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Government
Equalities Office

Sharing of childcare and well-being outcomes: an empirical analysis

Second Report: Quantitative Analysis of the 2014/15 UK Time Use Study

Research report prepared by Pierre Walthery, Centre for Time Use Research, University College London and Heejung Chung, School of Social Policy, Sociology and Social Research, University of Kent

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This research was commissioned under the previous government and before the covid-19 pandemic. As a result the content may not reflect current government policy, and the reports do not relate to forthcoming policy announcements. The views expressed in this report are the authors' and do not necessarily reflect those of the government.

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Executive Summary

This report summarises the main findings of the second part of our study, '**How do within-family caring arrangements impact parental and children's outcomes**'. This study consists of an empirical analysis of the relationship between the time spent on childcare by mothers and fathers in two parent households and a series of well-being outcomes, using the 2015 UK Time Use Survey. Here we distinguish between three dichotomies of the time spent caring for children based on the literature (see part 1 of this report, Chung, 2021) namely:

- Care conducted as either a primary (main activity) or secondary activity (alongside another primary activity such as paid work)
- 'Solo' care (conducted without the presence of the other parent) or 'joint' care (conducted with another parent present)
- Routine (i.e. feeding, cleaning, transporting) vs enriched (i.e. playing, reading, studying with child) care

The report first provides descriptive patterns of parental childcare. We then compared these according to maternal working-time (i.e. full vs part-time) as well as the age of the youngest child in the household. Key conclusions are as follows;

- Women are more likely to provide care during any given day and spend more time providing care compared to men. **A large proportion of fathers, on the other hand, did not report any care-giving.** Even among those who do report care giving in their time-diary, **men only spend about half as much time providing care compared to women.** This gap is much larger when we take into account those who do not report providing any care.
- This gender gap is especially noticeable during the weekday, for caring alone, and routine care. In other words, **when men take part in care, it is mostly done jointly with their partners, during the weekend, or providing enrichment care.**
- This gender gap was especially prevalent **among parents with pre-school aged children (under 5) where mothers were spending two to three times as much time providing care**, especially on weekdays, and for routine and solo care. The gender gap is reduced significantly especially once children reach secondary school age. Fathers are less likely to be involved in routine childcare in households where mothers work part-time, but those who are involved in routine and solo childcare tend to do for longer periods of time than in households where both mothers work full-time.
- **Mothers' employment patterns – i.e. full-time vs. part-time, did not matter much in the amount of care provided as a primary activity.** However, part-time working mothers

spent more time providing care as a secondary activity or being with children whilst doing other activities (co-presence).

- Fathers' employment patterns also did not change the amount of time they spent with children. However, **full-time working fathers tend to spend more time providing enrichment care** compared to their part-time counterparts, especially during the weekend, whilst **part-time working fathers reported providing more routine care and spent more in the presence of children** (co-presence).

We analyse the association between the absolute and relative share of care carried out by parents and seven distinct well-being instruments, namely, anxiety, overall life satisfaction, work-life balance satisfaction, satisfaction with leisure, satisfaction with social life, relationship satisfaction, and finally overall daily enjoyment. The final instrument, enjoyment, represents an innovation over traditional well-being instruments as it is based on episode-level records reported in a 24h time diary instead of an overall evaluation by respondent of a given aspect of their life.

Whereas past studies have analysed typologies of childcare such as those described above in terms of the amount of time spent by parents, the contribution of the present work consists in examining how within-household *sharing* of care between mothers and fathers is associated with these well-being outcomes.

We found clear evidence that an increased share of childcare provided by fathers is significantly associated with a number of positive well-being outcomes, primarily for mothers, but also for fathers themselves. Some evidence was also found of a positive effect of the time spent with their parents on well-being of children aged 8 to 14.

Controlling for the socio-demographic characteristics of parents, it was found that:

- **Mothers in households where fathers take on a significant share of enriched care tend to report greater satisfaction** with their work-life balance, and lower levels of anxiety than in those in which they are not involved. This is also true of households where a greater share of the childcare is jointly done by both parents. At the same time however, mothers tend to report feeling more anxious where fathers take on more than 40% of the routine childcare.
- **Fathers report greater satisfaction with their social life when they significantly engage in primary or routine care** (i.e. more than 40% of the total amount of childcare carried out in the household); and **a higher level of mean daily enjoyment when they significantly engage in enriched care**. At the same time however, fathers who engage in significant amount of solo and secondary childcare relative to mothers, tend to be significantly less satisfied with their relationship.
- **For children aged 8-14: no significant association was found** between their daily enjoyment and the time spent with either their mother, their father, or both parents jointly. There are indications that when mothers reported having a rushed day, the enjoyment levels of children were lower.

We also found that:

- **Fathers working flexible hours or working at the weekend for any reason¹ are more likely to be involved in childcare** than those who do not work in these ways.
- The association with fathers' involvement in childcare and well-being outcomes are unlikely to have a linear relationship. Rather, **being involved in primary childcare** (compared to not being involved) **mattered in enhancing fathers' overall enjoyment**.
- Both mothers and fathers equally enjoy higher levels of well-being when they care for children at the weekend rather than on a weekday.

These results of the analysis reinforce the body of evidence showing that fathers' involvement in childcare and a more equal division of care between mothers and fathers can potentially increase well-being outcomes for parents. The report also provides some reflections on the changes expected due to COVID-19 in terms of future parenting patterns.

¹ Fathers working at the weekend may be working at home or outside home as part of their contracted hours, working overtime, or carrying out additional paid work in another job.

1. Introduction

This report presents the main findings of the second part of the **How do within-family caring arrangements impact parental and children's outcomes study** which consisted of an empirical analysis of the relationship between the time spent on childcare by mothers and fathers in two parent households and parental well-being outcomes, using the 2015 UK Time Use Survey.

