

Lim, Misun; dos Santos, Sascha

**Article — Accepted Manuscript (Postprint)**

## The gendered impact of parenthood on job-related training participation in Germany and the United Kingdom

European Sociological Review

**Provided in Cooperation with:**

WZB Berlin Social Science Center

*Suggested Citation:* Lim, Misun; dos Santos, Sascha (2025) : The gendered impact of parenthood on job-related training participation in Germany and the United Kingdom, European Sociological Review, ISSN 1468-2672, Oxford Academic, Oxford, Vol. 41, Iss. 2, pp. 278-298, <https://doi.org/10.1093/esr/jcae026>

This Version is available at:

<https://hdl.handle.net/10419/330395>

**Standard-Nutzungsbedingungen:**

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

**Terms of use:**

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*

## The Gendered Impact of Parenthood on Job-related Training Participation in Germany and the UK

Misun Lim<sup>a, b</sup> and Sascha dos Santos<sup>a</sup>

<sup>a</sup>Research Unit 'Skill Formation and Labor Markets', WZB Berlin Social Science Center, Reichpietschufer 50, 10785 Berlin, Germany

<sup>b</sup>Faculty of Arts and Humanities, University of Siegen, Adolf-Reichwein-Str. 2, 57076 Siegen, Germany

---

**Corresponding author:** Please direct correspondence to Misun Lim, research unit: Skill Formation and Labor Markets, WZB Berlin Social Science Center (WZB), Reichpietschufer 50, 10785 Berlin, Germany & Faculty of Arts and Humanities, University of Siegen, Adolf-Reichwein-Str. 2, 57076 Siegen, Germany.

Email: [misun.lim@wzb.eu](mailto:misun.lim@wzb.eu).

**Acknowledgments:** We thank the *ESR* editors and three anonymous reviewers for their thoughtful comments and suggestions. We also thank Heike Solga, Martin Ehlert, Juho Härkönen, Tomas Korpi, and Carla Hornberg for their helpful suggestions on earlier drafts. The earlier versions of this work were presented at the 2022 American Sociological Association annual meeting and the 2022 European Consortium of Sociological Research annual conference. This article uses data from the National Educational Panel Study (NEPS): Starting Cohort 6—Adults, doi:10.5157/NEPS:SC6:13.0.0. From 2008 to 2013, NEPS data were collected as part of the Framework Programme for the Promotion of Empirical Educational Research funded by the German Federal Ministry of Education and Research (BMBF). As of 2014, the NEPS survey is carried out by the Leibniz Institute for Educational Trajectories (LIfBi) at the University of Bamberg in cooperation with a nationwide network. Understanding Society is an initiative funded by the Economic and Social Research Council and various Government Departments, with scientific leadership by the Institute for Social and Economic Research, University of Essex, and survey delivery by the National Centre for Social Research (NatCen) and Verian (formerly Kantar Public). The research data are distributed by the UK Data Service.

**Funding:** This research was funded in part by the European Commission for the project 'Technological inequality—understanding the relation between recent technological innovations and social inequalities (TECHNEQUALITY)' (Grant Agreement number: 822330—TECHNEQUALITY, H2020- SC6-TRANSFORMATIONS-2018-2019-2020/ H2020-SC6-TRANSFORMATIONS-2018).

**Data Availability:** The data underlying this article are available in the German National Educational Panel Study, at <http://doi.org/10.5157/NEPS:SC6:13.0.0> and the Understanding Society: The UK Household Longitudinal Study at <http://doi.org/10.5255/UKDA-SN-6614-18>.

**Contributors:** Misun Lim conceptualized the study and played a leading role in manuscript composition. She also contributed to data preparation and interpretation of results. Sascha dos Santos conducted formal analysis, developed the methodology, and contributed to data preparation, results interpretation, and manuscript writing. All authors participated in drafting and revising the manuscript, have reviewed and approved this version for publication, and agree to be accountable for all aspects of the work.

**Supplementary data:** Supplementary data are available at *ESR* online.

# The Gendered Impact of Parenthood on Job-Related Training Participation in Germany and the UK

## **Abstract**

*Recent studies highlight the role of parenthood in perpetuating persistent gender inequality in the labour market. We examine whether the transition to parenthood influences job-related training participation. This study uses fixed-effects models and longitudinal data from the German National Educational Panel Study (starting cohort 6, 2010–2021) and Understanding Society: The UK Household Longitudinal Study (2010–2019). Our findings show that women’s job-related training participation decreases following parenthood in both countries, but that this decline is steeper in Germany and persists beyond the early stage of parenthood. Furthermore, our mediation analysis shows that parental leave is one of the main drivers of the motherhood penalty in job-related training in both countries. In contrast, when men have a first child, it has a small negative effect on training participation levels in Germany and no effect in the United Kingdom. This study sheds light on the gendered impact of the transition to parenthood on job-related training participation and how the country context influences these relationships.*

Keywords: job training, gender, inequalities, parenthood, fixed-effects

## 1. INTRODUCTION

Despite decades of increasing female labour market participation, parenthood continues to disrupt women’s careers. While men’s labour market trajectories appear to be either unaffected by or slightly benefit from fatherhood, the birth of a first child decreases women’s earnings, market-related work hours, and likelihood of working in occupations with high levels of authority (Budig and England, 2001; Killewald and García-Mangano, 2016; Musick, Bea and

Gonalons- Pons, 2020; Glauber, 2023). Thus, even today, parenthood is a key driver of gender inequalities in the labour market (Goldin, Kerr and Olivetti, 2022).

Yet, job-related training can be an important tool for employees and especially for mothers after a childbirth-related career break, as it increases workers' competitiveness in the labour market. Previous studies have shown that job-related training is associated with better employment security (Ebner and Ehlert, 2018), higher productivity (Hansson, 2008), and wage increases (Haelermans and Borghans, 2012). However, causal evidence on access to participation opportunities after childbirth is limited (Zoch, 2023).

Despite decades of increasing female labour market participation, parenthood continues to disrupt women's careers. While men's labour market trajectories appear to be either unaffected by or slightly benefit from fatherhood, the birth of a first child decreases women's earnings, market-related work hours, and likelihood of working in occupations with high levels of authority (Budig and England, 2001; Killewald and García-Mangano, 2016; Musick, Bea and Gonalons- Pons, 2020; Glauber, 2023). Thus, even today, parenthood is a key driver of gender inequalities in the labour market (Goldin, Kerr and Olivetti, 2022).

Yet, job-related training can be an important tool for employees and especially for mothers after a childbirth-related career break, as it increases workers' competitiveness in the labour market. Previous studies have shown that job-related training is associated with better employment security (Ebner and Ehlert, 2018), higher productivity (Hansson, 2008), and wage increases (Haelermans and Borghans, 2012). However, causal evidence on access to participation opportunities after childbirth is limited (Zoch, 2023). Yet, Massing and Gauly (2017) find that the presence of a young child (13 years or younger) reduces the likelihood of participating in training for both men and women, but the effect of having a young child is more pronounced among women.

Prior studies have analysed the role of institutional contexts in the relationship between gender, parenthood, and participation in job-related training. Dämmrich, Kosyakova and Blossfeld (2016) show that family policies can increase women's on-the-job and employer-financed training participation, while Dieckhoff and Steiber (2011) find that cross-national variation in family policies does not translate into differential effects for children and planned fertility. Boll and Bublitz (2018) conclude that the effect of the presence of young children in the household is moderated by the coverage rate of all-day care.

Prior studies rely on cross-sectional data and cannot identify the *time path* of parenthood effects on participation in job-related training. However, a recent study using the German National Educational Panel Study (NEPS) and fixed-effects (FE) models finds that parents, particularly mothers, face significant penalties in job-related training in Germany and that the negative effects of parenthood persist longer for women than for men (Zoch, 2023). Yet, we know little about changes in workers' job-related training participation *after* first childbirth from a longitudinal perspective and how different institutional contexts affect the extent of change in workers' job-related training participation following first childbirth. Our study examines the mechanisms of such changes in job-related training following first childbirth. Additionally, we extend the discourse on this issue by providing a comparative perspective, addressing a gap in existing literature that has predominantly focused on a single country (Zoch, 2023).

Institutionalized constraints affect parents' resource availability and their expectations about gendered family roles (Schober and Scott, 2012; Pedulla and Thébaud, 2015). Examining two countries with different family policies and gender cultures, namely Germany and the United Kingdom, this study asks whether the transition to parenthood has a causal effect on participation in job-related training and whether workers in these two country contexts experience parenthood effects differently. This study aims to answer the following: (i) Are men's and women's job-related training participation affected differently by the

transition to first parenthood? (ii) How do men's and women's job-related training participation trajectories after parenthood differ by country context? (iii) What are the underlying mechanisms that explain the motherhood penalty in job-related training participation? We use data from the 2010–2021 round of the German NEPS and from the 2011–2019 round of Understanding Society: the UK Household Longitudinal Study (UKHLS). We employ FE models with step-impact functions and event-study designs.

Our study makes two key contributions. First, we show that the transition from being childless to having a first child is a critical point for reductions in training participation among women in Germany and the United Kingdom. Second, we find country differences in the magnitude of the childbirth effects on training participation. Women's job-related training participation decreases following first parenthood in Germany and the United Kingdom, but this decline is steeper in Germany and persists beyond the early stage of parenthood. When men have their first child, there is a small negative effect on training participation levels in Germany and no effect in the United Kingdom. Our study points to training gaps in the workplace following first parenthood and highlights the impact of country context on gender differences in the family formation effect on job-related training participation.

## 2. BACKGROUND AND HYPOTHESES

### 2.1. The Transition to First Parenthood and Job-related Training

Different theoretical approaches suggest that the transition to parenthood has gendered effects on labour market behaviour. We analyse whether changes in labour market behaviour following parenthood are also reflected in job-related training participation.

The *economic theory of the family* and the *theory of optimal energy allocation* (Becker, 1981, 1985) provide arguments for specialization in market and household work. Both theories suggest that investments in specialized human capital lead to increasing returns and thus create incentives for a division of labour with the goal of maximizing household utility (Becker, 1981, 1985). These theories assume that women tend to devote more time to childcare than their partners due to biological commitments to childbearing and nurturing, giving men a comparative advantage in labour work and women a comparative advantage in care work (Becker, 1981). Since childcare and housework consume a large amount of energy, working mothers might lack the energy levels necessary to additionally participate in job-related training. Furthermore, their reduced energy levels may force them to put less effort into each hour of paid labour than men (Becker, 1985). Therefore, since firms make decisions about who should receive training opportunities based on their perceptions of productivity (Dieckhoff, Jungblut and O’Connell, 2007), they may provide fewer training opportunities to women, even if women work as many hours as men.

