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DISCUSSION PAPER SERIES

IZA DP No. 18019

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ABSTRACT

When Managers Choose: Gender Disparities in Employer Training Provision*

We examine how gender shapes managers' decisions regarding on-the-job training using a discrete choice experiment embedded in a representative survey of German firms. While previous research has focused on employees' demand for it, we make a contribution by studying firms' supply of training. In our vignette study, 1,144 managers evaluate hypothetical candidate profiles that differ by gender, age, competence, job mobility, and training characteristics. We find that women are somewhat more likely than men to receive training offers. The exceptions are that female managers are more reluctant to choose young women for training, while male managers favor male candidates for fully employer-funded training. These patterns persist across various model specifications and remain robust when controlling for observable manager characteristics. Heterogeneity analyses reveal that female managers are more reluctant to offer training to women when they operate in competitive product markets, male-dominated industries, and firms without collective bargaining agreements. More broadly, our results highlight that managers influence not only how much training is undertaken, but also how training opportunities are distributed among employees.

JEL Classification: J24, J16, M53

Keywords: gender differences, manager decisions, human capital investment, training

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1 Introduction

Over the past 60 years, the gap between men's and women's labor market outcomes has narrowed considerably (Blau and Kahn, 2017). Yet, disparities in wages, career advancement, and long-term employment trajectories remain persistent. These disparities often appear early in workers' careers, even among those with similar education and skills, and tend to grow over time, resulting in long-lasting consequences (e.g. Manning and Swaffield, 2008; Azmat *et al.*, 2024). One major contributing factor is that women's careers are more frequently disrupted by family formation and caregiving responsibilities than men's (Bertrand *et al.*, 2010; Kleven *et al.*, 2019; Cortes and Pan, 2023; Olivetti *et al.*, 2024). Therefore, ensuring equal access to early career opportunities is crucial to achieving broader gender equality in the labor market.

Arguably, access to on-the-job training is one of the most crucial factors shaping workers' career opportunities. In the face of globalization and technological change, equipping workers with the necessary skills to thrive has become a strategic priority for European policymakers. The EU Skills Agenda aims to strengthen re-skilling, up-skilling, and lifelong learning by increasing training participation rates to 50% by 2025 (Commission, 2016). Enhanced training opportunities also provide an important mechanism for achieving social goals, including reduced inequity. The International Labor Organization, for example, explicitly aims to promote social inclusion by expanding access to education and training for disadvantaged individuals (International Labour Organization, 2008). Training benefits both employers and employees. Firms benefit from training because it increases productivity and ensures continuous employee development(e.g. Tannenbaum, 1997; Barrett and O'Connell, 2001; De Grip and Sauermann, 2012; Martins, 2021). From an employer's perspective, training reflects a commitment to workforce development that can foster a sense of achievement and enhance employee motivation (Georgellis and Lange, 2007). Employees benefit from the opportunity to invest in their work-related skills, enhancing their productivity (Bartel, 1995) and job security. This implies that workers are often willing to forgo current earnings for human capital development opportunities and the prospect of higher future earnings (Maestas *et al.*, 2023). Furthermore, training can support career advancement by providing opportunities for wage growth, promotion, and job mobility (Lynch, 1992; Melero, 2010; Haelermans and Borghans, 2012). Given this, there is a potential for more equitable training opportunities to support gender equity in labor market outcomes more generally.

While training investments depend both on employers' supply of training opportunities (i.e., training offers) and on employees' demand for training (i.e., training take-up), much of the existing research focuses on the determinants of training participation, without separately identifying

demand- and supply-side factors. The evidence suggests that older and less educated workers are less likely to participate in training, while higher ability, higher occupational status, more experience and being in a permanent contract are all positively associated with undertaking work-related training (Bassanini *et al.*, 2007; Maximiano, 2016). Training rates also differ by labor market sector (Oosterbeek, 1996) and are generally higher in larger firms (Lynch and Black, 1998; Maximiano, 2016). Additionally, personality traits and individual preferences play a role in shaping training participation (Caliendo *et al.*, 2022, 2023). Previous studies also highlight gender disparities in training participation. Women undertake less employer-financed training, train for shorter periods on average (O'Halloran, 2008), but engage more in self-funded training (Barron *et al.*, 1993; Daemmrich *et al.*, 2015). Fitzenberger and Muehler (2015) examine data from a large German company (2004–2007) and provide descriptive evidence that women receive less company-provided formal training in the early stages of their careers. Using the German Socioeconomic Panel (SOEP), Caliendo *et al.* (2022) document a broader gender gap in training participation across the German labor market in the early 2000s. It is unclear whether this gender gap in training participation stems from women being offered fewer training opportunities, or from women being less likely to take up the opportunities offered to them.

We begin by showing that the overall gender gap in training participation that was evident at the turn of the century appears to have diminished in recent years. Nevertheless, we provide evidence that gender differences in training participation still persist among young workers, and are particularly important in the context of employer-financed and specific (non-transferable) training. As in other studies, simply analyzing training rates does not tell us whether the training patterns we observe result from women requesting less (or more) training or whether women are provided with fewer (or more) training opportunities. Disentangling the demand side from the supply side of the training market is an important first step in identifying strategies to address any training imbalances.

Consequently, in the second step of our empirical analysis, we leverage novel employer data to isolate the determinants of on-the-job training offers. Specifically, we embed a discrete choice vignette study in the 2018 Cost-Benefit Survey, a nationally representative survey of German firms. These vignettes involve fictitious training scenarios that were presented to 1,144 survey respondents – primarily firm owners and human resource managers typically making such decisions on a daily basis – who were then asked which of two workers they would choose to train.[1]

[1] Karpinska *et al.* (2015b), Fleischmann and Koster (2018), and Poulissen *et al.* (2023) use a similar vignette design to study the factors driving Dutch firms' decisions to train older and temporary workers. Vignette methods have also been used to study a variety of other labor market issues including gender discrimination in hiring (Kuebler *et al.*, 2018), individuals' willingness-to-pay for fringe benefits and job amenities (Eriksson and Kristensen, 2014), and managers' decisions regarding telework (Beham *et al.*, 2015), worker retention (Buers *et al.*, 2018) and recruitment (Karpinska *et al.*, 2015a; Humburg and van der Velden, 2015; Mulders *et al.*, 2014). Drawing on the

Randomization of candidate characteristics (i.e. gender, age, occupational expertise, and previous job mobility) as well as the nature of training (costs, duration, transferability) provides us with the exogenous variation necessary for causal estimation. Using these data, we allow for random preference variation across managers, and estimate a mixed logit model of the determinants of training offers.

The primary contribution of our research is to extend the literature about on-the-job training by investigating whether managers offer the same training opportunities to men and women; and, if they do not, how any gender disparities vary with other worker characteristics such as age. From a firm's perspective, training decisions – like other investment choices – are risky. Some training may be unproductive and not result in increased productivity. Even when training is productive, trained workers may leave the firm before the firm can re-coop its training costs. The risk that training will not pay off is higher for general (transferable) training than for specific (non-transferable) training (Becker, 1962) and when training is more costly, of longer duration, and primarily employer-funded. Managers play a pivotal role in evaluating these costs and benefits for the firm, ultimately deciding which employees will receive the opportunity to train. Their decisions are likely to be consequential. A growing body of literature documents that in general managers heavily impact firms' performances (Bertrand and Schoar, 2003; Bloom and Van Reenen, 2010; Lazear *et al.*, 2015; Bandiera *et al.*, 2020; Fenizia, 2022) and the career progression and opportunities that their subordinates have (Haegele, 2022).

We also make a contribution by examining the choices that female and male managers make regarding training investments. To date, we know very little about the way that managers' own gender affects the decisions they make. Previous research has shown, however, that, on average, managerial decisions are often male biased when it comes to hiring decisions for high-skilled jobs (Petit, 2007), jobs that imply a promotion (Baert *et al.*, 2016) or in evaluations concerning the CV (Kuebler *et al.*, 2018). One common explanation for the narrowing of gender gaps in labor market outcomes is that the higher share of women in management positions reduces the potential for male bias. The underlying assumption is that female managers enhance the career opportunities of the women they supervise. Research investigating that hypothesis is inconclusive, however. Some studies examining the consequences of greater representation of women on corporate boards or evaluation committees find a positive effect of an increase in female decision makers on the level of support that junior women receive (Ehrenberg *et al.*, 2012; Kurtulus and Tomaskovic-Devey, 2012; De Paola and Scoppa, 2015; Kunze and Miller, 2017; Bossler *et al.*, 2020). Other studies find no effect, or even that women are evaluated more

same data set as we use here, Caliendo *et al.* (2024) find that training offers vary with the risk preferences of the managers responsible for these decisions.

harshly by other women (Bagues and Esteve-Volart, 2010; Bagues *et al.*, 2017; Bertrand *et al.*, 2019; Arceo-Gomez and Campos-Vazquez, 2022; Brown, 2022). While most of these studies focus on the share of women in decision-making positions, we directly compare the behavior of female and male managers in choosing between on-the-job training investments. We are particularly interested in two key questions: First, is there a gender disparity in the supply of on-the-job training? Second, how do training offers vary with manager gender?

We find that, in general, women are slightly more likely to be chosen for on-the-job training than their male colleagues. The notable exception is that managers are more likely to offer training to young men than young women. This training penalty for young women stands in stark contrast to other findings that: (i) women with higher professional competence are preferred over men with the same level of competence; and (ii) women are selected significantly more often than men for longer training courses. Importantly, we show that training decisions vary depending on the manager's gender: Female managers are 9.8 percentage points less likely to select young female employees for training than young male employees, a pattern not observed among male managers. When training is fully employer-funded, male managers favor male employees by 9.7 percentage points, an effect not seen among female managers. These results remain robust in a weighted mixed logit model that accounts for observable differences in the characteristics of male and female managers.

In the final step of our empirical analysis, we conduct a heterogeneity analysis to examine how our results vary with the firm environment (i.e., product market competition, industry gender ratio, workplace culture, and industrial relations system) and key manager characteristics (i.e., tenure and risk preferences). Our results indicate that female managers offer more training to women if the firm is facing a less competitive product market, in a female-dominated industry, has a lower gender wage gap, and is covered by a collective bargaining agreement. Young women, however, receive fewer training offers when they are supervised by female managers operating in competitive product markets, male-dominated industries, and firms without collective bargaining agreements. Interestingly, male managers are in general less sensitive to their operating environments when making decisions about whether to train women or men. Finally, there is little evidence that disparities in the risk attitudes and tenure of male and female managers provide an explanation for the gender pattern in training offers that we observe.

Our paper makes several contributions to the literatures that examine training, gender inequality, and managerial decision-making. First, we shift the analytical focus from the demand-side of training (i.e., employee participation) to the supply-side, specifically, managers' decisions to offer training. This complements existing research that largely interprets training gaps through

the lens of individual preferences or constraints. Second, we provide causal evidence on the gender disparities in employer-provided training opportunities using a unique vignette experiment embedded in a nationally representative employer survey. Third, we call attention to the structural role that managerial discretion plays in shaping gendered career outcomes by demonstrating that training offers vary systematically with the gender of both the candidate and the manager. Young women are particularly disadvantaged when evaluated by female managers, though male managers also tend to favor male candidates when training is fully employer-funded. Finally, we explicitly examine the way the organizational context shapes training offers, providing evidence that gender disparities are amplified in competitive environments, male-dominated industries, and firms without collective bargaining agreements. Taken together, our findings highlight the need for more nuanced, context-specific interventions – particularly in the early career stages – to ensure that all workers have equitable access to employer-sponsored training. Improving equity is particularly important in light of policymakers strategic goal to improve training participation rates.

The rest of the paper is organized as follows. Section 2 provides descriptive evidence about the employee side of on-the-job training investment. Section 3 describes data, study design and provides descriptive evidence on training offers. Section 4 describes the estimation strategy, while Section 5 presents the main results. In Section 6 we conduct a heterogeneity analysis, before Section 7 concludes our study.

2 On-The-Job Training in Germany – The Employee Side

We use data from the German Socio-Economic Panel (SOEP) to examine the key determinants of equilibrium training investments (i.e., training participation). The SOEP is an annual representative household panel survey, which collects household- and individual-level information on topics such as demographic events, education, labor market behavior, earnings and economic preferences. It contains over 30,000 individuals and 14,000 households per year.

The SOEP data are perfectly suited for this purpose, as the survey includes detailed questions on training activities. We restrict our sample to the working-age population between 25 and 65 years between 2000 and 2019. As we are interested in work-related training and not in training during periods of unemployment, we restrict our analysis to individuals who were employed at the time of training. We also exclude individuals who were self-employed at the time of the interview.

Training Information and Estimation Samples We have several measures of on-the-job training in our data. First, we create an indicator of training participation that take the value one if individuals participated in training in the last calendar year, and zero otherwise. The corresponding survey question was included in the SOEP in 2000, 2004, 2008, and annually after 2014. Second, we consider the direct costs of training and create two indicator variables to capture whether (i) the training course was fully financed by the employer; or (ii) fully financed by the employee. Additionally, we take into account information about the type of training, distinguishing between general (transferable) and specific (non-transferable training) (see Caliendo *et al.*, 2022).[2]

Descriptive Evidence We begin by investigating the training participation rates of men and women. Figure 1a presents on-the-job training trends by gender from 2000 to 2019, revealing a trend change over time. Between 2000 and 2008, male workers had higher training participation rates than female workers. From 2016 to 2019, this trend reversed, with female workers participating in training at higher rates than their male counterparts. In 2018, the year of our vignette experiment 25 percent of all male workers and 29 percent of all female workers participated in training.[3]

Next, we analyze the relationship between gender and training participation while controlling for a broad set of factors, including socio-demographics, firm and occupation characteristics, labor market history, personality traits, as well as regional characteristics and year-fixed effects. The results are presented in Panel (A) in Table 1. We first replicate Caliendo *et al.* (2022) who find a gender gap in training participation between 2000 and 2008 (column 1). In later years, this gap reverses: women are significantly more likely (1.7 percentage points) to participate in training over the period 2014 to 2019 (column 2). Over the entire sample period (column 3) the gender gap is close to zero and insignificant.

[Insert Table 1 and Figure 1 here]

Age Heterogeneity To assess whether this result holds across groups, we examine the heterogeneity in training participation by age, direct training costs, and training type.[4] Figure 1b

[2]The estimation sample consists of 56,170 individuals for whom we observe training participation; 6,228 individuals for for whom we observe training financing (available for 2015, 2017, and 2018); and 17,545 individuals for whom we observe the type of training (available for 2000, 2004, and 2008).

[3]Out of all workers that participated in training, 54 percent were women. Despite these shifts in participation trends, the overall training rates for both men and women remain well below the ambitious target set by the EU Skills Agenda, which aims to increase training participation to 50 percent by 2025. This suggests that while there have been some improvements, a considerable increase in training opportunities is required across all workers (Commission, 2016).

[4]We categorize employees into age groups of <35 years, 35-44 years, 45-54 years and ≥ 55 years, as this distribution balances the number of observations in each age group. These categories also align closely with those

shows the distribution of on-the-job training participation by age and gender. As the graph illustrates, 27 percent of all men under age 35 participated in training, compared to 24 percent of women in the same age group. At older ages, training participation rates for men and women are nearly identical. This general trend is further confirmed by a regression analysis, where we again control for an extensive set of control variables. The results are presented in Panel (B) of Table 1.

The coefficient on the interaction of our indicators for being female and in the youngest age group is negative and significant for the period 2000 and 2008 (column 1), but insignificant for the later time period and in the pooled specification (columns 2 and 3). This indicates that between 2000 and 2008, young women were 3.6 percentage points less likely to participate in training relative to young men. Between 2014 and 2018, we see that women in the oldest age category were 5 percentage points more likely to participate in training compared to men in the same age category.

Training Type Heterogeneity The distribution of fully employer-financed training and training type by gender is illustrated in Figure 1c. We find that 89 percent of the training courses undertaken by men were fully financed by the employer, while this is the case for only 84 percent of the courses undertaken by women. In addition, women tend to engage in general training more often than men, while men are more likely to participate in specific training. We conduct a regression analysis, using these training types as separate outcomes, controlling for individual and firm-specific information. The results, presented in Panel (C) of Table 1, confirm that women are 3.7 percentage points less likely to participate in employer-financed training and 4.2 percentage points more likely to participate in self-financed training courses than men (columns 1 and 2). While no significant effect is found for general training, women are 1.3 percentage points less likely to participate in specific training compared to men (columns 1 and 2).

In summary, our results suggest that the overall gender gap in training participation has disappeared or reversed in recent years. Yet important disparities remain: a gender training gap persists for young workers, for fully employer-financed training, and with respect to the type of training. In a next step we turn to employer data to examine the employer perspective on training investment. In doing so, we aim to shed light on how managerial decisions influence the allocation of opportunities to take up on-the-job training.

used in our vignette experiment.

3 On-the-Job Training in Germany – The Supply of Training

We examine the training opportunities offered by employers using the Cost-Benefit Survey 2018 of the Federal Institute for Vocational Education and Training (BIBB). The survey is repeated every five years and aims to elicit the costs and benefits of vocational training and recruitment within German firms (see Schönfeld *et al.*, 2020). Responding firms are randomly drawn from an administrative register, housed at the Federal Employment Agency (*Bundesagentur für Arbeit*), that captures all firms with at least one employee subject to mandatory social insurance contributions. Therefore, the sample is representative of the universe of all firms in Germany. In total, around 4,000 firms participated in the 2018 BIBB Cost-Benefit Survey.

Survey respondents are firm owners, human resource managers and other decision makers who are regularly involved in actual training decisions.[5] The interviews take place in the firm using the computer-assisted personal interviewing (CAPI) method and last between 50 and 80 minutes. To reduce the risk of a social desirability bias in the face-to-face interviews, the interviewer hands over the laptop to the respondent when answering the vignette (described below) and when revealing personal information. The data was gathered by *infas (Institut für angewandte Sozialwissenschaft)* between June 2018 and July 2019.

The survey gathers a broad range of information from respondents, including their gender, tenure, and position within the firm. Additionally, firm-level data is collected, including firm size, industry sector, occupation, and legal status. Finally, the survey also canvases institutional factors, like the presence of a works council, collective bargaining agreements, and involvement in apprenticeships, which can provide insights into how these contextual factors influence training decisions.

Sample Characteristics Approximately one-third (1,358) of surveyed firms were randomly selected to participate in a vignette experiment, that was implemented by Caliendo *et al.* (2024) to analyze the impact of managers' risk preferences on training allocation. We restrict our sample to survey respondents who provide information about their gender and confirm their involvement in actual decision-making processes. The average firm size is around 160 employees, though some large firms have up to 29,000 employees. To account for the distinct management structures in very large firms, we exclude those above the 99th percentile in size, resulting in a final sample of 1,144 firm representatives with an average firm size of 88 employees.

The characteristics of our sample are summarized in Table 2. A majority (57 percent) of

[5] To select the interview participants, the interviewers first contact the firm (via postal letter) and ask for a contact person most knowledgeable regarding firms' decision making on training and recruitment. The interviewer then arranges a date for the personal interview with that contact person in the firm.

respondents are men. Most managers in the sample are highly educated: 44 percent hold an academic degree, 35 percent hold an advanced vocational degree, 21 percent hold a vocational degree, and only 1 percent have no vocational training. The data do not indicate significant gender disparities in educational attainment. The range of firm positions of the responding managers include: firm owners (35 percent), CEOs (13 percent), department head (7 percent) and head of human resources (17 percent), commerce (8 percent), and training (7 percent). Here, there are notable gender differences. Among male managers, 48 percent are firm owners, whereas only 19 percent of female managers hold this role. Similarly, 16 percent of male respondents report being CEOs, compared to 10 percent of female respondents. Conversely, women are more likely to hold a leadership position in human resources, with 29 percent of female managers heading HR departments, compared to only 9 percent of their male counterparts. On average managers have 14.55 years of tenure in the firm, though this varies significantly by gender. While male managers have an average of 15.92 years of tenure, female managers report 12.71 years of tenure on average. In addition, male managers are more risk-seeking then female managers.

Survey respondents report whether their firm offered employer-financed training to employees in the year prior to the survey. Across all firms, 77 percent provided training, suggesting that training is a common practice. There are no observed gender differences in this regard. Gender differences emerge, however, in the composition of the workforce in the firms where managers are employed. Female managers are more often found in firms with a higher share of employees who hold an apprenticeship degree, whereas male managers are more likely to work in firms with a greater proportion of employees holding an advanced vocational or academic degree. Across all firms, 22 percent have a works council, and 40 percent are covered by a collective bargaining agreement. In addition, 10 percent of firms are identified as export-oriented, while 67 percent operate in highly competitive markets. While there are no significant differences in the presence of works councils, collective bargaining coverage, or competition in the firms where male and female managers are employed, male managers are more frequently employed in export-oriented firms. Notably, female managers are significantly more prevalent in larger firms than in smaller ones, with an average firm size of 102.7 employees in female-led firms compared to 77.41 employees in male-led firms. Finally, female managers are more likely to work in firms with a high share of female employees and a lower gender wage gap.

[Insert Table 2 here]

Descriptive Evidence on Training Provision We begin by comparing the characteristics of firms that provide training to those that do not. In the survey, respondents indicate whether

or not workers in the firm have participated in employer-financed training in the year prior to the survey. We use this information to highlight differences between training and non-training firms. Results are summarized in Table A.3.

There is no significant relationship between manager gender and whether a firm trains or not; the proportion of managers who are women (43 percent) is the same in training and non-training firms. Training firms tend to be smaller, employing significantly fewer workers on average (105 vs. 35). They also have a less skilled workforce, with a higher share of unskilled or semi-skilled employees. Interestingly, these firms are less likely to have employees with university degrees, indicating that they may prioritize vocational pathways over higher education. Investment in technology to simplify or automate work is also more common in training firms (56 vs. 34 percent), suggesting that they may combine skill development with technological adaptation to enhance productivity. Despite differences in firm structure and training strategies, there is no significant difference in the gender composition of the training and non-training firm workforces. Training firms tend to have higher female wage growth (52 vs. 44 percent), though this difference is not statistically significant. This could indicate a positive trend toward narrowing wage disparities in firms that actively invest in skill development.

Our analysis focuses on the role of a manger's gender in the training they are prepared to provide. To investigate whether female managers are more or less likely than male managers to provide on-the-job training for workers, we estimate a series of logit regressions where the dependent variable is a binary indicator of whether a firm provides any training. Results can be found in Table A.4. In the first specification, training provision is regressed on the gender of the manager only. The second specification includes controls for firm- and manager-specific characteristics. Across both specifications, we find no significant difference in the likelihood of male and female managers providing training. The estimated marginal effects of female manager status are small and not statistically significant.

4 Empirical Approach

Managers are not randomly allocated to firms and also not to jobs within firms. To measure managers' preferences for different types of training and for participants' characteristics, we build on the vignette study embedded in the 2018 wave of the BIBB Cost-Benefits survey (see Caliendo *et al.*, 2024). In the vignette study, managers decide which of two workers in a given choice set will receive training. We assume that a worker is offered training if the manager's (expected) utility is positive. The parameters influencing this (relative) utility can be estimated using either a sample where agents select one option from multiple alternatives – similar to our

vignette study – or a framework where agents make a binary decision to either accept or reject a single option (Train, 2009). We first briefly present the vignette experiment before describing the estimation approach.[6]

4.1 Vignette Experiment

Respondents begin by first answering a series of questions about the vocational training of their employees. They are then introduced to the vignette experiment. In the experiment, respondents are presented with six fictitious choice scenarios involving employees requesting permission to participate in training. Making such decisions resembles an every-day task for the participating managers.[7] Specifically, in each choice scenario, two hypothetical training candidates in different training scenarios are presented to the respondents.[8] Each of the two training candidates is characterized by four attributes: gender, age, professional competence and previous job mobility. Each training scenario is characterized by three attributes: transferability of the training, training duration and the cost sharing agreement between the employee and employer. An overview of all possible attributes and attribute levels can be found in Table A.1, while Figure 2 provides an example of a choice scenario as seen by the respondents during the experiment.

We systematically vary the characteristics of the training scenario. We manipulate the duration of the training, representing the intensive margin of the investment. We randomly adjust the proportion of direct training costs covered by the employer and additionally, we vary the type of training, specifically the extent to which acquired skills are transferable to other firms. Moreover, we randomize key worker attributes (such as age, gender, qualifications, and prior job mobility) that may influence training decisions based on managers' preferences.

This design enables us to empirically examine whether managers are less likely to invest in training for female workers when (i) the training is of longer duration, (ii) entails higher costs, or (iii) is more transferable to other firms; and (iv) to what extent the preferences for training female candidates depend on other observed characteristics of the worker including age and experience. Furthermore, we assess whether male and female managers exhibit different decision-making patterns in this context.

[Insert Figure 2 here]

[6] See Caliendo *et al.* (2024) for more details regarding the vignette experiment.

[7] To minimize the risk of social desirability bias during the face-to-face interviews, the interviewer hands the laptop to the respondent when answering the vignette and disclosing personal information. We also align the sample and the target population by surveying and selecting firm representatives with decision-making power, which is an important step in ensuring the external validity of our discrete choice experiment (see Hainmueller *et al.*, 2015, for details).

[8] Hainmueller *et al.* (2015) conducted an external validity test for vignette experiments and found that this study design – presenting two alternatives in each choice situation and forcing the respondents to choose one or the other – comes closest to the behavioral benchmark and maximizes external validity.

After establishing the relevant attributes and attribute values for our vignette study, we move on to the actual implementation of the vignette experiment in the survey. We employ a fractional factorial design that meets the requirements for an efficient choice design proposed by Huber and Zwerina (1996), since the total number of possible choice sets in a full factorial design is by far too large to be included in the experiment.[9]

Our goal is to reduce the number of choice sets to a feasible set for respondents while estimating the respondents' preferences β as accurately as possible. The precision of the estimates is determined by the variance-covariance matrix of the estimated coefficients. An efficient vignette design minimizes this matrix size, thus reducing the D-error. Since the inverse of the D-error represents D-efficiency, we use the Stata command *dcreate* (Hole, 2007) to maximize the D-efficiency of our design by optimizing the attributes and attribute values. This process occurs in two steps. First, *dcreate* reduces the number of alternatives, resulting in 216 alternatives (i.e., 108 choice sets). Second, it groups these 108 choice sets into 18 blocks, with six choice sets per block. Each respondent is assigned one block of six choice sets, and the distribution of the 18 blocks, as well as the order of choice sets within each block, is fully randomized.[10]

Table 3 presents descriptive evidence that our vignette experiment meets two key properties of an efficient choice design: level balance and minimal overlap (Huber and Zwerina, 1996). Column (1) shows that the frequency of attribute values is balanced across the two choices, which aligns with the level balance property. As for the minimal overlap property, our design ensures that attribute values differ between the two choices in each set, forcing respondents to choose between distinct attribute options.

Column (2) of Table 3 summarizes the actual choices made by the managers. The results indicate that women, younger candidates, and those with above-average professional competency are more frequently selected for training. Managers are more likely to choose training that is usable only within the firm (i.e. specific) and and of shorter duration. Finally, columns (3)-(5) in Table 3 report the gender differences in managers' choice behavior. Female managers are more likely than male managers to select candidates from the oldest age group (55 years). While male managers tend to prefer candidates with above-average work experience, female managers show a slight preference for shorter training courses. Additionally, male managers are more likely than female managers to choose training that is fully funded by the employer.

[9] Huber and Zwerina (1996) propose four properties for efficient choice designs: (i) orthogonality, (ii) level balance, (iii) minimal overlap, and (iv) utility balance. In our case, the total number of possible vignettes is $2 \times 4 \times 3 \times 3 \times 3 \times 3 \times 3 = 1,944$, which can be combined into $(1,944 \times 1,943)/2 = 1,888,596$ possible choice sets.

[10] Overall, we have 1,144 respondents in our sample, for whom we observe 6,747 training decisions involving 13,494 choice alternatives. For 96% of the sample, we observe six choices, while 4% have fewer. The results remain robust if we exclude those who did not make all of the training decisions presented to them.

[Insert Table 3 here]

4.2 Estimation Strategy

Each participant (i.e. manager) i in our vignette study makes repeated choices between two alternative candidates k and s. Each choice scenario consists of $J = 2$ alternatives. We assume respondents choose the utility maximizing alternative in each choice scenario. Therefore, given choice set t respondent i chooses alternative k if:

$$U_{ikt} > U_{ist}, \quad \forall s \neq k.$$

Each choice alternative j in choice set t can be completely characterized by the observed attribute characteristics x_{ijt} as described in the vignette. The manager's utility is specified as a linear function of the observed choice alternative characteristics x_{ijt}:

$$U_{ijt} = \beta_i^{'} x_{ijt} + \epsilon_{ijt},$$

where β_i is an individual-specific coefficient vector capturing the preferences for various characteristics of the hypothetical training context and training candidate and ϵ_{ijt} is an error term assumed to be independent and identically distributed. The coefficient vector can be decomposed to $\beta_i = \bar{\beta} + \nu_i$, where $\bar{\beta}$ denotes the population mean and ν_i the unobserved individual preference deviation from this average. The error term ϵ_{ijt} can be interpreted as a mistake made by respondents when computing and comparing the utilities of the different choice alternatives.