Background

As the literature review on shared care and well-being has shown (Chung, 2021), there is an abundance of research on how fathers' caring roles and mothers' employment (and subsequent reduced involvement in childcare) influence outcomes for children as well as parents. One missing piece of the puzzle is how the two interact with each other. Relatively little is known about both the division of time spent caring for children within households and its relationship to child and parental well-being. The majority of studies examined, especially those focusing on child outcomes, examined maternal and paternal involvement separately. A few studies have looked at how the involvement of fathers in certain activities influence child outcomes, taking into account the amount of childcare carried out by mothers (e.g., Baxter and Smart, 2010). Others have focused on the absolute number of hours fathers spend with children but with little differentiation between the type of childcare – for example, distinguishing between enrichment and routine activities (e.g., Kroll et al., 2016). Few have explored whether the proportion of time fathers spend relative to mothers is associated with variations in outcomes for children. Some have analysed the influence of the division of childcare and housework on parental relationship satisfaction and breakdown (e.g., Schober, 2012). However, most of these rely on the self-assessment, mostly of mothers, in not only the amount of time they themselves engage in childcare but also their partners' engagement – in many cases, with conflicting perceptions between the two (e.g., Milkie et al., 2002).

This project aims at filling some of these gaps by conducting a multivariate analysis on the 2015 UK Time Use Survey (TUS). Looking at couples with at least one child under the age of 15, we aim to explore how the *length* and *quality of time* spent by parents with their children, and most importantly *its division* between mothers and fathers, is associated with well-being outcomes for children and parents themselves.

In order to examine how sharing childcare influences well-being outcomes of children and parents, we need to be able to precisely measure the share of care provided by each parent. Some surveys ask respondents about their perception of the share of care they take on– e.g. Millennial Cohort Survey. However, previous studies have established that there is a mismatch within couples about what 'sharing childcare' means, as fathers tend to think their share of childcare matches that of their partner, but mothers tend to disagree (e.g., Milkie et al., 2002; Craig, 2006). Again the Time Use Survey may be one of the only existing quantitative data sources that allows us to get a more accurate picture of such complex realities.

We were able to operationalise different types of time spent caring for children – namely, routine vs non-routine/enrichment care, solo vs. care with the other parent/joint care, and care as main or primary activity vs. secondary care, 'contaminated' by simultaneously conducting other activities such as paid-work or other housework. The majority of studies about the care shared between

mothers and fathers have focused on factors that explain how childcare is shared between the two (Craig and Powell, 2012; Craig and Mullan, 2011; Raley et al., 2012; Wight et al., 2008). Some studies have shown that an unequal division of labour among heterosexual couples may lead to the dissatisfaction and decline in well-being of individuals (Hochschild and Machung, 1989; Blair-Loy, 2009; Williams, 1999; Young, 2018), yet they are largely based on qualitative data. Few large scale quantitative studies have examined how the share of care is related to outcomes such as children's and parents' well-being. The few studies which do this, either focused on families in the United States (Milkie et al., 2002 ; Carlson et al., 2016), or on relationship satisfaction and breakdown (Schober, 2012; Norman et al., 2018). Thus, more large scale quantitative evidence is needed on how the share of care-giving among heterosexual couples relate to the well-being outcomes of children and parents, including outcomes such as stress, satisfaction towards life, work-life balance, social life, leisure in addition to relationship.

Based on this, our analysis examines the following questions:

- *How is childcare currently being shared among mothers and fathers, according to the type of care provided?*
- *How does the total amount of time spent by fathers and mothers with their children, as well as its division between parents, impact children's and parental well-being outcomes?*

As part of an extension to the original research programme, we also examined some sub questions relating to our main question, namely;

- *What is the impact of parental working patterns on fathers' share of primary and routine childcare?*
- *What are the differences in parental well-being outcomes for households where fathers take part in childcare as opposed to those who do not?*
- *Is the association between fathers' involvement in care and parental and child well-being affected by paternal childcare occurring at the weekend or instead during weekdays?*

One point to note here is that our data is from 2015, prior to the COVID-19 pandemic and the multiple lockdown measures that have occurred. Many studies have shown that the COVID-19 pandemic and the different measures that were in place to reduce the risk of transmissions of the disease – such as lockdown and mass scale home working – has had a positive impact on the division of housework and childcare done by parents, with fathers possibly contributing more than before (Chung, Birkett et al., 2020; Craig and Churchill, 2020; Carlson et al., 2020; Yerkes et al., 2020). We will explore the type of changes we expect to have occurred due to the COVID-19 pandemic in terms of parental involvement in childcare and in work patterns in greater detail in our final section.

2. Data and methods

Data

The data source used in the project is the 2015 Time Use Survey (TUS), which provides the most recent and up to date time diary data for the UK. The TUS is a two stage stratified random sample household survey representative of the UK population. Fieldwork was conducted between May 2014 and October 2015 using face-to-face interviews. The TUS provides a wealth of information about the daily activities of household members (parents and children aged 8 years and over) in relation to work and family life. Data is collected both via time diaries and an individual questionnaire. In time diaries, respondents keep a record of their activities over 24 hours at ten minutes intervals on one weekday (i.e. one day between Monday to Friday) and one day at the weekend. Diary days were randomly allocated to each household and were identical for all household members. Separate diaries were provided to children and adults. All diaries were self-completed.

Time diaries are the most robust, and perhaps the only type of social survey which allow researchers to measure the actual amount of time parents spend with their children. Other stylised instruments such as through questionnaires, i.e., when parents are asked to provide an overall time estimate over a period of time such as a week or month- tend to be characterised by definition issues and measurement error: respondents are notably imprecise at estimating 'on average' the amount of time they spend on different activities (Kan and Pudney, 2008).

For example, questions asked about 'on average, how many hours do you spend on childcare in the past 7 days' may not invite accurate answers due to the different definitions individuals may have of childcare (in relation to other activities), in addition to the inherent difficulty of recalling the precise amount of time spent caring. Time use data also enabled us to directly investigate how the proportion of childcare carried out by fathers within households is associated with child and parental well-being outcomes, which represents another innovation implemented in this project. Finally, the way in which care is recorded in the time use data allows us to distinguish between the *different types* of care provided by each parent, which is difficult to apply in other survey techniques.

In the time diaries, information is also collected about the location in which each activity took place, the presence of other people, enjoyment, and whether alongside the main, primary activity, other, secondary, activities also took place. A distinction needs to be made between activities, what respondents record they are doing at a given time of the day, from an episode, which is the continuous period of time during which an activity or its context does not change. Overall sample size is 11,421 individuals in 4,733 households. Of these, 8,210 individuals in 3,606 households provided complete time diary information.

