investigate departmental-level homophily. Keep in mind that because many departments have several team leaders, our departmental-level analyses use the share of female leaders as the treatment variable.

Table 6: Leader's Gender and Support from Non-Leader Female Colleagues

	Professional Support			Personal Support		
	Pooled	Females	Males	Pooled	Females	Males
Under Female Leader	0.252***	0.277***	0.235***	0.227***	0.213***	0.244***
	(0.024)	(0.031)	(0.037)	(0.020)	(0.031)	(0.039)
Wild Bootstrap P-value	0.000	0.000	0.000	0.000	0.000	0.000
Mean (Under Male Leader)	0.237	0.381	0.153	0.309	0.561	0.157
N	1577	648	929	1499	627	872
P-Value (Male=Female)		0.361			0.585	

Reported results are obtained from ordinary least squares (OLS) regressions for the subordinate sample. Dependent variable is the proportion of females nominated in the network. *Females* columns use the female subsample. *Male* columns use the male subsample. *P-Value (Male=Female)* rows test whether a gender gap exists in receiving support from female leaders. Covariates selected via post-double-selection LASSO, include gender, fluid cognitive ability, verbal creativity and cooperation, as well as the share of females within department, nature of the job performed, and firm fixed effects. Standard errors are clustered at firm level, and wild bootstrapped p-values, adjusted for the small sample, are provided. Asterisks indicate that coefficient is statistically significant at the 1% ***, 5% **, and 10% * levels.

Table 7 presents the effects of the proportion of female leaders in a department on the level of male and female homophily in that department. Controlling for the share of females in the department and firm fixed effects, the degree of male homophily declines, and that of female homophily increases significantly as the proportion of female leaders increases. This result is consistent with our node-level findings that female leaders lead workers (both males and females) to form more professional ties with their female colleagues. The results can be viewed in Figure 5 in visual clarity and confirmed via semi-parametric estimates. Appendix Figure A.1 presents the nonparametric relationship between the proportion of female leaders and male and female homophily, controlling for the share of females in the department and firm fixed effects. Corroborating our parametric results, female leadership lowers male homophily and increases female homophily, especially in the professional support domain. Importantly, the results are not mechanically driven by females being the gender minority, as the constructed homophily measure adjusts for department size and department gender composition.

Although it appears as if the pattern of homophily switches from high male homophily and negative female homophily to high female homophily and slightly negative male homophily under a female leader, a careful inspection of the predicted values suggests that this is not the case. In a department with an equal share of male and female leaders, the predicted male homophily in the professional support domain is 0.19, and the predicted female homophily in the professional

support domain is computed as -0.05. This suggests that even under equal leadership, there is substantial but more mild male homophily. In the personal support domain, the predicted male homophily computed for a department with an equal share of male and female leaders is 0.09, and female homophily, 0.13.

Table 7: Share of Female Leaders and Homophily in the Department

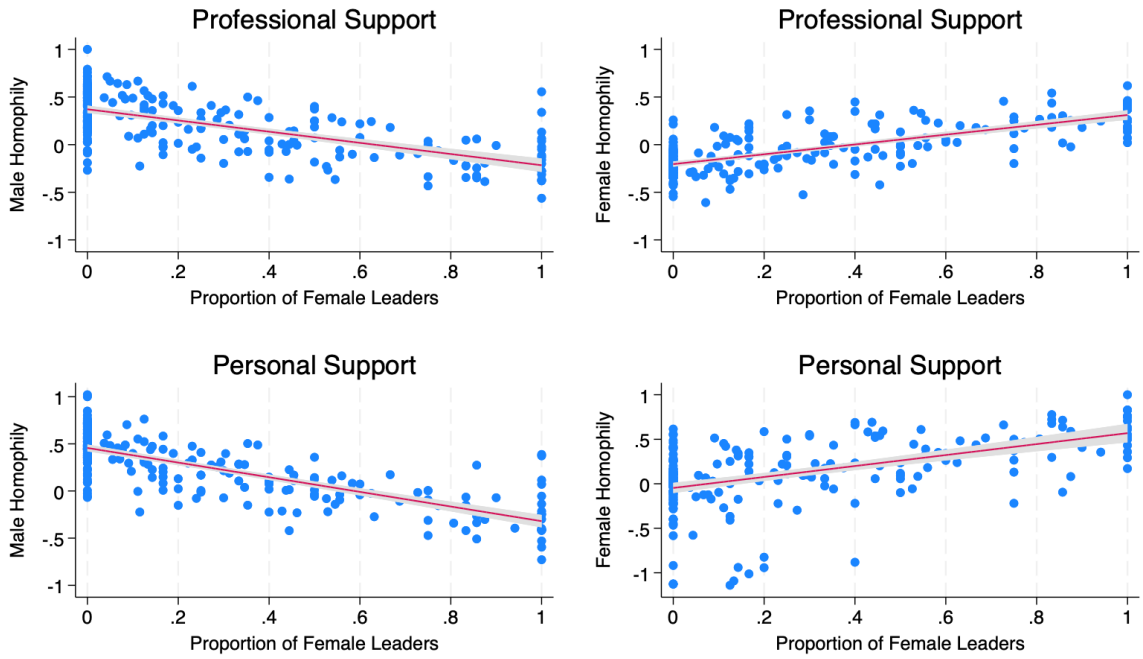
	Professional Support			Personal Support		
	Male Homophily	Female Homophily	Density	Male Homophily	Female Homophily	Density
Proportion of Female Leaders	-0.362**	0.463**	0.004	-0.554***	0.305	0.007
	(0.144)	(0.182)	(0.045)	(0.142)	(0.183)	(0.035)
Wild Bootstrap P-value	0.008	0.026	0.943	0.000	0.112	0.849
Outcome Mean	0.214	-0.017	0.094	0.244	0.196	0.076
N	195	166	212	192	168	210

Reported results are obtained from ordinary least squares (OLS) regressions at department level. Dependent variables are *Coleman's homophily index* and department network density. All regressions control for share of females in the department, and firm fixed effects. Standard errors are clustered at firm level, and wild bootstrapped p-values, adjusted for the small sample, are provided. Asterisks indicate that coefficient is statistically significant at the 1% ***, 5% **, and 10% * levels.

Note that female leadership changes the structure of the inter-gender interactions without increasing the overall network density, i.e., without creating additional social links within the firm. Network density is defined as the ratio of all formed links to all potential links that could be formed in a department. Columns 3 and 6 of Table 7 show that female leadership does not increase the density of actual links in either professional or personal domain.[14] Overall, our results on social networks can be interpreted as female leadership redirecting social links from male-male interactions to male-female and female-female interactions (Table 6), which is also reflected in the homophily results in Table 7. Taken together, a higher share of female leaders fosters a less segregated workplace environment.

[14]The number of nominations is capped at 3. This result implies that under female leaders, those making 0, 1 or 2 nominations do not establish significantly more links compared to those working under male leaders. The share of isolated notes in the professional network is 30%, indicating potential for an increase in network density.

Figure 5: Proportion of Female Leaders and Homophily



The figure plots female and male Coleman homophily index at department level using OLS estimation with the proportion of female leaders within department, controlling for the share of females in the department and firm fixed effects. The shaded area indicates the 95% confidence intervals based on clustered standard errors at firm level.

