Parental Leave and Discrimination in the Labor Market

Julia Schmieder
Doris Weichselbaumer
Clara Welteke
Katharina Wrohlich

DISCUSSION PAPER SERIES

IZA DP No. 17451

Parental Leave and Discrimination in the Labor Market

Julia Schmieder
DIW and IZA

Clara Welteke
DIW

Doris Weichselbaumer
University of Linz and IZA

Katharina Wrohlich
DIW, University of Potsdam, Berlin School of Economics and IZA

NOVEMBER 2024

ABSTRACT

Parental Leave and Discrimination in the Labor Market*

Promoting fathers to take parental leave is seen as a promising way to advance gender equality. However, there is still a very limited understanding of its impact on fathers' labor market outcomes. We conducted a correspondence study to analyze whether fathers who take parental leave face discrimination during the hiring process in three different occupations. Fathers who took parental leave in a female-dominated or gender-neutral occupation are not less likely to be invited to a job interview compared to fathers who did not take leave. However, in the male-dominated occupation, fathers who have taken long parental leave are penalized. Regardless of leave-taking, fathers are treated less favorably than mothers in the female-dominated and the gender-neutral occupation, while the opposite is true for the male-dominated occupation. This suggests the presence of strong gender norms concerning the perception of ideal employees in different occupations.

Corresponding author:
Katharina Wrohlich
DIW Berlin
Mohrenstr. 58
10117 Berlin
Germany
E-mail: kwrohlich@diw.de

1 Introduction

Parental leave taken by fathers is considered a promising way to promote gender equality in the labor market and address the distribution of unpaid care work at home. Many countries have, therefore, introduced periods of paid parental leave earmarked to fathers to incentivize their involvement in childcare. Germany, for example, adopted such a system in 2007, where 2 out of 14 months are earmarked individually to each parent. Since then, the share of fathers taking parental leave has steadily increased but is still far from equal. Moreover, the duration of parental leave is very unequally distributed between fathers and mothers: The majority of fathers who take parental leave only take two months, whereas most mothers take 12 months (Samtleben et al., 2019). Evidence from quantitative surveys shows that fathers fear disadvantages in the labor market if they take leave longer than two months (Samtleben et al., 2019). Qualitative studies also suggest that fathers who take time for care work face ridicule and are perceived as idle at their jobs (Kelland et al., 2022). However, causal empirical evidence on the actual labor market consequences of parental leave for fathers is scarce.

In this paper, we aim to analyze whether fathers who take parental leave experience negative consequences in the labor market and, if so, whether these effects vary by occupation and the duration of parental leave. Specifically, we are investigating whether taking parental leave affects the probability of being invited to a job interview several years after the leave has been taken. As a point of reference, we are including mothers in the analysis, which also allows us to identify any potential gender differences. Our analysis is based on data collected between September 2019 and July 2021 through a correspondence study in which we sent job applications to more than 8,000 firms. We compare the probability of being invited to a job interview across five applicant profiles: fathers who do not take parental leave, those who take short (2 months) or long (12 months) leave, and mothers who take short (2 months) or long (12

months) leave. We collected data for three types of jobs that differ by the gender composition of their workforce to determine if the effects vary along this dimension.

There are several reasons why taking parental leave may lead to negative labor market outcomes – many of which are independent of gender. One reason is the human capital argument, which suggests that time away from work reduces job experience and depreciates work-related skills (Mincer and Polachek, 1974). Additionally, parental leave can have negative consequences through a signaling effect. Employers may interpret the decision to take parental leave as a signal that the employee values family more than career and question the worker's commitment and work dedication as a result. This belief has been termed "flexibility stigma" in the literature (Coltrane et al., 2013). Statistical discrimination (Phelps, 1972; Arrow, 1973) occurs when there is incomplete information about the productive characteristics of a job applicant. Employers likely expect an applicant who has taken long parental leave in the past to be the primary caregiver at home, leading to the assumption that they may need to take time off, for example, when the child is sick. This could result in statistical discrimination, particularly for individuals who have taken long parental leave. The effect is expected to be the same for both mothers and fathers, as they equally signal their family orientation when taking long parental leave.

Parental leave-taking behavior that is (not) congruent with gender stereotypes, however, can result in effects that differ by gender. Men are stereotypically ascribed the breadwinner and family provider role, while women are considered to be the main caregivers (e.g., Gerst and Grund, 2023). As a result, women who take long parental leave conform to their stereotype, while men who do so violate it (e.g., Fleischmann and Sieverding, 2015). Employers may prefer employees who conform to established norms, including gender norms, and have a distaste for those who violate them. In that case, we would expect to see taste discrimination

(Becker, 1957) that differs by gender and works against men who have taken long parental leave and possibly against women who have taken short leave.

Finally, there could be differences in the effects of parental leave by occupation type. For example, men working in female-dominated occupations that often comprise "caring" activities, might actually increase their chances if they signal a communal personality by taking long parental leave (Fleischmann and Sieverding, 2015; Krstic, 2019). Conversely, mothers with short leaves may be seen as more agentic, leading to better outcomes in male-dominated occupations.

Empirical evidence on the labor market effects of parental leave for fathers is still scarce. A few studies based on observational data from the Nordic countries that analyze the effects of parental leave on subsequent wages show inconclusive results (Cools et al., 2011; Rege and Solli, 2013). For many other countries, including Germany, there are no administrative data available that could be used for this kind of empirical analysis as it is not possible to identify fathers, e.g., in social security data. However, experimental studies (e.g. Hipp, 2021; Bartos and Pertold-Gebicka, 2018) can fill this gap.

We contribute to the literature by providing the first causal evidence of the effects of parental leave on fathers' subsequent labor market outcomes for different lengths of parental leave and in different types of occupations. Additionally, we are able to compare the results for fathers to those for mothers. Our results show that in the female-dominated and the gender-neutral occupation, fathers who indicate to have taken parental leave are not treated differently compared to fathers who do not, irrespective of the leave duration. In the male-dominated occupation, however, fathers have a five percentage points lower probability of being invited to a job interview when they indicate that they have taken 12 months compared to no parental

leave in the past. Regarding mothers, by contrast, we find no evidence that the duration of their parental has any impact in any of the three occupations.

Our findings show that, regardless of parental leave, mothers have a higher probability of being invited to job interviews in the female-dominated and the gender-neutral occupation than fathers. In the male-dominated occupation, male applicants are more successful than female applicants. These results align with previous research indicating that the direction of gender discrimination depends on the gender composition of an occupation (Weichselbaumer, 2004; Yavorsky, 2019; Galos and Coppock, 2023, Adamovic and Leibbrandt, 2023). This suggests deeply rooted gender norms concerning the perception of ideal employees in specific occupations and workplaces. We find that gender is a stronger predictor of the interview invitation probability than the duration of parental leave. This indicates that employers' assessment of candidates is not based on potential productivity signals that could be inferred from leave-taking. Instead, there seems to be gender-based discrimination against men and women depending on the specific work domain.

During our data collection period, the COVID-19 pandemic struck Germany in March 2020. This timing allowed us to investigate the potential effects of the pandemic on employers' assessments of candidates' past parental leave-taking. We find that before COVID-19, mothers with long parental leave were preferred in the female-dominated occupation, presumably because they followed the social norm of mothers being the primary caregivers. However, the pandemic, along with school and kindergarten closures and the resulting childcare crisis, brought this preferential treatment to an end.

2   Institutional Background and Related Literature

2.1   Parental Leave Regulations in Germany

In Germany, parental leave legislation is rather generous. Employed mothers have access to paid maternity leave, which assures a leave of six weeks before and eight weeks after giving childbirth, along with financial benefits (maternity leave benefit, "Mutterschaftsgeld") that replace total net prior-to-birth earnings in most cases. After this, each parent can take parental leave from their job and is granted employment protection for a maximum of three years. However, not all of this maximum parental leave period is paid: The parental leave benefit ("Elterngeld") is paid for a maximum of 12 months if only one parent takes parental leave and can be extended by two months ("partner months") if both parents take parental leave.[1] Thus, to qualify for the full 14 months, a minimum of two month of parental leave is reserved exclusively for each parent. The parental leave benefit replaces 65 percent of prior-to-birth net earnings of the parent on leave, up to a maximum of 1,800 Euro per month. The minimum amount is 300 Euros per month.

