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WORK-FAMILY INTERACTIONS AND MATERNAL HEALTH: A COMPARATIVE STUDY OF SINGLE AND PARTNERED MOTHERS IN GERMANY

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Article Info

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Abstract

The increasing labor force participation of mothers in high-income countries has led to a growing interest in understanding the impact of employment on their health and well-being. While previous research has shown that employment can have positive effects on overall health and well-being, the literature is divided on the specific impact of work-family interactions on women's health. This study aims to investigate the association between employment and health and well-being among single mothers compared to partnered mothers in Germany. Single mothers face unique challenges in balancing work and family responsibilities due to the absence of a partner's support and intra-household division of labor. Previous studies have suggested that employment may not provide the same benefits for single mothers, but most of these studies have been based on cross-sectional data, limiting causal inferences. Additionally, transitioning to employment could potentially offer single mothers an escape from poverty and social isolation. This study utilizes longitudinal data from the German Socio-Economic Panel (SOEP) spanning from 1992 to 2016. By employing panel regression techniques, the dynamic relationship between employment and maternal health and well-being is examined. The analysis compares the experiences of single mothers and partnered mothers, considering regional disparities between eastern and western Germany, differences based on the age of the youngest child, and variations among mothers in full-time, part-time, and marginal employment. The study findings contribute to the existing literature by offering a longitudinal analysis of the impact of employment transitions on maternal health and well-being, accounting for work-family conflict.

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It expands on previous research by focusing on both single and partnered mothers and exploring differences between them. Additionally, the study examines regional and employment-related variations in the impact of employment on maternal health and well-being, taking into account the effects of parental policy reforms.The robustness checks conducted in this study confirm the stability of the findings, ensuring that they are not influenced by model specifications or sample size. The availability of the analysis code further promotes transparency and replicability. Overall, this study provides a comprehensive understanding of the association between employment transitions and the health and well-being of single and partnered mothers in Germany.

1. Introduction

In many high-income countries, the maternal labor force participation has increased considerably in recent decades. Although research has consistently shown that being employed is associated with improvements in health and well-being for the population as a whole (Ross and Mirowsky 1995; Schuring et al., 2011; Wanberg 2012), there is less agreement in the literature on how paid work and its interactions with family life affect women's health and well-being. Some studies have found that women with multiple roles, including work and family roles, tend to be healthier and to have a better well-being than women with fewer roles (Barnett and Hyde 2001; Janzen and Muhajarine 2003; Waldron et al. 1998). However, a number of papers have demonstrated that the beneficial effects of employment can be offset by stressors resulting from work-family role conflicts; for reviews, see: Bianchi and Milkie (2010); Allen et al. (2000). Such conflicts are more prevalent for women than for men as women continue to shoulder more responsibility for unpaid domestic and care work (Perry-Jenkins and Gerstel 2020).

Single mothers are particularly vulnerable to work− family stress (Meier et al., 2016; Van den Eynde, Vercruyssen and Mortelmans, 2019). Research has shown that for single mothers, time allocation in general, and the task of combining family life and employment in particular, are more challenging than they are for partnered mothers, because single mothers cannot rely on any intra-household division of labor, or on the emotional and material support provided by a partner (Minnotte 2012). Accordingly, many previous studies have suggested that employment does not provide health and well-being benefits for single mothers (Baker and North 1999; Cooke 2004). However, given that most of these studies were based on cross-sectional data, their results may be attributable to reverse causality or unobserved heterogeneity. Moreover, it can be argued that single mothers in particular benefit from transitioning to employment, as it can be a way out of poverty and social isolation (Harkness 2016).

In this paper, we investigate the association between employment and health and well-being among single mothers, and how it differs from that among partnered mothers in the context of Germany. Germany is an interesting case for studying the effects of maternal employment transitions, as the Federal Republic of Germany (FRG) has a long history as a conservative welfare state that favored a male-breadwinner model with low maternal labor force participation. By contrast, in the German Democratic Republic (GDR), maternal employment was strongly supported, as the demand for female workers was high. After reunification, regional differences in maternal employment rates have largely converged. However, regional differences in working hours remain, as the share of full-time working mothers of children requiring childcare continues to be higher in East Germany

than in West Germany. This suggests that East-West differences in the maternal work-care culture still exist (Schober and Stahl 2016).

Since the mid-2000s, the German welfare state has provided comparatively generous benefits and parental leave policies aimed at making the reconciliation of work and family easier for parents after the birth of a child. The female labor force participation rate has been increasing continuously in recent years (Hanel and Riphahn 2012; Kreyenfeld and Geisler 2006; Spiess and Wrohlich 2008). At the same time, partnered mothers in particular still tend to work on a part-time basis only (Borck 2014; Maurer 2006), although the rates of part-time employment among mothers in the East have been converging with the still higher rates among mothers in the West (Barth et al., 2020). Single mothers are more likely than partnered mothers to work full time. However, single mothers also have a higher risk of relying on social welfare benefits than their partnered counterparts (Hancioglu 2015; Lietzmann 2009). Thus, the situations of single mothers tend to be particularly difficult.

Our paper contributes to the literature in several ways. First, drawing from theory on work-family conflict, we provide one of the few longitudinal analyses of the impact of employment transitions on maternal health and well-being. Using the German Socio- Economic Panel (SOEP) for the years 1992–2016, we apply panel regression techniques that can account for the dynamic nature of the relationship between employment and maternal health and well-being. Second, we study both single mothers and partnered mothers and show how they differ, whereas previous studies mainly focused on either partnered or single mothers. Third, we explore potential differences in the impact of employment on maternal health and well-being, including regional disparities between mothers in eastern and western Germany, differences between mothers depending on the age of their youngest child, as well as differences between mothers in full-time, part-time, and marginal employment. Moreover, we look at how these patterns differed before and after the introduction of parental policy reforms. Investigating these differences allows us to paint a more nuanced picture of the impact of employment transitions on maternal health and well-being. Furthermore, we provide extensive robustness checks that show that our findings are stable, and that they do not depend on the model choice, the sample size, or the model specification. The code for all our analyses is available online (see: https://osf.io/vzuxk/).

2. Background

2.1. *Maternal employment and maternal health and well-being*

A growing number of studies have investigated how paid work and its intersection with family life affect women's health and well- being (Bianchi and Milkie 2010). From a theoretical perspective, some of these studies have argued that individuals who have multiple roles and face competing demands experience levels of conflict and stress that detract from their quality of life and lead to compounding health and well-being problems (Barnett, Gareis and Brennan, 2008; Davis et al., 2008; Nomaguchi et al., 2005; Schieman and Reid 2009). Other scholars have highlighted the positive interdependencies between work and family roles (Greenhaus and Powell 2006; Grzywacz and Bass 2003). The role enhancement perspective emphasizes that the combination of work and family life can be beneficial for health and well-being, as having multiple roles provides additional sources of social support or financial resources that outweigh any disadvantages (Barnett and Hyde 2001; Tiedje et al., 1990; Waldron et al., 1998).