Our specification offers the advantage of allowing managers to have different (unobserved) preferences for the attributes of choice alternatives. We account for this heterogeneity through ν_i, which we model as a random effect, assuming it is uncorrelated with the observed attributes of the choice alternatives, x_{ijt}. While this independence assumption is often quite strong in non-experimental studies, our research design mitigates this concern by randomly assigning choice alternatives to managers' choice sets. As a result, there is no reason to expect a correlation between managers' unobserved preferences and the observed attributes of the choice alternatives.

We derive the choice probabilities for different training alternatives by assuming that the random terms ϵ_{ijt} follow an extreme value distribution. This leads to a mixed logit model. The individual likelihood contribution L_i, conditional on unobserved heterogeneity ν_i, is given by:

$$L_i|\nu_i = \prod_{t=1}^{T} \frac{\exp(\beta_i' x_{i1t})^{d_{i1t}} \exp(\beta_i' x_{i2t})^{1-d_{i1t}}}{\sum_{j=1}^{2} \exp(\beta_i' x_{ijt})}.$$

Here, d_{i1t} is a dummy variable which is equal to one if individual i selects alternative $j = 1$ in choice set t. The coefficients β_i follow a distribution with density function $f(\beta|\theta)$, where θ is a

vector of parameters characterizing this distribution. The unconditional likelihood is obtained by intergrating over this distribution:

$$L_i = \int \prod_{t=1}^{T} \frac{\exp(\beta_i' x_{i1t})^{d_{i1t}} \exp(\beta_i' x_{i2t})^{1-d_{i1t}}}{\sum_{j=1}^{2} \exp(\beta_i' x_{ijt})} f(\beta) d\beta.$$

The log likelihood for a sample with n observations is given by:

$$\ln L = \sum_{i=1}^{n} \ln \left(\int \prod_{t=1}^{T} \frac{\exp(\beta_i' x_{i1t})^{d_{i1t}} \exp(\beta_i' x_{i2t})^{1-d_{i1t}}}{\sum_{j=1}^{2} \exp(\beta_i' x_{ijt})} f(\beta) d\beta \right). \tag{1}$$

Since the integral in equation (1) cannot be solved analytically, the model cannot be estimated using exact maximum likelihood. Instead, we employ maximum simulated likelihood (MSL) to estimate the parameters of the continuous mixing distribution, approximating the integrals through simulation (Revelt and Train, 1998; Train, 2009). The simulations rely on R draws from the distribution $f(\beta)$. The MSL estimator introduces bias due to the logarithmic transformation of probabilities. This bias decreases as the variance of the simulated probabilities falls, which happens as the number of draws increases (Bhat, 2001). Consequently, achieving a small bias typically requires a large number of draws, often leading to long computation times for MSL estimation.

Various methods exist to improve integral approximations by using systematic rather than purely random draws. In our study, we use Halton draws to reduce simulation variance, as they have been shown to perform well in mixed logit models (Train, 1999; Bhat, 2001; Haan and Uhlendorff, 2006). While effective, standard Halton sequences tend to exhibit high correlation in higher-dimensional integrals. Bhat (2003) finds that scrambled Halton sequences outperform standard ones in such cases. Kolenikov (2012) discusses several scrambling techniques, including the square-root scrambler, random multiplier scrambler, and Atanassov's modified Halton sequence. We apply the square-root scrambling method to refine the Halton sequence.[11]

To address our research questions, we proceed in three steps. First, we estimate a baseline model to examine how the probability of receiving a training offer varies with the vignette attributes. Second, we estimate a model in which we allow each of the vignette attributes to interact with the gender of the potential training candidate, in order to understand if and how gender influences managers' choices. In a third step, we split our sample by manager's gender and re-estimate the interacted model for each subsample, allowing us to explore differences in decision-making between male and female managers regarding female training candidates. We report the average marginal effects to investigate effect sizes and economic importance.

[11] We estimate the mixed logit models in Stata using the routines by Hole (2007).

4.3 Model Selection

Following Caliendo *et al.* (2024), we estimate a series of models to account for unobserved preference heterogeneity (Table 4). We begin with a standard logit model that does not account for unobserved heterogeneity (column 1) and compare it to two mixed logit specifications that do: one with uncorrelated random coefficients (column 3) and another allowing for a fully flexible variance-covariance matrix (column 5). In both mixed logit models, unobserved heterogeneity follows a multivariate normal distribution.

As expected, mean coefficient estimates increase in mixed logit models, particularly when allowing for correlation in the random effects. This occurs because mixed logit decomposes unobserved utility into $\nu_i' x_{ijt} + \epsilon_{ijt}$, shifting variance from the error term to the correlated random effects (Revelt and Train, 1998; Eriksson and Kristensen, 2014).

[Insert Table 4 here]

Model comparison shows a substantial log-likelihood improvement when moving from standard logit to mixed logit. The significance of estimated standard deviations in the mixed logit models confirms substantial preference heterogeneity among managers. Since the sign and significance of mean coefficients remain stable across specifications, we select the mixed logit model with uncorrelated random effects as our baseline.

5 Main Results

Our baseline results reveal how managers' training offers differ with respect to the vignette attributes. The mixed logit results are presented in column (3) in Table 4, with the corresponding marginal effects shown in column (3) in Table 5. Overall, managers slightly prefer female training candidates over male candidates, with a 1.2 percentage point advantage for women. Thus, we do not observe a general gender gap that discriminates against women in training provision.[12] We also find that younger employees are more likely to be offered training. A 25 or 35 year-old employee is 13 to 14 percentage points more likely to receive training than a 55 year-old employee. Comparing a 55 year-old worker to a 45 year-old worker, the latter has a 10.7 percentage point higher chance of being selected for training. This is consistent with existing literature, which shows that older workers receive less training (Oosterbeek, 1996; Bassanini *et al.*, 2007).

[Insert Table 5 here]

[12] This is in line with the general trend of training participation that we documented in Section 2.

Training opportunities are more often allocated to skilled workers. Employees with above-average job experience are significantly more likely to be selected for training, with an 8.6 percentage point increase for those with average experience and 13.9 percentage points for those with above-average experience.

Moreover, managers are cautious when considering characteristics directly related to the risk of recouping their training investment and the cost of training. For example, training candidates with a high level of mobility in their previous job history are significantly less likely to receive a training offer. Each half a standard deviation increase in job mobility in the last five years reduces the probability of receiving a training offer by 6.3 percentage points.[13]

In addition, managers prefer training options that are company-specific and shorter in duration. When training duration increases by half a standard deviation, the probability of receiving a training offer decreases by 2.76 percentage points on average (holding everything else constant). These findings align with those of Poulissen *et al.* (2023), who found similar results regarding investment in training for temporary workers in Dutch firms.

Finally, fully employer-financed training is less likely to be chosen than training fully covered by the candidate. If the training is completely funded by the employer, the choice probability declines by 3.1 percentage points.

5.1 Gender of the Training Candidate

We expand our analysis by investigating how the gender of the training candidate is connected to training offers. We do this by implementing a specification that allows the observed attributes of choice alternatives to be fully interacted with the gender of the training candidate. Results of the parameter estimates are shown in columns (2), (4) and (6) of Table 4.

Again, we compute marginal effects to interpret effect sizes. In order to directly compare training candidates by gender, we estimate the gender difference in marginal effects. We do this by comparing the probability of choosing a male candidate with specific characteristics with the probability of choosing a female candidate with the same characteristics. A value of zero indicates that managers are indifferent between males and females in regards to the corresponding attribute. A negative (positive) value implies that managers prefer male (female) candidates with respect to the corresponding attribute. The estimated effects are illustrated in Figure 3 and reported in column (1) of Table 6.

[13] Given that job mobility has a mean of 1 and a standard deviation of 0.82, a half a standard deviation increase moves job mobility from 1 to approximately 1.41, while a half a standard deviation decrease moves it to 0.59. The difference in predicted probability between these two points is 6.3 percentage points, meaning that an individual with a job mobility score of 1.41 is 6.3 percentage points more likely to receive a training offer than an individual with a mobility of 0.59.

[Insert Figure 3 and Table 6 here]

The results show no evidence that a candidate's gender influences managers' decisions regarding job mobility or cost coverage by the employer. Gender, however, does play a role for younger candidates: 25 year-old female employees are offered training less frequently compared to male candidates of the same age. Specifically, a 25 year-old woman has a 5.8 percentage points lower chance of receiving a training offer than a 25 year-old male employee, statistically significant at the 10% level. We observe no significant difference for older three age groups, suggesting a persistent gender gap in training opportunities at the early stages of women's careers. Puhani and Sonderhof (2011) find that an increase in parental leave duration negatively affects on-the-job training opportunities for mothers and for women who, from the firms' perspective, are most at risk of becoming a mother. Gallen (2024) finds that young women (who look most like future mothers) are discriminated against in terms of uncompensated productivity in anticipation of potential motherhood. Blau and Lynch (2024) highlight that young women face significant career disadvantages due to societal and employer biases against (potential) mothers. A similar tendency emerges for fully employer-financed training, with female candidates being 4 percentage points less likely to receive an offer. This supports the finding by Daemmrich *et al.* (2015), who argue that females participate less often in employer-financed training. The effect is however not significant at conventional levels.

Additionally, we find that women with average or above-average professional competency are selected for training more frequently than their male counterparts. Specifically, female candidates with comparable competency levels are 6.3 to 7.5 percentage points more likely to receive a training offer than men.[14]

Lastly, we observe that female training candidates are preferred for longer training. A half a standard deviation increase in training duration results in a 6.1 percentage point higher chance for female candidates. The last two results are consistent with the findings of Benson *et al.* (2022) in the context of promotions. They show that women's potential is generally underestimated and that female workers are less likely to leave the firm. This may explain why riskier (fully transferable) and more expensive (longer) training is more often offered to female candidates.

Taken together, our findings suggest that while gender does not systematically disadvantage women in training allocations, managers' decisions reflect nuanced preferences that vary across different attributes. On the one hand, young women face barriers to training access, likely due

[14]The corresponding interaction effects in Table 4 are not statistically significant. However, it turns that the coefficient for being female and the interaction effects are jointly statistically significant at the 5% level for both levels of professional competency. This is in line with the statistically significant marginal effects reported in Table 6.

to implicit expectations regarding future career interruptions. On the other hand, once they demonstrate competency and perceived stability, they may be offered more extensive training opportunities than men. This reinforces the notion that women's career progression is often shaped by managers' expectations.

5.2 Gender of the Manager

The descriptive results, presented in Table 3, suggest that male and female managers make similar decisions in the vignette experiment for most characteristics. There are, nonetheless, some notable differences: female managers choose training candidates of the oldest age group more often than male managers while male managers have a higher preference for highly experienced workers and fully employer-financed training. To understand the connection between training offers, the gender of the manager and how it interacts with the gender of the training candidate, we expand our analysis as outlined below.

We divide our data into two subsamples – one consisting of female managers and the other of male managers and estimate mixed logit models for each, using specifications that allow again all observable attributes of the choice alternatives to fully interact with the training candidate's gender.[15] The gender gaps in marginal effects for female and male managers are illustrated in Figure 3. The corresponding estimated effects are reported in columns (3) and (5) of Table 6.

The results reveal distinct differences in how female and male managers evaluate training candidates, particularly when it comes to women. Notably, female managers exhibit a strong preference for younger male candidates over their female counterparts, while no such pattern is observed among male managers. Essentially, when assessing women for training, the selections made by female managers are influenced by the candidate's age, while the age of a female candidate does not significantly impact the decisions of male managers.

Considering the marginal effects for female managers (column 3), we find that the training offer probability for a 25 year-old male training candidate is 9.8 percentage points higher than for a 25 year-old female training candidate. This effect is significant on a 5% level. This preference shifts for older candidates: female managers are more inclined to offer training to women in later career stages. Specifically, a 45-year-old female candidate is 7.4 percentage points more likely to be selected for training than a male candidate of the same age, with the effect being significant at the 10% level. For male managers (column 5), however, the age of the training candidate is

[15] We use information on whether a firm invested in training in the past year to examine whether female managers are more or less likely than male managers to work in firms that offer training. We control for individual decision-making power (four categories), tenure (years), position in the firm (seven categories), the firm's legal status (six categories), works council presence (yes/no), collective bargaining coverage (yes/no), apprenticeship training (yes/no), firm size (two categories), industry (one-digit NACE: 18 categories), and region (West/East). Results indicate no significant gender differences (see Table A.4).

not associated with different gender preferences.

Furthermore, our findings indicate that the overall preference for highly qualified female candidates is entirely driven by female managers. Female managers exhibit a strong and significant preference for women with (above) average professional competency over equally qualified male candidates. While male managers also show a tendency to favor highly qualified women over highly qualified men, they exhibit a preference for male candidates at lower competency levels. This pattern, however, is not statistically significant for male managers. Female managers are also the primary drivers of the overall positive effect observed for female candidates in relation to training duration. They are also significantly more likely to offer partially employer-financed training to female candidates, with a 10.3 percentage point higher probability compared to male candidates.

Male managers are less likely to offer training to female candidates if the training is fully or partly financed by the firm. The likelihood of being selected for training is 9.7 percentage points higher for male candidates, if the training is fully financed by the employer, the effect is significant at the 1% level. We do not find this for female managers.

In summary, our findings reveal notable gender differences in managerial decision-making regarding training allocation. Female managers are significantly less likely to select young female workers for on-the-job training compared to young male workers, yet they are more likely to offer training to highly qualified female employees over equally qualified male employees. In contrast, we do not observe these patterns among male managers. Instead, male managers are less inclined to provide training to female candidates when the training is fully employer-funded – a pattern not found among female managers.

There is little literature explaining these differences in the decision-making of male and female managers. Maida and Weber (2022) show in the context of Norwegian gender quotas that while such quotas can increase the share of women in top positions, this effect does not necessarily trickle down to lower levels in the company. This could explain why female managers prefer older (and arguably more experienced) and highly qualified female workers over male workers with the same characteristics, but not younger women at the bottom of the career ladder. Bagues and Esteve-Volart (2010) demonstrate that majority female committees overestimate the quality of male candidates, which may be particularly relevant when judging younger candidates for whom managers cannot yet rely on previous experience or qualifications. Chakraborty and Serra (2023) find that women in leadership roles are more averse to receiving negative feedback, which may explain their reliance on supporting less risky (e.g. more experienced) candidates for training. Furthermore, Ronchi and Smith (2024) find that the salience of gender issues has a significant

effect on male managers' decisions, with male managers hiring more women after the birth of their first daughter. One might expect the reverse to be true for female managers, who may be more aware of the difficulties young mothers face in combining work and family life.

5.3 Robustness Analysis

To assess the robustness of our main findings, we account for observable differences between male and female managers using a propensity score weighting approach. Specifically, we calculate propensity scores based on a rich set of manager and firm characteristics – including demographics (e.g., gender, education, tenure), personality traits (e.g., Big Five, risk preferences, locus of control), and firm attributes (e.g., size, sector, collective bargaining coverage) – and apply inverse probability weights in our mixed logit estimations. This procedure equalizes the distribution of observed characteristics across male and female managers, allowing us to test whether our results are driven by systematic differences in observables rather than gender per se. While we cannot fully address unobserved heterogeneity, this approach helps mitigate concerns about selection into firm type or managerial role. The propensity score estimation and quality of the matching is summarized in Table A.8. We find that the groups are fairly equal across all observables after matching. The re-estimated results of the weighted mixed logit estimation are reported in Table B.9, with marginal effects shown in Panel A of Table A.9. The finding that young women are less likely to be offered training than young men, and that this is driven by female managers, is robust to this specification, suggesting that this effect is not driven by the selection of male and female managers with certain characteristics into different firms. Looking at the gender gap in the marginal effects in Table A.9, the gender gap in the provision of training by female managers for young workers has actually increased compared to the previous specification. Young women are 13.4 percentage points less likely to receive training than their male counterparts if their manager is female. This effect is not visible for male managers. For the other attributes, however, some coefficients change in magnitude and lose significance when we run the weighted regression. Therefore, we cannot completely rule out the possibility that the differences between male and female managers that we find for the other attributes (e.g., training duration and cost coverage) are partly driven by the sorting of male and female managers into firms with a specific training environment. Note, however, that the standard errors – especially for male managers – are also much larger in this specification due to missing observations in some of the variables we use for the propensity score weights.

In addition, we replicate our main analysis, firstly, leaving out the owners of firms in the pool of managers. Since the owners have potentially different incentives to maximize returns and

profits compared to other employees, such as the head of HR or the head of training, we rule out that our main results are driven by this particular group in the sample. Secondly, we repeat our main analysis and only include firms that offer employer-financed training. The results are overall in correspondence with our original findings (see Table B.9 for the parameter estimates and Panels B and C of Table A.9 for the gender gap in marginal effects). Despite the shrinking sample size, we still find a very similar pattern for both specifications: Female managers prefer young male candidates to young female candidates. They are, nonetheless, more likely to offer training to women if they have at least average experience, if the training is longer and if the training is partly or fully financed by the company. Male managers do not discriminate against women in terms of age, if at all, only when it comes to training that is fully funded by the employer.

6 Discussion

Managers play an important role in not only overseeing the career progression of those they supervise (Haegele, 2022), but also in driving overall firm performance (Bertrand and Schoar, 2003; Bloom and Van Reenen, 2010; Lazear *et al.*, 2015; Bandiera *et al.*, 2020; Fenizia, 2022). For both reasons, managers' training decisions can be particularly consequential. Our research is notable in revealing that: first, men and women are not equally likely to receive training offers; and, second, male and female managers often have quite different perspectives on which employees to train. While on average female candidates receive slightly more training offers, women are at a disadvantage at younger ages and when the training is fully employer-funded, leaving them with fewer opportunities relative to men. Among candidates with more professional experience, however, women are more likely to receive training offers, particularly if they are evaluated by female managers. Similar age-dependent gender disparities have been documented in other contexts, including hiring decisions (Petit, 2007), participation in employer-financed training (Fitzenberger and Muehler, 2015), and the remuneration of productivity (Gallen, 2024). Understanding why – and in which circumstances – training opportunities might also be gendered is important in promoting gender equity in labor market outcomes more generally.

In what follows, we explore the heterogeneity in – and some of the potential explanations for – the results we find. We begin by considering the role of the firm environment (i.e., product market competition, industry gender ratio, workplace culture, and industrial relations system), before moving on to briefly consider some manager characteristics other than gender (i.e., tenure and risk preferences).

6.1 The Firm Context

Previous research has shown that firm characteristics matter for the amount of training. For example, training investment rates differ by labor market sector (Oosterbeek, 1996; Albert *et al.*, 2010) and are higher in larger firms (Lynch and Black, 1998; Albert *et al.*, 2010; Maximiano, 2016) and in outsourcing firms (Hummels *et al.*, 2012). Finally, the interaction of manager and firm characteristics has been documented regarding the systematic risk that firms are exposed to (Schoar *et al.*, 2023) and firm productivity (Bender *et al.*, 2018). We will consider the following four firm characteristics: product market competition, the industry gender ratio, workplace culture and industrial relation systems.

Product Market Competition Enhancing workers' skills improves firms' competitiveness by raising firm-level productivity (Barrett and O'Connell, 2001) giving firms a stronger incentive to invest in training when markets are competitive. Moreover, the degree of market competitiveness is also likely to influence the type of workers that firms are willing to train. Taste-based models of employer discrimination predict that, because discrimination increases costs, it will be hard for firms to sustain discrimination in competitive markets (Becker, 1957). Managers under market pressure may also be more sensitive to the risk that training investments will not ultimately be profitable. This gives them an incentive to evaluate (and measure) each worker's own suitability for training, rather than engaging in statistical discrimination, in an effort to offer training only to the most promising candidates. In short, competition has the potential to reduce both taste- and information-based discrimination leading to smaller gender disparities in training.[16] Furthermore, we know that women and men behave differently when faced with competition (Gneezy *et al.*, 2003; Niederle and Vesterlund, 2007; Markowsky and Beblo, 2022), suggesting that a manager's gender may affect decision-making in competitive contexts.

[Insert Figure 4 here]

Our BIBB data provide us with a measure of product market competitiveness. Specifically, managers were asked: "Are you exposed to high competitive pressure in your segment of the market" (yes or no) and we use their responses to generate an indicator of highly competitive product markets. There is no significant gender difference in the proportion of managers employed in highly competitive markets (see column 3 of Table 2). We explore whether there is a potential for this to moderate our results by re-estimating our model for subsamples of managers experiencing high vs. low product market competition. The marginal effects of all attributes are

[16] Dodini and Willén (2025) make a similar argument analyzing wage and employment discrimination between natives and immigrants.

summarized for female vs. male candidates in Figure 4a. Full results can be found in Panel (B) of Table A.6. Our results indicate that female managers are more sensitive than male managers to product market competition when deciding whether to offer training to men or to women. Specifically, male managers are equally likely to offer training to men and women irrespective of whether they are in a highly competitive market or not (see Figure 4a, lower part). The only exception is that, when market competition is high, male managers are more likely to offer training to men if the firm is fully funding it. Female managers (upper part of Figure 4a), on the other hand, have a general preference for offering training to women if the market is not competitive (upper part, left side). For example, female candidates aged 55 are 22.1 percentage points more likely to be offered training than male candidates in the same age group, and female employees are 25.2 percentage points more likely to receive fully employer-funded training than male employees. When markets are competitive (upper part, right side), female managers exhibit no gender preference in choosing training candidates, with the exception that they are significantly less likely (13.8 percentage points) to offer training to young women than to young men.

Industry Gender Ratio Social psychologists have proposed that senior women may not always enhance the opportunities of more junior women because they are trying to assimilate into male-dominated organizations by distancing themselves from an (as yet) less successful group of women (Ellemers *et al.*, 2004; Derks *et al.*, 2016; Faniko *et al.*, 2016, 2017). As a result, female managers may offer fewer – not more – opportunities to their female staff. Derks *et al.* (2016) argue that, in fact, this type of social distancing is not exclusive to women, but rather reflects a broader pattern of behavior observed in other marginalized groups. Similarly, disparities between female and male managers' investment choices might also be attributed to differences in leadership style. Matsa and Miller (2013) for example demonstrate that increasing female representation on corporate boards can lead to significant changes in firm policies, particularly in areas related to employment and cost management. Furthermore, despite the increasing representation of women in management roles, several studies (e.g Powell *et al.*, 2002; Gmür, 2006) have found that managerial competence is still stereo-typically associated with masculine traits. This leads to higher expectations for female managers to think and behave like men.

Social distancing and leadership style both provide a potential rationale for the gender disparities in training offers that we see. To investigate this, we separate our sample of managers into those employed in female- versus male-dominated industries and re-estimate our baseline model. The resulting marginal effects are presented in Figure 4b. The full table of average marginal effects can be found in Panel (B) of Table A.6.

We find that female managers employed in female-dominated industries do not have a preference for offering training to men relative to women irrespective of candidates' other characteristics. Instead, Figure 4b reveals a general tendency for female managers to offer training to women. For example, female training candidates aged 55 are significantly more likely (16.3 percentage points) to receive training than their male counterparts. Female employees with average occupational competency are offered training significantly more often (30.8 percentage points) than male employees with the same competency level, and female managers in female-dominated industries are significantly more likely to offer firm-specific training to women (14.7 percentage points). In male-dominated industries, however, our analysis confirms our earlier findings: female managers show a strong preference (18.9 percentage points) for training young men over young women. Thus, the decisions of female managers are sensitive to the gender composition of their industries. In addition, male managers are consistently more likely to offer training to men when the training is partly or fully financed by the employer – irrespective of the gender composition of the industry.

Workplace Culture Firms' hiring, promotion, and especially wage setting policies have an important effect on the overall gender pay gap (Cruz and Rau, 2022; Li *et al.*, 2023; Casarico and Lattanzio, 2024; Card *et al.*, 2025). At the firm level, industry and occupation (Blau and Kahn, 2017), pay transparency rules (which depend on), firm size and sector (public versus private) (Bennedsen *et al.*, 2022; Baker *et al.*, 2023) as well as the gender of the firm owner (Kritikos *et al.*, 2024) matter for gender disparities in wages. Given this evidence, we consider a firm's gender pay gap to be a proxy for its overall workplace culture and investigate whether managers' training decisions are less gendered when the workplace is more equal. We do this by conducting an ancillary analysis using linked employer-employee data from the Integrated Employment Biographies (IEB) of the Institute for Employment Research in Germany which we can match to a subset of the firms from our vignette study and which allows us to compute the relative gender pay gap of full-time employed individuals in these firms.[17]

We find that in less equal workplaces – where the gender pay gap is higher than the median – female managers tend to offer more training opportunities to men, while male managers tend

[17]The IEB data capture all individuals who are either in employment, subject to social security contributions, or in marginal part-time employment, receive benefits according to SGB III or II, are officially registered as job seekers with the Federal Employment Agency (Bundesagentur für Arbeit), or are (planned to be) participants in active labor market policy programs. Note that only a subset of our vignette firms can be merged to the IEB data. Tables B.10 and B.11 provide further information on the matching procedure and sample differences. We compute the relative gender pay gap of full-time employees in each firm, i.e. the difference between the mean wages of men and women relative to the mean wages of men. We then construct a dummy variable that equals one if the gender pay gap is above the median gender pay gap of all linked firms.

to offer more training to women (see Figure 4c).[18] The gender disparity in female managers' training offers to young candidates, while not statistically significant, is sizable irrespective of whether the firm's gender wage gap is high or low. In short, female managers' preference for training young men rather than young women is not sensitive to the firm's broader workplace culture. In all other cases, however, women receive more training offers if their workplace is inclusive, particularly if their manager is also a women, suggesting that these firms are generally more open to providing career opportunities for women.

Industrial Relations System Collective bargaining agreements often set standardized rules and procedures around many human resource practices, including training decisions. These rules serve to limit the discretion that individual managers have when deciding who will receive training, reducing the potential for taste-based discrimination. Moreover, collective bargaining agreements typically emphasize fairness and equity in the treatment of workers. Consequently, we expect less gender inequity in firms covered by collective bargaining agreements. There is empirical evidence to support this proposition for example regarding the gender wage gap (Blau and Kahn, 1996; Bruns, 2019; Biasi and Sarsons, 2022) and the creation of female-friendly jobs (Corradini *et al.*, 2025).

Whether collective bargaining agreements influence female and male managers' decision-making differently is an open question. We investigate this issue by replicating our analysis separately for managers employed in firms that are and are not covered by collective bargaining agreements. We find that the penalty young women face in accessing training is driven by female managers employed in firms without collective bargaining, who are likely to have more discretion in who they train (see Figure 4d). Female managers in these firms are 17.2 percentage points less likely to offer young women training relative to young men. Female managers in firms covered by collective bargaining agreements tend to provide more training to women. For instance, female candidates are significantly preferred to male candidates at age 55 (by 19.5 percentage points) and for partly employer-financed training (by 19.2 percentage points). No significant gender gap in training provision for young candidates is observed when the manager is female and the firm has a collective bargaining agreement. Furthermore, none of the estimated gender gaps are significant for male managers, i.e. they do not seem to offer more or less training to women in firms with or without collective bargaining agreements.

[18] The median relative gender pay gap is 14.8%. Interestingly, there are also a significant number of firms where women earn more than men on average.

6.2 Managers' Characteristics

One potential explanation for the disparity we observe in male and female managers' training decisions is that their own characteristics differ on average. In our sample, for example, female managers on average have three years less tenure than their male colleagues; they are also significantly less willing to take risks. These disparities are important because managers' tenure and risk preferences are both conceptually linked to the training investments they are prepared to make in women rather than men.

Tenure One possible explanation for the finding that young women receive less training by female managers is that, based on their experience, female managers may be more likely to expect young women to leave their jobs before any training investments pay off for the firm. On the one hand, the potential for this type of gendered statistical discrimination is reduced in our study relative to studies based on observational data. The managers in our experiment were instructed that – with the exception of the candidate and training attributes specifically mentioned in the vignettes – all other candidate and training characteristics are "identical". On the other hand, we cannot definitively rule this possibility out; our data, unfortunately, do not allow us to directly investigate whether our results are driven by a differential tendency for male and female managers to engage in statistical discrimination.

Instead, we shed light on the extent to which managers' engage in statistical discrimination by examining how managers' firm tenure affects training investments. Tenure is relevant because managers' ability to evaluate an individual's productivity is expected to increase – making them less reliant on statistical discrimination – the more experience they have (Altonji and Pierret, 2001; Lange, 2007; Arcidiacono *et al.*, 2010; Bordón and Braga, 2020).

