

**Day-care availability, maternal employment, and satisfaction of parents: Evidence from
cultural and policy variations in Germany**

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Abstract

This study investigates how the availability and expansion of childcare services for under-three-year-old children relate to the subjective wellbeing of German mothers and fathers. It extends previous studies by examining more in detail the relationship between day-care availability and use, maternal employment, and parental subjective wellbeing during early childhood in a country with expanding childcare services and varying work-care cultures. The empirical analysis links annual day-care attendance rates at the county level to individual level data of the Socio-Economic Panel (2007 to 2012) and the 'Families in Germany'-Study (2010 to 2012). We apply fixed-effects panel models to samples of 2,002 couples and 376 lone mothers.

We find some evidence of a positive effect of the day-care expansion only on satisfaction with family life for lone mothers and for full-time employed partnered mothers. Transitions to full-time employment are associated with reductions in subjective wellbeing irrespective of local day-care availability among partnered mothers in West Germany but not in East Germany. These results suggest that varying work-care cultures between East and West Germany are more important moderators of the relationship between maternal employment and satisfaction than short-term regional expansions of childcare services.

Key words: Wellbeing, satisfaction; maternal employment; day-care; childcare; early childhood education and care

Introduction

In recent years, the provision of state-subsidized childcare services has expanded in many Western countries, including Canada, Australia, the United Kingdom, Germany, Slovenia, France, Norway, and Sweden. In Europe, this was partly in response to the Barcelona targets of the European Union (EU) to provide day-care places for one third of all children aged under three years by 2010 with the aim to facilitate parental employment and work-life balance. The target has been renewed until 2020, as only 10 member states had achieved this objective by 2010 (European Commission, 2013).

A large body of international economic and sociological literature focuses on how availability and costs of day-care services impact maternal employment. Results generally suggest positive, albeit sometimes small, effects of greater availability and lower costs of state-subsidized day-care (e.g., Havnes and Mogstad, 2011; Haan and Wrohlich, 2011) on maternal employment. In the longer term, a broader access to public childcare appears to facilitate a transformation from a male to a universal breadwinner model (Crompton, 1999). This has been an integral part of the EU's social policy agenda which propagates the so-called adult worker model. However, corresponding labour market deregulation policies have focused more on encouraging maternal employment than on disburdening mothers from traditional carer tasks (Gottschall and Schröder, 2013). An expansion of day-care supply for under-three-year-olds may benefit families by reducing stress for parents, in particular working mothers.

Yet, the empirical findings on the relation between day-care availability and parental wellbeing or work-family conflict have been contradictory (e.g., Baker et al., 2008; Stier et al., 2012). In this study, we aim to shed light on the relationship between the availability of day-care institutions, work-care culture, maternal employment, and subjective wellbeing. In particular, we examine the impact of a relatively swift expansion of day-care supply for young children

from 2007 to 2012 as opposed to longer-term cultural differences between East and West Germany in terms of acceptance of maternal employment and public care for young children.

Previous studies

Some studies indicate that day-care availability may moderate the extent to which longer work hours or full-time employment are associated with greater work-family conflict or lower subjective wellbeing of women or mothers. Based on a cross-national comparison of 28 countries, Treas et al. (2011) showed that full-time employed married women were less happy than those in part-time jobs and women who were not employed. However, the difference in wellbeing between full-time workers and other women was smaller in countries with higher female labour force participation, more egalitarian gender ideologies, and more extensive provision of day-care services for children aged under three years. Several other comparative studies also found evidence for greater childcare availability being correlated with lower levels of work-family conflict (Stier et al., 2012; Strandh and Nordenmark, 2006; Chung, 2011), whereas others find little or no indications of such a relation (Van der Lippe et al., 2006; Steiber, 2009). Few of these studies, however, relied on large enough country samples to investigate the impact of day-care provision and consider other relevant institutional and cultural controls, such as gender ideologies, labour market conditions and policies impacting maternal employment. Furthermore, their cross-sectional perspective limited the possibilities to consider unobserved factors of relevance for maternal employment choices, childcare arrangements, and perceptions of work-family conflicts.

To address this problem, a few recent studies have used longitudinal data from Germany and the UK and found differing associations of maternal employment transitions and life satisfaction (Booth and van Ours, 2008; Berger, 2009; Gash et al., 2012). These studies did not consider variations in family policy support, such as day-care availability, in their empirical analyses. Due to sample size restrictions, they were also unable to specifically focus

on the group of parents with young children who are most likely to suffer from work-family conflict.

A recent Australian longitudinal study at the regional level found that an increase in the regional availability of centre-based childcare was correlated with a decrease in the perceived difficulty of obtaining a day-care slot, of finding ‘good quality’ childcare, and with an increase in mothers’ satisfaction with the amount of free time available (Yamauchi, 2010). More rigorous individual-level longitudinal evaluations of the introduction of universal day-care subsidies in Quebec in 1997 found adverse effects on parental life satisfaction, paternal self-reported health, maternal depression and work-family conflict, and relationship satisfaction (Brodeur and Connolly, 2012; Baker et al., 2008). However, among low income families and high educated parents, the reform had positive effects on parental life satisfaction (Brodeur and Connolly, 2012). These studies, however, have provided little explanation for their findings of contrasting effects across education and income groups and for the inconsistency with previous results on this topic.

In this study, we extend the literature by exploring more in-depth the relationship between day-care availability, work-care culture, maternal employment status, and subjective wellbeing. In particular, we examine the importance of differences between East and West Germany in terms of cultures of maternal employment and using day-care for young children as opposed to variations in actual availability of day-care places across counties. We consider an observation period from 2007 to 2012. Furthermore, we investigate whether the importance of day-care availability for maternal wellbeing may depend on family resources, such as the presence or absence of a partner. Focusing on a critical life-course segment in terms of a high potential for work-family conflict, we draw on a sample of mothers and fathers with children under three years, which have been the target group of the day-care expansion. By analyzing variations in

the wellbeing of East- and West German parents during a period of substantial day-care expansion, we overcome several methodological shortcomings of previous studies.

The German day-care expansion and family policy context

Historically, the level of publicly subsidized day-care provision for under-three-year-olds has been low in West Germany under assumptions of a male breadwinner/ female homemaker model. In East Germany, a long tradition of working mothers has been linked to both a high level of supply and a broad acceptance of formal day-care services from child age one onwards (Klenner and Hašková, 2010). Among children aged over three years almost 100 per cent attend a day-care centre across the whole of Germany (Statistische Ämter des Bundes und der Länder, 2011), relying on a legal entitlement to a half-day place in a day-care centre from age three.