While men have been eligible for paid parental leave since its introduction in 1986 and could share it with their partner since 1992, very few men used this opportunity (Bünning, 2016). Only since the 2007 reform that introduced the ear-marked parental leave for each parent has the share of fathers taking parental leave increased from about three percent for children born in 2006 to around 46 percent for those born in 2021. Among fathers with children born in 2016, the group we focus on in our experiment, 39 percent took parental leave.[2] However, while more than 90 percent of mothers took more than ten months of parental leave, most of the fathers

---

[1] Months in which a mother receives maternity benefit are included in the number of months with parental leave benefit.
[2] See database on parental leave of the German Federal Statistical Office: https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Soziales/Elterngeld/Tabellen/zeitreihe-elterngeld.html (retrieved June 24th 2024).

who took parental leave took exactly two months (80 percent), mostly in the 13th and 14th months after the child's birth (Brehm et al., 2022). The second most frequent length of parental leave among fathers was 12 months, albeit at a much lower share (5 percent).[3]

2.2   Previous Literature on the effects of parental leave on fathers' subsequent labor market outcomes

That men do not take up parental leave in greater numbers, despite respective policies, has been observed in several countries (OECD 2023). One of the reasons fathers give for not taking parental leave or only taking a short leave is the fear of facing disadvantages at the workplace (Samtleben et al., 2019; Vogt and Pull 2010). However, empirical evidence on the causal consequences of parental leave for fathers is limited.[4]

Two early Swedish studies (Albrecht et al., 1999; Stafford and Sundström, 1996) that applied fixed-effects models on the basis of panel data, showed that parental leave leads to lower wages, particularly for men. More recently, Evertsson (2016) confirmed the negative effects of parental leave on wages for fathers and mothers in Sweden. Among fathers, these occurred particularly for those with higher education, irrespective of whether they took a long or short

---

[3] The information on the share of male and female parental leave users by monthly durations is only available for the children born in the years 2009-2015. For our experiment, the relevant birth year is 2016. Therefore, we present parental leave use of fathers by month for the latest year available (2015).

[4] In contrast, there is a large literature on the effects of parental leave on mothers' labor market outcomes. For example, Schönberg and Ludsteck (2014) analyzed several extensions of paid parental leave in (West) Germany and found that these reforms prolonged mothers' employment interruptions but mostly did not affect their earnings in the medium run. Similarly, Lalive et al. (2014) have shown for Austria that reforms that have increased the maximum duration of paid leave in combination with job protection have prolonged mothers' employment interruptions quite strongly but did not affect mothers' earnings in the medium run. Similar results have been found for the parental leave scheme introduced in California (Baum and Ruhm, 2016), Canada (Baker and Milligan, 2008) and Australia (Broadway et al., 2023). Frodermann et al. (2023) have shown that the German 2007 parental leave reform, which increased the duration of parental leave for some groups of mothers, even positively affected long-run earnings of mothers. As summarized by Rossin-Slater (2018), the general conclusion from the literature is that leave entitlements up to one year can improve job continuity for women and increase their labor market attachment. However, leaves longer than one year can negatively affect their earnings, employment and career advancement.

leave.[5] Making use of the introduction of a paternity leave quota in Norway to estimate the effect on fathers' earnings, Rege and Solli (2013) showed that fathers who took four (out of 42) weeks of parental leave experienced a wage penalty afterward, while such effects are insignificant in the study by Cools et al. (2011). Two studies examined the wage effects of parental leave for fathers in Germany based on survey data, with inconclusive results: On the basis of the Socio-economic panel and fixed-effect models, Bünning (2016) did not find any significant effect of parental leave on the wages of fathers, while another study that focused on middle managers in the chemical industry found lower wages particularly for fathers who took leaves longer than 2 months, but without accounting for selection effects (Gerst and Grund, 2023).

These studies face the difficulty of accounting for the selection into (long) parental leave. Although the fixed-effects model allows to control for time-constant individual factors that affect both leave-taking and labor market outcomes, it does not account for unobserved characteristics that change over time. Additionally, these studies do not allow the identification of mechanisms driving the results. These limitations can be overcome in experimental studies.

So far, experimental evidence of parental leave's effect on labor market outcomes of fathers and mothers is rather scarce.[6] A couple of laboratory experiments (mainly using students as subjects) assessed how fathers who have taken parental leave are perceived on various

---

[5] For the US, estimating fixed-effects models, Coltrane et al. (2013) found that white men who took time out of employment due to family obligations suffered with regard to their earnings, but their penalties were lower than for white women.

[6] There is a relatively large experimental literature on the effects of parenthood (not parental leave-taking) on labor market outcomes. Several correspondence tests examined whether parenthood (not parental leave) affected the labor market chances of job applicants. For example, Firth (1982), Correll et al. (2007) and Hipp (2020) found that mothers received fewer invitations to an interview than non-mothers, while fathers were not penalized for having children in the UK, the USA and Germany. Bygren et al. (2017) did not detect parents being discriminated in Sweden – irrespective of their gender. Likewise, Becker et al. (2019) did not find an effect for parenthood for either sex in a study covering the German speaking countries as long as full-time jobs were concerned. Statistical discrimination concerning a potential career break due to motherhood was also illustrated with different correspondence study designs, e.g., by Duguet and Petit (2005), Duguet et al. (2017) or Baert (2014).

dimensions. Fleischmann and Sieverding (2015), as well as Krstic (2019), found that study participants perceived fathers who had taken (long) paternity leave as more communal, while no direct effect of paternity leave on perceived hirability was identified in Germany and Canada, respectively. One laboratory experiment in the US found that students perceived men who took parental leave (or cared for parents) as actually more employable than men who took leave for a non-family related reason, i.e., having a temporary injury (Kmec et al., 2014).[7]

One disadvantage of laboratory experiments is their potentially limited external validity; for example, subjects may alter their behavior when aware they are being studied or experiments are often conducted with populations (such as university students) that are not representative of decision-makers in real labor markets. Field experiments like correspondence tests overcome these problems.

One correspondence study on women by Bartos and Pertold-Gebicka (2018) found that in the Czech Republic, mothers with a long (three years) parental leave were, on average, just as likely to be invited to a job interview as those with a shorter leave (two years). However, the average effect masks an important heterogeneity: Among highly qualified mothers, those with a shorter leave fared better, while among the less qualified, those with a long parental leave were more successful. To the best of our knowledge, only two previous correspondence studies looked at the effect of parental leave on mothers as well as fathers. An experiment by Hipp (2021), which focused on one single gender-neutral occupation in Germany, found that fathers' job opportunities were unaffected by leave duration, while mothers fared better if they had taken a long (12 months) instead of short (2 months) leave. The author concluded that this is because women are judged more negatively if they violate conventional gender norms with

---

[7] However, one vignette study in the Netherlands found that fathers who shared childcare responsibilities with their partners by working fewer hours were rated more negatively in employment-related terms than those who focused on full-time work life (Vinkenburg et al. 2012).

regard to childcare. Weisshaar (2018) showed that parents in the US who temporarily opted out of work to care for their family fared significantly worse in terms of hiring prospects relative to applicants who experienced unemployment due to job loss as well as compared to continuously employed parents. In contrast to Hipp (2021), no difference occurred by gender.

With our correspondence study, we first add to this literature by analyzing the effects for different types of occupations that vary by the gender composition of the workforce (female-dominated, gender-neutral, and male-dominated occupation). Second, since the COVID-19 pandemic struck Germany during our data collection, we are able to compare the effects of parental leave before and during the pandemic. Finally, in contrast to the only study for Germany (Hipp, 2021), we use a between-subject design, meaning we send only one application to each employer, which has been argued to be methodologically favorable to a within-subject design, where several applications are sent to the same employer.[8]

3   Experimental Design

In our experiment, we investigate whether fathers are treated differently by potential future employers depending on whether and how long they have taken parental leave in the past. Our study specifically focuses on differences by occupation type (female-dominated, male-dominated, or mixed-gender occupations). To identify the mechanisms behind the receipt of interview invitations related to parental leave and its duration, we include mothers as a reference group. If long parental leave is perceived as a lower productivity signal leading to lower invitation probabilities, this effect should occur irrespective of gender. If, however, gender stereotypes about the appropriate leave-taking and leave duration of men and women

---

[8] Weichselbaumer (2015) and Larsen (2020) advocate the between-subject design because of the increased and maybe unnatural competition that is induced by adding an equally qualified applicant to the applicant pool and the increased probability of detection in the within-subject-design.

influence invitation probabilities, we expect to see different patterns between the genders and across various occupational types.

To evaluate employer interest in different hypothetical applicants for actual job openings, we conducted a large-scale correspondence study. Job advertisements were collected from a large online job board in Germany operated by the Federal Employment Agency.[9] Applications were sent with randomly varying gender and parental leave combinations. We chose a between-subject (single application) design, where only one application was sent per employer.

Choice of identities and occupations

Our experiment includes five identities, three male and two female candidates. All candidates had one child but differed with respect to the duration of their parental leave. As mentioned before, in Germany, on average 60 percent of all fathers did not take any parental leave, and among those who did, the two most common parental leave durations were two and 12 months. Fathers in our experiment were therefore assigned either no parental leave (M-0), two months (M-2), or 12 months (M-12). Mothers in Germany are subject to an obligatory maternity leave of eight weeks. Hence, we assigned them either two (F-2) or 12 months (F-12) of parental leave. To hold job experience constant among applicants, those with 12 months of parental leave were one year older (birth year 1992 instead of 1993). Thus, the applicants were in the second half of their twenties.

The child's year of birth was set to 2016 for all candidates. This implies that the child was aged three to five at the time of the application. In Germany, more than 90 percent of all children aged three to six are enrolled in childcare. Around half of them are in full-day child care, meaning they spend at least seven hours per day in the care facility (BMFSFJ, 2023). Thus,

---

[9] https://jobboerse.arbeitsagentur.de

childcare obligations are alleviated for this age group. Because the likelihood of a second child is high,[10] employers may form expectations about potential future career breaks. However, Becker et al. (2019) did not find different employment chances depending on the probability of future childbirths for full-time job applicants in Germany.