Given this, we investigate the role of manager tenure in training decisions by splitting our sample of managers into those with above and below median tenure. We find that female managers with less tenure tend to offer less training to young women than to young men, however, the effect is not significant at conventional levels (see Figure 5a). In all other cases, they have a general tendency to make more training offers to women. Less experienced male managers also tend to offer more training to women – even when those women are young. These effects are generally not significant, however. The exception is that male managers with lower firm tenure offer significantly more training to women: i) at age 55 (13.5 percentage points); ii) at all competency levels (14.2 to 18.6 percentage points); and iii) irrespective or whether training is firm-specific or (partly) transferable training (12.1 to 15.6 percentage points). Male managers that have above median firm tenure do not appear to have strong preferences for the gender of

the candidates they offer to train. Taken together, these results provide suggestive evidence that female managers with less firm experience behave in a way that is consistent with traditional models of statistical discrimination against women in child-bearing ages (see e.g. England, 2005). Inexperienced male manages, in contrast, appear to be generally more likely to offer training to women rather than men.

[Insert Figure 5 here]

Risk Preferences Like the many other strategic decisions they make, managers' decisions to invest in training can be modeled as an inter-temporal choice made under uncertainty. Using the same discrete choice experiment that we rely on here, Caliendo *et al.* (2024) show that managers' risk preferences are most directly related to the attributes of training scenarios that are most directly linked to turnover risk (in particular, training transferability). Our results in Figure 5b do not reveal any clear pattern regarding risk aversion of managers, all estimated gender gaps in marginal effects are insignificant for both male and female managers and independent of risk aversion/affinity. If anything, risk-averse female managers have a tendency to prefer female training candidates and risk-affine male managers are slightly more likely to offer partly or fully transferable training to female candidates than risk-averse male managers.

7 Conclusion

The success of the training system in maintaining competitiveness, promoting a culture of life-long learning, and supporting social equity goals rests on the decisions of both the employers who provide the training opportunities and the employees who take them up. While there is ample evidence that men and women often do not participate in training at the same rate, we do not fully understand whether this stems from gender differences in workers' willingness to undertake training or from gender disparities in the training offered to them. Virtually all existing studies analyze training participation without separately identifying demand- and supply-side factors. We make an important contribution in closing this gap. Using a vignette experiment embedded in a representative survey of German firm managers, we are the first to provide causal evidence on the way that candidate and manager gender affect the supply of on-the-job training offers.

Our key finding is that young women face hurdles in accessing training when they are supervised by female managers operating in competitive product markets, male-dominated industries, and firms without collective bargaining agreements. In general and in many other contexts, however, women across the age spectrum are more likely than men to be offered training. Female managers offer more training to women if the firm is facing a less competitive product market,

in a female-dominated industry, has a lower gender wage gap, and is covered by a collective bargaining agreement. Male managers are in general less sensitive to their operating environment when making decisions about whether to train women or men. Interestingly, there is no evidence that disparities in the risk attitudes and tenure of male and female managers provide an explanation for the gender pattern in training offers that we observe.

These findings lead us to several conclusions. The apparent tendency of some employees to under-invest in training partly reflects firm-level decisions to offer more training opportunities to certain types of workers than to others. The fact that women receive fewer opportunities to invest in training early in their careers – just as they are also establishing families – provides one potential mechanism through which motherhood may have lasting impacts on women's career trajectories. Efforts to use targeted subsidies and other training incentives to increase training among women and other under-represented groups need to be sensitive to firms' – and managers' – motivations for offering training.

Our finding that it is female managers who are most likely to prefer young men over young women when offering training is consistent with other research showing that women sometimes evaluate other women more harshly (Bagues and Esteve-Volart, 2010; Bagues *et al.*, 2017; Bertrand *et al.*, 2019; Arceo-Gomez and Campos-Vazquez, 2022; Brown, 2022). Increasing the share of women in senior decision-making roles has been linked to an increase in the support that junior women receive (Ehrenberg *et al.*, 2012; Kurtulus and Tomaskovic-Devey, 2012; De Paola and Scoppa, 2015; Kunze and Miller, 2017; Bossler *et al.*, 2020), however, we should not assume that this is a panacea. While we can only speculate about what motivates individual managers' decisions, our results are consistent with young women experiencing statistical discrimination at the hands of their female managers. To the extent this is true, a broader range of strategies – most likely tied to eliminating the motherhood penalty – may be necessary to make substantive gains in further reducing gender disparities in labor market outcomes.

It is also clear that the firm context matters. Our research demonstrates that human resource managers and CEOs are sensitive to the potential for worker turnover to undermine the training investments they make. Gender gaps in training opportunities do not exist everywhere, but are more likely to emerge in competitive markets, male-dominated industries, and firms without collective bargaining agreements. Designing contracts that impose penalties on premature quitting and reduce the incentives for poaching by other firms may be effective strategies for increasing firms' training investments. Female managers appear to face institutional or cultural constraints in supporting young women when operating in male-dominated settings – possibly due to organizational pressures or gendered expectations. Establishing equal access to career opportunities

as an explicit organizational goal, for example through collective bargaining agreements, may be necessary. More broadly, institutional reforms – e.g., around parental leave, turnover costs, and poaching incentives – may be needed to support substantive equality in training access.

Future research investigating the reasons that male and female managers choose to make different training investments – despite facing the same decision context – would be particularly valuable. Training investments are risky and one possibility is that male and female managers form different expectations about the return to training and the way it varies by the gender and other characteristics of training candidates. Alternatively, female managers may be constrained in supporting other women when they operate in non-traditional, highly competitive and male-dominated environments. Either way, understanding the factors that lead male and female managers to make different training choices is important given their crucial role in allocating development opportunities to employees.

Finally, organizational performance is closely linked to management practices, including those of individual managers (Bertrand and Schoar, 2003). It is an open question whether the key role of manager gender in training investments that we have identified here extends to other investment decisions, or, indeed, to other managerial decisions more generally. Answering this question would be useful in shining a light on the mechanisms through which managers influence organizational outcomes.

References

Albert, C., García-Serrano, C. and Hernanz, V. (2010). On-the-job training in Europe: Determinants and wage returns. *International Labour Review*, **149** (3), 315–341.

Altonji, J. G. and Pierret, C. R. (2001). Employer learning and statistical discrimination. *The Quarterly Journal of Economics*, **116** (1), 313–350.

Arceo-Gomez, E. O. and Campos-Vazquez, R. M. (2022). Gender bias in evaluation processes. *Economics of Education Review*, **89**, 102272.

Arcidiacono, P., Bayer, P. and Hizmo, A. (2010). Beyond signaling and human capital: Education and the revelation of ability. *American Economic Journal: Applied Economics*, **2** (4), 76–104.

Azmat, G., Cuñat, V. and Henry, E. (2024). Gender promotion gaps and career aspirations. *Management Science*, **71** (3), 2127–2141.

Baert, S., Pauw, A.-S. D. and Deschacht, N. (2016). Do employer preferences contribute to sticky floors? *ILR Review*, **69** (3), 714–736.

Bagues, M. and Esteve-Volart, B. (2010). Can gender parity break the glass ceiling? Evidence from a repeated randomized experiment. *Review of Economic Studies*, **77** (4), 1301–1328.

—, Sylos-Labini, M. and Zinovyeva, N. (2017). Does the gender composition of scientific committees matter? *American Economic Review*, **107** (4), 1207–38.

Baker, M., Halberstam, Y., Kroft, K., Mas, A. and Messacar, D. (2023). Pay transparency and the gender gap. *American Economic Journal: Applied Economics*, **15** (2), 157–83.

Bandiera, O., Prat, A., Hansen, S. and Sadun, R. (2020). CEO behavior and firm performance. *Journal of Political Economy*, **128** (4), 1325–1369.

Barrett, A. and O'Connell, P. (2001). Does training generally work? The returns to in-company training. *ILR Review*, **54** (3), 647–662.

Barron, J. M., Black, D. A. and Loewenstein, M. A. (1993). Gender differences in training, capital, and wages. *The Journal of Human Resources*, **28** (2), 343–364.

Bartel, A. P. (1995). Training, wage growth, and job performance: Evidence from a company database. *Journal of Labor Economics*, **13** (3), 401–25.

Bassanini, A., Booth, A., Brunello, G., Paola, M. D. and Leuven, E. (2007). Workplace training in Europe. In G. Brunello, P. Garibaldi and E. Wasmer (eds.), *Education and Training in Europe*, Oxford: Oxford University Press.

Becker, G. (1957). *The Economics of Discrimination*. University of Chicago Press.

Becker, G. S. (1962). Investment in human capital: A theoretical analysis. *Journal of Political Economy*, **70** (5, Part 2), 9–49.

Beham, B., Baierl, A. and and, S. P. (2015). Managerial telework allowance decisions - a vignette study among german managers. *The International Journal of Human Resource Management*, **26** (11), 1385–1406.

Bender, S., Bloom, N., Card, D., Reenen, J. V. and Wolter, S. (2018). Management practices, workforce selection, and productivity. *Journal of Labor Economics*, **36** (S1), S371–S409.

Bennedsen, M., Simintzi, E., Tsoutsoura, M. and Wolfenzon, D. (2022). Do firms respond to gender pay gap transparency? *Journal of Finance*, **77** (4), 2051–2091.

Benson, A., Li, D. and Shue, K. (2022). "Potential" and the gender promotion gap. *Working Paper*.

Bertrand, M., Black, S., Jensen, S. and Lleras-Muney, A. (2019). Breaking the glass ceiling? The effect of board quotas on female labour market outcomes in Norway. *Review of Economic Studies*, **86** (1), 191–239.

—, Goldin, C. and Katz, L. F. (2010). Dynamics of the gender gap for young professionals in the financial and corporate sectors. *American Economic Journal: Applied Economics*, **2** (3), 228–55.

— and Schoar, A. (2003). Managing with style: The effect of managers on firm policies. *The*

Quarterly Journal of Economics, **118** (4), 1169–1208.

Bhat, C. R. (2001). Quasi-random maximum simulated likelihood estimation of the mixed multinomial logit model. *Transportation Research Part B: Methodological*, **35** (7), 677–693.

— (2003). Simulation estimation of mixed discrete choice models using randomised and scrambled halton sequences. *Transportation Research Part B: Methodological*, **37** (9), 837–855.

Biasi, B. and Sarsons, H. (2022). Flexible wages, bargaining, and the gender gap. *The Quarterly Journal of Economics*, **137** (1), 215–266.

Blau, F. D. and Kahn, L. M. (1996). Wage structure and gender earnings differentials: An international comparison. *Economica*, **63** (250), S29–S62.

— and — (2017). The gender wage gap: Extent, trends, and explanations. *Journal of Economic Literature*, **55** (3), 789–865.

— and Lynch, L. M. (2024). Fifty years of breakthroughs and barriers: Women in economics, policy, and leadership. *The ANNALS of the American Academy of Political and Social Science*, **711** (1), 225–244.

Bloom, N. and Van Reenen, J. (2010). Why do management practices differ across firms and countries? *Journal of Economic Perspectives*, **24** (1), 203–24.

Bordón, P. and Braga, B. (2020). Employer learning, statistical discrimination and university prestige. *Economics of Education Review*, **77**, 101995.

Bossler, M., Mosthaf, A. and Schank, T. (2020). Are female managers more likely to hire more female managers? Evidence from Germany. *ILR Review*, **73** (3), 676–704.

Brown, C. (2022). Understanding gender discrimination by managers. *Working Paper*.

Bruns, B. (2019). Changes in workplace heterogeneity and how they widen the gender wage gap. *American Economic Journal: Applied Economics*, **11** (2), 74–113.

Buers, C., Karpinska, K. and Schippers, J. (2018). Managers' retention decisions regarding young intermediate-level educated employees. *International Journal of Manpower*, **39** (2), 254–268.

Caliendo, M., Cobb-Clark, D., Obst, C., Seitz, H. and Uhlendorff, A. (2022). Locus of control and investment in training. *Journal of Human Resources*, **57** (4), 1311–1349.

—, —, — and Uhlendorff, A. (2023). Risk preferences and training investments. *Journal of Economic Behavior and Organization*, **205**, 668–686.

—, Cobb-Clark, D. A., Pfeifer, H., Uhlendorff, A. and Wehner, C. (2024). Managers' risk preferences and firm training investments. *European Economic Review*, **161**, 104616.

Card, D., Devicienti, F., Rossi, M. and Weber, A. (2025). *The gender gap in career trajectories: Do firms matter?* IZA Discussion Paper 17860, Bonn, Germany.

Casarico, A. and Lattanzio, S. (2024). What firms do: Gender inequality in linked employer-employee data. *Journal of Labor Economics*, **42** (2), 325–355.

Chakraborty, P. and Serra, D. (2023). Gender and leadership in organisations: The threat of backlash. *The Economic Journal*, **134** (660), 1401–1430.

Commission, E. (2016). EU skills agenda for sustainable competitiveness, social fairness and resilience. Accessed: 2025-02-28.

Corradini, V., Lagos, L. and Sharma, G. (2025). Collective bargaining for women: How unions can create female-friendly jobs. *The Quarterly Journal of Economics, forthcoming*.

Cortes, P. and Pan, J. (2023). Children and the Remaining Gender Gaps in the Labor Market. *Journal of Economic Literature*, **61** (4), 1359–1409.

Cruz, G. and Rau, T. (2022). The effects of equal pay laws on firm pay premiums: Evidence from Chile. *Labour Economics*, **75**, 102135.

Daemmrich, J., Kosyakova, Y. and Blossfeld, H.-P. (2015). Gender and job-related non-formal training: A comparison of 20 countries. *International Journal of Comparative Sociology*, **56** (6), 433–459.

De Grip, A. and Sauermann, J. (2012). The effects of training on own and co-worker productivity: Evidence from a field experiment. *The Economic Journal*, **122** (560), 376–399.

De Paola, M. and Scoppa, V. (2015). Gender discrimination and evaluators' gender: Evidence

from Italian academia. *Economica*, **82** (325), 162–188.

Derks, B., Van Laar, C. and Ellemers, N. (2016). The queen bee phenomenon: Why women leaders distance themselves from junior women. *The Leadership Quarterly*, **27** (3), 456–469, special Issue: Gender and Leadership.

Dietrich, H., Alda, H., Pfeifer, H., Wenzelmann, F., Schönfeld, G., Schiel, S. and Seth, S. (2014). Linked employer-employee data on firms' training costs: Enriching register-based lee data with firm level data on apprenticeship training. *Schmollers Jahrbuch: Journal of Applied Social Science Studies*, **134** (2), 237–248.

Dodini, S. and Willén, A. (2025). *The power to discriminate*. IZA Discussion Paper 17830, Bonn, Germany.

Ehrenberg, R. G., Jakubson, G. H., Martin, M. L., Main, J. B. and Eisenberg, T. (2012). Diversifying the faculty across gender lines: Do trustees and administrators matter? *Economics of Education Review*, **31** (1), 9–18.

Ellemers, N., Heuvel, H., de Gilder, D., Maass, A. and Bonvini, A. (2004). The underrepresentation of women in science: Differential commitment or the queen bee syndrome? *British Journal of Social Psychology*, **43** (3), 315–338.

England, P. (2005). Gender inequality in labour markets: The role of motherhood and segregation. *Social Politics: International Studies in Gender, State & Society*, **12** (2), 264–288.

Eriksson, T. and Kristensen, N. (2014). Wages or fringes? Some evidence on trade-offs and sorting. *Journal of Labor Economics*, **32** (4), 899 – 928.

Faniko, K., Ellemers, N. and Derks, B. (2016). Queen bees and alpha males: Are successful women more competitive than successful men? *European Journal of Social Psychology*, **46** (7), 903–913.

—, —, — and Lorenzi-Cioldi, F. (2017). Nothing changes, really: Why women who break through the glass ceiling end up reinforcing it. *Personality and Social Psychology Bulletin*, **43** (5), 638–651.

Fenizia, A. (2022). Managers and productivity in the public sector. *Econometrica*, **90** (3), 1063–1084.

Fitzenberger, B. and Muehler, G. (2015). Dips and floors in workplace training: Gender differences and supervisors. **62** (4), 400–429.

Fleischmann, M. and Koster, F. (2018). Older workers and employer-provided training in the netherlands: a vignette study. *Ageing and Society*, **38** (10), 1995–2018.

Gallen, Y. (2024). Motherhood and the gender productivity gap. *Journal of the European Economic Association*, **22** (3), 1055–1096.

Georgellis, Y. and Lange, T. (2007). Participation in continuous, on-the-job training and the impact on job satisfaction: Longitudinal evidence from the German labour market. *The International Journal of Human Resource Management*, **18** (6), 969–985.

Gmür, M. (2006). The gendered stereotype of the 'good manager' sex role expectations towards male and female managers. *Management Revue*, **17** (2), 104–121.

Gneezy, U., Niederle, M. and Rustichini, A. (2003). Performance in competitive environments: Gender differences. *The Quarterly Journal of Economics*, **118** (3), 1049–1074.

Haan, P. and Uhlendorff, A. (2006). Estimation of multinomial logit models with unobserved heterogeneity using maximum simulated likelihood. *The Stata Journal*, **6** (2), 229–245.

Haegele, I. (2022). *Talent hoarding in organizations*. arxiv:2206.15098v2.

Haelermans, C. and Borghans, L. (2012). Wage effects of on-the-job training: A meta-analysis. *British Journal of Industrial Relations*, **50** (3), 502–528.

Hainmueller, J., Hangartner, D. and Yamamoto, T. (2015). Validating vignette and conjoint survey experiments against real-world behavior. *Proceedings of the National Academy of Sciences*, **112** (8), 2395–2400.

Hole, A. R. (2007). Fitting mixed logit models by using maximum simulated likelihood. *The Stata Journal*, **7** (3), 388–401.

Huber, J. and Zwerina, K. (1996). The importance of utility balance in efficient choice designs. *Journal of Marketing Research*, **33** (3), 307–317.

Humburg, M. and van der Velden, R. (2015). Skills and the graduate recruitment process: Evidence from two discrete choice experiments. *Economics of Education Review*, **49**, 24–41.

Hummels, D., Munch, J. R., Skipper, L. and Xiang, C. (2012). Offshoring, transition, and training: Evidence from Danish matched worker-firm data. *American Economic Review*, **102** (3), 424–428.

International Labour Organization (2008). *Conclusions on skills for improved productivity, employment growth and development*. Report for the International Labor Conference, ILO, Geneva.

Karpinska, K., Henkens, K. and Schippers, J. (2015a). The recruitment of early retirees: A vignette study of the factors that affect managers' decisions. *Ageing & Society*, **31**, 570–589.

—, —, — and Wang, M. (2015b). Training opportunities for older workers in the netherlands: A vignette study. *Research in Social Stratification and Mobility*, **41**, 105–114.

Kleven, H., Landais, C. and Søgaard, J. E. (2019). Children and gender inequality: Evidence from Denmark. *American Economic Journal: Applied Economics*, **11** (4), 181–209.

Kolenikov, S. (2012). Scrambled Halton sequences in Mata. *The Stata Journal*, **12** (1), 29–44.

Kritikos, A. S., Maliranta, M., Nippala, V. and Nurmi, S. (2024). Does gender of firm ownership matter? female entrepreneurs and the gender pay gap. *Journal of Population Economics*, **37** (52).

Kuebler, D., Schmid, J. and Stueber, R. (2018). Gender discrimination in hiring across occupations: a nationally-representative vignette study. *Labour Economics*, **55** (C), 215–229.

Kunze, A. and Miller, A. R. (2017). Women helping women? Evidence from private sector data on workplace hierarchies. *The Review of Economics and Statistics*, **99** (5), 769–775.

Kurtulus, F. A. and Tomaskovic-Devey, D. (2012). Do female top managers help women to advance? A panel study using eeo-1 records. *The ANNALS of the American Academy of Political and Social Science*, **639** (1), 173–197.

Lange, F. (2007). The speed of employer learning. *Journal of Labor Economics*, **25** (1), 1–35.

Lazear, E. P., Shaw, K. L. and Stanton, C. T. (2015). The value of bosses. *Journal of Labor Economics*, **33** (4), 823–861.

Li, J., Dostie, B. and Simard-Duplain, G. (2023). Firm pay policies and the gender earnings gap: The mediating role of marital and family status. *ILR Review*, **76** (1), 160–188.

Lynch, L. and Black, S. (1998). Beyond the incidence of employer-provided training. *ILR Review*, **52** (1), 64–81.

Lynch, L. M. (1992). Private-sector training and the earnings of young workers. *The American Economic Review*, **82** (1), 299–312.

Maestas, N., Mullen, K. J., Powell, D., von Wachter, T. and Wenger, J. B. (2023). The value of working conditions in the United States and the implications for the structure of wages. *American Economic Review*, **113** (7), 2007–47.

Maida, A. and Weber, A. (2022). Female leadership and gender gap within firms: Evidence from an italian board reform. *ILR Review*, **75** (2), 488–515.

Manning, A. and Swaffield, J. (2008). The gender gap in early-career wage growth. *The Economic Journal*, **118** (530), 983–1024.

Markowsky, E. and Beblo, M. (2022). When do we observe a gender gap in competition entry? A meta-analysis of the experimental literature. *Journal of Economic Behavior & Organization*, **198**, 139–163.

Martins, P. (2021). Employee training and firm performance: Evidence from esf grant applications. *Labour Economics*, **72**, 102056.

Matsa, D. A. and Miller, A. R. (2013). A female style in corporate leadership? Evidence from quotas. *American Economic Journal: Applied Economics*, **5** (3), 136–169.

Maximiano, S. (2016). Two to tango: The determinants of workers' and firms' willingness to participate in job-related training. *Working Paper*.

Melero, E. (2010). Training and promotion: Allocation of skills or incentives? *Industrial Relations: A Journal of Economy and Society*, **49** (4), 640–667.

Mulders, J. O., Dalen, H., Henkens, K. and Schippers, J. (2014). How Likely are Em-

ployers to Rehire Older Workers After Mandatory Retirement? A Vignette Study Among Managers. *De Economist*, **162** (4), 415–431.

Niederle, M. and Vesterlund, L. (2007). Do women shy away from competition? Do men compete too much? *The Quarterly Journal of Economics*, **122** (3), 1067–1101.

O'Halloran, P. L. (2008). Gender differences in formal on-the-job training: Incidence, duration, and intensity. *LABOUR*, **22** (4), 629–659.

Olivetti, C., Pan, J. and Petrongolo, B. (2024). Chapter 8 - the evolution of gender in the labor market. *Handbook of Labor Economics*, vol. 5, Elsevier, pp. 619–677.

Oosterbeek, H. (1996). A decomposition of training probabilities. *Applied Economics*, **28** (7), 799–805.

Petit, P. (2007). The effects of age and family constraints on gender hiring discrimination: A field experiment in the french financial sector. *Labour Economics*, **14**, 371–391.

Poulissen, D., De Grip, A., Fouarge, D. and Künn-Nelen, A. (2023). Employers' willingness to invest in the training of temporary versus permanent workers: A discrete choice experiment. *Labour Economics*, **84**, 102430.

Powell, G. N., Butterfield, D. A. and Parent, J. D. (2002). Gender and managerial stereotypes: Have the times changed? *Journal of Management*, **28** (2), 177–193.

Puhani, P. and Sonderhof, K. (2011). The effects of parental leave extension on training for young women. *Journal of Population Economics*, **24** (2), 731–760.

Revelt, D. and Train, K. (1998). Mixed logit with repeated choices: households' choices of appliance efficiency level. *The Review of Economics and Statistics*, **80** (4), 647–657.

Ronchi, M. and Smith, N. (2024). Daddy's girl: Daughters, managerial decisions, and gender inequality. *Working Paper*.

Schoar, A., Yeung, K. and Zuo, L. (2023). The effect of managers on systematic risk. *Management Science*, **70** (2), 815–833.

Schönfeld, G., Wenzelmann, F., Pfeifer, H., Risius, P. and Wehner, C. (2020). *Ausbildung in Deutschland – eine Investition gegen den Fachkräftemangel. Ergebnisse der BIBB-Kosten-Nutzen-Erhebung 2017/18*. Bibb report 1/2020, BIBB.

Tannenbaum, S. I. (1997). Enhancing continuous learning: Diagnostic findings from multiple companies. *Human Resource Management*, **36** (4), 437–452.

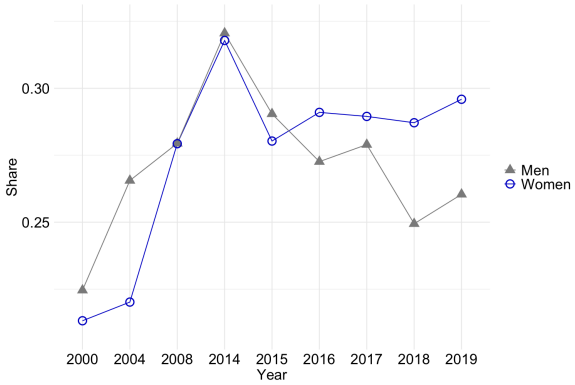
Train, K. (1999). *Halton Sequence for Mixed Logit*. Working paper, Department of Economics, UC Berkeley.

— (2009). *Discrete Choice Methods with Simulation*. Cambridge University Press.

Figures and Tables

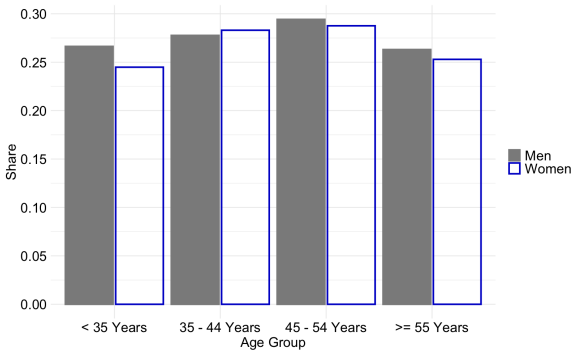
Figure 1: On-The-Job Training Incidence by Gender Based on the SOEP

(a) Training Incidence Over Time by Gender



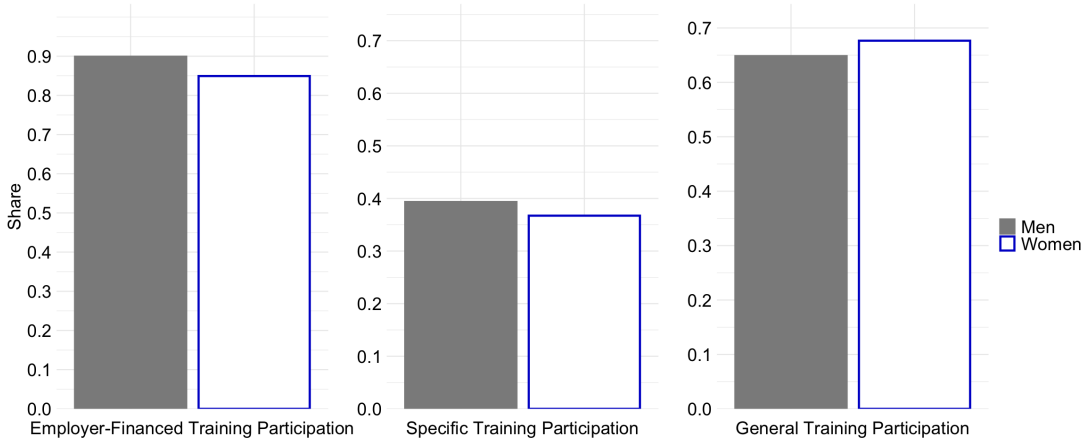
Notes: The figure shows the share of women (blue) and the share of men (gray) that participated in any type of training by year.

(b) Training Incidence Over Age by Gender



Notes: The figure shows the share of female training participants (blue) and the share of male training participants (gray) by age groups.

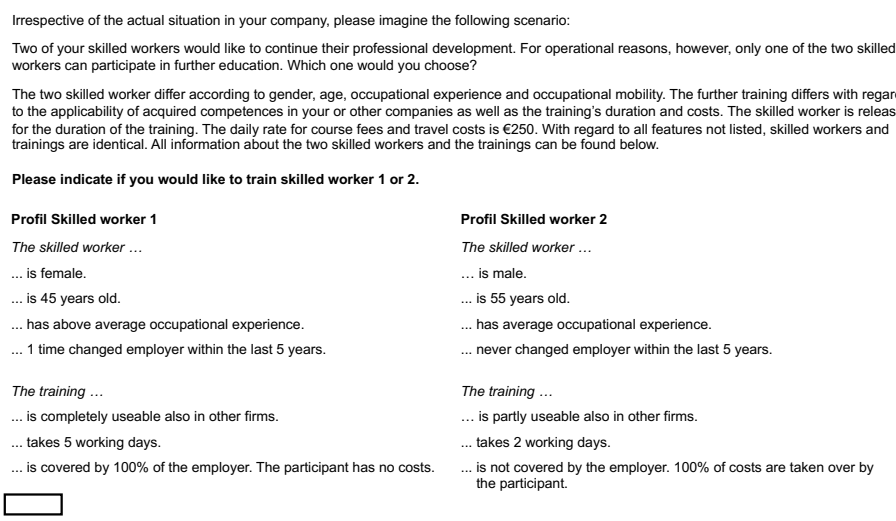
(c) Training Incidence Over Financing and Training Type by Gender



Notes: The figure shows the share of women (blue) and the share of men (gray) that took part in (1) employer-financed training, (2) specific training, or (3) general training.