For the past decades, Germany has traditionally provided long but relatively low-paid parental leave periods. Since 1992, parents have been entitled to take job-protected leave for the first three years of the child's life. The share of fathers taking part of the leave used to be close to zero. The ideal of maternal care (Kremer, 2007) for young children has been a dominant social norm in West Germany, whereas maternal employment and using formal care for infants has been and still is more widely accepted in the Eastern states (Schober and Stahl, 2014). This relates to the cultural ideal of working women in East Germany, characterized by widespread female labour force participation and a dual-earner model (Schmitt and Trappe, 2010).

Recent policy developments indicate a slow movement towards greater acceptance of formal care and shared parental care for young children also in West Germany. In 2007, the German government introduced a parental leave benefit ("Elterngeld"), offering a 2/3 income-replacement (capped at 1,800 Euros per month) for 12 months for one parent or 14 months if both parents take at least two months of leave. Simultaneously, day-care provision has been expanded substantially. Since 2005, a federal law ("Tagesbetreuungsbaugesetz") stipulated

that children under the age of three should have the chance of enrolling in day-care programs if a lone parent or both parents are employed or in education or want to take up employment. A second law in 2008 (“Kinderförderungsgesetz”) provided funding for further expansions and outlined that from August 2013 all children aged one or older will be entitled to a formal childcare place. Some federal states and municipalities prioritised access for specific target groups, such as lone parents (Spiess et al., 2008). Substantial differences in the provision remain between East and West Germany as well as across states, counties and municipalities (Statistisches Bundesamt, 2011), depending on financial endowment and political priority given to day-care services.

The majority of day-care places are provided by non-profit organizations. Slightly more than one third are publicly provided (Spiess et al., 2008). Parental fees are income-dependent and below the OECD average (Immervoll and Barber, 2005). Due to the large subsidies, formal childcare institutions are considerably cheaper than private market alternatives, which play an almost negligible role in the German childcare system. As shown in Figure A1 in the Online Appendix, the percentage of under-three-year-olds who attended day-care increased from 10 to 22 per cent in West Germany from 2007 to 2012, whereas it rose from 41 to 49 per cent in East Germany (Statistisches Bundesamt, 2012; Schilling, 2014). Most of these children attend day-care centres; only four per cent of all children under three attend registered family day-care (Fendrich et al., 2014). In our analysis and discussion, the term day-care will refer to both of these types of formal care.

Theoretical framework

We draw on the demands and resources approach toward perceived work-family balance (Voydanoff, 2005) and on social production function theory (Ormel et al., 1999; Lindenberg, 1986) to consider the relationship between day-care availability, maternal employment transitions, and parental subjective wellbeing. Voydanoff (2005) defines work-family balance

as a global assessment that work and family resources are sufficient to meet work and family demands and this in turn relates to work and family role performance and quality. We conceptualise the subjective assessment of family role quality as mothers' and fathers' perceived satisfaction with family life. Following Voydanoff's model, state-subsidized day-care services can be understood as boundary-spanning resources, which may be used to meet structural or psychological demands in the work or family domain.

According to social production function theory (Ormel et al., 1999; Lindenberg, 1986), individuals aim at maximising their own physical and social wellbeing. The achievement of these goals relies on progress in a set of intermediate domains including comfort, stimulation, social status, behavioural confirmation, and affection. Work or family demands which conflict with the available resources limit the ability to achieve these goals: To improve social wellbeing, social status can be derived primarily from an employment career, whereas affection is an important resource frequently gained from family life. Physical wellbeing relies on both the comfort derived from an intact family life and some recreational time as well as stimulation from employment. We assume that an improved fit between existing work hours or family demands and childcare resources affects not only individuals' satisfaction with family life but also subjective wellbeing more generally.

The day-care expansion in Germany in recent years has been closely linked to the goals of improving work-family balance and of increasing maternal employment rates by providing prioritised access to children of employed parents and of single parents. In couples, day-care availability as a boundary-spanning resource is expected to improve parental wellbeing mainly by facilitating reconciliation with existing work demands of employed mothers. Given the widespread use of informal care in Germany (Schober and Stahl, 2014), the effects are likely to be greatest among mothers who work long part-time or full-time hours, which are difficult to cover by informal care.

We therefore expect an increase in day-care availability to be associated with improvements in satisfaction with family life, with life overall, and with the childcare available in particular for mothers who work long part-time or full-time hours (Hypothesis 1).

Some previous studies (Treas et al., 2011; Berger, 2009) found transitions to full-time employment to be negatively associated with subjective wellbeing mainly in relatively traditional contexts with low levels of formal childcare provision. Several studies on care cultures (Kremer, 2007; Hochschild, 1995) have suggested that changes in family policies, such as the expansion of state-subsidized day-care provision with subsequent changes in take-up and maternal employment, may transform the dominant work and care ideals of families with young children. Such cultural changes are likely to take place over longer periods and are reflected in the persistent cultural differences between East and West Germany, which correlate strongly with variations in day-care provision for under-three-year-olds.

We examine whether improvements in day-care availability are capable of attenuating the decrease in maternal wellbeing associated with the return to full-time employment, or whether this is rather due to higher acceptance of maternal employment and formal care use in regions with greater day-care availability. If the *extent* of day-care provision was the driving force, we would expect subjective wellbeing to decline more strongly among mothers returning to full-time work in counties with lower levels of day-care availability. This should apply in a German sample including East and West Germany but also when the analysis is only restricted to a West German subsample, where maternal employment and day-care use for young children also vary but are generally less accepted than in the East (Hypothesis 2a).

As an alternative hypothesis, we may assume that cultural differences between East and West Germany may be driving the variations in day-care availability and in the relationship of maternal employment transitions with parental subjective wellbeing. Specifically, maternal full-time employment may be negatively associated with parental subjective wellbeing in

regions with low cultural acceptance of maternal employment and formal day-care use, such as West Germany, whereas the relationship may be not significant or even positive in regions with high cultural acceptance, such as East Germany (Hypothesis 2b).

A relatively traditional gender division of childcare and formal employment prevails among East and West German couples during the early years after childbirth (Schober, 2013). Whereas mothers face care norms which hamper their return to the labour market and the extension of working hours, fathers' choices are likely to be more constrained by working schedules, thus restricting their involvement in family care. The day-care expansion has mainly aimed at facilitating maternal employment, therefore mothers may benefit more directly. Nevertheless, positive effects on maternal wellbeing might spill over to their partners. Therefore, greater day-care availability is likely to be positively associated with wellbeing and satisfaction with childcare for mothers and fathers. However, as greater day-care availability provides primarily a disburdenment from primary care tasks, mothers should profit most in terms of wellbeing (Hypothesis 3).