5.4 Leader's Gender, Employee Separation, and Promotions

A company's separation rate can be an important indicator of its relational culture. While some voluntary turnover is expected and considered healthy for highly educated corporate professionals, some separations can be an escape from a toxic environment (Fiordelisi and Ricci, 2014; Batut et al., 2021; Hoffman and Tadelis, 2021). Similarly, in a healthy work environment, professionals expect to advance in their careers, i.e., to get promoted to posts with higher responsibility and decision-making power. Recall that we were granted access to individual-level data on layoffs and quits that took place between July 1, 2021, and November 30, 2021. This was about 1.5 years after measuring our outcome variables. For this, we are compelled to use a subsample of the firms for the following two reasons: (i) 4 firms have dropped out of the project, three at the onset of COVID-19 and one at the baseline stage, (ii) In Fall 2020, we implemented a randomized intervention on half of the remaining 20 firms, which effectively reduced job separations (Alan et al., 2023). Hence we

run the analysis on the employees of 10 control companies, free from the effect of the intervention.

Table 8 presents the estimated effects of female leadership on employee separation and promotions. First, note that we find no effect on any of these outcomes for the pooled sample. However, these null results conceal an interesting heterogeneity regarding voluntary separations. As seen in Column 5, females working under female leaders are 6.7 percentage points less likely to separate from their jobs voluntarily. Considering the voluntary separation rate of about 12% under male leadership, the estimated effect represents a 56% lower separation rate under female leadership. The probability of promotion of a female employee under male leadership is 7.4%, and this value is 9.2% for male employees. Female leadership increases the probability of promotion for both male and female employees by 2 percentage points, but these estimates do not reach statistical significance. Therefore our promotion results do not support the women-help-women hypothesis à la Kunze and Miller (2017). Estimates without covariates, reported in Appendix Table A.3, echo these results.

Table 8: Leader's Gender, Employee Separation (Layoffs and Quits) and Promotions

	Layoffs			Quits			Promotions		
	Pooled	Females	Males	Pooled	Females	Males	Pooled	Females	Males
Under Female Leader	0.007	-0.008	0.030	-0.017	-0.067**	0.011	0.011	0.026	0.021
	(0.009)	(0.006)	(0.023)	(0.016)	(0.026)	(0.024)	(0.023)	(0.034)	(0.027)
Wild Bootstrap P-value	0.527	0.410	0.287	0.215	0.043	0.614	0.641	0.392	0.460
Mean (Under Male Leader)	0.010	0.007	0.011	0.078	0.119	0.057	0.086	0.074	0.092
N	486	183	303	486	183	303	486	183	303
P-Value (Male=Female)		0.166			0.045			0.893	

Reported results are obtained from ordinary least squares (OLS) regressions for the subordinate sample. Dependent variable is a binary indicator of layoff, quit, or promotion. Covariates selected via post-double-selection LASSO, include gender, fluid cognitive ability, verbal creativity and cooperation, as well as the share of females within department, nature of the job performed and firm fixed effects. Standard errors are clustered at firm level, and wild bootstrapped p-values, adjusted for the small sample, are provided. Asterisks indicate that coefficient is statistically significant at the 1% ***, 5% **, and 10% * levels.

Our results so far suggest that female leadership makes a significant impact on the relational dynamics, in particular inter-gender professional links in the workplace, and has implications for voluntary job separations. Our next question is how employees perceive the workplace climate under female leadership.

5.5 Leader's Gender and Perceived Workplace Climate

Table 9 presents the effect of working under a female leader on various perceived workplace climate indicators. In Panel I, we see striking negative effects on workplace satisfaction and perceived meritocratic values for the pooled sample. Employees working under female leaders report 0.132 standard deviations lower workplace satisfaction and 0.110 standard deviations lower meritocratic values in their firm. While department collegiality and job satisfaction seem to be higher under female leadership, these effects do not reach statistical significance. Reported behavioral norms and perceived leader professionalism are also lower under female leadership, although they do not reach statistical significance either. The results are comparable when we exclude the set of individual level covariates (see Appendix Table A.4).

Table 9: Leader's Gender and Reported Workplace Climate

	W-Satisfaction	Meritocracy	Collegiality	Job Satisfaction	Behavioral Norms	Leader Prof.
Panel I: Pooled Sample						
Under Female Leader	-0.132**	-0.110*	0.022	0.030	-0.047	-0.054
	(0.056)	(0.055)	(0.084)	(0.070)	(0.088)	(0.082)
Wild Bootstrap P-value	0.026	0.061	0.810	0.688	0.620	0.522
Mean (Under Male Leader)	0.010	-0.026	-0.015	-0.022	0.010	0.023
N	1424	1384	1518	1491	1467	1493
Panel II: Female Sample						
Under Female Leader	-0.199*	-0.193**	0.047	-0.056	-0.009	0.030
	(0.099)	(0.077)	(0.115)	(0.101)	(0.137)	(0.107)
Wild Bootstrap P-value	0.068	0.018	0.695	0.600	0.953	0.765
Mean (Under Male Leader)	-0.135	-0.052	-0.090	-0.195	-0.039	-0.038
N	604	589	637	633	621	624
Panel III: Male Sample						
Under Female Leader	-0.076	-0.019	0.021	0.083	-0.058	-0.143
	(0.070)	(0.074)	(0.110)	(0.081)	(0.092)	(0.115)
Wild Bootstrap P-value	0.305	0.788	0.860	0.290	0.544	0.265
Mean (Under Male Leader)	0.101	-0.009	0.031	0.087	0.041	0.061
N	820	795	881	858	846	869
P-Value (Male=Female)	0.297	0.034	0.829	0.205	0.701	0.153