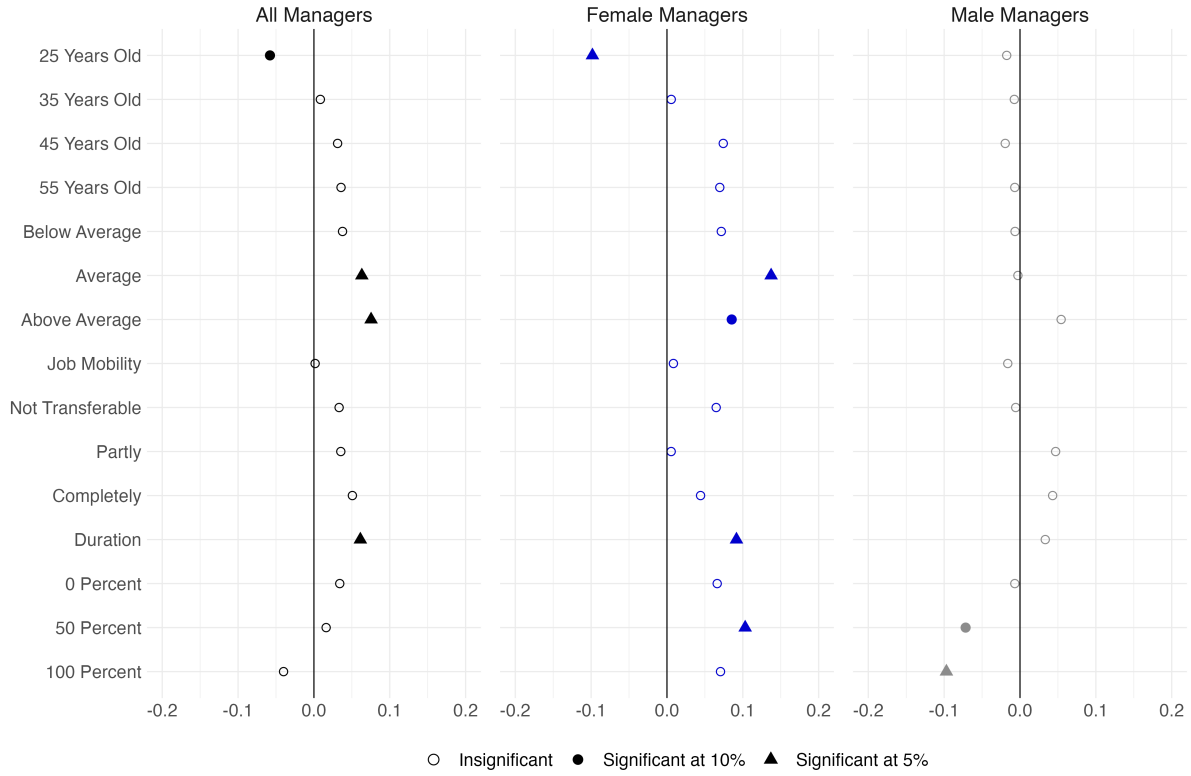
Source: Socio-Economic Panel (SOEP), version 36, years 2000-2019. Own calculations.

Figure 2: Example of the Discrete-Choice Experiment on Training Decisions



Notes: The figure displays an example of the choice set-up that is presented to each respondent, who has to decide between two different hypothetical training candidates in different training scenarios. Each of the two candidates is characterized by four attributes (gender, age, occupational expertise and previous job mobility). The training scenario is characterized by three attributes (transferability, duration and cost sharing agreement). Each respondent is confronted with six of such decisions between two alternative worker/training combinations, each characterized by seven attributes in total.

Figure 3: Gender Gap in Marginal Effects for All, Female and Male Managers

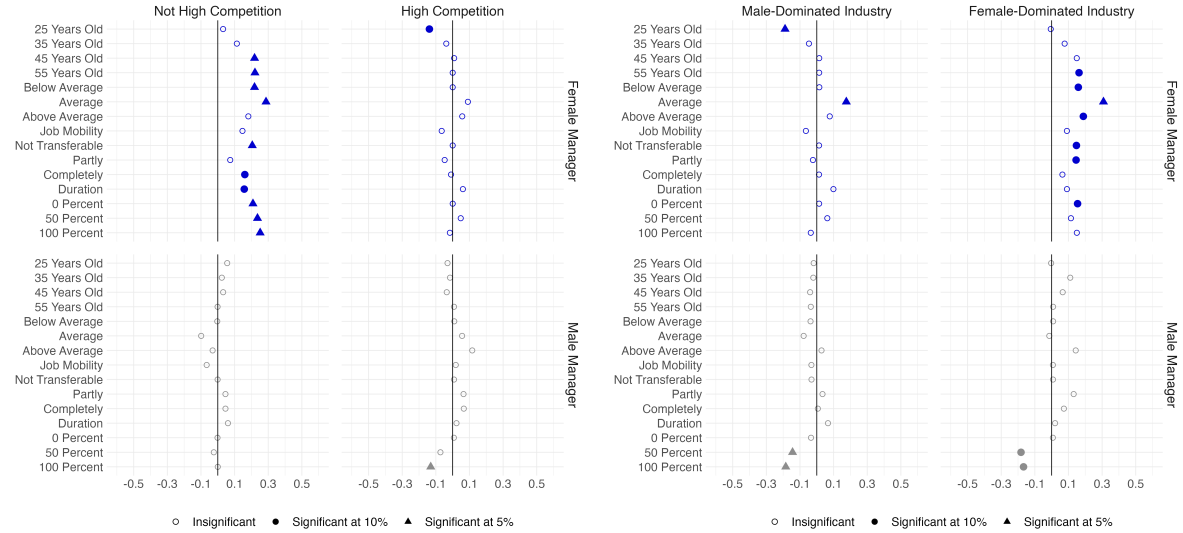


Source: BIBB-CBS 2017/18. Own calculations.
Notes: The displayed values represent the differences in average marginal effects between male and female training candidates. A negative value indicates that male training candidates are preferred over female candidates regarding the corresponding vignette characteristic. The estimates are based on the mixed logit models, interacted with the gender of the training candidate (see the parameter estimates in column (4) of Table 4 for all managers and in columns (2) and (4) of Table A.5 for male and female managers. The marginal effects can be found in Table 6.)

Figure 4: Gender Gap in Marginal Effects by Gender of the Manager: Different Sub-Samples (1)

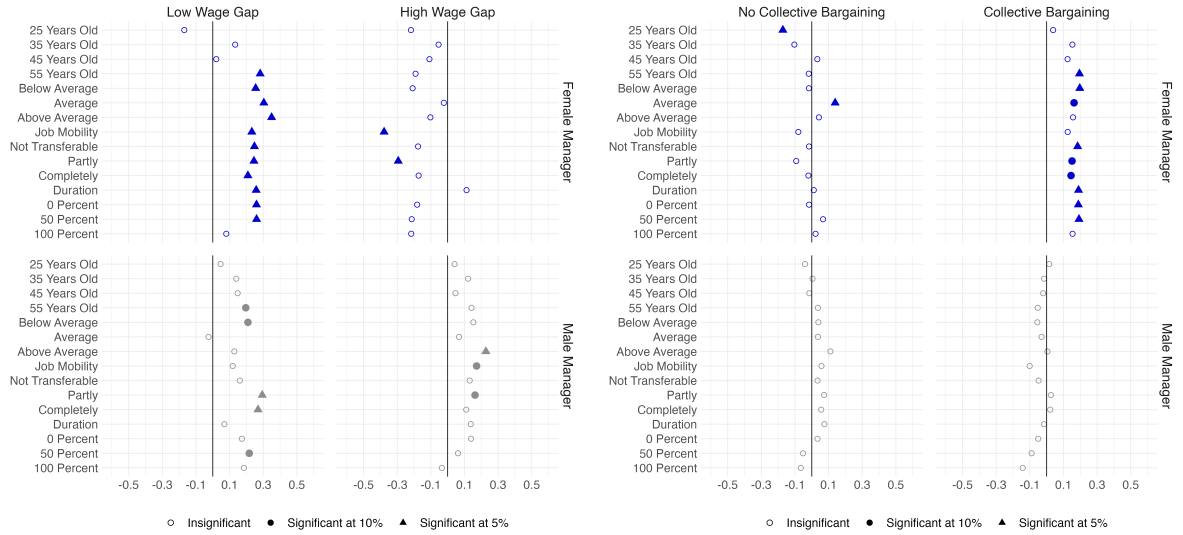
(a) Product Market Competition

(b) Female- and Male-Dominated Industries



(c) Gender Wage Gap

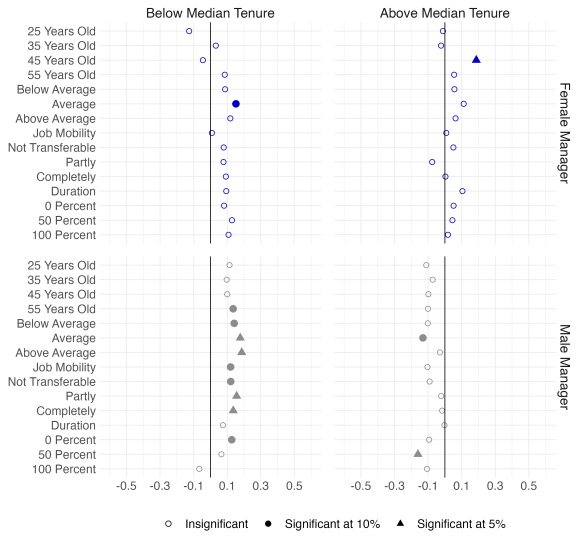
(d) Collective Bargaining



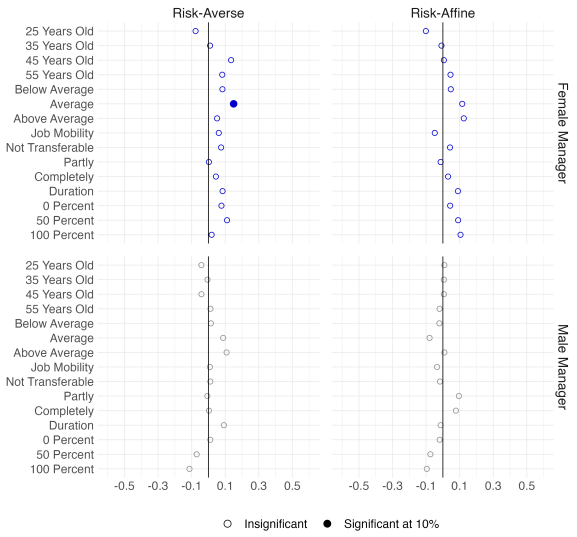
Source: BIBB-CBS 2017/18. Own calculations.
Notes: The figure displays differences in average marginal effects for female and male managers by different sub-samples. Figure (a) splits by whether or not the firm operates in a highly competitive environment (yes/no), Figure (b) by male- and female dominated industries, Figure (c) by the gender wage gap in the firm (below/above median), and Figure (d) by whether or not there is a collective bargaining agreement (no/yes). The full table of marginal effects can be found in Table A.6.

Figure 5: Gender Gap in Marginal Effects by Gender of the Manager: Different Sub-Samples (2)

(a) Tenure of the Manager



(b) Risk Preferences



Source: BIBB-CBS 2017/18. Own calculations.
Notes: The figure displays differences in average marginal effects for female and male managers by different sub-samples. Figure (a) splits by tenure of the manager (below/above median), Figure (b) by whether the manager is risk-averse or risk-affine. The full tables of marginal effects can be found in Table A.7.

Table 1: On-The-Job Training Participation – Conditional Gender Differences Based on the SOEP

	Logit – Marginal Effects		
	(1)	(2)	(3)
A. Training Participation – Conditional Gender Difference			
	2000-2008	2014-2019	2000-2019
Female	-0.014	0.017**	0.009
	(0.009)	(0.008)	(0.007)
Controls	yes	yes	yes
Number of Observations	16,538	36,131	52,669
B. Training Participation – Age Heterogeneity			
	2000-2008	2014-2019	2000-2019
Interaction with Female by:			
Age			
<35 Years	-0.036**	-0.006	-0.016
	(0.015)	(0.016)	(0.011)
35-44 Years	-0.013	0.005	-0.001
	(0.013)	(0.013)	(0.010)
45-54 Years	0.008	0.022*	0.019**
	(0.014)	(0.012)	(0.010)
≥ 55 Years	-0.030	0.050***	0.035***
	(0.022)	(0.017)	(0.014)
Controls	yes	yes	yes
Number of Observations	16,538	36,131	52,669
C. Training Participation – Financing Heterogeneity			
	Employer-Financed	Self-Financed	
Female	-0.037***	0.042***	
	(0.012)	(0.014)	
Controls	yes	yes	
Number of Observations	6,109	6,109	
D. Training Participation – Training Type Heterogeneity			
	General	Specific	
Female	0.019	-0.013*	
	(0.019)	(0.008)	
Controls	yes	yes	
Number of Observations	4,351	4,351	

Source: Socio-Economic Panel (SOEP), version 36. Own calculations.
Notes: The table displays average marginal effects of logit estimations. The dependent variables are training participation (yes/no) in Panels A and B, employer-financed and self-financed training participation (yes/no) in Panel C, and general and specific training participation (yes/no) in Panel D. Control variables include socio-demographics, labor market history, firm and occupation characteristics and personality traits, as well as regional characteristics and yearly dummy variables. See Table B.1 for the full list of controls. The estimates in Panel B are based on a logit estimation, without a constant and not including the female dummy variable. That way the interacted coefficients directly report the marginal effects for women.
***/**/* indicate statistical significance at the 1%/5%/10%-level.

Table 2: Selected Summary Statistics of the Managers and Firms

	Manager			
	All (1)	Female (2)	Male (3)	ttest (4)
Gender				
Male	0.57	0.00	1.00	.
Female	0.43	1.00	0.00	.
Firm Position				
Owner	0.35	0.19	0.48	0.00
CEO	0.13	0.10	0.16	0.00
Department Head	0.07	0.06	0.08	0.39
Head HR	0.17	0.29	0.09	0.00
Head Commerce	0.08	0.09	0.08	0.46
Head of Training	0.07	0.09	0.05	0.01
Other Position	0.11	0.18	0.07	0.00
Qualification				
No Vocational Training	0.01	0.00	0.01	0.31
Vocational Training	0.21	0.28	0.15	0.00
Advanced Voc Degree	0.35	0.28	0.40	0.00
Academic Degree	0.44	0.44	0.44	1.00
Firm Tenure in Years[a]	14.55	12.71	15.92	0.00
Risk-Affinity[a]	5.47	5.25	5.63	0.00
Number of Employees	88.25	102.70	77.41	0.07
Small Firm (1-49)	0.70	0.63	0.75	0.00
Large Firm (50+)	0.30	0.37	0.25	0.00
Training Firm	0.77	0.77	0.77	0.90
Share of[a]				
Un-/Semiskilled Workers	0.13	0.14	0.10	0.00
Workers with Apprenticeship	0.57	0.58	0.56	0.16
Workers with Training	0.14	0.15	0.13	0.21
Workers University degree	0.16	0.13	0.20	0.00
Work council	0.22	0.21	0.24	0.16
Collective bargaining	0.40	0.41	0.39	0.48
Export Oriented[a]	0.10	0.09	0.12	0.08
High Competition[a]	0.67	0.67	0.67	0.97
Share of Female Workers Above Median[b]	0.50	0.58	0.45	0.00
High Gender Wage Gap[b]	0.50	0.38	0.59	0.00
Number of Observations	1,144	490	654	1,144

Source: BIBB-CBS 2017/2018. Own calculations.
Notes: This table shows descriptive statistics about the participants of the vignette experiment. Column (1) reports the overall mean of each characteristic. Columns (2) and (3) provide the averages in all characteristics of all female and male respondents, respectively. In column (4) the p-values of the t-test on differences in means between female and male choices are reported.
[a] For these variables the number of observations is slightly lower due to item non-response.
[b] *Source:* BIBB-CBS 2017/18 + IEB data. The number of observations is lower, due to the data linkage.

Table 3: Proportional Frequencies and Choices Made

		Manager			
	Alternatives	All	Female	Male	ttest
	(1)	(2)	(3)	(4)	(5)
Gender					
Male	0.50	0.48	0.48	0.48	1.00
Female	0.50	0.52	0.52	0.52	1.00
Age					
25 Years Old	0.25	0.28	0.28	0.29	0.39
35 Years Old	0.25	0.28	0.28	0.28	0.46
45Years Old	0.25	0.25	0.25	0.25	0.83
55 Years Old	0.25	0.19	0.20	0.18	0.07
Professional Competency					
Below Average	0.33	0.26	0.26	0.26	0.70
Average Prof Competencies	0.33	0.34	0.35	0.33	0.08
Above Average	0.34	0.40	0.39	0.41	0.06
Job Mobility					
Never Changed Employer	0.33	0.41	0.41	0.41	1.00
1 Time Changed Employer	0.33	0.33	0.33	0.33	0.84
2 Times Changed Employer	0.34	0.26	0.26	0.26	0.84
Usability in other Firms					
Only Usable in Firm	0.32	0.37	0.37	0.37	0.65
Partly	0.34	0.32	0.32	0.32	0.66
Completely	0.34	0.31	0.31	0.31	0.97
Training Duration					
Takes 2 Working Days	0.34	0.37	0.38	0.36	0.04
Takes 5 Working Days	0.33	0.34	0.33	0.34	0.56
Takes 10 Working Days	0.33	0.29	0.28	0.30	0.14
Cost Coverage by the Employer					
0 Percent	0.34	0.35	0.36	0.34	0.12
50 Percent	0.33	0.34	0.34	0.33	0.35
100 Percent	0.33	0.32	0.30	0.33	0.01
Number of Observations	1,144	1,144	490	654	1,144

Source: BIBB-CBS 2017/2018. Own calculations.
Notes: This table shows descriptive statistics about the vignette attributes and choices. The proportional frequencies of the vignette attributes in the vignette experiment are shown in column (1) and the frequency each attribute was chosen by the participants in column (2). Columns (3) and (4) show how often each vignette attribute was chosen by female and male respondents, respectively. In column (5) the p-values of the t-test on differences in means between female and male choices are reported.

Table 4: Parameter Estimates for Logit and Mixed Logit Models

	Logit		Mixed Logit		Corr. Mixed Logit	
	Basic (1)	Interacted (2)	Basic (3)	Interacted (4)	Basic (5)	Interacted (6)
Mean:						
Female (ref. Male)	0.070**	0.189	0.078**	0.220	0.080	0.019
	(0.028)	(0.193)	(0.037)	(0.256)	(0.049)	(0.354)
Age (ref. 55 Years Old)						
25 Years Old	0.660***	0.769***	0.885***	1.062***	1.349***	1.616***
	(0.050)	(0.091)	(0.071)	(0.132)	(0.136)	(0.207)
35 Years Old	0.612***	0.628***	0.842***	0.876***	1.258***	1.377***
	(0.050)	(0.091)	(0.070)	(0.126)	(0.130)	(0.196)
45 Years Old	0.490***	0.406***	0.663***	0.615***	0.977***	0.997***
	(0.048)	(0.087)	(0.067)	(0.121)	(0.112)	(0.179)
Occupational Competency (ref. Below Average)						
Average	0.388***	0.325***	0.508***	0.412***	0.798***	0.701***
	(0.041)	(0.081)	(0.051)	(0.108)	(0.097)	(0.158)
Above Average	0.640***	0.540***	0.908***	0.769***	1.335***	1.187***
	(0.050)	(0.087)	(0.069)	(0.122)	(0.136)	(0.187)
Job Mobility	-0.344***	-0.300***	-0.486***	-0.433***	-0.702***	-0.676***
	(0.021)	(0.040)	(0.033)	(0.057)	(0.061)	(0.088)
Usability in other Firms (ref. Only Usable in Firm)						
Partly	-0.327***	-0.303***	-0.470***	-0.485***	-0.707***	-0.821***
	(0.037)	(0.079)	(0.052)	(0.109)	(0.088)	(0.161)
Completely	-0.398***	-0.449***	-0.543***	-0.635***	-0.757***	-0.886***
	(0.039)	(0.079)	(0.053)	(0.107)	(0.090)	(0.157)
Training Duration	-0.038***	-0.044***	-0.054***	-0.066***	-0.071***	-0.092***
	(0.005)	(0.011)	(0.007)	(0.014)	(0.011)	(0.021)
Cost Coverage by the Employer (ref. 0 Percent)						
50 Percent	0.006	0.062	0.024	0.091	-0.017	0.017
	(0.039)	(0.081)	(0.051)	(0.111)	(0.077)	(0.154)
100 Percent	-0.138***	-0.035	-0.200***	-0.043	-0.340***	-0.140
	(0.037)	(0.081)	(0.049)	(0.112)	(0.075)	(0.155)
Interaction with Female Candidate by:						
Age (ref. 55 Years Old)						
25 Years Old		-0.301**		-0.450**		-0.648**
		(0.147)		(0.200)		(0.276)
35 Years Old		-0.090		-0.166		-0.408
		(0.142)		(0.195)		(0.268)
45 Years Old		0.081		-0.025		-0.211
		(0.153)		(0.199)		(0.278)
Occupational Competency (ref. Below Average)						
Average		0.122		0.202		0.281
		(0.138)		(0.190)		(0.254)
Above Average		0.189		0.294		0.343
		(0.147)		(0.206)		(0.276)
Job Mobility		-0.109		-0.149		-0.072
		(0.070)		(0.095)		(0.123)
Usability in other Firms (ref. Only Usable in Firm)						
Partly		-0.045		0.003		0.291
		(0.134)		(0.184)		(0.245)
Completely		0.049		0.100		0.229
		(0.134)		(0.183)		(0.246)
Training Duration		0.013		0.023		0.043
		(0.020)		(0.025)		(0.037)
Cost Coverage by the Employer (ref. 0 Percent)						
50 Percent		-0.110		-0.116		-0.054
		(0.134)		(0.190)		(0.254)
100 Percent		-0.219		-0.348*		-0.430
		(0.146)		(0.198)		(0.264)
SD:						
Female (ref. Male)			0.429***	0.436***	0.021	0.082
			(0.086)	(0.087)	(0.097)	(0.129)
Age (ref. 55 Years Old)						
25 Years Old			0.504***	0.509***	1.309***	1.147***

			(0.153)	(0.156)	(0.203)	(0.210)
35 Years Old			-0.426**	-0.441**	1.141***	1.317***
			(0.176)	(0.177)	(0.195)	(0.208)
45 Years Old			0.344*	0.372**	1.115***	0.924***
			(0.186)	(0.182)	(0.198)	(0.207)
Occupational Competency (ref. Below Average)						
Average			-0.180	-0.195	1.402***	1.404***
			(0.165)	(0.167)	(0.162)	(0.162)
Above Average			1.191***	1.206***	2.476***	2.460***
			(0.088)	(0.090)	(0.209)	(0.207)
Job Mobility			0.412***	0.419***	0.632***	0.619***
			(0.053)	(0.053)	(0.084)	(0.080)
Usability in other Firms (ref. Only Usable in Firm)						
Partly			0.024	0.030	0.961***	0.929***
			(0.192)	(0.218)	(0.145)	(0.143)
Completely			0.230	0.238	1.042***	1.020***
			(0.197)	(0.196)	(0.162)	(0.157)
Training Duration			0.104***	0.107***	0.148***	0.147***
			(0.013)	(0.013)	(0.020)	(0.020)
Cost Coverage by the Employer (ref. 0 Percent)						
50 Percent			-0.333**	-0.343**	0.885***	0.896***
			(0.157)	(0.155)	(0.158)	(0.155)
100 Percent			-0.069	-0.067	0.873***	0.942***
			(0.216)	(0.211)	(0.162)	(0.157)
Number of Observations	13,494	13,494	13,494	13,494	13,494	13494
Log Likelihood	-4,154	-4,144	-4,052	-4,040	-3,933	-3,923

Source: BIBB-CBS 2017/2018. Own calculations.
Notes: This table shows the parameter estimates of the basic conditional logit estimation (column 1), of the basic mixed logit estimation (column 3) and the basic correlated mixed logit estimation (column 5). Further, the table reports the parameter estimates of the conditional logit and (correlated) mixed logit estimations, interacted with the gender (female = 1) of the potential training candidate in columns (2), (4) and (6). ***/**/* indicate statistical significance at the 1%/5%/10%-level. Estimation based on 300 scrambled Halton draws.

Table 5: Marginal Effects – Mixed Logit

	Marginal Effects			
	Conditional Logit		Mixed Logit	
	ME (1)	SE (2)	ME (3)	SE (4)
Female (ref. Male)	0.0164**	(0.0066)	0.0121**	(0.0059)
Age (ref. 55 Years Old)				
25 Years Old	0.1555***	(0.0115)	0.1409***	(0.0105)
35 Years Old	0.1442***	(0.0115)	0.1350***	(0.0102)
45 Years Old	0.1154***	(0.0112)	0.1072***	(0.0102)
Occupational Competency (ref. Below Average)				
Average	0.0914***	(0.0113)	0.0856***	(0.0079)
Above Average	0.1507***	(0.0095)	0.1389***	(0.0096)
Job Mobility	-0.0811***	(0.0047)	-0.0630***	(0.0039)
Usability in other Firms (ref. Only Usable in Firm)				
Partly	-0.0770***	(0.0091)	-0.0730***	(0.0081)
Completely	-0.0937***	(0.0086)	-0.0846***	(0.0078)
Training Duration	-0.0089	(0.0112)	-0.0276***	(0.0037)
Cost Coverage by the Employer (ref. 0 Percent)				
50 Percent	0.0014	(0.0087)	0.0035	(0.0077)
100 Percent	-0.0325***	(0.0092)	-0.0314***	(0.0075)
Number of Observations		13,494		13,494

Source: BIBB-CBS 2017/2018. Own calculations.
Notes: This table shows the marginal effects corresponding to the parameter estimates in Table 4 columns (1) and (3). ***/**/* indicate statistical significance at the 1%/5%/10%-level. Estimation based on 300 scrambled Halton draws.

Table 6: Gender Gap in Marginal Effects

	All Managers		Only Female Managers		Only Male Managers	
	ME (1)	SE (2)	ME (3)	SE (4)	ME (5)	SE (6)
Age						
25 Years Old	-0.0580*	(0.0341)	-0.0983**	(0.0493)	-0.0175	(0.0476)
35 Years Old	0.0085	(0.0307)	0.0056	(0.0527)	-0.0075	(0.0427)
45 Years Old	0.0312	(0.0308)	0.0742*	(0.0464)	-0.0195	(0.0445)
55 Years Old	0.0357	(0.0392)	0.0696	(0.0459)	-0.0069	(0.0443)
Occupational Competency						
Below Average	0.0377	(0.0305)	0.0716	(0.0454)	-0.0065	(0.0462)
Average	0.0631**	(0.0301)	0.1373***	(0.0491)	-0.0028	(0.0429)
Above Average	0.0753**	(0.0350)	0.0853*	(0.0415)	0.0542	(0.0505)
Job Mobility	0.0016	(0.0382)	0.0085	(0.0493)	-0.0161	(0.0408)
Usability in other Firms						
Only Usable in Firm	0.0332	(0.0363)	0.0649	(0.0485)	-0.0057	(0.0397)
Partly	0.0354	(0.0383)	0.0055	(0.0501)	0.0470	(0.0432)
Completely	0.0507	(0.0340)	0.0443	(0.0430)	0.0430	(0.0474)
Training Duration	0.0612**	(0.0251)	0.0916**	(0.0440)	0.0333	(0.0365)
Cost Coverage by the Employer						
0 Percent	0.0340	(0.0274)	0.0662	(0.0492)	-0.0069	(0.0411)
50 Percent	0.0161	(0.0314)	0.1031**	(0.0506)	-0.0717*	(0.0408)
100 Percent	-0.0400	(0.0329)	0.0706	(0.0470)	-0.0970***	(0.0453)
Number of Observations	13,494		5,812		7,682	

Source: BIBB-CBS 2017/2018. Own calculations.
Notes: This table shows the gender gap in marginal effects corresponding to the parameter estimates in Table 4, column (4) and Table A.5, columns (2) and (4). A negative value corresponds to a preference of male over female training candidates in the corresponding attribute. ***/**/* indicate statistical significance at the 1%/5%/10%-level. Estimation based on 300 scrambled Halton draws.