Because the effect of parental leave may vary across occupations with different shares of female employees, we focus on three different occupations (Table 1): one female-dominated (office clerks and secretaries) with 78.9 percent female employees, one gender-neutral (occupations in business administration and technical business management as well as in purchasing, "industrial clerk") with 60.0 percent female employees, and one male-dominated (technical occupations in the automotive industry, "automotive technicians") with 5.1 percent female employees. For comparison reasons, we only chose positions with specialist activities, which normally require a completed vocational training (of at least two years). All these occupations had a sufficient labor demand at the time of the experiment and typically invite e-mail applications.

Table 1: Occupations in the experiment

Occupation type	Occupation	Female employees (%)
Female-dominated	Office clerks and secretaries (KldB 2010: 7140)	78.9
Gender-neutral	Occupations in business administration and technical business management as well as in purchasing (KldB 2010: 6111, 7130)	60.0
Male-dominated	Technical occupations in the automotive industries (KldB 2010: 2521)	5.1

Note: Share of female employees refers to September 30, 2019, KldB stands for the German Classification of Occupations;
Source: Federal Employment Agency Statistics: Beschäftigte nach Berufen (KldB 2010),
https://statistik.arbeitsagentur.de/SiteGlobals/Forms/Suche/Einzelheftsuche_Formular.html;jsessionid=B22C157381C881E0
4AD3D4EE6297F913?nn=20894&topic_f=beschaeftigung-sozbe-bo-heft.

---

[10] The median age difference between the first and the second child for first children born in 2016 was 3,2 years in Germany, see Federal Statistical Office: https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bevoelkerung/Geburten/Tabellen/lebendgeborene-geburtenabstand.html.

Application material

The application material consisted of a cover letter, a résumé, and a certificate of successful completion of an apprenticeship training. Since we only sent one application per employer and the qualification requirements are relatively similar across job openings, the documents were the same for all applications within one occupation, except for the characteristics that varied by design. While the parental leave duration was indicated by a respective entry in the résumé (e.g., September 2016 – September 2017: parental leave), the photo and name signaled the applicant's gender.[11] The applicants' first names ("Jan" and "Julia") were among the most common in the 1992 and 1993 birth cohorts in Germany. Their surname ("Schneider"), one of the three most common in Germany, was the same across all five identities. Additionally, the résumé stated that the applicant is married and has one child born in 2016, as providing such personal information is common in Germany (see also Becker et al., 2019).

All candidates lived in Kassel, in the center of Germany, at the time of the application and obtained their education and work experience there.[12] Their résumé listed the city with the nearest hospital to the job location as their birthplace, and their cover letter explained a personal desire to work close to where they were born. This made it plausible to employers that they were genuinely interested in the position even though they did not live nearby.

The application material also included an apprenticeship certificate.[13] The candidates obtained dual apprenticeship training, combining vocational school with practical training in a firm. The apprenticeship certificate was issued by a fictitious employer and included an email contact

---

[11] In Germany, it is the norm to attach a photograph to the application (Weichselbaumer, 2020).

[12] The postal address in Kassel was the same across all candidates.

[13] The candidates indicated that they had the relevant apprenticeship training for the occupation they applied for. After finishing their apprenticeship, the applicants changed employers. They started working at a medium-sized trading company (for the female-dominated and gender-neutral occupation) or a car workshop (for the male-dominated occupation). At the time of the application, they were still employed at this firm. The résumé also included information about a driver's license, language, and computer skills, and two gender-neutral hobbies (running and meeting friends).

and a company logo, which we had created. We randomly varied the final apprenticeship grade (grade point average, GPA) in the résumé between good (2.0 on a scale of one to five, with one being the best grade) and satisfactory (3.0).

We prepared all application documents based on real-life examples and strictly adhered to rules defined by the German Federal Anti-Discrimination Agency, which legally covers testing procedures (Klose and Kuehn, 2010). The plausibility of the application material in interviews was confirmed with individuals experienced in hiring decisions (two individuals per occupation).

4   Data Collection

Every week during the data collection period, we manually downloaded job openings posted in the preceding seven days in all regions of Germany. We only included openings for jobs whose basic requirements matched the profile of the fictitious candidates. Every employer was included only once. We further omitted job openings from temporary and private employment agencies, those that did not allow for e-mail applications, and positions with managerial responsibility, shift work, or marginal employment (so-called "mini-jobs"). We also excluded vacancies posted by small companies with five employees or fewer.[14]

We collected employers' responses by e-mail, phone (text message, voicemail), and mail. To keep costs for employers at a minimum, we politely withdrew our application in the case of an invitation to a job interview or any other positive callback within 24 hours.

Our main outcome variable is an indicator equal to one if an employer requests an interview and zero otherwise. An interview invitation is defined as a personalized phone, e-mail, or mail

---

[14] This was a suggestion by the ethics committee in order to avoid costs involved with the handling of our applications for small firms.

contact in which the potential employer expressed interest in conducting an interview. For a broader measure of employer interest in the applicant, we also examined whether an application received a callback. A callback is defined as any positive response from a potential employer by phone, e-mail, or mail, including requests for interviews as well as inquiries for additional or clarifying information.

Besides our outcome measures, we collected information on job characteristics available in the job openings, such as whether the job required full-time work, whether the contact person was female, whether the job was subject to a collective agreement, whether the position was permanent, and whether a salary expectation should be stated in the application. We further acquired information on the employer size, industry sector, and work location (zip code).[15] Based on this zip code, we added information on the grade of urbanicity (high, medium, or low), the county, and the broader region (East/West Germany) of the work location.[16] Finally, we merged information on the labor market tightness, measured as the number of unemployed individuals per vacancy, to each job opening at the county-occupation-month level.[17]

We started our data collection in September 2019, with a weekly number of applications of approximately 150, on average. With the introduction of the first national lockdown due to the COVID-19 pandemic in Germany, we had to interrupt the data collection from mid-March 2020 until mid-April 2020 when we resumed the data collection while working from home. With the beginning of the COVID-19 pandemic, the number of available job openings and, as

---

[15] The information on wage setting by collective agreement and employer size was retrieved from the online platform, which is self-reported information from the companies that posted the job ad.
[16] Data source: Federal Statistical Office, Gemeindeverzeichnis 2018. (https://www.destatis.de/DE/Themen/Laender-Regionen/Regionales/Gemeindeverzeichnis/_inhalt.html, retrieved in October 2024)
[17] Data source: Calculations by the Federal Employment Agency upon our request.

a result, the number of applications dropped substantially and stayed permanently lower (around 80-100 per week) until the end of our experiment in July 2021.[18]

Summary statistics

Statistics describing the sample are presented in Table 2. The final sample consists of 8,244 observations, with 3,051 observations for the female-dominated, 2,472 for the gender-neutral, and 2,721 for the male-dominated occupation. As expected, since they were strictly randomized, each of our five gender-parental leave types was assigned to approximately 20 percent of the applications.

The average job characteristics, which we controlled for in the main analysis, vary substantially across the three occupations. For example, the job market was, on average, tighter for the male-dominated occupation compared to the gender-neutral and female-dominated occupation: While there was, on average, one unemployed person per vacancy in the male-dominated occupation, this ratio was around 3.6 and 6.8 for the gender-neutral and the female-dominated occupation, respectively.

The percentage of posted jobs that require full-time work is decreasing with the share of female employees in the profession. While almost all jobs (95 percent) in the male-dominated occupation require full-time work, only 38 percent of jobs in the female-dominated occupation do so. Around 18 percent of all employers are in East Germany. Most gender-neutral and male-dominated jobs are located in areas of "medium urbanization", whereas firms that seek employees for the female-dominated occupation are situated more often in cities. Jobs in the male-dominated occupation are mainly posted by small employers; less than ten percent have

---

[18] As a result, we extended the data collection period from the intended 12 to 22 months and updated the intervention end date in our pre-analysis plan from September 11, 2020 to July 31, 2021 (see http://www.socialscienceregistry.org/trials/4694).

more than 50 employees. In contrast, half of the vacancies in the gender-neutral occupation come from large employers.

Roughly one-third of all observations were collected before March 2020, i.e., before the COVID-19 pandemic hit Germany. The other two-thirds of observations were collected between April 2020 and July 2021, during the pandemic.

