



Gender differences in employers' promotion preferences? The role of working time, care obligations, and work–family policies

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ABSTRACT

Despite considerable changes in recent decades, women and men still have different careers, fostering gender inequality in paid work. Women work more often part-time and have more care obligations, which are typically regarded as incongruent with leadership roles and might lead to career penalties. We investigate employers' gender-related promotion preferences. Using a large factorial survey experiment across organizations in Germany enables us to disentangle employer preferences regarding gender from their promotion preferences on employees' working time and care obligations. We find career penalties for working part-time as well as having care obligations, instead of gender as such. Work–family policies do not appear to equalize the promotion probability between employees having care obligations and those without any care obligations. These findings reflect the impact of gender inequality in the household on the career opportunities of women. They suggest that the lower promotion chances for women compared to men that are observed in practice are due to unequal distributions of care obligations and working part-time.

1. Introduction

Women's participation in education and the labor market has increased considerably in recent decades. Nobel Prize winner Claudia Goldin (2014) even proclaims there has been a “grand gender convergence” in the labor market. However, despite these developments and the increasing efforts of national- and organizational-level policies to foster equal opportunities in the labor market, women are still severely underrepresented in leadership positions (for instance, Abendroth et al., 2013; Stojmenovska et al., 2021).

Labor market outcomes are the joint result of processes of self-selection and employers' selection. Women and men select themselves and are selected by employers into different occupations and career tracks. Women more often work part-time and have more care obligations than men (Abendroth et al., 2013; Penner et al., 2023; Yaish & Stier, 2009). Both working part-time and having care obligations are typically regarded as incongruent with leadership positions, which might lead to career penalties (Correll et al., 2014; Eagly & Karau, 2002; Williams et al., 2013). Earlier research on how employers' promotion

preferences take such employee characteristics into account is scarce and inconclusive, merely focused on highly skilled employees only, and does not take decisive organizational-level factors such as the gender composition of the workforce into account (Beham et al., 2020; Fernandez-Lozano et al., 2020; Sterkens et al., 2023). In the literature, there is also no evidence on whether organizational work–family policies are effective in mitigating inequalities in employers' promotion preferences regarding employees' care obligations.

In this paper, we investigated whether employers prefer women or men when promoting skilled employees to leadership positions, that is, a job with management tasks in men-dominated versus women-dominated work contexts. Moreover, we analyzed how employers' promotion preferences are affected by employees' working time, care obligations, and organizations' work–family policies. We implemented a factorial survey experiment in a subsample of the BIBB Establishment Panel on Qualification and Competence Development 2022 (BIBB Training Panel 2022). This survey was conducted with a national probability sample of 3550 employers in Germany, which provides rich additional organizational-level information. Skilled employees are

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employees with a vocational degree in one of the more than 300 recognized occupations trained within Germany's well-established vocational education and training system. Skilled employees represent the largest skill group in the German labor market. In 2022, a large part (45,2%) of the working population in Germany had this intermediate qualification level (Bach et al., 2024), and a majority of organizations in Germany (96.5% of organizations in our analytic sample) employed workers with a vocational degree. Moreover, these skilled employees typically work in teams that are led by an experienced skilled employee. Promotions of vocationally qualified employees to (team-)leadership positions are thus a regularly occurring scenario. However, the overall share of women in leadership positions is rather low (Destatis, 2023).

In the factorial survey experiment, each employer was randomly assigned to evaluate seven vignettes on hypothetical employees. The employees were experimentally varied in their attributes, including gender, working time, and care obligations and the employers were asked how likely it is that they would promote the employee in question. This enables us to disentangle employers' preferences on gender from their promotion preferences on working time and having care obligations that are, in practice and thus in observational studies, at least partly overlapping. We focused on skilled employees who worked in the private sector for at least 20 h a week. The factorial experiment enabled us to assess causal relationships in employers' internal promotion preferences as employees' attribute values vary exogenously in simulated decision-making situations and enabled us to study employers' promotion preferences independent of employees' potential self-selection into specific occupations and careers. In men-dominated organizations, for instance, there would, in practice, probably be few women who apply for promotion (cf. Eriksson & Kristensen, 2014).

Employers were asked how likely it was that these employees would be promoted to leadership positions with tasks such as the management of individual teams or projects, for 20 h a week of their regular part-time or full-time job. Building on, for instance, Abraham et al. (2013) and Auspurg et al. (2014), we used a double-hurdle model or Craggit model to address the issue that employers' decision-making processes for promotions involve two stages: (1) employees' promotion eligibility and (2) employees' promotion probability conditional on eligibility. While promotion eligibility determines whether an employee qualifies for promotion, promotion probability reflects the likelihood of the employee being promoted, given their eligibility. We contribute to the sociological as well as economic literature on gender inequalities in job promotions in two ways. First, there is generally very little knowledge on gender inequalities in employers' promotion preferences based on experimental data. Two exceptions are factorial survey experiments by Beham et al. (2020) and Fernandez-Lozano et al. (2020) on promotion preferences regarding university graduates in high-level managerial jobs and the impact of part-time work and parenthood. We contribute to these studies by focusing (1) on the promotion of skilled employees into leadership positions and (2) on how employers' promotion preferences may vary with an organization's gender composition. Second, research on how organizational policies to advance gender equality in the organization affect employers' promotion preferences is almost entirely absent. The only exception is a study by Zimmermann & Collischon (2023), who showed that organizations with work-family policies have smaller gender promotion gaps than those without such policies. We contribute to this study by identifying the extent to which this is due to employer preferences for promoting employees without care obligations.

2. Context

Germany is a highly relevant country to study gender differences in job promotions of skilled employees into medium-level management positions and how this relates to care obligations, part-time work, and work-family policies. In 2022, a large part (45,2%) of the working population in Germany had this intermediate qualification level (Bach et al., 2024). Like many other Western societies with similar structural

and institutional features (cf. Nennstiel & Becker, 2025 on Switzerland), Germany is still characterized by a rather traditional gender division of paid and unpaid work. Although the gender care gap in Germany has decreased over the past 10 years, women still perform 43.8% more unpaid care work than men (Destatis, 2024). Mothers are also more likely to take longer parental leaves and work part-time after their leave than fathers (Schäper et al., 2023). Gender inequalities in pay and workplace authority also continue to exist. For instance, the overall share of women in leadership positions is only 29%, while the share of women among all employed people is 47% (Destatis, 2023). As a measure to reconcile work and family responsibilities, part-time leadership, while still being an exception, has been emerging. Hammermann (2023) shows that the share of part-time working managers has increased in recent years and that in 2023, 13% of all German managers worked part-time (25% of women and 6% of men). More generally, many organizations implemented policies intended to build family-friendly work contexts and to promote gender equality in care, pay, and leadership. Such policies have been mandatory in the public sector since the mid-1990s (Zimmermann & Collischon, 2023) and are increasingly adopted by private-sector organizations. This might include support in finding childcare facilities or providing firm-related facilities. In addition, work-family policies might include flexible work arrangements such as flexible working hours, long-term working-time accounts for care-related leaves, the possibility to work remotely at home, and further training opportunities for employees on leave (Frodermann et al. 2018; Berufundfamilie Service GmbH, 2026). All these policies aim at facilitating work-family life.

