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Philipp, Marie-Fleur; Büchau, Silke; Schober, Pia S.; Werner, Viktoria; Spiess, C. Katharina

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Marie-Fleur Philipp, Silke Büchau,
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How daycare quality shapes norms around daycare use and parental employment: Experimental evidence from Germany

Marie-Fleur Philipp¹, Silke Büchau¹, Pia S. Schober¹, Viktoria Werner & C. Katharina Spiess^{2,3,4}

¹ University of Tübingen, Germany

² Federal Institute for Population Research (BiB), Germany

³ Johannes Gutenberg University Mainz, Germany

⁴ IZA - Institute of Labor Economics, Germany

Abstract:

Not only the quantity of formal daycare provision for young children, but also its quality has become an issue of political concern. This experimental study investigates how a hypothetical improvement in the quality of daycare facilities shapes normative judgements regarding daycare use and working hours norms for parents with young children in Germany. The analysis is framed using capability-based explanations combined with theoretical concepts of ideals of care and normative policy feedback theories. We draw on a factorial survey experiment implemented in 2019/2020 in the German Family Panel (pairfam) measuring underlying work-care norms for a couple with a 15-month-old child under different contextual conditions. Ordered logistic and linear multilevel regressions were conducted with 5,324 respondents. On average, high hypothetical daycare quality for young children leads respondents to recommend greater daycare use and longer working hours for mothers and fathers by about 1 hour per week. Respondents who hold more egalitarian gender beliefs, those with tertiary education, native Germans and parents tend to respond more strongly to higher daycare quality by increasing their support for full-daycare use. The results consistently point to the relevance of high quality for increasing the acceptance and subsequently take-up of formal daycare.

Key words: work-care norms, gender beliefs, care ideals, early childhood education and care, daycare, childcare, factorial survey, pairfam, Germany

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Corresponding author

Marie-Fleur Philipp, Wilhelmstr. 36, 72074 Tübingen, Germany. marie-fleur.philipp@uni-tuebingen.de

Introduction

In recent decades, many high-income countries have expanded family policy provisions such as publicly provided early childhood education and care (hereafter: daycare) and individual entitlements to paid parental leave for mothers and fathers in order to facilitate balancing work and family demands, promote gender equality and equalize child development opportunities (European Commission, 2020). A large international body of literature has provided evidence that daycare availability for children below age three increases daycare take-up and employment of mothers but not fathers (e.g., Jessen et al., 2020; Müller & Wrohlich, 2020; for a review on maternal employment, see Ferragina, 2020).

Alongside its care function and relevance for equalizing labour market opportunities for parents, scholars and more recently also policymakers have stressed the educational function of not only pre-school but also daycare (for toddlers) (Vandenbroeck, 2020). As high quality is crucial for positive effects on children's development (e.g., Schmutz, 2024; van Huizen & Plantenga, 2018), not only the quantity of daycare but also its quality has become an important issue of political concern (e.g., European Commission, 2014). Across OECD countries, quality criteria including child-teacher ratios fall short of evidence-based requirements (Bertelsmann Stiftung, 2012; OECD, 2022). Existing reviews on effects on children's development point to particular benefits of high-quality daycare for children from disadvantaged families, thus potentially contributing to reducing socioeconomic differences in child development (Schmutz, 2024; Vandenbroeck, 2020).

Despite a massive expansion of public daycare in Germany, extensive daycare use for toddlers has been increasing only slowly, especially in Western Germany and among parents with low education (Jessen et al., 2020). Potential reasons include widespread ideals of parental and intergenerational care, scepticism about non-parental care for toddlers, traditional views regarding maternal employment, as well as quality features (Begall et al., 2023; Ruckdeschel, 2015; Stahl & Schober, 2018; Huebener et al., 2023).

In this study, we draw on normative policy feedback theories (Gangl & Ziefle, 2015), which suggest that policies not only affect actual work-care arrangements among the target group of families but also induce normative changes in the wider population through cultural diffusion and norm-setting effects. Improved quality may increase the acceptability of daycare take-up and thereby further enhance parents' work-care options (Hobson, 2011; Yerkes & Javornik, 2019), so that normative changes might translate into behavioural changes. So far, a small body of literature suggests that major expansions in daycare availability for (young) children correlate with more egalitarian ideologies regarding maternal employment among

parents as well as the wider public (Ellingsæter et al., 2017; Zoch & Schober, 2018), while daycare closures triggered a shift towards more traditional ideologies (Huebener et al., forthcoming). Experimental studies in the United States and Germany found that hypothetical improvements in the availability of work-family balance policies or the provision of high-quality daycare are associated with more egalitarian work-care preferences among the (potential) target population, particularly among women (Bünning & Hipp, 2022; Pedulla & Thébaud, 2015).

We expand the literature by shifting the focus from daycare provision more generally to public daycare *quality* for normative beliefs around parental care and work. Studying normative work-care beliefs is important, as individuals' own beliefs as well as the social expectations they encounter provide orientation, opportunities and constraints for work-care decisions (Bicchieri, 2017; Kremer, 2007). We form our assumptions based on capability-based explanations (Hobson, 2011; Yerkes & Javornik, 2019) combined with parental ideals of care (Kremer, 2007). We use a factorial survey implemented in the German family panel (pairfam) to provide experimental evidence on whether increased public daycare quality for toddlers changes parental care ideals and increases the acceptance of extended employment hours for mothers and fathers as well as daycare use. We focus on families with children under age three, as scepticism towards formal daycare is higher and care norms for children in this age group are more in flux than for children aged three to five (Gambaro et al., 2023). We further contribute to the literature by investigating whether daycare quality improvements shape work-care norms differently across population subgroups to shed light on their potential for reducing social inequalities in daycare use, child outcomes and maternal labour market outcomes.

Conceptual framework and empirical evidence

We draw on the capabilities approach (Sen, 1992) and combine it with ideals of childcare (Kremer, 2007) and normative policy feedback theories (Gangl & Ziefle, 2015) to conceptualise the role of daycare quality for work-care norms. *Capabilities* are the options and perceived alternatives from which individuals can choose to achieve their desired outcome (*achieved functioning*) (Sen, 1992; Yerkes & Javornik, 2019). Daycare can be seen as a resource (*means*) that individuals draw on to achieve their preferred work-care arrangement (Yerkes & Javornik, 2019). However, individuals' ability to use formal daycare for their children and thus their opportunities regarding the arrangement of childcare and paid work are shaped by *conversion factors*, the social context in the form of macro-level influences (e.g. social norms around work

and care) and by personal circumstances (e.g. partners' relative income constellation) (Hobson, 2011; Yerkes & Javornik, 2019). Childcare ideals are one important macro-level conversion factor. They define what is considered appropriate care in terms of *how much, where, by whom and how* care should be given (Kremer, 2007). Approval may vary across different care providers, e.g., mothers, fathers, grandparents or professional childminders, but may also refer to specific childcare practices by each type of provider. Care ideals tend to be highly gendered and constructed with reference to mothers' care. For example, ideals of full-time maternal care, parental sharing, intergenerational care, surrogate maternal care, and professional care can be identified in European countries (Kremer, 2007). Not living up to the dominant ideal may be socially sanctioned, creating feelings of parental guilt and being judged by other parents (Kremer, 2007).

For children under age three, ideals of parental care are widespread in Germany as well as several other European countries (Begall et al., 2023; Ruckdeschel, 2015). In 2020, 63 percent of parents with a one-year-old child expressed a preference and need for a daycare slot in Germany (Huebener et al., 2023). In line with widespread ideals of parental care, parents who did not use any daycare mostly considered their child too young, but one third also pointed to concrete quality concerns (Huebener et al., 2023; Jessen et al., 2020). Daycare quality relates to how much care is provided (e.g., child-teacher ratio), who provides care (e.g., highly qualified staff), where care is provided (e.g., movement-friendly rooms), and how care is provided (e.g., cognitive stimulation, promoting the social and emotional development of young children) (BMFSFJ, 2022; Kluczniok & Roßbach, 2014; Tietze et al., 2013). High-quality daycare for toddlers is more likely to be perceived as a “good enough” substitute for maternal/parental care.

Following normative policy feedback theories (Gangl & Ziefle, 2015), daycare policies can change social norms by signalling what is considered a legitimate and acceptable work-care arrangement. If policies enhance daycare quality and these improvements are perceived accordingly by the public, formal daycare is more likely to be considered a suitable and legitimate alternative to care by parents (mothers), grandparents or other informal caretakers. Such shifts from parental care ideals to professional care ideals as a conversion factor are assumed to increase the extent to which parents express a preference and need for daycare and can actually make use of available daycare slots.

To date, the role of daycare quality for social norms around daycare use and parental employment has not been studied. However, a few studies found positive associations between structural daycare quality and networking with parents, which constitute two important

dimensions of pedagogical quality (Kluczniok & Roßbach, 2014; Tietze et al., 2013), and increased maternal employment and working hours preferences in Germany (Bünning & Hipp, 2022; Schober & Spiess, 2015; Stahl & Schober, 2020). Structural quality comprises quantifiable and regulable features of the daycare context, such as child-teacher ratios, whereas networking with parents comprises information and advising for parents and conversations about the child's development. Less observable quality dimensions relating to pedagogical processes and teachers' orientations have not been considered yet. Stahl and Schober (2020) found that German mothers increased their employment hours to a greater extent when using higher quality daycare in terms of teacher-child ratios, learning activities for children and offered services for parents. No effects were found for smaller group sizes and more play materials (Stahl & Schober, 2020). In another German cross-sectional study, mothers in Eastern Germany with a child under age 3 who lived in a district with a smaller average group size were more likely to be employed and to extend their employment hours (Schober & Spiess, 2015). However, regional daycare quality was not significantly related to the employment of mothers with toddlers in Western Germany (Schober & Spiess, 2015). However, both studies were unable to control for variations in mothers' career aspirations or gender ideologies, which might be linked to their career aspirations and investments in searching for a high-quality daycare slot. Additionally, the analyses of regional quality levels might have underestimated the variation in quality. One experimental study analysed the effects of daycare quality on work-care preferences. In a vignette experiment, Bünning and Hipp (2022) studied the effect of a hypothetical policy setting with affordable high-quality daycare for children of all ages on employment hours preferences of parents with children under 13 in Germany. What respondents define as high-quality and affordable daycare was left to the respondents' interpretation. Mothers, but not fathers, were found to prefer longer working hours if affordable high-quality daycare was available (Bünning & Hipp, 2022).