Table 2: Summary Statistics

	Occupation type			
	female-dominated	neutral	male-dominated	Total
Résumé characteristics				
Male, 0 months leave (M-0)	0.199	0.201	0.200	0.200
	(0.400)	(0.401)	(0.400)	(0.400)
Male, 2 months leave (M-2)	0.201	0.200	0.201	0.200
	(0.401)	(0.400)	(0.401)	(0.400)
Male, 12 months leave (M-12)	0.199	0.199	0.201	0.200
	(0.400)	(0.399)	(0.401)	(0.400)
Female, 2 months leave (F-2)	0.201	0.200	0.198	0.200
	(0.401)	(0.400)	(0.399)	(0.400)
Female, 12 months leave (F-12)	0.200	0.200	0.201	0.200
	(0.400)	(0.400)	(0.401)	(0.400)
Final Grade: good	0.498	0.488	0.500	0.496
(reference: satisfactory)	(0.500)	(0.500)	(0.500)	(0.500)
Job characteristics				
# of unemployed per vacancy	6.748	3.588	1.022	3.911
	(4.186)	(3.060)	(1.008)	(3.923)
Full-time required	0.381	0.775	0.947	0.686
	(0.486)	(0.418)	(0.223)	(0.464)
Female contact person	0.495	0.557	0.292	0.447
	(0.500)	(0.497)	(0.455)	(0.497)
Collective agreement	0.210	0.124	0.089	0.144
	(0.408)	(0.329)	(0.285)	(0.352)
Desired salary required	0.177	0.282	0.039	0.163
	(0.381)	(0.450)	(0.194)	(0.369)
Firm characteristics				
East Germany	0.195	0.165	0.184	0.182
	(0.396)	(0.371)	(0.387)	(0.386)
Medium urbanization	0.353	0.498	0.508	0.447
	(0.478)	(0.500)	(0.500)	(0.497)
Low urbanization	0.114	0.265	0.246	0.203
	(0.318)	(0.441)	(0.431)	(0.402)
More than 50 employees	0.288	0.512	0.091	0.290
	(0.453)	(0.500)	(0.288)	(0.454)
COVID-19	0.643	0.671	0.610	0.640
	(0.479)	(0.470)	(0.488)	(0.480)
Outcome variables				
Interview invitation	0.182	0.220	0.346	0.247
	(0.386)	(0.415)	(0.476)	(0.432)
Callback	0.281	0.349	0.567	0.396
	(0.450)	(0.477)	(0.496)	(0.489)
Observations	3,051	2,472	2,721	8,244

Notes: This table presents summary statistics for the analysis sample of the experiment.

5   Main Results

Our main outcome variable of interest is the interview invitation probability. First of all, we find strong differences between the invitation rates across the three occupations (Table 2). With an average of 35 percent, applicants for the male-dominated occupation have the highest invitation rate. This rate is 13 percentage points higher than for the gender-neutral occupation (22 percent) and almost twice as high as for the female-dominated occupation amounting (18 percent). These main differences may not be surprising as they mirror the different degrees of labor market tightness in the three occupations.

Second, the patterns in Figure 1 provide evidence of strong gender differences in the invitation rate by occupation. In the female-dominated occupation, women have a significantly and substantially higher probability of being invited to a job interview than men (Panel a). We find a similar, although smaller, advantage for women in the gender-neutral occupation (Panel b). For the male-dominated occupation, the opposite pattern occurs: Male applicants have a higher interview invitation rate than female applicants.

Third, using a two-sided t-test, we find that, within each occupation, the interview invitation rate for mothers does not statistically differ between applicants with two months versus twelve months of parental leave. The same is true for fathers, with one exception: Male applicants for the male-dominated job who took 12 months of parental leave have a 5 percentage points lower invitation rate than male applicants who do not report taking any parental leave (p=0.075).

Fourth, even in the male-dominated profession where we find discrimination against fathers who took long leave, gender discrimination is even more pronounced. The mother who took 12 months of leave was 7 percentage points less likely than the father to receive an invitation to an interview (p=0.017).

Figure 1: Interview invitation rate by gender-leave type and occupation

(a) Female-dominated occupation

(b) Gender-neutral occupation

(c) Male-dominated occupation
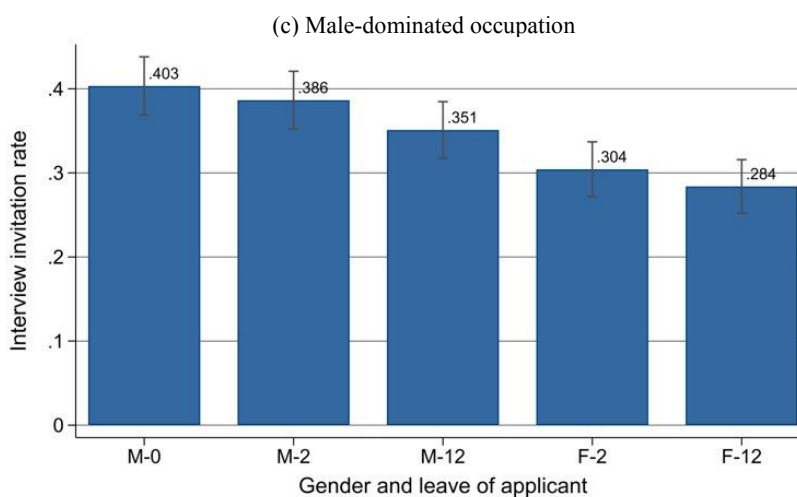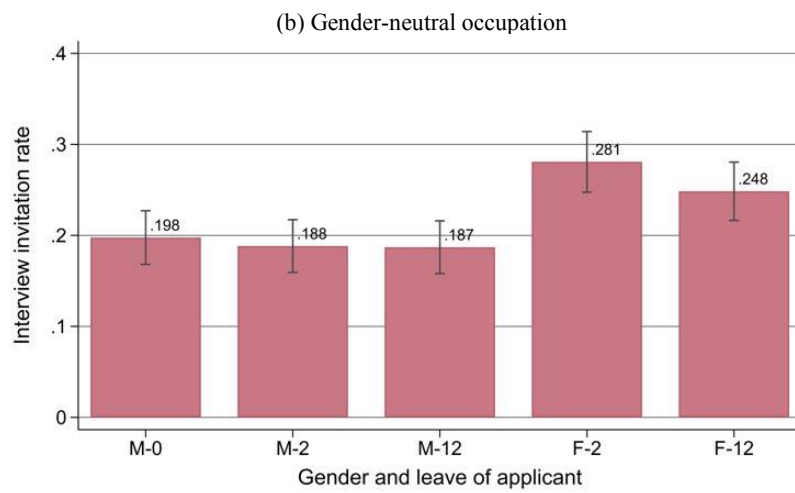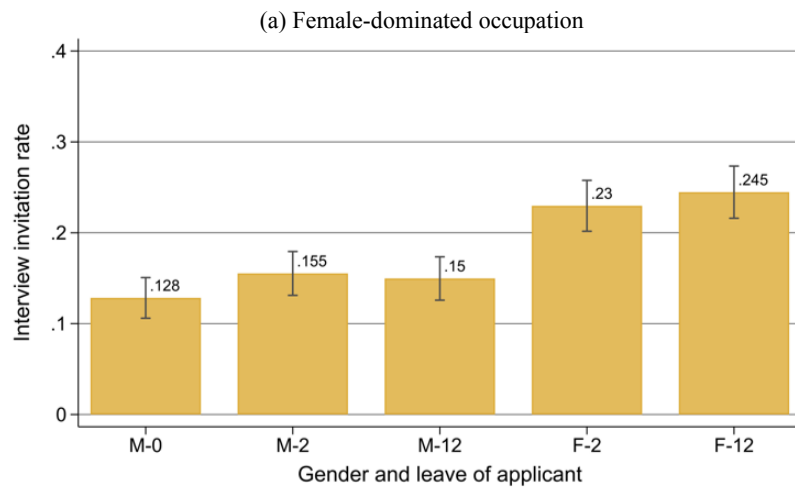
Note: Male, 0 months leave (M-0); Male, 2 months leave (M-2); Male, 12 months leave (M-12); Female, 2 months leave (F-2); Female, 12 months leave (F-12). Black bars indicate the 95% confidence intervals.

In the following, we examine the interview invitation rate by occupational type in a multivariate setting. We estimate the probability of being invited to a job interview with a linear probability model, in which we control for individual characteristics (high versus low GPA), as well as for job and firm characteristics such as labor market tightness, the requirement to work full-time, the gender of the contact person, whether a collective agreement covers the job, the location of the firm (East versus West Germany), the grade of urbanicity at the location of the firm as well as the firm size (more or less than 50 employees). Moreover, we include time and industry sector dummies. Table 3 summarizes the coefficients of interest for each of the occupations. The detailed regression results are presented in Tables A1 to A3 in the Appendix.

Table 3: Summary of Main Regression Results:
Invitation probability (Linear probability model) by occupation type

	Dependent variable: interview invitation		
	female-dominated occupation	**gender-neutral occupation**	**male-dominated occupation**
Gender-leave type			
Male, 0 months leave (M-0)		(reference category)	
Male, 2 months leave (M-2)	0.028 (0.020)	-0.011 (0.025)	-0.013 (0.029)
Male, 12 months leave (M-12)	0.025 (0.020)	-0.015 (0.025)	-0.052* (0.029)
Female, 2 months leave (F-2)	0.102*** (0.022)	0.085*** (0.027)	-0.095*** (0.029)
Female, 12 months leave (F-12)	0.116*** (0.022)	0.048* (0.026)	-0.120*** (0.028)
Constant	0.037 (0.108)	0.117 (0.192)	0.446 (0.332)
F12 - F2	0.012 (0.024)	-0.037 (0.028)	-0.025 (0.028)
M12 – M2	-0.003 (0.021)	-0.003 (0.025)	-0.039 (0.029)
Observations	3,051	2,472	2,721

Notes: This table presents the coefficients for our gender-parental leave types from columns (4) in the Appendix Tables A1–A3. Robust standard errors are in parentheses. Stars indicate statistical significance at the following levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Control variables include the GPA of the applicant, job characteristics (labor market tightness, full-time requirement, gender of the contact person, wage setting according to collective agreement, requirement to state desired salary), firm characteristics (location in East Germany, grade of urbanicity, firm size) as well as time and industry sector dummies.