We constructed a dataset where caring data as well as the individual characteristics of mothers, fathers and children within the same household were matched together. We cannot say our descriptive analyses are representative of the national general population due to the absence of household-level weights in the 2015 TUS, as well as the small sample size. However, this dataset enables precise analysis of the sharing of care between parents, as well as providing the point of

view of children aged 8 and above who were also present in the household, which is very rare in quantitative data sets.

Sample

For the purpose of this study, the population of reference was defined as UK households made of two cohabitating heterosexual parents aged 16 and over with at least one child aged between 0 and 14. Complex households - including those made of several families, or multigenerational households were not taken into account. Respectively 1,178, 1,147 and 828 days of mothers, fathers and children aged under 15 were available in such households where complete records were available. Actual sample size differed from these numbers according to item-non response of the outcomes variables. For instance, 509, 545 and 403 records of mean daily enjoyment were available for mothers, fathers and children. This should be considered as the minimum sample size for descriptive analysis among parents, as more observations are available about alternative outcomes, such as evaluative well-being.

Weighting

The 2014/15 UK TUS survey is representative of the UK population aged 8 and above. However, due to non-response, estimates need to be weighted in order to properly reflect nationally representative trends. Two sets are available: individual-level weights, and diary weights (i.e. day level ones). The main difference between the two is that the latter equalises the probability of selection of the days across the week. Results relying on the main UK TUS dataset (i.e. results presented in section 3.1 of this report) use the individual-level weights. However, results based on the matched *household dataset* (from section 3.2 onwards) cannot be weighted due to the fact that the data does not include household weights. Therefore, descriptive results based on this dataset cannot be considered nationally representative. On the other hand, multivariate i.e. regression results are more likely to be close to national trends as some of the control variables used, such as qualifications, record factors traditionally associated with non-response.

Outcomes

The two main outcomes considered in this study were *evaluative well-being*, which was recorded through several overall and facet-specific instruments, and *experienced well-being/enjoyment*. The former was only administered to adults respondents in the UK TUS 2015, whereas the latter was also recorded for children aged 8 and above.

Enjoyment (parents and children)

The 2015 UK TUS is one of very few surveys where household members, including children aged 8 and above, were systematically asked about their enjoyment derived from each activity reported in the time diary and is the closest measurement available to experienced/emotional well-being (Kahneman et al 2005). Enjoyment was measured on a scale ranging from 1 to 7. Completion rate was about 75%, due to the fact that, the question was not asked during the first two months of the survey. Overall mean daily enjoyment was computed and weighted for activity duration. It was used to examine how different parenting activities, and with whom it is done (mother, father, or both), are associated with children's daily enjoyment levels.

Evaluative well-being and life satisfaction (parents)

We used a number of evaluative well-being outcomes for parents, as they were only recorded among respondents aged 16 years and over.

Overall life satisfaction

A single standardised overall life satisfaction was constructed from the two instruments available in the data².

The following facets well-being variables were also used. They were recorded on seven item scales ranging from 'Completely dissatisfied' to 'Completely satisfied'.

Work-life balance satisfaction

'How dissatisfied or satisfied are you with your work-life/work-family balance?'

Satisfaction with social life

'How dissatisfied or satisfied are you with your social life;

Satisfaction with leisure

'How dissatisfied or satisfied are you with the amount of leisure time?'

Relationship satisfaction

'How dissatisfied or satisfied are you with your marriage or partnership?'

Anxiety

'How anxious did you feel yesterday?'

Independent variables

Time spent caring for children

The main independent variable in this study is the time spent caring by parents. Two different approaches were used.

Firstly, we examined the amount of time that mothers and fathers *individually* spent caring for children as a whole, as well as broken down by type. This is either computed as the daily number of minutes as well as the proportion of caring time relative to other non-resting activities (such as paid work or socialising). The figures obtained this way are presented in section 3.1 can be considered nationally representative of the population of cohabitating heterosexual parents in household with at least one dependent child under 15.

² Two overall life satisfaction variables (SATIS and SATISOV) were recorded in the UK TUS 2015. SATISOV was initially recorded between April and September 2014 after which a decision was taken to alter the instrument in order to improve comparability with the ONS life satisfaction instrument. SATIS was subsequently recorded between October 2014 and 2015. SATISOV is measured through the following question: *'How dissatisfied or satisfied would you say you are with your life overall?'* Answers were recorded on a seven item labelled scale ranging from 'Completely dissatisfied' to 'Completely satisfied'. SATIS is measured through the following question: *'Overall, how satisfied are you with your life nowadays?'* Answers were on an 11 item unlabelled scale ranging from 'Not at all satisfied' to 'completely satisfied'.

As discussed in depth the literature review (first part of this study - Chung, 2021) and in the previous section, in order to differentiate between the types of care, we adopted three distinctions: the distinction now commonly accepted between routine vs non-routine/enrichment care (Craig and Mullan 2011); as well as how it is provided – i.e., solo vs with the other parents, and finally the primacy of the care – namely, whether it is recorded as the primary activity, or if it is done in addition to other activities, such as housework, paid work or leisure, and finally whether if children are simply present while the parent carries out another task, without specifying that care in being carried out. Table 1 provides a more detailed description of the different types of care used in this study.

Table 1 Categories of care

Type of care	<i>Routine care</i>	Feeding, bathing, dressing, putting children to sleep, carrying, holding, cuddling, hugging, soothing, transportation to school, visits, sports training, music and ballet lessons, time spent waiting and meeting trains or buses, and handing them over to substitute caregivers
	<i>Enrichment/ non routine</i>	Talking, listening, teaching, helping children learn, reading, telling stories, and playing games etc.
Involvement of the other parent	<i>Solo care</i>	When care is provided without the other parent involved – divided into father care and mother care
	<i>Joint care</i>	When care is provided with the other parent also present
Primacy of care	<i>Primary</i>	Care provided without other recorded activities, or care is the primary activity carried out by parent
	<i>Secondary</i>	Care provided as secondary activity while doing other activities
	<i>Co-presence</i>	Child(ren) present while parent is engaging on an activity unrelated to childcare

Multivariate analysis

We conducted several multivariate analyses of the relationship between the sharing of childcare done by mothers and fathers and their own well-being as well as their children’s well-being. In order to do so, we worked with a subset of the UK TUS in which individual characteristics of mothers, fathers and children were matched together. This allowed for within household analysis of childcare practices. Whilst non nationally representative when conducting descriptive analysis due to the absence of household-level weights in the 2015 UK TUS, this dataset enables precise analysis of the sharing of care between parents, as well as, the perspective of children aged 8 and above who were also present in the household. This provides a rich understanding of the quality

and perception of care, yet the relatively small sample size of the analysis limits the precision of related findings.