Although available places probably exceeded the numbers of lone parents in most counties already before the expansion, for single parents greater availability still increased day-care take-up (Schober and Stahl, 2014) probably due to improvements in terms of proximity to home and extended or more flexible opening hours in the course of the reform. Lone parents have been granted prioritized access also for other reasons than employment, such as for providing stable childcare support in order to promote child wellbeing. They may therefore also use day-care to reduce their own childcare time in favour of leisure activities, which benefit physical and social wellbeing. Hence, we expect a positive association of greater day-care availability with subjective wellbeing among lone parents, irrespective of employment status (Hypothesis 4).

Data and Method

Our empirical analysis is based on data from the German Socio-Economic Panel Study (SOEP) and the associated study ‘Families in Germany’ (FiD). The SOEP is a representative annual household panel study, which started in 1984. The most recent wave covers about 20,000 respondents from 11,000 households (for a detailed description of the data set, see Wagner et al., 2007). We use the annual SOEP waves of the years 2007 to 2012 jointly with the FiD waves 2010 and 2012. FiD is an extension study of the SOEP focusing on families with young children and with special needs (low income, lone parents, and large families). The FiD data cover information from about 4,500 households with a total of about 7,800 respondents (for further information, see Schröder et al., 2013). The structure and the content of these two data sets are similar, hence they can be analysed jointly.

The advantage of using these two data sets together is that they provide a representative and large enough sample of families with young children to match them with administrative information on ECEC provision at the county level. The latter administrative statistics on child and youth welfare (‘Kinder- und Jugendhilfestatistik’) have been collected annually since 2006. They provide information on the percentages of children of different ages attending day-care institutions in each of the 412 German counties. The data are compiled and distributed by the German Youth Institute in collaboration with the Technical University of Dortmund. The specific link between individual and county level data is determined by the family’s county of residence in a given survey year.

To estimate the association between maternal employment status, care arrangements, and subjective wellbeing measures in different day-care contexts, we apply fixed-effects panel models¹ at the individual level over a period of six years (2007 to 2012). The method allows us

¹ Fixed-effects panel models analyse the associations of within-person deviation from the within-person mean over time in the dependent and independent variables, i.e. how changes in the satisfaction measures correlate with changes in the day-care context over time. We conducted a Hausman test comparing random and fixed effects models. It tests the null hypothesis that the individual-specific error terms are not correlated with the regressors which had to be rejected favoring the fixed-effects estimator.

to control for any unobserved time-invariant characteristics of individuals. Assuming a certain degree of stability, such characteristics may include work-family-orientations, gender role identities, occupational and industry characteristics, as well as individual-specific response tendencies with respect to subjective wellbeing. Ideally, we would like to run separate analyses for West Germany and East Germany and for partnered and lone mothers in each region, respectively. However, due to sample size restrictions, we can only analyse couples and lone mothers, respectively, in the whole of Germany. In a second step, we re-run the models for couples including only the West German subsample.

To test the hypotheses, the analytical strategy relies on the following steps: Based on a model which includes the county rate of day-care provision and control variables, we add individual level indicators for employment of both partners as well as childcare arrangements, as shown in Equation 1. s_{it} stands for satisfaction with family life, life satisfaction overall, or for satisfaction with the available childcare. w_{it} represents the employment status of the mother, and c_{ct} is the effect of county-level childcare availability, respectively. x_{it} is a vector of control variables. u_i denotes the n individual-specific intercepts, and ε_{it} is the error term. In a second step, we test whether the associations of expanding day-care availability with the satisfaction outcomes depend on maternal employment status by including an interaction term $w_{it} * c_{ct}$ (eq. 2).

$$s_{it} = \beta_{1t} + \beta_2 c_{ct} + \beta_3 w_{it} + \beta_4 x_{it} + u_i + \varepsilon_{it} \quad [\text{Eq.1}]$$

$$s_{it} = \beta_{1t} + \beta_2 c_{ct} + \beta_3 w_{it} + \beta_4 w_{it} * c_{ct} + \beta_5 x_{it} + u_i + \varepsilon_{it} \quad [\text{Eq.2}]$$

In a third modelling step (eq. 3), we include an interaction between maternal employment transitions with residence in East Germany e_{it} to test whether significant interactions with day-care availability may be driven by variations in cultural work-care context. Finally in a fourth step (eq. 4) we test an interaction effect of actual day-care take-up c_{it} with maternal employment

on satisfaction of parents. These interaction effects are included to examine whether the expansion in day-care provision may improve parental satisfaction especially among mothers who work longer hours, and to explore whether a return to full-time employment is less negatively associated with mothers' satisfaction in regions with more extensive day-care provision or less traditional work-care cultures.

$$s_{it} = \beta_{1t} + \beta_2 c_{ct} + \beta_3 w_{it} + \beta_4 w_{it} * e_{it} + \beta_5 x_{it} + u_i + \varepsilon_{it} \quad [\text{Eq.3}]$$

$$s_{it} = \beta_{1t} + \beta_2 c_{it} + \beta_3 w_{it} + \beta_4 w_{it} * c_{it} + \beta_5 x_{it} + u_i + \varepsilon_{it} \quad [\text{Eq.4}]$$

By using fixed-effects panel models, we analyse, for instance, how changes in day-care availability are associated with changes in satisfaction with childcare, with family life, and with life overall within the same individuals over time. Only individuals who experience some change in either the independent or the dependent variable are considered in the estimation of the respective relationships.

The interaction terms can be interpreted in different ways. The interaction term of maternal employment with day-care availability might be interpreted as follows: 1) increases over time in day-care availability may correlate more positively with changes in satisfaction among continuously full-time employed mothers than among mothers who are less attached to the labour market, or 2) a transition from non-employment to full-time employment may be more strongly associated with reductions in subjective well-being in counties with low (and possibly unchanged) levels of day-care provision compared to counties with higher levels. To clarify the interpretations of the interaction terms, we performed two tests: To explore the first interpretation, we estimated models separately for employment subgroups of mothers who did not change employment status. To examine the second interpretation, we included an interaction of maternal employment transitions with a time-invariant within-person mean of day-care availability over all periods.

We apply robust standard errors at the individual level. To account for the multilevel structure of the data with families nested in counties, we have estimated alternative specifications with robust standard errors clustered at the county level, where we excluded families who were affected by county border reforms or who moved across counties. The latter approach provided substantively the same results.