In contrast, *bargaining models* (Lundberg and Pollak, 1996) assume that partners not only pursue the goal of maximum household utility but also have individual utility functions. Thus, they claim that partners bargain over the allocation of household resources and time-use patterns. Following childbirth, women’s bargaining power is weakened due to a decrease in earning potential as a result of career interruptions. As a consequence, working mothers might enter part-time jobs with low pay, which may further reduce their participation probability. Indeed, relative earnings within the household and working hours seem to be key determinants of training participation (Boll and Bublitz, 2018; Adolfsson, Baranowska-Rataj and Lundmark, 2022). In dual-career couples, even when mothers have ambitions to participate in job-related training, their weaker bargaining position might reallocate them to childcare and housework tasks.

Gendered labour market behaviour is influenced by gender norms in addition to efficiency considerations and bargaining processes. The gendered division of labour within the household reflects couples' normative expectations of '*doing gender*' (West and Zimmerman, 1987), with childcare and housework representing symbolic productions of gender relations. Female breadwinners still do a greater share of housework than their husbands (Mandel, Lazarus and Shaby, 2020) and the allocation of childcare between couples is heavier for women, even when women spend more hours in paid work than their spouses (Craig and Mullan, 2011). As a result, mothers may lack the time to participate in training.

However, gender attitudes of parents themselves might change by the event of first childbirth besides the influence of societal gender norms. For a long time, gender attitudes were considered stable across the life course. Yet, recent studies have shown that the transition into parenthood might reshape and alter *gender attitudes* and behavioural patterns within couples and individuals (Schober and Scott, 2012; Baxter *et al.*, 2015) and that traditional gender attitudes reduce the probability of participating in job-related non-formal training (Dieckhoff and Steiber, 2011).

Gender norms and attitudes might also foster *discrimination processes* (Phelps, 1972; Arrow, 1973). Employers might perceive mothers as less productive and less labour market-oriented than fathers after the parenthood transition. Studies suggest that mothers are rated both as less hireable and as less suitable for promotion and management training courses (Correll, Benard and Paik, 2007; Hipp, 2020). Thus, employers, who are key gatekeepers regarding access to job-related training, might disadvantage women. Based on these different theoretical approaches, we expect that first parenthood will *decrease* the probability of training participation among mothers (Hypothesis 1a, moderation effect), but not fathers (Hypothesis 1b, moderation effect).

## 2.2 Mediating Roles of Parental Leave, Part-Time Work, and Job Changes

The transition to motherhood reshapes women's careers in manifold ways: Changes in women's labour market behaviour around childbirth often involve taking parental leave, transitioning to part-time work, or changing jobs to reconcile work–family conflicts (Killewald and García-Manglano, 2016; Musick, Bea and Gonalons-Pons, 2020). These, among others, may be central mechanisms in the relationship between motherhood and participation in job-related training.

While *parental leave* can be gender-neutral, mothers are more likely than fathers to take parental leave (Goldin, Kerr and Olivetti, 2022), and when fathers do take parental leave, it tends to be for shorter periods (OECD, 2023). Parental leave increases the degree of women's exposure to the caregiver role compared to working mothers; as a result, parental leave leads to lower work commitment (Gangl and Ziefle, 2015) and thereby to an organization's reduced tendency to provide training. Furthermore, women's absence from the labour market after childbirth has significant implications for women's career opportunities because any period of non-employment may result in skill obsolescence and a decline in overall human capital (Mincer and Ofek, 1982). Since job-related training is primarily employer sponsored (Cedefop, 2015), employers play a crucial role as gatekeepers regarding access to training for mothers (Correll, Benard and Paik, 2007; Dieckhoff, Jungblut and O'Connell, 2007). If long parental leave uptake leads to skill obsolescence and simultaneously leads to a lower work commitment, employers may decide to refuse to offer training opportunities to mothers due to productivity considerations. Indeed, taking extensive parental leave (between 10 and 36 months) has a negative impact on young women's training participation in Germany, as employers show less interest in the training of young women compared to young men (Puhani and Sonderhof, 2011).

Work–family conflicts disrupt women's continuous employment and encourage *part-time employment*. Part-time work is a key strategy for reconciling work and childcare (Becker and Moen, 1999). For women, parenthood is associated with reduced hours in paid work, while men's hours in paid work stay

the same or increase slightly (Kühhirt, 2012; Gummy, Plagnol and Piasna, 2022). Gender differences in working hours are often used to explain the possible gender and parenthood gap in job-related training, as part-time work is associated with fewer training opportunities at workplaces (Adolfsson, Baranowska-Rataj and Lundmark, 2022). Women in part-time employment have lower rates of job-training participation than women in full-time employment in Germany (Boll and Bublitz, 2018). Therefore, we expect the following in Hypothesis 2a: the parenthood effect on training participation among mothers will be mediated by parental leave and part-time work (mediation effect).

Motherhood plays a pivotal role in shaping women's career aspirations (Thébaud and Taylor, 2021). To coordinate responsibilities for work and family, mothers are more likely to end up on a '*mommy track*', a career path with less time- and effort-intensive working hours but with lower pay and promotion opportunities (Schwartz, 1992). Occupational segregation—the tendency of mothers and childless women to work in different occupations (Hook and Pettit, 2016)—may contribute to the motherhood gap in job-related training because mothers are overrepresented in occupations with fewer training opportunities. Indeed, relative to their childless counterparts, mothers are overrepresented in low-paying occupations (e.g. service and sales, elementary occupations) (Hook and Pettit, 2016), which are also the occupations with the lowest training participation rates (Cedefop, 2015). Compared to childless women, mothers may make fewer wage- or career-enhancing job changes (Looze, 2017), which could further reduce women's opportunities to participate in training after childbirth. Thus, we predict the following in Hypothesis 2b: the parenthood effect on training participation among mothers will be mediated by job changes (mediation effect).

### 2.3. Contexts of Germany and the UK: The Relationship between Job-related Training Participation and Parenthood

Studies have shown the influence of family policies on gender ideologies and gendered work commitment and labour market behaviour (Gangl and Ziefle, 2015; Zoch and Schober, 2018; Han, 2023). Therefore, the gendered micro-level dynamics of parenthood and job-related training participation are likely to depend on differences in institutional characteristics between Germany and the United Kingdom.

Germany and the United Kingdom have different welfare state regimes (Esping-Andersen, 1990; Korpi, 2000). Germany's approach is based on conservative assumptions about women as secondary earners (Korpi, 2000; Lohmann and Zagel, 2016), and its tax policy discourages paid employment among secondary earners (Bick and Fuchs-Schündeln, 2017), which may foster traditional gendered specialization. Family policy in the United Kingdom is characterized as restricted, gender-neutral, and market-based defamilization (Lohmann and Zagel, 2016). The joint taxation system that discourages secondary earners from working in Germany is not prevalent in the United Kingdom, where spouses are taxed separately (Bick and Fuchs-Schündeln, 2017). While the United Kingdom is considered a liberal welfare regime, it still offers universal paid parental leave and subsidized childcare services (Hsu, 2023).

Comparative studies focus on variation in family policies and gender norms across countries to explain gender differences in job-related training participation (Dieckhoff and Steiber, 2011; Dämmrich, Kosyakova and Blossfeld, 2016; Boll and Bublitz, 2018). Different institutional contexts affect parents' resource availability and gendered expectations regarding responsibilities (Zoch and Schober, 2018; Musick, Bea and Gonalons-Pons, 2020). Work-family reconciliation policies, such as parental leave schemes and state-funded childcare services, impact parents' ability to address work-family conflicts and their gendered expectations regarding work and family responsibilities (Pedulla and Thébaud, 2015; Han, 2023). In this sense, we expect that institutional factors,

such as family policies and gender culture, moderate the effect of first parenthood on job-related training participation. Following prior studies (Dieckhoff and Steiber, 2011; Dämmrich, Kosyakova and Blossfeld, 2016; Boll and Bublitz, 2018), we consider three institutional aspects related to the gender and parenthood differences in job-related training participation: (i) parental leave policy, (ii) childcare provision, and (iii) gender-role ideologies.

#### *Parental leave policy*

Germany offers 3.5 months of maternity leave (*Mutterschutz*) with full-income replacement and job protection (Bergemann and Riphahn, 2023); following this paid leave with full-income replacement, Germany also offers long parental leave, as parents are entitled to take 36 months of parental leave with job guarantee (Aisenbrey and Fasang, 2017); furthermore, Germany's policy reform in 2007 encouraged parents to share 12 months of parental leave. Since then, fathers have been offered two extra months of paid parental leave, which cannot be shared by parents and will be lost if not used (Mari, 2019). Recent trends suggest that women tend to take shorter periods of parental leave than before and men's participation in parental leave has increased (Kraemer, 2015). However, women continue to take by far the largest share of parental leave, while fathers lag behind (OECD, 2023).

In the United Kingdom, mothers are entitled to 13 months of maternity leave, with the paid leave allowance providing 90 percent income replacement for 6 weeks and weekly allowance of GBP 151.97 for 33 weeks (UK Government, 2023). Maternity leave consists of *Ordinary Maternity Leave* (first 6.5 months) and *Additional Maternity Leave* (second 6.5 months). Fathers in contrast have the right to 2 weeks of *Ordinary Paternity Leave*. In 2011, the *Additional Paternity Leave* scheme was introduced, permitting fathers to access up to 6.5 months of paternity leave in addition to the 2 weeks of ordinary parental leave. Yet, only 29 percent of fathers took more than 2 weeks of leave, and less than 1 percent of fathers took APL in its first year (Kaufman, 2018). In 2015, the APL was

replaced by *Shared Parental Leave* scheme that allows parents to share 12.5 months of leave and up to 37 weeks of statutory shared parental pay until the child turns 1 year old. After maternity/paternity leave, parents have the right to a total of 9 months of unpaid parental leave, which needs to be evenly shared between fathers and mothers.

In conclusion, mothers in the United Kingdom are guaranteed a shorter length of paid leave and a smaller amount of parental leave allowance than mothers in Germany (Hsu, 2023). The availability of a long parental leave has a paradoxical effect on women's employment and wages (Misra, Moller and Budig, 2007). Although the right to parental leave is related to higher maternal employment rates, long maternity leave discourages women from re-entering employment (Gangl and Ziefle, 2015) and increases the motherhood wage penalty (Misra, Moller and Budig, 2007). Moreover, long parental leave is associated with a more traditional division of housework in Germany and the United Kingdom, resulting in women taking on more of the household responsibilities (Schober, 2013). However, the association between the length of maternal time off and maternal housework share is slightly weaker and more reversible in the United Kingdom than in Germany (Schober, 2013). Thus, we assume that the longer parental leave duration regulations in Germany may lead to a higher childbirth penalty than in the United Kingdom.

#### *Childcare provision*

Since 2005, public childcare in Germany has expanded for children under the age of 3 to encourage women's employment following childbirth (Zoch and Schober, 2018). The percentage of children aged 0–2 receiving early childhood education and care (ECEC) is 37.7 percent in Germany and 45.1 percent in the United Kingdom (OECD, 2023). Yet, in terms of childcare affordability, the cost of non-parental childcare for two children in full-time care (40 h/week) is highest in the United Kingdom, but the ECEC costs are one of the lowest in Germany among OECD countries (OECD, 2020). Despite the high costs, overall ECEC

participation rates are relatively higher in the United Kingdom than in Germany. Accordingly, as childcare responsibilities are perceived as a major barrier to participation in training for women but not for men in both countries, gender inequality in reporting family responsibilities as a major barrier is more pronounced in Germany than in the United Kingdom (Massing and Gauly, 2017). Thus, family-related caregiving obligations as a structural barrier may prevent individuals from participating in job training, even if they would like to (Rubenson and Desjardins, 2009). Therefore, we assume that the negative effects of first childbirth should be less pronounced in the United Kingdom than in Germany.