3. Previous research on the gender promotion gap

Previous research mostly investigated gender differences in job promotions with observational data. Most of these studies found that women have lower promotion probabilities than men (for instance, Benson et al., 2024; Bossler & Grunau, 2020; Deschacht, 2017; Stojmenovska et al., 2021). This gender promotion gap or, relatedly, the gender gap in job authority, can partly be explained by occupational or organizational gender segregation (Dämmrich and Blossfeld, 2017; Stojmenovska, 2024; Yaish and Stier, 2009), women's lower career aspirations (Azmat et al., 2020; Haegele, 2023), their less advantageous social networks (Blommaert et al., 2020; Zaharieva & Neugart, 2020), gendered returns to career negotiations with employers (Lükemann and Abendroth, 2024), gender differences in working hours and flexible work arrangements and motherhood (Abendroth et al., 2013; Bossler & Grunau, 2020; Deschacht, 2017; Stojmenovska & England, 2021). As exceptions to these findings, Booth et al. (2003) and Kräft (2022) indicated that women have higher promotion probabilities than men but lower levels of pay increase upon promotion in the British labor market. Booth et al. (2003) described this phenomenon as "sticky floors" in women's wages. According to Kräft (2022), institutional pressures to achieve gender balance at executive levels could be a reason for "cracks" in the "glass ceiling."

Institutional differences might lead to varying degrees of gender promotion gap across countries (Abendroth et al., 2013; Yaish & Stier, 2009). Moreover, organizational work-family policies seem to make a difference in the gender promotion gap. Building on linked employee-employer data from Germany, Zimmermann & Collischon (2023) found that organizations with policies to advance gender equality appear to have smaller gender promotion gaps than organizations that do not have such policies. This finding is in line with other studies on the impact of organizational policies in reducing the gender pay gap (Huffman et al., 2017; Kronberg & Gerlach, 2024; Van der Lippe et al., 2019).

Studies based on observational data cannot distinguish whether a particular promotion outcome is due to employer selection or employee self-selection. However, experimental studies allow the investigation of employers' promotion preferences independently of employees' self-

selection. There are only a few earlier experiments on the effects of gender, working time, and care obligations on employers' promotion preferences available. Baert et al. (2016) showed with a correspondence test that women applicants received fewer interview invitations than men for graduate jobs implying a promotion in Belgium. Two factorial survey experiments investigated gender-related differences in employers' promotion preferences for highly skilled managerial jobs and the role of part-time work in Spain (Fernandez-Lozano et al., 2020) and Germany (Beham et al., 2020). Both studies found negative effects of working fewer hours, independent of employee gender, which indicates career penalties for part-time working women as well as men. Fernandez-Lozano et al. (2020) identified higher promotion probabilities for parents and showed that mothers get even higher employer ratings than fathers. Yet, parental leave, in comparison to *no leave*, significantly lowers employees' promotion probabilities according to another factorial survey, which was conducted with managers in the United Kingdom and the United States (Sterkens et al., 2023).

4. Theory and hypotheses

Status characteristics theory argues that widely held social beliefs exist about high-status and low-status roles in society and the presumed sex-typical competencies to fulfill certain tasks in different contexts. Such stereotypical beliefs assume that men are more competent in social-relational labor market contexts, particularly in male-typed leadership positions, while women are assumed to be more competent in domestic work, caregiving, and subordinate female-typed jobs. This "gender system" is also reflected in the household division of labor and in the rather strong occupational gender segregation in Western economies. It might thus result in status-based discrimination by employers (Correll & Benard, 2015; Ridgeway & Correll, 2004). In a similar vein, social role theory and, more specifically, the role-congruity theory of prejudice toward women leaders, posits that people believe that men and women should behave in certain ways that are congruent with sex-typical social roles (Eagly & Karau, 2002; Eagly & Wood, 2012). Male-stereotypical agentic attributes are usually regarded as being congruent with managerial and leadership roles, while communal, female-stereotypical attributes are not. In that sense, being a man and being a team leader is thought to be role congruent, while this is not the case for women (Eagly & Karau, 2002). Riding the "glass escalator," men would be promoted to leadership positions not only in men-dominated but also in women-dominated jobs because employers consider men to be a better fit for such agentic tasks than women (Budig, 2002; Williams, 1992). Following these theories, we expect that men are favored in promotions for leadership positions and test the following hypothesis:

H1.1. *Employers are more likely to prefer to promote men to leadership positions than women.*

However, two comprehensive meta-analyses of correspondence tests (Galos & Coppock, 2023; Lippens et al., 2023) showed that men appear to be discriminated against in hiring decisions when they apply for women-dominated jobs (see also Birkelund et al., 2020), while women are discriminated against when applying for men-dominated jobs. Similarly, Mari & Luijkx (2020), based on a factorial survey, showed that employers have a slightly higher hiring preference for women in women-dominated jobs. These findings are in line with theories of tokenism (Kanter, 1977), which predict that being one of the few men in women-dominated contexts and being among the few women in men-dominated contexts might result in disadvantages for men in women-dominated contexts and vice versa because of increased stereotyping by evaluators (Campero & Fernandez, 2019). Status-based discrimination might thus find expression in promotion preferences favoring men for leadership positions in male-typed jobs, and women for leadership positions in female-typed jobs. In other words, we can expect that employers might no longer consider women in leadership positions as role incongruent, depending on the work context. At least, if this

concerns leadership positions in women-dominated organizations, women might be seen as possessing the necessary competencies to be promoted to leadership positions.