The empirical findings on the association between maternal employment and maternal health and well-being are mixed. Some results point to employment having a negative impact on health. Ohers indicate that employment improves health. On the negative side, there is evidence that having fixed and limited time resources affects mothers' health and well-being, which suggests that mothers tend to experience work-family conflicts. It has, for instance, been reported that time pressure is strongly associated with depression (Roxburgh 2004), and that the feeling of having too little time to spend with one's children or spouse affects the well-being of mothers, but not of fathers (Nomaguchi et al., 2005). One explanation for why women are particularly affected by work-family conflicts is that there is an idealized model of intensive mothering. Hays (1996) argued that mothers are

confronted with conflicting societal ideas about how they should behave: on the one hand, mothers are expected to be child-centered and to devote their time and emotional resources to their children; while on the other hand, they are urged to be competitive and ambitious at work.

Furthermore, some scholars have questioned the beneficial effects of work for women in general, arguing that in contrast to men, women often prefer the non-pecuniary benefits of being more active in their role as parent or carer (Winkelmann and Winkelmann 1998). Harkness (2016) observed that partnered women may identify themselves more with regard to their partner's employment, particularly if they are second earners, which makes the pecuniary gains from work less critical for the family income.

In contrast to these negative findings, other scholars have focused on the long-term improvements in education and employment for women, and have noted that there is a generally positive relationship between women's working hours and their health and well-being (Blau 1998; Schnittker 2007). Several studies have reported that performing household labor is associated with higher levels of psychological distress and less perceived control. Thomas, Benzeval and Stansfeld (2007) found that women who left work to look after their family are more likely to experience psychological distress. Studies investigating gender differences in parenting strains and their effects on depression have demonstrated that these strains are more likely to be associated with depression when mothers are working part time, while the association is similar among dual-earner mothers and fathers. These findings indicate that the stress of parenting is disproportionately higher for woman who are working part time or who are at home full time (Roxburg, 2005).

These inconsistent findings suggest that neither the negative nor the positive perspective alone is adequate to understand the effects of employment on maternal health and well-being (Kneipp et al., 2000). Instead, these effects seem to be dependent on contextual factors of both work and family life (Ali and Avison 1997). Moreover, these effects may change across the family life cycle (Baker and North 1999), and they might cancel each other out to some extent. Given the growing demographic importance of single parents, the differences in the living conditions of partnered and single parents should be considered.

2.2. *Single mothers' employment and their health and well-being*

It has been consistently demonstrated that single mothers are a vulnerable group. They are at higher risk of unemployment; they are more likely to suffer from financial strain; and they have less social support (Cairney et al., 2003; Sørensen 1994; Vandecasteele 2010). Furthermore, single mothers have higher rates of physical and mental illness than their partnered counterparts (Avison, Ali and Walters, 2007; Cooper et al., 2008; Kühn 2018; Lipman, Offord and Boyle, 1997). The health differences between partnered and single mothers are usually attributed to the chronic economic and social stressors single mothers are exposed to (Crosier, Butterworth and Rodgers, 2007; Dziak, Janzen and Muhajarine, 2010).

Previous empirical research on this topic focused on Anglo-Saxon and Nordic countries, and generated somewhat mixed findings. For instance, Baker and North (1999) examined to what extent policies promoting labor market participation affected the mental and physical health of single mothers in the UK, and found no significant association between employment and better health for these mothers. However, a more recent study that considered subsequent UK welfare reforms found that the relationship between mental health and work had changed among single mothers, with the mental health of working single mothers improving substantially; but that the relationship between work and mental health had not changed among partnered mothers (Harkness 2016).

In contrast, research for the Nordic countries observed a generally positive association between employment and health and well-being. For example, in a comparison of British and Finnish mothers, Lahelma et al. (2002) found that single mothers in Britain who were working part time tended to have better health than their counterparts who were working full time, and that single mothers in Finland had the best health outcomes among the single mothers who were working full time.

There is also evidence that employment is beneficial for single mothers in Germany (Kühn 2018). The findings of this longitudinal study showed that shortly after becoming a single mother, being in part-time and particularly in full-time employment improved single mothers' health and well-being. However, little is known about the differing effects of employment, and the magnitudes of these effects, on single and partnered mothers in Germany. The potential reasons for the mixed findings of the studies discussed here include the different cultural and institutional contexts the studies covered, and the fact that most of these studies were based on cross-sectional data, and were thus unable to rule out selectivity issues.

2.3. *Maternal employment and the institutional context in Germany*

When investigating the effects of employment on mothers' health and well-being, the socio-historical and the policy context must be taken into account. This is particularly important in the case of Germany, because even though Germany has been identified as a context with an intensive mothering ideology, as was described above (Giesselmann, Hagen and Schunck 2018), the gender norms and the maternal work-care cultures in East and West Germany were fundamentally different. While the state-socialist system in East Germany both expected and needed men and women to be employed, West Germany's socially conservative welfare state supported the male-breadwinner model with policies that are still in place today (Borck 2014; Maurer 2006). Thus, in East Germany, the rate of full-time employment among mothers was high. To address mothers' potential work-family conflicts, state-subsidized daycare was provided in East Germany. In West Germany, policies such as the joint taxation of married couples with full income splitting, family health insurance, and the lack of an all-day childcare system encouraged new mothers to leave the workforce for several years and to return to the labor market only on a part-time basis (Gangl and Ziefle 2015; Hanel and Riphahn 2012; Rosenfeld, Trappe and Gornick, 2004; Zoch and Schober 2018). For example, the joint taxation of spouses provides a marriage premium for couples with unequal earnings, whereas the premium is zero for couples with similar earnings. This creates an incentive for married women to reduce their working hours, as their hourly wages are often lower (Aisenbrey, Evertsson and Grunow 2009).

After German reunification in 1990, East Germany had to adopt the West German policy framework (Berger 2013), albeit with some exceptions. For example, daycare centers for children in East Germany continued to receive policy support (Zoch and Hondralis 2017). Following reunification, the employment rates of mothers in eastern Germany declined, and there was a convergence of maternal employment patterns toward a high prevalence of part-time work in both East and West Germany (Barth et al., 2020). Starting in the mid-2000s, policies were enacted that encouraged labor market participation among mothers, marking a paradigm shift in German family policies (Hook 2015; Zoch and Schober 2018). The most important reforms were to formal childcare and parental leave entitlements. A reform of public childcare that expanded the provision of care from a part-day to a full-day schedule, and that extended care services to cover children under three years of age, was introduced in 2005. In 2007, income-related parental leave benefits for a period of up to 12 months (or of up to 14 months if each parent takes at least two months) were introduced. Previously, benefits of this kind were not income-related and were relatively low, and households with incomes above a certain threshold were not eligible to receive them. Moreover, the benefits were paid for up to two years, even though parental leave could be taken for up to three years per child. These reforms provided incentives for mothers, and particularly for well-educated mothers, to return to the labor market much faster than they did in the past. More comprehensive descriptions of all of these reforms are provided in Geyer, Haan and Wrohlich (2015); Kluve and Tamm (2013) and Müller and Wrohlich (2020). These papers showed that the reforms indeed had positive effects on female labor force participation.