We extend existing studies, which mostly relied on (quasi-)observational methods and restricted their sample to parents, particularly mothers, as the target group of such policies, in several ways: First, based on a factorial survey experiment, we study how overall (perceived) daycare quality shapes social norms around parental work and care in families with toddlers. Second, we take a couple perspective to simultaneously explore norms around care and work arrangements for both parents. Finally, we explore heterogeneous effects among respondents with varying gender ideologies, educational level, immigrant background as well as their parenthood status.

Empirical expectations

The empirical analysis explores how the availability of a daycare slot in a daycare facility with high quality compared to only medium quality relates to normative judgements about work-care arrangements for hypothetical couples with toddlers in Germany. In this hypothetical scenario, only parental care and formal daycare are available. Our focus therefore lies on ideals of maternal care and parental sharing versus ideals of professional care, excluding intergenerational care and surrogate mother care (Kremer, 2007). Normative judgements capture individuals' personal normative beliefs, i.e. what they think about how other couples should divide paid work (Bicchieri, 2017), and not their personal preferences or behaviours. More specific than general gender ideologies, they capture which work-care arrangement respondents would recommend in specific family constellations.

High daycare quality is assumed to weaken ideals of parental care as conversion factors, increasing the acceptability of formal daycare. Given that these childcare ideals are often based on traditional assumptions of the mother as primary caregiver (Kremer, 2007; Ruckdeschel, 2015), higher daycare quality might particularly weaken maternal care ideals and increase acceptance of mothers returning to work or increasing their employment hours. Variations in daycare quality might be less relevant for paternal care ideals and fathers' employment (Bünning & Hipp, 2022). Therefore, we expect that a slot in a daycare facility of higher compared to medium quality increases normative support for extended take-up of daycare (H1a) and extended maternal employment hours (H1b), while not significantly altering normative judgements regarding paternal working hours (H1c).

Following the capabilities perspective, individual circumstances can also act as conversion factors and moderate the relationship between parents' means and work-care capabilities. We investigate how individuals' gender ideologies, education, immigrant background and parenthood status moderate the relationship between daycare quality and the normative acceptance of different parental work-care arrangements. For analytical clarity, we present the underlying mechanisms separately, although they overlap.

Individuals' gender ideologies can be defined as rather general and frequently multidimensional attitudes regarding men's and women's traits and responsibilities in work and care roles (Begall et al., 2023), which are likely to influence more specific, situated normative judgements of couples' work-care arrangements. We focus on gender ideologies toward the public sphere with respect to maternal employment. Respondents with traditional gender ideologies in this domain are more likely to adhere to traditional ideals of maternal care and reduced employment, irrespective of variation in daycare quality. In contrast, respondents with

egalitarian gender ideologies will tend to prefer extended maternal employment hours and be more open to extended daycare take-up. They might also be more responsive to improvements in daycare quality because they are more likely to consider using formal daycare for longer periods. We therefore expect that high daycare quality increases normative support for extended daycare use (H2a) and extended maternal employment (H2b) more strongly among respondents with more egalitarian gender ideologies than among those with more traditional gender ideologies.

Moreover, respondents' educational level might shape the relevance of daycare quality for work-care beliefs. In Germany, the highly educated tend to hold more egalitarian gender ideologies (Begall et al., 2023) and prefer and use daycare for toddlers more often (Huebener et al., 2023), although they also tend to devote more time to interactive childcare, including playing, teaching and reading to their children, than the lower educated (Blaurock & Kluczniok, 2019; Dotti Sani & Treas, 2016; Schulz & Engelhardt, 2017). Daycare scepticism and concerns about daycare quality are slightly more widespread among the lower educated (Huebener et al., 2023; Jessen et al., 2020; Ruckdeschel, 2015). On the whole, the greater importance attached to mothers' careers, gender equality in family work, and stimulating learning environments for children may make highly educated respondents more responsive to improvements in daycare quality. Hence, higher daycare quality is assumed to more strongly increase normative support for extended take-up of daycare (H3a) and extended maternal employment hours (H3b) among highly educated compared to lower educated respondents.

Work-care beliefs and how they are influenced by quality might further differ by immigrant background. High-quality daycare particularly benefits children from immigrant backgrounds, e.g., by improving their German language skills (van Huizen & Plantenga, 2018). Children who do not primarily speak German at home are less likely to get a daycare slot, even and if they do, attend daycare for fewer hours than children from German-speaking families. Their parents also mention quality concerns as a reason for not using daycare more often than parents from non-immigrant backgrounds (Huebener et al., 2023; Jessen et al., 2020). However, non-working mothers in families where German is not the primary language plan to return to the labour market only in the distant rather than the near future (Huebener et al., 2023). This is in line with the finding that individuals with immigrant backgrounds from Eastern Europe, Asia and Africa tend to hold more traditional gender ideologies toward maternal employment and more strongly support the male breadwinner model than native Germans (Gambaro et al., 2023). Thus, higher daycare quality is assumed to more strongly increase normative support for

extended take-up of daycare (H4a) and extended maternal employment hours (H4b) among native Germans compared to those from immigrant backgrounds.

Lastly, daycare quality might be more influential for normative judgements among parents compared to childless respondents. Many prospective or new parents have been found to actively seek out information about parenting, childcare and child development from social networks as well as professionals (Barimani et al., 2017). In addition, as a result of their own experiences, parents are likely to be more aware of the relevance and importance of daycare quality when recommending work-care arrangements for parents of toddlers than childless respondents. Therefore, we assume that the availability of a slot in a very high-quality daycare centre will increase support for extended take-up of daycare (H5a) and longer maternal employment hours (H5b) more strongly among parents (with young children) compared to childless individuals.

German context

While half-day daycare slots have been guaranteed to all children between ages 3 and 6 in Germany since 1996, daycare availability for children under age 3 has been traditionally low, especially in Western Germany (Jessen et al., 2020). Since the 2000s, major reforms regarding daycare policies have been implemented in Germany: These reforms focussed on increasing the universal availability and accessibility of daycare for children under age 3. Since August 2013, all children aged 1 and above have been granted a legal entitlement to a public daycare slot (Zoch & Schober, 2018). Consequently, between 2006 and 2021, the average attendance rate for children under age 3 increased from 8 to 31 percent in Western Germany and from 40 to 53 percent in Eastern Germany (Kayed et al., 2023; Zoch & Schober, 2018). The preference for a daycare slot has risen more slowly in Western Germany and among lower educated parents than for other groups (Jessen et al., 2020), and most parents prefer and use daycare for less than 35 hours per week (Kayed et al., 2023). Along with take-up differences, gender ideologies differ between Eastern and Western Germany, with stronger support for maternal full-time employment among those born in the East (Gambaro et al., 2023).

Daycare is mostly provided by public or non-profit providers and parents' fees are mostly income-dependent (Schröder et al., 2015) and relatively low. Minimum quality standards regarding aspects such as child-teacher ratios vary considerably between Eastern and Western Germany and across federal states and partly fall short of evidence-based recommendations (Bock-Famulla et al., 2023). For instance, for children below age three (OECD, 2022), child-

teacher ratios are not required to meet the widely accepted high-quality level of 3:1 (Bertelsmann Stiftung, 2012), but do meet the target of 6:1 set by the European Commission Network on Childcare (1996) and are better than the OECD average of 10:1 and the EU22 average of 9:1 (OECD, 2022). Observed process quality has mostly been evaluated as medium (Tietze et al., 2013). The average quality of daycare for children of all ages in Germany as perceived by the population at large is above the EU average (7.3 vs. 6.7 on a scale from 1 to 10) but lower than in the Scandinavian countries (Eurofund, 2019).

No nationwide quality seals, official websites with quality ratings or the like exist, so families cannot rely on publicly available information on the quality of particular daycare centres. As a consequence, parents in Germany, as well as in other countries, tend to be not well informed about daycare quality and have to rely on their perceptions of daycare quality, which tend to be biased towards observable quality criteria (Bassok et al., 2017; Camehl et al., 2018).

In response to these shortcomings, the German Act on Good Early Childhood Education and Care (“Gute-KiTa-Gesetz”), was enacted in 2019 to improve the regulable structural features (e.g. child-teacher ratio, recruiting and qualification of skilled staff) of daycare quality and reducing daycare fees (BMFSFJ, 2022). The KiTa Quality Act, enacted in 2023, continues these efforts (BMFSFJ, 2023) and the current government has even agreed to implement universal quality standards in Germany-which, however, will be a hard goal to reach.

Overall, Germany provides an interesting country context for studying how (perceived) daycare quality might affect normative beliefs around work-care arrangements in families with toddlers. Due to rather medium actual and perceived daycare quality, variation in quality might play a crucial role for the acceptance of daycare take-up in Germany compared to Nordic social-democratic welfare states, where daycare is universally available and of high-quality. Moreover, Germany provides a setting with strong (maternal) parental care ideals, potentially hampering the effect of mere availability and increasing the relevance of daycare quality for norms around daycare take-up and parental work-care arrangements.

Data and Method

The study draws on data from a factorial survey experiment implemented in 2019/2020 in the German Family Panel (‘Panel Analysis of Intimate Relationships and Family Dynamics’ pairfam) (release 13.0; Brüderl et al., 2022). The pairfam panel began in 2008 with a nationwide random register-based sample of approx. 12,000 individuals from three birth cohorts born in 1971-73, 1981-83, and 1991-93; over time, refreshment samples, new cohorts 2001-2003 and

step-ups (former child respondents) were added. Annual interviews are conducted. Wave 12, which is used here, contains about 8,197 respondents. A detailed description of the study can be found in Huinink et al. (2011).

Factorial surveys are especially useful for measuring underlying social norms under different conditions and are less subject to social desirability bias than direct (single-item) attitude questions (Auspurg & Hinz, 2015). In our case, we aim to measure work-care norms in contexts of varying daycare quality, assuming that these norms are context-specific and that daycare quality constitutes one central contextual feature. To investigate normative judgements of work-care arrangements, we developed a factorial survey experiment in cooperation with the pairfam coordinators (for further information on the experimental design, piloting and data quality checks, see Schober et al., 2022).