Accordingly, and in contrast to our first hypothesis, employers can be expected to hold gender-specific stereotypes that affect their promotion preferences depending on the gender composition in their organization. We thus formulate as a competing hypothesis to H1.1:

H1.2. *Employers are more likely to prefer promoting women to leadership positions in women-dominated organizations, while they are more likely to prefer promoting men to leadership positions in men-dominated organizations.*

Employers can generally be expected to value employee characteristics in line with the "ideal-worker norm" and consider these in hiring and promotion processes (Correll et al. 2014; Williams, 2000). Ideal workers would be employees who are 100% available and dedicated to their jobs. Career interruptions, working time reductions, and time-intensive or stressful duties outside the workplace, such as care obligations, are stereotypically regarded as opposed to meeting the ideal-worker norm and incongruent with leadership and management roles. Employees working part-time are at risk for career penalties, also known as flexibility stigma (for instance, Fernandez-Lozano et al. 2020: 265; Thébaut & Pedulla, 2022; Van der Lippe et al., 2019; Williams et al. 2013). Working part-time might signal that employees are less committed to their work, leading employers to expect them to be less suitable for leadership or management tasks (Correll et al., 2014; Eagly & Karau, 2002; Hipp et al., 2023). In addition, employers might have lower expectations regarding an employee's performance in leadership positions when they are aware of the employee's care obligations. Many experiments investigating hiring discrimination against parents and other caregivers support this assumption (although there are some exceptions: see Lippens et al., 2023; Bygren et al., 2017). Parents, especially mothers, and job seekers with other care-related career breaks were found at risk of being penalized in hiring decisions (Brady, 2025; Correll et al., 2007; D'hert et al., 2025; Gonzáles et al., 2019; Hipp, 2020; Weisshaar, 2018). This leads to the following two hypotheses:

H2. *Employers are less likely to prefer promoting part-time working employees to leadership positions than full-time working employees.*

H3. *Employers are less likely to prefer promoting employees with care obligations to leadership positions than employees without any care obligations.*

Yet, the magnitude of the flexibility penalty might differ by employee gender (Fernandez-Lozano et al., 2020; Thébaut & Pedulla, 2022). Part-time work is still predominantly done by women (Hipp et al., 2015), and women also have more care obligations than men (Ferrant et al., 2014; Leuze & Kleinert, 2021). Moreover, motherhood penalties in hiring decisions appear to be more strongly pronounced than fatherhood penalties (Correll et al., 2007; Gonzáles et al., 2019; Hipp, 2020). Having care obligations might thus carry different stereotypical meanings for women than for men. Women employees who care, in comparison to men employees with care obligations, might not only be perceived as being more competent in caring but also as spending more time and energy in caring. In this vein, high shares of cognitive household labor tend to increase work-family conflicts for women but not for men (Haupt & Gelbgiser, 2024). Accordingly, working part-time or having care obligations may be particularly detrimental to employers' promotion preferences concerning leadership positions for women. Yet, requesting part-time work and/or having care obligations might be regarded as role incongruent for a man (Williams et al., 2013). In that case, working part-time or having care obligations as a man might be perceived as a stronger signal of low commitment to the job than for a woman, resulting in a more strongly pronounced flexibility penalty (Beham et al., 2020; Pedulla, 2016). This leads to the following two sets of competing hypotheses:

H4.1. *The negative effects of (a) working part-time and (b) having care*

obligations on promotion preferences for women are stronger than on promotion preferences for men.

H4.2. *The negative effects of (a) working part-time and (b) having care obligations on promotion preferences for men are stronger than on promotion preferences for women.*

Nevertheless, many organizations today state that they aim to deviate in their personnel strategies from rewarding (Huffman et al., 2017; Kronberg & Gerlach, 2024; Van der Lippe et al., 2019) and promoting (Zimmermann & Collischon, 2023) only those employees who are closest in meeting the ideal-worker norm. Policies that offer employees support in reconciling work and family life are mandatory in the German public sector, and have also been developed by many private organizations (Zimmermann & Collischon, 2023). Thus, we expect promotion preferences in (private) organizations with work–family policies that aim at facilitating work–family life and preventing work–family conflicts to be less affected by employees' care obligations. This leads to the following hypothesis:

H5. *Employers in organizations with work–family policies are less likely to base promotion preferences for leadership positions on employees' care obligations than employers in organizations without such policies.*

5. Methodology and data

5.1. Method

We developed a factorial survey experiment on the determinants of employers' promotion preferences for organizations in Germany, in which each employer was randomly assigned to evaluate seven vignettes on hypothetical employees. In the vignettes, the employee characteristics were experimentally varied, and employers were asked how likely it is that they would promote the employee in question. We included the factorial survey experiment in the BIBB Establishment Panel on Qualification and Competence Development 2022 (BIBB Training Panel 2022), a survey among employers based on a large national probability sample of organizations in Germany (Gerhards et al., 2023).

Unlike standard surveys, a factorial survey experiment makes it possible to simulate decision-making processes in which employer and employee promotion preferences that are usually analyzed jointly can be disentangled. Moreover, a factorial experiment enables the assessment of causal relationships in employers' promotion preferences as the hypothetical employees' attribute values vary exogenously by randomization, whereas, for example, there are probably fewer women who apply for promotion in male-dominated organizations in particular (cf. Eriksson & Kristensen, 2014). Factorial survey experiments are also less affected by socially desirable responses than non-experimental surveys (Shi & Di Stasio, 2022; Walzenbach, 2019). Moreover, in our factorial survey experiment, we only included owners, CEOs, department heads, HR managers, commercial managers, and other managers who have promotion decision-making power in their organization. Therefore, making promotion decisions is a task that survey participants know very well from their own job tasks. Hainmueller et al. (2015) showed that the external validity of factorial survey experiments is high if respondents regularly make these decisions in real life. The authentic work setting and the experimental variation of employee characteristics endow our study with high external and internal validity.

5.2. Data and analytic sample

In the BIBB Training Panel 2022, 3550 employers were surveyed. Of all employers who responded to the BIBB Training Panel, we have randomly assigned 1777 to our factorial survey experiment. 150 of the 1777 respondents did not participate in the experiment, which leaves us with vignettes for 1627 employers.

We further identified respondents' decision-making power for

promotions by asking: "To what extent can you personally decide who is promoted in your organization?" The answer categories were "I decide on my own," "I decide together with others," "I support or advise the decision-makers," "I am not involved in the decision," "declined to answer," and "don't know." For our analysis, we only used information from employers with direct participation in the promotion decision, that is, those who decide on promotions either independently or together with others, or who support the decision-makers on promotions. This choice leaves us with 1581 actual promotion decision-makers who were included in our factorial survey experiment.

We limited our analysis to private sector organizations because public sector organizations, by law, provide work–family policies, so variation in this variable is lacking (cf. Zimmermann & Collischon, 2023). This exclusion resulted in 1380 respondents. Finally, the respondents additionally reported detailed information about their organization (before answering the vignette) and themselves (after responding to the vignette). After considering the relevant respondent and organization characteristics that we describe below, our analytic sample consists of 9511 promotion preferences provided by 1373 employers.