The trends in maternal employment in Germany indicate that the employment rate of mothers living in a household with a partner and children between ages six and 18 increased substantially in recent years, from 69% in 2008 to 78% in 2018 (Statistisches Bundesamt, 2020). However, maternal employment and institutional childcare use remain higher in East than in West Germany. This is particularly true for mothers with children

under three years of age. Data for 2018 show that the prevalence of the traditional male- breadwinner model, with a full-time employed father and a part-time employed mother, is lower in East Germany (20%) than in West Germany (25%). The same data show that the share of families with children under age three in which both parents are in full-time employment is 19% in East Germany, but only 7% in West Germany (Statistisches Bundesamt, 2019a). Differences between East and West Germany also exist with regard to the use of institutional childcare, as just 30.3% of children under age three are in care in West Germany, compared to 52.1% in East Germany (including Berlin) (Statistisches Bundesamt, 2019b).

Few studies have investigated the associations between the recently implemented family policies, the changing social norms toward maternal employment, and the well-being of mothers in Germany. Preisner et al. (2018) found an increasing beneficial effect of employment for mothers and a converging gap in life satisfaction between full-time, part-time, and non-employed mothers over the 1984–2015 period. The authors argued that these changes are attributable to changing norms, better education and job opportunities, and improved conditions for reconciling family and work. Other studies have provided evidence of persistent differences in the work-care cultures of eastern and western Germany (Trappe, Pollmann-Schult and Schmitt, 2015), and of a positive association between employment and well-being among mothers in East Germany, but not in West Germany (Schober and Stahl 2016; Schroder ¨ 2020).

2.4. *Research aims*

Single mothers are a particularly disadvantaged group with regard to their economic and health conditions. Thus, gaining a better understanding of the patterns of employment, self-rated health, and well-being among single mothers can help to address a significant public health concern. In response to calls to improve our knowledge about the causal relationships between family experiences, work- family conflicts, and health and well-being (Bianchi and Milkie 2010), this study assesses differences in the effects of employment on mothers. We are guided by the following question: *Are changes in employment status more or less beneficial for the health and well-being of single mothers than of partnered mothers?* While previous studies have mostly argued that employment is associated with additional stressors for single mothers because they find balancing work and parenthood especially difficult, we expect that in the German context, the resources single mothers gain through paid work outweigh the stressors associated with employment, and thus that employment has positive effects on single mothers' health and well-being. Additionally, as employment can provide access to social networks and social support, and may help single mothers to avoid the social stigma of being on welfare (Harkness 2016), *we expect that employment is more beneficial for single mothers than for partnered mothers*.

Furthermore, sub-analyses will shed light on *how these patterns vary between single mothers in eastern and western Germany, before and after family policies were introduced, by working hours, and by having very young versus older children.* Given the ongoing differences in work-care cultures in East and West Germany and the greater acceptance of maternal employment in East Germany, we expect that East German mothers benefit from employment transitions more, as measured by their health and well-being outcomes. In addition, it is possible that the positive effects of the reforms of family policies introduced in the mid-2000s on the female labor force participation rate are also linked to maternal health and well-being. *Thus, we expect that for both single mothers and partnered mothers, employment transitions after 2005 are more beneficial than those before, because in the post-2005 period, mothers are better able to balance family life and work.* The beneficial effects of employment transitions might also vary by the number of working hours. *Therefore, we expect to observe differences in the effects of transitions into full-time, part-time, and marginal employment.* Our findings will improve our understanding of whether being in full-time employment, which tends to be accompanied by better working conditions, is more beneficial than being in part-time or marginal employment. Moreover, the ages of a mother's children might play an important role in the effects of employment on her well-being. Combining family and work can be more difficult for mothers with young children due to the lack of availability of full-time institutional

childcare. Furthermore, acceptance of maternal employment might be greater when the mother's children are older. *Therefore, we expect to find that employment transitions are more beneficial for mothers with older children.*

3. Data and methods

3.1. *Samples*

For our analysis, we use data from the German Socio-Economic Panel (SOEP; https://www.diw.de/en/soep). The SOEP is a nationally representative longitudinal study of households that includes German citizens, foreigners, and recent immigrants to Germany living in both West and East Germany (Wagner, Frick and Schupp, 2007). The SOEP was initiated in West Germany in 1984. Since then, it has been conducted annually, and includes detailed information on all individuals aged 16 and older in the respondent households. The East German sample was added in 1990. We use data for the years from 1992 to 2016, as some of the variables we include in our analysis are only available from 1992 onward.

We define partnered mothers as women who share their household with their underage child or children and a partner; while we define single mothers as women who live with their underage child or children, but without a partner. For the analysis, we construct two samples, each consisting of a subset of episodes. The first sample consists of partnered mothers' episodes and the second sample consists of single mothers' episodes. For instance, if a woman is first observed in the data as a single woman from 1991 to 1995, and then as a partnered woman without children from 1996 to 1998, and again as a partnered mother from 1999 to 2016, only the latter observations (waves 1999 to 2016) are used, and they are included in the sample of the partnered mothers' episodes. If another woman is observed as a partnered mother in 2000–2003, and then as a single mother in 2004–2009, the first episode is included in the sample of partnered mothers, and the second episode is included in the sample of single mothers. The sample of single mothers includes 971 individuals and a total of 4646 observations, while the sample of partnered mothers is larger, with 5310 individuals and a total of 29,892 observations.

3.2. *Outcomes and treatment*

Our main analyses focus on two key measures: subjective well-being and self-rated health. In the SOEP, well-being is measured with the *Satisfaction with Life Scale* where respondents assess their quality of life based on their individual criteria (Diener et al., 1985; Diener and Lucas 1999). Respondents were asked: "How satisfied are you with your life, all things considered?" Answers are recorded on a scale from zero ("very unsatisfied") to 10 ("very satisfied"). For the self-rated health measure, respondents are asked: "How would you evaluate your present health? It is 1) very good), 2) good, 3) fair, 4) poor, or 5) bad?" We reverse-coded this variable so that the numerical scoring scale runs in the same direction as the well-being scale, with higher values now indicating better health. However, it should be noted that the scales of the two variables differ, and that the effect sizes are not directly comparable. Self-rated health is commonly used as a proxy for assessing a respondent's health status, and is considered to be a reliable measure of general health (Martikainen et al., 1999), as well as a good predictor of future morbidity and mortality (DeSalvo et al., 2006; Idler and Benyamini 1997). Both outcomes have been measured annually from the beginning of the study in 1984 (subjective well-being) or from 1992 onward (self-rated health). We also provide estimates for several other related outcomes as robustness checks (see the supplementary materials).

The treatment we are interested in is the employment status. Individuals are either employed or not employed. The "not employed" status refers to individuals who are either unemployed and looking for a job, are inactive and outside of the labor market, or are on maternity leave. The "employed" status refers to individuals who are working full time or part time, are in marginal employment, or are in occupational training. Marginal employment refers to jobs with earnings below the lower social insurance earnings threshold. Typically, this is part-time work with very low regular working hours.