Respondents were asked to judge the work-care arrangements of three hypothetical couples with a 15-month-old child. The age of 15 months was chosen because at that time the maximum period of fully paid parental leave in Germany (14 months) has expired. The family situations described (vignettes) varied on seven dimensions: i) daycare centre quality, ii) employer support for part-time work, iii) parental income ratio, iv) promotion prospects, v) couple's standard of living, vi) couple's division of childcare, vii) child temperament. Each vignette dimension varied on at least two categories. (For the detailed introductory text to the vignette module, see Figure A1; for details about the vignette dimensions, see Table A1). We applied a fully randomized factorial design. By embedding the experiment within the large pairfam survey, our study provides sufficient statistical power to test for heterogeneous effects of daycare quality across respondent subgroups.

Operationalization of variables

Recommended work-care arrangements. The dependent variables are respondents' recommendations regarding the extent of daycare take-up and weekly working hours for the mother and the father in the vignette couples. Respondents could indicate whether and for how many hours the hypothetical child should attend daycare on a scale ranging from "no daycare", over "a few hours on some days" and "a half day every day", to full-time described as "a full day every day". Respondents were asked to recommend mothers' and fathers' paid working hours in the coming years on a seven-point scale ranging from '0 hours per week', '1-8 hours per week', '9-17 hours per week', '18-25 hours per week', '26-32 hours per week', '33-40 hours per week' and 'more than 40 hours per week'. Whether respondents first had to judge the mother's or the father's employment was randomly varied. For the analysis, we recoded the

parental working hour categories into metric variables, taking the middle value of each category (0, 4.5, 13, 21.5, 29, 36.5, 44). In addition, to capture non-linear variations in couples' combined working hours, we built a categorical variable distinguishing between the following models: i) 'Male breadwinner', consisting of a father working full-time and a mother who is not employed or working part-time for relatively few hours (Mother: 0-17h, Father: 33+h), ii) 'Father full-time/mother long part-time' (Mother: 18-32h, Father: 33+h), iii) 'Dual part-time' (Mother: 1-32h, Father: 1-32h), iv) 'Dual full-time' (Mother: 33+h, Father: 33+h) and v) 'Female breadwinner', with a mother who works longer hours than the father.

Independent variables on the vignette level. Our central independent variable is the level of daycare quality. The vignettes stated that the hypothetical couples were offered a slot for their child in a daycare centre, whose quality was described as either medium or high. We distinguished between medium and high daycare quality because daycare centre quality in Germany has mostly been evaluated as medium and low quality is rare. Our experiment therefore portrays a situation in which the quality of the specific daycare centre is known and trusted by the parents.

Independent variables on the respondent level. Gender ideologies toward the public sphere with respect to maternal employment were measured with one item focussing on consequences of maternal employment for child development: "A child under 6 suffers if the mother is employed". Responses originally ranged from 1 (totally disagree) to 5 (totally agree). The item was recoded so that higher values indicate stronger egalitarianism. Due to the skewed distribution, we further distinguished between traditional and moderate/undecided (3-5, recoded to 1), egalitarian (2, coded to 2) and very egalitarian respondents (1, recoded to 3). We used this item due to its closest match with work-care considerations. The four gender ideology items available in pairfam did not correlate sufficiently to combine any of them into a summary index. Based on the Casmin variable, we distinguished between whether respondents held a tertiary educational degree or not. We distinguished between respondents who came from a (first- or second-generation) immigrant background or not. We included respondents' parenthood status, distinguishing between respondents who were childless (1), had a child under age 7 (2), had a child aged 7 to 14 years (3), respondents whose youngest child is older than 14 years or with children living outside the household (4).

Control variables. Due to sample imbalances¹, we controlled for respondents' weekly employment hours (capped at 60 hours per week), tertiary education, federal state and the size

¹ Respondents who did not answer the survey experiment were significantly more likely to be born in cohort 1971-73 compared to the other cohorts, to hold more egalitarian gender ideologies, to be childless, to work longer hours, and to live in the states of Hesse or Mecklenburg-Western Pomerania.

in of the town in which respondents currently live. Additionally, we accounted for whether respondents were male or female, birth cohort, and region (Eastern/Western Germany). We further included the other vignette dimensions to control for the situation on which respondents based their normative judgements. The factorial survey experiment was combined with a priming experiment. We controlled for whether respondents received the short priming information informing them about the existence of a legal entitlement to a daycare slot for children aged 1 and older in Germany since 2013 and the negative economic long-term consequences of long employment interruptions for mothers (for details, see Büchau et al., 2023).

Sample selection and method

In total, 6,285 respondents (18,855 vignette evaluations) received the survey experiment; the unit nonresponse rate to the survey was 3.74%. We kept only respondents with non-missing answers on all dependent variables, thereby losing 2,097 vignette evaluations (11.12%) due to item nonresponse. After excluding observations with missing values on the independent respondent-level variables, our analytical sample consisted of 5,333 respondents and 15,424 vignette evaluations. We applied ordered logistic and linear multilevel models to investigate the effect of daycare quality on normative judgements of parental work-care arrangements. To assess the moderating influences, we included interactions between vignette-level daycare quality and respondents' characteristics such as gender ideologies, educational level, and parenthood status. In addition, we ran multinomial logistic regression to examine the joint probabilities of different recommended parental employment combinations using a slightly smaller sample (15,320 observations of 5,316 respondents)². All data preparation and analysis were conducted using the statistical software Stata 18.

² We intended to run multilevel multinomial logistic regressions to examine the probabilities of different recommended parental employment combinations. However, many models did not converge, so we consistently present the corresponding multinomial logistic regression results. The sample for the employment combinations is slightly smaller because 124 observations recommended very rare employment combinations, such as zero working hours for both partners.

Results

Effect of daycare quality

We expected that higher daycare quality would be associated with recommending more extensive daycare take-up (H1a) and maternal employment hours (H1b), but not with paternal employment hours (H1c). Table 1 shows a significant positive effect of high vs. medium quality for recommended daycare take-up and both maternal and paternal employment hours.

Having been offered a slot in a daycare facility of high quality increased the odds of respondents indicating extended weekly daycare use by a factor of 2.6. The average marginal effects (see Figure 1) show that high daycare quality lowered the probability of respondents recommending no or few hours of daycare by about 2 and 6 percentage points, respectively, while increasing the probability of recommending half-day or full-day daycare by about 0.6 and 8 percentage points, respectively. So, recommendations seem to shift from few hours to full-day daycare usage in the case of high quality.

Having been offered a place in a daycare facility with high compared to medium quality showed a significantly positive effect of about 1 hour more per week for both maternal and paternal recommended employment hours.

Table 1. Ordered logistic multilevel and multilevel regression models of recommended daycare use and parental employment hours

	Recommended daycare take-up (Odds ratio)	Recommended maternal employment hours	Recommended paternal employment hours
High daycare quality (ref. medium)	2.621*** (0.123)	0.782*** (0.129)	0.716*** (0.121)
Cut1	-4.183 (0.265)	-4.183*** (0.265)	-4.183*** (0.265)
Cut 2	-0.564 (0.258)	-0.564 (0.258)	-0.564 (0.258)
Cut 3	4.789 (0.284)	4.789 (0.284)	4.789 (0.284)
Constant		22.673*** (0.642)	27.332*** (0.556)
Number of vignette evaluations	15,424	15,424	15,424
Number of respondents	5,333	5,333	5,333
Wald test χ^2	1422.19	2959.625	2565.967
p-value	0.000	0.000	0.000
Sigma ² u			
Sigma u		6.466	5.241
Sigma e		7.015	6.678
Rho		0.459	0.381

Source: Own calculations based on pairfam data from waves 11 and 12, standard errors in parentheses, including the other vignette dimensions and the following respondent-level control variables: gender, birth cohort, partner, parenthood status, tertiary education, working hours, immigrant background, attitude toward maternal employment, former East Germany, federal state, town size. *** p<0.001, ** p<0.01, * p<0.05