#### *Gender culture*

Family policies reflect gendered assumptions about paid and unpaid work and care (Misra, Moller and Budig, 2007) and influence gender cultures (Grunow and Veltkamp, 2016). Both Germany and the United Kingdom have strong male-breadwinner legacies (Mari, 2019). Male-breadwinner norms may foster shifts in the traditional household specialization patterns among couples after childbirth, or they may increase employers' pro-father bias (Correll, Benard and Paik, 2007). Since the mid-2000s, Germany has increased institutional support for working parents (Grunow and Veltkamp, 2016). Yet, egalitarian attitudes regarding women's paid work and family roles are notably more prevalent in the United Kingdom as compared to Germany (Han, 2023). Comparative studies showed that while women's wages after childbirth decrease both in Germany and the United Kingdom, the decline is greater in Germany (Kleven *et al.*, 2019; Musick, Bea and Gonalons-Pons, 2020). Kleven *et al.* (2019) suggest that this finding is correlated with conservative gender ideologies, as there is less support for maternal employment in Germany than in the United Kingdom. Progressive gender culture with high and continuous female labour market participation is associated with a reduced gender gap in training participation (Dieckhoff and Steiber, 2011). Based on these country differences in parental leave, childcare

provisions, and gender culture, we suggest the following Hypothesis 3: a steeper and long-term decline in women's training participation will follow parenthood in Germany relative to the United Kingdom.

### 3. DATA AND METHODS

#### 3.1. Data

To test the hypotheses, we use the starting cohort 6 data (SUF 13.0.0) from the NEPS (NEPS Network, 2022) for Germany and Understanding Society: the UK Household Longitudinal Study (UKHLS) for the UK analyses (University of Essex, I. F. S., 2022). NEPS collects detailed information about educational trajectories, competencies, and returns to education over the life course of people born between 1944 and 1986. We used waves 2–13, which contained detailed information on non-formal training participation. The UKHLS is a large, nationally representative UK panel study that started in 2009–2010, with annual follow-ups with all study members. Adults (aged 16+) are interviewed annually, as are any new household members and household members who have turned 16 since the last interview. We used waves 2–10 of the UKHLS. In both datasets, we exclude wave 1 since in both panels the first wave did not contain measures for job-related training participation.

Since our analyses refer to dependent employees, we exclude all respondents who are either not employed or self-employed during our observational period. Our focus on employed workers allows us to investigate the impact of family formation on job-related training participation for women and men who do not self-select into inactivity. Thus, we analyse whether even for individuals with high labour market attachment, transitions into first parenthood influence training participation. This means that our results can be considered conservative measures of the relationship between the two spheres. Furthermore,

we restrict our samples to continuously employed (employed in each interview) prime-age workers aged 25–55 years. Although this age range does not allow us to draw conclusions on the relationship between family formation and job-related training participation for the total population, the focus on prime-age workers is especially important for cross-country comparisons. Focusing on prime-age workers allows us to have more certainty that our cross-country results are not based on differences in school-to-work (Brzinsky-Fay, 2007) and retirement transitions (Fasang, 2012). For the analyses, we include individuals who became parents or remained constantly childless during the observation period. Individuals who experienced first childbirth before our observation period are excluded. Since we focus on the total effect of family formation, we do not exclude person-years when individuals make the transition into second or subsequent childbirths, as higher-order childbirths are likely influenced by first childbirth. Thus, excluding person-years when a second child is born would lead to an overcontrol bias.

### 3.2. Variables

#### *Dependent variable*

We focused on non-formal job-related training participation. For both Germany and the United Kingdom, we coded a binary variable indicating whether an individual had participated in at least one job-related training course between two waves. The term ‘job-related non-formal training’ refers to organized learning programs that help employees upgrade and expand their skills without gaining educational qualifications, such as college degrees or vocational training diplomas. In the NEPS, respondents were asked about associated training courses since the previous panel interview for each individual life course episode (e.g. employment and parental leave). Detailed information is collected for two randomly chosen courses. In the UKHLS, respondents were asked, ‘In the last 12

months, that is since [interview month] [interview year – 1], have you done any [other] training schemes or courses, even if they are not finished yet? Please include any part-time or evening courses, training provided by an employer, day release schemes, apprenticeships and government training schemes'. The UKHLS provides detailed information for up to three training spells between interviews. In both datasets, courses that were for 'hobbies and leisure' were coded 0.

#### *Independent variable*

The independent variable of interest is the transition to parenthood upon first childbirth. Childless workers are coded 0 and workers with children are coded 1. Thus, our independent variable indicates the transition from childlessness to parenthood.

#### *Mediators*

A categorical variable indicating employment status was coded. While working full-time serves as the reference category, parental leave uptake and part-time work (less than 35 h/week) were two additional categories. To measure job change as a mediator, we use occupation FE (ISCO-08 2-digit).

#### *Confounders*

Participation in job-related training (Cedefop, 2015) and fertility behaviour depends on age, especially for women. With no or broad control of age, the treatment effect might pick up ageing effects. Therefore, we follow the suggestion of Ludwig and Brüderl (2021) by including a full control set for the age effects. For the age FE, we use age 25 as the reference age and include a 1-year dummy for each additional year of age up to age 55. We further control for marital status (no partner, cohabiting, married), since it is a predictor of first childbirth and might influence training participation. We also control for whether individuals are employed on a temporary contract. A fixed-term contract might symbolize employment uncertainty, which influences an employee's fertility (Bernardi, Klarner and von der Lippe, 2008) and reduces employers' incentives to invest in training (Adolfsson, Baranowska-Rataj and Lundmark, 2022).

Besides individual employment insecurity, general labour market conditions might also influence fertility and training behaviour. Following Kratz and Brüderl (2021)'s approach, we attempt to capture period effects by controlling for unemployment rate, disposable income growth rate, and GDP growth rate.<sup>1</sup> We also include a dummy variable indicating whether the interview took place during the Covid-19 pandemic (in 2020 or later) since it influenced training participation rates overall. For our analysis of Germany, we additionally control for East and West Germany, since childbirth rates (Goldstein and Kreyenfeld, 2011) and rates of further education (BMBF, 2022) differ across the two regions.

### 3.3. Analytical Strategy

We implement fixed-effects (FE) regression models with control groups and standard errors clustered at the individual level.

$$Y_{it} = a_i + \gamma A_{it} + \mu_t + \beta Parentstat_{it} + \delta X_{it} + \varepsilon_{it} \quad (1)$$

Through the process of demeaning, FE models eliminate all time-constant observed and unobserved factors  $a_i$  that might influence our independent and dependent variables (Brüderl and Ludwig, 2015) and cause spurious correlation. Thus, only the idiosyncratic error term  $\varepsilon_{it}$  remains in the error term. This is the primary advantage of our approach over a between-estimator approach. FE estimators are consistent under the assumption of strict exogeneity with respect to  $\varepsilon_{it}$ , meaning that in each time period  $t$  there is no correlation between  $\varepsilon_{it}$  and the independent variables  $Parentstat_{it}$  and  $X_{it}$  of the same time period and all other time periods. We implement linear probability models (LPM) because FE logit models do not enable us to estimate average marginal effects and, therefore, do not allow interpretation of the effect size of the coefficient. Furthermore, LPM are closely related to average marginal effects (Breen, Karlson and Holm, 2018).

Since the fundamental problem of causal inference (Holland, 1986) means that within estimation is only possible when observing individuals over time,

changes in our outcome variable must be exclusively based on changes in treatment status. Therefore, we must ensure that outcome changes are not based on period effects or ageing or any other time-varying confounding factor.

A requirement of this approach is the assumption of common baseline trends between the treatment and control groups. To weaken this assumption and make our argument more plausible, we include a control group of non-treated individuals (constantly childless) for each estimation. They contribute to the estimation by providing a time trend estimate that we measure via age FE ( $\_Ait$ ) and by controlling for period effects by including three macro variables, unemployment rate, GDP growth rate, and disposable income growth rate (following the example of Kratz and Brüderl, 2021), and a dummy variable indicating whether the interview took place since the start of the Covid-19 pandemic. We calculate separate models by gender.

We also examine the time path of the family formation effect and analyse whether childbirth has a constant and permanent effect on training participation or whether the effect changes as the child grows older. Investigating the precise shape of the impact function is important for several reasons (Ludwig and Brüderl, 2021): First, a step-impact function would only be sufficient in case of a time-constant childbirth effect. Second, it allows us to see whether the effect of first childbirth on training participation is short-lived or persistent; in the case of persistent, we can see whether the effect increases or decreases over time. Thus, analysing the time path should also be of interest from a theoretical perspective. Therefore, we additionally implement FE models with control groups in event-study designs and compare them with step-impact models to see whether the overall family formation effect is driven by having a young child in the household or if the effect remains stable over time.

$$Y_{it} = a_i + \gamma A_{it} + \mu_t + \sum_{k=-q}^{-2} \beta_k \times Parentstat_{ik} + \sum_{k=0}^m \beta_k \times Parentstat_{ik} + \delta X_{it} + \varepsilon_{it} \quad (2)$$

Here,  $i$  refers to the individual and  $t$  to the year and  $k$  refers to the period relative to first childbirth.  $Parentstat_{ik}$  equals one if individual  $i$  experienced parenthood for  $k$  periods since the first child's birthyear. The reference period is  $k=-1$ . Therefore, we include pretreatment periods (leads) from  $-q$  (the period farthest in time before the year of first birth) until  $k=-2$  (two years before the first child is born) and posttreatment periods (lags) from  $k=0$  to  $m$  (the last observation period following childbirth). This enables us to investigate the time path of the childbirth effect from the year of birth until the last observation period of the individuals in our sample. Although a saturated model with a full set of leads and lags based on treatment timing cannot be seen as a direct test of the common baseline trend assumption, it approximately shows whether the treatment and control groups had comparable dynamics in the pretreatment period (Cunningham, 2021). Nevertheless, we refrain from interpreting the pretreatment results causally because they might capture different aspects such as anticipation effects, omitted time-varying variables, and reverse causality/feedback effects, which cannot be disentangled from each other (Ludwig and Brüderl, 2021). A considerable disadvantage of our event-study approach is that it reduces the reference period of being childless for our treatment group to one time point ( $t - 1$ ). Therefore, we additionally implemented an analysis with a model specification only including posttreatment dummies using the whole pretreatment time as reference time points (see in online Supplementary Appendix).