We restrict our sample to repeatedly observed couples or lone mothers who live with at least one child aged under three years and follow them until the child is at most 3.5 years old. As the German childcare expansion consisted to a large part of extended provision for two-year-olds, this allows us to investigate changes in parental satisfaction for at least the year after day-care entry of children who entered day-care before the age of 2.5 years. We run separate models for partnered mothers, partnered fathers, and lone mothers, respectively. Our final samples consist of 2,002 mothers and fathers in couples and 376 lone mothers.

Dependent variables

Our dependent variables capture satisfaction with life overall, with family life, and with the childcare available. The question wording for the domain satisfaction questions has been ‘how satisfied are you today with the following areas of your life?’ with two out of ten aspects being ‘family life’ and ‘the childcare available’². Furthermore, respondents were asked ‘how satisfied are you with your life, all things considered?’ The items for all these questions have been measured using an 11-point Likert scale ranging from ‘completely dissatisfied’ to ‘completely satisfied’. These life and domain satisfaction questions have been found to provide valid and reliable measures (Eckersley, 2013). During the observation period we observe a slight positive trend with some fluctuations in satisfaction with family life and with life overall for mothers

² 14 percent of parents have some item non-response, which occurs most frequently for the item measuring satisfaction with available childcare. Additional tests suggest that this is partly due to questionnaire filtering, which restricts this question to parents of preschool children. Some parents have interpreted this restriction as concerning children in the age range of one to two years before entry to primary school. Hence, parents who only have a child younger than preschool have a slightly higher likelihood of item non-response.

and fathers in West and East Germany (see Figure A1 in the Online Appendix). For satisfaction with available childcare, the trend is positive for parents in West Germany whereas it fluctuates in East Germany (tables available on request).

Independent variables

Day-care availability: A central independent variable is the rate of day-care attendance of under-three-year-old children in relation to all children in this age group living in a county per annum. In line with previous German studies, we assume that there is no excess supply in terms of day-care slots which are not taken up by parents within a short time frame. This assumption seems reasonable given the documented excess demand in both regions for this age group (Rauschenbach et al., 2012). We also considered the rate of full-day attendance to distinguish county variations in hours of care provided. The latter is excluded in the final models due to multicollinearity with the rate of day-care usage for under-three-year-olds. The percentage of children under three years attending day-care institutions increased by about 10 points over the observation period (see Figure A1). Moreover, the county rates of day-care provision show substantial variation, ranging from a minimum of 2 and 20 percent to a maximum of 39 and 63 percent in West and East Germany, respectively. For including interaction terms of maternal employment status with the county rate of day-care use, the latter variable is centered at the mean of West Germany to facilitate the interpretation across models.

Work-care-arrangements: For maternal employment status, we distinguish five categories: Non-employed, working part-time, long part-time or full-time (over 30 hours per week), unemployed, or attending education. Regarding the actual use of day-care services, we can only distinguish three categories: no use of day-care, half-day (less than five hours), and more than half-day.

Three variables are included to capture family care support. These include paternal childcare hours and housework hours on a typical weekday, and a binary variable indicating if any care is provided by a relative other than the partner. We also tested alternative specifications of fathers' unpaid work contributions relative to mothers'. Fathers' employment status is included using the same categories as for maternal employment (non-working, part-time, full-time work, unemployed, and in education). We consider economic resources using the logarithm of the inflation-adjusted net household income (base 2010). Associations of maternal employment with subjective wellbeing therefore capture residual effects after controlling for variations in household income, for instance, as a result of employment changes. To reduce the risk of reverse causation of changes in wellbeing leading to changes in labour force status, we control for mothers' self-reported health status.

Furthermore, we consider the marital status among couples. Lone mothers are defined as women living without a partner. We also control for the age of the youngest child in months and for the number of children in the household. Period effects are incorporated in all models using year dummies.

To control for labour market conditions, economic prosperity and public finances, we consider variations in unemployment rates at the county level and in public expenditure per capita. A dummy is included for changes in the county-level indicators of day-care and economic context due to shifts in county borders, which occurred in some counties of four federal states. We also control for moves of families across counties. Table A1 displays descriptive statistics for the dependent and independent variables.

Results

Subjective wellbeing among partnered mothers

Table 1 shows the results of fixed-effects panel models of satisfaction with family life, with life overall, and with the available childcare for mothers and fathers in couples (for control variable estimates, see Table A2 in Online Appendix). Before considering interaction terms, an increase in the county rate of day-care use is not significantly associated with changes in satisfaction of mothers concerning any domain (models not shown). However, as shown in Model 1, an interaction term with maternal employment status is significant for satisfaction with family life and with life overall. In a set of separate models for subgroups of mothers by employment status (not shown), we mostly find no significant associations of increased availability of day-care at the county level with changes in maternal satisfaction. The only exception is satisfaction with family life among continuously full-time employed mothers, for whom the association with greater day-care availability is positive and significant at the 10-percent level. This is the only indication we find of a direct positive effect of the day-care expansion on subjective wellbeing in line with Hypothesis 1, which assumed that availability should improve well-being for mothers working long part-time or full-time hours.

Slightly different specifications of Model 1 with stable person-specific means of the day-care attendance rate during the observation period showed an interaction effect of very similar magnitude and statistical significance (not shown). This suggests that a transition from non-employment to a full-time job is associated with a significant reduction in satisfaction with family life and with life overall for mothers in counties with 17 percent of children under three years attending day-care, the West German average in our sample. These moderate associations are equivalent to about one quarter of a standard deviation and of a similar size as the increase in satisfaction after a transition to marriage among cohabiting couples. However, a switch to full-time employment is not negatively associated with satisfaction with family life or with life overall among mothers who live in counties where over 35 or 40 percent of children under three years attend day-care institutions (see Figure A2 in the Online Appendix).

Mothers' transitions into or out of part-time employment, either from non-employment or from full-time employment, and changes in day-care use are not significantly associated with changes in satisfaction with family life or life in general.

Models 2 and 3 in Table 2 investigate whether greater day-care availability (H2a) or rather more widespread cultural acceptance of maternal employment (H2b) in counties with greater day-care provision is likely to attenuate any negative impacts which maternal transitions into full-time employment may have on subjective wellbeing. Model 2 includes an interaction term with East Germany, which turns out statistically significant (see also Figure A3 in the Online Appendix). In East Germany, a switch to full-time employment is not significantly associated with maternal satisfaction with family life and is even positively associated with life satisfaction (this is also confirmed in separate models for East Germany which are available on request). In Model 3, a repetition of Model 1 limited to the West German subsample, the interaction terms of maternal employment with day-care availability do not reach statistical significance for satisfaction with family life or with life satisfaction. Also additional tests as to whether the actual take-up of day-care services moderated the relationship with full-time employment showed no significant interaction effects (models available on request).