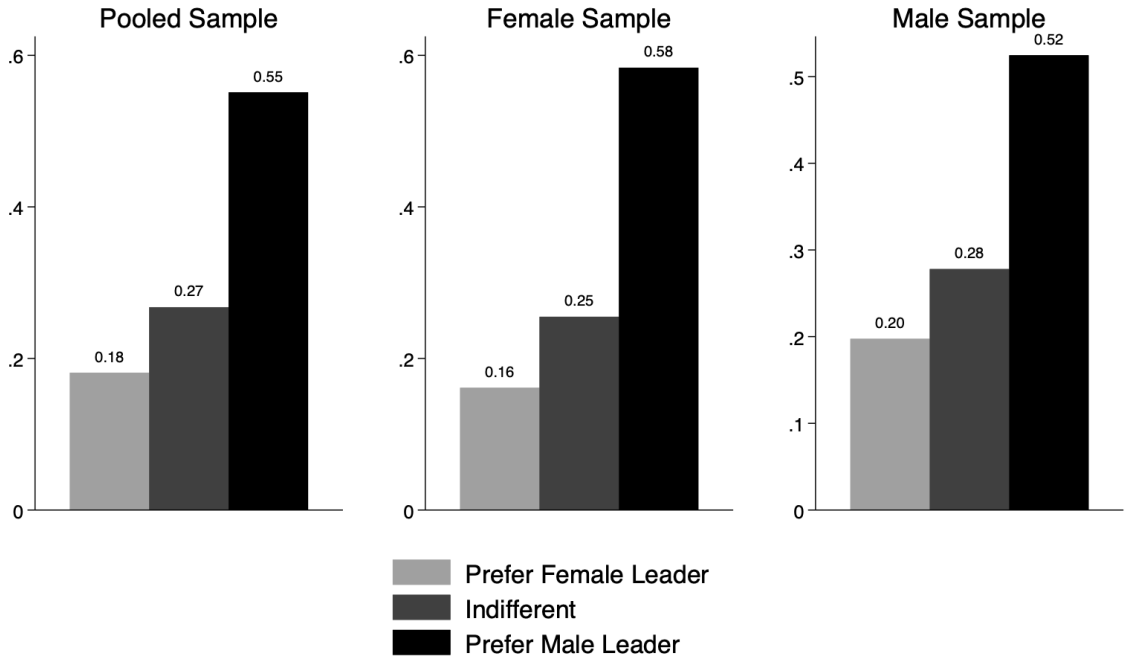
Reported results are obtained from ordinary least squares (OLS) regressions for the subordinate sample. Dependent variable is a standardized workplace climate item as indicated. Covariates selected via post-double-selection LASSO, include gender, fluid cognitive ability, verbal creativity and cooperation, as well as the share of females within department, nature of the job performed and firm fixed effects. 'W-Satisfaction' stands for workplace satisfaction, whereas 'Leader Prof.' stands for leader professionalism. Standard errors are clustered at firm level, and wild bootstrapped p-values, adjusted for the small sample, are provided. Asterisks indicate that coefficient is statistically significant at the 1% ***, 5% **, and 10% * levels.

Even more striking is that these negative perceptions seem stronger among female employees. Females report 0.199 standard deviations lower workplace satisfaction under female leadership

compared to male leadership. Females working under female leaders report much worse perceived meritocratic values (0.193 standard deviations lower) than males working under female leaders, and this gender difference is statistically significant. These results are at odds with the fact that female employees are more likely to receive professional and personal support from female leaders and if one considers gender segregation in the workplace a negative climate indicator as in Cullen and Perez-Truglia (2023).

These negative perceptions become even more puzzling as we show that female leadership lowers voluntary separations. Adding more mystery to the puzzle, Figure 6 depicts employees' preferences for their leaders' gender. As can be seen, 18% of all employees in our sample prefer to work under female leadership, with 27% stating indifference and 55% a preference for male leadership. What is striking is there is not much gender heterogeneity in these results. More than half of employees, 52% of males, and 58% of females, state that they prefer to work with male leaders.

Figure 6: Leader Gender Preferences



The figure plots the shares of subordinates who prefer having a female leader, a male leader, and remain indifferent between the two. The left panel plots the corresponding shares in the pooled sample; the middle panel in the female sample; and the right panel in the male sample.

5.6 Mechanism: The Role of Social Support

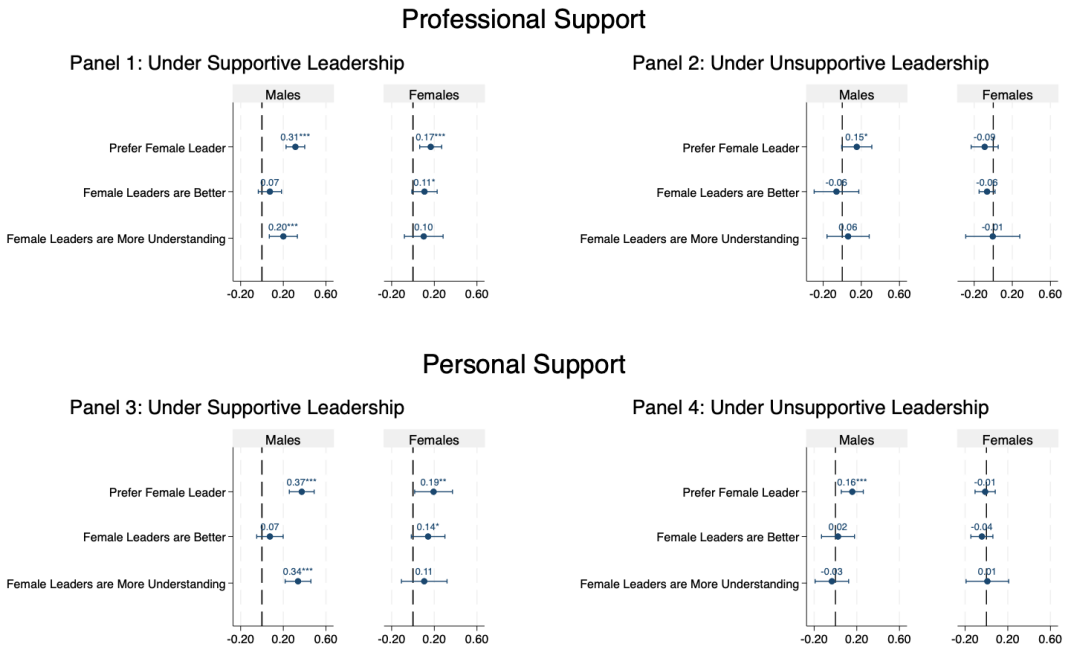
If we consider gender segregation and voluntary quits to be negative workplace climate indicators, the results on workplace climate perceptions and leader gender preferences appear to be at odds with the earlier results on the relational dynamics. With the objective of unraveling the mechanisms, we explore heterogeneity with respect to social support from leader. Indeed, these preferences reveal a very interesting pattern when leaders are considered to be supportive types. We consider subordinates who nominated their leaders within their primary support networks to be working under 'supportive' leaders.

As seen in Figure 7, under supportive leadership, both males and females working under female leaders state that they prefer female leaders. Under supportive female leaders, male employees think that female leaders have more understanding of their professional and personal matters, and female employees believe that female leaders are better. Interestingly, when the leader is considered unsupportive, males who work under female leaders still seem to prefer female leaders, while females who work under females do not prefer female leaders.[15] This resonates well with the finding that women hold each other against higher standards.

Given all these results, the question stands as to why female employees working under female leaders form better professional and personal ties with their leaders and prefer to stay in their firm, but still prefer to work under male leadership and report such negative workplace satisfaction and meritocratic values under female leadership? To understand what drives these results, we explore our rich data and provide some suggestive evidence on the possible rationale behind these negative female perceptions under female leadership. Our primary explanation is that female employees hold their female leaders to a higher standard than their male leaders. While an unsupportive male leader generates negative perceptions among female employees, an unsupportive female leader generates a much deeper disappointment.

[15]The results are robust to the exclusion of individual level covariates, as illustrated in Appendix Figure A.2.