To assess the heterogeneity in the effects of employment, and how the effects might have changed over time, we conduct several analyses in which we interact or further break down employment. First, we interact employment with region, while distinguishing between West and East Germany, as there are still considerable East-West differences in women's labor market participation. Second, to investigate whether the reforms discussed in the previous section changed the association between employment and health, we distinguish between a pre-reform (1992–2004) and a post-reform (2005–2016) effect. Third, as there are likely to be important differences between the effects of full-time, part-time, and marginal employment, we conduct analyses in which we distinguish between the three types of employment. Fourth, to examine potential differences in the effects of combining family and work on mothers depending on whether their children are very young or older, we distinguish between households with children under age five and households in which the youngest child is aged five or older.

3.3. *Control variables*

We control for a set of potential confounders and mediators of the relationship between employment transitions and maternal health and well-being. There is consistent evidence that self-rated health declines with increasing age (Andersen, Christensen and Frederiksen, 2007), while a general decrease in well-being with age (de Ree and Alessie 2011) challenges the frequently reported U-shaped association (Blanchflower and Oswald 2008). The mother's age is captured with dummies for five-year age categories: 16–19
(reference category), 20–24, 25–29, 30–34, 35–39, 40–44, 45–49, 50–54, 55–59, and 60+. Earlier research has found that for single mothers, the age of the youngest child and the number of children living in the household can affect their ability to successfully take up employment (Cook and Noblet 2012). Moreover, there is evidence that for single mothers, having young children or a larger number of children can be a barrier to labor market participation (Dilworth 2004; Hewitt, Baxter and Western, 2006), and is also more demanding, and might therefore be detrimental to their well-being (Simon and Caputo, 2019).

We also control for the socioeconomic variables of education (International Standard Classification of Education) and net equivalent household income adjusted for inflation. It is well established that education has a positive effect on health (Grossman 2004; Ross and Mirowsky 1995). Being highly educated is associated with having more stable employment contracts and better pay and working conditions (Barbieri 2009; Kalleberg 2000), while being less educated is associated with being unemployed or underemployed (Ross and Mirowsky 1995). We combine ISCED levels 0 to 2 to capture low educational attainment; ISCED levels 3 to 4 to create the intermediate educational attainment category; and ISCED levels 5 to 6 to capture high educational attainment. Income may be important in mediating the relationship between health, well-being, and employment (Harkness 2016). Controlling for income means that we estimate the effect of employment net of the income effect of employment, which might be an important mechanism linking employment to well-being and health. Thus, removing this mediated effect could be problematic, but it is a common practice in the literature. Results are also provided in which we exclude income as a covariate. In this case, the effect of employment includes the pathway to health and well-being through income (see the robustness checks section).

Additionally, in all models we control for broad overall time trends (for example, period effects of unemployment) by including dummies for the decades the observations are in, using the 2010s as the reference category.

Moreover, for some analyses, we further divide the two samples into an East German and a West German subsample based on the place of residence in each wave. An overview of the variables is given in Table 1.

3.4. *Methods and analytical strategy*

For our main analysis, we use fixed effects (FE) regression, which has the benefit of controlling for unobserved time-constant heterogeneity. Time-constant control variables cannot and do not need to be included. The results we find based on FE regression are very similar to the results we find using other approaches, which we present as robustness checks in the supplementary materials. These other methods include pooled OLS, random effects

(RE), FE regression with individual slopes (Ludwig and Brüderl 2018), and FE with treatment effect heterogeneity (Wooldridge 2010).

We run all models on both the single mother sample and the partnered mother sample, which allows us to compare the results for partnered mothers and single mothers. This means that all of the covariates in the regression analysis can have different effects for partnered mothers and single mothers, which makes this approach essentially equivalent to interacting all variables with marital status. As additional requirements for both sets of episodes, we only use those episodes in which at least one change of the employment status is observed. Furthermore, we use up to three observations before and three observations after the change. This restricts our analysis to episodes with variance on the employment variable, and to the time shortly before and after a transition, while focusing on the immediate effect of employment on the outcomes. This restriction is motivated by our concern that if episodes that took place earlier or later than three years differ, it would be more difficult to argue that this was due to the effect of employment, as other events might have happened in the meantime. However, we also run our analysis with less restricted samples and with more restricted samples as robustness checks (see the supplementary materials).

4. Results

4.1. *Employment and maternal well-being and health*

Fig. 1 shows our estimates of the effects of employment transitions on well-being (left panel) and self-rated health (right panel). It plots 10 regression models for each outcome including our main estimates, as well as estimates by region (East/West), by period (2005–2016/post-reform; 1992 to 2004/pre-reform), by hours worked (full-time, part-time, and marginal employment), and age of the youngest child (aged five or older versus under age five). On the x-axis, the estimates are shown in orange for single mothers, and in purple for partnered mothers. The value zero (dashed vertical line) refers to no effect of employment transitions. Values below zero

Table 1

Descriptive statistics of the outcome variables, the treatment variables, and the control variables. Numbers of individuals and observations in each sample are provided at the bottom of the table.

Variable	Single mothers	Partnered mothers
Well-being (0–10; mean)	6.2	7.3
Self-rated health (1–5; mean)	3.3	3.6
Employed (%)	53%	54%
Age of mother (mean)	37.4	35.9
Annual net equivalent income (euros; mean)	11,300	19,110
ISCED 0–2 (%)	21%	14%
ISCED 3–4 (%)	61%	58%
ISCED 5–6 (%)	18%	28%
Age of youngest child (mean)	8.1	5.5
No. of children (mean)	1.7	2.0
East Germany (%)	34%	22%
Migration background (%)	21%	27%
Observations	4,646	29,892
Individuals	971	5,310