## 4. RESULTS

### 4.1. Descriptive Results

The upper part of Table 1 displays descriptive statistics from our NEPS sample, separated by gender and parenthood status, for the dependent and independent variables in our models (more detailed in Supplementary Table A1 in online Supplementary Appendix). The sample incorporates 1,205 men who remained

childless and 197 men who became fathers during our observation, and 949 women who remained childless and 154 women who became mothers for the first time during our observation period.

-----TABLE 1 HERE -----

We found heterogeneous participation rates in Germany: Men who became fathers during the observation period had a rather comparable training participation rate (33 percent) to those who constantly remained childless (31 percent). As expected, there were large parenthood differences in job-related training participation among women in Germany. Constantly childless women had much higher training participation rates (40 percent) than women who became mothers (31 percent).

The lower part of Table 1 displays an overview of our UKHLS sample. The sample included 2,284 childless men, 560 men who became fathers during the observation period, 2,298 women who remained childless, and 525 women who made the transition into first childbirth. Men who transitioned to parenthood had a training participation rate of 35 percent, while constantly childless men trained less (28 percent). Women who transitioned into first parenthood had a training participation rate of 29 percent, while the female control group had a participation rate of 33 percent.

## 4.2. Multivariate Results

### *4.2.1. Step Impact Functions Analysis of Job-related Training Participation by Country*

Figure 1 illustrates our results from the analyses of the effect of the parenthood transition on job-related training participation, using FE step-impact models with control groups. In our models that are supposed to estimate the total effect of family formation (see M2 in Table 2), we found that in Germany, first childbirth

decreased women's job-related training participation by 29 percentage points. Unexpectedly, our results give evidence for a fatherhood penalty as well. Following first childbirth, men's training participation decreased in Germany by about 7 percentage points.

Figure 1: Effects of transition to first childbirth on job-related training participation by gender and country, based on fixed-effects models with step impact functions.

-----FIGURE 1 HERE -----

Notes: Confounders include age, marital status (no partner, cohabiting, married), employment contract (permanent / temporary) and GDP (growth rate), disposable income (growth rate), unemployment rate, and the Covid-19 pandemic.

Activity includes full-time work (reference category), part-time work, and parental leave.

Occupation is based on ISCO08 2-digit codes.

95% Confidence Intervals

Source: NEPS SC6 SUF 13.0.0, Wave 2 – Wave 13 (2010 – 2021), and UKHLS, Wave 2 – Wave 10 (2010 – 2019), authors' calculations

Likewise, we found gender differences in job-related training participation following parenthood in the UK. Here, women suffered a substantial and statistically significant motherhood penalty in job-related training participation, whereas men were not affected by parenthood. In our main model (M2 in Table 3), we found that motherhood decreased women's training participation probability by 10 percentage points, whereas we found no fatherhood effect. Thus, our results for the UK and Germany are in line with Hypothesis 1a, which postulated that first motherhood decreases job-related

training participation. However, they only partly support Hypothesis 1b, stating that first fatherhood has no effect on job-related training participation.

We further analysed potential mediators of the family formation effect for mothers.<sup>2</sup> Hypothesis 2a, which postulated that the motherhood effect on training participation would be mediated by parental leave and part-time work, was confirmed by our results. In Germany, we found that controlling for parental-leave uptake and part-time work decreased the negative effect of childbirth on job-related training to 18 percentage points (see M3 in Table 2). In line with our results regarding the effects of motherhood in Germany, we found that parental leave uptake and part-time work were the main drivers of the motherhood penalty in the United Kingdom, reducing the motherhood effect from 10 to 3 percentage points (see M3 in Table 3). Taken together, our results are consistent with Hypothesis 2a.

Contrary to our expectations, our results do not support Hypothesis 2b, which states that the motherhood effect on job-related training is mediated by occupational changes. The family formation effect did not change after we included occupation FE (ISCO-08 2-digits) in our models (see M4 in Tables 2 and 3). This held in both Germany and the United Kingdom. None of our analysed mediators seem to contribute to the fatherhood penalty found in Germany.

#### *4.2.2. Event Study Analysis of Job-related Training Participation by Country*

Our step-impact models did not allow us to draw a conclusion regarding the longevity of the motherhood effect. Thus, we examined whether our identified parenthood effects were short term or long term. Figure 2 shows findings from the FE estimations with control groups in event-study specifications. We first focused on potential violations of parallel-trend assumptions, focusing on the models that estimate the total effects of family formation on job-related training participation. Indeed, anticipation processes may precede family formation. In

both countries, women who became mothers during our observational period trained more in the third year before childbirth than constantly childless women in the same time period. It may be that (i) training participation is already lower 1 year before childbirth ( $t = -1$ ) due to anticipation and pregnancy effects or (ii) women who plan to become mothers and who hope for a smooth return to work increase their training participation in anticipation of a labour market return.

In the remaining pre-treatment periods, we did not find significant differences in training dynamics between treatment and control groups.

Figure 2. Predicted change in job-related training participation before and after first childbirth by gender and country, based on fixed-effects models with control groups with an event-study design

-----FIGURE 2 HERE -----

Note: Unadjusted effects (M1 in Table 4 and 5) include time relative to first childbirth. Total effects (M2 in Table 4 and 5) include time relative to first childbirth and confounders such as age, marital status (no partner, cohabiting, married), employment contract (permanent / temporary) and GDP (growth rate), disposable income (growth rate), unemployment rate, and the Covid-19 pandemic. Direct effects (M3 in Table 4 and 5) include time relative to first childbirth, confounders, and full-time work (reference category), part-time work, parental leave, and ISCO08 2-digit codes of occupations.

95% Confidence Intervals

Source: NEPS SC6 SUF 13.0.0, Wave 2 – Wave 13 (2010 – 2021), and UKHLS, Wave 2 – Wave 13 (2010 – 2019), *authors' calculation*.

Hypothesis 3 suggests that a steeper and long-term decline in women's training participation will follow parenthood in Germany relative to the United Kingdom. Time-path patterns between Germany and the United Kingdom differed. In Germany, motherhood effects were larger and lasted longer than in

the United Kingdom. In the first interview after childbirth, women reported a training participation probability that was 28 percentage points lower than 1 year before childbirth. Our findings suggest that the motherhood penalty became slightly stronger 1 year after childbirth (at  $t = 1$ , 30 percentage points). In the following 2 years, the parenthood effect started to fade. In the second year after first childbirth ( $t = 2$ ), motherhood decreased the training participation probability by 18 percentage points, while in the third year following first childbirth ( $t = 3$ ), the job-related training participation probability was 12 percentage points lower than in the pre-motherhood period ( $t = -1$ ). Still, the training participation probability never returned to the pre-motherhood baseline.

In the United Kingdom, we found that mothers reported a lower training participation rate in the first two interviews after first childbirth. During the year of first childbirth, training participation probability decreased by 12 percentage points. One year after the transition into parenthood, women still had a training probability that was 7 percentage points lower than at  $t = -1$ . After 2 years, women did not participate less in job-related training than before becoming mothers.

Both findings support Hypothesis 3, postulating a steeper and longer-term decline in women's training participation following parenthood in Germany than in the United Kingdom. In Germany, women's training participation probability never returned to its original level after the initial drop, although the drop became statistically insignificant 3 years after childbirth. Four years after the birth of a first child, women's training participation was 24 percentage points below its level just before childbirth. In the United Kingdom, 2 years after the first childbirth, there were no remaining negative effects on women's training participation following childbirth.

Considering the time paths of fatherhood effects, we found no relative time period with a significant effect on first childbirth in the United Kingdom. In Germany, our results indicated no fatherhood penalty in the first interview after

childbirth ( $t = 0$ ) and the negative and statistically significant effect at  $t = 1$  (-11 pp.) became insignificant over time.

In sum, the impact of parenthood on training participation was more substantial in Germany than in the United Kingdom. Furthermore, the gender gap regarding the parenthood effect on job-related training participation was larger in Germany than in the United Kingdom, as women's job-related training participation following first childbirth declined more sharply in Germany than in the United Kingdom. We found (i) long-term negative effects of childbirth on women's training participation in Germany, (ii) short-term negative effects on men in Germany and women in the United Kingdom, and (iii) no effects on men in the United Kingdom.

#### *4.2.3. Robustness checks*

In addition to our main analyses, we performed six different robustness checks. The corresponding tables and figures can be found in the online Supplementary Appendix. However, we summarize the results:

[1] To test the impact of second or third births on our results, we re-estimated our models excluding person-years with second or subsequent child births. Our step-impact models (see Figure A1 in the online Supplementary Appendix) did not differ substantially from our main models (see Figure 1). However, re-estimating our event-study specification indicates that the long-term effects of family formation processes are influenced by second or subsequent births (see Figure A2 in the online Supplementary Appendix). While we find no substantive differences in the first 2 years after first childbirth, our re-estimation with the restricted sample indicates that second or subsequent births influence later years ( $t = 2$ ) after childbirth. In our main model, we find a motherhood penalty of 18 percentage points at  $t = 2$ , while our re-estimation with the restricted sample shows a coefficient of 12 percentage points with weaker statistical significance (10 percent level).

[2] Furthermore, we wanted to determine whether the results of our mediation analysis change if we re-operationalize occupational changes. Therefore, we add dummy variables for occupational changes (ISCO-08 2 digit) to our occupational FE (ISCO-08 2 digit). Adding the change dummies to our models did not change the results (see Figures A3 and A4 in the online Supplementary Appendix).

[3] We implemented an analysis with a model specification only including posttreatment dummies using the whole pre-treatment time as reference time points. We investigate whether using  $(t - 1)$  as the reference time point in our event-study specification influences our results. Being pregnant is likely to influence training participation as well. Since only women experience pregnancy, we might underestimate childbirth effects for women but not for men. Thus, using  $t - 1$  might result in an underestimation of gender differences since men are not or at least less likely to be influenced by pregnancy. The coefficients at  $t = 0$  and  $t = 1$  become slightly more negative when all pre-treatment periods are used as reference time points, suggesting that anticipation and/or pregnancy effects might lead to a small underestimation of our main models (see Figure A5 in the online Supplementary Appendix).

[4] In the NEPS, detailed information is collected for two randomly chosen courses. In the UKHLS, detailed information is available for three randomly selected courses. To see whether this might influence our results, we re-estimated our analyses for Germany using a different coding of the training variable based on logical imputation, using the information about all training courses (Grüttgen, Helbig and Ehlert, 2023). Results can be seen in Figures A6 and A7 in the online Supplementary Appendix. Using the training variable based on logical imputation weakly affects the analyses for men. The effects of first childbirth become around two percentage points more negative. Thus, our results are robust even when we use a different coding of the training variable.

[5] In our main models, we assume that family status and contract type are

confounding factors in the relationship between first childbirth and job-related training participation. However, their inclusion could mediate the effect of childbirth on training participation, potentially introducing an overcontrol bias in the models. We re-ran our analyses, excluding them. The results remained unchanged in both our step-impact specifications (see Figures A8 and A10 in the online Supplementary Appendix) and our event-study specifications (see Figures A9 and A11 in the online Supplementary Appendix).