Figure 7: Leader Gender Preferences Under Supportive and Unsupportive Leadership



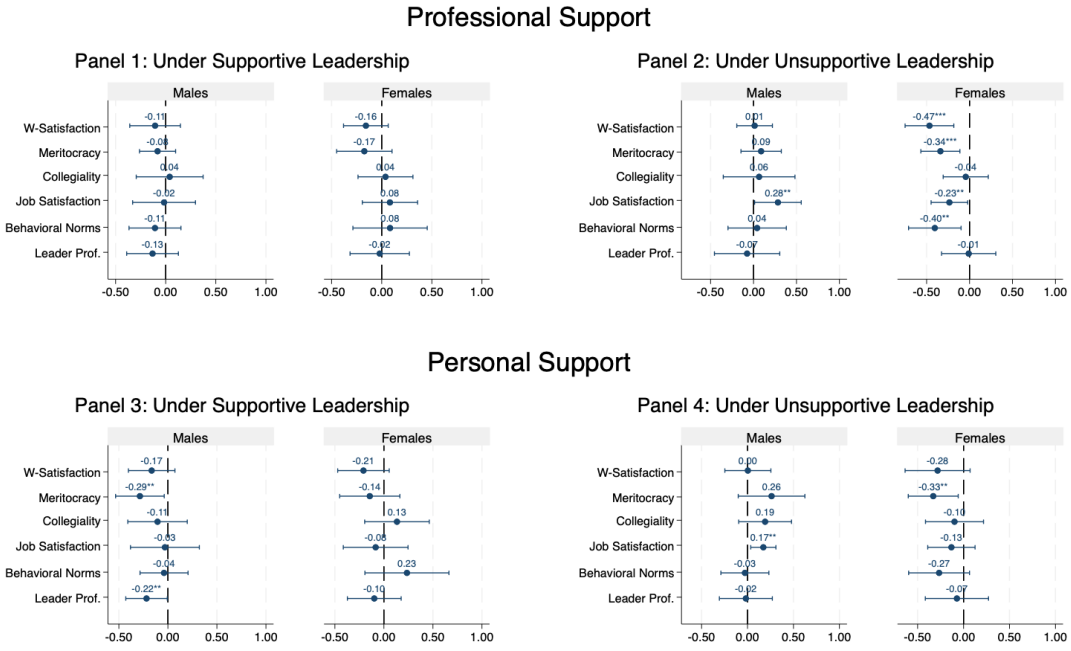
The figure plots effects of having a female leader on leader gender preferences separately for female and male employees under supportive and unsupportive leaders. Coefficients are obtained from ordinary least squares (OLS) estimations by regressing leader gender preferences on a binary indicator of having a female leader, and covariates selected via post-double-selection LASSO, including fluid cognitive ability, verbal creativity and cooperation, as well as the share of females within department, nature of the job performed, and firm fixed effects. 95% confidence intervals are based on standard errors clustered at the firm level. Asterisks indicate that coefficient is statistically significant at the 1% ***, 5% **, and 10% * levels.

Figure 8 provides support, albeit suggestively, for this explanation. The figure plots differences in climate indicators reported by subordinates under female versus male leaders. Panel 1 shows the results for the situation where subordinates nominated their leader as professional support provider. In this panel, we see that the gender of the leader does not matter for male and female employees when leaders are considered supportive. However, when the leader is considered unsupportive, as seen in Panel 2, while for male employees, the gender of the leader still does not matter for their perceived workplace climate, female employees paint a dark workplace climate picture under female leadership.[16] They report 0.47 standard deviations lower workplace satisfaction, 0.34

[16]The unexpected finding that under unsupportive leadership male employees working under female leaders report higher job satisfaction could speak to the findings in Rickne and Folke (2023), which links workplace gender diversity to higher levels of job satisfaction.

standard deviations lower meritocratic values, 0.23 standard deviations lower job satisfaction, and perceive much worse behavioral norms within their department under unsupportive female leaders. Interestingly, in both supportive and unsupportive cases, employees consider their leaders' conduct professional. These findings remain stable when we do not include the individual level characteristics as controls (see Appendix Figure A.3).

Figure 8: Climate Perceptions Under Supportive and Unsupportive Leadership



The figure plots effects of having a female leader on workplace climate separately for female and male employees under supportive and unsupportive leaders. Coefficients are obtained from ordinary least squares (OLS) estimations by regressing standardized measures of workplace climate on a binary indicator of having a female leader, and covariates selected via post-double-selection LASSO, including fluid cognitive ability, verbal creativity and cooperation, as well as the share of females within department, nature of the job performed, and firm fixed effects. 95% confidence intervals are based on standard errors clustered at the firm level. Asterisks indicate that coefficient is statistically significant at the 1% ***, 5% **, and 10% * levels.

All in all, while both males and females are more likely to receive support from their leaders under female leadership and form more inter-gender ties in the workplace, we interpret our findings as showing that female workers' expectations from their female leaders are likely different from their expectations from male leaders. This is also consistent with the finding that female leaders tend to receive harsher backlash from their subordinates (Chakraborty and Serra, 2023). In our

case, similar to the backlash finding, disappointment created by a female leader may be felt deeper by female employees than by male employees.

6 Conclusion

Using data from over 2,000 white-collar workers in 24 companies in Turkey, covering diverse industries, we identify the role of female leadership in shaping the workplace climate. For our analysis, we used incentivized games, extensive surveys of perceived workplace climate, social networks, and administrative records on promotions and separations. To understand the role of female leaders on the relational climate on the workplace, we rely on the individual level variation in working under a female leader, or the between department variation in the share of female leaders within a department. We complement our qualitative evidence on HR practices with compelling empirical evidence to argue that exposure to female leadership is as good as random once we control for variables that are mechanically related to working under female leadership.

Overall, our results suggest that female leaders are pivotal in transforming the relational culture in the workplace. Firstly, we document that female leaders do not possess the same skill endowment as male leaders, except for basic cognitive capacity. Rather, they are significantly less competitive, more risk-averse, and have higher cognitive empathy. Secondly, we show that female leaders tend to create a more inclusive workplace, where (i) male homophily is reduced, (ii) female subordinates have more access to professional and personal support from leaders, and (iii) both males and females establish more links with female colleagues that are not leaders. Moreover, female employees have a lower probability of quitting their jobs under female leadership, with no effect detected on their promotion probabilities.

Despite these positive effects, more than half of the employees in our data prefer to work under male leadership. Employees working with female leaders report significantly lower workplace satisfaction and worse meritocratic values for their firms, and these negative perceptions are driven entirely by female employees. We conjecture that this result is due to their female leaders being judged more harshly than their male counterparts, evidence of which is provided in Dupas et al. (2021) and Abel (2022). This is especially evident in our female subordinate sample. An alternative explanation for this finding could involve female subordinates lowering their aspirations when exposed to female leaders (Azmat and Ferrer, 2017). So, while promoting female leadership in

corporations is undoubtedly a crucial step towards achieving gender equality, it is not sufficient on its own to ensure a healthy workplace environment, in particular for female employees. We have shown that having a supportive leader is essential for a healthy workplace climate. Reducing the job separation rate is particularly valuable in times of tight labor markets, (Friebel et al., 2023), and here the leader's support plays a key role. These findings suggest that corporations should have an eye towards supportive leaders, and highlights the importance of communication between leaders and subordinates. Previous work has demonstrated that training programs targeting communication between leaders and subordinates can also effectively improve workplace climate and reduce involuntary separations (Alan et al., 2023).