The results in Table 3 indicate that in the female-dominated and the gender-neutral occupation, female applicants with short (F-2) and long leaves (F-12) have a significantly higher probability of being invited for a job interview than the male candidate without parental leave (reference category). The advantage of mothers is more pronounced in the female-dominated than in the gender-neutral occupation. Within gender, there is no statistically significant effect of the duration of parental leave on the invitation probability in these two occupations, i.e. neither the estimated coefficients on M-2 and M-12 nor the difference of the coefficients F-12 and F-2 are statistically significantly different from zero.

In the male-dominated occupation, both female applicant types are less likely to be invited to the job interview than the male candidate without parental leave. The point estimate is slightly lower for women with long parental leave than those with short parental leave. However, this difference is not statistically significantly different from zero. In contrast, the interview invitation rate for male applicants with 12 months of parental leave is around five percentage points lower than for male applicants without parental leave. This difference is statistically significant at the 10 percent level. The difference between men who take two and those who take 12 months of leave is not statistically significant.

Although the statistical significance of the unfavorable treatment of fathers who took long leave is not high, it is important to keep in mind that labor markets in this sector were particularly tight. During the experiment, the male-dominated occupation had one unemployed person per vacancy, while the female-dominated occupation had seven. As Baert et al. (2015) have shown, discrimination is lower in occupations where vacancies are difficult to fill. We thus suspect that discrimination is still underestimated in the male-dominated occupation compared to the others.

Tables A1-A3 in the Appendix illustrate which other variables affect the interview invitation rate. Apart from parental leave (duration) and gender, our applicants also differed by the final grade in their apprenticeship certificate, which was randomly varied. This final grade point average (GPA) does not significantly affect the interview invitation rate in any of the three occupations. Also most job and firm characteristics that we include in the model do not affect the interview invitation rate. In both the female-dominated and the gender-neutral occupation, we find that applications to larger firms (with more than 50 employees) and to companies that pay wages according to collective agreements have a lower rate of interview invitations. Applications to jobs located in East Germany yield significantly higher interview invitation rates in the female-dominated (plus 3 percentage points, see Table A1 in the Appendix) and the gender-neutral occupation (plus 8 percentage points, see Table A2). A model with interaction terms between East Germany and gender/parental leave types, however, does not reveal any systematically different pattern of interview invitation rates according to parental leave duration and gender in East than in West Germany (see Table A4 in the Appendix).

6   The Impact of the COVID-19 Pandemic

The data collection period in our experiment was from September 2019 until July 2021. Six months after the start of the data collection, Germany experienced the first national lockdown due to the COVID-19 pandemic. In March 2020, German federal states introduced strict contact restrictions and closures of schools and kindergartens. Bars, restaurants, shops, and many other services had to close for several weeks, and employees were asked to work from home if possible.[19] We, therefore, had to interrupt the data collection from mid-March to mid-April to prepare the technical and organizational aspects of sending out applications while working from home.

---

[19] For an overview of COVID-19 containment measures in Germany, see Bauer and Weber (2020).

In our analysis, in order to investigate the potential effects of the COVID-19 pandemic on employers' response to candidates' parental leave-taking, we included interactions of the variable "COVID-19" with the gender/parental leave types in the regression model (see Table 4). The results for the gender-neutral and the male-dominated occupation are not altered by the inclusion of this interaction term.

However, we find an interesting pattern of the effect of parental leave for mothers in the female-dominated occupation. In the period before the COVID-19 pandemic, female applicants with long parental leave had a significantly higher interview invitation rate (by seven percentage points) than female applicants with short parental leave. This hints at discrimination against mothers who violate the social norm of being the primary caregiver in the female-dominated occupation. This is in line with the findings by Hipp (2021), albeit for a gender-neutral job, as well as by Bartos and Pertold-Gebicka (2018) for highly qualified applicants. In our experiment, however, we observe that with the COVID-19 pandemic, the advantage of mothers with long compared to short leaves disappeared. Specifically, with the COVID-19 pandemic, the difference between the invitation rate of female applicants with long and short leave decreased by nine percentage points in the female-dominated occupation (F-12xCOVID-19 – F-2xCOVID-19). This result could be driven by the relatively long school closures during the COVID-19 pandemic in Germany,[20] which resulted in a high burden on primary caregivers to combine work and childcare at home.

---

[20] Compared to other European countries, Germany's schools were closed for a relatively long period of time, see Freundl et al. (2021).

Table 4: Invitation probability (linear probability model) and COVID-19

Dependent variable: Interview Invitation

	Female-dominated		Gender-neutral		Male-dominated	
	(1)	(2)	(3)	(4)	(5)	(6)
M-2	0.031	0.035	0.015	0.014	-0.004	-0.005
	(0.035)	(0.035)	(0.045)	(0.044)	(0.048)	(0.048)
M-12	0.003	0.001	0.026	0.021	-0.027	-0.028
	(0.033)	(0.034)	(0.045)	(0.045)	(0.048)	(0.048)
F-2	0.056	0.057	0.072	0.070	-0.077	-0.078*
	(0.035)	(0.038)	(0.047)	(0.046)	(0.047)	(0.047)
F-12	0.126***	0.129***	0.037	0.042	-0.107**	-0.113**
	(0.038)	(0.044)	(0.046)	(0.046)	(0.047)	(0.047)
COVID-19	-0.015		-0.005		-0.027	
	(0.029)		(0.038)		(0.043)	
M-2 x COVID-19	-0.007	-0.010	-0.036	-0.039	-0.021	-0.015
	(0.0042)	(0.042)	(0.054)	(0.053)	(0.061)	(0.061)
M-12 x COVID-19	0.029	0.036	-0.054	-0.053	-0.041	-0.039
	(0.042)	(0.042)	(0.055)	(0.054)	(0.061)	(0.061)
F-2 x COVID-19	0.071	0.069	0.017	0.021	-0.036	-0.028
	(0.045)	(0.045)	(0.058)	(0.057)	(0.060)	(0.060)
F-12 x COVID-19	-0.015	-0.019	0.021	0.008	-0.021	-0.011
	(0.047)	(0.047)	(0.056)	(0.056)	(0.034)	(0.059)
Additional control variables		Yes		Yes		Yes
Constant	0.138***	0.047	0.201***	0.094	0.420***	0.435
	(0.023)	(0.103)	(0.031)	(0.194)	(0.034)	(0.337)
F12-F2	0.070*	0.072*	-0.035	-0.028	-0.030	-0.035
	(0.040)	(0.040)	(0.049)	(0.049)	(0.046)	(0.046)
F-12 x COVID-19 - F-2 x COVID-19	-0.086*	-0.088*	0.005	-0.013	0.015	0.017
	(0.050)	(0.050)	(0.060)	(0.060)	(0.057)	(0.058)
Observations	3,051	3,051	2,472	2,472	2,721	2,721

Notes: Separate regressions by occupation: (1) and (2): female-dominated, (3) and (4) gender-neutral, and (5) and (6) male-dominated. Reference categories M0, M0 x COVID-19. The additional control variables include indicators for high GPA, full-time requirement, female contact person, collective agreement, desired salary requirement, East Germany, grade of urbanicity, large firm as well as industry sector and time dummies. The COVID-19 indicator is dropped in models with control variables because of the time dummies.

7   Robustness Check

We ran all regressions with the alternative outcome variable "callback" as a robustness check. This variable includes not only interview invitations but all employer contacts that signal interest in a candidate, including e-mails or phone calls where employers requested additional information, additional application material such as school certificates, or asked for a phone call to "discuss further questions". Compared to the outcome variable "interview invitation", which indicates a strong interest in the candidate, the variable "callback" includes companies that are yet not fully certain about the applicant.

In our data, around two thirds of all callbacks are interview invitations. As Table 2 indicates, the interview invitation rate is about 25 percent, whereas the callback rate is around 40 percent. The largest difference between interview invitations and callbacks is observed for the male-dominated occupation, where 57 percent of all candidates get a callback (compared to 28 percent in the female-dominated and 35 percent in the gender-neutral occupation), but only 35 get a direct invitation for an interview (as compared to 18 percent in the female-dominated and 22 percent in the gender-neutral occupation).