Using these data and for each of the seven types of childcare shown in Table 1, we constructed ratios of the time reported by fathers on childcare in the household on diary day divided by the total childcare time reported by both parents on the same day -- either as a primary or secondary activity. This represents a precise operationalisation of childcare in households, and improves on those which only consider childcare as a primary activity. The ratios were subsequently recoded into three category variables, as follows:

- Fathers did not carry out any childcare on diary day
- Fathers took on between 1 and 40% of the total caring time in the household on diary day
- Fathers carried out between 41 and 100% of the total time caring on diary day

For each one of the seven well-being outcomes described above, six models were fitted (retaining the most relevant share of paternal care: primary, secondary, solo, joint, routine and enriched), for fathers and mothers respectively. These amounted to a total of 84 OLS regression models. In the case of joint care, the substantive meaning of this variable is that it represents the amount of care done by *both parents* jointly as a proportion of the total care carried out in the household.

The mean daily enjoyment of children aged 8 to 14 was also modelled using a slightly different approach, in part due to the smaller number of observations available. For these models the main explanatory variables were the time children spent with each parent, separately with one or the other parent and jointly with both parents together. The effect of the time spent with each parent was tested one by one, then using an interaction term we test to see how the two moderated one another. We also used a dichotomic indicator of time pressure which was recorded in the time diary: *Is this a rushed day?*

Control variables

Additional variables were used in the multivariate analysis to control for respondents socio-demographic characteristics which have been shown to influence the time spent on care (Craig and Mullan, 2011), as well as well-being outcomes of individuals (Milkie et al., 2002; Schober, 2012; Kroll et al., 2016):

- Age of each parent
- Age of the youngest child in the household: 0-4 (reference category), 5-10, 11-14
- Whether childcare for one or more child out was outsourced to non-household members
- Whether mother were employed full-time, part-time or not in paid work
- Maternal highest qualification

- A combined variable recording whether *fathers* worked under a flexible working-time schedule and the skills levels of their main occupation³: flexible hours with or without specified core hours, annualised hours, unsocial hours, shift work. The skills level of their current occupation (according to the definition of the Office for National Statistics). Fathers not currently in paid work are grouped in a distinct category.

In order to avoid bias due to the correlation between this variable and paternal education, the latter was not included. For similar reasons, the same indicator could not be used for mothers as the household-level working-time arrangements described above already includes a category for those not in paid work. In light of the recent discussion in UK policy in reforming flexible working to enable better share of care tasks, and a better work-life balance, this analysis also examines how flexible working arrangements may encourage parents to equally share care between them (Chung and van der Lippe, 2018; Chung, 2020).

For the children models, control variables included:

- Age of the child
- Sex of the child
- Mother's education
- Whether mother were employed full-time, part-time or not in paid work
- Fathers' occupational skills level in his main job together with whether he worked flexible hours
- An interaction term between gender of the child and the time spent with each parent
- An interaction term between the time spent with each parent and whether diary day was reported being a rushed day by either parent.

Extension to the original analysis

An extension of the above analysis was decided, which involved examining the three following additional questions:

1. *What is the impact of parental working patterns on fathers' involvement in primary and routine childcare*
2. *To what extent is fathers' involvement in childcare associated with parental and children well-being, when we only look at dual-earning couples?*
3. *To what extent are these well-being outcomes affected by childcare taking place at the weekend or instead during weekdays?*

³ Flexible/atypical working-time arrangements can potentially enable fathers to carry out more childcare at home (Presser, 1988), but flexible working is impacted by the education and occupational levels of parents (Chung, 2018; 2019). In addition, the division of childcare is likely to be affected by fathers' occupational level (Lyonette and Crompton 2015).

We used a subpopulation of the matched household dataset drawn from the 2015 UK Time Use Survey described above: as we wanted to examine the impact of the involvement in childcare by fathers in the context of dual earners families, the analyses were conducted in households in which both adults were in employment. As a result, the sample size was limited: 561 observations with valid record of time spent by parents on childcare. The number of households with non-missing well-being records was unfortunately smaller and varies depending on the outcome variable examined (see below).

- Question 1 was operationalised by analysing fathers' share of total time spent on childcare in households by both parents, by type of care. For greater robustness, both the mean and the median were computed, as given the small sample size, large values can disproportionately affect the mean.
- Question 2 was examined by producing four sets of eight linear regression models for each mothers and fathers: one model was run for each one of the eight well-being outcomes of interest already discussed above.
- For each outcome, we first considered *whether* fathers engaging in any primary, or alternatively, routine childcare, impacted on the outcome (Stage 1). Stage 2 consisted in modelling the impact of the share of childcare taken on by fathers on the same outcomes, leaving out households in which fathers did not conduct any childcare.

For these analyses, we controlled for household-level working-time configurations instead of just mothers' working time, namely:

- Whether the household was of the dual-earner type (i.e. both parents working full-time),
- Secondary earner (i.e. father working-full-time, mother part-time), or,
- Any other type (including female main earner).

3. Results

The data analysis is presented in three stages:

- We first provide descriptive statistics about the time spent on childcare in UK households distinguishing between that of mothers and fathers;
- We then present the outcomes examining how the sharing of childcare between parents -- broken down by the types of care set out above – is associated with seven well-being outcomes (for mothers, fathers and children aged 8 and over) through a regression analysis.
- Finally, in households where both parents are employed and we further examine:
 - how different working-time patterns are associated with the share of care fathers carry out;
 - how paid working time and caring time are related to well-being outcomes for parents.