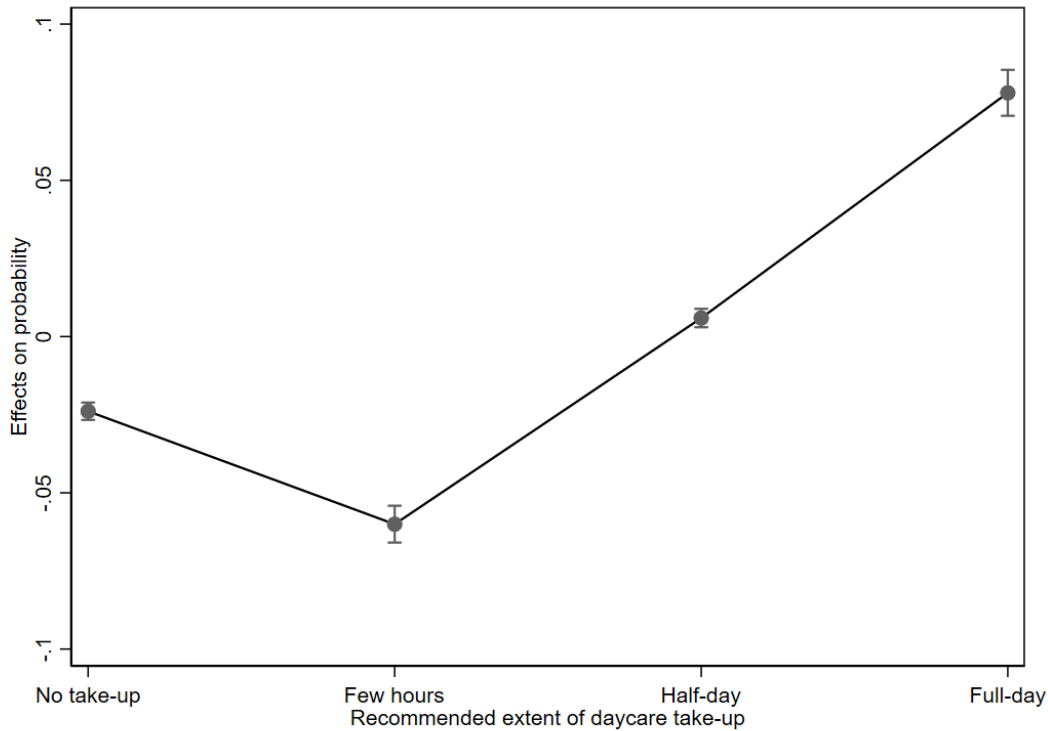


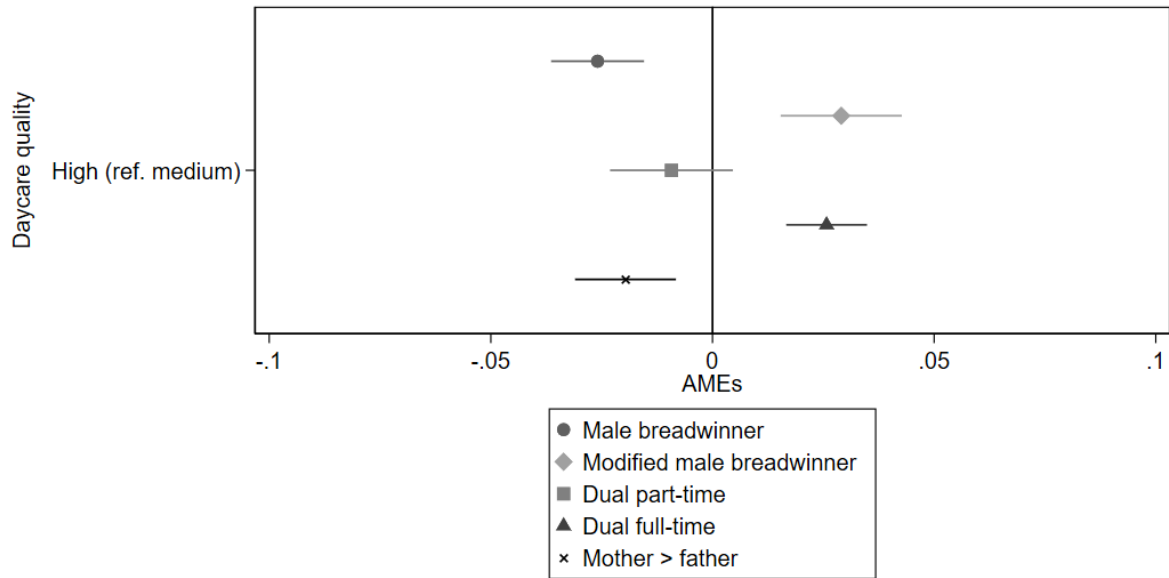
Figure 1. Average marginal effects of high compared to medium daycare quality on recommended daycare use with 95% confidence intervals (based on estimates from Model 1 in Table 1)

Moreover, we tested effects on work-care combinations using multinomial logistic models (see Figure 2 and Table 2). The average marginal effects (see Figure 2) showed that if day-care quality was high (vs. medium), the likelihood of approving a (modified) male breadwinner or dual full-time model increased by 3-4 percentage points each, whereas the likelihood of male or female breadwinner models decreased by 2-3 percentage points each. Moreover, high daycare quality seems to particularly increase the acceptance of most work arrangements combined with full-day daycare (see Figure A2 in the appendix).

Table 2. Multinomial logistic regression of recommended parental employment combinations (relative-risk ratios)

Ref.: Male breadwinner	Father full-time/mother long part-time	Dual part-time	Dual full-time	Mother works more than father
High daycare quality (ref. medium)	1.373***	1.179**	1.640***	1.084
Constant	(0.075)	(0.065)	(0.118)	(0.067)
	0.622**	0.746	0.146***	1.199
	(0.010)	(0.137)	(0.035)	(0.246)
Number of vignette evaluations	15,320			
Number of respondents	5,316			
LR test χ^2	5743.84			
p-value	0.000			

Source: Own calculations based on pairfam data from waves 11 and 12, standard errors in parentheses, control variables as in Table 1. *** p<0.001, ** p<0.01, * p<0.05



Note: Medium daycare quality is the reference category

Figure 2. Average marginal effects of daycare quality with 95% CIs on recommended parental employment constellations (based on estimates in Table 2). Own calculations based on pairfam data from waves 11 and 12.

Heterogeneous effects

We further assumed that respondent characteristics influence the relationship between daycare quality and work-care recommendations. Next to daycare take-up, we focus on the results for the continuous variables of parents' working hours, as the interactions between daycare quality and respondents' characteristics were mostly not significant for the dependent variable of parents' employment constellations (see Tables A2-A5 in appendix).

We expected stronger responses to higher quality among respondents holding more egalitarian gender ideologies toward maternal employment (H2a and H2b). Table 3 shows that when daycare quality was medium, respondents with (very) egalitarian attitudes already supported more egalitarian work-care arrangements and longer daycare use. Regarding the interaction with daycare quality, we find that egalitarian and very egalitarian respondents responded more strongly to increased quality than respondents with traditional attitudes. In line with H2a, suggested half-day take-up decreased by about 1 percentage point more and full-day take-up increased by about 3 percentage points more among very egalitarian respondents in comparison to traditional respondents if quality was high (see Figure 3). The interaction was not significant for recommended maternal employment hours, contradicting H2b. However, (very) egalitarian respondents increased their recommended paternal working hours slightly more strongly if daycare quality was high than respondents holding traditional attitudes (see Table 3 and Figure 4).

Table 3. Ordered logistic multilevel and multilevel regression models of recommended daycare use and parental employment hours on daycare quality interacted with respondents' attitude toward maternal employment

	Recommended daycare take-up (Odds ratio)	Recommended maternal employment hours	Recommended paternal employment hours
High daycare quality (ref. medium)	2.239*** (0.151)	0.814*** (0.194)	0.346 (0.181)
Attitudes toward maternal employment (ref. traditional/moderate)			
Egalitarian	1.655*** (0.191)	2.506*** (0.295)	-0.542* (0.259)
Very egalitarian	3.220*** (0.409)	4.024*** (0.320)	-0.285 (0.281)
Interaction			
High quality x egalitarian	1.237* (0.131)	-0.193 (0.305)	0.626* (0.286)
High quality x very egalitarian	1.488** (0.171)	0.104 (0.323)	0.721* (0.303)
Number of vignette evaluations	15,424	15,424	15,424
Number of respondents	5,333	5,333	5,333
Wald test χ^2	1428.62	2960.248	2574.553
p-value	0.000	0.000	0.000
Sigma ² u	7.594		
Sigma u		6.463	5.241
Sigma e		7.016	6.676
Rho		0.459	0.381

Source: Own calculations of ordered logistic multilevel and multilevel regression models based on pairfam data from waves 11 and 12, standard errors in parentheses. Control variables as in Table 1. *** p<0.001, ** p<0.01, * p<0.05

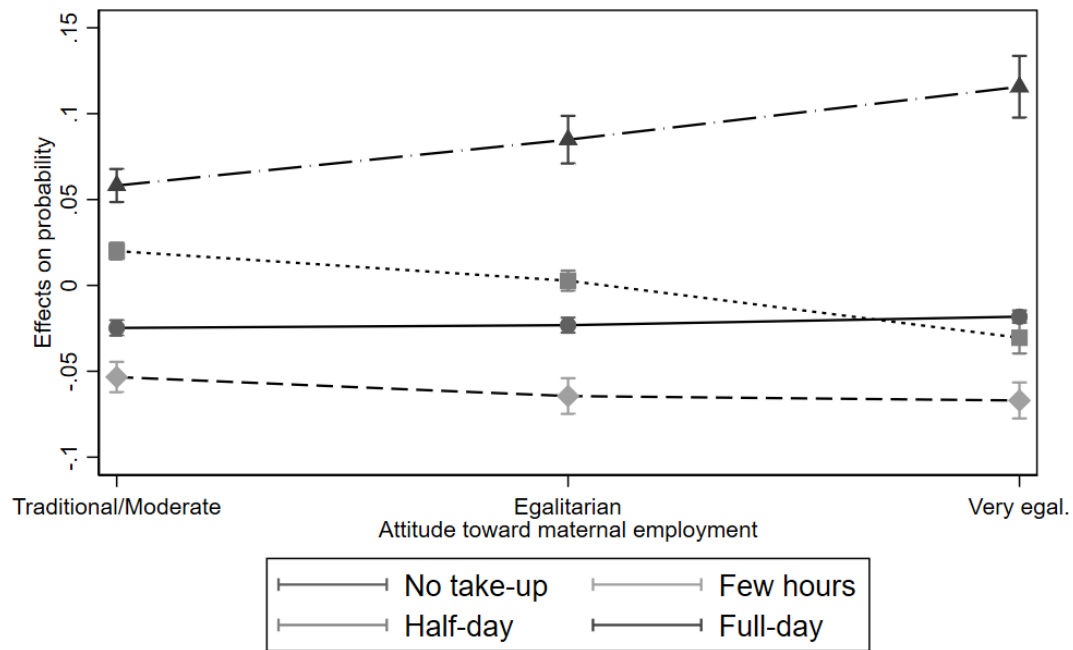


Figure 3. Average marginal effects of high daycare quality on recommended daycare use by respondents' attitude toward maternal employment with 95% confidence intervals (based on estimates from Model 1 in Table 3)

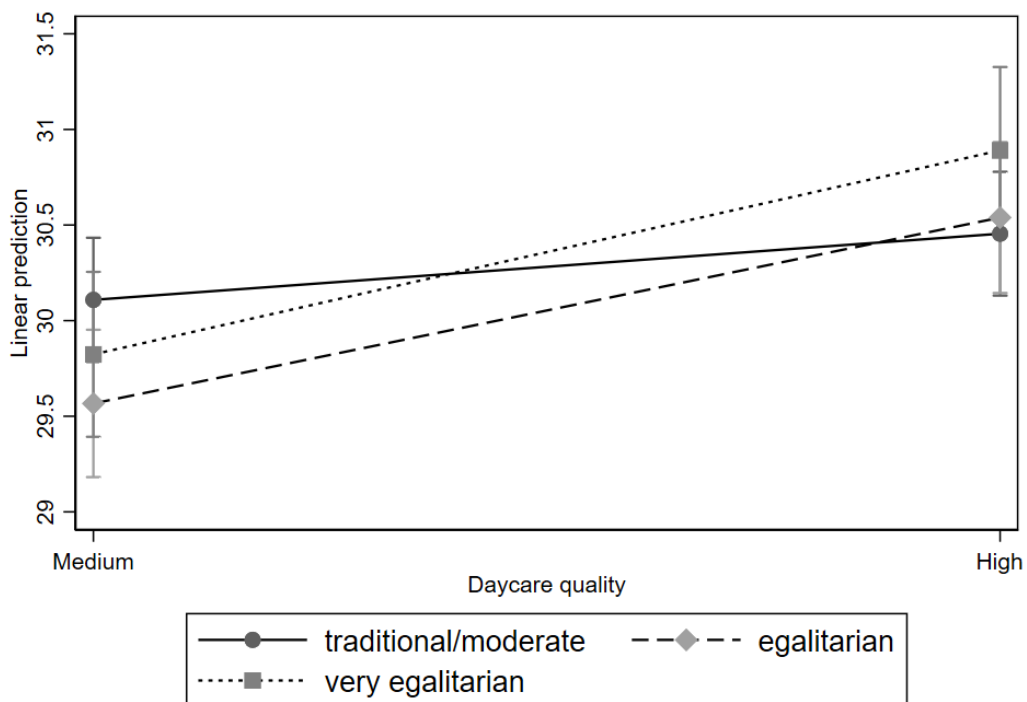


Figure 4. Predictive margins by daycare quality and respondents' attitude toward maternal employment on recommended paternal employment hours with 95% confidence intervals (based on estimates from Model 3 in Table 3)