## 5. DISCUSSION

This study uses FE models and longitudinal data from the NEPS (2010–2021) and UKHLS (2010–2019) and examines whether family formation has gendered effects on job-related training participation in Germany and the United Kingdom.

Following first childbirth, women face a motherhood penalty in job-related training in Germany and the United Kingdom. However, the *magnitude* and *duration* of motherhood penalties differ between both countries, with German women faring worse than their UK counterparts. In Germany, women experience a steeper and more long-term decline in training participation following first childbirth compared to the United Kingdom. Our mediation analysis shows that transitions into parental leave and part-time work seem to be key mediators of the motherhood effects on job-related training in both countries, while change of occupation does not seem to contribute to the motherhood penalty. Fatherhood, on the other hand, has small and short-term negative effects on training participation levels in Germany and no effect in the United Kingdom. Neither parental leave nor changes of occupation seem to mediate the effect of fatherhood on job-related training.

Our results are in line with previous literature, which finds a similar gendered parenthood impact with comparable effects in regard to magnitude and duration in Germany (Zoch, 2023). Furthermore, our country's comparative

results fit to previous studies showing that gender differences in training participation are less pronounced in countries with higher childcare provision (e.g. Dämmrich, Kosyakova and Blossfeld, 2016; Boll and Bublitz, 2018). Our results indicate that the motherhood training penalty is higher in Germany than in the United Kingdom, which is consistent with findings on the motherhood wage penalty (Kleven *et al.*, 2019; Musick, Bea and Gonalons-Pons, 2020). As the literature suggests, the male-breadwinner norm is still prevalent in Germany, including long maternity leaves and limited childcare options for children under 3 (Leopold, Skopek and Schulz, 2018; Lang and Groß, 2020). These policies are linked to larger motherhood wage penalties and higher levels of gender segregation in the German labour market (Aisenbrey and Fasang, 2017) and may, among others, be the central factors moderating the impact of childbirth on training participation (Dämmrich, Kosyakova and Blossfeld, 2016).

Our study advances a framework to conceptualize how the transition to parenthood *changes* an individual's job-related training participation over time, as shaped by different country contexts. Our findings add to existing knowledge, but our research design allows us to analyse changes in job-related training participation following first childbirth with longitudinal evidence. This provides new insights into how the impact of parenthood varies by gender from cross-national perspectives. In terms of analytical approach, our results highlight the importance of Ludwig and Brüderl's (2021) encouragement to analyse the *time path* of treatment effects by modelling flexible impact functions. Comparing our step-impact functions with our event-study specification, static impact modelling would cover up the strong treatment effect variance over time that we find in our event-study specifications. Despite making contributions, several limitations suggest the need for future research. Many respondents had already transitioned to first parenthood before our observational window. This leads to relatively small treatment groups, especially in Germany. Small sample sizes for Germany restrict our ability to complete a separate analysis for East and West Germany, although

we controlled for geographic locations in our model. Future studies using larger samples could incorporate this historical dimension into the analyses because there might be persistent East–West differences in maternal employment patterns and gender ideologies (Zoch and Schober, 2018). Furthermore, we would have liked to directly model anticipation/pregnancy effects since they might have led to an underestimation of our gender differences. Lastly, we cannot rule out the possibility of time-varying confounding factors that we did not consider in our models.

Despite these limitations, our analyses underscore the implications of the motherhood penalty in training participation for broader questions of social inequality (Zoch, 2023). While motherhood still disrupts women’s careers (Goldin, Kerr and Olivetti, 2022), job-related further training is considered an important tool for counterbalancing motherhood penalties. A better understanding of women’s and men’s training participation behaviours after childbirth is therefore of high interest, both from a scientific and policy perspective.

The long-term implications of our findings are clear: even for working mothers, access to work-related non-formal training is limited, leading to an additional dimension of inequality in the labour market that could destabilize women’s careers. Thus, rather than stabilizing careers (Ebner and Ehlert, 2018), our findings suggest that mothers’ post-family formation patterns of participation in job-related training appear to further promote gender inequalities in the labour market at one of the most vulnerable stages of women’s careers. However, our cross-country comparison shows that the magnitude and duration of the gendered effects of parenthood on training participation are not fixed, but are contextual. Family policies have the potential to influence both gender norms and gendered labour market behaviour, which in turn may reduce gender inequalities stemming from gendered specialization dynamics after parenthood.

## References

- Adolfsson, M., Baranowska-Rataj, A. and Lundmark, A. (2022). Temporary employment, employee representation, and employer-paid training: a comparative analysis. *European Sociological Review*, **38**, 785–798.
- Aisenbrey, S. and Fasang, A. (2017). The interplay of work and family trajectories over the life course: Germany and the United States in comparison. *American Journal of Sociology*, **122**, 1448–1484.
- Alwin, D. F. and Hauser, R. M. (1975). The decomposition of effects in path analysis. *American Sociological Review*, **40**, 37–47.
- Arrow, K. (1973). Higher education as a filter. *Journal of Public Economics*, **2**, 193–216.
- Baxter, J. *et al.* (2015). A life-changing event: first births and men’s and women’s attitudes to mothering and gender divisions of labor. *Social Forces*, **93**, 989–1014.
- Becker, G. S. (1981). *A Treatise on the Family*. Cambridge, MA: Harvard University Press.
- Becker, G. S. (1985). Human capital, effort, and the sexual division of labor. *Journal of Labor Economics*, **3**, S33–S58.
- Becker, P. E. and Moen, P. (1999). Scaling back: dual-earner couples’ work-family strategies. *Journal of Marriage and the Family*, **61**, 995–1007
- Bergemann, A. and Riphahn, R. T. (2023). Maternal employment effects of paid parental

leave.

*Journal of Population Economics*, **36**, 139–178.

Bernardi, L., Klärner, A. and von der Lippe, H. (2008). Job insecurity and the timing of parenthood: a comparison between Eastern and Western Germany. *European Journal of Population = Revue Européenne de Démographie*, **24**, 287–313.

Bick, A. and Fuchs-Schündeln, N. (2017). Quantifying the disincentive effects of joint taxation on married women's labor supply. *American Economic Review*, **107**, 100–104.

BMBF (2022). Weiterbildungsverhalten in Deutschland 2020: Ergebnisse des Adult Education Survey – AES-Trendbericht. Berlin.

Boll, C. and Bublitz, E. (2018). A cross-country comparison of gender differences in job-related training: the role of working hours and the household context: gender differences in job-related training. *British Journal of Industrial Relations*, **56**, 503–555.

Breen, R., Karlson, K. B. and Holm, A. (2018). Interpreting and understanding logits, probits, and other nonlinear probability models. *Annual Review of Sociology*, **44**, 39–54.

Brüderl, J. and Ludwig, V. (2015). Fixed-effects panel regression. In Best, H. and Wolf, C. (Eds.), *The SAGE Handbook of Regression Analysis and Causal Inference*. Thousand Oaks, CA: SAGE Publications Ltd.

Brzinsky-Fay, C. (2007). Lost in transition? Labour market entry sequences of

- school leavers in Europe. *European Sociological Review*, **23**, 409–422.
- Budig, M. J. and England, P. (2001). The wage penalty for motherhood. *American Sociological Review*, **66**, 204.
- Cedefop, European Centre for the Development of Vocational Training (2015). *Job-related Adult Learning and Continuing Vocational Training in Europe: A Statistical Picture*. Luxembourg: Publications Office.
- Correll, S. J., Benard, S. and Paik, I. (2007). Getting a job: is there a motherhood penalty? *American Journal of Sociology*, **112**, 1297–1339.
- Craig, L. and Mullan, K. (2011). How mothers and fathers share childcare: a cross-national time-use comparison. *American Sociological Review*, **76**, 834–861.
- Cunningham, S. (2021). *Causal Inference: The Mixtape*. New Haven, CT: Yale University Press.
- Dämmrich, J., Kosyakova, Y. and Blossfeld, H.-P. (2016). Gender and job-related non-formal training: a comparison of 20 countries. *International Journal of Comparative Sociology*, **56**, 433–459.
- Dieckhoff, M. and Steiber, N. (2011). A re-assessment of common theoretical approaches to explain gender differences in continuing training participation: gender differences in continuing training participation. *British Journal of Industrial Relations*, **49**, s135–s157.
- Dieckhoff, M., Jungblut, J.-M. and O'Connell, P. J. (2007). Job-related training in Europe: do institutions matter? In Gallie, D. (Ed.), *Employment*

- Regimes and the Quality of Work*. Oxford, UK: Oxford University Press.
- Ebner, C. and Ehlert, M. (2018). Weiterbilden und Weiterkommen? Non-formale berufliche Weiterbildung und Arbeitsmarktmobilität in Deutschland. *KZfSS Kölner Zeitschrift für Soziologie und Sozialpsychologie*, **70**, 213–235.
- Esping-Andersen, G. (1990). *The Three Worlds of Welfare Capitalism*. Princeton, NJ: Princeton University Press.
- Fasang, A. E. (2012). Retirement patterns and income inequality. *Social Forces*, **90**, 685–711.
- Gangl, M. and Ziefle, A. (2015). The making of a good woman: extended parental leave entitlements and mothers' work commitment in Germany. *American Journal of Sociology*, **121**, 511–563.
- Glauber, R. (2023). Motherhood, fatherhood, and the gender gap in occupational authority. *Sociological Forum*, **38**, 637–659.
- Goldin, C., Kerr, S. P. and Olivetti, C. (2022). *When the Kids Grow Up: Women's Employment and Earnings across the Family Cycle*. NBER Working Paper, No.w30323, National Bureau of Economic Research. [https://www.nber.org/system/files/working\\_papers/w30323/w30323.pdf](https://www.nber.org/system/files/working_papers/w30323/w30323.pdf)
- Goldstein, J. R. and Kreyenfeld, M. (2011). Has East Germany overtaken West Germany? Recent trends in order-specific fertility. *Population and Development Review*, **37**, 453–472.
- Grunow, D. and Veltkamp, G. (2016). Institutions as reference points for parents-

- to-be in European societies: a theoretical and analytical framework. In *Couples' Transitions to Parenthood: Analysing Gender and Work in Europe*. Cheltenham, UK: Edward Elgar, pp. 3–33.
- Grüttgen, I., Helbig, A. and Ehlert, M. (2023). *NEPS-Data on Non-Formal Adult Learning Activities—Structure, Specifications and Linking of the Data of the Starting Cohort 6*. NEPS Survey Paper No. 101. Bamberg, Germany: Leibniz Institute for Educational Trajectories, National Educational Panel Study.
- Gumy, J. M., Plagnol, A. C. and Piasna, A. (2022). Job satisfaction and women's timing of return to work after childbirth in the UK. *Work and Occupations*, **49**, 345–375.
- Haelermans, C. and Borghans, L. (2012). Wage effects of on-the-job training: a meta-analysis: wage effects of on-the-job training. *British Journal of Industrial Relations*, **50**, 502–528.
- Han, S. W. (2023). When kids are a burden: understanding the normative sources of negative perceptions of parenthood. *Population and Development Review*, **49**, 499–529.
- Hansson, B. (2008). *Job-Related Training and Benefits for Individuals: A Review of Evidence and Explanations*. OECD Education Working Papers No. 19. Paris, France: OECD Publishing. <https://doi.org/10.2139/ssrn.1347622>
- Hipp, L. (2020). Do hiring practices penalize women and benefit men for having children? Experimental evidence from Germany. *European Sociological*