5.3. Experimental design

The employers were randomly assigned to evaluate a set of seven vignettes, which were tabular descriptions of fictitious employees. On a scale from 0% to 100%, employers were asked how likely it is that they would promote the employee described in the vignette to perform "management tasks such as the management of individual teams or projects in your organization for 20 h a week." The respondents were informed that employees who work more than 20 h a week would pursue tasks similar to their previous activities in the remaining time. This design allowed us to investigate promotion preferences regarding part-time employees (those who are working 20 h a week) and full-time working employees (those working more than 20 h a week) and to model the employees' promotion eligibility and—conditional on the promotion eligibility—their promotion probability. While promotion eligibility determines whether an employee qualifies for promotion (employer ratings of 0% versus higher), promotion probability reflects the likelihood of the employee being promoted, given their eligibility (employer ratings ranging from 1% to 100%). In principle, ratings of 0% might not in every case reflect perceived ineligibility. Instead, they might indicate that employees would be considered eligible, but that their promotion would be extremely unlikely. In the following, we refer to both of these possible but conceptually close scenarios using the term "eligibility". The employer ratings were used to operationalize our dependent variables (see 5.5). Moreover, the respondents were informed that all employees to be evaluated had a vocational degree and had been working for the organization for at least three years so that the employer knew that the skilled employees included in the vignettes did not differ on these important attributes and only varied in the eight attributes included in the vignettes: gender, age, professional and social competencies, working time, care obligations, living in a partnership, and wage claim for having management tasks (see 5.4 for more details).

Our factorial survey experiment consisted of 455 vignettes out of a vignette universe of 1296 vignettes, which was orthogonal and balanced (it has a D-efficiency score of 99.68). Our (resolution V) design allowed the identification of all main effects of the vignette dimensions and their two-way interactions (Auspurg & Hinz, 2015). The 455 vignettes were then divided into 65 decks so that each employer had to evaluate seven vignettes, while each deck and vignette was rated by approximately 27 employers. This gave enough power to estimate two-way and three-way interactions between vignette attributes and the organization characteristics about the share of women employees or the provision of work–family policies.

To avoid order effects in the employers' response behavior, we randomly varied both the order of the vignettes and the vignette

attributes within each deck. Moreover, we control for both the vignette order and the order of the attributes in our analyses. To check for successful randomization, [Supplementary Table S2](#) shows that the attributes are almost uncorrelated (cf. [Auspurg & Hinz, 2015](#)). [Supplementary Table S3](#) shows that for each attribute in the factorial survey experiment, all values arise equally often, which shows that the level balance proposition of an efficient design is met ([Huber & Zwerina, 1996](#)).

5.4. Measurement of vignette attributes, organization, and employer characteristics

5.4.1. Vignette attributes

We designed the attribute values in such a way that they are realistic and sufficiently specific to allow for meaningful comparisons. [Table 1](#) gives an overview of the applicant attributes and their values in the factorial experiment, and [Supplementary Table S1](#) provides an example of the vignette that the employer was asked to decide upon during the interview.

The focus of this paper lies on the attribute *gender* with two values—woman and man. We analyze the effect of family-related decisions on promotion preferences by focusing on working time and care obligations. The attribute *working time* refers to the employee's current weekly working time and distinguishes between part-time and full-time work. The attribute *care obligations* indicates whether the employee has to look after children or other relatives in need of care. This attribute has the values yes and no.

As remaining attributes in our factorial survey experiment, we have included age, professional and social competencies, living in a partnership, and the wage claim for having management tasks. The attribute *age* includes the values 25, 40, and 55 years old. We have chosen these ages because they clearly represent the young, middle-aged, and older employees, respectively. *Professional competencies* are related to the knowledge and methods required to cope with subject-specific tasks in the occupation, comprising the three attribute values of below average, average, and above average professional competencies. *Social competencies* are related to the ability to work in a team as well as having adequate communication and cooperation skills. This attribute also comprises the values of below average, average, and above average social competencies. The attribute *living in a partnership* indicates whether the employee lives in a partnership or not. Finally, the employee's *wage claim* measures the gross monthly wage increase

demanding by the employee for being promoted to a leadership position with management tasks and includes the attribute values 200€, 350€, and 500€. These values reflect the wage increases related to promotions for employees at the intermediate qualification level in collective agreements.

5.4.2. Organization characteristics

To investigate the effect of employees' gender, working time, and care obligations in women- vs. men-dominated work contexts and in organizations with work-family policies, we use the following information on the organization. The *share of women* in the organization enables us to distinguish three segments of the labor market: men-dominated organizations where the share of women is between 0% and 30%; gender neutral organizations where the share of women is between 31% and 69%; and women-dominated organizations where the share of women is between 70% and 100% ([Bächmann, 2023](#)).

The variable *work-family policies* is based on the question of whether the organization offers "measures to reconcile work and family life" to its employees. The BIBB Training Panel 2022 includes a binary measurement, which differentiates whether or not the organization has at least one of such policies implemented. Moreover, we control for the number of employees working in the organization and whether the organization is based in East or West Germany.

5.4.3. Employer characteristics

To control for possible employer heterogeneity in personal gender preferences for leadership positions, we use survey questions on the employer's gender, educational background, and position in the organization. The employer's gender might be either woman or man. The employer's educational background includes three categories: vocational degree (also including 12 respondents without a degree), advanced vocational degree, and academic degree. The employer's position can be owner, CEO, plant or branch manager, HR manager, head of training, head of department, commercial manager, or other position.

5.5. Dependent variables and estimation method

We have estimated double-hurdle models using the Stata commands *churdle* and *margins*, also known as Craggit models (cf. [Abraham et al., 2013](#); [Auspurg et al., 2014](#); [Lang & Groß, 2020](#)). This allows us to address the issue that the decision-making process on promotions usually involves two stages. First, employers decide whether employees are eligible for promotion, and second, provided that an employee is eligible for promotion, how likely it is that the employer would promote this employee. This two-stage decision-making process is reflected in the rating scale on which respondents were asked to indicate the promotion probability for each employee (vignette), ranging from 0% (that is, non-eligible or extremely unlikely to be promoted) to 100%. For the first stage, the Craggit model estimates with a probit model the probability that a candidate is eligible for promotion (1) or not (0). Among our 9511 observations, 8034 employees were considered to be eligible for promotion. For the second stage, the model estimates a truncated linear regression model predicting the promotion probability conditional on being eligible for promotion (that is, those rated from 1% to 100%). The signs and significance levels of the coefficients for the two stages indicate whether the independent variables are associated with (1) the promotion eligibility and (2) the promotion probability conditional on the eligibility, respectively. Since we assume that besides our treatment variables and interactions of interest, all remaining vignette attributes, respondent and organization controls and controls for the vignette and attribute order might affect candidates' promotion eligibility as well as probability, these variables are all included in both stages of the Craggit regression model. As the effect sizes of these models are not directly interpretable, we estimate predicted probabilities and average marginal effects to facilitate the interpretation of our regression results ([Williams, 2012](#)). These predicted probabilities and average marginal effects

Table 1
Overview of Employees' Attributes and Their Values in the Factorial Survey Experiment.