3.1 Probability and duration of childcare

Main findings

- Women are more likely to provide childcare and spend more time than men on any given day. **A large proportion of fathers, on the other hand, did not report any care-giving.** Even among those who do report care giving, **men only spend about half as much time providing care.** This gap is much larger when we take into account those who do not provide any care.
- This gender gap is especially noticeable during the weekday, and for caring alone and routine care. In other words, **when men take part in care, it is usually done jointly with their partners, during the weekend, providing enrichment care.**
- This gender gap was especially evident **among parents with pre-school children (under the age of 5) where mothers were spending two to three times as much time providing care,** especially during the weekday, and for routine and solo care. The gender gap reduces as children grow older, especially once children reach secondary school age.
- **Mothers' employment patterns – i.e. full time vs. part-time, was not associated with the amount of time mothers spent in providing care as a primary activity.** However, part-time working mothers spent more time providing care as a secondary activity or being with children whilst doing other activities (co-presence).
- Fathers' employment patterns also did not change the amount of time they spent with children. However, **full-time working fathers tend to spend more time providing enrichment care** compared to their part-time counterparts, especially at the weekend, whilst **part-time working fathers reporting providing more routine care and spent more in the presence of children** (co-presence).

Table 2 provides an estimate of the percentage of parents who engaged in childcare on weekdays and at the weekend. Table 3 shows the average amount of time they did so.

Table 2: Proportion of mothers and fathers reporting childcare on diary day

	Weekdays		Weekend	
	Mothers	Fathers	Mothers	Fathers
Primary care	70.8	52.4	65.9	56.2
Secondary care	42.5	19.6	38.8	28.2
Copresence	75.5	70.8	76.7	76.7
Primary and secondary	72.8	55.5	69.7	60.6
Primary, secondary and copresence	75.7	73.2	76.7	77.2
Caring alone	61.9	30.6	51.3	36.0
Joint caring	54.8	44.6	59.3	52.1
Routine care	70.8	48.0	68.1	51.7
Enrichment care	57.3	37.1	52.3	45.3

Note: Proportion of parents who reported at least ten minutes of childcare on diary day. Denominator: parents aged 16 and above in UK households with two cohabitating heterosexual adults and at least one child under 15. Data: UK TUS 2015, weighted for non-response

We can see in Table 2 that mothers were more likely than fathers to be caring for children at any point during the day, especially on weekdays. The gap between mothers and fathers in the probability of engaging in primary childcare is 18.4 percentage points during weekdays (70.8% vs 52.4%), against 9.7 at the weekend. This remains true across all types of childcare. The largest gap is observed for caring alone (31.3 percentage points during the week, 15.3 at the weekend) followed by routine care (22.8 percentage points during the week, 16.4 at the weekend). Even if the gaps are smaller, mothers were also more likely than fathers to engage in enrichment care, **even during the weekend** (7.0 percentage point gap).

If we broaden the definition of caring to include not only primary and secondary caring, but also simple co-presence, the difference between mothers and fathers almost disappears, both during the week and at the weekend. This tells us that although both mothers and fathers may be equally likely to be spending time with children around, it is usually the mothers, especially on weekdays, that are engaging with and actively caring for children.

Throughout this section, results are presented as the amount of time mothers and fathers spent on childcare. These were computed both for the total population (including those who did not report any care giving on a diary day) and for the ‘carers’ population (only including those who reported providing at least 10 minutes of childcare during a diary day). Whereas the latter is closer to the typical amount of time parent spent on caring, the former also provides information about parents (i.e. mostly fathers) who did not engage in childcare. We focus mostly on reporting the latter in the main text, but when useful we also touch upon the former.

Table 3 Time spent caring by mothers and fathers (2014-15)

	Weekdays				Weekends			
	Mothers		Fathers		Mothers		Fathers	
	Carers ^a	All ^b	Carers	All	Carers	All	Carers	All
Primary care	132	93	69	36	133	87	108	61
Secondary care	68	29	44	9	77	30	65	18
Copresence	493	372	355	251	582	446	509	390
Primary and secondary	168	122	81	45	168	117	130	79
Primary, secondary and copresence	652	494	404	296	734	563	608	469
Caring alone	146	90	67	21	109	56	92	33
Joint caring	77	42	62	27	118	70	97	51
Routine care	122	86	59	29	120	82	79	41
Enrichment care	90	51	57	21	92	48	99	45

Note: Mean daily minutes by type of caring. Denominator: ^a all respondents who reported caring on the day; ^b all respondents (incl. those who did not report caring) Population: Individuals in UK households with two cohabitating heterosexual parents and at least one child under 15. Data: UK TUS 2015, weighted for non-response