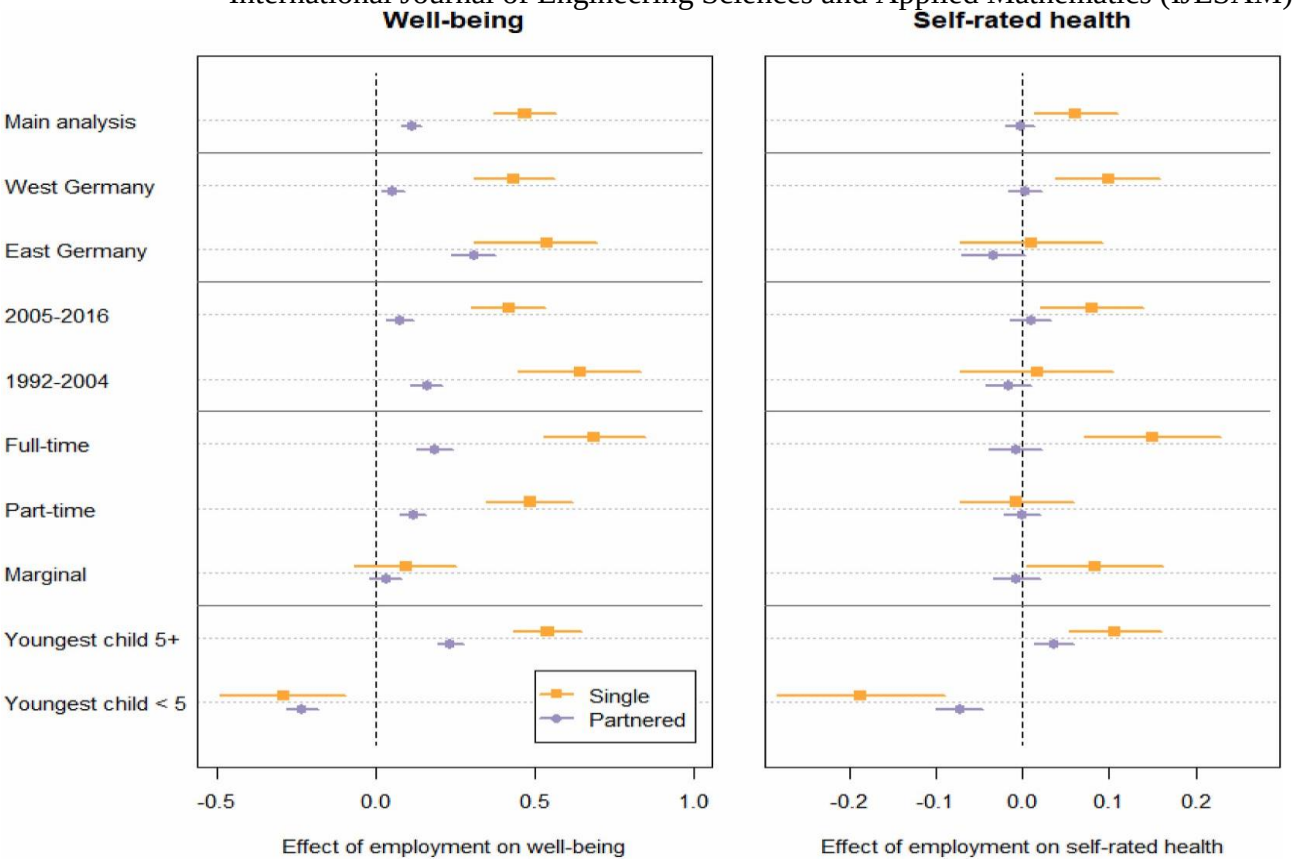

Fig. 1. Estimates of the effect of employment on well-being (left panel) and self-rated health (right panel) with 95% confidence intervals. The results for single mothers are shown in orange, and the results for partnered mothers are shown in purple. The first row displays the results of our main analysis. The second and third rows show the results for West Germany and East Germany; the fourth and fifth rows show the results for the period from 2005 to 2016 (post-reform) and the period from 1992 to 2004 (pre-reform); the sixth, seventh, and eighth rows show the effects of full- time employment, part-time employment, and marginal employment; and the last two rows show the effect of employment when the youngest child is at least five years old vs. the effect of employment when the youngest child is less than five years old. Well-being is measured on a scale from one (low) to 10 (high), and self-rated health is measured on a scale from one (low) to five (high). Source: SOEP; own calculations. (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

Indicate a negative effect and values over zero indicate a positive effect of the employment transition. In addition to the point estimates, 95% confidence intervals are displayed. All of these estimates are based on the FE regression controlling for age of the mother, education, income, age of the youngest child, and number of children. For our main analysis, all coefficients are indicated in Table 2. For the other regressions, all coefficients are provided in the supplementary materials.

The top part of the left panel of Fig. 1 shows that a change in employment status has a positive effect on the well-being of both partnered mothers (+0,1) and single mothers (+0,5). The effect for single mothers is considerably larger than the effect for partnered mothers, and the confidence intervals do not overlap. This suggests that employment is more beneficial for the well-being of single mothers than of partnered mothers. Our sensitivity analysis in the supplementary materials suggests that this finding is robust. To better understand the impact of employment on well-being, we use as a reference point the impact of unemployment on well-being as reported in the literature. Unemployment can be expected to have a strong impact on well-being, at least temporarily. Thus, it's effect size provides an order of magnitude for what can be considered a strong impact on well-being. Previous

research using SOEP data showed that unemployment negatively affects German women's well-being (measured on a scale from 1 to 10), reducing it by between 0.2 points (Kassenboehmer and Haisken-DeNew 2009) and − 0.5 points (Oesch and Lipps 2012). While our results show a different sign, the magnitude of the effect is roughly comparable; i.e., employment improves well-being of mothers significantly.

The results for the effect of employment on self-rated health (Fig. 1; right panel) differ somewhat from the findings for the effect on well-being. For single mothers, there is again a positive effect. For partnered mothers, by contrast, the effect is negative but small, and is close to zero. The confidence interval includes zero, and slightly overlaps with the confidence interval of the effect for single mothers. Thus, for health, our findings are somewhat less conclusive: the effect of employment is positive for single mothers, but remains ambiguous compared to the effect for partnered mothers. SOEP-based studies that applied other approaches/estimators did not find significant (short-term) effects of unemployment on women's health satisfaction (Gordo 2006), or a significant change in self-rated health after becoming employed (Kroll and Lampert 2011). These results are in line with our findings for partnered mothers.

Table 2

Coefficients and standard errors of the FE regression models for well-being and self-rated health. Source: Own calculations; SOEP.

Variable	Well-being				Self-rated health			
	Single mothers		Partnered mothers		Single mothers		Partnered mothers	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Employed	0.470	0.003	0.114	0.000	0.061	0.001	− 0.003	0.000
Age 16–19 (reference)	–	–	–	–	–	–	–	–
Age 20-24	− 0.461	0.142	0.165	0.120	− 0.074	0.034	0.241	0.035
Age 25-29	− 0.347	0.168	0.060	0.123	− 0.115	0.040	0.146	0.036
Age 30-34	− 0.456	0.196	− 0.039	0.125	− 0.167	0.047	0.085	0.037
Age 35-39	− 0.089	0.221	− 0.055	0.127	− 0.155	0.053	0.059	0.038
Age 40-44	− 0.178	0.247	− 0.065	0.130	− 0.138	0.059	0.026	0.038
Age 45-49	− 0.180	0.279	− 0.114	0.134	− 0.230	0.067	− 0.059	0.039
Age 50-54	− 0.174	0.323	− 0.178	0.141	− 0.226	0.078	− 0.118	0.041
Age 55-59	− 0.077	0.497	− 0.243	0.176	0.147	0.120	− 0.122	0.052
Age 60 and older	1.412	2.125	− 0.558	0.751	1.239	0.532	− 1.491	0.211
Age youngest child	− 0.050	0.000	− 0.062	0.000	− 0.030	0.000	− 0.027	0.000
No. of children	− 0.030	0.009	− 0.115	0.001	− 0.060	0.002	− 0.119	0.000
Low education	− 0.248	0.096	0.140	0.010	0.008	0.024	− 0.016	0.003
Intermediate education	− 0.020	0.057	0.074	0.006	0.117	0.014	− 0.003	0.002
High education (reference)	–	–	–	–	–	–	–	–
Annual income (in 1000s)	0.020	0.000	0.008	0.000	0.004	0.000	0.001	0.000
Period 1992-1999	− 0.183	0.046	− 0.142	0.004	0.006	0.011	− 0.009	0.001
Period 2000-2009	− 0.249	0.017	− 0.120	0.002	− 0.030	0.004	− 0.007	0.000