- Review*, **36**, 250–264.
- Holland, P. W. (1986). Statistics and causal inference. *Journal of the American Statistical Association*, **81**, 945–960.
- Hook, J. L. and Pettit, B. (2016). Reproducing occupational inequality: motherhood and occupational segregation. *Social Politics: International Studies in Gender, State & Society*, **23**, 329–362.
- Hsu, C. H. (2023). How women’s employment instability affects birth transitions: the moderating role of family policies in 27 European countries. *European Sociological Review*, **39**, 935–956.  
<https://doi.org/10.1093/esr/jcad037>
- Kaufman, G. (2018). Barriers to equality: Why British fathers do not use parental leave. *Community, Work & Family*, **21**, 310–325.
- Killewald, A. and García-Manglano, J. (2016). Tethered lives: a couple-based perspective on the consequences of parenthood for time use, occupation, and wages. *Social Science Research*, **60**, 266–282.
- Kleven, H. *et al.* (2019). Child penalties across countries: evidence and explanations. *AEA Papers and Proceedings*, **109**, 122–126.
- Korpi, W. (2000). Faces of inequality: gender, class, and patterns of inequalities in different types of welfare states. *Social Politics: International Studies in Gender, State & Society*, **7**, 127–191.
- Kraemer, B. (2015). *Germany: Family Benefit Rule Changes Encourage Parents to Share Childcare Duties*. Dublin, Ireland: European Foundation for the

- Improvement of Living and Working Conditions (Eurofound).
- Kratz, F. and Brüderl, J. (2021). The age trajectory of happiness. *PsyArXiv*, 1–31.
- Kühhirt, M. (2012). Childbirth and the long-term division of labour within couples: how do substitution, bargaining power, and norms affect parents' time allocation in West Germany? *European Sociological Review*, **28**, 565–582.
- Lang, V. and Groß, M. (2020). The just gender pay gap in Germany revisited: the male breadwinner model and regional differences in gender-specific role ascriptions. *Research in Social Stratification and Mobility*, **65**, 100473.
- Lebert, F. and Antal, E. (2016). Reducing employment insecurity: further training and the role of the family context. *SAGE Open*, **6**, 215824401667176.
- Leopold, T., Skopek, J. and Schulz, T. C. D. (2018). Gender convergence in housework time: a life course and cohort perspective. *Sociological Science*, **5**, 281–303.
- Lohmann, H. and Zagel, H. (2016). Family policy in comparative perspective: the concepts and measurement of familization and defamilization. *Journal of European Social Policy*, **26**, 48–65.
- Looze, J. (2017). Why Do(n't) they leave? Motherhood and women's job mobility. *Social Science Research*, **65**, 47– 59.
- Ludwig, V. and Brüderl, J. (2021). What you need to know when estimating impact functions with panel data for demographic research. *Comparative Population Studies*, **46**, 453–486.

- Lundberg, S. and Pollak, R. A. (1996). Bargaining and distribution in marriage. *Journal of Economic Perspectives*, **10**, 139–158.
- Mandel, H., Lazarus, A. and Shaby, M. (2020). Economic exchange or gender identities? Housework division and wives' economic dependency in different contexts. *European Sociological Review*, **36**, 831–851.
- Mari, G. (2019). Is there a fatherhood wage premium? A reassessment in societies with strong male-breadwinner legacies. *Journal of Marriage and Family*, **81**, 1033–1052.
- Massing, N. and Gauly, B. (2017). Training participation and gender: analyzing individual barriers across different welfare state regimes. *Adult Education Quarterly*, **67**, 266–285.
- Mincer, J. and Ofek, H. (1982). Interrupted work careers: depreciation and restoration of human capital. *The Journal of Human Resources*, **17**, 3.
- Misra, J., Moller, S. and Budig, M. J. (2007). Work–family policies and poverty for partnered and single women in Europe and North America. *Gender & Society*, **21**, 804–827.
- Musick, K., Bea, M. D. and Gonalons-Pons, P. (2020). His and her earnings following parenthood in the United States, Germany, and the United Kingdom. *American Sociological Review*, **85**, 639–674.
- NEPS Network (2022). *National Educational Panel Study, Scientific Use File of Starting Cohort Adults*. Bamberg: Leibniz Institute for Educational Trajectories (LIfBi).

- OECD (2020). *'Is Childcare Affordable?'* Policy Brief on Employment, Labour and Social Affairs, available from: <[https://web-archive.oecd.org/2020-06-05/554683- OECD-Is-Childcare-Affordable.pdf](https://web-archive.oecd.org/2020-06-05/554683-OECD-Is-Childcare-Affordable.pdf)> [accessed 2 April 2024].
- OECD (2023). *Family Database. PF2.2 Use of Childbirth-related Leave Benefits & PF3.2 Enrolment in Childcare and Pre-school*, available from: <<https://www.oecd.org/els/family/database.htm>> [accessed 2 April 2024].
- Pedulla, D. S. and Thébaud, S. (2015). Can we finish the revolution? Gender, work-family ideals, and institutional constraint. *American Sociological Review*, **80**, 116–139.
- Phelps, E. S. (1972). The statistical theory of racism and sexism. *The American Economic Review*, **62**, 659–661.
- Puhani, P. A. and Sonderhof, K. (2011). The effects of parental leave extension on training for young women. *Journal of Population Economics*, **24**, 731–760.
- Rubenson, K. and Desjardins, R. (2009). The impact of welfare state regimes on barriers to participation in adult education. *Adult Education Quarterly*, **59**, 187–207.
- Schober, P. S. (2013). Maternal labor market return and domestic work after childbirth in Britain and Germany. *Community, Work & Family*, **16**, 307–326.

- Schober, P. and Scott, J. (2012). Maternal employment and gender role attitudes: dissonance among British men and women in the transition to parenthood. *Work, Employment and Society*, **26**, 514–530.
- Schwartz, F. (1992). *Breaking with Tradition: Women and Work, the New Facts of Life*. New York: Warner.
- Thébaud, S. and Taylor, C. J. (2021). The specter of motherhood: culture and the production of gendered career aspirations in science and engineering. *Gender & Society*, **35**, 395–421.
- UK Government (2023). *Statutory Maternity Pay and Leave: Employer Guide*, available from: <<https://www.gov.uk/employers-maternity-pay-leave/print>> [accessed 2 April 2024].
- University of Essex, I. F. S. (2022). *United Kingdom Household Longitudinal Study; UKHLS Understanding Society: Waves 1-, 2008-Understanding Society: Waves 1-12, 2009-2021 and Harmonised BHPS: Waves 1-18, 1991-2009*. 17th edn. Colchester, Essex, UK: UK Data Service.  
<https://doi.org/10.5255/UKDA-SN-6614-18>
- West, C. and Zimmerman, D. H. (1987). Doing gender. *Gender & Society*, **1**, 125–151.
- Zoch, G. (2023). Participation in job-related training: is there a parenthood training penalty? *Work, Employment and Society*, **37**, 274–292.
- Zoch, G. and Schober, P. S. (2018). Public child-care expansion and changing gender ideologies of parents in Germany. *Journal of Marriage and*

*Family*, **80**, 1020–1039.