A Appendix

Table A.1: Possible Values of Vignette Attributes

Attribute	Attribute Values
	The skilled worker ...
Gender	(1) ... is male. (2) ... is female.
Age	(1) ... is 25 years old. (2) ... is 35 years old. (3) ... is 45 years old. (4) ... is 55 years old.
Occupational Experience	(1) ... has below average occupational experience. (2) ... has average occupational experience. (3) ... has above average occupational experience.
Occupational Mobility	(1) ... never changed employer within the last 5 years. (2) ... 1 time changed employer within the last 5 years. (3) ... 2 times changed employer within the last 5 years.
	The training ...
Content	(1) ... is only useable in your firm and not in other firms. (2) ... is partly useable also in other firms. (3) ... is completely useable also in other firms.
Duration	(1) ... takes 2 working days. (2) ... takes 5 working days. (3) ... takes 10 working days.
Cost Coverage	(1) ... is not covered by the employer. 100% of costs are taken over by the participant. (2) ... is covered by 50% of the employer. The participant takes over the remaining 50% of the costs. (3) ... is covered by 100% of the employer. The participant has no costs.

Notes: Overview of possible vignette attributes as implemented in BIBB-CBS 2017/18.

Table A.2: Summary Statistics of Managers and Firms

Variable Names	Mean (1)	SD (2)	Min (3)	Max (4)
Minutes				
Intro	1.23	1.95	0	32
Vignette 1	1.17	1.49	0	37
Vignette 2	0.58	0.61	0	16
Vignette 3	0.46	0.40	0	8
Vignette 4	0.41	0.29	0	3
Vignette 5	0.37	0.33	0	5
Vignette 6	0.36	0.28	0	4
Total	4.57	2.91	0	39
Gender				
Male	0.57	0.50	0	1
Female	0.43	0.50	0	1
Firm Position				
Owner	0.35	0.48	0	1
CEO	0.13	0.34	0	1
Department Head	0.07	0.26	0	1
Head HR	0.17	0.38	0	1
Head Commerce	0.08	0.28	0	1
Head of Training	0.07	0.25	0	1
Other Position	0.11	0.32	0	1
Qualification				
No Vocational Training	0.01	0.08	0	1
Vocational Training	0.21	0.40	0	1
Advanced Voc Degree	0.35	0.48	0	1
Academic Degree	0.44	0.50	0	1
Firm Tenure in Years	14.55	10.49	0	51
Risk-Affinity	5.47	2.15	0	10
Altruism	251.61	286.72	0	1,000
Reciprocity	6.20	1.19	1	7
Locus of Control	5.78	1.27	1	7
B5 Openness	5.12	1.02	2	7
B5 Conscientiousness	6.09	0.81	3	7
B5 Extraversion	5.17	1.14	1	7
B5 Agreeableness	5.60	0.89	3	7
B5 Emotional Stability	4.81	1.16	1	7
Firm's Training Decision				
Alone	0.30	0.46	0	1
Together	0.45	0.50	0	1
Suport	0.16	0.37	0	1
Not Involved	0.09	0.28	0	1
Training yes/no	0.77	0.42	0	1
Number of Employees	88.25	235.30	1	2,600
Firmsize				
Small	0.70	0.46	0	1
Large	0.30	0.46	0	1
Firmtype				
Autonomous Holding	0.64	0.48	0	1
Independent Operation	0.11	0.31	0	1
Coorperate Headquarter	0.07	0.26	0	1
Branch Office	0.09	0.29	0	1
Foundation	0.05	0.22	0	1
Something Different	0.05	0.21	0	1
Work Council	0.22	0.42	0	1
Collective Bargaining Coverage	0.40	0.49	0	1
Firm				
Export-oriented	0.10	0.31	0	1
High Competition	0.67	0.47	0	1
Labor Market Tightness	3.89	1.07	1	5
Training Cooperations	0.25	0.43	0	1
Profit Sharing	0.34	0.47	0	1
Flexible Working Hours	0.58	0.49	0	1
Firm's Utilized Capacity	88.93	14.04	0	100
Branch				
Agriculture	0.02	0.13	0	1
Mining	0.00	0.03	0	1
Manufacturing	0.08	0.27	0	1
Electricity	0.01	0.09	0	1
Water Supply	0.01	0.07	0	1
Construction	0.08	0.27	0	1
Wholesale, Retail Trade	0.16	0.37	0	1
Transportation	0.03	0.16	0	1
Accommodation Activities	0.07	0.25	0	1
Information Activities	0.04	0.19	0	1

Finance and Insurance	0.02	0.14	0	1
Real Estate Activities	0.02	0.13	0	1
Professional Activities	0.10	0.29	0	1
Administration	0.07	0.25	0	1
Public Administration	0.03	0.17	0	1
Education	0.02	0.12	0	1
Human Health, Social Work	0.12	0.32	0	1
Arts, Recreation	0.01	0.09	0	1
Other service	0.06	0.23	0	1
Other	0.08	0.28	0	1
Max. Number of Observations	1,144			

Source: BIBB-CBS 2017/2018. Own calculations.
Notes: This table shows descriptive statistics about individual and firm-level characteristics of the respondents in the vignette experiment. Column (1) shows the average, column (2) reports the the standard deviation, columns (3) and (4) provide the minimum and maximum.

Table A.3: Summary Statistics of Managers and Firms by Training Provision

	All Firms (1)	No Training in Firm (2)	Training in Firm (3)	ttest (4)
Manager Characteristics				
Gender				
Male	0.57	0.57	0.57	0.90
Female	0.43	0.43	0.43	0.90
Firm Position				
Owner	0.35	0.33	0.44	0.00
CEO	0.13	0.15	0.08	0.01
Department Head	0.07	0.08	0.04	0.03
Head HR	0.17	0.19	0.12	0.00
Head Commerce	0.08	0.05	0.20	0.00
Head of Training	0.07	0.07	0.05	0.12
Other Position	0.11	0.12	0.08	0.05
Qualification				
No Vocational Training	0.01	0.00	0.02	0.00
Vocational Training	0.21	0.19	0.25	0.04
Advanced Voc Degree	0.35	0.31	0.47	0.00
Academic Degree	0.44	0.49	0.26	0.00
Firm Tenure in Years	14.55	14.63	14.33	0.68
Risk-Affinity	5.47	5.47	5.44	0.83
Firm characteristics				
Number of Employees	88.25	104.51	34.94	0.00
Small (1-49)	0.70	0.66	0.80	0.00
Large (50+)	0.30	0.34	0.20	0.00
Share of				
Un/semi-skilled Workers	0.13	0.11	0.18	0.00
with Apprenticeship	0.57	0.59	0.53	0.01
with Further Training Degree	0.14	0.13	0.18	0.00
with University Degree	0.16	0.17	0.11	0.00
Invested in Tech. to reduce/simplify work	0.51	0.34	0.56	0.00
Firmtype				
Autonomous Holding	0.64	0.61	0.73	0.00
Independent Operation	0.11	0.12	0.09	0.27
Coorperate Headquarter	0.07	0.08	0.04	0.02
Branch Office	0.09	0.09	0.09	0.64
Foundation	0.05	0.05	0.03	0.20
Something Different	0.05	0.06	0.01	0.00
Work Council	0.22	0.26	0.09	0.00
Collective Bargaining Coverage	0.40	0.43	0.30	0.00
Export-oriented	0.10	0.11	0.09	0.41
High Competition	0.67	0.66	0.69	0.41
Labor Market Tightness	3.89	3.86	4.00	0.07
Training Cooperations	0.25	0.28	0.16	0.00
Profit Sharing	0.34	0.39	0.19	0.00
Flexible Working Hours	0.58	0.62	0.45	0.00
Firm's Utilized Capacity	88.93	89.80	86.32	0.00
Branch				
Agriculture	0.02	0.02	0.02	0.55
Mining	0.00	0.00	0.00	0.58
Manufacturing	0.08	0.08	0.09	0.66
Electricity	0.01	0.01	0.02	0.20
Water Supply	0.01	0.01	0.00	0.71
Construction	0.08	0.08	0.09	0.52
Wholesale, Retail Trade	0.16	0.15	0.17	0.49

Transportation	0.03	0.03	0.03	0.94
Accommodation Activities	0.07	0.06	0.10	0.02
Information Activities	0.04	0.04	0.04	0.99
Finance and Insurance	0.02	0.03	0.00	0.03
Real Estate Activities	0.02	0.02	0.02	0.74
Professional Activities	0.10	0.11	0.05	0.00
Administration	0.07	0.05	0.11	0.00
Public Administration	0.03	0.04	0.01	0.04
Education	0.02	0.02	0.01	0.51
Human Health, Social Work	0.12	0.13	0.07	0.01
Arts, Recreation	0.01	0.01	0.01	0.47
Other service	0.06	0.06	0.05	0.65
Other	0.08	0.08	0.12	0.03
Gender-specific characteristics[a]				
Share of Female Employees	0.25	0.25	0.24	0.89
Above Median Share of Female Employees	0.50	0.48	0.54	0.25
High Gender Wage Gap	0.50	0.49	0.57	0.70
Higher Female Wage Growth	0.45	0.44	0.52	0.20
Max. Number of Observations	1,141	264	877	

Source: BIBB-CBS 2017/2018. Own calculations.
Notes: This table shows descriptive statistics about individual and firm-level characteristics of the respondents in the vignette experiment. Column (1) shows the average, column (2) average in firms that offer no training, column (3) the average of firms that train and columd (4) provides the p-value of the t-test between columns (2) and (3).
[a] *Source:* BIBB-CBS 2017/2018 + IEB. Observation numbers are lower for these variables, due to the data linkage.

Table A.4: On-The-Job Training Provision

	Training Investment (yes/no)	
	(1)	(2)
Female	-0.014	-0.028
	(0.026)	(0.027)
Controls	No	Yes
Number of Observations	1,072	1,072

Source: BIBB-CBS 2017/18. Own calculations.
Notes: The table displays marginal effects from a logit regression with standard errors in parentheses. The dependent variable is a dummy indicating whether a firm provides training to their workers. The main explanatory variable of interest is the managers' gender (female = 1). Controls include the respondents' decision power (4 categories), tenure (years), position in firm (7), the firm's legal status (6), work council (yes/no), collective bargaining (yes/no), training apprentices (yes/no), firm size, industry (1-digit NACE: 18) and region (west/east). ***/**/* indicate statistical significance at the 1%/5%/10%-level.

Table A.5: Parameter Estimates for Mixed Logit Models with Interactions for Female Only and Male Only Managers

	Mixed Logit			
	Only Female Managers		Only Male Managers	
	Basic (1)	Interacted (2)	Basic (3)	Interacted (4)
Mean:				
Female (ref. Male)	0.055	0.418	0.099*	-0.040
	(0.053)	(0.376)	(0.054)	(0.358)
Age (ref. 55 Years Old)				
25 Years Old	0.709***	1.123***	1.034***	1.041***
	(0.099)	(0.195)	(0.101)	(0.180)
35 Years Old	0.662***	0.802***	1.001***	0.962***
	(0.095)	(0.185)	(0.103)	(0.177)
45 Years Old	0.593***	0.527***	0.724***	0.704***
	(0.096)	(0.178)	(0.091)	(0.168)
Occupational Competency (ref. Below Average)				
Average	0.479***	0.209	0.550***	0.573***
	(0.075)	(0.160)	(0.071)	(0.150)
Above Average	0.766***	0.660***	1.035***	0.864***
	(0.100)	(0.182)	(0.098)	(0.169)
Job Mobility	-0.452***	-0.360***	-0.524***	-0.513***
	(0.046)	(0.085)	(0.047)	(0.081)
Usability in other Firms (ref. Only Usable in Firm)				
Partly	-0.415***	-0.239	-0.517***	-0.702***
	(0.075)	(0.163)	(0.072)	(0.152)
Completely	-0.527***	-0.498***	-0.559***	-0.765***
	(0.079)	(0.159)	(0.073)	(0.149)
Training Duration	-0.065***	-0.076***	-0.045***	-0.063***
	(0.011)	(0.021)	(0.010)	(0.020)
Cost Coverage by the Employer (ref. 0 Percent)				
50 Percent	-0.019	-0.115	0.058	0.288*
	(0.074)	(0.168)	(0.071)	(0.154)
100 Percent	-0.291***	-0.305*	-0.125*	0.157
	(0.073)	(0.166)	(0.068)	(0.156)
Interaction with Female Candidate by:				
Age (ref. 55 Years Old)				
25 Years Old		-0.947***		-0.076
		(0.303)		(0.271)
35 Years Old		-0.384		-0.009
		(0.292)		(0.269)
45 Years Old		0.039		-0.083
		(0.297)		(0.276)
Occupational Competency (ref. Below Average)				
Average		0.479*		0.023
		(0.288)		(0.261)
Above Average		0.146		0.432
		(0.311)		(0.283)
Job Mobility		-0.260*		-0.043
		(0.143)		(0.131)
Usability in other Firms (ref. Only Usable in Firm)				
Partly		-0.384		0.351
		(0.277)		(0.255)
Completely		-0.145		0.325
		(0.273)		(0.253)
Training Duration		0.020		0.036
		(0.038)		(0.036)
Cost Coverage by the Employer (ref. 0 Percent)				
50 Percent		0.235		-0.444*
		(0.289)		(0.262)
100 Percent		0.020		-0.607**
		(0.292)		(0.276)
SD:				
Female (ref. Male)	0.152	0.157	0.588***	0.582***
	(0.277)	(0.272)	(0.101)	(0.104)
Age (ref. 55 Years Old)				
25 Years Old	0.543***	0.585***	-0.480**	-0.468**
	(0.201)	(0.189)	(0.213)	(0.220)
35 Years Old	0.120	0.096	0.720***	0.735***

	(0.302)	(0.321)	(0.173)	(0.176)
45 Years Old	-0.332	0.533**	0.206	0.214
	(0.346)	(0.213)	(0.319)	(0.303)
Occupational Competency (ref. Below Average)				
Average	0.030	0.052	0.147	0.180
	(0.257)	(0.273)	(0.352)	(0.346)
Above Average	1.188***	1.186***	1.202***	1.233***
	(0.127)	(0.132)	(0.122)	(0.125)
Job Mobility	0.347***	0.349***	0.442***	0.447***
	(0.083)	(0.086)	(0.071)	(0.072)
Usability in other Firms (ref. Only Usable in Firm)				
Partly	0.007	-0.028	-0.096	-0.094
	(0.230)	(0.250)	(0.262)	(0.283)
Completely	-0.478***	-0.470***	-0.096	-0.103
	(0.155)	(0.160)	(0.234)	(0.244)
Training Duration	0.088***	0.092***	0.110***	0.112***
	(0.020)	(0.020)	(0.018)	(0.019)
Cost Coverage by the Employer (ref. 0 Percent)				
50 Percent	0.359*	0.358*	-0.360*	-0.367*
	(0.203)	(0.207)	(0.195)	(0.195)
100 Percent	0.014	0.193	0.009	-0.003
	(0.566)	(0.294)	(0.249)	(0.245)
Number of Observations	5,812	5,812	7,682	7,682
Log-Likelihood	-1,762	-1,746	-2,277	-2,271

Source: BIBB-CBS 2017/2018. Own calculations.
Notes: This table shows the parameter estimates of the mixed logit estimates for the sample divided into only female and only male decision makers. Columns (1) and (2) provide the estimates for basic and interacted mixed logit estimation for female respondents only. Columns (3) and (4) show the estimates for the basic and interacted mixed logit estimation for male respondents only. ***/**/* indicate statistical significance at the 1%/5%/10%-level. Estimation based on 300 scrambled Halton draws.

Table A.6: Gender Gap in Marginal Effects – Product Market Competition, Male/Female-Dominated Industry, Gender Wage Gap and CBA Heterogeneity

	Only Female Managers				Only Male Managers			
	ME (1)	SE (2)	ME (5)	SE (6)	ME (3)	SE (4)	ME (7)	SE (8)
Panel A. Product Market Competition	No High Comp.		High Comp.		No High Comp.		High Comp.	
Age								
25 Years	0.0316	(0.1185)	-0.1383**	(0.0790)	0.0559	(0.10120)	-0.0305	(0.0704)
35 Years	0.1133	(0.1034)	-0.0379	(0.0735)	0.0239	(0.0902)	-0.01560	(0.0632)
45 Years	0.2186**	(0.1010)	0.0088	(0.0751)	0.0319	(0.0957)	-0.0352	(0.0645)
55 Years	0.2210**	(0.0991)	0.0001	(0.0713)	-0.0013	(0.1010)	0.0079	(0.0634)
Occupational Competency								
Below Average	0.2184**	(0.0950)	0.0002	(0.0738)	-0.0031	(0.0997)	0.0096	(0.0663)
Average	0.2868***	(0.0968)	0.0906	(0.0678)	-0.0988	(0.0989)	0.0561	(0.0634)
Above Average	0.1817	(0.1162)	0.0570	(0.0774)	-0.0308	(0.1055)	0.1165	(0.0715)
Job Mobility	0.1468	(0.0916)	-0.0652	(0.0698)	-0.0661	(0.0923)	0.0185	(0.0607)
Usability in other Firms								
Only Usable in Firms	0.2051**	(0.0941)	0.0001	(0.0666)	-0.0011	(0.09012)	0.0080	(0.0587)
Partly	0.0739	(0.0960)	-0.0476	(0.0694)	0.0456	(0.0934)	0.0646	(0.0639)
Completely	0.1608*	(0.0826)	-0.0097	(0.0617)	0.0457	(0.0816)	0.0662	(0.0604)
Training Duration	0.1574*	(0.0874)	0.0609	(0.0627)	0.0604	(0.0829)	0.0228	(0.0555)
Cost Coverage by the Employer								
0 Percent	0.2092**	(0.0924)	0.0002	(0.0682)	-0.0017	(0.0946)	0.0072	(0.0597)
50 Percent	0.2360**	(0.1023)	0.0480	(0.0726)	-0.0237	(0.0992)	-0.0727	(0.0648)
100 Percent	0.2520**	(0.1039)	-0.0166	(0.0722)	-0.0001	(0.0926)	-0.1304**	(0.0646)
Number of Observations	1,908		3,892		2,522		5,160	
Panel B. Industry	Male-Dominated		Female-Dominated		Male-Dominated		Female-Dominated	
Age								
25 Years Old	-0.1887**	(0.0821)	-0.0054	(0.1113)	-0.0185	(0.0654)	-0.0031	(0.1045)
35 Years Old	-0.0466	(0.0752)	0.0771	(0.0983)	-0.0208	(0.0596)	0.1106	(0.0941)
45 Years Old	0.0145	(0.0826)	0.1493	(0.0959)	-0.0397	(0.0595)	0.0656	(0.0986)
55 Years Old	0.0143	(0.0735)	0.1628*	(0.0938)	-0.0356	(0.0627)	0.0085	(0.1001)
Occupational Competency								
Below Average	0.0151	(0.0759)	0.1586*	(0.0889)	-0.0372	(0.0655)	0.0087	(0.1007)
Average	0.1756**	(0.0682)	0.3081***	(0.0774)	-0.0781	(0.0590)	-0.0140	(0.0973)
Above Average	0.0770	(0.0842)	0.1884*	(0.1039)	0.0281	(0.0695)	0.1430	(0.1157)
Job Mobility	-0.0648	(0.0719)	0.0907	(0.0894)	-0.0320	(0.0563)	0.0073	(0.0938)
Usability in other Firms								
Only Usable in Firm	0.0135	(0.0690)	0.1473*	(0.0862)	-0.0314	(0.0563)	0.0078	(0.0924)
Partly	-0.0228	(0.0713)	0.1452*	(0.0868)	0.0340	(0.0569)	0.1309	(0.0948)
Completely	0.0132	(0.0630)	0.0640	(0.0806)	0.0062	(0.0514)	0.0727	(0.0829)
Training Duration	0.0989	(0.0654)	0.0909	(0.0844)	0.0666	(0.0528)	0.0203	(0.0871)
Cost Coverage by the Employer								
0 Percent	0.0139	(0.0706)	0.1541*	(0.0886)	-0.0343	(0.0575)	0.0072	(0.0944)
50 Percent	0.0625	(0.0796)	0.1146	(0.1032)	-0.1441**	(0.0602)	-0.1822*	(0.0942)
100 Percent	-0.0357	(0.0805)	0.1497	(0.1000)	-0.1845***	(0.0593)	-0.1673*	(0.0983)
Number of Observations	2,816		1,676		4,402		1,628	
Panel C. Wage Gap	Low Wage Gap		High Wage Gap		Low Wage Gap		High Wage Gap	
Age								
25 Years Old	-0.1695	(0.1222)	-0.2183	(0.1494)	0.0462	(0.1338)	0.0412	(0.1046)
35 Years Old	0.1332	(0.1127)	-0.0540	(0.1473)	0.1399	(0.1201)	0.1218	(0.0957)
45 Years Old	0.0207	(0.1156)	-0.1084	(0.1427)	0.1479	(0.1171)	0.0467	(0.1034)
55 Years Old	0.2818**	(0.1122)	-0.1909	(0.1342)	0.1961*	(0.1195)	0.1420	(0.0990)
Occupational Competency								
Below Average	0.2550***	(0.0960)	-0.2083	(0.1420)	0.2090*	(0.1242)	0.1530	(0.1009)
Average	0.3035***	(0.0935)	-0.0229	(0.1295)	-0.0253	(0.1197)	0.0679	(0.1022)
Above Average	0.3496***	(0.1029)	-0.1026	(0.1547)	0.1280	(0.1258)	0.2272**	(0.1100)
Job Mobility	0.2322**	(0.1049)	-0.3780***	(0.1094)	0.1186	(0.1044)	0.1720*	(0.0982)
Usability in other Firms								
Only Usable in Firm	0.2475**	(0.0980)	-0.1761	(0.1258)	0.1606	(0.1031)	0.1311	(0.0917)
Partly	0.2447**	(0.1013)	-0.2939**	(0.1273)	0.2942***	(0.0961)	0.1628*	(0.0980)
Completely	0.2088**	(0.0932)	-0.1727	(0.1211)	0.2692***	(0.0909)	0.1104	(0.0858)
Training Duration	0.2581***	(0.0906)	0.1122	(0.1325)	0.0690	(0.0987)	0.1372	(0.0873)
Cost Coverage by the Employer								
0 Percent	0.2598**	(0.1013)	-0.1814	(0.1279)	0.1729	(0.1082)	0.1392	(0.0979)
50 Percent	0.2604**	(0.1071)	-0.2137	(0.1375)	0.2170*	(0.1128)	0.0613	(0.1004)
100 Percent	0.0802	(0.1252)	-0.2166	(0.1507)	0.1847	(0.1215)	-0.0345	(0.1066)
Number of Observations	1,306		800		1,248		1,760	

Panel D. Collective Bargaining	No		Yes		No		Yes	
Age								
25 Years Old	-0.1720**	(0.0789)	0.0386	(0.1060)	-0.0409	(0.0744)	0.0155	(0.0897)
35 Years Old	-0.1036	(0.0687)	0.1530	(0.0935)	0.0042	(0.0712)	-0.0148	(0.0798)
45 Years Old	0.0329	(0.0751)	0.1244	(0.0924)	-0.0148	(0.0689)	-0.0206	(0.0837)
55 Years Old	-0.0180	(0.0714)	0.1950**	(0.0920)	0.0361	(0.0694)	-0.0530	(0.0858)
Occupational Competency								
Below Average	-0.0173	(0.0723)	0.1969**	(0.0906)	0.0392	(0.0710)	-0.0555	(0.0886)
Average	0.1389**	(0.0679)	0.1629*	(0.0960)	0.0363	(0.0691)	-0.0303	(0.0789)
Above Average	0.0422	(0.0784)	0.1566	(0.1132)	0.1105	(0.0747)	0.0043	(0.0964)
Job Mobility	-0.0801	(0.0667)	0.1251	(0.0896)	0.0576	(0.0659)	-0.1010	(0.0764)
Usability in other Firms								
Only Usable in Firms	-0.0164	(0.0664)	0.1841**	(0.0878)	0.0342	(0.0640)	-0.0483	(0.0790)
Partly	-0.0926	(0.0679)	0.1510*	(0.0879)	0.0734	(0.0674)	0.0249	(0.0815)
Completely	-0.0202	(0.0612)	0.1449*	(0.0764)	0.0560	(0.0592)	0.0210	(0.0758)
Training Duration	0.0118	(0.0634)	0.1895**	(0.0770)	0.0752	(0.0604)	-0.0156	(0.0750)
Cost Coverage by the Employer								
0 Percent	-0.0163	(0.0670)	0.1885**	(0.0884)	0.0341	(0.0659)	-0.0502	(0.0803)
50 Percent	0.0668	(0.0720)	0.1923**	(0.0969)	-0.0523	(0.0726)	-0.0894	(0.0870)
100 Percent	0.0226	(0.0755)	0.1540	(0.0962)	-0.0654	(0.0713)	-0.1425	(0.0871)
Number of Observations		3,525		2,274		4,514		3,168

Source: BIBB-CBS 2017/2018. Own calculations.
Notes: This table shows the marginal effects corresponding to the parameter estimates in Table B.3 for Panel A, Table B.4 for Panel B, Table B.8 for Panel C, and Table B.5 for Panel D. A negative value corresponds to a preference of men over women in the corresponding attribute. ***/**/* indicate statistical significance at the 1%/5%/10%-level. Estimation based on 300 scrambled Halton draws.

Table A.7: Gender Gap in Marginal Effects – Tenure, and Risk Preference Heterogeneity

	Only Female Managers				Only Male Managers			
	ME (1)	SE (2)	ME (3)	SE (4)	ME (5)	SE (6)	ME (7)	SE (8)
Panel A. Tenure	Below Median Tenure		Above Median Tenure		Below Median Tenure		Above Median Tenure	
Age								
25 Years	-0.1266	(0.0825)	-0.0117	(0.0958)	0.1140	(0.0857)	-0.1109	(0.0739)
35 Years	0.0319	(0.0851)	-0.0228	(0.0838)	0.0968	(0.0797)	-0.0727	(0.0689)
45 Years	-0.0446	(0.0861)	0.1871**	(0.0823)	0.1000	(0.0786)	-0.0984	(0.0690)
55 Years	0.0854	(0.0821)	0.0551	(0.0842)	0.1353*	(0.0785)	-0.1003	(0.0709)
Occupational Competency								
Below Average	0.0874	(0.0821)	0.0568	(0.0858)	0.1417*	(0.0787)	-0.1019	(0.0719)
Average	0.1520*	(0.0776)	0.1120	(0.0800)	0.1777**	(0.0760)	-0.1306*	(0.0667)
Above Average	0.1187	(0.0929)	0.0634	(0.0982)	0.1864**	(0.0846)	-0.0295	(0.0784)
Job Mobility	0.0089	(0.0767)	0.0084	(0.0830)	0.1203*	(0.0731)	-0.1037	(0.0666)
Usability in other Firms								
Only Usable in Firms	0.0790	(0.0760)	0.0507	(0.0791)	0.1212*	(0.0706)	-0.0910	(0.0661)
Partly	0.0778	(0.0791)	-0.0758	(0.0812)	0.1562**	(0.0741)	-0.0225	(0.0686)
Completely	0.0920	(0.0685)	0.0034	(0.0725)	0.1360**	(0.0649)	-0.0163	(0.0630)
Training Duration	0.0945	(0.0718)	0.1045	(0.0769)	0.0746	(0.0664)	-0.0026	(0.0629)
Cost Coverage by the Employer								
0 Percent	0.0813	(0.0774)	0.0517	(0.0808)	0.1271*	(0.0746)	-0.0938	(0.0664)
50 Percent	0.1284	(0.0795)	0.0449	(0.0870)	0.0655	(0.0822)	-0.1605**	(0.0706)
100 Percent	0.1080	(0.0850)	0.0182	(0.0915)	-0.0661	(0.0820)	-0.1067	(0.0733)
Number of Observations		3,210		2,602		3,242		4,440
Panel B. Risk	Risk-Averse		Risk-Affine		Risk-Averse		Risk-Affine	
Age								
25 Years	-0.0764	(0.0966)	-0.1013	(0.0929)	-0.0419	(0.0859)	0.0088	(0.0759)
35 Years	0.0098	(0.0890)	-0.0085	(0.0853)	-0.0055	(0.0792)	0.0054	(0.0692)
45 Years	0.1350	(0.0875)	0.0059	(0.0834)	-0.0414	(0.0846)	0.0055	(0.0683)
55 Years	0.0824	(0.0862)	0.0453	(0.0819)	0.0122	(0.0797)	-0.0198	(0.0717)
Occupational Competency								
Below Average	0.0835	(0.0858)	0.0471	(0.0834)	0.0145	(0.0825)	-0.0209	(0.0731)
Average	0.1502*	(0.0809)	0.1152	(0.0800)	0.0878	(0.0735)	-0.0793	(0.0691)
Above Average	0.0516	(0.0965)	0.1245	(0.0901)	0.1081	(0.0851)	0.0091	(0.0809)
Job Mobility	0.0617	(0.0800)	-0.0484	(0.0777)	0.0089	(0.0751)	-0.0345	(0.0665)
Usability in other Firms								
Only Usable in Firms	0.0756	(0.0802)	0.0424	(0.0770)	0.0114	(0.0723)	-0.0175	(0.0663)
Partly	0.0029	(0.0853)	-0.0135	(0.0793)	-0.0062	(0.0754)	0.0953	(0.0682)
Completely	0.0445	(0.0715)	0.0310	(0.0698)	0.0032	(0.0664)	0.0777	(0.0613)
Training Duration	0.0843	(0.0744)	0.0896	(0.0751)	0.0921	(0.0691)	-0.0135	(0.0631)
Cost Coverage by the Employer								
0 Percent	0.0777	(0.0821)	0.0433	(0.0779)	0.0113	(0.0754)	-0.0193	(0.0674)
50 Percent	0.1110	(0.0853)	0.0909	(0.0892)	-0.0701	(0.0779)	-0.0747	(0.0749)
100 Percent	0.0191	(0.0910)	0.1050	(0.0852)	-0.1128	(0.0780)	-0.0957	(0.0743)
Number of Observations		2,788		3,024		3,374		4,308

Source: BIBB-CBS 2017/2018. Own calculations.
Notes: This table shows the marginal effects corresponding to the parameter estimates in Table B.6 for Panel A and and Table B.7 for Panel B. A negative value corresponds to a preference of male over female training candidates in the corresponding attribute. ***/**/* indicate statistical significance at the 1%/5%/10%-level. Estimation based on 300 scrambled Halton draws.