4.2. *Differences between east and west Germany*

The effect of employment differs between East and West Germany (Fig. 1, rows 2 and 3, and Table A and B in the supplementary materials). Irrespective of the outcome and the region considered, the point estimates for single mothers are always higher than those for partnered mothers. However, the beneficial effect is significantly greater

for single mothers' well-being (0.44) and self-rated health (0.1) than for partnered mothers' well-being (0.06) and self-rated health (0.002) in West Germany, but not in East Germany, as the confidence intervals overlap. Nonetheless, in East Germany, the effect of employment on well-being is positive for both single mothers (0.54) and partnered mothers (0.31), while for the effect of employment on single mothers' and partnered mothers' self-rated health, the confidence intervals include zero.

4.3. *Differences between the pre-reform and the post-reform period*

When we distinguish between the 2005 to 2016 (post-reform) and 1992 to 2004 (pre-reform) periods, the key pattern of higher point estimates for single mothers than for partnered mothers remains unchanged in all models (Fig. 1, rows 4 and 5, and Table C and D in the supplementary materials). The effect of employment on well-being is significantly larger for single mothers than for partnered mothers in both the pre-reform (0.6 versus 0.16) and the post-reform (0.42 versus 0.08) period. However, for the effect of employment on self-rated health, the confidence intervals overlap between single and partnered mothers. Additionally, there are slight differences in the point estimates between the pre- and the post-reform periods: for both partnered and single mothers, the beneficial effect of employment on well-being is smaller and the effect on self-rated health is larger in the post-reform period than in the pre-reform period. These differences between the pre- and the post-reform periods are not significant, as the confidence intervals overlap.

4.4. *Differences between full-time, part-time, and marginal employment*

Transitioning to either full-time or part-time employment has a significant positive effect on the well-being of single mothers and partnered mothers, while transitioning to marginal employment has no significant effect (Fig. 1, rows 6, 7, and 8, and Table E in the supplementary materials). The figure also shows that for both single mothers and partnered mothers, the beneficial effect of employment is stronger for full-time employment (0.69 and 0.18) than for part-time employment (0.49 and 0.12).

For partnered mothers, the results show that there is no significant effect of employment, irrespective of the number of working hours, as the point estimates are close to zero and the confidence intervals overlap. For single mothers, the results indicate that the magnitude of the effect differs depending on whether they are in full-time, part-time, or marginal employment: being in part-time employment has no statistically significant beneficial effect on self-rated health, and the effect of being in marginal employment is close to zero (0.08), while the effect of being in full-time employment is positive and significant (0.15).

4.5. *Differences by age of the youngest child*

When examining the effect of employment on mothers depending whether their youngest child is younger or older than age five, we find a clear pattern of a positive effect for mothers with older children and a negative effect for mothers with younger children (Fig. 1, rows 9 and 10, and Table F in the supplementary materials). With older children, the beneficial effects of employment are larger than in our main findings for well-being and self-rated health of single mothers (0.54 and 0.11, respectively) as well as for partnered mothers (0.24 and 0.11). Differences between single mothers and partnered mothers persist, but the gap in well-being is smaller than in the main analyses. For mothers of young children, the results show that employment has detrimental effects on their well-being (− 0.29) and self-rated health (− 0.19) if they are single and also on their well-being (− 0.23) and self-rated health (− 0.07) if they are partnered.

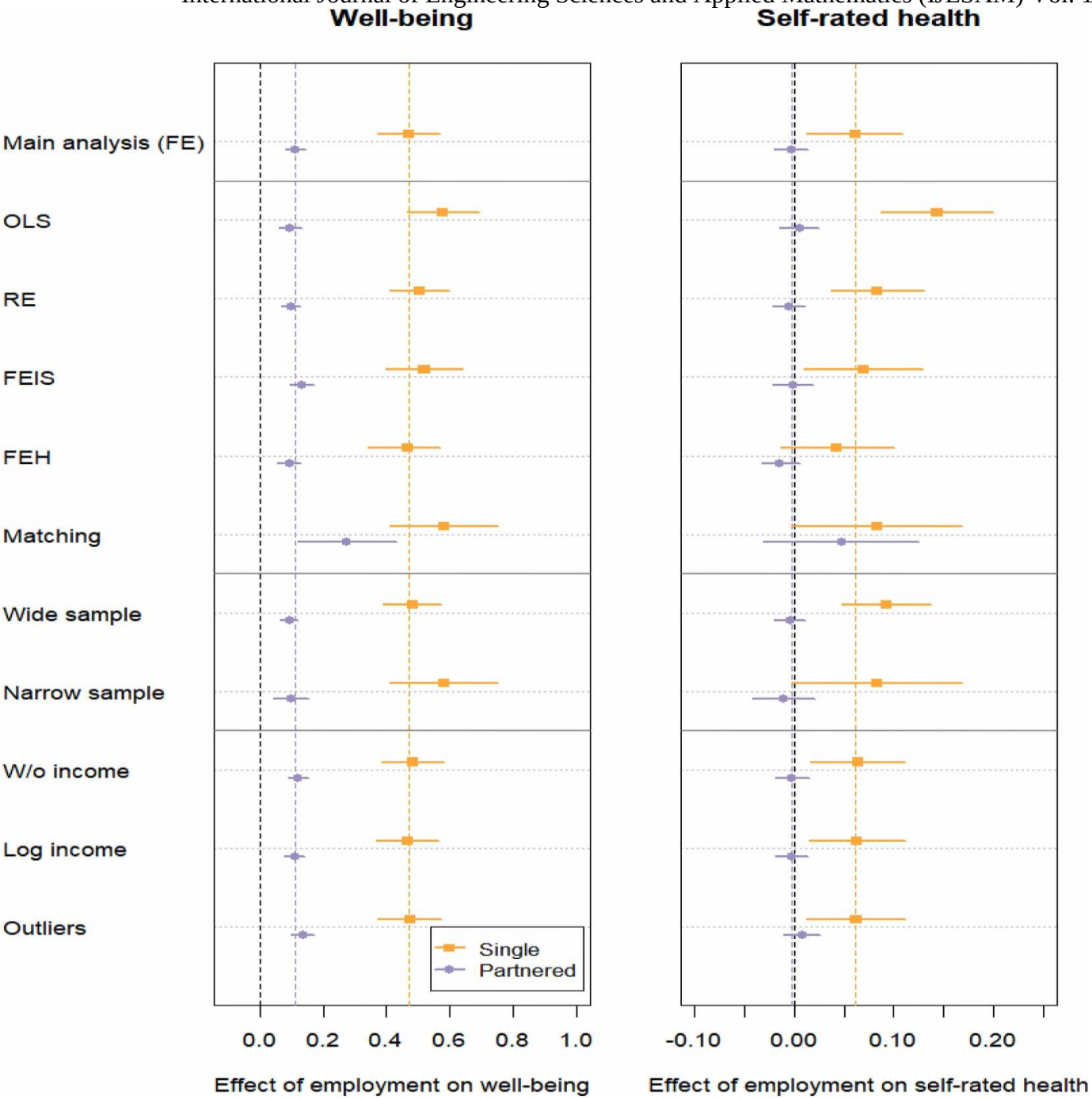

Fig. 2. Estimates of the effects of employment on well-being (left panel) and self-rated health (right panel) with 95% confidence intervals. The results for single mothers are shown in orange, and the results for partnered mothers are shown in purple. The top row displays the results of our main analysis. Lines 2 to 6 show the results for the alternative regression approaches; lines 7 and 8 show the results for different samples; and lines 9 to 11 show several variations regarding the inclusion of household income. Source: SOEP; own calculations. (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