**Appendix.**

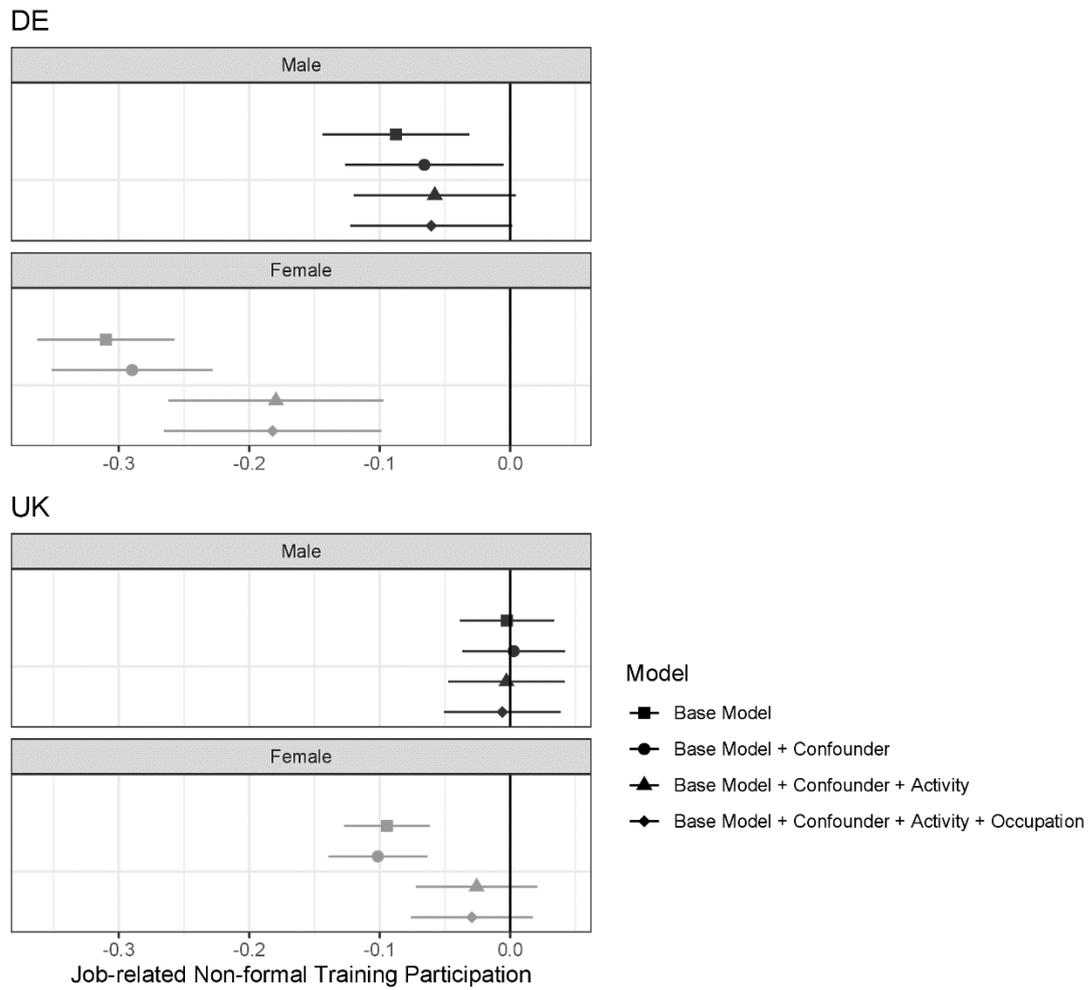
-----TABLE 2 ABOUT HERE -----

-----TABLE 3 ABOUT HERE -----

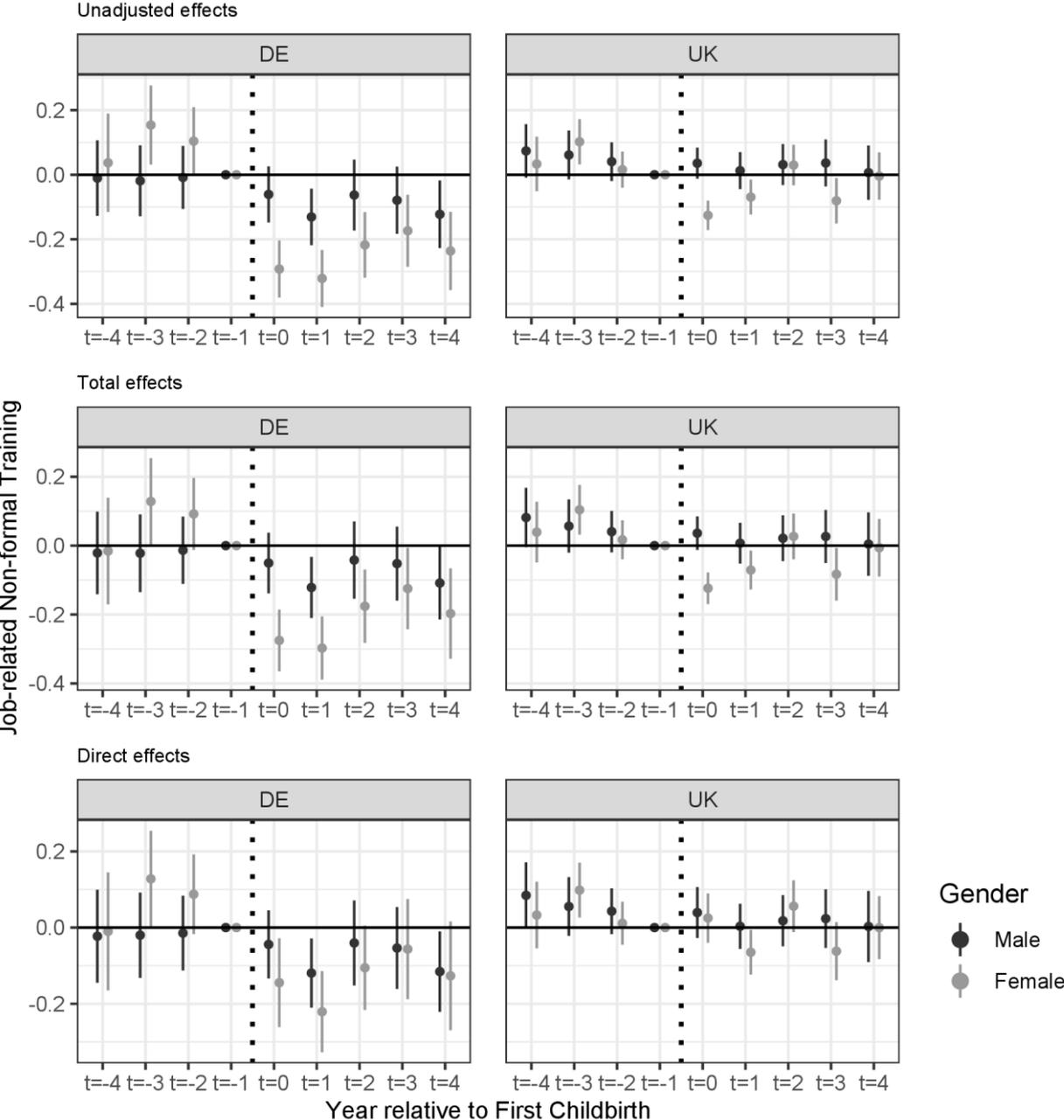
-----TABLE 4 ABOUT HERE -----

-----TABLE 5 ABOUT HERE -----

**Figure 1: Effects of transition to first childbirth on job-related training participation by gender and country, based on fixed-effects models with step impact functions.**



**Figure 2. Predicted change in job-related training participation before and after first childbirth by gender and country, based on fixed-effects models with control groups with an event-study design**



**Table 1: Descriptive statistics**

	Constantly childless men	Men transitioning to parenthood	Men total	Constantly childless women	Women transitioning to parenthood	Women total
<b>Germany</b>						
Job-related training	.31	.33	.31	.4	.31	.38
Parenthood status	0	.56	.13	0	.57	.12
Number of persons	1,205	197	1,402	949	154	1,103
% total	85.95	14.05	100	86.04	13.96	100
Number of person-years	5,309	1,546	6,855	4,115	1087	5,202
% total	78.9	21.1	100	79.4	20.6	100
Mean person-years per person	4.41	7.85	4.89	4.34	7.06	4.72
<b>UK</b>						
Job-related training	.28	.35	.3	.33	.29	.32
Parenthood status	0	.56	.14	0	.56	.14
Number of persons	2,284	560	2,844	2,298	525	2,823
% total	80.31	19.69	100	81.4	18.6	100
Number of person-years	9,685	3,347	13,032	9,841	3,151	12,992
% total	74.32	25.68	100%	75.75	24.25	100
Mean person-years per person	4.24	5.98	4.58	4.28	6.00	4.60

Source: NEPS SC6 SUF 13.0.0, Wave 2 – Wave 13 (2010 – 2021), and UKHLS, Wave 2 – Wave 10 (2010 – 2019), *authors' calculations*.  
Note: Statistics shown are mean values for unweighted data

**Table 2. Fixed-effects Step Impact Estimation: Family Formation and Job-related Training Participation in Germany**

	Women				Men			
	M1	M2	M3	M4	M1	M2	M3	M4
<b>Family formation</b>								
First childbirth	-0.31*** (0.03)	-0.29*** (0.03)	-0.18*** (0.04)	-0.18*** (0.04)	-0.09** (0.03)	-0.07* (0.03)	-0.06+ (0.03)	-0.06+ (0.03)
<b>Age (ref.: 25)</b>								
Age (fixed-effects)	NO	YES	YES	YES	NO	YES	YES	YES
<b>Family status (ref.: no partner)</b>								
Cohabiting		0.07+ (0.04)	0.07+ (0.04)	0.08+ (0.04)		0.01 (0.03)	0.01 (0.03)	0.01 (0.03)
Married		0.05+ (0.03)	0.05+ (0.03)	0.06+ (0.03)		0.03 (0.03)	0.03 (0.03)	0.03 (0.03)
<b>Employment contract (ref.: Permanent)</b>								
Temporary		0.00 (0.03)	-0.01 (0.03)	-0.01 (0.03)		-0.04 (0.03)	-0.04 (0.03)	-0.04 (0.03)
<b>Residence (ref.: West Germany)</b>								
East Germany		0.01 (0.12)	0.02 (0.12)	0.03 (0.12)		0.05 (0.07)	0.05 (0.07)	0.05 (0.08)
<b>Activity (ref.: Full-time work)</b>								
Part-time work			-0.04 (0.03)	-0.04 (0.03)			-0.05 (0.04)	-0.05 (0.04)
Parental leave			-0.18*** (0.04)	-0.18*** (0.04)			-0.09 (0.06)	-0.09 (0.06)
<b>Occupations (ISCO-08)</b>								
ISCO 08 2digit (fixed effects)	NO	NO	NO	YES	NO	NO	NO	YES
<b>Period Effects</b>								
GDP (growth rate)		-0.01** (0.00)	-0.01** (0.00)	-0.01** (0.00)		-0.01* (0.00)	-0.01* (0.00)	-0.01* (0.00)
Disposable income (growth rate)		0.04** (0.01)	0.04** (0.01)	0.04** (0.01)		0.03* (0.01)	0.02* (0.01)	0.03* (0.01)
Unemployment rate		0.02 (0.02)	0.02 (0.02)	0.02 (0.02)		-0.02 (0.02)	-0.02 (0.02)	-0.02 (0.02)
Covid		0.08** (0.03)	0.07* (0.03)	0.07* (0.03)		0.09*** (0.02)	0.09*** (0.02)	0.09*** (0.02)
Constant	0.42*** (0.00)	0.42 (0.26)	0.45+ (0.26)	0.51* (0.26)	0.32*** (0.00)	0.73*** (0.21)	0.75*** (0.21)	0.82*** (0.22)
N	5,202	5,202	5,202	5,202	6,855	6,855	6,855	6,855
N_g	1,103	1,103	1,103	1,103	1,402	1,402	1,402	1,402
R2 (within)	0.03	0.04	0.05	0.05	0.00	0.02	0.02	0.02

Notes: Standard errors in parentheses. + p < 0.10, \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

Source: NEPS SC6 SUF 13.0.0, Wave 2 – Wave 13 (2010 – 2021), authors' calculations

**Table 3. Fixed-effects Step Impact Estimation: Family Formation and Job-related Training Participation in the UK**

	Women				Men			
	M1	M2	M3	M4	M1	M2	M3	M4
<b>Family formation</b>								
First childbirth	-0.09*** (0.02)	-0.10*** (0.02)	-0.03 (0.02)	-0.03 (0.02)	0.00 (0.02)	0.00 (0.02)	0.00 (0.02)	-0.01 (0.02)
<b>Age (ref.: 25)</b>								
Age (fixed-effects)	NO	YES	YES	YES	NO	YES	YES	YES
<b>Family status</b>								
Cohabiting		-0.05* (0.02)	-0.04+ (0.02)	-0.04+ (0.02)		-0.03 (0.02)	-0.03 (0.02)	-0.03 (0.02)
Married		-0.05+ (0.03)	-0.04 (0.03)	-0.04 (0.03)		-0.01 (0.03)	-0.01 (0.03)	0.00 (0.03)
<b>Employment contract (ref.: Permanent)</b>								
Temporary		0.02 (0.02)	0.02 (0.02)	0.02 (0.02)		-0.01 (0.03)	-0.01 (0.03)	-0.02 (0.03)
<b>Activity (ref.: Full-time work)</b>								
Part-time work			-0.02 (0.02)	-0.02 (0.02)			-0.01 (0.03)	0.00 (0.03)
Parental leave			-0.15*** (0.02)	-0.15*** (0.02)			0.01 (0.02)	0.02 (0.02)
<b>Occupations (ISCO-08)</b>								
ISCO 08 2digit (fixed effects)	NO	NO	NO	YES	NO	NO	NO	YES
<b>Period Effects</b>								
GDP (growth rate)		-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)		0.02* (0.01)	0.02* (0.01)	0.02+ (0.01)
Disposable income (growth rate)		0.01** (0.00)	0.01** (0.00)	0.01** (0.00)		0.00* (0.00)	0.00* (0.00)	0.00* (0.00)
Unemployment rate		-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)		0.00 (0.01)	0.00 (0.01)	0.00 (0.01)
Covid		-0.03+ (0.02)	-0.03* (0.02)	-0.03+ (0.02)		-0.01 (0.02)	-0.01 (0.02)	-0.01 (0.02)
Constant	0.33*** (0.00)	0.52*** (0.15)	0.52*** (0.15)	0.55*** (0.16)	0.30*** (0.00)	0.31+ (0.16)	0.31+ (0.16)	0.36* (0.16)
N	12,992	12,992	12,992	12,992	13,032	13,032	13,032	13,032
N_g	2,826	2,826	2,826	2,826	2,845	2,845	2,845	2,845
R2 (within)	0.00	0.01	0.01	0.02	0.00	0.01	0.01	0.01

Notes: Standard errors in parentheses. + p < 0.10, \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

Source: UKHLS Wave 2 – Wave 10 (2010 – 2019), authors' calculations.