Figure 1: Total time spent caring by type of care, weekend and weekday

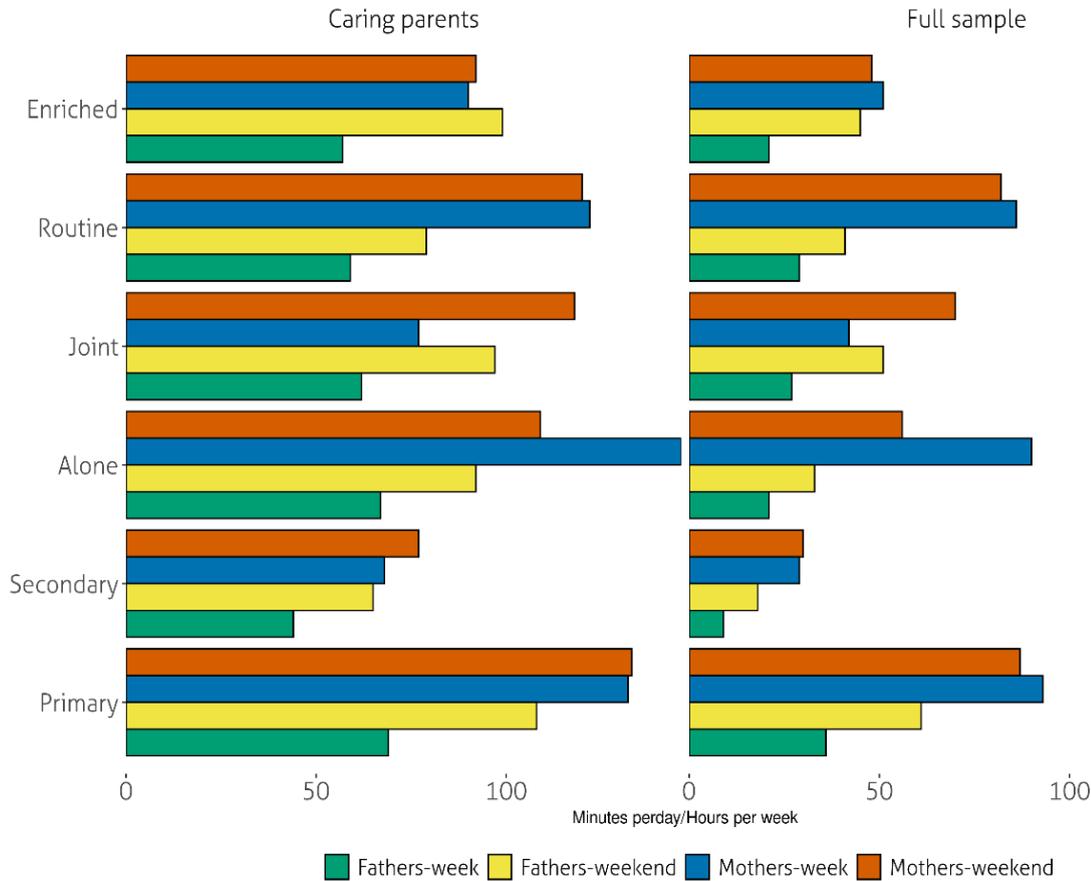


Table 3 and Figure 1 show the average number of minutes mothers and fathers spent per day on childcare. It is computed both for parents who reported at least one episode of childcare on the day (referred to as ‘carers’ in Table 3, and ‘caring parents’ in the Figure1) and for the full sample -- including parents who did not report performing any childcare on the time-diary day. The latter gives an indication of the number of parents (mostly fathers) who did not engage in childcare on the day⁴.

On weekdays, even when we only consider parents who reported any care giving activities, women on average spent almost twice as much time as men caring for children as a main/primary activity (132 vs 69 minutes). This relative gap is even higher when we include in our analysis, parents who do not report any care giving activity. In this case mothers reported providing childcare for more than twice the time fathers did (93 vs 36 minutes). This reflects the fact that fathers are more likely than mothers to report that they did not engage in childcare. The gap is smaller when childcare as a secondary activity is considered (68 against 44 minutes) but only when we only consider parents who have reported doing any secondary care activity. This goes some way towards confirming that within households, frontline care is carried out by women, whereas care as an additional activity tends to be a more common behaviour among men.

⁴ The difference between the two is that the former is more a typical measure of time typically spent caring by parents who actually did some childcare on diary day, but does not reflect the fact that a significant number of them, especially fathers, did not report any caring activities. By contrast, the mean time computed with the full sample better reflects the weight of parents who did not engage in caring on the days they have reported but not give a realistic sense of the time spent doing childcare when it occurs.

When considering the full sample, it emerges that women spent three times as much time as men providing on routine childcare (86 vs 29 minutes). This is reduced somewhat if we only consider parents who have reported doing any routine care, yet, even then women on average provide double the amount men do (122 vs 59 minutes). As expected, the gender gap in enrichment care is smaller in comparison. Similarly, women on average spend more than twice the time (146 vs 67 minutes) caring for children without their partner than men. This contrasts with the closely aligned amount of time fathers spent caring as a primary activity (respectively 62 and 69 minutes per day).

All in all, on a typical weekday this results in more than two thirds of women's time (excluding sleeping, resting or naps) being spent either caring or with children present, by contrast with less than half of men's time (see Table 1 in the appendix) when comparing men and women who report doing any care.

The last two columns in Tables 2 and 3 show that the gap in caring time between partners **at the weekend**. Whether it is care as a primary or secondary activity, or mere co-presence, gender gaps tends to narrow. For instance in Table 3, when *all* respondents are taken into account, the gap between fathers and mothers drops from 57 to 26 minutes for primary care, 20 to 12 for secondary care, and 121 to 56 minutes for co-presence.

This means that when primary, secondary and co-presence are taken together men now spend up to 69% of their time with children at the weekend, although for women the figure is still larger at 83.5% (see Table 1 in the appendix). In other words, despite the fact that men's increased care time gets them close to that of their female partners, women still take up the majority of the care time. There remains also close to half an hour gap between the time women and men spend caring alone for children.

The amount of time each partner spends on routine care does not differ very much at the weekend compared with the weekdays – meaning that at the weekend men do not drastically increase their time on the more daily physical type of care. It is, however, noticeable that men catch up on enriched care, as they spend on average half an hour more on this type of care on the weekend compared to the weekdays. It also notable that when we consider only the sample of those who do provide any care, that at the weekend men seem to spend a bit more time with children on enrichment care compared to mothers.

Overall, although a gender gap remained both in terms of the number of parents providing any care (Table 2) and the amount of care provided (Table 3) at the weekend as well as during the week, fathers were visibly more likely to be engaged in secondary and enriched childcare at the weekend.

Table 4: Time spent caring by parental working-time

	Weekdays				Weekends			
	Mothers		Fathers		Mothers		Fathers	
	Carers ^a	All ^b	Carers	All	Carers	All	Carers	All
<i>Parents working full-time</i>								
Primary care	125	79	67	35	145	86	111	62
Secondary care	50	18	39	7	72	27	68	19
Copresence	396	279	340	239	536	385	514	392
Primary + Secondary	145	97	76	42	170	112	133	81
Primary+Secondary+Co-presence	530	376	384	281	693	497	615	473
Caring alone	122	67	57	17	109	54	92	33
Joint caring	75	38	61	27	120	67	98	52
Routine care	113	73	53	25	125	80	79	41
Enriched care	69	36	53	20	89	45	100	47
<i>Parents working part-time</i>								
Primary care	123	87	66	26	122	84	97	41
Secondary care	65	28	42	6	86	34	65	19
Copresence	469	352	448	275	556	427	480	348
Primary + Secondary	159	115	83	32	166	118	122	60
Primary+Secondary+Co-presence	622	467	500	307	710	546	563	408
Caring alone	137	87	98	19	110	58	77	22
Joint caring	70	39	53	18	111	70	110	41
Routine care	110	77	82	30	109	77	81	32
Enriched care	90	54	38	6	102	55	108	32
<i>Parents not in paid work</i>								
Primary care	148	117	90	62	135	93	91	64
Secondary care	84	43	67	27	70	28	44	16
Copresence	616	502	409	355	657	539	492	420
Primary + Secondary	200	160	118	89	169	121	112	80
Primary+Secondary+Co-presence	807	661	511	444	805	660	586	501
Caring alone	178	122	120	61	108	56	100	47
Joint caring	87	51	69	44	126	74	73	40
Routine care	143	112	95	62	130	91	79	48
Enriched care	109	66	95	50	83	42	86	41