Attribute	Attribute Value
Gender	1) woman 2) man
Working time	1) part-time 2) full-time
Care obligations	1) yes 2) no
Age	1) 25 years old 2) 40 years old 3) 55 years old
Professional competencies	1) below average 2) average 3) above average
Social competencies	1) below average 2) average 3) above average
Living in a partnership	1) yes 2) no
Monthly gross wage claim	1) 200€ 2) 350€ 3) 500€

Source: BIBB Training Panel 2022

combine the effects of both stages and indicate how many percentage points, on average, the promotion probability increases with a one-unit change in the independent variables (Auspurg et al., 2014).

Each employer evaluated up to seven vignettes. As ratings from one employer might be related, the respondent-level error terms are not independent. To account for this nested data structure, we estimate clustered robust standard errors at the respondent level. As an alternative to clustered robust standard errors, multilevel regression models are often applied to appropriately address such hierarchical data. However, such an approach would not be applicable in our study due to the two-staged nature of the decision-making process on promotions.

5.6. Descriptive statistics

Among the 1373 decision-makers for promotion in our analytic sample, 1340 made all seven choices (98%), 15 made six, three made five, one made four, two made three, four made two, and eight made only one decision, leaving us with data on 9511 employee profiles and promotion preferences. [Supplementary Table S5](#) gives an overview of the sample characteristics. The table shows that 41% of our respondents were women. Moreover, the majority of employers had an academic degree (57%) and most were either owners of the organization (24%), CEO (17%), or HR managers (29%). Regarding organization characteristics, our sample consisted of 43% men-dominated, 38% gender neutral, and 19% women-dominated organizations, and 72% of the organizations provided work-family policies. A total of 21% are based in East Germany, and the average size of the organization is 164 employees ([Supplementary Table S4](#)).

6. Results

In this section, we discuss our findings based on the Craggit regression models and evaluate the hypotheses. [Tables 2 and 3](#) show coefficients and standard errors. The figures in this section display the predicted aggregated promotion probabilities based on the Craggit models that test our hypotheses. The [Supplementary Tables S5, S7, S9, S11, and S13](#) show all estimates including the underlying regression coefficients at the two stages of the hurdle model, whereas the [Tables S6, S8, S10, S12, and S14](#) show the predicted aggregated promotion probabilities and average marginal effects. In Subsections 6.1, 6.2, and 6.3, we test our hypotheses by showing the estimation results in terms of their significance, while in Subsection 6.4, we discuss the relative importance of the effects of gender, working time, care obligations, and work-family policies on an employee's predicted aggregated promotion probability. For the sake of simplicity, we from now on use the term promotion probability instead of predicted aggregated promotion probability.

6.1. Gender differences in promotion probability

To evaluate our competing hypotheses 1.1 and 1.2 on gender differences, we first tested whether there is an overall gender difference in the promotion probability and then whether there are gender differences in promotion probabilities by the share of women in the organization. [Table 2](#) shows that women have a slightly higher promotion probability than men. The predicted probabilities are 41.1% for women and 40.2% for men. This rather small difference of 0.9 %age points is statistically significant (see [Supplementary Table S6](#)). This finding is contrary to the expectation of hypothesis 1.1, which proposed higher promotion chances for men.

By contrast, hypothesis 1.2 finds partial support. According to the estimates presented in [Fig. 1](#), women have a significantly higher promotion probability compared to men in women-dominated organizations of 2.9 %age points (women 41%, men 38.2%), while men do not have a similar advantage in men-dominated organizations (see [Supplementary Table S8](#)). Thus, we conclude that women have higher

Table 2

Main Differences in Promotion Preferences.

Craggit Regression Model	1 st Stage: Promotion eligibility	2 nd Stage: Promotion probability conditional on being eligible
Vignette Attribute Values		
Woman (Ref.: Man)	0.02 (0.03)	1.00* (0.48)
Working Part-time (Ref.: Full-time)	-0.13*** (0.03)	-4.57*** (0.52)
Care Obligations (Ref.: No Care Obligations)	-0.09** (0.03)	-2.45*** (0.50)
40 Years Old (Ref.: 25 Years Old)	0.03 (0.03)	2.09*** (0.59)
55 Years Old (Ref.: 25 Years Old)	-0.05 (0.04)	-0.97 (0.63)
Average Professional Competence (Ref.: Below-average)	0.63*** (0.04)	16.73*** (0.67)
Above-average Professional Competence (Ref.: Below-average)	0.90*** (0.04)	31.34*** (0.77)
Average Social Competence (Ref.: Below-average)	0.44*** (0.04)	14.33*** (0.66)
Above-average Social Competence (Ref.: Below-average)	0.66*** (0.04)	24.84*** (0.73)
Partnership (Ref.: No Partnership)	0.02 (0.03)	1.01* (0.47)
Wage Claim 350€ (Ref.: 200€)	-0.06 ⁺ (0.03)	-3.02*** (0.55)
Wage Claim 500€ (Ref.: 200€)	-0.35*** (0.03)	-8.51*** (0.64)
Respondent Controls	✓	✓
Organization Controls	✓	✓
Vignette and Attribute Order Controls	✓	✓
Constant	0.11 (0.26)	14.05*** (4.15)
Insigma constant		3.10*** (0.01)
Sigma		22.28 (0.30)
Pseudo R2		0.051
N		9511

Source: BIBB Training Panel 2022, own calculations. Significance ⁺ 0.10, * 0.05, ** 0.01, *** 0.001.

Note: Coefficients are based on a double-hurdle model using the Stata commands `churdle`, including robust clustered standard errors. The coefficients on the 1st stage are estimated with a probit model considering whether a candidate is eligible for promotion (1) or not (0). The coefficients on the 2nd stage are based on a truncated linear regression model predicting the promotion probability conditional on being eligible for promotion (that is, those rated from 1% to 100%). For coefficients related to respondent, organization as well as vignette and attribute order controls see [Table S5](#).

promotion probabilities than men in women-dominated organizations.

6.2. Heterogeneity in gender differences in promotion probability

6.2.1. Part-time work

[Table 2](#) and [Fig. 2](#) show that the promotion probability of employees working part-time is significantly lower than for those working full-time (4.4 %age points lower; see [Supplementary Tables S5 and S6](#)). This result supports hypothesis 2.

However, we do not find a significant gender difference in the relationship between working part-time and the promotion probability (see [Fig. 3](#) and [Supplementary Tables S9](#)). This means that when working part-time, the promotion probability decreases for both women and men. We therefore do not find any evidence for hypotheses 4.1a and 4.2a.

Table 3

Interaction Effect between Work-Family Policies and Care Obligations on Promotion Preferences.