Regression results for the outcome variable "callback" are summarized in Table 5 for all three occupations. Overall, the results show the same pattern as for the outcome variable "interview invitation". We find that employers favor women in female-dominated and gender-neutral occupations and that they favor men in male-dominated occupations. Parental leave duration does not affect the callback probability for women in any of the three occupations, neither does it affect the callback probability for men in the female-dominated or the gender-neutral occupation. However, in the male-dominated occupation, fathers with long (12 months) parental leave have a 7.9 percentage points lower probability of getting a callback than those

without any parental leave. Compared to the results based on the interview invitations, this effect is not only economically larger in absolute terms but also more statistically significant, now reaching a 1 percent significance level. There is no difference in the callback rate between the male applicants who took long compared to short (2 months) parental leave. The large differences in the male-dominated occupation are striking (mothers who took one year of parental leave are even 17 percentage points less likely to receive a callback than fathers without leave), particularly given that labor markets were tight in this sector.

Table 5: Summary of Regression Results: Outcome Variable "Callback"
Invitation probability (Linear probability model) by occupation type

	Dependent variable: callback		
	female-dominated occupation	**gender-neutral occupation**	**male-dominated occupation**
Gender-leave type			
Male, 0 months leave (M-0)		(reference category)	
Male, 2 months leave (M-2)	0.005	0.004	-0.036
	(0.024)	(0.030)	(0.029)
Male, 12 months leave (M-12)	0.014	-0.003	-0.079***
	(0.024)	(0.029)	(0.030)
Female, 2 months leave (F-2)	0.111***	0.073***	-0.143***
	(0.025)	(0.030)	(0.030)
Female, 12 months leave (F-12)	0.127***	0.065**	-0.174***
	(0.026)	(0.030)	(0.030)
Constant	0.106	0.273	0.434
	(0.120)	(0.230)	(0.343)
F12 - F2	0.015	-0.008	-0.031
	(0.027)	(0.031)	(0.031)
M12 – M2	-0.009	-0.007	-0.043
	(0.024)	(0.030)	(0.030)
Observations	3,051	2,472	2,721

Notes: This table is a summary of the regression results presented in Tables A5 to A7 in the Appendix. Robust standard errors are in parentheses. Stars indicate statistical significance at the following levels: $^*p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

8   Conclusion

Over the last decades, many countries have implemented policies that encourage fathers to take parental leave. For example, Germany introduced two months of earmarked parental leave for fathers in 2007. Since then, an increasing number of fathers have used this opportunity; however, fewer than half of all fathers take parental leave, and those who do generally opt for relatively short leaves. There is still limited evidence regarding the economic impact of parental leave on fathers. With this experimental study, we provide findings how parental leave affects fathers' future job opportunities.

Overall, we do not find consistent evidence that fathers are discriminated on the basis of parental leave, at least not at the level of invitations to job interviews. For fathers working in gender-neutral or female-dominated jobs, we show that parental leave in the past does not affect their probability of being invited to a job interview, irrespective of the leave duration. For fathers in male-dominated jobs, we also find no evidence of discrimination related to a short (two months) parental leave taken in the past. However, fathers who took longer leaves (twelve months) are less successful compared to fathers who did not take any parental leave. This effect is even stronger if we look at callback rates rather than interview invitations.

While we find evidence for discrimination due to parental leave only for fathers working in the male-dominated occupation, there is clear evidence for gender-based hiring discrimination in all occupations. In female-dominated as well as in gender-neutral jobs, men are significantly less likely to be invited to a job interview. The opposite is true for male-dominated jobs, irrespective of parental leave. The finding that gender discrimination relates to the gender composition of an occupation is in line with previous experimental studies (Weichselbaumer, 2004; Yavorsky, 2019; Galos and Coppock, 2023; Adamovic and Leibbrandt, 2023).

While we cannot determine how our findings on the discrimination of fathers taking parental leave in the automotive technician job translate to other male-dominated occupations, we know that the labor market in this specific occupation has been relatively tight throughout the experiment. Drawing on previous literature showing that discrimination is lower in tight labor markets (e.g., Baert et al. 2015), we can infer that discrimination against fathers who took long leave might be even stronger in other male-dominated fields where vacancies are less difficult to fill. Moreover, it is important to note that Germany's labor market is highly gender-segregated, with most men working in male-dominated occupations. Consequently, discrimination against fathers who take parental leave in these fields remains a significant concern.

Despite these problems, we believe that policies which encourage a more equal distribution of parental leave between mothers and fathers should be promoted, as there is evidence that these policies have the potential to reduce gender inequalities in the labor market and in the division of care work at home (Patnaik 2019, and Druedahl et al. 2019). Furthermore, although we find evidence for discrimination due to parental leave for fathers, discrimination due to gender is considerably higher and present in all three occupation types. Since gender discrimination often arises from social norms about gender roles in the family and the labor market, encouraging more fathers to take parental leave – and thereby "normalizing" their involvement in family care – could help reduce both discrimination against fathers who share caregiving responsibilities with their partners and gender discrimination in general.

References

Adamovic, Mladen, and Andreas Leibbrandt. 2023. A large-scale field experiment on occupational gender segregation and hiring discrimination. *Industrial Relations* 62(1): 34–59.

Albrecht, James, Per-Anders Edin, Marianne Sundström and Susan Vroman. 1999. Career interruptions and subsequent earnings: A reexamination using Swedish data, *Journal of Human Resources*, 34(2): 294–311.

Arrow, Kenneth J. 1973. The theory of discrimination. In Ashenfelter, Orley and Rees, Albert (Eds.), *Discrimination in Labor Markets*, pp. 3–33. Princeton, NJ: Princeton University Press.

Bartoš, Vojtech, and Barbara Pertold-Gebicka. 2018. Parental leave length, social norms, and female labor market re-entry frictions. *International Journal of Manpower* 39(4): 600–620.

Baert, Stijn. 2014. Career lesbians. Getting hired for not having kids? *Industrial Relations Journal* 45(6): 543–561.

Baert, Stijn, Bart Cockx, Niels Gheyle, and Cora Vandamme. 2015. Is there less discrimination in occupations where recruitment is difficult? *ILR Review* 68(3): 467–500.

Baker, Michael, and Kevin Milligan. 2008. How does job protected maternity leave affect mothers' employment? *Journal of Labor Economics* 26(4): 655–691.

Bauer, Anja, and Enzo Weber. 2020. COVID-19: How much unemployment was caused by the shutdown in Germany? *Applied Economics Letters* 28(12): 1053-1058.

Baum, Charles L., and Christopher Ruhm. 2016. The effects of paid family leave in California on labor market outcomes. *Journal of Policy Analysis and Management* 35(2): 333–356.

Becker, Gary S. 1957. The economics of discrimination. Chicago: University of Chicago Press.

Becker, Sascha O., Ana Fernandes, and Doris Weichselbaumer. 2019. Discrimination in hiring based on potential and realized fertility: Evidence from a large-scale field experiment. *Labour Economics* 59: 139–152.

BMSFSJ. 2023. Kindertagesbetreuung Kompakt. Ausbaustand und Bedarf 2022. Report provided by the Federal Ministry of Family, Senior Citizens, Women and Youth. Online available: https://www.bmfsfj.de/bmfsfj/service/publikationen/kindertagesbetreuung-kompakt-228472, retrieved in October 2024.

Brehm, Uta, Mathias Huebener, and Sophia Schmitz. 2022. 15 Jahre Elterngeld: Erfolge, aber noch Handlungsbedarf. Ein Blick auf partnerschaftliche Arbeitsteilung und Karrieren. *Bevölkerungsforschung Aktuell* 6.

Broadway, Barbara, Guyonne R.J. Kalb, Duncan McVicar, and Bill Martin. 2023. The impact of paid parental leave on labour supply and employment outcomes. *Feminist Economics*. https://doi.org/10.1080/13545701.2020.1718175

Bünning, Mareike. 2016. Die Vereinbarkeitsfrage für Männer: Welche Auswirkungen haben Elternzeiten und Teilzeitarbeit auf die Stundenlöhne von Vätern? *Kölner Zeitschrift für Soziologie und Sozialpsychologie* 68(4): 597–618.

Bygren, Magnus, Anni Erlandsson, and Michael Gähler. 2017. Do employers prefer fathers? Evidence from a field experiment testing the gender by parenthood interaction effect on callbacks to job applications. *European Sociological Review* 33(3): 337–348.

Cools, Sara, Jon Fiva, and Lars Kirkeboen. 2015. Causal effects of paternity leave on children and parents. *Scandinavian Journal of Economics* 117(3): 801–828.

Coltrane, Scott, Elizabeth Miller, Tracy DeHaan, and Lauren Stewart. 2013. Fathers and the flexibility stigma. *Journal of Social Issues* 69(2): 279–302.

Correll, Shelly J., Stephen Benard, and In Paik. 2007. Getting a job: is there a motherhood penalty? *American Journal of Sociology* 112(5): 1297–1339.

Duguet, Emmanuel, Pascale Petit. 2005. Hiring discrimination in the French financial sector: an econometric analysis on field experiment data. *Annales d'Économie et de Statistique* 78(78): 80–101.

Duguet, Emmanuel, Loïc du Parquet, and Pascale Petit. 2017. Hiring discrimination against women: distinguishing taste-based discrimination from statistical discrimination. TEPP WP 2017–11.