Table A.8: Robustness Analysis: Propensity Score Estimation and Matching Quality

	Logit Estimation	MSB (%bias)			
	P(Female = 1)	Unmatched	Matched	ttest	p-value
	(1)	(2)	(3)	(4)	(5)
Firm Position:					
Owner	-2.216***	-65.4	-5.1	-2.77	0.006
	(0.104)				
CEO	-1.683***	-25.2	-1.7	-0.96	0.336
	(0.105)				
Department Head	-1.034***	-3.4	-3.7	-1.82	0.069
	(0.113)				
Head HR	0.685***	58.6	5.8	2.33	0.020
	(0.098)				
Head Commerce	-0.716***	7.0	0.3	-0.17	0.867
	(0.110)				
Head of Training	-0.3212***	16.2	-0.4	-0.17	0.867
	(0.118)				
Other Position	Ref.	35.1	5.4	2.25	0.025
Firm Tenure in Years	0.002	-30.7	3.9	1.95	0.051
	(0.003)				
Educational Status:					
No Vocational Degree	-1.693***	-8.6	-0.9	-0.62	0.536
	(0.354)				
Vocational Degree	0.551***	32.0	12.0	5.45	0.000
	(0.069)				
Advanced Voc. Degree	-0.135**	-24.6	-3.1	-1.56	0.118
	(0.059)				
Academic Degree	Ref.	-1.6	-6.8	-3.31	0.001
Firm's Training Decision:					
Alone	-1.359***	-46.4	-4.7	-2.53	0.011
	(0.115)				
Together	-1.033***	-6.8	-6.4	-3.13	0.002
	(0.103)				
Support	-0.689***	37.2	13.4	5.89	0.000
	(0.107)				
Not Involved	Ref.	36.7	1.2	0.46	0.647
Reciprocity	-0.164***	-17.6	12.6	5.58	0.000
	(0.020)				
Internal Locus of Control	-0.058*	-6.5	-2.2	-1.11	0.266
	(0.035)				
Big Five:					
Openness	0.206***	10.5	5.8	2.89	0.004
	(0.026)				
Conscientiousness	0.343***	18.9	8.8	4.50	0.000
	(0.034)				
Extraversion	0.091***	9.8	2.2	1.07	0.282
	(0.024)				
Agreeableness	0.132***	14.1	-0.2	-0.10	0.923
	(0.028)				
Emotional Stability	-0.307***	-20.0	6.6	3.11	0.002
	(0.023)				
Number of Employees in Firm	0.000*	9.1	-7.9	-3.52	0.000
	(0.000)				
Vocational Training Provider	-0.223***	-2.2	-4.1	-2.04	0.042
	(0.055)				
Firm:					
Export-oriented	-1.044***	-17.3	1.1	0.62	0.538
	(0.089)				
High Competition	-0.036	2.0	1.3	0.63	0.530
	(0.055)				
Training Cooperations	-0.173***	-3.9	1.3	0.65	0.519
	(0.058)				
Profit Sharing	-0.215***	-3.1	-6.6	-3.21	0.001
	(0.055)				
Flexible Work Hours	0.002	5.0	-0.8	-0.42	0.677
	(0.053)				
Firmtype:					
Autonomous Individual Holding	0.467***	-16.5	6.6	-3.21	0.001
	(0.119)				
Independent Operation as Part of Enterprise	0.238*	7.6	2.0	0.92	0.356
	(0.134)				
Corporate Headquarter	0.275*	10.8	-2.4	-1.05	0.294

	(0.144)				
Branch Office	0.047	-0.3	-4.4	-2.09	0.037
	(0.140)				
Foundation, Institution, Authority	-0.192	4.8	3.8	1.83	0.068
	(0.188)				
Something Different	Ref.	8.5	-12.8	-5.24	0.000
Firm's Utilized Capacity	0.003	0.3	3.9	1.90	0.057
	(0.002)				
Firm Sector:					
Agriculture (A)	0.387**	-6.3	0.3	0.15	0.884
	(0.187)				
Manufacturing (C)	-0.524***	-20.6	-0.3	-0.20	0.842
	(0.125)				
Water Supply (E)	0.150	5.1	0.8	0.36	0.718
	(0.297)				
Construction (F)	-1.234***	-35.6	1.8	1.35	0.178
	(0.137)				
Wholesale, Retail Trade (G)	0.230**	-5.0	-8.4	-4.05	0.000
	(0.103)				
Transportation (H)	-0.596***	-9.7	-1.1	-0.64	0.525
	(0.168)				
Accommodation Activities (I)	0.112	0.5	-7.2	-3.31	0.001
	(0.126)				
Information Activities (J)	0.291**	9.5	0.1	0.05	0.958
	(0.142)				
Finance and Insurance (K)	0.012	2.0	-0.2	-0.09	0.931
	(0.182)				
Real Estate Activities (L)	0.471**	5.4	-3.0	-1.26	0.206
	(0.184)				
Professional Activities (M)	0.306***	0.7	9.3	4.81	0.000
	(0.117)				
Administrative Activities (N)	1.198***	18.4	-1.9	-0.81	0.421
	(0.121)				
Public Administration (O)	-0.601***	-8.2	1.6	0.93	0.351
	(0.211)				
Education (P)	2.646***	21.2	15.8	6.99	0.000
	(0.260)				
Human Health, Social Work (Q)	1.056***	24.3	10.8	4.89	0.000
	(0.108)				
Arts, Recreation (R)	0.501**	2.8	-2.6	-1.14	0.255
	(0.253)				
Other service Activities (S)	1.131***	10.1	-12.2	-5.02	0.000
	(0.127)				
Other Branches (inl. Mining B, Electricity C)	Ref.	-5.0	-0.5	-0.25	0.803
Work Council	-0.638***	7.1	-10.4	-4.82	
	(0.076)				
Collective Bargaining Coverage	0.057	-4.2	-3.5	-1.71	0.087
	(0.055)				
Constant	-0.281				
	(0.369)				
Observations	11,686				
Sample	Ps R2	LR chi2	p>chi2	Mean Bias	B
Unmatched	0.278	4419.84	0.00	14.5	137.4
Matched	0.035	460.51	0.00	4.6	44.3

Source: BIBB-CBS 2017/2018. Own calculations.
Notes: The mean standardized bias (MSB) is reported before matching in column (2) and after matching in column (3). The t-test statistics in column (4) and the complementary p-values in column (5) correspond to a t-test for equality of means in the two samples, before and after matching.
The summary statistics contain for both the unmatched sample and the matched sample the Pseudo R^2 values in column (1), the test statistics for the likelihood ratio test on the joint significance of all regressors in column (2) and the corresponding p-values in column (3), the mean biases in column (4), and Rubin's B estimates in column (5). Standard errors in parentheses. ***/**/* indicate statistical significance at the 1%/5%/10%-level.

Table A.9: Gender Gap in Marginal Effects – Robustness

	All Managers		Only Female Managers		Only Male Managers	
	ME (1)	SE (2)	ME (3)	SE (4)	ME (5)	SE (6)
Panel A. Weighted						
Age						
25 Years Old	-0.0421	(0.0725)	-0.1341**	(0.0607)	0.0132	(0.1231)
35 Years Old	0.0753	(0.0686)	-0.0178	(0.0582)	0.1492	(0.1189)
45 Years Old	0.0807	(0.0660)	0.0550	(0.0588)	0.0880	(0.1139)
55 Years Old	0.0688	(0.0679)	0.0297	(0.0547)	0.0791	(0.1185)
Occupational Competency						
Below Average	0.0724	(0.0708)	0.0306	(0.0555)	0.0848	(0.1259)
Average	0.1308**	(0.0541)	0.1415***	(0.0505)	0.0882	(0.0965)
Above Average	0.0946	(0.0643)	0.0655	(0.0730)	0.0918	(0.1079)
Job Mobility	0.0204	(0.0548)	-0.0284	(0.0619)	0.0479	(0.0877)
Usability in other Firms						
Only Usable in Firm	0.0644	(0.0635)	0.0276	(0.0603)	0.0734	(0.1116)
Partly	0.0017	(0.0578)	-0.0521	(0.0653)	0.0416	(0.0880)
Completely	0.0385	(0.0545)	0.0282	(0.0605)	0.0398	(0.0959)
Training Duration	0.1435***	(0.0611)	0.0628	(0.0479)	0.1913*	(0.1070)
Cost Coverage by the Employer						
0 Percent	0.0655	(0.0646)	0.0282	(0.0514)	0.0747	(0.1136)
50 Percent	0.0046	(0.0635)	0.0634	(0.0557)	-0.0721	(0.1123)
100 Percent	-0.0191	(0.0649)	0.0208	(0.0570)	-0.0624	(0.1167)
Number of Observations	11,686		4,944		6,742	
Panel B. Without Owners						
Age						
25 Years Old	0.0065	(0.0437)	-0.0965*	(0.0560)	0.0653	(0.0563)
35 Years Old	0.0326	(0.0396)	0.0157	(0.0562)	0.0322	(0.0519)
45 Years Old	0.0626	(0.0419)	0.0887	(0.0593)	0.0183	(0.0550)
55 Years Old	0.0822**	(0.0396)	0.0709	(0.0558)	0.0770	(0.0556)
Occupational Competency						
Below Average	0.0856**	(0.0406)	0.0725	(0.0563)	0.0815	(0.0577)
Average	0.1151***	(0.0404)	0.1318**	(0.0528)	0.0905	(0.0516)
Above Average	0.1124**	(0.0450)	0.0880	(0.0616)	0.1386**	(0.0573)
Job Mobility	0.0378	(0.0372)	0.0017	(0.0523)	0.0626	(0.0485)
Usability in other Firms						
Only Usable in Firm	0.0757**	(0.0357)	0.0658	(0.0517)	0.0695	(0.0482)
Partly	0.0614*	(0.0362)	-0.0159	(0.0562)	0.1390***	(0.0488)
Completely	0.0728**	(0.0319)	0.0239	(0.0472)	0.1236***	(0.0435)
Training Duration	0.0765**	(0.0338)	0.0888*	(0.0482)	0.0539	(0.0445)
Cost Coverage by the Employer						
0 Percent	0.0778**	(0.0370)	0.0670	(0.0524)	0.0721	(0.0517)
50 Percent	0.0605	(0.0413)	0.0975*	(0.0580)	-0.0335	(0.0583)
100 Percent	0.0282	(0.0427)	0.0925	(0.0590)	-0.0997*	(0.0599)
Number of Observations	8,874		4,816		4,058	
Panel C. Training Firms						
Age						
25 Years Old	-0.0417	(0.0394)	-0.0947*	(0.0558)	0.0015	(0.0458)
35 Years Old	0.0109	(0.0347)	-0.0357	(0.0487)	0.0430	(0.0414)
45 Years Old	0.0467	(0.0358)	0.0917*	(0.0478)	0.0136	(0.0411)
55 Years Old	0.0472	(0.0356)	0.0458	(0.0451)	0.0449	(0.0428)
Occupational Competency						
Below Average	0.0492	(0.0367)	0.0470	(0.0466)	0.0473	(0.0444)
Average	0.1036***	(0.0359)	0.1382***	(0.0475)	0.0716*	(0.0421)
Above Average	0.1051**	(0.0420)	0.0592	(0.0594)	0.1376***	(0.0489)
Job Mobility	0.0008	(0.0349)	-0.0211	(0.0412)	0.0155	(0.0395)
Usability in other Firms						
Only Usable in Firm	0.0441	(0.0326)	0.0431	(0.0420)	0.0416	(0.0380)
Partly	0.0491	(0.0326)	-0.0248	(0.0437)	0.1045***	(0.0392)
Completely	0.0326	(0.0289)	-0.0311	(0.0378)	0.0774**	(0.0355)
Training Duration	0.0659**	(0.0299)	0.0906**	(0.0369)	0.0402	(0.0335)
Cost Coverage by the Employer						
0 Percent	0.0454	(0.0339)	0.0443	(0.0428)	0.0426	(0.0400)
50 Percent	0.0209	(0.0384)	0.0850	(0.0485)	-0.0548	(0.0441)
100 Percent	0.0205	(0.0396)	0.0964**	(0.0492)	-0.0758*	(0.0441)
Number of Observations	10,484		4,524		5,960	

Source: BIBB-CBS 2017/2018. Own calculations.
Notes: This table shows the gender gaps in marginal effects corresponding to Table B.9. A negative value corresponds to a preference of male over female training candidates in the corresponding attribute. ***/**/* indicate statistical significance at the 1%/5%/10%-level. Estimation based on 300 scrambled Halton draws.

B Supplementary Appendix

Table B.1: On-The-Job Training Participation – Conditional Gender Differences Based on the SOEP

	Training Participation					
	Conditional Gender Differences			Age Heterogeneity		
	2000-2008	2014-2019	2000-2019	2000-2008	2014-2019	2000-2019
	(1)	(2)	(3)	(4)	(5)	(6)
Female (ref. Male)	-0.085	0.092**	0.048			
	(0.054)	(0.044)	(0.036)			
Age						
<35 Years	0.585***	-0.082	0.086	-1.941***	-2.313***	-2.132***
	(0.138)	(0.100)	(0.083)	(0.341)	(0.274)	(0.210)
35-44 Years	0.534***	0.051	0.158**	-2.066***	-2.215***	-2.107***
	(0.106)	(0.076)	(0.063)	(0.351)	(0.281)	(0.216)
45-54 Years	0.378***	0.094*	0.142***	-2.287***	-2.226***	-2.186***
	(0.078)	(0.054)	(0.045)	(0.362)	(0.288)	(0.222)
≥ 55 Years Years	Ref.	Ref.	Ref.	-2.566***	-2.399***	-2.376***
				(0.380)	(0.300)	(0.232)
Interaction with Female by:						
<35 Years				-0.216**	-0.031	-0.086
				(0.089)	(0.082)	(0.062)
35-44 Years				-0.078	0.026	-0.007
				(0.079)	(0.067)	(0.052)
45-54 Years				0.050	0.118*	0.105**
				(0.081)	(0.063)	(0.052)
≥ 55 Years				-0.181	0.262***	0.192***
				(0.130)	(0.087)	(0.074)
Married	0.054	-0.035	-0.019	0.054	-0.032	-0.016
	(0.052)	(0.041)	(0.034)	(0.052)	(0.041)	(0.034)
Number of Children	-0.024	0.016	0.009	-0.020	0.018	0.012
	(0.027)	(0.020)	(0.016)	(0.027)	(0.020)	(0.016)
Disabled	-0.093	-0.185**	-0.159***	-0.092	-0.183**	-0.158***
	(0.094)	(0.072)	(0.058)	(0.094)	(0.072)	(0.058)
German Nationality	0.529***	0.347***	0.396***	0.528***	0.349***	0.397***
	(0.113)	(0.070)	(0.061)	(0.113)	(0.070)	(0.061)
Owner of House/Dwelling	0.065	0.088**	0.083***	0.065	0.089**	0.084***
	(0.047)	(0.039)	(0.032)	(0.047)	(0.039)	(0.032)
Education (ref. Higher Technical College)						
No School Degree	-1.074	-0.317	-0.396*	-1.089	-0.319	-0.400*
	(0.741)	(0.228)	(0.212)	(0.748)	(0.228)	(0.213)
Lower/Intermediate School Degree	0.100	0.192***	0.154***	0.105*	0.198***	0.159***
	(0.062)	(0.047)	(0.039)	(0.062)	(0.047)	(0.039)
Apprenticeship	-0.157***	-0.198***	-0.197***	-0.158***	-0.199***	-0.198***
	(0.052)	(0.045)	(0.036)	(0.052)	(0.045)	(0.036)
Vocational School	0.542***	0.290***	0.366***	0.545***	0.292***	0.369***
	(0.068)	(0.054)	(0.044)	(0.068)	(0.054)	(0.044)
University Degree	0.287***	0.295***	0.290***	0.285***	0.294***	0.290***
	(0.066)	(0.054)	(0.044)	(0.066)	(0.054)	(0.044)
Work Experience (FT + PT) (in years)	-0.005	-0.003	-0.004	-0.005	-0.003	-0.003
	(0.005)	(0.004)	(0.003)	(0.005)	(0.004)	(0.003)

Unemployment Experience (in years)	-0.066***	-0.075***	-0.072***	-0.067***	-0.075***	-0.071***
	(0.023)	(0.012)	(0.011)	(0.023)	(0.012)	(0.011)
Real Net HH income last month of 2 years ago (in 1000 €)	-0.036***	0.009	-0.001	-0.037***	0.009	-0.001
	(0.014)	(0.009)	(0.007)	(0.014)	(0.009)	(0.007)
Region (ref. West Germany)						
East Germany	0.215**	0.294***	0.262***	0.214**	0.293***	0.261***
	(0.106)	(0.058)	(0.052)	(0.106)	(0.058)	(0.052)
South Germany	-0.131**	0.072	-0.014	-0.130**	0.072	-0.014
	(0.066)	(0.061)	(0.043)	(0.066)	(0.061)	(0.043)
North Germany	-0.074	0.040	-0.005	-0.074	0.039	-0.005
	(0.076)	(0.061)	(0.050)	(0.076)	(0.061)	(0.050)
City States	0.020	-0.291***	-0.189***	0.017	-0.295***	-0.190***
	(0.101)	(0.086)	(0.067)	(0.101)	(0.086)	(0.068)
Unemployment Rate	-0.013	-0.005	-0.013*	-0.013	-0.005	-0.013*
	(0.012)	(0.013)	(0.007)	(0.012)	(0.013)	(0.007)
GDP	0.002	0.001	0.001	0.002	0.001	0.001
	(0.004)	(0.002)	(0.002)	(0.004)	(0.002)	(0.002)
White-collar Worker	-0.404***	-0.279***	-0.318***	-0.407***	-0.284***	-0.321***
	(0.086)	(0.074)	(0.058)	(0.086)	(0.074)	(0.058)
Blue-collar Worker	-1.448***	-0.889***	-1.057***	-1.455***	-0.894***	-1.063***
	(0.104)	(0.088)	(0.070)	(0.104)	(0.088)	(0.070)
Member Tradeunion	0.249***	0.251***	0.252***	0.249***	0.250***	0.252***
	(0.055)	(0.050)	(0.039)	(0.055)	(0.050)	(0.039)
Member Tradeassiocation	0.194***	0.513***	0.401***	0.196***	0.517***	0.404***
	(0.071)	(0.067)	(0.051)	(0.071)	(0.067)	(0.051)
Manager	0.244***	0.291***	0.282***	0.247***	0.293***	0.284***
	(0.063)	(0.046)	(0.038)	(0.063)	(0.046)	(0.038)
Tenure (in years)	0.005	-0.006***	-0.003*	0.005	-0.006***	-0.003*
	(0.003)	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)
Contract type (ref. Other)						
Permanent	0.262**	0.332***	0.307***	0.261**	0.335***	0.308***
	(0.104)	(0.109)	(0.078)	(0.103)	(0.109)	(0.078)
Temporary	-0.042	0.069	0.035	-0.042	0.076	0.041
	(0.133)	(0.121)	(0.090)	(0.133)	(0.121)	(0.090)
Full-time Employed	0.187***	0.162***	0.168***	0.197***	0.165***	0.173***
	(0.061)	(0.044)	(0.037)	(0.062)	(0.044)	(0.037)
Number Employees in Firm (Firm Size)	0.058***	0.054***	0.057***	0.058***	0.054***	0.057***
	(0.009)	(0.007)	(0.005)	(0.009)	(0.007)	(0.005)
Sector (ref. Other)						
Manufacturing	0.172*	-0.067	0.025	0.174*	-0.071	0.023
	(0.100)	(0.105)	(0.075)	(0.100)	(0.105)	(0.075)
Agriculture	0.444**	0.098	0.208	0.451**	0.096	0.207
	(0.225)	(0.207)	(0.161)	(0.225)	(0.207)	(0.161)
Mining, Quarrying, Energy, Water	0.375**	-0.022	0.183	0.375**	-0.024	0.182
	(0.175)	(0.208)	(0.134)	(0.175)	(0.208)	(0.134)
Chemicals/Pulp/Paper	-0.140	-0.390***	-0.284***	-0.138	-0.389***	-0.284***
	(0.128)	(0.132)	(0.097)	(0.128)	(0.133)	(0.097)
Construction	-0.183	-0.094	-0.128	-0.184	-0.101	-0.134
	(0.133)	(0.132)	(0.094)	(0.132)	(0.132)	(0.094)
Iron/Steel	-0.085	-0.233*	-0.169*	-0.084	-0.238*	-0.173*

	(0.136)	(0.140)	(0.099)	(0.136)	(0.140)	(0.099)
Textile/Apparel	-1.297***	-0.584	-0.907***	-1.296***	-0.589	-0.909***
	(0.418)	(0.409)	(0.296)	(0.418)	(0.409)	(0.296)
Wholesale/Retail	-0.353***	-0.202*	-0.248***	-0.351***	-0.206*	-0.248***
	(0.109)	(0.113)	(0.082)	(0.109)	(0.113)	(0.082)
Transportation/Communication	-0.091	0.214*	0.114	-0.089	0.214*	0.117
	(0.125)	(0.122)	(0.090)	(0.125)	(0.123)	(0.090)
Public Service	0.327***	0.449***	0.406***	0.325***	0.443***	0.403***
	(0.089)	(0.093)	(0.066)	(0.089)	(0.093)	(0.066)
Financials/Private Services	0.164*	0.020	0.100	0.164*	0.017	0.100
	(0.099)	(0.104)	(0.074)	(0.099)	(0.104)	(0.074)
Big 5						
Openness	0.065***	0.105***	0.093***	0.065***	0.105***	0.094***
	(0.022)	(0.016)	(0.013)	(0.022)	(0.016)	(0.013)
Conscientiousness	-0.043	-0.041**	-0.040**	-0.043	-0.041**	-0.039**
	(0.028)	(0.020)	(0.017)	(0.028)	(0.020)	(0.017)
Extraversion	0.022	0.035**	0.031**	0.022	0.035**	0.031**
	(0.022)	(0.017)	(0.014)	(0.022)	(0.017)	(0.014)
Agreeableness	-0.043*	-0.027	-0.031**	-0.043*	-0.027	-0.031**
	(0.024)	(0.019)	(0.015)	(0.024)	(0.019)	(0.015)
Neuroticism	0.027	-0.040***	-0.023*	0.028	-0.038**	-0.021*
	(0.020)	(0.015)	(0.013)	(0.020)	(0.015)	(0.013)
Willingness to take risks	0.065**	-0.003	0.016	0.065**	-0.004	0.015
	(0.029)	(0.022)	(0.018)	(0.029)	(0.022)	(0.018)
Locus of control	0.196***	0.070***	0.103***	0.197***	0.070***	0.103***
	(0.027)	(0.020)	(0.017)	(0.027)	(0.020)	(0.017)
Years (ref. 2019)						
2000	-0.234***		-0.267***	-0.236***		-0.268***
	(0.057)		(0.083)	(0.057)		(0.083)
2004	-0.165***		-0.244***	-0.164***		-0.244***
	(0.052)		(0.083)	(0.052)		(0.083)
2008			-0.080			-0.078
			(0.076)			(0.076)
2014		0.128	0.124*		0.131	0.125*
		(0.095)	(0.073)		(0.095)	(0.073)
2015		-0.077	-0.082		-0.073	-0.080
		(0.095)	(0.072)		(0.095)	(0.072)
2016		-0.016	-0.022		-0.012	-0.021
		(0.095)	(0.072)		(0.095)	(0.072)
2017		-0.104	-0.111		-0.099	-0.109
		(0.092)	(0.068)		(0.092)	(0.068)
2018		-0.009	-0.013		-0.009	-0.013
		(0.031)	(0.031)		(0.031)	(0.031)
Constant	-2.578***	-2.274***	-2.264***			
	(0.375)	(0.295)	(0.229)			
Number of Observations	16,538	36,131	52,669	16,538	36,131	52,669
Log-Likelihood	-8,380	-20,274	-28,810	-8,376	-20,267	-28,800

Source: SOEP version 36. Own calculations.
Notes: This table shows the parameter estimates of the logit estimation with training participation as dependent and gender (female = 1) as the main independent variable, in addition to controls. The results correspond to the marginal effects presented in Panel (A) and (B) of Table 1. ***/**/* indicate statistical significance at the 1%/5%/10%-level.