Furthermore, we hypothesized stronger effects of high daycare quality among highly educated respondents (H3a and H3b). When daycare quality was medium, respondents holding a tertiary degree recommended a significantly less intensive use of daycare, shorter paternal working hours and longer maternal working hours than less educated respondents, supposing that the father should be relatively more involved in childcare (see Table 4). The interaction with daycare quality shows that high daycare quality led respondents with tertiary education to recommend few hours of daycare use less frequently (about 3 percentage points less) and raised recommendations of full-day daycare (by about 4 percentage points more) compared to respondents without tertiary education (see Figure 5). Moreover, if daycare quality was high, respondents with tertiary education supported extending maternal employment (by 0.7 hours per week) to a greater extent than the lower educated (see Table 4). High daycare quality thus seems to widen the educational gap in recommended maternal employment hours (see Figure 6). Overall, the results support Hypothesis 3.

Table 4. Ordered logistic multilevel and multilevel regression models of recommended daycare use and parental employment hours on daycare quality interacted with respondents' level of education

	Recommended daycare take-up (Odds ratio)	Recommended maternal employment hours	Recommended paternal employment hours
High daycare quality (ref. medium)	2.270*** (0.123)	0.590*** (0.152)	0.576*** (0.142)
Tertiary education (ref. No tertiary degree)	0.651*** (0.077)	0.738* (0.300)	-2.208*** (0.262)
Interaction			
High quality x tertiary education	1.706*** (0.174)	0.707* (0.291)	0.514 (0.273)
Number of vignette evaluations	15,424	15,424	15,424
Number of respondents	5,333	5,333	5,333
Wald test χ^2	1438.45	2966.392	2569.924
p-value	0.000	0.000	0.000
Sigma ² u	7.622		
Sigma u		6.468	5.241
Sigma e		7.013	6.678
Rho		0.460	0.381

Source: Own calculations of ordered logistic multilevel and multilevel regression models based on pairfam data from waves 11 and 12, standard errors in parentheses. Control variables as in Table 1. *** p<0.001, ** p<0.01, * p<0.05

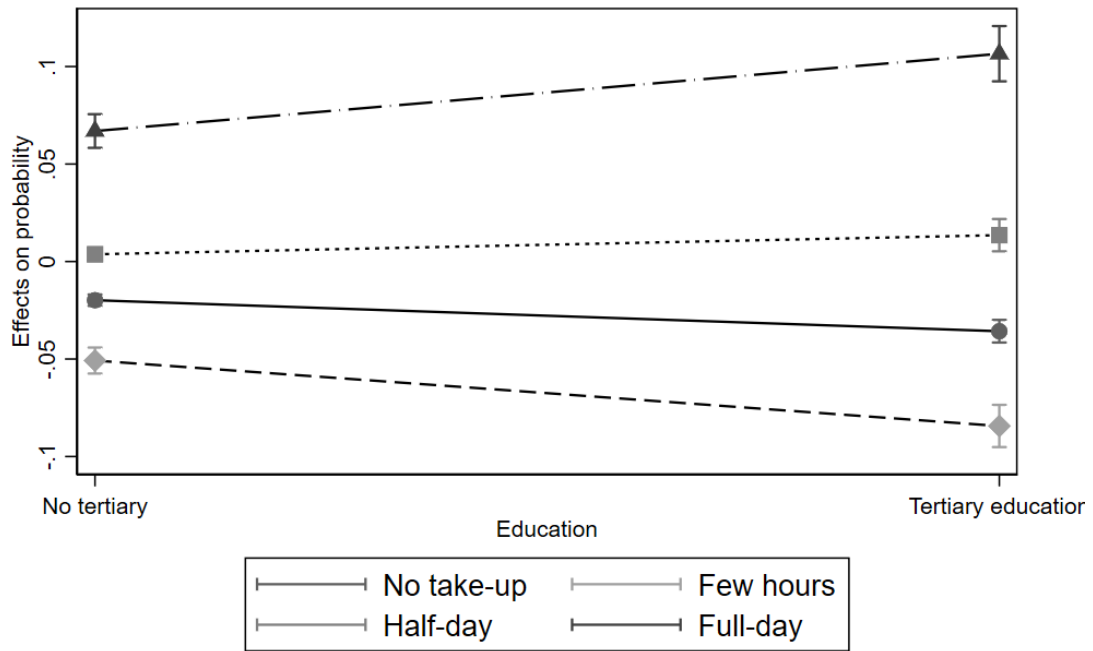


Figure 5. Average marginal effects of high daycare quality on recommended daycare use by respondents' education with 95% confidence intervals (based on estimates from Model 1 in Table 4)

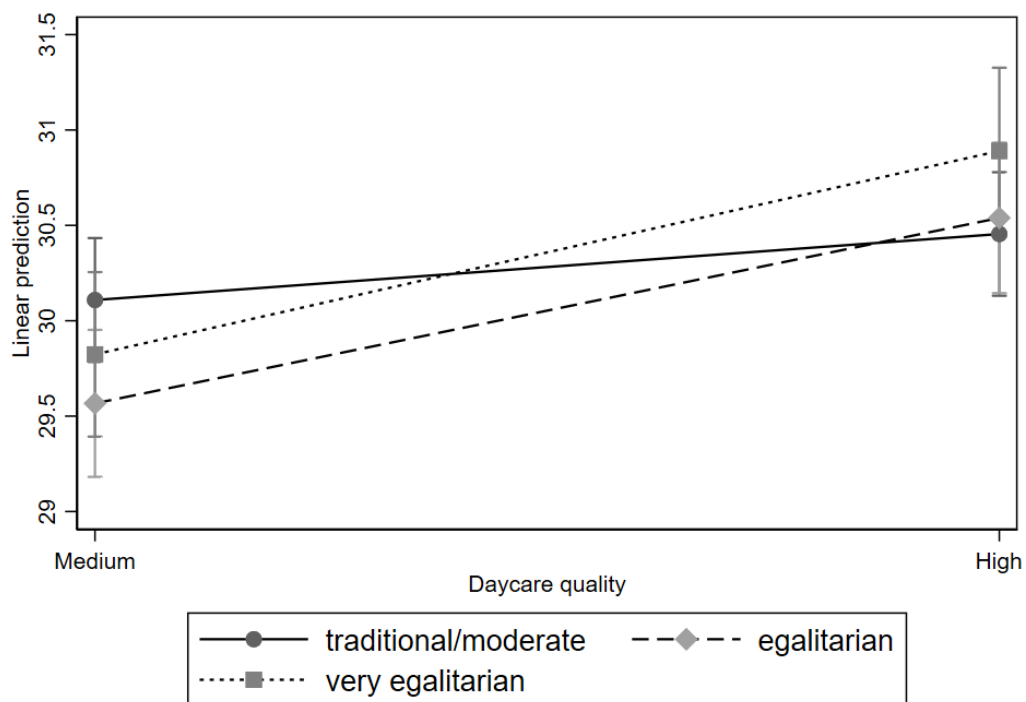


Figure 6. Predictive margins by daycare quality and respondents' level of education on recommended maternal employment hours with 95% confidence intervals (based on estimates from Model 2 in Table 4)

Moreover, we assumed stronger effects of high daycare quality among native Germans compared to those from immigrant backgrounds (H4a and H4b). The interaction effect between daycare quality and respondents' immigrant status was not significant for mothers' or fathers' employment hours (see Table 5). However, in line with H4b, the significant interaction for recommended day-care use shows that high quality increased the probability of recommending full-day care by about 2 percentage points less among respondents from an immigrant background compared to native Germans (see Figure 7).

Table 5. Ordered logistic multilevel and multilevel regression models of recommended daycare use and parental employment hours on daycare quality interacted with respondents' immigrant background

	Recommended daycare take-up (Odds ratio)	Recommended maternal employment hours	Recommended paternal employment hours
High daycare quality (ref. medium)	2.765*** (0.143)	0.893*** (0.143)	0.806*** (0.135)
Immigrant background (ref. non-immigrant background)	1.133 (1.144)	-0.382 (0.327)	1.174*** (0.287)
Interaction			
High quality x immigrant background	0.756* (0.087)	-0.595 (0.333)	-0.486 (0.312)
Number of vignette evaluations	15,424	15,424	15,424
Number of respondents	5,333	5,333	5,333
Wald test χ^2	1425.61		
p-value	0.000	0.000	0.000
Sigma ² u	7.594		
Sigma u		6.464	5.242
Sigma e		7.015	6.678
Rho		0.459	0.381

Source: Own calculations of ordered logistic multilevel and multilevel regression models based on pairfam data from waves 11 and 12, standard errors in parentheses. Control variables as in Table 1. *** p<0.001, ** p<0.01, * p<0.05