Druedahl, Jeppe, Mette Ejrnaes, and Thomas H. Jorgensen. 2019. Earmarked paternity leave and the relative income within couples. *Economics Letters* 180 (2019): 85-88.

Evertsson, Marie. 2016. Parental leave and careers: Women's and men's wages after parental leave in Sweden. *Advances in Life Course Research* 29: 26–40.

Firth, Michael. 1982. Sex discrimination in job opportunities for women. *Sex Roles* 8(8): 891–901.

Fleischmann, Alexandra and Monika Sieverding. 2015: Reactions toward men who have taken parental leave: Does the length of parental leave matter? *Sex Roles*, 72, 462–476.

Freundl, Vera, Clara Stiegler, and Larissa Zierow .2021. Europe's schools in the Coronavirus pandemic – A country comparison. *Ifo Schnelldienst* 74(12): 1–12.

Frodermann, Corinna, Katharina Wrohlich, and Aline Zucco 2023. Parental leave policy and long-run earnings of mothers. *Labour Economics* 80. https://doi.org/10.1016/j.labeco.2022.102296

Galos, Diana Roxana, and Alexander Coppock. 2023. Gender composition predicts gender bias: A meta-reanalysis of hiring discrimination audit experiments, *Science Advances* 9.

Gerst, Benedikt, and Christian Grund. 2023. Gender-specific duration of parental leave and current earnings. *Work, Employment and Society* 37(1): 215–235.

Hipp, Lena. 2020. Do hiring practices penalize women and benefit men for having children? Experimental evidence from Germany. *European Sociological Review* 36(2): 250–264.

Hipp, Lena. 2021. Damned if you do, damned if you don't? Experimental evidence from Germany on hiring discrimination against mothers with short family leave. Unpublished Manuscript, WZB Berlin.

Kelland, Jasmine, Duncan Lewis, and Virgina Fisher. 2022. Viewed with suspicion, considered idle and mocked - Working caregiving fathers and fatherhood forfeits. *Gender, Work and Organisation* 29: 1578-1593.

Klose, Alexander, and Kerstin Kuehn. 2010. Die Anwendbarkeit von Testing-Verfahren Im Rahmen Der Beweislast, § 22 Allgemeines Gleichbehandlungsgesetz. Antidiskriminierungsstelle des Bundes. Berlin.

Kmec, Julie, Matt Huffman, and Andrew Penner. 2014. Being a parent or having a parent? The perceived employability of men and women who take employment leave. *American Behavioral Scientist*. 58(3): 453–472.

Kristic, Anja. 2019. The effect of taking a paternity leave on men's career outcomes: The role of communality perceptions. Dissertation.

Lalive, Rafael, Analia Schlosser, Andreas Steinhauer, and Josef Zweimüller. 2014. Parental leave and mothers' careers: The relative importance of job protection and cash benefits. *The Review of Economic Studies* 81: 219–265.

Larsen, Edvard. 2020. Induced competition in matched correspondence tests: Conceptual and methodological considerations. *Research in Social Stratification and Mobility* 65: 100475.

Mincer, Jacob, and Solomon Polachek. 1974. Family investments in human capital: earnings of women. *Journal of Political Economy* 82: 76–108.

OECD. 2023. Joining forces for gender equality: What is holding us back? *OECD Publishing*, Paris. https://doi.org/10.1787/67d48024-en.

Patnaik, Ankita. 2019. Reserving time for daddy: The consequences of fathers' quota. *Journal of Labor Economics* 37 (4): 1009-1330.

Phelps, Edmund S. 1972. The statistical theory of racism and sexism. *American Economic Review* 62(4): 659–661.

Rege, Mari, and Ingeborg F. Solli. 2013. The impact of paternity leave on fathers' future earnings. *Demography* 20: 2255–2277.

Rossin-Slater, Maya. 2018. Maternity and family leave policy. *Oxford Handbook of Women and the Economiy*. In Susan L. Averett, Laura M. Argys, and Saul D. Hoffman (Eds.). Oxford University Press.

Samtleben, Claire, Clara Schäper, and Katharina Wrohlich. 2019. Elterngeld und Elterngeld Plus: Nutzung durch Väter gestiegen, Aufteilung zwischen Müttern und Vätern aber noch sehr ungleich. *DIW Wochenbericht* 35: 607–613.

Schönberg, Uta, and Johannes Ludsteck. 2014. Expansions in maternity leave coverage and mothers' labor market outcomes after childbirth. *Journal of Labor Economics* 32(3): 469–505.

Stafford, Frank P., and Sundström, Marianne. 1996. Time out for childcare: Signalling and earnings rebound effects for men and women. *Labour* 10(3): 609–629.

Vinkenburg, Claartje, Marloes van Engen, Jennifer Coffeng, and Josje Dikkers. 2012. Bias in employment decisions about mothers and fathers: The (dis)advantages) of sharing care responsibilities., *Journal of Social Issues* 68(4): 725–741.

Vogt, Ann-Cathrin, and Kerstin Pull. 2010. Warum Väter ihre Erwerbstätigkeit (nicht) unterbrechen: Mikroökonomische versus in der Persönlichkeit des Vaters begründete Determinanten der Inanspruchnahme von Elternzeit durch Väter. *Zeitschrift für Personalforschung* 24: 48–68.

Weichselbaumer, Doris. 2004. Is it sex or personality. The impact of sex-stereotypes on discrimination in applicant selection. *Eastern Economic Journal* 30: 159–186.

Weichselbaumer, Doris. 2015. Testing for discrimination against lesbians of different marital status: A field experiment. *Industrial Relations* 54(1): 131–161.

Weichselbaumer Doris. 2020. Multiple discrimination against female immigrants wearing headscarves. *ILR Review* 73(3): 600–627.

Weisshaar, Katherine. 2018. From opt out to blocked out: The challenges for labor market re-entry after family-related employment lapses. *American Sociological Review* 83(1): 34–60.

Yavorsky, Jill. 2019. Uneven patterns of inequality: An audit analysis of hiring-related practices by gendered and classed contexts. *Social Forces* 98(2): 461–492.

Appendix: Tables

Table A1: Invitation probability (linear probability model), female-dominated occupation

	Dependent variable: Interview invitation			
	(1)	(2)	(3)	(4)
Gender-leave type by occupation				
M-0		(reference category)		
M-2	0.027	0.027	0.027	0.028
	(0.020)	(0.020)	(0.020)	(0.020)
M-12	0.021	0.021	0.024	0.025
	(0.020)	(0.020)	(0.020)	(0.020)
F-2	0.101***	0.102***	0.101***	0.102***
	(0.022)	(0.022)	(0.022)	(0.022)
F-12	0.116***	0.117***	0.115***	0.116***
	(0.022)	(0.022)	(0.022)	(0.022)
High GPA		0.008	0.006	0.006
		(0.014)	(0.014)	(0.014)
Job characteristics				
Labor market tightness			-0.000	-0.001
			(0.003)	(0.003)
Labor market tightness (sq.)			-0.000	-0.000
			(0.000)	(0.000)
Full-time required			-0.005	-0.001
			(0.015)	(0.015)
Female contact person			-0.003	-0.001
			(0.014)	(0.014)
Collective agreement			-0.057***	-0.037*
			(0.016)	(0.021)
Desired salary required			-0.032*	-0.030
			(0.018)	(0.018)
Firm characteristics				
East Germany				0.034*
				(0.019)
Medium urbanization				0.023
				(0.016)
Low urbanization				0.020
				(0.024)
More than 50 employees				-0.031*
				(0.017)
Time dummies		Yes	Yes	Yes
Industry sector dummies			Yes	Yes
Constant	0.128***	0.124***	0.148***	0.037
	(0.014)	(0.015)	(0.025)	(0.108)
F12 - F2	0.015	0.015	0.014	0.014
	(0.024)	(0.024)	(0.024)	(0.024)
M12 – M2	-0.006	-0.006	-0.003	-0.003
	(0.021)	(0.021)	(0.021)	(0.021)
Observations	3,051	3,051	3,051	3,051
R^2	0.015	0.015	0.047	0.058
Adjusted R^2	0.013	0.013	0.018	0.025

Note: This table presents the effect of randomized gender-leave types on the probability of an employer to invite the applicant for an interview in a female-dominated occupation. Robust standard errors are in parentheses. Stars indicate statistical significance at the following levels: $^*p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A2: Invitation probability (linear probability model), gender-neutral occupation