Table B.2: On-The-Job Training Participation – Conditional Gender Differences: Training Type Heterogeneity

	Training Participation			
	Employer-Financed (1)	Self-Financed (2)	General (3)	Specific (4)
Female (ref. Male)	-0.369***	0.410***	0.091	-0.058
	(0.122)	(0.133)	(0.091)	(0.089)
Age (ref. ≥ 55 Years)				
<35 Years	0.091	0.105	0.386	-0.370
	(0.265)	(0.287)	(0.241)	(0.232)
35-44 Years	0.347	-0.208	0.189	-0.182
	(0.213)	(0.230)	(0.184)	(0.177)
45-54 Years	0.119	-0.088	0.143	-0.123
	(0.162)	(0.172)	(0.133)	(0.130)
Married	0.123	-0.284**	-0.087	0.039
	(0.109)	(0.115)	(0.089)	(0.086)
Number of Children	-0.022	0.013	0.067	0.002
	(0.058)	(0.059)	(0.048)	(0.045)
Disabled	0.062	0.080	-0.095	0.023
	(0.215)	(0.233)	(0.151)	(0.155)
German Nationality	0.173	-0.243	0.278	-0.201
	(0.183)	(0.190)	(0.200)	(0.203)
Owner of House/Dwelling	0.204*	-0.036	-0.034	-0.030
	(0.109)	(0.116)	(0.080)	(0.078)
Education (ref. Higher Technical College)				
No School Degree	-0.653	0.336	-1.302	0.880
	(0.607)	(0.719)	(1.753)	(1.536)
Lower/Intermediate School Degree	-0.239*	0.369***	0.131	-0.074
	(0.129)	(0.133)	(0.099)	(0.095)
Apprenticeship	0.295**	-0.272**	0.073	-0.017
	(0.122)	(0.127)	(0.083)	(0.081)
Vocational School	-0.120	0.055	-0.053	0.130
	(0.136)	(0.132)	(0.116)	(0.111)
University Degree	-0.201	0.154	-0.171	0.218**
	(0.144)	(0.138)	(0.105)	(0.102)
Work Experience (FT + PT) (in years)	-0.000	-0.003	0.001	-0.004
	(0.009)	(0.010)	(0.009)	(0.008)
Unemployment Experience (in years)	-0.071***	-0.062*	0.017	-0.033
	(0.027)	(0.037)	(0.045)	(0.043)
Real Net HH income last month of 2 years ago (in 1000 €)	-0.040	0.053*	0.036	-0.026
	(0.031)	(0.029)	(0.027)	(0.025)
Region (ref. West Germany)				
East Germany	0.018	0.206	0.100	-0.011
	(0.159)	(0.164)	(0.170)	(0.168)
South Germany	-0.115	0.112	-0.008	0.002
	(0.172)	(0.177)	(0.112)	(0.108)
North Germany	-0.210	0.284*	0.025	0.031
	(0.158)	(0.165)	(0.128)	(0.122)
City States	-0.220	0.000	0.122	-0.117

	(0.228)	(0.234)	(0.156)	(0.154)
Unemployment Rate	0.007	-0.022	-0.024	0.019
	(0.039)	(0.040)	(0.019)	(0.019)
GDP	0.003	-0.002	0.012**	-0.005
	(0.006)	(0.007)	(0.006)	(0.006)
White-collar Worker	0.098	-0.235	0.193	-0.196
	(0.193)	(0.181)	(0.132)	(0.127)
Blue-collar Worker	-0.216	0.140	-0.093	0.038
	(0.254)	(0.267)	(0.176)	(0.171)
Member Tradeunion	-0.176	0.262*	-0.061	0.020
	(0.137)	(0.141)	(0.087)	(0.085)
Member Tradeassiocation	-0.668***	0.959***	0.215*	-0.185*
	(0.138)	(0.132)	(0.115)	(0.108)
Manager	0.029	0.332***	0.343***	-0.329***
	(0.126)	(0.123)	(0.105)	(0.101)
Tenure (in years)	0.040***	-0.037***	-0.011**	0.012**
	(0.007)	(0.007)	(0.005)	(0.005)
Contract type (ref. Other)				
Contract - Permanent	0.014	0.471	-0.157	0.085
	(0.321)	(0.332)	(0.182)	(0.171)
Contract - Temporary	-0.939***	0.688*	0.051	0.041
	(0.342)	(0.362)	(0.239)	(0.226)
Full-time Employed/Working	0.077	-0.287**	0.040	-0.065
	(0.114)	(0.118)	(0.108)	(0.105)
Number Employees in Firm (Firm Size)	0.112***	-0.070***	-0.108***	0.113***
	(0.018)	(0.018)	(0.016)	(0.016)
Sector (ref. Other)				
NACE - Manufacturing	0.282	-1.116***	0.461**	-0.485***
	(0.316)	(0.314)	(0.188)	(0.177)
Agriculture	1.305*	-1.566**	-1.133***	1.016***
	(0.775)	(0.775)	(0.386)	(0.394)
Mining, Quarrying, Energy, Water	0.518	-1.118	-0.117	0.129
	(0.718)	(0.710)	(0.277)	(0.274)
Chemicals/Pulp/Paper	0.486	-1.046**	0.040	-0.198
	(0.459)	(0.446)	(0.217)	(0.213)
Construction	0.329	-0.476	0.302	-0.469*
	(0.413)	(0.399)	(0.256)	(0.244)
Iron/Steel	0.434	-1.627***	0.478**	-0.487**
	(0.456)	(0.584)	(0.240)	(0.232)
Textile/Apparel	-0.200	-0.223	1.218	-1.371
	(0.943)	(0.865)	(1.117)	(1.148)
Wholesale/Retail	0.013	-0.755**	-0.068	-0.061
	(0.324)	(0.325)	(0.196)	(0.188)
Transportation/Communication	-0.026	-0.879**	-0.133	0.102
	(0.348)	(0.377)	(0.214)	(0.204)
Public Service	0.298	-0.701***	0.026	-0.089
	(0.266)	(0.247)	(0.160)	(0.152)
Financials/Private Services	0.478	-1.362***	-0.039	-0.117
	(0.312)	(0.305)	(0.182)	(0.173)

Big Five Factor Openness	-0.086*	0.216***	0.046	-0.073**
	(0.046)	(0.047)	(0.035)	(0.035)
Big 5				
Conscientiousness	0.023	-0.048	0.097**	-0.132***
	(0.061)	(0.063)	(0.048)	(0.045)
Extraversion	0.070	-0.081*	0.021	-0.003
	(0.046)	(0.048)	(0.036)	(0.036)
Agreeableness	0.054	-0.036	0.094**	-0.074*
	(0.054)	(0.055)	(0.040)	(0.039)
Neuroticism	0.073*	-0.036	-0.015	-0.001
	(0.043)	(0.046)	(0.033)	(0.032)
Willingness to take risks	-0.022	0.024	0.050	-0.016
	(0.062)	(0.065)	(0.047)	(0.045)
Locus of control	0.045	0.038	0.183***	-0.164***
	(0.056)	(0.058)	(0.048)	(0.047)
Years (ref. 2019)				
2000			-0.044	-0.261***
			(0.103)	(0.101)
2004			-0.043	-0.023
			(0.091)	(0.089)
2015	-0.258	0.782***	0.000	0.000
	(0.273)	(0.251)	(.)	(.)
2017	-0.273	0.839***	0.000	0.000
	(0.265)	(0.243)	(.)	(.)
Constant	0.168	-1.488*	-0.656	0.950
	(0.834)	(0.891)	(0.651)	(0.629)
Number of Observations	6,109	6,109	4,351	4,351
Log-Likelihood	-2,095	-2,108	-2,649	-2,783

Source: SOEP version 36. Own calculations.
Notes: This table shows the parameter estimates of the logit estimation with training participation as dependent and gender (female = 1) as the main independent variable, in addition to controls. The results correspond to the marginal effects presented in Panels (C) and (D) of Table 1. ***/**/* indicate statistical significance at the 1%/5%/10%-level.

Table B.3: Parameter Estimates for Mixed Logit Models with Interactions for Female Only and Male Only Managers Divided by High Competition Status (yes/no)

	Mixed Logit – High competition			
	Only Female Managers		Only Male Managers	
	No	Yes	No	Yes
	(1)	(2)	(3)	(4)
Mean:				
Female (ref. Male)	1.606*	0.001	-0.011	0.058
	(0.864)	(0.464)	(0.767)	(0.449)
Age (ref. 55 Years Old)				
25 Years Old	1.665***	1.044***	1.045***	1.169***
	(0.452)	(0.240)	(0.364)	(0.236)
35 Years Old	1.256***	0.707***	1.123***	1.081***
	(0.439)	(0.225)	(0.376)	(0.230)
45 Years Old	0.922**	0.445**	0.511	0.914***
	(0.403)	(0.215)	(0.341)	(0.223)
Professional Competency (ref. Below Average)				
Average	-0.289	0.372*	1.194***	0.416**
	(0.341)	(0.201)	(0.342)	(0.191)
Above Average	0.348	0.827***	1.491***	0.697***
	(0.367)	(0.229)	(0.380)	(0.215)
Job Mobility	-0.264	-0.411***	-0.461***	-0.591***
	(0.169)	(0.106)	(0.170)	(0.104)
Usability in other Firms (ref. Only Usble in Firm)				
Partly	-0.196	-0.196	-0.836***	-0.761***
	(0.337)	(0.200)	(0.315)	(0.196)
Completely	-0.614*	-0.477**	-1.122***	-0.742***
	(0.332)	(0.198)	(0.326)	(0.192)
Training Duration	-0.076*	-0.083***	-0.072*	-0.064**
	(0.045)	(0.026)	(0.042)	(0.025)
Cost Coverage by the Employer (ref. 0 Percent)				
50 Percent	-0.206	-0.127	0.241	0.324
	(0.363)	(0.208)	(0.318)	(0.198)
100 Percent	-0.517	-0.267	0.099	0.211
	(0.354)	(0.206)	(0.325)	(0.198)
Interation with Female Candidate by:				
Age (ref. 55 Years Old)				
25 Years Old	-1.382**	-0.910**	0.468	-0.274
	(0.626)	(0.379)	(0.553)	(0.349)
35 Years Old	-0.779	-0.242	0.215	-0.170
	(0.617)	(0.361)	(0.558)	(0.347)
45 Years Old	0.034	0.054	0.261	-0.298
	(0.626)	(0.364)	(0.562)	(0.358)
Professional Competency (ref. Below Average)				
Average	0.652	0.622*	-0.823	0.361
	(0.609)	(0.359)	(0.554)	(0.333)
Above Average	-0.201	0.398	-0.252	0.830**
	(0.648)	(0.388)	(0.564)	(0.375)
Job Mobility	-0.384	-0.284	-0.345	0.048
	(0.311)	(0.179)	(0.271)	(0.165)
Usability in other Firms (ref. Only Usable in Firm)				
Partly	-1.064*	-0.305	0.370	0.394
	(0.633)	(0.336)	(0.524)	(0.324)
Completely	-0.400	-0.063	0.368	0.408
	(0.581)	(0.342)	(0.529)	(0.325)
Training Duration	-0.063	0.053	0.066	0.014
	(0.082)	(0.046)	(0.075)	(0.045)
Cost Coverage by the Employer (ref. 0 Percent)				
50 Percent	0.220	0.312	-0.177	-0.579*
	(0.605)	(0.360)	(0.536)	(0.338)
100 Percent	0.333	-0.107	0.012	-0.980***
	(0.619)	(0.361)	(0.565)	(0.358)
SD:				
Female (ref. Male)	0.624**	0.113	0.868***	0.546***
	(0.263)	(0.261)	(0.220)	(0.143)
Age (ref. 55 Years Old)				
25 Years Old	-0.639	0.760***	-0.425	0.667***
	(0.418)	(0.223)	(0.429)	(0.233)
35 Years Old	0.537	0.032	-1.245***	0.612**

	(0.468)	(0.411)	(0.336)	(0.266)
45 Years Old	0.780**	-0.468*	0.763*	-0.028
	(0.369)	(0.271)	(0.395)	(0.304)
Professional Competency (ref. Below Average)				
Average	0.768**	-0.021	0.001	0.626***
	(0.315)	(0.205)	(0.279)	(0.199)
Above Average	1.361***	1.175***	1.252***	1.391***
	(0.321)	(0.163)	(0.267)	(0.171)
Job Mobility	0.551***	0.303***	0.658***	0.450***
	(0.181)	(0.107)	(0.156)	(0.097)
Usability in other Firms (ref. Only Usable in Firm)				
Partly	-0.130	0.196	-0.103	0.192
	(0.618)	(0.238)	(0.367)	(0.349)
Completely	-0.020	-0.500***	0.314	0.070
	(0.549)	(0.187)	(0.337)	(0.342)
Training Duration	0.132***	0.092***	0.149***	0.119***
	(0.046)	(0.026)	(0.037)	(0.024)
Cost Coverage by the Employer (ref. 0 Percent)				
50 Percent	0.877***	0.222	-0.684**	-0.437*
	(0.307)	(0.300)	(0.323)	(0.224)
100 Percent	-0.197	0.090	-0.035	-0.244
	(0.387)	(0.708)	(0.319)	(0.295)
Number of Observations	1,908	3,892	2,522	5,160
Log-Likelihood	-581	-1,135	-731	-1,519

Source: BIBB-CBS 2017/2018. Own calculations.
Notes: ***/**/* indicate statistical significance at the 1%/5%/10%-level. Estimation based on 300 scrambled Halton draws.

Table B.4: Parameter Estimates for Mixed Logit Models with Interactions for Female Only and Male Only Managers Divided by Gender Composition of Sectors

	Mixed Logit Interacted			
	Female-Dominated Sector		Male-Dominated Sector	
	Only Female Managers (1)	Only Male Managers (2)	Only Female Managers (3)	Only Male Managers (4)
Mean:				
Female (ref. Male)	1.168	0.055	0.086	-0.239
	(0.850)	(0.779)	(0.533)	(0.522)
Age (ref. 55 Years Old)				
25 Years Old	1.694***	0.852**	1.334***	1.072***
	(0.471)	(0.399)	(0.285)	(0.256)
35 Years Old	0.922**	0.567	0.737***	0.912***
	(0.424)	(0.390)	(0.266)	(0.253)
45 Years Old	0.446	0.161	0.410	0.659***
	(0.393)	(0.375)	(0.252)	(0.238)
Occupational Competency (ref. Below Average)				
Average	-0.381	0.625*	-0.080	0.892***
	(0.363)	(0.340)	(0.230)	(0.215)
Above Average	0.410	0.543	0.547**	0.975***
	(0.400)	(0.369)	(0.253)	(0.244)
Job Mobility	-0.464**	-0.377**	-0.331***	-0.568***
	(0.190)	(0.173)	(0.125)	(0.115)
Usability in other Firms (ref. Only Usable in Firm)				
Partly	-0.799**	-0.996***	-0.213	-0.792***
	(0.400)	(0.361)	(0.233)	(0.219)
Completely	-0.548	-0.924***	-0.631***	-0.857***
	(0.343)	(0.349)	(0.228)	(0.217)
Training Duration	-0.073	-0.051	-0.078**	-0.103***
	(0.045)	(0.045)	(0.031)	(0.028)
Cost Coverage by the Employer (ref. 0 Percent)				
50 Percent	0.133	0.966**	-0.182	0.505**
	(0.377)	(0.377)	(0.237)	(0.221)
100 Percent	-0.506	0.398	-0.154	0.360
	(0.369)	(0.360)	(0.234)	(0.220)
Interaction with Female Candidate by:				
Age (ref. 55 Years Old)				
25 Years Old	-1.210*	-0.075	-1.283***	0.106
	(0.673)	(0.610)	(0.440)	(0.378)
35 Years Old	-0.601	0.726	-0.369	0.089
	(0.653)	(0.610)	(0.421)	(0.381)
45 Years Old	-0.063	0.380	0.001	-0.035
	(0.657)	(0.623)	(0.430)	(0.388)
Occupational Competency (ref. Below Average)				
Average	1.334**	-0.154	1.052**	-0.359
	(0.668)	(0.571)	(0.414)	(0.372)
Above Average	0.353	0.994	0.417	0.462
	(0.690)	(0.662)	(0.443)	(0.398)
Job Mobility	-0.362	-0.003	-0.335	0.015
	(0.309)	(0.292)	(0.209)	(0.185)
Usability in other Firms (ref. Only Usable in Firms)				
Partly	-0.090	0.835	-0.226	0.485
	(0.635)	(0.587)	(0.394)	(0.367)
Completely	-0.692	0.437	-0.007	0.286
	(0.612)	(0.582)	(0.399)	(0.358)
Training Duration	-0.068	0.011	0.070	0.097*
	(0.084)	(0.079)	(0.055)	(0.050)
Cost Coverage by the Employer (ref. 0 Percent)				
50 Percent	-0.288	-1.355**	0.302	-0.827**
	(0.647)	(0.641)	(0.409)	(0.375)
100 Percent	-0.050	-1.215*	-0.304	-1.107***
	(0.638)	(0.642)	(0.408)	(0.396)
SD:				
Female (ref. Male)	-0.051	0.345	0.144	0.734***
	(0.342)	(0.378)	(0.335)	(0.148)
Age (ref. 55 Years Old)				
25 Years Old	0.755**	0.738*	0.502*	0.183
	(0.367)	(0.412)	(0.300)	(0.455)
35 Years Old	0.125	-0.787*	-0.129	0.947***
	(0.435)	(0.415)	(0.429)	(0.234)

45 Years Old	0.772**	0.275	0.453	0.161
	(0.391)	(0.465)	(0.361)	(0.435)
Occupational Competency (ref. Below Average)				
Average	-0.140	0.148	-0.171	-0.533**
	(0.556)	(0.307)	(0.293)	(0.242)
Above Average	1.535***	1.289***	1.082***	1.448***
	(0.346)	(0.306)	(0.180)	(0.194)
Job Mobility	0.376*	0.338*	0.392***	0.519***
	(0.198)	(0.194)	(0.106)	(0.105)
Usability in other Firms (ref. Only Usable in Firms)				
Partly	0.352	-0.012	-0.101	0.241
	(0.357)	(0.504)	(0.357)	(0.450)
Completely	-0.697**	-0.541	-0.117	0.146
	(0.322)	(0.380)	(0.296)	(0.364)
Training Duration	0.042	0.114***	0.095***	0.109***
	(0.109)	(0.039)	(0.028)	(0.028)
Cost Coverage by the Employer (ref. 0 Percent)				
50 Percent	0.839***	0.627*	-0.312	-0.317
	(0.323)	(0.374)	(0.304)	(0.295)
100 Percent	0.689**	0.008	-0.198	0.096
	(0.339)	(0.771)	(0.381)	(0.384)
Number of Observations	1,676	1,628	2,816	4,402
Log-Likelihood	-477	-488	-837	-1,279

Source: BIBB-CBS 2017/2018. Own calculations.
Notes: ***/**/* indicate statistical significance at the 1%/5%/10%-level. Estimation based on 300 scrambled Halton draws.

Table B.5: Parameter Estimates for Mixed Logit Models with Interactions for Female Only and Male Only Managers Divided by Collective Bargaining Agreement Availability

	Mixed Logit – Collective Baragining			
	Only Female Managers		Only Male Managers	
	Yes	No	Yes	No
	(1)	(2)	(3)	(4)
Mean:				
Female (ref. Male)	-0.347	0.248	1.185*	-0.108
	(0.580)	(0.488)	(0.627)	(0.498)
Age (ref. 55 Years Old)				
25 Years Old	0.765**	1.357***	1.105***	1.210***
	(0.273)	(0.262)	(0.311)	(0.265)
35 Years Old	0.857**	1.116***	0.737**	0.940***
	(0.282)	(0.247)	(0.301)	(0.250)
45 Years Old	0.602**	0.826***	0.747**	0.425*
	(0.265)	(0.237)	(0.289)	(0.236)
Professional Competency (ref. Below Average)				
Average	0.568**	0.565**	0.290	0.080
	(0.232)	(0.212)	(0.259)	(0.217)
Above Average	0.860**	0.851***	0.676**	0.686**
	(0.275)	(0.230)	(0.292)	(0.242)
Job Mobility	-0.372**	-0.642***	-0.352**	-0.377**
	(0.126)	(0.115)	(0.140)	(0.115)
Usability in other Firms (ref. Only Usable in Firms)				
Partly	-0.912***	-0.610**	-0.525**	-0.059
	(0.253)	(0.205)	(0.267)	(0.215)
Completely	-0.913***	-0.669***	-0.374	-0.600**
	(0.245)	(0.202)	(0.256)	(0.213)
Training Duration	-0.071**	-0.062**	-0.058*	-0.089**
	(0.031)	(0.027)	(0.033)	(0.028)
Cost Coverage by the Employer (ref. 0 Percent)				
50 Percent	0.266	0.354*	-0.017	-0.281
	(0.250)	(0.213)	(0.272)	(0.228)
100 Percent	0.137	0.249	-0.084	-0.526**
	(0.246)	(0.217)	(0.267)	(0.227)
Interacted with Female Candidate by:				
Age (ref. 55 Years Old)				
25 Years Old	0.459	-0.534	-0.946*	-1.042**
	(0.424)	(0.385)	(0.483)	(0.406)
35 Years Old	0.243	-0.217	-0.237	-0.563
	(0.424)	(0.379)	(0.469)	(0.391)
45 Years Old	0.210	-0.345	-0.411	0.320
	(0.445)	(0.381)	(0.477)	(0.397)
Professional Competency (ref. Below Average)				
Average	0.129	0.019	-0.139	1.076**
	(0.415)	(0.363)	(0.451)	(0.403)
Above Average	0.381	0.593	-0.162	0.406
	(0.463)	(0.386)	(0.505)	(0.416)
Job Mobility	-0.231	0.094	-0.306	-0.278
	(0.210)	(0.180)	(0.235)	(0.200)
Usability in other Firms (ref. Only Usable in Firm)				
Partly	0.518	0.260	-0.246	-0.495
	(0.415)	(0.347)	(0.449)	(0.364)
Completely	0.494	0.139	-0.276	-0.020
	(0.412)	(0.345)	(0.445)	(0.364)
Training Duration	0.033	0.037	0.000	0.025
	(0.057)	(0.049)	(0.061)	(0.050)
Cost Coverage by the Employer (ref. 0 Percent)				
50 Percent	-0.283	-0.617*	0.044	0.552
	(0.422)	(0.362)	(0.463)	(0.394)
100 Percent	-0.643	-0.705*	-0.217	0.255
	(0.440)	(0.382)	(0.476)	(0.390)
SD:				
Female (ref. Male)	0.511**	0.713***	-0.013	0.436**
	(0.200)	(0.137)	(0.211)	(0.175)
Age (ref. 55 Years Old)				
25 Years Old	-0.321	0.516*	-0.424	0.706**
	(0.428)	(0.311)	(0.342)	(0.247)
35 Years Old	0.996***	-0.555**	0.101	0.153
	(0.255)	(0.267)	(0.408)	(1.484)

45 Years Old	0.070	0.443	-0.546*	0.453
	(0.352)	(0.371)	(0.324)	(0.489)
Professional Competency (ref. Below Average)				
Average	-0.270	-0.420*	-0.039	-0.007
	(0.317)	(0.229)	(0.280)	(0.767)
Above Average	1.416***	1.197***	1.043***	1.200***
	(0.210)	(0.176)	(0.202)	(0.185)
Job Mobility	0.453***	0.517***	0.360**	0.392***
	(0.117)	(0.100)	(0.127)	(0.111)
Usability in other Firms (ref. Only Usable in Firm)				
Partly	0.493**	-0.064	0.003	-0.062
	(0.245)	(0.303)	(0.312)	(0.761)
Completely	0.242	-0.012	-0.648**	0.281
	(0.293)	(0.563)	(0.213)	(0.398)
Training Duration	0.086**	0.136***	0.080**	0.110***
	(0.030)	(0.026)	(0.037)	(0.027)
Cost Coverage by the Employer (ref. 0 Percent)				
50 Percent	0.276	0.412	0.727**	-0.057
	(0.346)	(0.291)	(0.222)	(0.337)
100 Percent	0.049	0.138	0.044	0.158
	(0.345)	(0.424)	(0.442)	(0.461)
Number of Observations	3,168	4,514	2,274	3,526
Log-Likelihood	-940	-1,318	-698	-1,027

Source: BIBB-CBS 2017/2018. Own calculations.
Notes: ***/**/* indicate statistical significance at the 1%/5%/10%-level. Estimation based on 300 scrambled Halton draws.

Table B.6: Parameter Estimates for Mixed Logit Models with Interactions for Female Only and Male Only Managers Divided by Median Tenure

	Mixed Logit – Tenure			
	Only Female Managers		Only Male Managers	
	Below Median (1)	Above Median (2)	Below Median (3)	Above Median (4)
Mean:				
Female (ref. Male)	0.549	0.334	0.914	-0.658
	(0.547)	(0.570)	(0.579)	(0.498)
Age (ref. 55 Years Old)				
25 Years Old	1.481***	0.813***	1.265***	0.997***
	(0.292)	(0.288)	(0.296)	(0.248)
35 Years Old	0.802***	0.919***	0.998***	1.054***
	(0.266)	(0.289)	(0.285)	(0.249)
45 Years Old	0.931***	0.187	0.803***	0.708***
	(0.263)	(0.276)	(0.272)	(0.232)
Professional Competency (ref. Below Average)				
Average	0.133	0.390	0.309	0.799***
	(0.223)	(0.252)	(0.241)	(0.211)
Above Average	0.609**	0.795***	1.001***	0.788***
	(0.266)	(0.276)	(0.272)	(0.237)
Job Mobility	-0.324***	-0.455***	-0.528***	-0.553***
	(0.119)	(0.132)	(0.129)	(0.113)
Usability in other Firms (ref. Only Usable in Firm)				
Partly	-0.521**	0.014	-0.797***	-0.698***
	(0.239)	(0.252)	(0.247)	(0.208)
Completely	-0.804***	-0.228	-0.700***	-0.867***
	(0.236)	(0.240)	(0.237)	(0.211)
Training Duration	-0.054*	-0.120***	-0.014	-0.098***
	(0.030)	(0.032)	(0.032)	(0.028)
Cost Coverage by the Employer (ref. 0 Percent)				
50 Percent	-0.197	0.092	0.297	0.319
	(0.240)	(0.263)	(0.247)	(0.216)
100 Percent	-0.461**	-0.155	0.517**	-0.100
	(0.234)	(0.261)	(0.254)	(0.215)
Interaction with Female Candidate by:				
Age (ref. 55 Years Old)				
25 Years Old	-1.408***	-0.409	-0.069	-0.114
	(0.433)	(0.466)	(0.438)	(0.376)
35 Years Old	-0.342	-0.483	-0.231	0.138
	(0.410)	(0.458)	(0.438)	(0.368)
45 Years Old	-0.837*	0.876*	-0.226	-0.002
	(0.436)	(0.465)	(0.445)	(0.384)
Professional Competency (ref. Below Average)				
Average	0.504	0.430	0.433	-0.311
	(0.411)	(0.438)	(0.420)	(0.360)
Above Average	0.295	0.100	0.565	0.445
	(0.453)	(0.470)	(0.454)	(0.397)
Job Mobility	-0.348*	-0.201	-0.065	-0.019
	(0.204)	(0.220)	(0.209)	(0.180)
Training Duration	0.009	0.045	-0.054	0.089*
	(0.055)	(0.057)	(0.057)	(0.050)
Usability in other Firms (ref. Only Usable in Firm)				
Partly	-0.035	-0.815*	0.179	0.510
	(0.385)	(0.446)	(0.401)	(0.357)
Completely	0.059	-0.313	0.037	0.553
	(0.391)	(0.419)	(0.404)	(0.354)
Cost Coverage by the Employer (ref. 0 Percent)				
50 Percent	0.319	-0.042	-0.442	-0.490
	(0.415)	(0.448)	(0.421)	(0.365)
100 Percent	0.167	-0.219	-1.385***	-0.087
	(0.408)	(0.464)	(0.460)	(0.377)
SD:				
Female (ref. Male)	-0.202	0.189	0.547***	0.650***
	(0.285)	(0.343)	(0.172)	(0.141)
Age (ref. 55 Years Old)				
25 Years Old	0.775***	-0.221	0.483	-0.633**
	(0.243)	(0.405)	(0.387)	(0.262)
35 Years Old	0.020	-0.505	-0.422	0.980***

	(0.349)	(0.326)	(0.353)	(0.217)
45 Years Old	-0.117	0.814***	0.076	-0.325
	(0.416)	(0.258)	(0.818)	(0.370)
Professional Competency (ref. Below Average)				
Average	-0.160	-0.237	0.203	-0.451*
	(0.432)	(0.410)	(0.299)	(0.230)
Above Average	1.337***	1.153***	1.416***	1.219***
	(0.212)	(0.202)	(0.223)	(0.170)
Job Mobility	0.415***	0.374***	0.395***	0.562***
	(0.118)	(0.113)	(0.120)	(0.098)
Usability in other Firms (ref. Only Usable in Firm)				
Partly	-0.090	-0.030	0.054	-0.270
	(0.256)	(0.501)	(0.279)	(0.338)
Completely	0.413	0.542**	0.130	0.102
	(0.265)	(0.240)	(0.330)	(0.373)
Training Duration	0.131***	0.023	0.149***	0.085***
	(0.028)	(0.076)	(0.028)	(0.027)
Cost Coverage by the Employer (ref. 0 Percent)				
50 Percent	-0.509**	-0.349	0.435	-0.360
	(0.223)	(0.309)	(0.321)	(0.282)
100 Percent	0.196	-0.137	-0.059	0.211
	(0.325)	(0.721)	(0.260)	(0.418)
Number of Observations	3,210	2,602	3,242	4,440
Log-Likelihood	-964	-760	-924	-1,322

Source: BIBB-CBS 2017/2018. Own calculations.
Notes: ***/**/* indicate statistical significance at the 1%/5%/10%-level. Estimation based on 300 scrambled Halton draws.