All these results therefore provide limited support for Hypothesis 2a which suggested that day-care availability per se may reduce the negative association of maternal full-time employment with subjective wellbeing. Instead, the results are in line with Hypothesis 2b which assumed that East-West differences in childcare culture will moderate the relation between full-time employment and well-being. The significant interaction effect with the level of day-care provision, which was also found in previous studies, therefore, appears to be driven by work-care cultures, which go hand in hand with longer-term variations in day-care provision.

Somewhat surprisingly, the results in Table 1 show no significant correlation between the county rate of day-care provision and satisfaction with the available childcare of mothers.

Instead, we find a strong and significant association of changes in day-care use with satisfaction with childcare. Most of the changes we observe concern children's first-time entry into day-care. Mothers who start to use day-care part-time or - even more so - full-time increase their satisfaction with available childcare. One reason may be that once they found a day-care slot, parents perceive less shortage of places and therefore express greater satisfaction with the available childcare. In addition, parents' experiences with day-care also in terms of quality may be more positive than they had expected.

In East German counties with high levels of day-care usage (over 50 percent) maternal return to work is correlated with a reduction in satisfaction with childcare, as shown by the significant interaction terms in Model 1 in Table 1 and in Model 2 in Table 2. One possible interpretation may be that in countries with higher provision and acceptance of public childcare in East Germany, mothers who reenter the labour market also expect more formal childcare support and are therefore less satisfied with current availability than mothers in regions with lower levels of provision.

Subjective wellbeing among partnered fathers

As can be seen from Table 1, fathers' satisfaction in all three domains does not correlate significantly with changes in the day-care context over time or with their partners' transitions into employment. The non-significant associations for fathers contradict Hypothesis 3, which also expected positive, even if possibly weaker, effects on fathers' wellbeing. Similar to mothers, fathers' satisfaction with childcare correlates positively with increased day-care take-up. This suggests that satisfaction with childcare relates more strongly to parents' experience of actual take-up of day-care rather than general availability.

Subjective wellbeing of lone mothers

As shown in Table 3, the expansion of day-care places relates to improvements in satisfaction with family life for lone mothers (significant at the 10-percent level), whereas the relationship is not significant for life satisfaction. Hence, this provides partial support for a moderate short-term effect of greater day-care availability on subjective wellbeing as assumed in Hypothesis 4. Transitions into part-time or full-time employment are not significantly associated with lone mothers' satisfaction with family life or with life overall³. Notably, using day-care for more than half a day is accompanied by a moderate rise of one third of standard deviation in the satisfaction with family life for lone mothers. Additional tests suggest that this is independent of lone mothers' employment status (results available on request).

Similar to couples, lone mothers' satisfaction with the available childcare increases as their youngest child starts attending full-day care. In contrast to the results for couples, transitions into full-time employment also correlate positively with increasing satisfaction with childcare, possibly because single mothers are more dependent on the public childcare supply and therefore adapt their expectations.

Sensitivity analysis

We tested all models excluding control variables of paternal and other informal care arrangements which may be affected by day-care availability and the results were unchanged. As the counties in our sample vary in population density, we tested whether the day-care expansion correlated more strongly with subjective wellbeing among a subsample of parents living in cities with county status ('kreisfreie Städte'), where it can be assumed to measure the expansion speed more precisely. The results provided very similar results.

Discussion

³ For lone mothers, models without interaction effects of maternal employment status with the county day-care rate are presented due to sample size restrictions. These models fit the data better than interaction terms with a dummy variable indicating whether the mother is employed or not.

Our results provide evidence of positive short-term effects of the day-care expansion on satisfaction only for lone mothers and full-time employed partnered mothers and only including the East German sample. Transitions into full-time employment are negatively associated with mothers' satisfaction with family life and with life overall in West German counties, where levels of day-care provision have been low, but not in counties with high day-care take-up rates for young children, which dominate in East Germany. By comparing interaction effects of maternal employment with the regional day-care availability across the whole of Germany, across West Germany only, and with an interaction with East Germany, we have shown that varying work-care cultures between East and West Germany are more significant moderators of the relationship of maternal full-time employment with subjective wellbeing than day-care availability and use themselves. Our findings are in line with and extend a previous cross-national cross-sectional study (Treas et al., 2011) and several longitudinal studies of subjective wellbeing in Germany and the UK (Berger, 2009; Gash et al., 2012; Booth and van Ours, 2008). They found similar individual-level relationships with full-time employment of mothers but were unable to consider the importance of contextual variations in terms of childcare culture and policy simultaneously. The relationships between full-time employment and satisfaction in previous studies on the German context vary most likely because some considered only West Germany, whereas others included also East Germany, and the results seem to vary between mothers with very young children as opposed to those with older children (see also Berger, 2009).

German fathers' subjective wellbeing does not seem to be affected by variations in maternal employment status or day-care contexts in a unidirectional way, which suggests that the relationships with work-care reconciliation issues may be less central or more complex to disentangle. However, fathers' satisfaction with available childcare correlates with actual take-

up for their children in a way very similar to mothers, which points to some degree of awareness and agreement among partners.

The positive effect of the expansion and take-up of day-care on satisfaction with family life among lone mothers irrespective of employment status implies that for them, day-care resources have mainly alleviated demands and pressures of family life. The stronger and somewhat different associations found for lone mothers than for mothers in couples confirm the importance of considering the varying needs and resources of different groups of families. Considerable variations across education and income groups have also been found by Brodeur and Connelly (2012). Unfortunately, sample size restrictions did not allow us to further examine such group variations in West and East Germany.

Our results show that changes in satisfaction with childcare availability of mothers and fathers are strongly associated with actual use rather than with general expansion trends at the county level. Given that these associations remain unchanged after controlling for changes in maternal employment status and paternal family involvement, this may indicate that satisfaction with childcare increases significantly as a consequence of parents choosing to use this type of care arrangement and finding a day-care slot rather than improvements in childcare satisfaction increasing parents' take-up.

This study provides one of the first investigations of trends in subjective wellbeing of parents with young children in a country which has been undergoing dramatic shifts in day-care provision and other family policies over the last decade. Due to the piecewise roll-out of the day-care expansion across the whole of Germany since the mid-2000s and limited data availability before this period, we were unable to consider pre-treatment measures and identify a control group which can be assumed to be unaffected by the expansion. However, by observing the varying speed of the expansion across German counties and considering actual take-up of care and interactions with maternal employment in fixed-effects models, we were

able to provide a more detailed investigation of potential mechanisms. A fruitful extension for further research might be a focus on day-care quality, as it may also influence parental satisfaction. Unfortunately, the lack of longitudinal data for the observation period prevented us from considering this aspect.