	Dependent variable: Interview invitation			
	(1)	(2)	(3)	(4)
Gender-leave type by occupation				
M-0		(reference category)		
M-2	-0.009	-0.009	-0.011	-0.011
	(0.025)	(0.025)	(0.025)	(0.025)
M-12	-0.011	-0.011	-0.014	-0.015
	(0.025)	(0.025)	(0.025)	(0.025)
F-2	0.083***	0.083***	0.082***	0.085***
	(0.027)	(0.027)	(0.027)	(0.027)
F-12	0.051*	0.050*	0.048*	0.048*
	(0.026)	(0.026)	(0.026)	(0.026)
High GPA		0.007	0.000	0.002
		(0.017)	(0.017)	(0.017)
Job characteristics				
Labor market tightness			-0.008	-0.006
			(0.007)	(0.007)
Labor market tightness (sq.)			0.000	0.000
			(0.000)	(0.000)
Full-time required			0.023	0.032
			(0.020)	(0.020)
Female contact person			0.007	0.010
			(0.017)	(0.017)
Collective agreement			-0.056**	-0.037
			(0.023)	(0.025)
Desired salary required			-0.030	-0.022
			(0.019)	(0.019)
Firm characteristics				
East Germany				0.083***
				(0.024)
Medium urbanization				-0.019
				(0.021)
Low urbanization				0.008
				(0.025)
More than 50 employees				-0.038**
				(0.018)
Time dummies		Yes	Yes	Yes
Industry sector dummies			Yes	Yes
Constant	0.198***	0.194***	0.213***	0.117
	(0.018)	(0.019)	(0.030)	(0.192)
F12 - F2	-0.032	-0.033	-0.034	-0.037
	(0.028)	(0.028)	(0.028)	(0.028)
M12 - M2	-0.001	-0.002	-0.004	-0.003
	(0.025)	(0.025)	(0.025)	(0.025)
Observations	2,472	2,472	2,472	2,472
R^2	0.008	0.008	0.052	0.063
Adjusted R^2	0.007	0.006	0.017	0.024

Note: This table presents the effect of randomized gender-leave types on the probability of an employer to invite the applicant for an interview in a gender-neutral occupation. Robust standard errors are in parentheses. Stars indicate statistical significance at the following levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A3: Invitation probability (linear probability model), male-dominated occupation

	Dependent variable: Interview invitation			
	(1)	(2)	(3)	(4)
Gender-leave type by occupation				
M-0		(reference category)		
M-2	-0.017	-0.017	-0.014	-0.013
	(0.030)	(0.030)	(0.029)	(0.029)
M-12	-0.052*	-0.052*	-0.052*	-0.052*
	(0.029)	(0.029)	(0.029)	(0.029)
F-2	-0.099***	-0.099***	-0.097***	-0.095***
	(0.029)	(0.029)	(0.029)	(0.029)
F-12	-0.119***	-0.119***	-0.118***	-0.120***
	(0.029)	(0.029)	(0.028)	(0.028)
High GPA		0.002	0.002	-0.000
		(0.018)	(0.018)	(0.018)
Job characteristics				
Labor market tightness			-0.008	-0.006
			(0.015)	(0.015)
Labor market tightness (sq.)			0.000	0.000
			(0.001)	(0.001)
Full-time required			0.036	0.033
			(0.038)	(0.039)
Female contact person			0.075***	0.074***
			(0.020)	(0.021)
Collective agreement			-0.005	-0.000
			(0.032)	(0.033)
Desired salary required			-0.046	-0.056
			(0.047)	(0.047)
Firm characteristics				
East Germany				0.026
				(0.024)
Medium urbanization				0.012
				(0.023)
Low urbanization				0.001
				(0.027)
More than 50 employees				0.006
				(0.034)
Time dummies		Yes	Yes	Yes
Industry sector dummies			Yes	Yes
Constant	0.403***	0.402***	0.355***	0.446
	(0.021)	(0.023)	(0.045)	(0.332)
F12-F2	-0.020	-0.020	-0.022	-0.025
	(0.028)	(0.028)	(0.028)	(0.028)
M12 - F12	-0.035	-0.036	-0.038	-0.039
	(0.029)	(0.029)	(0.029)	(0.029)
Observations	2,721	2,721	2,721	2,721
R^2	0.009	0.009	0.052	0.056
Adjusted R^2	0.008	0.008	0.019	0.019

Note: This table presents the effect of randomized gender-leave types on the probability of an employer to invite the applicant for an interview in a male-dominated occupation. Robust standard errors are in parentheses. Stars indicate statistical significance at the following levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A4: Invitation probability (linear probability model) and East vs. West Germany

Dependent variable: Interview invitation

	Female-dominated		Gender-neutral		Male-dominated	
	(1)	(2)	(3)	(4)	(5)	(6)
M-2	0.018	0.015	-0.024	-0.028	-0.013	-0.008
	(0.022)	(0.022)	(0.027)	(0.027)	(0.033)	(0.033)
M-12	0.005	0.010	-0.017	-0.019	-0.050	-0.050
	(0.022)	(0.022)	(0.027)	(0.027)	(0.033)	(0.033)
F-2	0.092***	0.092***	0.064**	0.064**	-0.088***	-0.086***
	(0.024)	(0.024)	(0.029)	(0.029)	(0.032)	(0.032)
F-12	0.105***	0.106***	0.030	0.028	-0.122***	-0.122***
	(0.025)	(0.024)	(0.029)	(0.029)	(0.031)	(0.031)
East Germany	-0.017	-0.013	0.009	0.017	0.041	0.042
	(0.033)	(0.033)	(0.049)	(0.048)	(0.054)	(0.054)
M-2 x East	0.050	0.067	0.099	0.098	-0.020	-0.032
	(0.053)	(0.054)	(0.073)	(0.073)	(0.078)	(0.076)
M-12 x East	0.082	0.074	0.034	0.029	-0.014	-0.006
	(0.051)	(0.051)	(0.068)	(0.068)	(0.075)	(0.075)
F-2 x East	0.048	0.046	0.143*	0.137*	-0.057	-0.049
	(0.054)	(0.055)	(0.080)	(0.080)	(0.075)	(0.074)
F-12 x East	0.058	0.054	0.113	0.114	0.015	0.011
	(0.056)	(0.056)	(0.073)	(0.073)	(0.075)	(0.075)
Additional control variables		Yes		Yes		Yes
Constant	0.132***	0.065	0.196***	0.131	0.395***	0.441
	(0.015)	(0.106)	(0.020)	(0.190)	(0.023)	(0.340)
F12-F2	0.013	0.014	-0.034	-0.036	-0.033	-0.035
	(0.027)	(0.027)	(0.030)	(0.030)	(0.030)	(0.031)
F-12 x East Germany - F-2 x East Germany	0.010	0.008	-0.030	-0.023	0.071	0.061
	(0.063)	(0.063)	(0.083)	(0.085)	(0.073)	(0.074)
Observations	3,051	3,051	2,472	2,472	2,721	2,721
R^2	0.016	0.058	0.016	0.063	0.010	0.055
Adjusted R2	0.013	0.025	0.013	0.024	0.007	0.019

Notes: Separate regressions by occupation: (1) and (2): female-dominated, (3) and (4) gender-neutral, and (5) and (6) male-dominated. Reference categories M0, M0 x East Germany. The additional control variables include indicators for high GPA, full-time requirement, female contact person, collective agreement, desired salary requirement, COVID-19, urbanicity, large firm as well as industry sector and time dummies.

Table A5: Callback probability (linear probability model)

	Dependent variable: Callback		
	Female-dominated occupation	Gender-neutral occupation	Male-dominated occupation
Gender-leave type by occupation			
M-0		(reference category)	
M-2	0.005	0.004	-0.036
	(0.024)	(0.030)	(0.029)
M-12	0.014	-0.003	-0.079***
	(0.024)	(0.029)	(0.030)
F-2	0.111***	0.073**	-0.143***
	(0.025)	(0.030)	(0.030)
F-12	0.127***	0.065**	-0.174***
	(0.026)	(0.030)	(0.030)
High GPA	0.000	0.015	-0.004
	(0.016)	(0.019)	(0.019)
Job characteristics			
Labor market tightness	-0.006*	-0.003	-0.009
	(0.003)	(0.008)	(0.016)
Labor market tightness (sq.)	0.000	0.000	-0.001
	(0.000)	(0.000)	(0.001)
Full-time required	0.022	0.021	-0.005
	(0.017)	(0.023)	(0.043)
Female contact person	0.033**	0.027	0.024
	(0.016)	(0.020)	(0.021)
Collective agreement	-0.036	-0.018	-0.005
	(0.024)	(0.030)	(0.034)
Desired salary required	0.012	0.026	0.043
	(0.022)	(0.022)	(0.048)
Firm characteristics			
East Germany	0.038*	0.074***	0.024
	(0.021)	(0.027)	(0.025)
Medium urbanization	0.014	-0.004	0.020
	(0.019)	(0.025)	(0.024)
Low urbanization	0.047*	0.015	0.043
	(0.029)	(0.028)	(0.028)
More than 50 employees	0.013	-0.007	-0.008
	(0.021)	(0.021)	(0.035)
Time dummies	Yes	Yes	Yes
Industry sector dummies	Yes	Yes	Yes
Constant	0.106	0.273	0.434
	(0.120)	(0.230)	(0.343)
F12 - F2	0.015	-0.008	-0.031
	(0.027)	(0.031)	(0.031)
M12 - F12	0.009	-0.007	-0.043
	(0.025)	(0.030)	(0.030)
Observations	3,051	2,472	2,721
R^2	0.063	0.051	0.050
Adjusted R^2	0.031	0.011	0.013

Note: This table presents the effect of randomized gender-leave types on the probability of an employer to invite the applicant for an interview in a female-dominated occupation. Robust standard errors are in parentheses. Stars indicate statistical significance at the following levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.