**Table 4. Fixed-effects Event Study Estimation: Family Formation and Job-related Training Participation in Germany**

	Women			Men		
	M1	M2	M3	M1	M2	M3
<b>Time Relative to First Childbirth</b>						
T-11				-0.71*** (0.04)	-0.78*** (0.06)	-0.79*** (0.06)
T-10	-0.28*** (0.05)	-0.43*** (0.08)	-0.39*** (0.09)	-0.34* (0.13)	-0.38** (0.14)	-0.36* (0.15)
T-9	0.36+ (0.22)	0.25 (0.23)	0.27 (0.24)	0.13 (0.14)	0.08 (0.15)	0.08 (0.14)
T-8	-0.14 (0.09)	-0.20+ (0.11)	-0.19+ (0.11)	0.06 (0.10)	0.04 (0.10)	0.04 (0.09)
T-7	-0.11 (0.10)	-0.16+ (0.10)	-0.16 (0.10)	0.20* (0.10)	0.18+ (0.10)	0.18+ (0.10)
T-6	0.06 (0.14)	0.03 (0.15)	0.04 (0.15)	0.16* (0.07)	0.15+ (0.08)	0.15* (0.08)
T-5	-0.01 (0.09)	-0.04 (0.09)	-0.03 (0.09)	0.04 (0.06)	0.03 (0.07)	0.03 (0.07)
T-4	0.04 (0.08)	0.01 (0.08)	0.01 (0.08)	-0.01 (0.06)	-0.01 (0.06)	-0.01 (0.06)
T-3	0.15* (0.06)	0.13* (0.06)	0.14* (0.06)	-0.02 (0.06)	-0.02 (0.06)	-0.01 (0.06)
T-2	0.10+ (0.05)	0.09+ (0.05)	0.09+ (0.05)	-0.01 (0.05)	0.00 (0.05)	-0.01 (0.05)
T+0	-0.29*** (0.05)	-0.28*** (0.05)	-0.15* (0.06)	-0.06 (0.04)	-0.05 (0.04)	-0.04 (0.05)
T+1	-0.32*** (0.04)	-0.30*** (0.05)	-0.23*** (0.05)	-0.13** (0.04)	-0.11* (0.04)	-0.11* (0.05)
T+2	-0.22*** (0.05)	-0.18*** (0.05)	-0.11* (0.06)	-0.06 (0.06)	-0.04 (0.06)	-0.04 (0.06)
T+3	-0.17** (0.06)	-0.12* (0.06)	-0.06 (0.07)	-0.08 (0.05)	-0.05 (0.05)	-0.05 (0.05)
T+4	-0.24*** (0.06)	-0.19** (0.07)	-0.13+ (0.07)	-0.12* (0.05)	-0.08 (0.06)	-0.09 (0.06)
T+5	-0.19* (0.08)	-0.14 (0.08)	-0.09 (0.09)	0.02 (0.07)	0.05 (0.07)	0.04 (0.07)
T+6	-0.19+ (0.10)	-0.14 (0.10)	-0.09 (0.10)	-0.07 (0.08)	-0.03 (0.09)	-0.03 (0.09)
T+7	-0.16 (0.12)	-0.10 (0.13)	-0.03 (0.14)	-0.04 (0.08)	0.02 (0.08)	0.02 (0.08)
T+8	-0.01 (0.13)	0.05 (0.13)	0.11 (0.13)	-0.08 (0.10)	-0.04 (0.11)	-0.04 (0.11)
T+9	-0.05 (0.16)	0.05 (0.17)	0.10 (0.18)	-0.16 (0.14)	-0.09 (0.13)	-0.08 (0.14)
T+10	-0.13 (0.15)	-0.03 (0.15)	0.02 (0.16)	-0.11 (0.16)	0.00 (0.17)	0.01 (0.18)
<b>Age</b>						
Age (fixed-effects)	NO	YES	YES	NO	YES	YES
<b>Family Status</b>						
Cohabiting		0.08+ (0.04)	0.08+ (0.04)		0.02 (0.03)	0.02 (0.03)
Married		0.06* (0.03)	0.06* (0.03)		0.04 (0.03)	0.04 (0.03)
<b>Employment contract (ref.: Permanent)</b>						

Temporary		-0.01 (0.03)	-0.02 (0.03)		-0.04 (0.03)	-0.04 (0.03)
<b>Residence (ref.: West Germany)</b>						
East Germany		0.02 (0.12)	0.04 (0.11)		0.04 (0.07)	0.05 (0.08)
<b>Activity (ref.: Full-time work)</b>						
Part-time work			-0.04 (0.03)			-0.06 (0.04)
Parental leave			-0.16*** (0.05)			-0.09 (0.06)
<b>Occupation (ISCO-08)</b>						
ISCO 08 2digit (fixed effects)	NO	NO	YES	NO	NO	YES
<b>Period Effects</b>						
GDP (growth rate)		-0.01** (0.00)	-0.01** (0.00)		-0.01* (0.00)	-0.01* (0.00)
Disposable income (growth rate)		0.04** (0.01)	0.04** (0.01)		0.03* (0.01)	0.03* (0.01)
Unemployment rate		0.01 (0.02)	0.01 (0.02)		-0.02 (0.02)	-0.02 (0.02)
Covid		0.07* (0.03)	0.07* (0.03)		0.08*** (0.02)	0.08*** (0.02)
Constant	0.40*** (0.01)	0.52* (0.26)	0.53* (0.26)	0.32*** (0.01)	0.71*** (0.21)	0.66** (0.23)
N	5,202	5,502	5,502	6,855	6,855	6,855
N_g	1,103	1,103	1,103	1,402	1,402	1,402
R2 (within)	0.03	0.05	0.06	0.01	0.02	0.03

Notes: Standard errors in parentheses. + p < 0.10, \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.  
Source: NEPS SC6 SUF 13.0.0, Wave 2 – Wave 13 (2010 – 2021), authors' calculations

**Table 5. Fixed-effects Event Study Estimation: Family Formation and Job-related Training Participation in the UK**

	Women			Men		
	M1	M2	M3	M1	M2	M3
<b>Time Relative to First Childbirth</b>						
T-8	0.09 (0.22)	0.10 (0.22)	0.09 (0.21)	0.09 (0.18)	0.11 (0.18)	0.11 (0.17)
T-7	0.22+ (0.12)	0.24+ (0.12)	0.23+ (0.13)	0.03 (0.10)	0.07 (0.10)	0.08 (0.10)
T-6	0.09 (0.08)	0.09 (0.08)	0.09 (0.08)	0.07 (0.06)	0.09 (0.06)	0.09 (0.06)
T-5	0.00 (0.05)	0.01 (0.06)	0.00 (0.05)	0.01 (0.05)	0.03 (0.05)	0.03 (0.05)
T-4	0.03 (0.04)	0.04 (0.04)	0.03 (0.04)	0.07+ (0.04)	0.08+ (0.04)	0.09+ (0.04)
T-3	0.10** (0.04)	0.10** (0.04)	0.10** (0.04)	0.06 (0.04)	0.06 (0.04)	0.06 (0.04)
T-2	0.02 (0.03)	0.02 (0.03)	0.01 (0.03)	0.04 (0.03)	0.04 (0.03)	0.05 (0.03)
T+0	-0.13*** (0.02)	-0.12*** (0.02)	0.03 (0.03)	0.04 (0.02)	0.04 (0.02)	0.04 (0.03)
T+1	-0.07* (0.03)	-0.07* (0.03)	-0.07* (0.03)	0.01 (0.03)	0.01 (0.03)	0.00 (0.03)
T+2	0.03 (0.03)	0.03 (0.03)	0.05 (0.03)	0.03 (0.03)	0.02 (0.03)	0.02 (0.03)
T+3	-0.08* (0.04)	-0.09* (0.04)	-0.06 (0.04)	0.04 (0.04)	0.03 (0.04)	0.02 (0.04)
T+4	0.00 (0.04)	-0.01 (0.04)	0.00 (0.04)	0.01 (0.04)	0.00 (0.05)	0.00 (0.05)
T+5	-0.04 (0.04)	-0.03 (0.05)	-0.03 (0.05)	-0.03 (0.05)	-0.03 (0.05)	-0.03 (0.05)
T+6	-0.04 (0.06)	-0.03 (0.06)	-0.03 (0.06)	-0.10 (0.07)	-0.10 (0.07)	-0.10 (0.07)
T+7	0.05 (0.07)	0.07 (0.08)	0.07 (0.08)	-0.05 (0.10)	-0.04 (0.10)	-0.04 (0.10)
<b>Age</b>						
Age (fixed-effects)	NO	YES	YES	NO	YES	YES
<b>Family Status</b>						
Cohabiting		-0.04+ (0.02)	-0.04 (0.02)		-0.03 (0.02)	-0.03 (0.02)
Married		-0.04 (0.03)	-0.03 (0.03)		0.00 (0.03)	0.00 (0.03)
<b>Employment contract (ref.: Permanent)</b>						
Temporary		0.02 (0.02)	0.02 (0.02)		-0.01 (0.03)	-0.02 (0.03)
<b>Activity (ref.: Full-time work)</b>						
Part-time work			-0.01 (0.02)			0.00 (0.03)
Parental leave			-0.18*** (0.03)			0.00 (0.03)
<b>Occupation (ISCO-08)</b>						

ISCO 08 2digit (fixed effects)	NO	NO	YES	NO	NO	YES
<b>Period Effects</b>						
GDP (growth rate)		-0.01 (0.01)	-0.01 (0.01)		0.02* (0.01)	0.02+ (0.01)
Disposable income (growth rate)		0.01** (0.00)	0.01** (0.00)		0.00* (0.00)	0.00* (0.00)
Unemployment rate		-0.01 (0.01)	-0.01 (0.01)		0.00 (0.01)	0.00 (0.01)
Covid		-0.04* (0.02)	-0.04* (0.02)		-0.01 (0.02)	-0.01 (0.02)
Constant	0.32*** (0.00)	0.49** (0.15)	0.52** (0.16)	0.29*** (0.00)	0.28+ (0.16)	0.33* (0.16)
N	12,992	12,992	12,992	13,032	13,032	13,032
N_g	2,826	2,826	2,826	2,845	2,845	2,845
R2 (within)	0.01	0.01	0.02	0.00	0.01	0.01

Notes: Standard errors in parentheses. + p < 0.10, \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.  
Source: UKHLS Wave 2 – Wave 10 (2010 – 2019), authors' calculations.