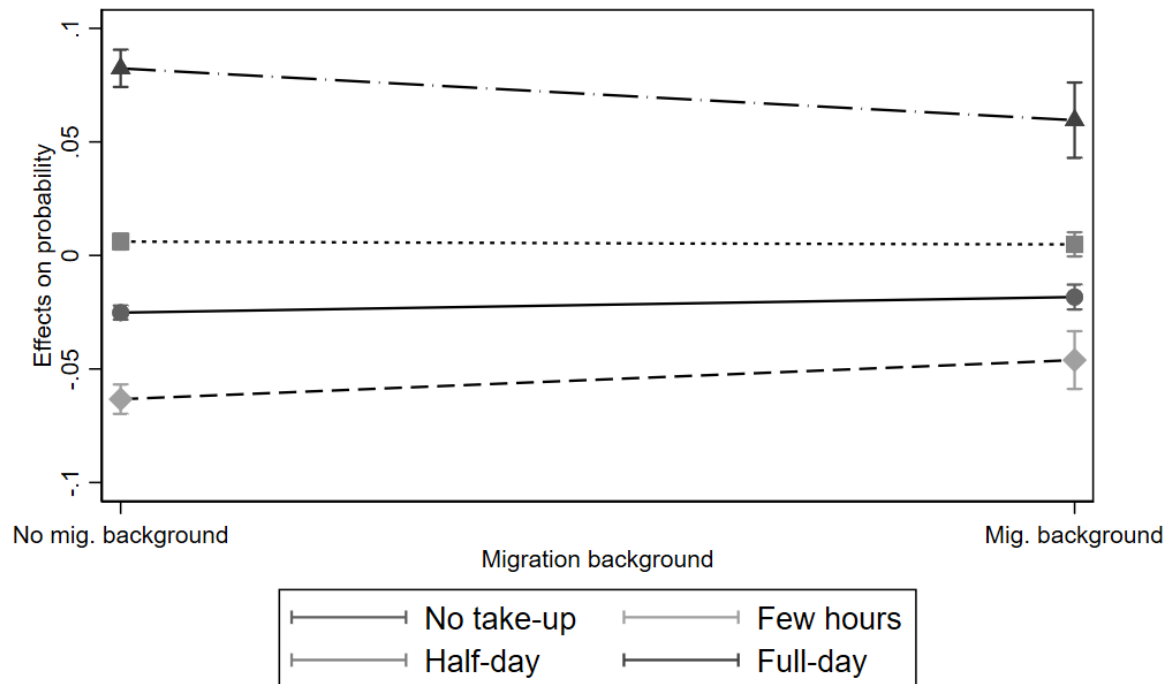


Figure 7. Average marginal effects of high daycare quality on recommended daycare use by respondents' immigrant background with 95% confidence intervals (based on estimates from Model 1 in Table 5)

Finally, we expected that the effects of higher daycare quality would be more pronounced among parents (with young children) compared to childless respondents (H5a and H5b). When daycare quality was medium, parents of young children supported slightly more traditional employment arrangements, with 1 hour less for the mother and 1 hour more for the father, compared to respondents without children. In line with H5a, parents of children under age seven responded to increased quality more strongly, with an increased probability of recommending full-day care (about 3 percentage points higher) compared to childless respondents (see Figure 8). In contrast to H5b, the effect of daycare quality on recommended maternal working hours did not significantly differ by parenthood status (see Table 6).

Table 6. Ordered logistic multilevel and multilevel regression models of recommended daycare use and parental employment hours on daycare quality interacted with respondents' parenthood status

	Recommended daycare take-up (Odds ratio)	Recommended maternal employment hours	Recommended paternal employment hours
High daycare quality (ref. medium)	2.491*** (0.151)	0.698*** (0.173)	0.944*** (0.162)
Parenthood status (ref. childless)			
Youngest child < 7 years	1.121 (0.171)	-0.990* (0.401)	0.767* (0.348)
Youngest child 7-14 years	1.134 (0.205)	-0.121 (0.452)	0.686 (0.393)
Children > 14 years or not living in household	1.302 (0.268)	-0.073 (0.514)	1.340** (0.446)
Interaction			
High quality x youngest child < 7 years	1.395* (0.171)	0.183 (0.347)	-0.277 (0.326)
High quality x youngest child 7-14 years	1.100 (0.149)	0.194 (0.384)	-0.335 (0.360)
High quality x children > 14 or not in hh	0.816 (0.124)	0.210 (0.428)	-1.179** (0.401)
Number of vignette evaluations	15,424	15,424	15,424
Number of respondents	5,333	5,333	5,333
Wald test χ^2	1428.02	2959.795	2575.373
p-value	0.000	0.000	0.000
Sigma ² u	7.605		
Sigma u		6.463	5.233
Sigma e		7.016	6.678
Rho		0.459	0.380

Source: Own calculations of ordered logistic multilevel and multilevel regression models based on pairfam data from waves 11 and 12, standard errors in parentheses. Control variables as in Table 1. *** p<0.001, ** p<0.01, * p<0.05

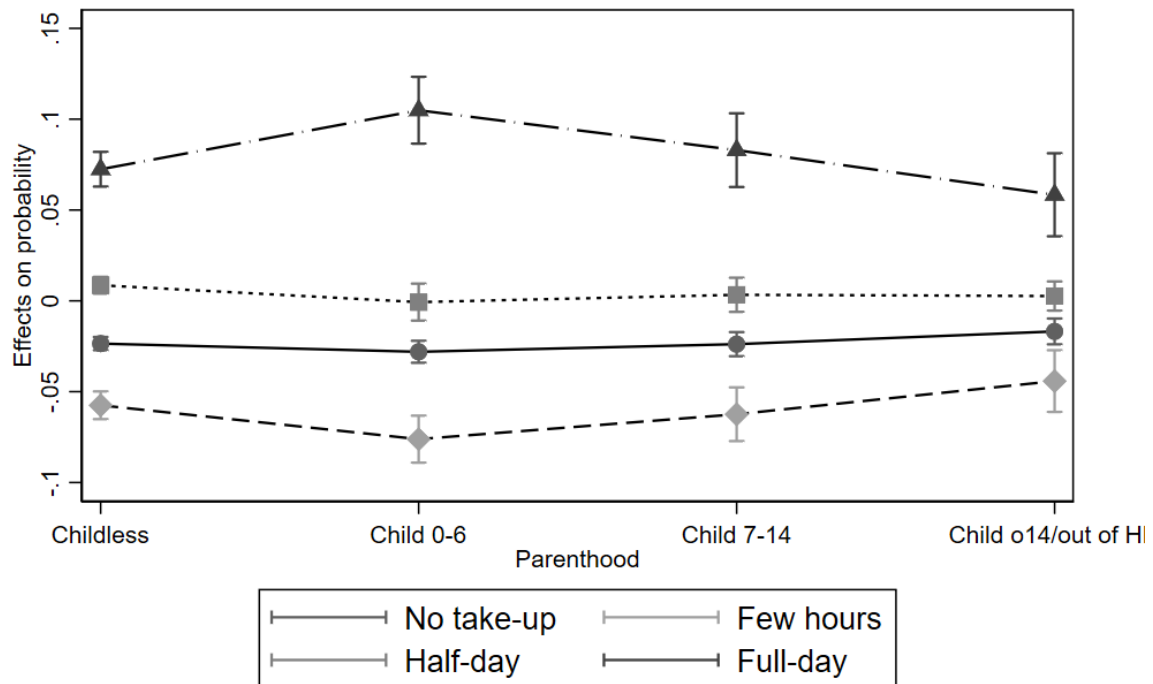


Figure 8. Average marginal effects of high daycare quality on recommended daycare use by respondents' parenthood status with 95% confidence intervals (based on estimates from Model 1 in Table 6)

Sensitivity analyses

First, we tested alternative specifications of the dependent variables: We ran ordered logistic multilevel models with the original categorical variables for normative judgements of parents' employment hours, which yielded similar results for our main analysis (see Table A6).

Second, we tested alternative specifications of the moderating variables. Using an alternative gender ideology measure ("Women should be more concerned about their family than about their career") showed similar interactions for very egalitarian respondents but non-significant interactions for egalitarian ones (see Table A7).

Third, the effect of higher daycare quality mostly did not differ between respondents living in Eastern or Western Germany and between men and women (not shown). Also, interactions testing whether daycare quality matters more for normative judgements if the child presented in the vignettes adjusted easily vs. had difficulties adjusting to new environments and people were not significant (not shown).

Finally, we reran our main analysis without respondent-level control variables; it did not change the results (see Tables A9 and A10 in appendix).

Conclusion

This experimental study investigated the role of daycare quality for social norms around work-care arrangements for parents with young children in Germany. Based on capability explanations (Hobson, 2011; Yerkes & Javornik, 2019) combined with ideals of parental care (Kremer, 2007) and normative policy feedback theories (Gangl & Ziefle, 2015), we argued that high daycare quality weakens maternal (parental) care ideals and thereby increases normative support for extended daycare use and maternal employment, overall enhancing parents' work-care capabilities.

Based on a factorial survey experiment in a large representative German panel study (pairfam), our results showed that being offered a slot in a daycare facility of high quality was associated with stronger normative support for extended take-up of (full-day) daycare. This implies that perceived high-quality daycare may make daycare (even full-day daycare) a more acceptable substitute for (maternal) parental care than if it is perceived to be of medium quality. At the same time, high-level daycare quality moderately increased support for modified breadwinner and dual full-time constellations for parents of toddlers. Our findings resonate with existing experimental evidence of small positive effect of daycare quality on maternal employment preferences (Bünning & Hipp, 2022), although we also find effects on fathers' employment hours.

Our findings point to the potential of (perceived) high-quality daycare for weakening traditional norms around work and childcare and promoting greater acceptance of institutional childcare in a context like Germany with strong, persistent norms around parental and family care for young children. If norms were to change following improvements in daycare quality, parents might be more open to using (extended) daycare for their children, which would at the same time allow mothers, in particular, to increase their paid employment. Even if high quality seems to only slightly increase the acceptance of longer maternal employment hours, greater normative acceptance and use of full-day formal care may foster positive effects on maternal subjective well-being (Schober & Stahl, 2016).

Notably, we found that respondents who held more egalitarian attitudes toward maternal employment responded more strongly to increased levels of quality by increasing their support for (full-day) daycare use and extended paternal working hours. This suggests that egalitarian respondents expected fathers to reduce their working hours less in a context of high quality compared to medium quality, which may reduce the otherwise slightly positive effects on gender equality in the division of paid work. Relatedly, highly educated respondents adjusted their normative beliefs more strongly towards (full-day) daycare and extended maternal

employment than the lower educated. Higher daycare quality seems to particularly resonate with greater support for gender equality in employment and family work among the highly educated as well as address their expectations regarding children's cognitive stimulation and time/resource investment. Similarly, high daycare quality was related to more extended daycare take-up recommendations among native Germans than among respondents from immigrant backgrounds. While a high level of daycare quality has been shown to disproportionately benefit developmental outcomes among children from disadvantaged families (Schmutz, 2024; van Huizen & Plantenga, 2018), the stronger normative acceptance among the higher educated and native-born may reduce such potential benefits of daycare quality improvements by exacerbating existing social inequalities in day-care take-up and maternal employment, at least in the short-term (Jessen et al., 2020; Stahl & Schober, 2018). As long as daycare quality varies substantially, it is unlikely that existing social disparities in attitudes towards and take-up of daycare will be reduced until existing excess demand among all groups is met (Huebener et al., 2023) and high-quality publicly funded daycare is universally accessible to all children and becomes widely accepted across the population.