5. Robustness checks

5.1. *Regression method*

Our results could depend on several choices that we made for our main analysis. One such choice is the use of the FE regression approach. To assess the robustness of the findings, we also use several alternative approaches that

rely on different assumptions, and that roughly form a continuum from strong underlying assumptions with weak data demands to weak underlying assumptions with strong data demands. The methods we use in addition to FE are pooled OLS, random effects (RE), FE regression with individual slopes (FEIS) (Ludwig and Brüderl 2018), and FE with treatment effect heterogeneity (FEH) (Wooldridge 2010). Applying different methods enables us to avoid fully relying on assumptions that are often hard to assess. All models include the control variables described above. In the OLS and RE regressions, we also include a dummy variable for residence in East Germany and a dummy variable for migration background.

Pooled OLS is based on the rather strong assumption that there is no unobserved heterogeneity. If this assumption is true, it is the most statistically efficient method in the sense that it should yield comparatively small standard errors. RE and FE regressions allow for time-constant unobserved heterogeneity, with RE relying on stronger assumptions than FE. FEIS introduces the idea that individuals can be on different trajectories or following different trends; e.g., for one individual the outcome may be improving over time, while for another it is deteriorating. This allows us to account for selection into employment of individuals who are on a good health trajectory, and for selection out of employment for individuals who are on a poor health trajectory. Finally, FEH allows for heterogeneous effects of employment on health or well-being that can be correlated with unobserved heterogeneity; i.e., employment might be good for some individuals, but bad for others. In a nutshell, the application of more complex methods requires larger data sets, as the FE, RE, FEIS, and FEH estimation approaches essentially involve discarding some of the information contained in the data.

We also apply a matching approach and combine it with a regression approach. This combination of methods can reduce biases and decrease the sensitivity of results with respect to model specification (Abadie and Imbens 2011; Iacus, King and Porro, 2011). To do so, we use a restricted sample that consists only of episodes with transitions from not being employed to being employed. For each single mother in this sample, we find one partnered mother who matches her as closely as possible before the transition to employment with respect to the covariates included in the regressions. Practically, we use the Mahalanobis distance (Abadie and Imbens 2011) and one-to-one nearest neighbor matching in a first step, and then apply FE regression to the resulting matched samples.

The results of the alternative approaches are shown in Fig. 2. The first row of Fig. 2 shows the main results already discussed in the previous section. Vertical dashed lines are now added at the point estimates of the main analysis, which allows for easy comparisons of the differing results. Lines 2 to 6 of Figure A show the estimates based on alternative approaches. For well-being (left panel), all results are consistent with the main results in the sense that the effect of employment on well-being is larger for single mothers than for partnered mothers, and the confidence intervals mostly do not overlap. The results based on matching differ in that the confidence intervals overlap. However, this is due to the smaller size of the restricted sample and the reduced number of partnered mothers, as one-to-one matching is applied, and for each single mother only one partnered mother is included, which leads to comparatively large standard errors. For self-rated health (right panel), the point estimates also indicate a larger effect for single mothers. However, whether the confidence intervals do or do not overlap is dependent on the approach.

5.2. *Sample*

Our samples consist of episodes of being a single mother or a partnered mother who is switching from being employed to not being employed or vice versa, and we only include observations for up to three years before or after the transition. This might have influenced our results. First, our pre-selection of cases was relatively strict; for instance, including women who do not experience an employment transition or observations more than three waves away from the employment transition might have altered our estimates. For this reason, we re-ran our analysis to include all episodes and observations of single mothers and partnered mothers, irrespective of whether the episodes include an employment transition, and irrespective of how many waves the observations are away from a transition. Second, the transitions from employment to non-employment might have different effects than

the transitions in the opposite direction. Therefore, we also used a narrower sample, which we constructed by only including episodes involving transitions from not being employed to being employed, and excluding transitions in the other direction.

The results based on wider and narrower samples are shown in lines 7 and 8 of Figure A. Compared to the size of our "main" sample (4799 observations for single mothers), the wider sample is larger (7204 observations for single mothers), while the narrower sample is much smaller (only 2917 observations for single mothers). Overall, the findings are consistent with those of our main analysis. Again, whether the confidence intervals of the estimates for self-rated health overlap for single mothers and for partnered mothers is not consistent.

5.3. *Potential mediator: Income*

As was previously noted, income could be a mediator of the effect of employment on well-being and health. Therefore, controlling for income removes the indirect effect of employment through income. At the same time, if income is included in a regression, its influence can be modelled in several ways. In our main analysis, we use a linear specification, but other functional forms are possible. Finally, income is the only variable in our analysis for which outliers – i.e., observations with very high or low values – are possible. In particular, given the relatively small sample size, single-mother households with high incomes could have a strong effect on the results of our analysis.

To deal with these issues, we conducted three additional analyses for which the results are shown in the bottom three rows of Fig. 2. First, we re-ran our analysis without controlling for income. Second, we included the natural logarithm of annual net equivalent income in the analysis. Third, we re-ran our main analysis, dropping all households with very high annual net equivalent income. As can be seen in Fig. 2, the resulting estimates are very close to those of our main analysis. These findings imply that income is not the main channel through which employment affects the well-being and health of (single) mothers. Moreover, these results show that our findings are robust with respect to the functional form of income, and to income outliers.

6. Discussion

This study investigated maternal employment transitions and the effects of these transitions on the well-being and the self-rated health of mothers. We have contributed to the existing literature by comparing the effects of employment on single mothers and on partnered mothers, and by conducting a set of sub-analyses to provide a nuanced picture of the potential mechanisms underlying these associations. Our main results show that both single and partnered mothers generally benefit from employment, which supports the role enhancement perspective. This is particularly the case for single mothers, as the beneficial effects of employment are stronger for them than for partnered mothers, irrespective of the outcome examined. This pattern was found to be consistent across a wide range of robustness checks. When considering why employment is more beneficial for single mothers than for partnered mothers, an obvious explanation is that single mothers generally have worse socioeconomic situations than partnered mothers, which our sample also shows. Thus, transitioning to employment might improve the financial situations of single mothers, and could enable them to escape poverty and dependence on social welfare.