We believe that our findings apply beyond our setting. Besides our access to these firms and the suitability of their HR practices to identify the effects of leaders' gender, Turkey offers an ideal setting to study female leadership and workplace climate in large corporations. On the one hand, it is a large OECD country with relatively high rates of female corporate professionals and high rates of female leadership. According to McKinsey's "Women Matter Turkey 2016" report (McKinsey&Company, 2016), although female participation in labor force is still low in Turkey, female representation in the leading companies (41%) is only slightly lower than that of Latin America (43%) and not so far from that of the US (53%). The representation of females in executive committees is 25% in Turkey, which is higher than 8% in Asia, 17% in the US, and 20% in Europe.[17] On the other hand, despite significant advances made regarding gender equality since the foundation of the secular republic in 1923, the conflict between traditional and modern gender norms remains in all walks of life. Given that we reached out to prominent modern corporations employing highly educated male and female professionals, our findings are likely to be generalizable to countries where there is a relatively high presence of females in the corporate sector, but nevertheless, gender equality in corporate life is still a distant goal.

[17] In this regard, although the female labor force participation rate at lower education levels is significantly low in Turkey compared to, for example, to the US; this difference tends to decrease as the education levels of women increase. Specifically, while the labor force participation rate is 46.9% for women graduated less than high school, 64% for women graduated from high school, 81% for women graduated from higher education in the US (Labor Statistics, 2021); it is 24.1% for women graduated less than high school, 29.9% for women graduated from high school, and 65.6% for women graduated from higher education in Turkey (Turkstat, 2021).

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Online Appendix: Not for Publication

A Additional Tables

Table A.1: Effects of Having a Female Leader on Receiving Support from Leader (Without Covariates)

	Professional Support			Personal Support		
	Pooled	Females	Males	Pooled	Females	Males
Under Female Leader	0.029	0.126***	-0.064	0.083**	0.188***	-0.022
	(0.038)	(0.040)	(0.052)	(0.033)	(0.040)	(0.033)
Wild Bootstrap P-value	0.459	0.013	0.260	0.028	0.000	0.493
Mean (Under Male Leader)	0.594	0.547	0.621	0.431	0.333	0.488
N	1735	732	1003	1735	732	1003
P-Value (Male=Female)		0.001			0.000	

Reported results are obtained from ordinary least squares (OLS) regressions for the subordinate sample. Dependent variable is a binary indicator of nominating leader in the network. *Females* columns use the female subsample. *Male* columns use the male subsample. *P-Value (Male=Female)* rows test whether a gender gap exists in receiving support from female leaders. Regressions control for the share of females within department, nature of the job performed, and firm fixed effects. Pooled regressions also control for gender. Standard errors are clustered at firm level, and wild bootstrapped p-values, adjusted for the small sample, are provided. Asterisks indicate that coefficient is statistically significant at the 1% ***, 5% **, and 10% * levels.

Table A.2: Effects of Having a Female Leader on Receiving Female Colleague Support (Without Covariates)

	Professional Support			Personal Support		
	Pooled	Females	Males	Pooled	Females	Males
Under Female Leader	0.251***	0.271***	0.238***	0.227***	0.208***	0.250***
	(0.023)	(0.031)	(0.034)	(0.019)	(0.030)	(0.038)
Wild Bootstrap P-value	0.000	0.000	0.000	0.000	0.000	0.000
Mean (Under Male Leader)	0.237	0.381	0.153	0.309	0.561	0.157
N	1707	721	986	1615	691	924
P-Value (Male=Female)		0.443			0.439	

Reported results are obtained from ordinary least squares (OLS) regressions for the subordinate sample. Dependent variable is the proportion of females nominated in the network. *Females* columns use the female subsample. *Male* columns use the male subsample. *P-Value (Male=Female)* rows test whether a gender gap exists in receiving support from female leaders. Regressions control for the share of females within department, nature of the job performed, and firm fixed effects. Pooled regressions also control for gender. Standard errors are clustered at firm level, and wild bootstrapped p-values, adjusted for the small sample, are provided. Asterisks indicate that coefficient is statistically significant at the 1% ***, 5% **, and 10% * levels.

Table A.3: Leader's Gender, Employee Separation (Layoffs and Quits) and Promotions (Without Covariates)

	Layoffs			Quits			Promotions		
	Pooled	Females	Males	Pooled	Females	Males	Pooled	Females	Males
Under Female Leader	0.002	-0.008	0.015	-0.024	-0.073*	0.002	0.026	0.054	0.025
	(0.009)	(0.007)	(0.023)	(0.018)	(0.037)	(0.023)	(0.020)	(0.036)	(0.022)
Wild Bootstrap P-value	0.758	0.474	0.832	0.115	0.076	0.937	0.216	0.062	0.270
Mean (Under Male Leader)	0.010	0.007	0.011	0.078	0.119	0.057	0.086	0.074	0.092
N	517	194	323	517	194	323	517	194	323
P-Value (Male=Female)		0.413			0.063			0.422	

Reported results are obtained from ordinary least squares (OLS) regressions for the subordinate sample. Dependent variable is a binary indicator of layoff, quit, or promotion. Regressions control for the share of females within department, nature of the job performed, and firm fixed effects. Pooled regressions also control for gender. Standard errors are clustered at firm level, and wild bootstrapped p-values, adjusted for the small sample, are provided. Asterisks indicate that coefficient is statistically significant at the 1% ***, 5% **, and 10% * levels.

Table A.4: Leader's Gender and Reported Workplace Climate (Without Covariates)

Panel I: Pooled Sample

	W-Satisfaction	Meritocracy	Collegiality	Job Satisfaction	Behavioral Norms	Leader Prof.
Under Female Leader	-0.136**	-0.129**	0.004	0.008	-0.048	-0.089
	(0.051)	(0.059)	(0.077)	(0.067)	(0.078)	(0.082)
Wild Bootstrap P-value	0.022	0.051	0.961	0.904	0.562	0.305
Mean (Under Male Leader)	0.010	-0.026	-0.015	-0.022	0.010	0.023
N	1582	1538	1677	1652	1624	1651

Panel II: Female Sample

Under Female Leader	-0.168*	-0.189**	0.050	-0.054	0.002	0.006
	(0.087)	(0.079)	(0.098)	(0.083)	(0.117)	(0.099)
Wild Bootstrap P-value	0.072	0.029	0.615	0.523	0.984	0.947
Mean (Under Male Leader)	-0.135	-0.052	-0.090	-0.195	-0.039	-0.038
N	689	673	723	719	705	709