In the light of recent labour market policies frequently encouraging an adult worker model, an important question is whether support through public childcare for young children may enhance work-family compatibility and improve wellbeing. We found only weak evidence of a short-term impact of the day-care expansion on parental satisfaction with family life and with life overall. Yet the substantial difference between East and West Germany in work and care culture suggests that such policy reforms may well have stronger positive effects in the long term or in contexts where parents are more accepting of formal care for young children. Research designs of future comparative studies should aim to consider measures of work-care cultures simultaneously with longitudinal changes in policy provisions to further our understanding of timing aspects and cultural interdependencies of childcare policy effects.

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Table 1: Satisfaction with family life, with life overall, and with childcare among mothers and fathers in couples (Model 1)

Satisfaction with....	Mothers – M1			Fathers – M1		
	..family life	..life overall	..childcare	..family life	..life overall	..childcare
County day-care rate under 3s	-0.01 (0.01)	-0.00 (0.01)	0.02 (0.03)	0.01 (0.02)	0.02 (0.01)	0.03 (0.02)
Mother part-time (mpt)	-0.04 (0.07)	-0.04 (0.06)	0.14 (0.13)	-0.12+ (0.06)	-0.04 (0.06)	-0.09 (0.13)
Mother full-time (mft)	-0.37* (0.16)	-0.31* (0.13)	0.01 (0.25)	-0.10 (0.13)	-0.15 (0.12)	-0.34 (0.29)
Mpt X county day-care rate	0.01 (0.00)	0.00 (0.00)	-0.02* (0.01)	0.01 (0.00)	0.01 (0.00)	-0.01+ (0.01)
Mft X county day-care rate	0.02* (0.01)	0.02** (0.01)	-0.02+ (0.01)	0.00 (0.01)	0.01 (0.01)	0.00 (0.01)
Half-day care	0.02 (0.07)	-0.07 (0.07)	0.54*** (0.13)	-0.05 (0.08)	-0.03 (0.07)	0.40** (0.12)
More than half-day care	-0.11 (0.08)	-0.09 (0.07)	0.94*** (0.16)	-0.00 (0.08)	0.09 (0.08)	0.86*** (0.16)
Observations	5,106	5,109	4,282	5,100	5,104	4,229
Number of mothers/fathers	2,002	2,002	1,888	2,002	2,002	1,892
R ² within/between/overall	.03/.01/.01	.06/.05/.05	.07/.03/.03	.04/.01/.01	.03/.04/.03	.05/.03/.03

Note: Method: Fixed-effects regression. Robust standard errors in parentheses. All models include the control variables shown in Table A2 in the Online Appendix. Reference categories: mother not employed, no day-care used.

*** p<0.001, ** p<0.01, * p<0.05, + p<0.1

Source: SOEP 2007-2012 and FiD 2010-2012 linked with regional youth welfare office statistics.

Table 2: Satisfaction with family life, with life overall, and with childcare among mothers in couples (Models 2 and 3)

Satisfaction with....	..family life		..life overall		..childcare	
	M2	M3- West Germany	M2	M3- West Germany	M2	M3 –West Germany
County day-care rate under 3s	-0.01 (0.01)	-0.02 (0.02)	-0.00 (0.01)	0.02 (0.02)	0.01 (0.03)	0.00 (0.04)
Mother part-time (mpt)	-0.05 (0.07)	-0.07 (0.07)	-0.05 (0.06)	-0.08 (0.07)	0.15 (0.13)	0.18 (0.14)
Mother full-time (mft)	-0.32* (0.15)	-0.35* (0.18)	-0.36** (0.12)	-0.30* (0.14)	-0.03 (0.26)	-0.05 (0.27)
Mpt X East	0.24+ (0.13)		0.05 (0.12)		-0.72*** (0.22)	
Mft X East	0.45* (0.22)		0.69*** (0.16)		-0.56 (0.37)	
East Germany	0.02 (0.56)		0.78 (0.48)		1.46 (1.28)	
Mpt X day-care rate		0.00 (0.01)		-0.01 (0.01)		-0.01 (0.02)
Mft X day-care rate		0.01 (0.02)		-0.03 (0.02)		-0.01 (0.04)
Observations	5,106	3,925	5,109	3,928	4,282	3,252
Number of mothers	2,002	1,531	2,002	1,531	1,888	1,443
R ² within/between/overall	.03/.01/.02	.04/.01/.02	.06/.05/.05	.06/.11/.10	.07/.03/.03	.08/.01/.02

Note: Model 2 is based on data for both East and West Germany, Model 3 includes mothers in West Germany only. Method: Fixed-effects regression. Robust standard errors in parentheses. All models include the following control variables: day-care use, mother in education, mother unemployed, childcare support from relatives, childcare and housework hours of fathers, fathers' employment status, ln of household income, maternal health, marital status, age of youngest child, number of children, county unemployment rate, county expenditure per capita, a dummy of missing county expenditure, year dummies, and dummies for county border reform and moving between counties, respectively. Reference categories: mother not employed, no day-care used, living in West Germany.

*** p<0.001, ** p<0.01, * p<0.05, + p<0.1

Source: SOEP 2007-2012 and FiD 2010-2012 linked with regional youth welfare office statistics.

Table 3: Satisfaction with family life, with life overall, and with available childcare among lone mothers

Satisfaction with....	..family life	..life overall	..childcare
County day-care rate under 3s	0.12* (0.06)	0.02 (0.04)	0.06 (0.08)
Mother part-time	-0.32 (0.34)	0.04 (0.26)	0.17 (0.46)
Mother full-time	0.31 -0.32	0.32 0.04	1.12* 0.17
Half-day care	0.18 (0.38)	-0.04 (0.32)	0.31 (0.45)
More than half-day care	0.74* (0.33)	0.22 (0.27)	0.89+ (0.46)
Observations	766	765	624
Number of mothers	376	376	346
R ² within/between/overall	.06/.01/.01	.10/.02/.01	.15/.06/.04

Note: Method: Fixed-effects regression. Robust standard errors in parentheses. All models include the following control variables: mother in education, mother unemployed, childcare support from relatives, childcare and housework hours of fathers, fathers' employment status, ln of household income, maternal health, marital status, age of youngest child, number of children, county unemployment rate, county expenditure per capita, a dummy of missing county expenditure, year dummies, and dummies for county border reform and moving between counties, respectively.

Reference categories: mother not employed, no day-care used.

*** p<0.001, ** p<0.01, * p<0.05, + p<0.1

SOEP 2007-2012 and FiD 2010-2012 linked with regional youth welfare office statistics.