However, the observed improvements in well-being and self-rated health cannot be attributed to increased income alone. Although the impact of income found in our main analysis is significant, the ("net") effect of employment is considerably more pronounced. Thus, while the share of single mothers in Germany who rely on welfare benefits is high, our results suggest that income is not the only – or even the main – mechanism behind the relationship between employment and well-being and health. These findings are in line with earlier literature showing that single mothers benefit from employment for reasons beyond financial gain (Baker and North 1999; Harkness 2016). As was pointed out in previous studies, employment not only provides people with economic resources (Strandh 2000); it also plays an important role in shaping people's social relationships, identity in society, and individual self-esteem (Winkelmann and Winkelmann 1998). For single mothers in particular, the

effects of employment – which may include enabling them not only to become financially independent, but also to receive more social support (Perreault et al., 2017) – might be important mediators of the association between employment and single mothers' well-being and health.

Interestingly, our results for the outcomes of well-being and self-rated health differ, with the findings for self-rated health being less clear-cut. These differences indicate that well-being is more sensitive to variation in employment status. Moreover, changes in self- rated health might emerge with a time lag, although our analyses did not point to differences in the short-term and the long-term effects of employment. For partnered mothers, the effect of employment on self-rated health appears to be neutral. Another potential reason for the less pronounced effect of employment on self-rated health might lie in the German health insurance system, which provides universal coverage. Unlike in the U.S. context, where non-employment and underemployment are associated with a lack of health insurance (Shi 2000; Wu and Eamon 2013), there might be only a weak association between the transitions into and out of employment and overall health in Germany.

In additional analyses comparing mothers living in East and West Germany, we did not find any East-West differences in the effect of employment on single mothers' well-being, which might reflect a generally high level of acceptance in both regions of single mothers engaging in paid work. In contrast, among partnered mothers, we detected significant differences in the magnitude of the employment effect, with East German mothers benefiting more than their counterparts in West Germany. This result is in line with research that found differences in gender ideologies and the work–care cultures of East and West Germany, with maternal employment being more accepted in the East than in the West (Bauernschuster and Rainer 2012; Campa and Serafinelli 2019). Again, the results for self-rated health show a less clear pattern, and suggest that only single mothers in West Germany benefit significantly from employment. This might be explained by the generally lower health status of West German single mothers compared to that of East German single mothers (results not shown here).

Disaggregating our samples to assess the differences in the employment effects before and after the reforms provided little support for our prediction that we would observe stronger beneficial effects of employment in the post-reform period. It is possible that reforms other than those affecting family policy, such as the labor market reforms implemented in the late 2000s, played a role in these outcomes (Jaehrling, Kalina and Mesaros 2014). Another potential reason why the pre- and the post-reform differences were found to be only marginal is that the target group of the reforms we were looking at consists primarily of the parents of children under age three, whereas our samples included all mothers of underage children.

Further analyses uncovered striking differences in the effects of full-time, part-time, and marginal employment on the well-being and self-rated health of mothers. Our findings show that for single mothers, both their well-being and their self-rated health benefit the most when they transition into full-time employment. This finding is in line with other evidence indicating that life satisfaction is higher among mothers who work full time than it is among mothers who work part time or who are non-employed (Berger 2013). Therefore, we did not find evidence that mothers who work full time experience more conflict and stress than mothers who work less, which would negatively affect their well-being and health. Thus, our findings contradict earlier evidence that suggested that part-time employment is associated with higher satisfaction with work-life balance than full-time employment (Beham et al., 2019). As was already mentioned, this observation cannot be attributed to the effect of income alone. However, regardless of whether the transition to full-time employment increases the household income of mothers, it might give them more financial independence, especially compared to relying on social welfare benefits. Moreover, the results indicate that the job characteristics of marginal, part-time, and full-time employment differ. Additional analyses demonstrated that mothers in full-time employment tend to have better working conditions (available on request). This is in line with a study that found for workers who are in full-time employment having better working conditions and more job stability (Zabkiewicz 2010), which, in turn, has a positive impact on their well-being and health. However, it is also possible that single mothers in full-time

employment are a positively selected group in the sense that they have a good social network and support system, which itself positively affects their well-being and health. In addition, because mothers with a good support system are better able to combine work and family, and they are also more likely to expand their working hours.
Moreover, we found substantial differences in the effects of maternal employment depending on the age of the youngest child. Our findings show that for both single mothers and partnered mothers, employment transitions are only beneficial if their youngest child is over age five. As we found that employment transitions have detrimental effects on the well-being and health of mothers with young children, it appears that combining work and family is particularly stressful for these mothers. It is known that greater childcare availability is correlated with lower levels of work-family conflicts (Schober and Schmitt 2017; Strandh and Nordenmark 2006; Treas, Van Der Lippe and Tai 2011). Therefore, our results might be attributable to a lack of sufficient and reliable access to full-time institutional childcare for very young children in Germany, which is of paramount importance for single mothers in particular. Interestingly, the detrimental effect of employment transitions of mothers with young children does not vary significantly between single mothers and partnered mothers, even though partnered mothers should have more support than single mothers. This finding indicates that for partnered mothers, the intra-household division of labor and care might not be evenly distributed. Instead, partnered mothers may experience competing demands that lead to increasing work-family conflicts. Therefore, our findings suggest that both partnered and single mothers with young children are a vulnerable group.
Our study has its limitations. We only considered women who actually experienced transitions into and out of paid work. It is therefore possible that the sample was negatively selected, as women undergoing employment transitions are more likely to hold marginal jobs, which are often associated with underemployment. However, when we included all mothers in the analysis irrespective of whether they experienced a transition into employment, we obtained very similar results (available on request). Our analyses also could not completely rule out the potential endogeneity of employment and well-being or health, as even the more advanced panel regression techniques we implemented required certain assumptions to be met. Moreover, while more complex methods might be less biased, their use was accompanied by higher standard errors. Another limitation is that the mechanisms underlying the employment effects and the differences between single mothers and partnered mothers could not be fully explained. Our study examined some important pathways by considering the differences between mothers based on their regional context (East/West) and on whether they are in full-time or part-time employment. However, sample size issues and the non-annual availability of variables made it challenging for us to identify further mechanisms underlying the employment effect, and doing so was beyond the scope of this paper.
All in all, our study has shown that the effects of employment on well-being and health can vary substantially between single and partnered mothers. In our analysis of the effects of employment transitions, contextual factors related to both work and family, such as job characteristics, the intra-family division of labor, and related role models, were found to matter. Given that single mothers are a disadvantaged group in terms of their income, work–family balance, and health, our consistent observations that employment has beneficial effects on the well-being and health of single mothers are of considerable importance for health researchers, social scientists, and policymakers. Specifically, in spite of the reforms already taken, policymakers should continue addressing the obstacles – e.g., limited availability of all-day childcare, especially for very young children – that single mothers are faced with when seeking to enter employment or expand their working hours in the direction of full-time work.

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Appendix A. Supplementary data
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