Note: 1. Mean daily minutes by type of caring. a Denominator: respondents who reported caring on the day; b All respondents (including those who did not report caring) Population: Individuals in UK households with two cohabitating heterosexual adults and at least one child under 15. Data: UK TUS 2015, weighted for non-response

Figure 2: Time spent caring by parental working-time

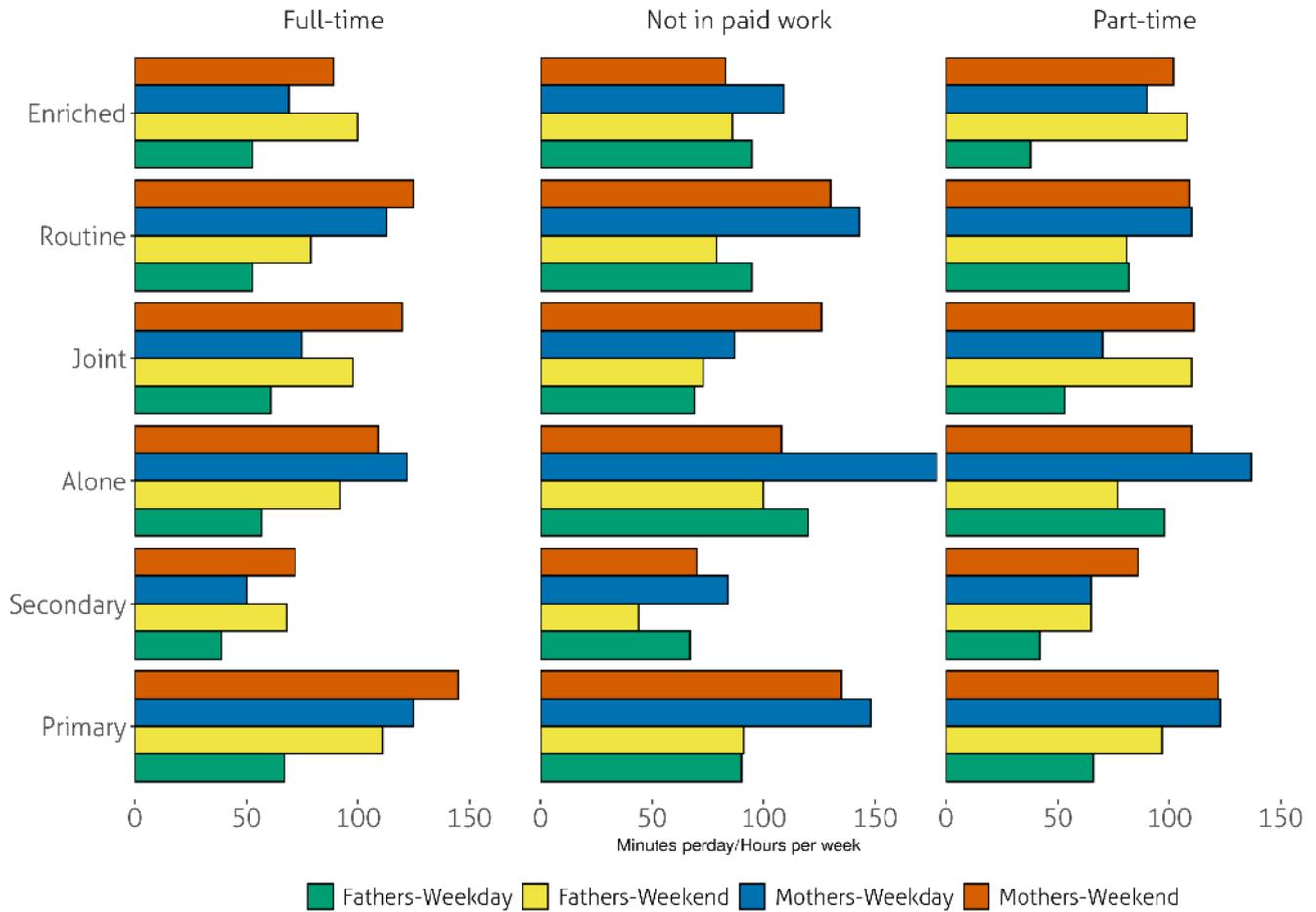


Table 4 and Figure 2 show the absolute amount of time mothers and fathers spent caring for children broken down by their working time status, i.e. not in paid work, working part time (here, defined as working less than 30 hours per week), and full-time. There are only a limited number of differences in terms of the average daily time part time and full time working mothers spend on caring as primary activity confirming previous studies (Craig 2006). Both full-time and part-time working mothers spent more than two hours on primary care, irrespective of the constraints arising from their work schedule (125 against 123 respectively for the sample of parents who provided any care). Similarly, hardly any difference was found in the time spent on routine childcare. Full-time working mothers did spend slightly less time on enrichment care compared to their part-time counterparts, yet at only 21 minutes, the difference remains small.

On the other hand co-presence time did change. Full time working mothers spent 396 minutes in children’s presence, while part-time working mothers spent an extra 73 minutes. Secondary care decreased a little bit more than primary care – with part-time working mothers spending 15 minutes extra on secondary care (65 minutes against 50). In sum, overall, women who worked full-time spent a little more than an hour and a half less (92 minutes) with their children compared to part-timers, yet the bulk of this difference occurred when mothers were not fully engaged with children (co-presence and secondary care). The total time full-time mothers spent in the presence of children represented 55.2% of their total non-resting time, against 65.2% for part-timers (see Table 3 in the appendix). As previously, irrespective of their working time, mothers spent a

significantly larger amount of time caring than fathers on weekdays, especially caring alone as well as on routine childcare but differences are much less visible at the weekend.

For men, there is little overall difference between full-time and part-time workers. Full-time working fathers seem to carry out the same amount of primary and secondary care altogether compared to their part-time counterparts (76 vs 83 minutes). Studies have shown that highly educated fathers are more likely to carry out enrichment care of children (Dotti and Treas, 2016) and they are also more likely to be working full-time. Our results show that part-time working fathers seem to be spending more time in the presence of children (co-presence: 448 vs 340 minutes) and doing more routine care of children during the week than their full-time counterparts (82 vs 53 minutes), mirroring results from previous studies (see for example, Lyonette and Crompton, 2015). On the other hand, full-time employed fathers seem to be taking on more primary and solo caring than part-timers at the weekend (111 against 97 minutes and 92 against 77 minutes respectively). Full-time employed fathers took on more enriched care than those employed part-time during the week (53 against 38 minutes), whereas little difference was visible between the two at the weekend.