Table B.7: Parameter Estimates for Mixed Logit Models with Interactions for Female Only and Male Only Managers Divided by Median Risk Affinity

	Mixed Logit – Risk Affinity			
	Only Female Managers		Only Male Managers	
	Below Median (1)	Above Median (2)	Below Median (3)	Above Median (4)
Mean:				
Female (ref. Male)	0.491	0.297	0.087	-0.129
	(0.557)	(0.556)	(0.571)	(0.503)
Age (ref. 55 Years Old)				
25 Years Old	1.135***	1.182***	1.199***	0.987***
	(0.284)	(0.300)	(0.299)	(0.246)
35 Years Old	0.777***	0.880***	1.071***	0.939***
	(0.266)	(0.280)	(0.288)	(0.247)
45 Years Old	0.412	0.644**	0.889***	0.618***
	(0.261)	(0.267)	(0.273)	(0.235)
Professional Competency (ref. Below Average)				
Average	0.102	0.335	0.504**	0.709***
	(0.227)	(0.247)	(0.237)	(0.214)
Above Average	0.718***	0.580**	0.894***	0.956***
	(0.263)	(0.271)	(0.270)	(0.242)
Job Mobility	-0.497***	-0.268**	-0.614***	-0.487***
	(0.125)	(0.124)	(0.133)	(0.111)
Usability in other Firms (ref. Only Usable in Firm)				
Partly	-0.196	-0.266	-0.584**	-0.893***
	(0.235)	(0.244)	(0.235)	(0.219)
Completely	-0.588***	-0.438*	-0.699***	-0.900***
	(0.228)	(0.240)	(0.238)	(0.212)
Cost Coverage by the Employer (ref. 0 Percent)				
50 Percent	-0.015	-0.247	0.416*	0.240
	(0.242)	(0.254)	(0.247)	(0.218)
100 Percent	-0.135	-0.504**	0.374	0.049
	(0.236)	(0.255)	(0.248)	(0.221)
Training Duration	-0.067**	-0.093***	-0.087***	-0.051*
	(0.030)	(0.032)	(0.032)	(0.027)
Interaction with Female Candidate by:				
Age (ref. 55 Years Old)				
25 Years Old	-0.970**	-0.995**	-0.386	0.196
	(0.440)	(0.457)	(0.443)	(0.377)
35 Years Old	-0.432	-0.354	-0.126	0.172
	(0.417)	(0.444)	(0.429)	(0.380)
45 Years Old	0.365	-0.258	-0.372	0.170
	(0.432)	(0.443)	(0.443)	(0.387)
Professional Competency (ref. Below Average)				
Average	0.493	0.525	0.588	-0.447
	(0.409)	(0.441)	(0.418)	(0.368)
Above Average	-0.151	0.604	0.767*	0.201
	(0.450)	(0.479)	(0.455)	(0.396)
Job Mobility	-0.087	-0.436**	-0.019	-0.069
	(0.210)	(0.213)	(0.209)	(0.182)
Usability in other Firms (ref. Only Usable in Firm)				
Partly	-0.475	-0.388	-0.129	0.793**
	(0.397)	(0.412)	(0.405)	(0.363)
Completely	-0.220	-0.087	-0.064	0.671*
	(0.394)	(0.414)	(0.406)	(0.356)
Training Duration	0.004	0.041	0.078	0.006
	(0.054)	(0.056)	(0.057)	(0.050)
Cost Coverage by the Employer (ref. 0 Percent)				
50 Percent	0.218	0.327	-0.600	-0.396
	(0.412)	(0.448)	(0.411)	(0.373)
100 Percent	-0.375	0.416	-0.899**	-0.536
	(0.422)	(0.440)	(0.440)	(0.391)
SD:				
Female (ref. Male)	0.228	-0.116	0.610***	0.652***
	(0.310)	(0.394)	(0.167)	(0.147)
Age (ref. 55 Years Old)				
25 Years Old	0.320	0.865***	0.477	0.647**
	(0.429)	(0.262)	(0.305)	(0.261)
35 Years Old	-0.112	0.112	0.721**	0.850***

	(0.418)	(0.410)	(0.284)	(0.239)
45 Years Old	-0.874***	0.215	-0.464	-0.042
	(0.252)	(0.459)	(0.403)	(0.309)
Professional Competency (ref. Below Average)				
Average	0.131	0.245	0.000	0.406*
	(0.267)	(0.322)	(0.533)	(0.238)
Above Average	1.130***	1.328***	1.335***	1.287***
	(0.199)	(0.205)	(0.196)	(0.179)
Job Mobility	0.354***	0.447***	0.473***	0.504***
	(0.119)	(0.122)	(0.114)	(0.101)
Usability in other Firms (ref. Only Usable in Firm)				
Partly	0.049	0.336	-0.157	0.108
	(0.263)	(0.313)	(0.436)	(0.358)
Completely	0.370	0.474*	0.048	0.320
	(0.376)	(0.268)	(0.289)	(0.295)
Training Duration	0.070**	0.128***	0.103***	0.130***
	(0.035)	(0.029)	(0.029)	(0.026)
Cost Coverage by the Employer (ref. 0 Percent)				
50 Percent	0.196	0.382	0.667***	-0.239
	(0.592)	(0.353)	(0.239)	(0.382)
100 Percent	0.070	-0.504**	0.045	0.096
	(0.325)	(0.242)	(0.379)	(0.314)
Number of Observations	2788	3024	3374	4308
Log-Likelihood	-827	-903	-973	-1282

Source: BIBB-CBS 2017/2018. Own calculations.
Notes: ***/**/* indicate statistical significance at the 1%/5%/10%-level. Estimation based on 300 scrambled Halton draws.

Table B.8: Parameter Estimates for Mixed Logit Models with Interactions for Female Only and Male Only Managers Divided by Wage Gap in the Firm

	Mixed Logit – Wage Gap					
	High Wage Gap			Low Wage Gap		
	All Managers (1)	Only Female Managers (2)	Only Male Managers (3)	All Managers (4)	Only Female Managers (5)	Only Male Managers (6)
Mean:						
Female	0.163	-1.231	1.019	1.547**	1.826**	1.597
	(0.577)	(1.007)	(0.798)	(0.690)	(0.902)	(1.173)
Age						
25 Years Old	0.713**	0.097	1.122***	1.761***	2.146***	1.848***
	(0.287)	(0.507)	(0.401)	(0.359)	(0.506)	(0.630)
35 Years Old	0.377	-0.017	0.708*	1.043***	0.811**	1.405**
	(0.279)	(0.507)	(0.383)	(0.327)	(0.403)	(0.561)
45 Years Old	0.309	-0.273	0.744*	1.011***	1.155***	1.108**
	(0.283)	(0.488)	(0.401)	(0.310)	(0.426)	(0.540)
Occupational Competency						
Above Average	0.618**	0.771	0.647*	0.819***	0.242	1.894***
	(0.277)	(0.505)	(0.371)	(0.304)	(0.393)	(0.587)
Average	0.483**	0.287	0.530*	0.618**	0.150	1.455***
	(0.242)	(0.427)	(0.321)	(0.277)	(0.351)	(0.529)
Job Mobility	-0.509***	-0.063	-0.774***	-0.471***	-0.606***	-0.433*
	(0.130)	(0.228)	(0.183)	(0.144)	(0.204)	(0.247)
Usability in other Firms						
Completely	-0.688***	-1.021**	-0.592*	-0.838***	-0.638*	-1.479***
	(0.243)	(0.439)	(0.327)	(0.272)	(0.365)	(0.494)
Partly	-0.439*	-0.006	-0.739**	-0.965***	-0.639*	-1.676***
	(0.248)	(0.445)	(0.337)	(0.280)	(0.377)	(0.521)
Cost Coverage by the Employer						
100 Percent	0.326	-0.380	0.659*	-0.087	0.284	-0.380
	(0.270)	(0.463)	(0.376)	(0.278)	(0.376)	(0.491)
50 Percent	0.208	-0.275	0.466	-0.164	-0.053	-0.007
	(0.263)	(0.453)	(0.360)	(0.278)	(0.387)	(0.483)
Training Duration	-0.125***	-0.239***	-0.073	-0.019	-0.032	-0.023
	(0.034)	(0.068)	(0.045)	(0.034)	(0.049)	(0.057)
Interaction with Female Candidate by:						
Age						
25 Years Old	-0.616	-0.219	-0.712	-1.827***	-3.013***	-1.188
	(0.468)	(0.819)	(0.636)	(0.533)	(0.769)	(0.891)
35 Years Old	0.168	0.861	-0.122	-0.663	-0.924	-0.333
	(0.460)	(0.867)	(0.611)	(0.498)	(0.650)	(0.842)
45 Years Old	-0.212	0.525	-0.681	-0.846*	-1.690**	-0.342
	(0.480)	(0.825)	(0.678)	(0.497)	(0.708)	(0.849)
Occupational Competency						
Above Average	0.695	0.491	0.780	0.379	0.897	-0.301
	(0.486)	(0.856)	(0.675)	(0.511)	(0.718)	(0.846)
Average	-0.022	1.069	-0.507	-0.434	0.453	-1.832**
	(0.426)	(0.786)	(0.563)	(0.479)	(0.618)	(0.873)
Job Mobility	-0.154	-0.931**	0.133	-0.319	-0.206	-0.401
	(0.212)	(0.417)	(0.279)	(0.240)	(0.316)	(0.419)
Usability in other Firms						
Completely	-0.125	0.148	-0.217	-0.049	-0.387	0.848
	(0.416)	(0.713)	(0.561)	(0.464)	(0.640)	(0.765)
Partly	-0.174	-0.711	0.170	0.352	-0.125	1.047
	(0.413)	(0.770)	(0.544)	(0.459)	(0.633)	(0.785)
Training Duration	0.088	0.263**	-0.004	-0.070	0.003	-0.139
	(0.058)	(0.110)	(0.078)	(0.064)	(0.091)	(0.105)
Cost Coverage by the Employer						
100 Percent	-0.797*	-0.154	-1.276*	-0.421	-1.288*	0.066
	(0.476)	(0.831)	(0.658)	(0.498)	(0.670)	(0.896)
50 Percent	-0.370	-0.166	-0.559	0.441	0.042	0.435
	(0.450)	(0.762)	(0.611)	(0.470)	(0.645)	(0.803)
SD:						
Female	0.160	-0.035	0.319	0.271	0.271	0.101
	(0.415)	(0.294)	(0.387)	(0.303)	(0.581)	(0.736)
Age						
25 Years Old	-0.022	-0.156	0.274	0.914***	1.007***	0.903
	(0.565)	(0.721)	(0.486)	(0.286)	(0.350)	(0.563)
35 Years Old	0.003	0.008	0.068	0.777**	0.327	1.372***
	(0.367)	(0.388)	(0.630)	(0.313)	(0.630)	(0.515)

45 Years Old	0.082	-0.313	0.156	-0.573*	-0.456	0.477
	(0.328)	(0.556)	(0.516)	(0.331)	(0.605)	(0.654)
Occupational Competency						
Above Average	1.293***	0.715*	1.615***	1.242***	0.775**	2.014***
	(0.226)	(0.396)	(0.335)	(0.237)	(0.313)	(0.524)
Average	0.482*	-0.055	-0.713**	0.559**	-0.197	1.135***
	(0.261)	(0.456)	(0.314)	(0.270)	(0.359)	(0.407)
Job Mobility	0.395***	0.344	-0.340**	0.425***	0.486***	-0.181
	(0.125)	(0.221)	(0.173)	(0.146)	(0.176)	(0.330)
Usability in other Firms						
Completely	0.024	-0.368	0.115	-0.062	0.395	-0.072
	(0.295)	(0.506)	(0.341)	(0.424)	(0.494)	(0.415)
Partly	-0.086	-0.027	-0.056	-0.464*	-0.436	-0.007
	(0.229)	(0.268)	(0.368)	(0.273)	(0.470)	(0.907)
Cost Coverage by the Employer						
100 Percent	-0.325	-0.009	-0.728**	0.051	-0.220	0.003
	(0.295)	(0.368)	(0.310)	(0.269)	(0.446)	(0.364)
50 Percent	-0.370	-0.621	-0.014	0.316	-0.472	-0.228
	(0.305)	(0.421)	(0.994)	(0.385)	(0.363)	(0.718)
Training Duration	0.112***	0.068	0.151***	0.076*	-0.039	0.131**
	(0.030)	(0.054)	(0.043)	(0.045)	(0.071)	(0.063)
Number of Observations	2,560	800	1,760	2,554	1,306	1,248
Log-Likelihood	-749	-217	-507	-738	-378	-337

Source: BIBB-CBS 2017/2018, IEB merge. Own calculations.
Notes: This table shows the parameter estimates of the mixed logit estimation interacted with the gender (female = 1) of the potential training candidate for the sample split by the gender wage gap in the firm (below/above the median). ***/**/* indicate statistical significance at the 1%/5%/10%-level. Estimation based on 300 scrambled Halton draws.

Table B.9: Parameter Estimates for Mixed Logit Models with Interactions without Firm Owners

	Mixed Logit Interacted – Weighted			Mixed Logit Interacted – Without Owners			Mixed Logit Interacted – Training Firms		
	All Managers (1)	Only Female Managers (2)	Only Male Managers (3)	All Managers (4)	Only Female Managers (5)	Only Male Managers (6)	All Managers (7)	Only Female Managers (8)	Only Male Managers (9)
Mean:									
Female (ref. Male)	0.450	0.180	0.558	0.500	0.420	0.515	0.280	0.280	0.281
	(0.526)	(0.413)	(1.040)	(0.311)	(0.414)	(0.503)	(0.278)	(0.433)	(0.393)
Age (ref. 55 Years Old)									
25 Years Old	1.249***	1.101***	1.463***	1.163***	1.130***	1.286***	1.013***	0.980***	1.088***
	(0.233)	(0.206)	(0.403)	(0.161)	(0.210)	(0.263)	(0.142)	(0.218)	(0.202)
35 Years Old	0.714***	0.706***	0.653**	0.981***	0.863***	1.228***	0.818***	0.844***	0.863***
	(0.194)	(0.200)	(0.328)	(0.152)	(0.199)	(0.257)	(0.138)	(0.212)	(0.196)
45 Years Old	0.535**	0.468**	0.591*	0.677***	0.535***	0.892***	0.501***	0.297	0.686***
	(0.183)	(0.198)	(0.312)	(0.146)	(0.190)	(0.243)	(0.132)	(0.203)	(0.189)
Occupational Competency (ref. Below Average)									
Average	0.256	0.107	0.479	0.303**	0.178	0.469**	0.197*	0.019	0.361**
	(0.171)	(0.183)	(0.302)	(0.130)	(0.174)	(0.212)	(0.116)	(0.181)	(0.164)
Above Average	0.852***	0.654**	1.055**	0.726***	0.628***	0.862***	0.550***	0.499**	0.633***
	(0.192)	(0.208)	(0.358)	(0.148)	(0.196)	(0.240)	(0.131)	(0.203)	(0.184)
Job Mobility	-0.454***	-0.417***	-0.514**	-0.390***	-0.321***	-0.510***	-0.394***	-0.356***	-0.459***
	(0.103)	(0.086)	(0.207)	(0.069)	(0.091)	(0.113)	(0.061)	(0.096)	(0.086)
Usability in other Firms (ref. Only Usable in Firm)									
Partly	-0.184	-0.115	-0.371	-0.418***	-0.137	-0.832***	-0.497***	-0.277	-0.726***
	(0.172)	(0.179)	(0.318)	(0.132)	(0.176)	(0.215)	(0.119)	(0.185)	(0.169)
Completely	-0.445**	-0.560**	-0.343	-0.564***	-0.418**	-0.827***	-0.548***	-0.362**	-0.725***
	(0.148)	(0.173)	(0.256)	(0.130)	(0.173)	(0.212)	(0.117)	(0.181)	(0.167)
Training Duration	-0.098***	-0.077***	-0.123**	-0.063***	-0.072***	-0.063**	-0.064***	-0.098***	-0.042**
	(0.026)	(0.023)	(0.049)	(0.017)	(0.022)	(0.028)	(0.015)	(0.025)	(0.022)
Cost Coverage by the Employer (ref. 0 Percent)									
50 Percent	0.450**	-0.048	1.029**	0.077	-0.095	0.381*	0.151	-0.092	0.353**
	(0.229)	(0.183)	(0.424)	(0.135)	(0.181)	(0.219)	(0.122)	(0.192)	(0.171)
100 Percent	0.208	-0.293	0.710**	-0.079	-0.363**	0.293	-0.111	-0.445**	0.123
	(0.191)	(0.183)	(0.332)	(0.135)	(0.179)	(0.221)	(0.123)	(0.192)	(0.173)
Interaction with Female Candidate by:									
Age (ref. 55 Years Old)									
25 Years Old	-0.740*	-1.041**	-0.456	-0.458*	-0.772**	-0.046	-0.535**	-0.875**	-0.270
	(0.385)	(0.323)	(0.694)	(0.243)	(0.325)	(0.388)	(0.220)	(0.348)	(0.303)
35 Years Old	0.058	-0.291	0.539	-0.296	-0.324	-0.288	-0.212	-0.505	0.001
	(0.294)	(0.310)	(0.505)	(0.233)	(0.311)	(0.380)	(0.213)	(0.337)	(0.298)
45 Years Old	0.090	0.163	0.074	-0.114	0.118	-0.392	0.000	0.294	-0.194

	(0.357)	(0.356)	(0.639)	(0.242)	(0.323)	(0.397)	(0.219)	(0.341)	(0.306)
Occupational Competency (ref. Below Average)									
Average	0.482	0.761**	0.123	0.264	0.430	0.156	0.378*	0.622*	0.205
	(0.312)	(0.327)	(0.554)	(0.233)	(0.315)	(0.372)	(0.207)	(0.324)	(0.289)
Above Average	0.240	0.329	0.169	0.263	0.155	0.557	0.401*	0.109	0.682**
	(0.278)	(0.340)	(0.466)	(0.251)	(0.337)	(0.406)	(0.225)	(0.354)	(0.317)
Job Mobility	-0.224	-0.249	-0.152	-0.191*	-0.291*	-0.066	-0.194*	-0.287*	-0.130
	(0.172)	(0.154)	(0.346)	(0.115)	(0.155)	(0.183)	(0.104)	(0.164)	(0.145)
Usability in other Firms (ref. Only Usable in Firm)									
Partly	-0.438	-0.507*	-0.254	-0.115	-0.518*	0.452	0.017	-0.434	0.390
	(0.329)	(0.303)	(0.637)	(0.223)	(0.300)	(0.358)	(0.201)	(0.316)	(0.281)
Completely	-0.191	-0.005	-0.265	-0.043	-0.274	0.346	-0.082	-0.473	0.217
	(0.267)	(0.291)	(0.478)	(0.222)	(0.298)	(0.356)	(0.200)	(0.314)	(0.280)
Training Duration	0.071	0.029	0.116	-0.003	0.017	-0.020	0.016	0.038	-0.003
	(0.044)	(0.041)	(0.083)	(0.031)	(0.041)	(0.050)	(0.028)	(0.043)	(0.039)
Cost Coverage by the Employer (ref. 0 Percent)									
50 Percent	-0.418	0.226	-1.115*	-0.112	0.191	-0.613*	-0.150	0.263	-0.444
	(0.351)	(0.315)	(0.623)	(0.231)	(0.311)	(0.372)	(0.208)	(0.330)	(0.290)
100 Percent	-0.580*	-0.050	-1.029*	-0.323	0.150	-1.004**	-0.155	0.324	-0.513*
	(0.336)	(0.323)	(0.600)	(0.238)	(0.313)	(0.396)	(0.216)	(0.334)	(0.305)
SD:									
Female (ref. Male)	0.389**	0.212	0.398	0.269*	-0.084	0.435***	0.295**	0.131	0.400***
	(0.143)	(0.248)	(0.350)	(0.158)	(0.268)	(0.168)	(0.119)	(0.217)	(0.143)
Age (ref. 55 Years Old)									
25 Years Old	0.362	0.753***	0.056	-0.572***	0.612***	0.472	-0.351	0.180	0.347
	(0.245)	(0.192)	(0.090)	(0.168)	(0.211)	(0.303)	(0.214)	(0.378)	(0.346)
35 Years Old	-0.430*	0.026	-0.524	-0.218	0.084	0.589**	0.406**	-0.297	0.601***
	(0.235)	(0.407)	(0.537)	(0.330)	(0.313)	(0.264)	(0.196)	(0.302)	(0.213)
45 Years Old	0.552**	-0.567**	-0.314	0.295	-0.504**	-0.168	-0.392**	-0.599***	0.231
	(0.190)	(0.242)	(0.366)	(0.256)	(0.252)	(0.310)	(0.177)	(0.220)	(0.388)
Occupational Competency (ref. Below Average)									
Average	0.055	-0.047	0.115	0.247	-0.027	-0.388	-0.102	-0.005	-0.227
	(0.085)	(0.081)	(0.144)	(0.169)	(0.298)	(0.266)	(0.276)	(0.783)	(0.338)
Above Average	1.400***	1.115***	1.760***	1.287***	1.172***	1.525***	1.114***	1.132***	1.220***
	(0.151)	(0.146)	(0.282)	(0.112)	(0.144)	(0.199)	(0.094)	(0.152)	(0.144)
Job Mobility	0.365***	0.378***	0.239	0.381***	0.393***	0.422***	0.320***	0.380***	0.409***
	(0.077)	(0.085)	(0.149)	(0.067)	(0.088)	(0.108)	(0.065)	(0.093)	(0.084)
Usability in other Firms (ref. Only Usable in Firm)									
Partly	-0.466**	-0.111	-0.437*	-0.020	0.065	0.001	0.091	0.066	0.324
	(0.205)	(0.221)	(0.239)	(0.217)	(0.295)	(0.239)	(0.281)	(0.431)	(0.221)
Completely	0.609**	-0.467**	0.715**	0.322*	0.442**	0.003	-0.279	-0.479**	0.015
	(0.202)	(0.178)	(0.262)	(0.180)	(0.190)	(0.348)	(0.182)	(0.193)	(0.360)

Training Duration	0.121***	0.095***	0.144***	0.097***	0.081***	0.127***	0.111***	0.110***	0.118***
	(0.019)	(0.023)	(0.030)	(0.017)	(0.023)	(0.026)	(0.014)	(0.022)	(0.021)
Cost Coverage by the Employer (ref. 0 Percent)									
50 Percent	0.001	0.190	-0.068	-0.219	-0.251	0.298	-0.347**	0.468**	-0.290
	(0.089)	(0.331)	(0.131)	(0.273)	(0.327)	(0.445)	(0.160)	(0.201)	(0.252)
100 Percent	0.032	-0.077	-0.035	0.003	0.179	0.005	0.110	-0.342	0.202
	(0.060)	(0.187)	(0.069)	(0.164)	(0.292)	(0.201)	(0.289)	(0.226)	(0.238)
Number of Observations	11,686	4,944	6,742	8,874	4,816	4,058	10,484	4,524	5,960
Log-Likelihood	-2,827	-1,472	-1,318	-2,638	-1,448	-1,169	-3,159	-1,362	-1,770

Source: BIBB-CBS 2017/2018. Own calculations.

Notes: This table shows the parameter estimates of the mixed logit estimates for the weighted mixed logit regression (columns 1-3), mixed logit regression excluding firm owners (columns 4-6) and mixed logit regreesions with training firms (columns 7-9). ***/**/* indicate statistical significance at the 1%/5%/10%-level. Estimation based on 300 scrambled Halton draws.

Table B.10: Descriptive Manager Statistics – Matched versus Non-Matched

	Mean (All) (1)	Matched (CBS-Vign + IEB) (2)	Not Matched (Only CBS-Vign) (3)	ttest (2) = (3) (4)	Matched (On All Vars) (5)	ttest (5) = (3) (6)
Gender						
Male	0.57	0.62	0.51	0.00	0.59	0.01
Female	0.43	0.38	0.49	0.00	0.41	0.01
Firm Position						
Owner	0.36	0.43	0.27	0.00	0.31	0.11
CEO	0.14	0.15	0.12	0.10	0.18	0.01
Department Head	0.07	0.07	0.07	0.73	0.09	0.50
Head HR	0.17	0.17	0.18	0.42	0.21	0.27
Head Commerce	0.09	0.06	0.12	0.00	0.06	0.00
Head of Training	0.06	0.05	0.09	0.01	0.07	0.30
Other Position	0.11	0.08	0.15	0.00	0.08	0.00
Qualification						
No Vocational Training	0.01	0.01	0.00	0.25	0.00	0.86
Vocational Training	0.21	0.21	0.20	0.66	0.21	0.68
Advanced Voc Degree	0.35	0.33	0.37	0.14	0.28	0.00
Academic Degree	0.44	0.45	0.42	0.38	0.51	0.01
Firm Tenure in Years	14.59	15.42	13.58	0.00	14.32	0.27
Risk-Affinity	5.46	5.51	5.40	0.39	5.56	0.28
Altruism	251.35	276.63	218.10	0.00	283.78	0.00
Reciprocity	6.20	6.19	6.21	0.81	6.11	0.25
Locus of Control	5.78	5.76	5.81	0.49	5.83	0.81
B5 Openness	5.12	5.13	5.11	0.73	5.08	0.61
B5 Conscientiousness	6.09	6.01	6.19	0.00	5.97	0.00
B5 Extraversion	5.17	5.15	5.20	0.56	5.16	0.64
B5 Agreeableness	5.60	5.60	5.60	0.87	5.60	0.99
B5 Emotional Stability	4.82	4.78	4.87	0.20	4.79	0.33
Firm's Training Decision						
Alone	0.30	0.34	0.26	0.01	0.26	0.84
Together	0.45	0.45	0.46	0.91	0.49	0.34
Support	0.16	0.15	0.16	0.44	0.18	0.60
Not Involved	0.09	0.06	0.12	0.00	0.08	0.05
Number of firms	1,132	622	511		428	

Source: BIBB-CBS 2017/2018 + IEB. Own calculations.
Notes: Shows means of managers' characteristics for all Vignette firms in column (1), for Vignette firms that could be matched with IEB in column (2), for Vignette firms that could not be matched with IEB in column (3) and for Vignette firms that could be matched with IEB and have non missing information on all new variables in column (5). Column (4) and (6) show the p-value of the respective t-test on equality of means. While significant differences indicate that our main and our merged sample differ, this does not affect the randomisation induced by the vignette.
Matching procedure: For the waves 2017 and 2018, we have information on the full workforce composition of each firm. However, only 824 of our vignette firms agreed to be linked to the administrative records. The merging procedure includes a quality check based on a comparison of firm size, which is available in both datasets (Dietrich *et al.*, 2014). We lose about 100 firm observations due to missing information or insufficient match quality (especially relevant for larger firms). Since the IEB data is stored in spell format, we chose the corresponding spell that overlaps with the CBS interview date for each remaining firm in the vignette sample. This ensures that we have a snapshot of the firm and the composition of the workforce at the time when the manager answers the vignette questions and decides on the provision of training. We then apply the same sample restrictions as for our main analysis.

Table B.11: Descriptive Firm Statistics – Matched versus Non-Matched

	Mean (All) (1)	Matched (CBS-Vign + IEB) (2)	Not Matched (Only CBS-Vign) (3)	ttest (2) = (3) (4)	Matched (On All Vars) (5)	ttest (5) = (3) (6)
Training yes/no	0.77	0.81	0.71	0.00	0.86	0.00
Number of Employees	70.62	55.03	89.60	0.00	76.23	0.20
Firmtype						
Autonomous Holding	0.64	0.71	0.57	0.00	0.61	0.15
Independent Operation	0.11	0.09	0.13	0.03	0.13	0.91
Cooperate Headquarter	0.07	0.06	0.08	0.14	0.07	0.84
Branch Office	0.09	0.07	0.11	0.05	0.10	0.55
Foundation	0.05	0.04	0.06	0.11	0.05	0.72
Something Different	0.05	0.03	0.06	0.03	0.04	0.10
Work Council	0.22	0.18	0.26	0.00	0.24	0.50
Collective Bargaining Coverage	0.40	0.41	0.38	0.38	0.41	0.44
Firm						
Export-oriented	0.10	0.09	0.12	0.19	0.12	0.85
High Competition	0.67	0.66	0.68	0.56	0.68	0.89
Labor Market Tightness	3.89	3.97	3.80	0.01	3.83	0.64
Training Cooperations	0.25	0.26	0.23	0.30	0.29	0.07
Profit Sharing	0.34	0.35	0.32	0.30	0.41	0.00
Flexible Working Hours	0.58	0.57	0.59	0.47	0.62	0.34
Firm's Utilized Capacity	88.89	89.17	88.55	0.47	89.43	0.35
Branch						
Agriculture	0.02	0.02	0.02	0.82	0.02	0.87
Mining Industry	0.00	0.00	0.00	0.36	0.00	0.27
Manufacturing	0.08	0.11	0.05	0.00	0.12	0.00
Electricity	0.01	0.01	0.01	0.53	0.00	0.36
Water Supply	0.01	0.00	0.01	0.81	0.00	0.41
Construction	0.08	0.09	0.06	0.06	0.07	0.63
Wholesale, Retail Trade	0.16	0.17	0.14	0.13	0.18	0.09
Transportation	0.03	0.02	0.04	0.14	0.03	0.40
Accommodation Activities	0.07	0.07	0.07	0.76	0.08	0.51
Information Activities	0.04	0.04	0.04	0.85	0.05	0.57
Finance and Insurance	0.02	0.02	0.02	0.94	0.02	0.76
Real Estate Activities	0.02	0.01	0.03	0.07	0.01	0.03
Professional Activities	0.10	0.09	0.10	0.71	0.10	0.84
Administrative Activities	0.07	0.06	0.08	0.31	0.06	0.28
Public Administration	0.03	0.02	0.03	0.46	0.04	0.75
Education	0.02	0.02	0.02	0.96	0.02	0.72
Human Health, Social Work	0.12	0.12	0.11	0.40	0.11	0.90
Arts, Recreation	0.01	0.01	0.01	0.53	0.01	0.95
Other Service Activities	0.06	0.04	0.08	0.00	0.03	0.00
Other Branches	0.08	0.07	0.10	0.19	0.06	0.03
Number of firms	1,132	622	511		428	

Source: BIBB-CBS 2017/2018 + IEB. Own calculations.
Notes: Shows means of firms' characteristics for all Vignette firms in column (1), for Vignette firms that could be matched with IEB in column (2), for Vignette firms that could not be matched with IEB in column (3) and for Vignette firms that could be matched with IEB and have non missing information on all new variables in column (5). Column (4) and (6) show the p-value of the respective t-test on equality of means. While significant differences indicate that our main and our merged sample differ, this does not affect the randomisation induced by the vignette.
Matching procedure: see Table B.10.