Craggit Regression Model		
	1 st Stage: Promotion eligibility	2 nd Stage: Promotion probability conditional on being eligible
Vignette Attribute Values		
Woman (Ref.: Man)	0.02 (0.03)	1.01* (0.48)
Working Part-time (Ref.: Full-time)	-0.13*** (0.03)	-4.57*** (0.52)
Care Obligations (Ref.: No Care Obligations)	-0.09 ⁺ (0.05)	-2.32* (0.98)
Work-Family Policies (Ref.: No Work-Family Policies)	0.11 (0.07)	1.69 (1.18)
Care Obligations X Work-Family Policies	-0.00 (0.06)	-0.19 (1.14)
40 Years Old (Ref.: 25 Years Old)	0.03 (0.03)	2.10*** (0.59)
55 Years Old (Ref.: 25 Years Old)	-0.05 (0.04)	-0.96 (0.63)
Average Professional Competence (Ref.: Below-average)	0.63*** (0.03)	16.73*** (0.67)
Above-average Professional Competence (Ref.: Below-average)	0.91*** (0.04)	31.34*** (0.77)
Average Social Competence (Ref.: Below-average)	0.44*** (0.04)	14.32*** (0.66)
Above-average Social Competence (Ref.: Below-average)	0.66*** (0.04)	24.84*** (0.73)
Partnership (Ref.: No Partnership)	0.02 (0.03)	1.01* (0.47)
Wage Claim 350€ (Ref.: 200€)	-0.06 ⁺ (0.03)	-3.03*** (0.55)
Wage Claim 500€ (Ref.: 200€)	-0.35*** (0.03)	-8.52*** (0.64)
Respondent Controls	✓	✓
Organization Controls	✓	✓
Vignette and Attribute Order Controls	✓	✓
Constant	0.07 (0.26)	13.28** (4.20)
Insigma constant		3.10*** (0.01)
Sigma		22.27 (0.30)
Pseudo R2		0.05
N		9511

Source: BIBB Training Panel 2022, own calculations. Significance ⁺ 0.10, * 0.05, ** 0.01, *** 0.001.

Note: Coefficients are based on a double-hurdle model using the Stata commands `churdle`, including robust clustered standard errors. The coefficients on the 1st stage are estimated with a probit model considering whether a candidate is eligible for promotion (1) or not (0). The coefficients on the 2nd stage are based on a truncated linear regression model predicting the promotion probability conditional on being eligible for promotion (that is, those rated from 1% to 100%). For coefficients related to respondent, organization as well as vignette and attribute order controls see [Table S13](#).

6.2.2. Care obligations

[Table 2](#) and [Fig. 4](#) show that employers' preference for employees who have care obligations is significantly lower than for those without care obligations: the promotion probability for the former is 2.5 %age points lower than for the latter (see [Supplementary Tables S5 and S6](#)). Thus, hypothesis 3 is supported.

The promotion probability of both women and men significantly decreases when they have care obligations (see [Supplementary Tables S11 and S12](#)). However, in line with hypothesis 4.1b, our estimates suggest that having care obligations decreases the promotion probability of women significantly more than for men. As shown in [Fig. 5](#), the

promotion probability for women without care obligations in comparison to men is 1.6 %age points higher. Women with care obligations, however, lose this slight advantage when having care obligations. For employees with care obligations, the promotion probabilities do not significantly differ by gender (see [Supplementary Table S12](#)).

6.2.3. Robustness check: Heterogeneous effects by region of organization and respondent position

To analyze whether there are any differences in outcomes between East vs. West Germany or between owners or CEOs vs. other respondents, we added interaction terms with gender, care obligations, and part-time work attributes to the regressions presented in [Table 2](#). These analyses show that the negative effect of having care obligations on an employee's promotion probability is most pronounced in East Germany. The positive effect for women on the promotion probability seems to be driven by respondents in all other positions than owners and CEOs of organizations (that is, Plant/Branch and HR Manager, Training and Department Heads, as well as Commercial Manager), whereas the negative effect of working part-time on the promotion eligibility is driven by owners and CEOs. [Tables S15 and S16](#) in the [supplementary material](#) show the full results of these analyses.

6.3. The role of work-family policies for promotion probability concerning care obligations

We find that work-family policies in the organization do not equalize the promotion probability for employees with care obligations compared to those with no care obligations, as indicated by the insignificant interaction effects between care obligations and work-family policies in [Table 3](#). In organizations without work-family policies, the promotion probability was 38% for employees with care obligations, while it was 40.4% for those without care obligations. In organizations with work-family policies, the promotion probability was 40% for employees with care obligations, while it was 42.5% for those without care obligations. Thus, the difference between employees with and without care obligations of around 2.5 %age points remains similar in both types of organizations (see also [Supplementary Table S14](#)). Therefore, hypothesis 5 is rejected.

6.4. The effects of gender, working time, care obligations, and work-family policies in comparison

To put the findings into perspective, we will discuss the substantive meaning of the effect sizes (cf. [Bernardi et al., 2017](#)). The gender difference in the promotion probability is significant, but rather small. However, compared to men, our results show that the promotion probability of women is 2.9 %age points higher in women-dominated organizations. This suggests that women's advantage in terms of the promotion probability is only relevant in this type of organization (which is in line with findings by [Galos & Coppock, 2023](#), [Lippens et al., 2023](#), and [Mari & Luijkx, 2020](#) on women's hiring chances).

In contrast to the rather moderate gender differences, we found that employees' promotion probability substantially varied with their working time and care obligations. Employees who worked full-time and had no care obligations have a promotion probability of 44.3%, while those working part-time and having care obligations only have a promotion probability of 37.4%. Apparently, working part-time and having care obligations substantially decrease promotion chances for both women and men, while the promotion probability of women is more affected by having care obligations compared to men. Having work-family policies in the organization does not substantially equalize the promotion probability for employees with care obligations compared to those having no care obligations.