Online Appendix

Table A1: Descriptive statistics of dependent and independent variables over pooled sample of families with a child aged 0 to 3.5 years, 2007-2012

	Mean/ Perc.	SD
Dependent variables		
Maternal satisfaction with family life	8.37	1.70
Maternal life satisfaction	7.67	1.52
Maternal satisfaction with available child care	7.27	2.50
Paternal satisfaction with family life	8.57	1.50
Paternal life satisfaction	7.59	1.51
Paternal satisfaction with available child care	7.35	2.23
Explanatory variables		
Mother full-time (mft)	9.15	
Mother part-time (mpt)	31.54	
Mother not employed	51.44	
Mother unemployed	6.44	
Mother in education	1.43	
Father full-time	82.61	
Father part-time	6.63	
Father not employed	10.75	
Father unemployed	6.22	
Father in education	0.76	
Ln net household income (in EUR, inflation-adjusted)	7.84	.48
Care by relatives	26.86	
Child care hours father	2.35	2.57
Housework hours father	.74	.91
No day-care used	69.78	
Day-care used half-day	10.86	
Day-care used more than half-day	19.36	
Married	72.85	
Cohabiting	16.66	
Single	10.92	
Child age in months	20.33	11.24
Number of children	1.88	.95
Mother health	2.23	.88
County day-care attendance rate for under threes	24.71	14.36
County unemployment rate	9.39	4.35
Public expenditure per capita (EUR)	263.70	278.00
County border reform	1.52	
Moved between counties	4.53	
Year 2007	7.31	
Year 2008	8.55	
Year 2009	8.73	
Year 2010	28.27	
Year 2011	27.48	
Year 2012	19.67	

Note: Parental satisfaction with family life is measured on a Likert scale ranging from 0 (completely dissatisfied) to 10 (completely satisfied).

Source: SOEP 2007-2012 and FiD 2010-2012 linked with regional youth welfare office statistics.

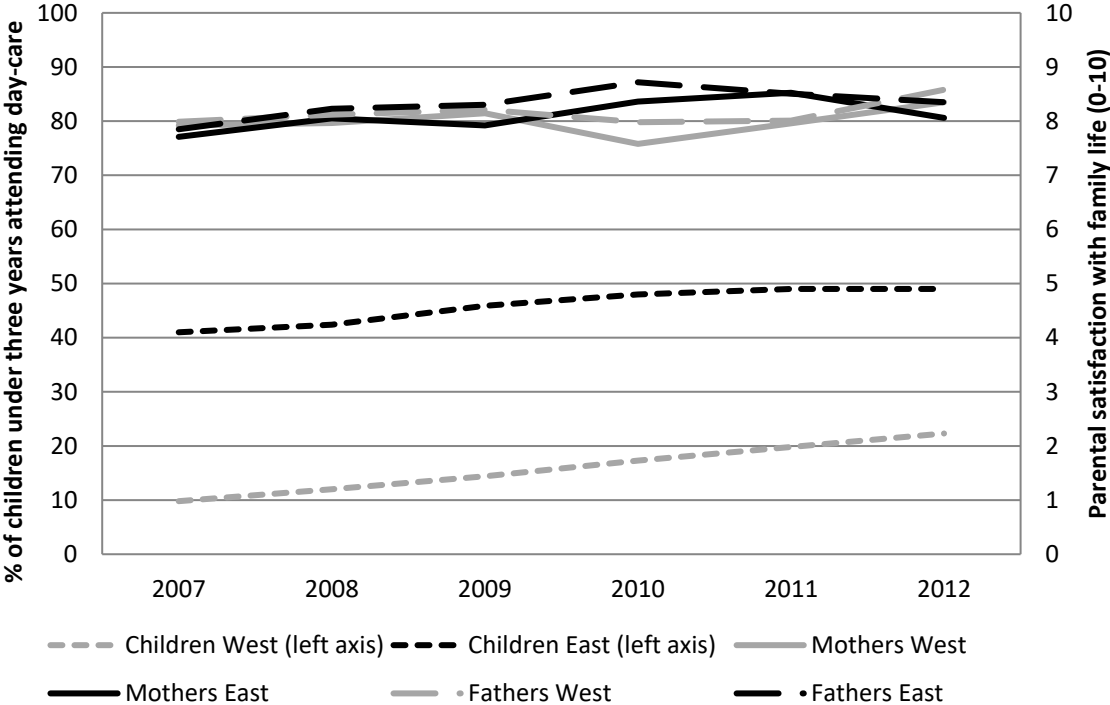
Table A2: Control variables estimates of fixed-effects panel models shown in Table 1

Satisfaction with....	Mothers – M1			Fathers – M1		
	..family life	..life overall	..child care	..family life	..life overall	..child care
Mother in education	0.31+ (0.16)	0.19 (0.16)	0.24 (0.36)	0.12 (0.19)	0.31+ (0.17)	0.03 (0.38)
Mother unemployed	-0.01 (0.13)	-0.21 (0.14)	-0.16 (0.22)	0.10 (0.13)	0.25+ (0.14)	-0.21 (0.22)
Child care support by relatives	-0.05 (0.06)	-0.01 (0.05)	-0.19+ (0.12)	-0.02 (0.06)	0.02 (0.05)	0.08 (0.11)
Child care hours father	0.03* (0.01)	0.03** (0.01)	0.00 (0.03)	0.03** (0.01)	0.01 (0.01)	0.00 (0.03)
Housework hours father	0.01 (0.03)	0.01 (0.03)	-0.02 (0.06)	-0.01 (0.03)	0.01 (0.03)	-0.04 (0.06)
Ln net household income	0.07 (0.12)	0.21+ (0.11)	0.17 (0.21)	0.20+ (0.11)	0.17+ (0.10)	0.23 (0.23)
Father part-time	0.05 (0.19)	-0.14 (0.16)	-0.31 (0.32)	0.15 (0.17)	0.02 (0.17)	-0.27 (0.34)
Father full-time	0.03 (0.15)	-0.05 (0.13)	-0.13 (0.28)	0.17 (0.14)	0.11 (0.15)	0.06 (0.28)
Father unemployed	-0.01 (0.18)	-0.54*** (0.16)	-0.42 (0.32)	0.13 (0.19)	-0.39* (0.18)	0.33 (0.36)
Father in education	0.11 (0.22)	0.27 (0.37)	0.16 (0.63)	0.22 (0.32)	0.05 (0.32)	0.68 (0.54)
Mother health	-0.11** (0.04)	-0.22*** (0.03)	-0.13* (0.06)	-0.12*** (0.03)	-0.07* (0.03)	-0.12+ (0.07)
Child age in months	-0.01+ (0.00)	-0.00 (0.00)	-0.00 (0.01)	-0.01** (0.00)	-0.01*** (0.00)	-0.00 (0.01)
Cohabiting	-0.37** (0.13)	-0.37** (0.13)	-0.37 (0.31)	-0.09 (0.12)	-0.07 (0.12)	-0.20 (0.32)
Number of children	-0.15 (0.10)	-0.06 (0.11)	0.13 (0.27)	-0.27* (0.12)	-0.28** (0.11)	0.17 (0.26)
County border reform	-0.18 (0.20)	-0.25 (0.16)	-0.48 (0.31)	-0.17 (0.21)	-0.24 (0.19)	-0.20 (0.36)
County unemployment rate	0.04 (0.03)	-0.01 (0.03)	0.07 (0.06)	0.00 (0.03)	0.00 (0.03)	0.09 (0.06)
Municipality expenses p. capita	0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	-0.00+ (0.00)	0.00 (0.00)
Moved across counties	-0.03 (0.14)	-0.24+ (0.13)	0.32 (0.29)	-0.04 (0.14)	0.01 (0.12)	0.09 (0.30)
East Germany (moved)	0.19 (0.54)	0.89+ (0.48)	1.06 (1.25)	-0.47 (0.62)	-0.84 (0.53)	-0.57 (0.92)
Year 2008	0.13 (0.10)	-0.10 (0.09)	0.37+ (0.20)	-0.07 (0.11)	-0.02 (0.10)	0.24 (0.20)
Year 2009	0.09 (0.14)	-0.16 (0.12)	0.58* (0.26)	-0.15 (0.15)	-0.23+ (0.13)	0.31 (0.27)
Year 2010	-0.04 (0.16)	-0.18 (0.15)	0.58+ (0.34)	-0.28 (0.19)	-0.04 (0.16)	0.21 (0.35)
Year 2011	0.07 (0.21)	-0.16 (0.19)	0.96* (0.44)	-0.15 (0.24)	-0.01 (0.21)	0.55 (0.45)
Year 2012	0.02 (0.25)	-0.31 (0.24)	0.99+ (0.56)	-0.25 (0.29)	-0.11 (0.25)	0.45 (0.55)