Finally, our findings suggest that high daycare quality was more important for increasing support for extended (full-day) care use among parents of young children, whereas work-care beliefs among childless respondents and parents of older children varied less strongly with quality. This suggests that the weakening of parental care ideals and subsequent increase in capabilities might be strongest among the target group of daycare policies. However, it also points to the relevance of providing information on daycare quality and underlines the importance of current national and international political attempts to define key principles of daycare quality, e.g., by the European Commission (2014). To foster the widespread normative acceptability of daycare among current and future parents as well as the wider public, improvements in daycare quality need to be transparent and clearly communicated to the public and particularly to parents (as potential users) to reduce information mismatches (Camehl et al., 2018). For example, governments may create incentives for daycare centres themselves to (regularly) provide more information to parents who apply to and send their child to the institution. Moreover, especially as quality standards vary regionally in Germany, a nationwide accreditation system would help to establish a common understanding of good (minimum) quality standards (Spiess & Tietze, 2002). The planned "Quality Development Act" would be a step toward such nationwide standards for daycare quality (BMFSFJ, 2023). Our results point to potential positive effects of increasing daycare quality not only on daycare take-up and thus child development but also on parental working hours. Although the effects were of modest

strength, given the shrinking workforce due to demographic aging, measures to increase maternal working hours are essential.

This study's findings are likely to be transferable to other countries with strict norms regarding childcare and maternal employment and with strong (regional) variation in the quality of public or private daycare (e.g., the US, UK, Netherlands, Southern Europe). However, such normative shifts are less likely to occur in countries with widespread acceptance of daycare or early school entry, such as France or Belgium, or with more universal high-quality daycare provision and substantially more egalitarian work-care beliefs, such as Scandinavia. The results of this study might also not be easily transferable to countries where daycare quality is currently significantly lower. In this case, more research is needed to see whether different mechanisms may be underlying changes in work-care norms across different social groups.

Some limitations are worth noting. First, in our study, daycare quality was a general and rather abstract construct based on parents' subjective perceptions as described in the vignette. We assumed that the quality of the specific daycare centre is known and trusted by the parents presented in our experiment. We did not examine the effects of specific daycare quality dimensions. Due to substantial regional variations in average opening hours of daycare centres in Germany, the number of hours respondents associate with a "full-day" slot may vary across regions. However, additional sensitivity tests of variations between Eastern and Western Germany indicated qualitatively very similar relationships in both regions. In addition, the gender ideology items available in our data only measure rejection of traditional standpoints and are not well suited to capturing variation at the egalitarian end of the spectrum, e.g., different types of egalitarianism (Begall et al., 2023). Future studies should aim at including multidimensional gender ideologies, which might show more variation in countries like Germany where work-family policies do not coherently support one work-family model.

All in all, our experimental study provides evidence for the relevance of high-quality daycare for social norms around work and care. Especially in country contexts with strong traditional norms around work-care arrangements in families with young children and variability in daycare quality, high quality represents a resource to weaken traditional care ideals and increase parents' perceived options and capabilities to choose work-care arrangements they value. Over time, these normative shifts induced by daycare quality improvements may translate into changes in parental work-care arrangements, but at least in the short-term, are likely to have effects on extended day-care take-up for young children and limited effects on promoting a more gender-equal division of labour. This underlines the importance of concerted efforts to expand daycare availability as well as quality.

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Appendix

In the following, we are interested in how you assess the compatibility of employment and childcare for couples with a young child.

We will now present 3 exemplary couples whose first child is at the age of 15 months.

In each of the examples, the parents are about 30 years old, equally well educated and have unlimited-term employment contracts. Both parents have daytime-only jobs and do not have to travel for work or have a long commute and worked full time before the birth of the 15-month-old child.

The child can be looked after by the parents or in a daycare center (covering day nursery, crèche or publicly funded family daycare), another option (e.g., grandparents or an au pair) is not available.

Please indicate in each case how much the parents should work for pay and for how long the child should attend daycare. There are no right or wrong answers. We are only interested in your personal opinion.

Case Study 1

Before the birth of the child, the mother earned more than the father.

Until now, the child has been cared for primarily by the mother and quickly adapts to new environments and people.

The family has now been offered a slot for their child in a daycare center of high quality.

The income from one full-time or two part-time jobs would not be sufficient to maintain the family's desired standard of living.

The mother has good prospects of promotion and career advancement at her job, but the father doesn't. The mother's employer supports career breaks or part-time work for parents, the father's employer does not.

In your opinion, what is the best way for this family to arrange paid employment and childcare in the upcoming years?

How many hours should the mother spend working at her job per week?

Not at all (0 hours)	1 to 8 hours	9 to 17 hours	18 to 25 hours	26 to 32 hours	33 to 40 hours	Over 40 hours
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How many hours should the father spend working at his job per week?

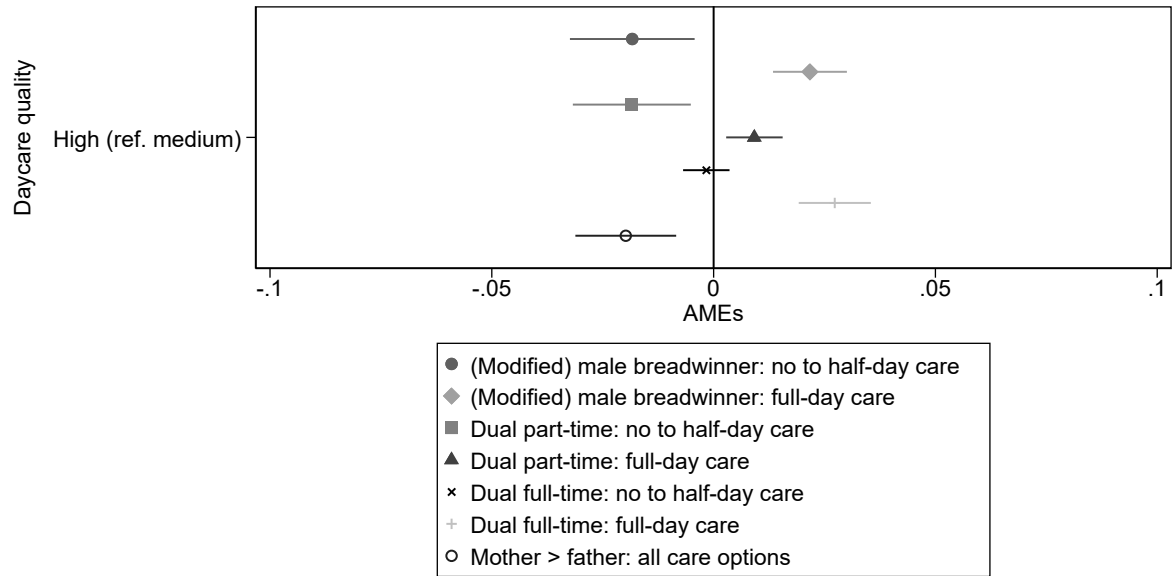
Not at all (0 hours)	1 to 8 hours	9 to 17 hours	18 to 25 hours	26 to 32 hours	33 to 40 hours	Over 40 hours
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The child should ...

Not attend daycare.	Only attend daycare for a few hours on selected days.	Attend daycare every day, half-day.	Attend daycare every day, full-time.
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure A1. Introductory text to the vignette module and example of a vignette (varied vignette dimensions underlined)

Note: English translation from German. In the German original vignette, we used the terms "Kindertageseinrichtung", "Kinderkrippe" and "Tagesmutter" to specify what is understood as a daycare centre. Kindertageseinrichtung refers to publicly funded daycare centres. Kinderkrippen are daycare centres specifically for children under age three. Tagesmutter refers to publicly funded family daycare. The different options for the extent of daycare take-up represent the typically available options in Germany.



Note: Medium daycare quality is the reference category

Figure A2. Average marginal effects of daycare quality with 95% CIs on recommended family constellations. Own calculations based on pairfam data from waves 11 and 12.

Table A1. Variation of vignettes

7 Dimensions	2-4 Levels
Income	Mother more Father more About equal
Division of childcare/parental leave so far	Mainly mother Mainly father Equally
Child temperament	Difficulties adapting Adapts easily
Daycare center quality	Medium quality High quality
Standard of living	Income not sufficient Income sufficient
Promotion prospects	Only mother Only father Both None
Employer part-time support	Only mother Only father Both None

Note: English translation from German.