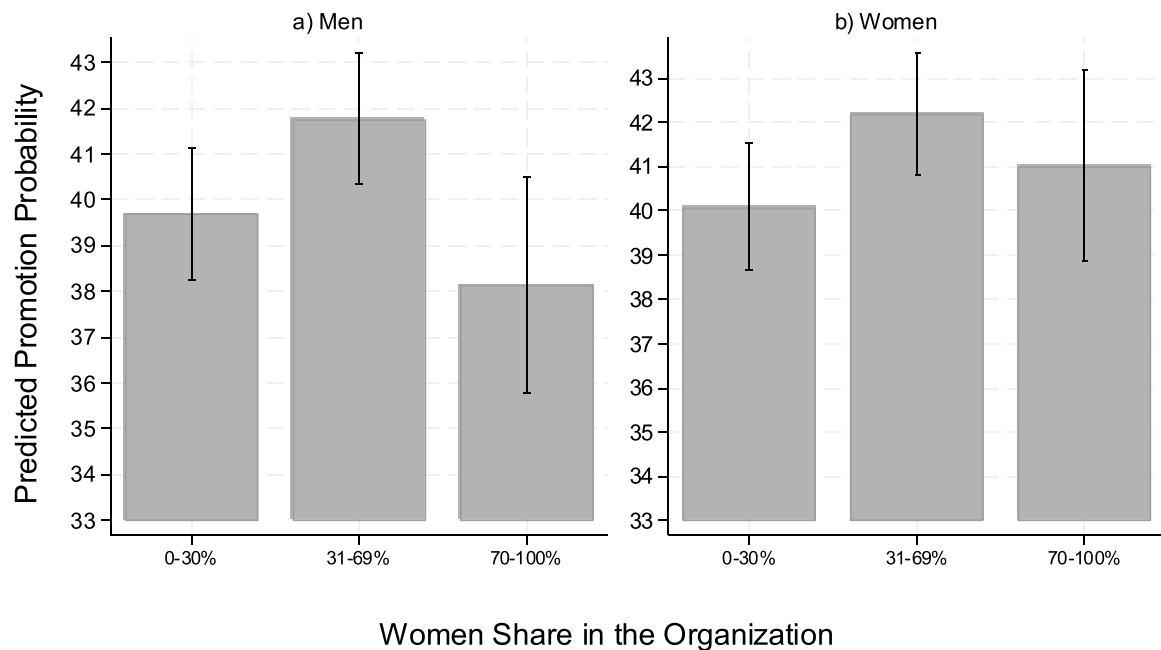


Fig. 1. Gender Differences in Promotion Probability by Women Share in the Organization.

Source: BIBB Training Panel 2022, own calculations (Supplementary Tables S7 and S8).

Note: Graphs show 95% confidence intervals.

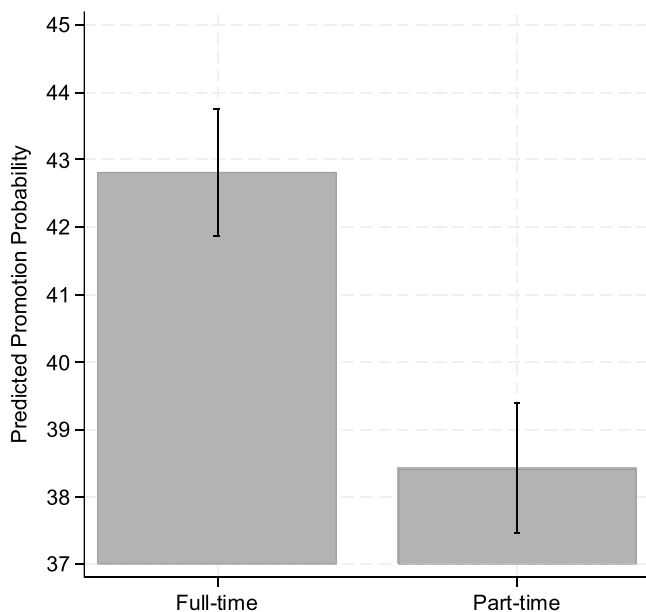


Fig. 2. Effect of Working Time on Promotion Probability.

Source: BIBB Training Panel 2022, own calculations (Supplementary Tables S5 and S6).

Note: Graph shows 95% confidence intervals.

7. Discussion and conclusion

In a factorial survey experiment conducted with a national probability sample of 1373 organizations in Germany, we investigated to what extent employers' promotion preferences are based on employees' gender, working time, and care obligations. Moreover, we studied whether organizational policies to reconcile work and family life mitigate the expected negative effects of having care obligations.

We found that employers consider women and men almost equally fit for promotion, although women have a marginally significant higher

promotion probability in organizations that employ mainly women. This is consistent with previous experimental research on hiring discrimination showing a weak overall pro-women bias (Birkelund et al., 2020; Galos & Coppock, 2023; Lippens et al., 2023). However, for both women and men, working part-time as well as having care obligations reduces the chance of being promoted considerably. These findings are clearly in line with the conceptual model on greedy work of Goldin (2021). Our two-stage estimates show that for both those working part-time and those with care obligations, the lower chances of being promoted are due to a lower eligibility for promotion, as well as a lower probability of being promoted for those who were eligible for promotion.

We find only slight gender differences in the promotion chances of skilled employees. More specifically, employers rated the promotion probability of women without care obligations marginally higher than the promotion probability of men without care obligations. However, the promotion probability of women with care obligations decreases significantly stronger compared to men with care obligations. As a result, there is no longer a gender difference among employees with care obligations. One explanation approach for the stronger decrease in women's promotion chances might be that care obligations carry different stereotypical meanings for women in comparison to men implying that women spend more time and energy when caring. Moreover, we find that work-family policies do not appear to equalize the promotion probability between employees having care obligations and those without any care obligations.

In practice, women are much more often working part-time and having care obligations than men (Destatis, 2024; Schäper et al., 2023). These compositional differences typically pose challenges for identifying causal effects in observational data. Our findings suggest that the lower promotion chances for women compared to men that are observed in practice are due to career penalties for working part-time and having care obligations instead of gender itself.

A limitation of our study might be linked to a potential social desirability bias of our respondents in indicating that their organization has a higher promotion probability for women. However, such a bias is usually much lower in factorial survey experiments than in answering survey questions (Walzenbach, 2019). Moreover, we would then not expect to only find this higher preference in organizations that employ

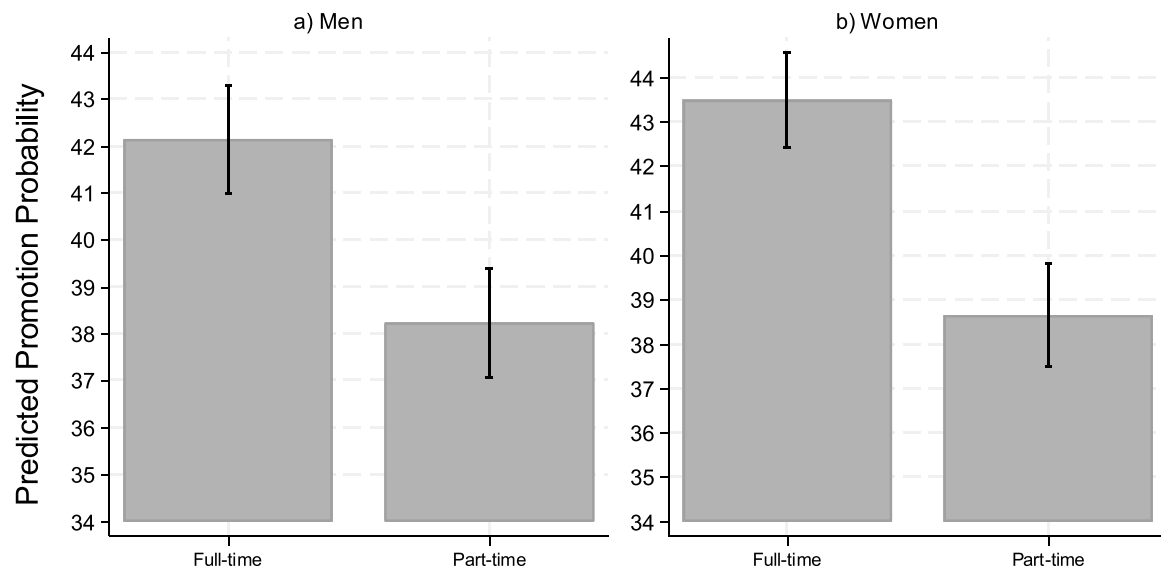


Fig. 3. Gender Differences in the Effect of Working Time on Promotion Probability.