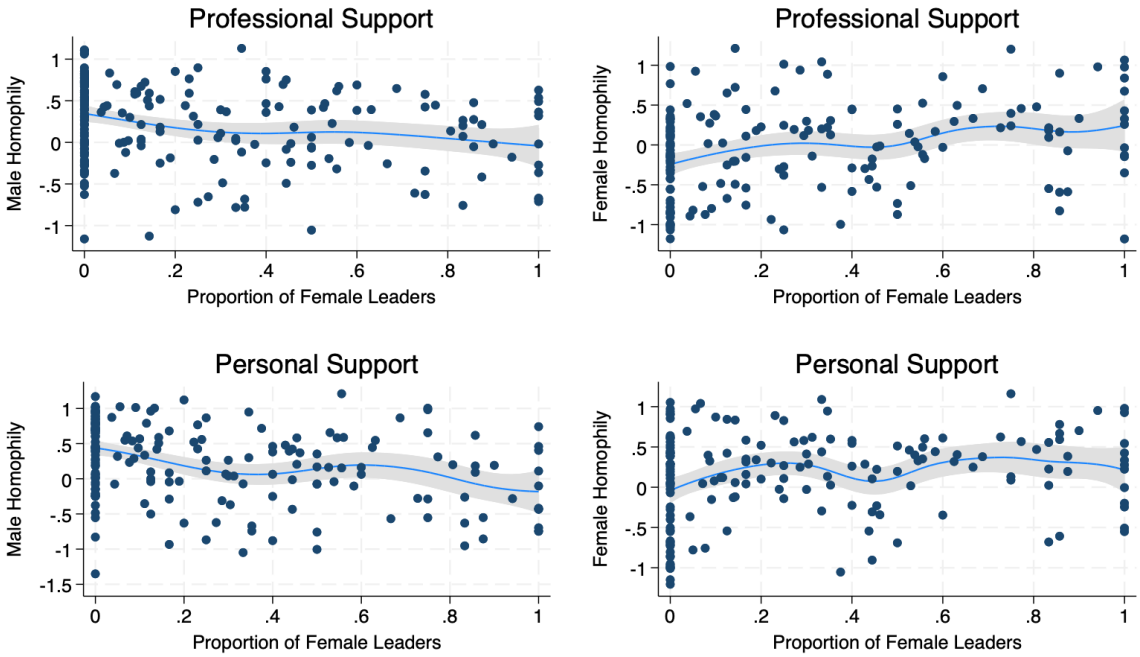
Panel III: Male Sample

Under Female Leader	-0.109	-0.056	-0.034	0.042	-0.095	-0.193
	(0.074)	(0.074)	(0.103)	(0.085)	(0.089)	(0.116)
Wild Bootstrap P-value	0.201	0.465	0.773	0.641	0.307	0.131
Mean (Under Male Leader)	0.101	-0.009	0.031	0.087	0.041	0.061
N	893	865	954	933	919	942
P-Value (Male=Female)	0.623	0.132	0.437	0.355	0.398	0.091

Reported results are obtained from ordinary least squares (OLS) regressions for the subordinate sample. Dependent variable is a standardized workplace climate item as indicated. Regressions control for the share of females within department, nature of the job performed, and firm fixed effects. Pooled regressions also control for gender. 'W-Satisfaction' stands for workplace satisfaction, whereas 'Leader Prof.' stands for leader professionalism. Standard errors are clustered at firm level, and wild bootstrapped p-values, adjusted for the small sample, are provided. Asterisks indicate that coefficient is statistically significant at the 1% ***, 5% **, and 10% * levels.

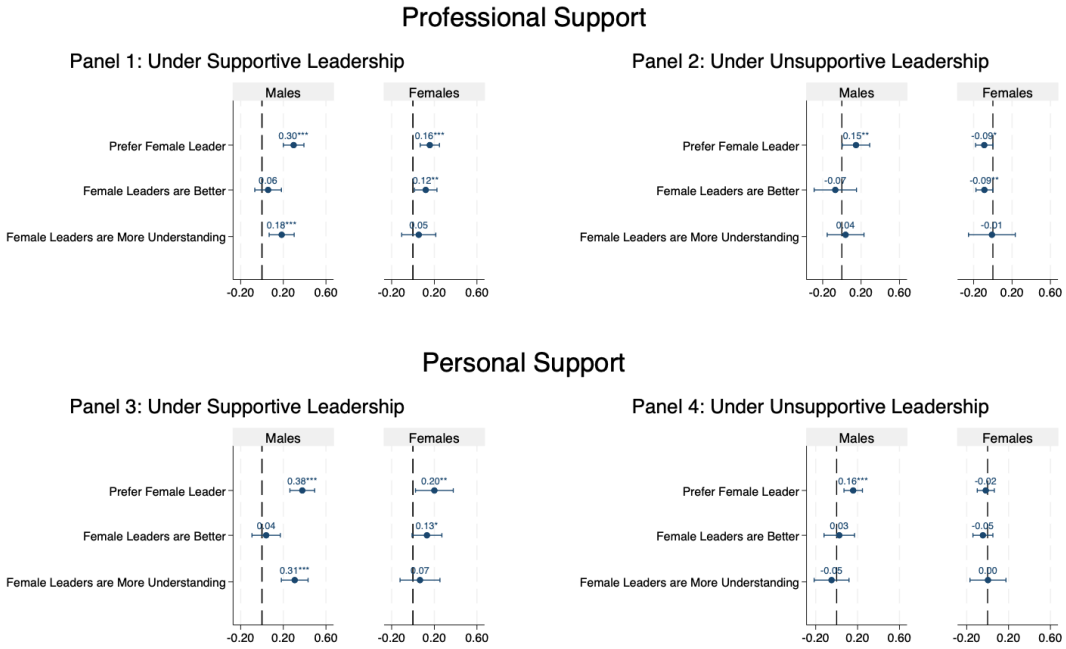
B Additional Figures

Figure A.1: Proportion of Female Leaders and Homophily



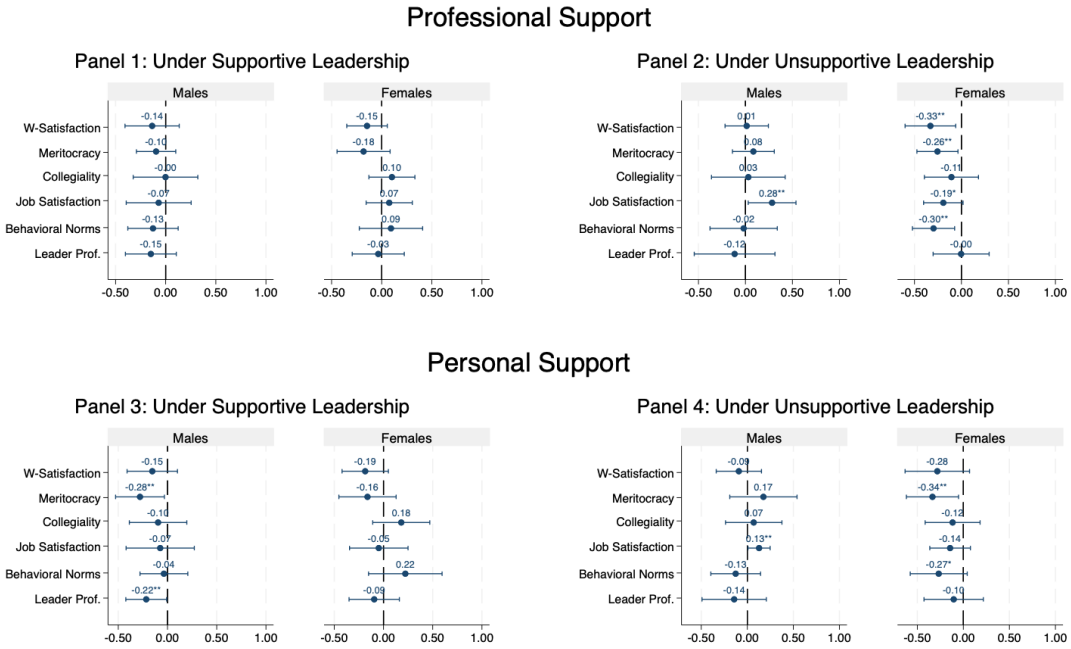
The figure plots female and male Coleman homophily index at department level using semi-parametric estimation with the proportion of female leaders within department, controlling for the share of females in the department and firm fixed effects. The gray-shaded area indicates the 95% confidence intervals based on clustered standard errors at firm level.