Table A2. Multinomial logistic regression of recommended parental employment combinations (relative-risk ratios) on the interaction between daycare quality and respondents' gender ideology

Ref.: Male breadwinner	Father full-time/ mother long part-time	Dual part-time	Dual full-time	Female breadwinner
High daycare quality (ref. medium)	1.473*** (0.109)	1.263** (0.094)	1.660*** (0.181)	1.189* (0.105)
Gender ideology (ref. traditional/moderate)				
Egalitarian	1.681*** (0.171)	1.584*** (0.161)	2.218*** (0.334)	2.072*** (0.221)
Very egalitarian	2.563*** (0.310)	2.224*** (0.269)	4.670*** (0.748)	3.193*** (0.413)
Interaction				
High quality x egalitarian ideology	0.826 (0.108)	0.847 (0.110)	0.800 (0.142)	0.822 (0.119)
High quality x very egalitarian ideology	0.886 (0.131)	0.861 (0.131)	1.053 (0.193)	0.821 (0.136)
Constant	0.602* (0.129)	0.723 (0.162)	0.145*** (0.046)	1.148 (0.269)
Number of vignette evaluations	15,320			
Number of respondents	5,316			
LR test χ^2	3,616			
p-value	0.000			

Source: Own calculations based on pairfam data from waves 11 and 12, standard errors in parentheses, control variables as in Table 1. *** p<0.001, ** p<0.01, * p<0.05

Table A3. Multinomial logistic regression of recommended parental employment combinations (relative-risk ratios) on the interaction between daycare quality and respondents' level of education

Ref.: Male breadwinner	Father full-time/ mother long part-time	Dual part-time	Dual full-time	Female breadwinner
High daycare quality (ref. medium)	1.359*** (0.084)	1.216* (0.077)	1.503*** (0.125)	1.086 (0.079)
Tertiary education (ref. no tertiary degree)	0.864 (0.094)	2.052*** (0.219)	1.109 (0.168)	1.892*** (0.211)
Interaction				
High quality x tertiary education	1.043 (0.136)	0.906 (0.115)	1.363 (0.229)	0.999 (0.138)
Constant	0.625* (0.134)	0.736 (0.164)	0.153*** (0.048)	1.198 (0.279)
Number of vignette evaluations	15,320			
Number of respondents	5,316			
Wald test χ^2	3612.98			
p-value	0.000			

Source: Own calculations based on pairfam data from waves 11 and 12, standard errors in parentheses, control variables as in Table 1. *** p<0.001, ** p<0.01, * p<0.05

Table A4. Multinomial logistic regression of recommended parental employment combinations (relative-risk ratios) on the interaction between daycare quality and respondents' immigrant background

Ref.: Male breadwinner	Father full-time/ mother long part-time	Dual part-time	Dual full-time	Female breadwinner
High daycare quality (ref. medium)	1.434*** (0.089)	1.150* (0.072)	1.669*** (0.135)	1.127 (0.078)
Immigrant background (ref. non-immigrant background)	1.201 (0.131)	0.807* (0.088)	1.060 (0.174)	0.770* (0.091)
Interaction				
High quality x immigrant background	0.807 (0.106)	1.150 (0.152)	0.923 (0.171)	0.804 (0.125)
Constant	0.608* (0.130)	0.755 (0.168)	0.144*** (0.046)	1.172 (0.274)
<hr/>				
Number of vignette evaluations	15,320			
Number of respondents	5,316			
Wald test χ^2	3626.49			
p-value	0.000			

Source: Own calculations based on pairfam data from waves 11 and 12, standard errors in parentheses, control variables as in Table 1. *** p<0.001, ** p<0.01, * p<0.05

Table A5. Multinomial logistic regression of recommended parental employment combinations (relative-risk ratios) on the interaction between daycare quality and respondents' parenthood status

Ref.: Male breadwinner	Father full-time/ mother long part-time	Dual part-time	Dual full-time	Female breadwinner
High daycare quality (ref. medium)	1.257** (0.095)	1.065 (0.078)	1.475*** (0.145)	0.929 (0.076)
Parenthood status (ref. childless)				
Youngest child < 7 years	0.791 (0.108)	0.550*** (0.078)	0.525** (0.102)	0.571*** (0.083)
Youngest child 7-14 years	1.168 (0.183)	0.803 (0.127)	0.720 (0.157)	0.863 (0.144)
Children > 14 years or not living in household	1.160 (0.201)	0.758 (0.138)	0.897 (0.212)	0.724 (0.142)
Interaction				
High quality x youngest child < 7 years	1.136 (0.159)	1.220 (0.179)	1.209 (0.227)	1.304 (0.210)
High quality x youngest child 7-14 years	1.095 (0.177)	1.129 (0.186)	1.186 (0.258)	1.295 (0.240)
High quality x children > 14 or not in hh	1.533* (0.272)	1.483* (0.279)	1.468 (0.338)	1.863** (0.394)
Constant	0.652 (0.141)	0.786 (0.176)	0.154 (0.049)	1.299 (0.304)
Number of vignette evaluations	15,320			
Number of respondents	5,316			
Wald test χ^2	3612.96			
p-value	0.000			

Source: Own calculations based on pairfam data from waves 11 and 12, standard errors in parentheses, control variables as in Table 1. *** p<0.001, ** p<0.01, * p<0.05

Table A6. Ordered logistic multilevel regression of recommended parental employment hours (odds ratios) on daycare quality

	Recommended maternal employment hours	Recommended paternal employment hours
High daycare quality (ref. medium)	1.231*** (0.043)	1.204*** (0.044)
Cut 1	-4.697 (0.187)	-5.530 (0.194)
Cut 2	-3.409 (0.182)	-4.431 (0.183)
Cut 3	-1.746 (0.180)	-2.980 (0.177)
Cut 4	0.584 (0.179)	-0.967 (0.175)
Cut 5	2.319 (0.180)	0.546 (0.175)
Cut 6	6.282 (0.196)	4.867 (0.182)
Number of vignette evaluations	15,424	15,424
Number of respondents	5,333	5,333
Wald test χ^2	2433.30	2080.06
p-value	0.000	0.000
Sigma ² u	3.208	2.787

Source: Own calculations based on pairfam data from waves 11 and 12, standard errors in parentheses, control variables as in Table 1. *** p<0.001, ** p<0.01, * p<0.05

Table A7. Ordered logistic multilevel and multilevel regression models of recommended daycare use and parental employment hours on daycare quality interacted with respondents' attitude toward maternal employment (alternative item)

	Recommended daycare take-up (Odds ratio)	Recommended maternal employment hours	Recommended paternal employment hours
High daycare quality (ref. medium)	2.199*** (0.140)	0.483** (0.181)	0.472** (0.170)
Attitudes toward maternal employment (ref. traditional/moderate)			
Egalitarian	1.382** (0.160)	1.413*** (0.293)	-1.298*** (0.258)
Very egalitarian	1.570*** (0.209)	2.610*** (0.336)	-1.721*** (0.296)
Interaction			
High quality x egalitarian	1.227 (0.130)	0.595 (0.304)	0.402 (0.285)
High quality x very egalitarian	1.879*** (0.226)	0.650 (0.338)	0.660* (0.318)
Cut1	-4.139 (0.267)		
Cut 2	-0.514 (0.260)		
Cut 3	4.863 (0.267)		
Constant		22.258*** (0.642)	27.768*** (0.560)
Number of vignette evaluations	15,379	15,379	15,379
Number of respondents	5,316	5,316	5,316
Wald test χ^2	1466.28	3089.39	2609.76
p-value	0.000	0.000	0.000
Sigma ² u	7.578		
Sigma u		6.357	5.215
Sigma e		7.016	6.678
Rho		0.451	0.379

Source: Own calculations of ordered logistic multilevel and multilevel regression models based on pairfam data from waves 11 and 12, standard errors in parentheses. Control variables as in Table 1. *** p<0.001, ** p<0.01, * p<0.05

Table A8. Ordered logistic multilevel and multilevel regression models of recommended daycare use and parental employment hours on daycare quality interacted with respondents' parenthood status (alternative specification)

	Recommended daycare take-up (Odds ratio)	Recommended maternal employment hours	Recommended paternal employment hours
High daycare quality (ref. medium)	2.491*** (0.151)	0.698*** (0.173)	0.944*** (0.162)
Parenthood status (ref. childless)			
Youngest child < 3 years	0.212 (0.360)	-4.759 (3.872)	-1.234 (3.301)
Youngest child 3-6 years	0.303 (0.517)	-4.328 (3.880)	-1.567 (3.308)
Children > 6 years	1.108 (0.254)	-0.273 (0.565)	1.831*** (0.487)
Children not living in household	1.347 (0.377)	0.493 (0.701)	-0.109 (0.611)
Interaction			
High quality x youngest child < 3 years	1.312 (0.202)	0.171 (0.438)	-0.618 (0.411)
High quality x youngest child 3-6 years	1.520* (0.263)	0.258 (0.487)	0.158 (0.457)
High quality x children > 6	0.923 (0.107)	0.242 (0.329)	-0.789* (0.308)
High quality x children not in hh	1.239 (0.305)	-0.205 (0.684)	-0.229 (0.640)
Cut 1	-4.216 (0.266)		
Cut 2	-0.594 (0.259)		
Cut 3	4.765 (0.266)		
Constant		22.726*** (0.646)	27.144*** (0.559)
Number of vignette evaluations	15,424	15,424	15,424
Number of respondents	5,333	5,333	5,333
Wald test χ^2	1431.36	2962.87	2584.85
p-value	0.000	0.000	0.000
Sigma ² u	7.597		
Sigma u		6.464	5.228
Sigma e		7.016	6.679
Rho		0.459	0.380

Source: Own calculations of ordered logistic multilevel and multilevel regression models based on pairfam data from waves 11 and 12, standard errors in parentheses. Control variables as in Table 1. *** p<0.001, ** p<0.01, * p<0.05

Table A9. Ordered logistic multilevel and multilevel regression models of normative judgements regarding daycare use and parental employment hours (without respondent-level controls)

	Recommended daycare take-up (Odds ratio)	Recommended maternal employment hours	Recommended paternal employment hours
High daycare quality (ref. medium)	2.628*** (0.124)	0.775*** (0.131)	0.727*** (0.122)
Cut1	-5.588 (0.131)		
Cut 2	-1.909 (0.110)		
Cut 3	3.427 (0.115)		
Constant		27.013*** (0.286)	27.940*** (0.257)
Number of vignette evaluations	15,424	15,424	15,424
Number of respondents	5,333	5,333	5,333
Wald test χ^2	731.64	2086.754	2187.051
p-value	0.000	0.000	0.000
Sigma ² u	9.408		
Sigma u		7.115	5.488
Sigma e		7.015	6.678
Rho		0.507	0.403

Source: Own calculations based on pairfam data from waves 11 and 12, standard errors in parentheses, including the other vignette dimensions. *** p<0.001, ** p<0.01, * p<0.05

Table A10. Multinomial logistic regression of recommended parental employment combinations (relative-risk ratios) (without respondent-level controls)

Ref.: Male breadwinner	Father full-time/ mother long part-time	Dual part-time	Dual full-time	Female breadwinner
High daycare quality (ref. medium)	1.348*** (0.072)	1.166** (0.062)	1.571*** (0.107)	1.063 (0.064)
Constant	2.284*** (0.249)	1.847*** (0.202)	0.765* (0.104)	4.034*** (0.475)
Number of vignette evaluations	15,320			
Number of respondents	5,316			
Wald test χ^2	3219.46			
p-value	0.000			

Source: Own calculations based on pairfam data from waves 11 and 12, standard errors in parentheses, including the other vignette dimensions. *** p<0.001, ** p<0.01, * p<0.05