Source: BIBB Training Panel 2022, own calculations (Supplementary Tables S9 and S10).

Note: Graph shows 95% confidence intervals.

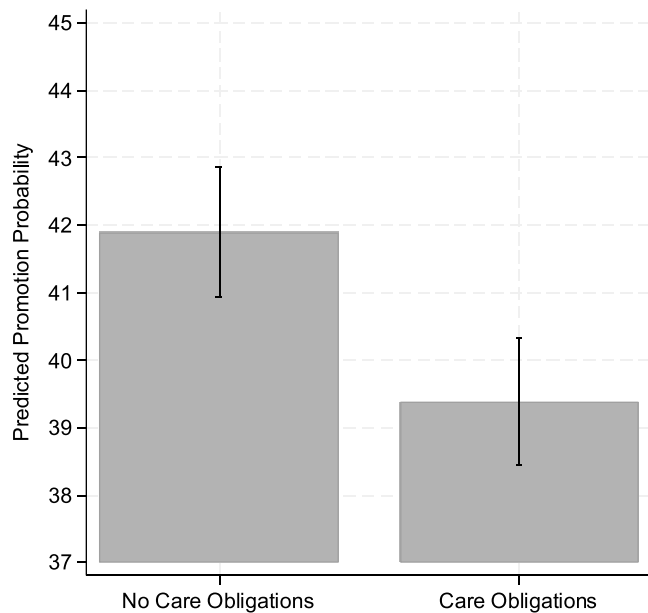


Fig. 4. Effect of Care Obligations on Promotion Probability.

Source: BIBB Training Panel 2022, own calculations (Supplementary Tables S5 and S6).

Note: Graph shows 95% confidence intervals.

mainly women and would also expect to find similarly positive biased effects for those working part-time or having care obligations. The higher preference of employers to promote women instead of men in women-dominated organizations might also reflect that the societal pressure to achieve a better gender balance in leadership positions of organizations affects the decision-making on promotions in practice. However, as the respective gender difference we found is relatively small, future research needs to establish the robustness of this finding. Another limitation concerns the rather broad measure of organizational work-family policies in the BIBB Training Panel 2022. Further research

should focus on the impact of specific policies, such as support in finding child care and the possibility of working remotely at home or having flexible working hours.

Our study contributes to the emerging field of experimental research on gender differences in job promotions. In line with previous research by Beham et al. (2020) and Fernandez-Lozano et al. (2020), we found evidence of career penalties for both men and women working part-time. We showed that employees with care obligations faced additional disadvantages in being promoted. Whereas previous studies restricted care obligations to parenthood or parental leave, we used a broader concept of care obligations that was not limited to parenthood. Moreover, our study provided the first experimental evidence on whether employees' care obligations are taken into account differently in employer promotion preferences if organizations have implemented work-family policies.

Our findings also reflect the impact of gender inequality in the household on the career opportunities of women. Improved task sharing between partners in the household would therefore also lead to more gender equality in career opportunities, which would also lead to less old-age poverty among women who mainly focused on unpaid care tasks. Our results suggest that equal sharing of work and family tasks might, however, also have negative consequences, as it seems to result in a career disadvantage for both partners (see also Goldin, 2021).

CRediT authorship contribution statement

Paula Protsch: Writing – review & editing, Writing – original draft, Visualization, Methodology, Conceptualization. **Andries de Grip:** Writing – review & editing, Writing – original draft, Methodology, Conceptualization. **Caroline Wehner:** Writing – review & editing, Writing – original draft, Visualization, Project administration, Methodology, Formal analysis, Data curation, Conceptualization.

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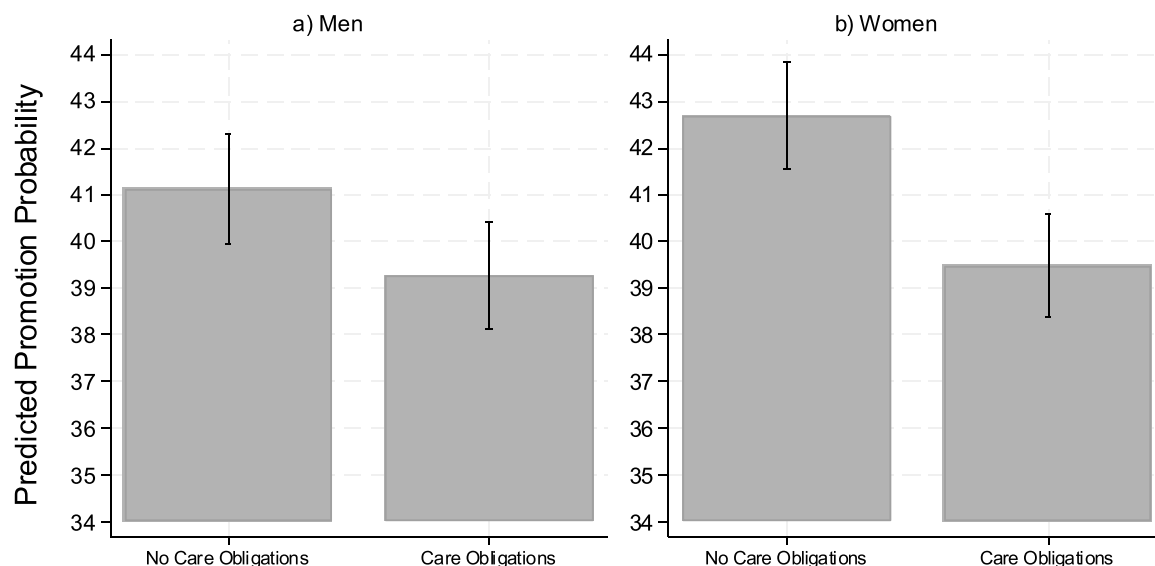


Fig. 5. Gender Differences in the Effect of Care Obligations on Promotion Probability.

Source: BIBB Training Panel 2022, own calculations (Supplementary Tables S11 and S12).

Note: Graph shows 95% confidence intervals.

Declaration of Competing Interest

None.

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at [doi:10.1016/j.rssm.2026.101154](https://doi.org/10.1016/j.rssm.2026.101154).

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