Figure A.2: Leader Gender Preferences Under Supportive and Unsupportive Leadership (Without Covariates)



The figure plots effects of having a female leader on leader gender preferences separately for female and male employees under supportive and unsupportive leaders. Coefficients are obtained from ordinary least squares (OLS) estimations by regressing leader gender preferences on a binary indicator of having a female leader, controlling for the share of females in the department, nature of the job performed, and firm fixed effects. 95% confidence intervals are based on standard errors clustered at the firm level. Asterisks indicate that coefficient is statistically significant at the 1% ***, 5% **, and 10% * levels.

Figure A.3: Climate Perceptions Under Supportive and Unsupportive Leadership (Without Covariates)



The figure plots effects of having a female leader on workplace climate separately for female and male employees under supportive and unsupportive leaders. Coefficients are obtained from ordinary least squares (OLS) estimations by regressing standardized measures of workplace climate on a binary indicator of having a female leader, controlling for the share of females in the department, nature of the job performed, and firm fixed effects. 95% confidence intervals are based on standard errors clustered at the firm level. Asterisks indicate that coefficient is statistically significant at the 1% ***, 5% **, and 10% * levels.

C Instructions

C.1 Instructions for Incentivized Games

We will play some fun games with you today. In these games, you will make some choices. Depending on your choices and the choices of other participants, you will earn different amounts of money.

Each game has a set of rules, but there is also an important ground rule. We ask you to make sure that you keep your choices to yourselves and never share them with anyone during the games.

We will play 3 games in this part. At the end of this part, 1 of the 3 games will be randomly

selected and your earnings will be equal to the money you earned in the randomly selected game. The reason we are randomly picking a game to determine your earnings is that we want to make sure that you pay equal attention to every game. We will start the games all together at the same time. We will also wait for the instruction to move on to the next sections.

Competition Game:

This game consists of 3 periods. At the end of this part, if competition game is chosen to determine the earnings, 1 of these 3 periods will also be chosen randomly to determine your earnings. Each period lasts for 2 minutes.

Period 1 - Piece rate:

For Task 1 you will be asked to calculate the sum of three randomly chosen two-digit numbers. You will be given 2 minutes to calculate the correct sum of a series of these problems. You cannot use a calculator to determine these sums. An example:

Figure B.1: Competition game task example

If Period 1 is the one randomly selected for payment, then you get 3 TL (Turkish Lira) per problem you solve correctly in the 2 minutes. Your payment does not decrease if you provide an incorrect answer to a problem. We refer to this payment as the piece rate payment.

Please do not talk with one another for the duration of the game. If you have any questions, please raise your hand. ARE THERE ANY QUESTIONS BEFORE WE BEGIN?

Period 2 - Tournament:

As in Period 1 you will be given 2 minutes to calculate the correct sum of a series of three two-digit numbers. However for this task your payment depends on your performance relative to that of a group of other participants. Each group consists of three people, the two other members of your group are randomly selected members of your class. You will not know who is in your group.

If Period 2 is the one randomly selected for payment, the individual in the group who correctly solves the largest number of problems will receive 9 TL per correct problem. The other participants receive no payment. We refer to this as the tournament payment. If there are ties the winner will be randomly determined.

Please do not talk with one another for the duration of the game. If you have any questions, please raise your hand. ARE THERE ANY QUESTIONS BEFORE WE BEGIN?

Period 3 - Choice:

As in the previous period you will be given 2 minutes to calculate the correct sum of a series of three 2-digit numbers. However you will now get to choose how you want to be payed: piece rate or tournament.

If Period 3 is the one randomly selected for payment, then your earnings for this task are determined as follows. If you choose the piece rate you receive 3 TL per problem you solve correctly. If you choose the tournament your performance will be compared to the performance of the other two participants of your group in Period 2. Period 2 is the one you have just completed. If you correctly solve more problems than the others in in your group did in Period 2, then you receive 9 TL per correct problem. You will receive no earnings for this task if you choose the tournament and do not solve more problems correctly than the others in your group did in Period 2.

Please do not talk with one another for the duration of the game. If you have any questions, please raise your hand. Please indicate below which payment scheme you choose: piece rate or tournament. ARE THERE ANY QUESTIONS BEFORE WE BEGIN?

Public Good Game:

In this game, you will be in a randomly formed group of three participants. Each participant in the group is given 30 TL. The group has the opportunity to undertake a joint project. Each participant in the group decides how much she or he is going to contribute to the project. Contribution could be any amount from 0 to 30 TL. The earnings from the project are calculated as follows: The contributions of all 3 participants are added up, the total contribution is multiplied by 2, and the resulting amount is the total earnings from the project, which is evenly split among all 3 participants. Your payoff equals your earnings from the project, plus the amount you did not contribute.

Let us work out an example. Suppose that the total contribution to the project is 15 TL. It is multiplied by 2 and divided equally between the three participants in the group. Therefore, each participant receives back 10 TL from the joint project. Suppose that you have contributed 8 TL. Then your earning is 22+10=32 TL.

Please do not talk with one another for the duration of the game. If you have any questions, please raise your hand. ARE THERE ANY QUESTIONS BEFORE WE BEGIN?

Risk Game:

In this game, you will make an investment decision. You will be given 30 TL in the beginning of this game. You will then allocate this 30 TL between a risky and risk-free option. The amount invested in the risky option will be multiplied by 3 with %50 probability and will be lost with %50 probability. You will keep the amount invested in the risk-free option as it is.

Please do not talk with one another for the duration of the game. If you have any questions, please raise your hand. ARE THERE ANY QUESTIONS BEFORE WE BEGIN?

Donation Game:

We give you an option to donate your earnings from the previous games to the disadvantaged schools (CONFIRM WHETHER SCHOOLS OR STUDENTS) in the South-East of Turkey. Please indicate what percentage of your earnings you would like to donate. This number can range from %0 to %100.

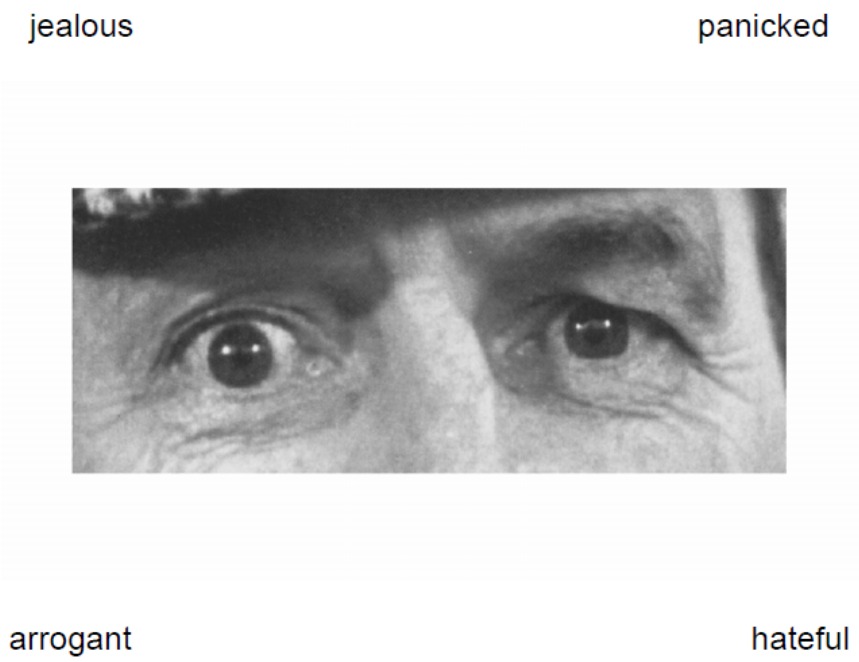
C.2 Instructions for Cognitive Tests

Reading the Mind in the Eyes:

We use "Reading the Mind in the Eyes" test developed by Baron-Cohen et al. (1997) and Baron-Cohen et al. (2001) to measure the cognitive empathy of the respondents. An example question from this test is given in Figure B.2. We instruct the respondents as follows:

"For every pair of eyes, please choose the word that you think reflects most accurately what the person in the picture thinks or feels. If you think more than one word describes it, please choose only the one that you find most accurate. Please also make sure that you read all of the four words before making your choice."

Figure B.2: Reading the mind in the eyes example

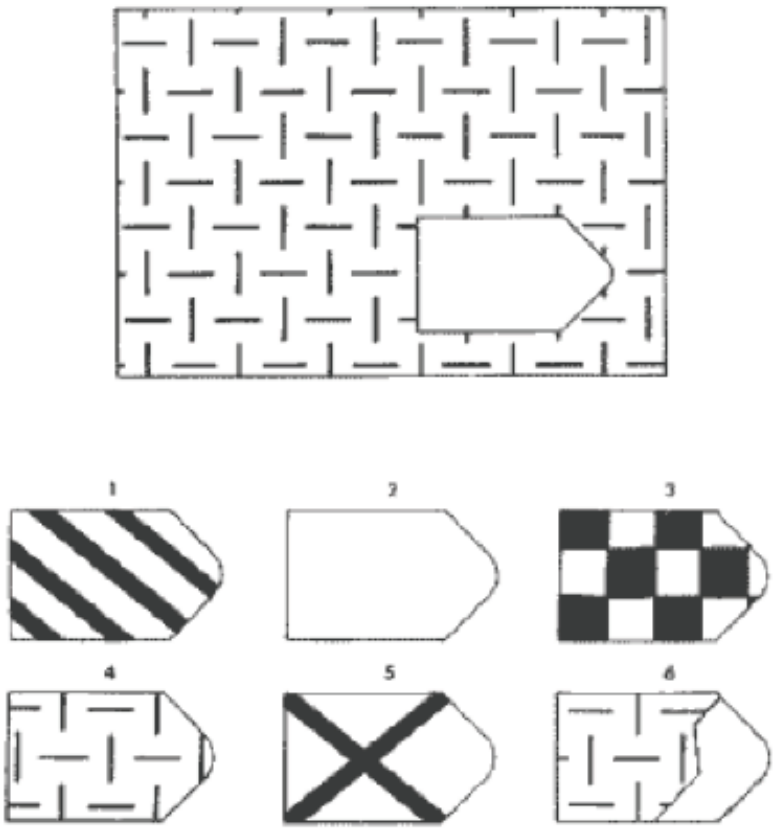


Raven's Advanced Progressive Matrices:

We use Raven's progressive matrices to measure abstract reasoning and non-verbal fluid intelligence (Court and Raven, 1962). An example of Raven's progressive matrices is given in Figure B.3. We ask the following question to the participants:

"Which of the smaller figures does fit the pattern in the picture?"

Figure B.3: Raven advanced progressive matrices example



The Remote Associates Test

We use the Remote Associates Test to measure the verbal creativity of the respondents. This test was originally developed by Mednick (1962). It is accepted as a valid measure of creative thinking (Bowden and Jung-Beeman, 2003; Lee et al., 2014; Marko et al., 2019).

We instruct the respondents as the following:

"Please look at the three remotely associated words below and find a fourth word that is related to all these three words. The fourth word must either prefix or suffix the three words given. If you cannot find any, you can leave the question empty and move on to the next one.

Let us illustrate it with an example:

sense / courtesy / place

For the three words above, an answer can be "common": *common* sense, *common* courtesy, and *common* place."

D Survey Items

Instrument	**Items**
Workplace Satisfaction	*To what extent do the following statements describe your thoughts about your company?*
	(Definitely not True-Not True-Somewhat True-True-Definitely True)
	I am not able to practice my own profession at this workplace.
	I am very pleased to have chosen to work at this company.
	Working in this company excites me.
	I plan to continue to be part of this workplace in the following years.
	In this workplace, the chances that I make progress in my professional career are high.
	If possible, I prefer working at another company where I can get practice my profession better.
	I believe that, in this workplace, my ideas are taken seriously and my contributions are recognized.
Meritocratic Values	*To what extent do the following statements describe your thoughts about your company?*
	(Definitely not True-Not True-Somewhat True-True-Definitely True)
	I believe if I work hard and perform well here, I will be promoted very quickly.
	I don't believe I'll be promoted unless I've enough connections with executives.
	If possible, I prefer working at another company where I can get promoted more easily.
Collegiality	*The following statements are related to your department colleagues. Please use the following scale to state your opinion.*
	(Never-Rarely-Sometimes-Often-Always)
	My department colleagues protect each other against an outside criticism.
	Those working in this department only think of and work for themselves.
	Different ideas are discussed extensively within the department.
	Everyone's ideas are listened to and taken into consideration in our department.
	People attack others verbally and with disrespect during departmental meetings.
Job Satisfaction	*The following statements are related to your department colleagues. Please use the following scale to state your opinion.*
	(Never-Rarely-Sometimes-Often-Always)
	I am happy to have chosen this job.
	My job excites me.
	I plan to continute to practice my job in the future as well.
	My job inspires me.
	If it were possible, I would have preferred practicing another job.
Behavioral Norms	*How often do you observe your department colleagues in the following situations?*
	(Never-Rarely-Sometimes-Often-Always)
	Gossiping
	Criticizing someone
	Helping someone
	Protecting someone else's rights
	Violating someone's rights
	Spending time on social media (during working hours on matters unrelated to work)
	Staying silent in situations of injustice
Leader Professionalism	*The following statements are related to your your team leader. Please use the following scale to state your opinion.*
	(Never-Rarely-Sometimes-Often-Always)
	Our department leaders are good listeners.
	Our department leaders have favorites and they are given favorable treatment.
	Our department leader is modest and accepts her mistakes.
	I completely trust our department leader's professionalism.
	Our department leader claims achievements, but blames mistakes on others.
	Our department leaders serve the interests of department rather than their own.
Gender Norms	*To what extent do you agree with the following statements?*
	(Completely Disagree-Disagree-Somewhat Agree-Agree-Completely Agree)
	Women are naturally more inclined towards verbal subjects than men.
	Men have a greater natural aptitude for numerical subjects such as mathematics and physics compared to women.
	Men are particularly more inclined towards leadership in financial matters compared to women.