Note: Robust standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05, + p<0.1

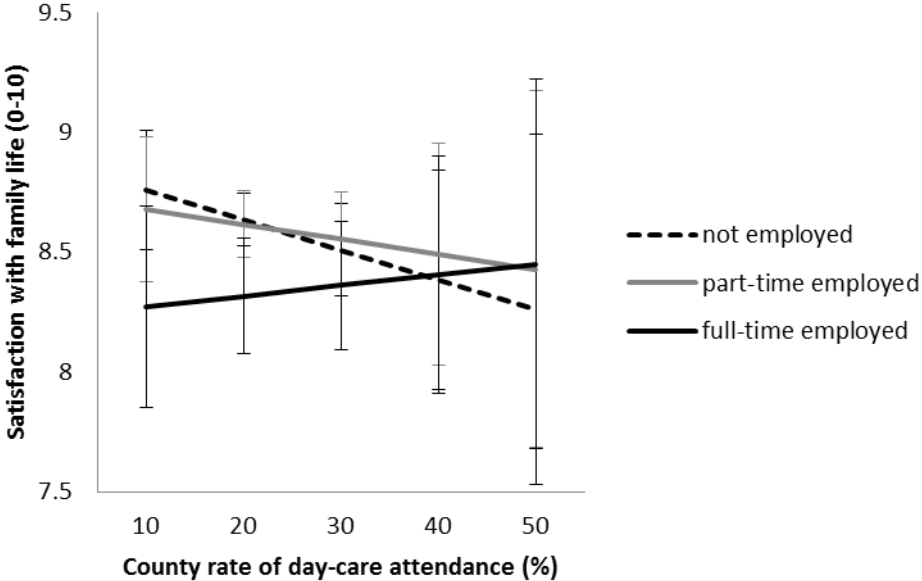
Source: SOEP 2007-2012 and FiD 2010-2012 linked with regional youth welfare office statistics.

Figure A1: Trends in the percentage of children under three years who attended state-subsidized day-care institutions (left axis) and in parental satisfaction with family life (right axis) in East and West Germany, 2007 to 2012



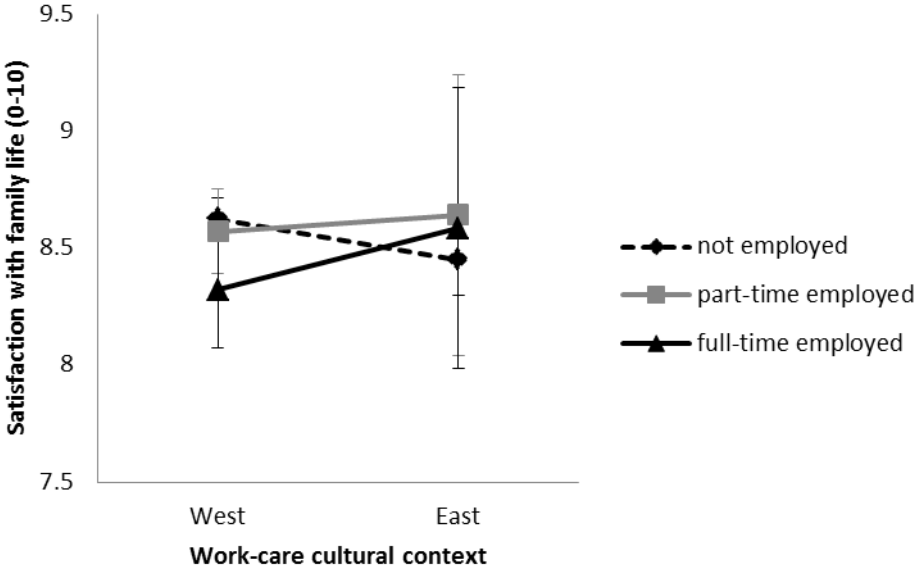
Source: Statistisches Bundesamt, 2012, and own calculations based on SOEP 2007-2012 and FiD 2010-2012.

Figure A2: Interaction effect of the county day-care attendance rate with maternal employment status based on fixed-effects panel models of maternal satisfaction with family life in Table 1



Source: own calculations based on SOEP 2007-2012 and FiD 2010-2012 linked with regional youth welfare office statistics. N= 5,106 observations; 2,002 mothers.

Figure A3: Interaction effect of maternal employment status with residence in East Germany based on fixed-effects panel models of maternal satisfaction with family life in Table 2



Source: own calculations based on SOEP 2007-2012 and FiD 2010-2012 linked with regional youth welfare office statistics. N= 5,106 observations; 2,002 mothers.