Table 5: Time spent caring by age of the youngest child in the household

	Weekdays				Weekends			
	Mothers		Fathers		Mothers		Fathers	
	Carers ^a	All ^b	Carers	All	Carers	All	Carers	All
<i>Youngest child is under 5</i>								
Primary care	147	139	73	51	146	132	115	90
Secondary care	73	42	47	13	80	43	68	26
Co-presence	528	512	385	341	600	590	526	497
Primary+Secondary+Co-presence	714	694	443	404	777	764	643	613
Caring alone	162	134	74	30	120	83	100	49
Joint caring	84	63	63	39	131	105	103	74
Routine care	139	131	65	41	135	124	83	59
Enriched care	95	73	60	30	98	70	103	66
<i>Youngest child is 5-10</i>								
Primary care	69	34	49	15	69	29	65	17
Secondary care	44	12	27	3	60	15	53	9
Co-presence	378	226	260	135	545	325	468	281
Primary+Secondary+Co-presence	453	273	281	153	619	369	512	307
Caring alone	80	36	39	8	63	22	51	10
Joint caring	43	14	49	11	61	24	64	18
Routine care	52	26	35	10	58	27	55	15
Enriched care	66	26	40	9	66	21	71	14

Note: 1 Mean daily minutes by type of caring. a Denominator: all respondents who reported caring on the day; b All sample all respondents (incl. those who did not report caring) Population: Individuals in UK households with two cohabitating heterosexual adults and at least one child under 15. Figures for households with children aged 10-14 not available due to small sample size. Data: UK TUS 2015, weighted for non-response

Table 5 presents caring time broken down by the age of the youngest child in the household. The largest differences between fathers and mothers occurred in households with children under five, in particular on weekdays. Depending on whether fathers who did not engage in childcare are

counted or not, mothers of children under 5 spent between two and close to three times as much time on primary care as fathers during the week (147 vs 73 minutes for carers only and 139 vs 51 minutes for the total sample). The relative gap is largest for routine (139 vs 65 minutes) and caring alone (162 vs 74 minutes). These gaps narrow down at the weekend but a clear imbalance between mothers and fathers remain visible. Although the absolute amount of time spent looking after children tends to drop as the youngest child in household reaches 5 years of age, the gap remains between the relative share mothers and fathers carry out, particularly during the week, especially for caring alone and routine care. The gap further tends to be filled and to some extent reversed once children reach secondary school age, although figures are less reliable due to the small number of observations for this group (not shown).

3.2 Sharing of childcare and well-being outcomes

This section presents the results of the multivariate analysis of well-being outcomes for mothers, fathers of children under 15 and children aged 8 to 14 which was conducted on the matched household sample. Well-being outcomes for parents included: anxiety, life satisfaction, work-life balance satisfaction, satisfaction with leisure, satisfaction with social life, satisfaction with their relationship, and mean daily enjoyment. For children, only mean daily enjoyment was available. For each parental well-being outcome, two sets of models were fitted, with and without control variables.

Main findings

We found clear evidence that an increased share of childcare by fathers is significantly associated with a number of positive well-being outcomes, primarily for mothers, but also for fathers themselves.

Controlling for the socio-demographic characteristics of parents, it was found that:

- **For mothers:** in households where fathers take on a significant share of enriched care, mothers tend to report greater satisfaction with their work-life balance, and lower levels of anxiety than in those in which they are not involved. This is also true of households where a greater share of the childcare is jointly done by both parents. At the same time however, mothers tend to report feeling more anxious where fathers take on more than 40% of the routine childcare.
- **For fathers:** report a greater satisfaction with their social life when they significantly engage in primary or routine care (i.e. more than 40% of the total amount of childcare carried out in the household); a higher level of mean daily enjoyment when they significantly engage in enriched care, which is an original and important finding. At the same time however, fathers who engage in significant amounts of solo and secondary child care relative to mothers tend to be significantly less satisfied with their relationship.
- **For children** aged 8-14: no significant association was found between their daily enjoyment and the time spent with either their mother, their father or both parents jointly. There are indications that when mothers reported having a rushed day, the enjoyment children was lower

We will start by examining the overall *division* of childcare time in the data, as shown in Table 6. In order to make the results more intelligible, we have recoded the caring ratio variables, obtained by dividing the amount of time spent by fathers doing a specific type of care by the total amount of time spent caring as a primary and secondary activity in the household on that day, into four categories.

Table 6 Sharing of childcare between parents (%)

	Fathers not caring	Fathers' share ≤40%	Fathers' share between 40 and 100%	Mothers not caring	Total
Primary care	31.9	38.9	23.9	5.3	100
Secondary care	70.1	24.8	4.3	0.8	100
Primary and Secondary	26.2	34.4	31.9	7.5	100
Caring alone	57.4	28.0	11.1	3.5	100
Routine care	79.9	17.2	1.9	1.0	100
Enriched care	51.0	35.5	12.2	1.3	100

Note: Within-household proportion of time spent by fathers relative to mothers by type of caring, proportion of fathers and mothers with one parent reporting at least 10 minutes of caring. Matched data in UK households with two cohabitating heterosexual parents and at least one child under 15. Data: UK TUS 2015.

We can see that across the types of care, the proportion of households in which fathers *did not* report any childcare activities on a diary day ranged from 79.9% in the case of routine care to 26.2% in the case of primary and secondary care taken together. Enriched care stands in the middle between these two with as on average every other father reported spending time on reading, playing or teaching their children. As expected, the proportion of those in which mothers did not do any childcare remained very small, oscillating between 0.8 and 7.5%.

Less than 30% of households in the sample (23.9% + 5.3%) had fathers reporting a substantial amount of primary care (i.e. more than 40% of the total amount of time spent on childcare in the household), rising to 39.4% (31.9% + 7.5%) when secondary care was also taken into account. However, this proportion was much smaller for the other types of caring. For instance, less than 3% (1.9%+1%) of households reported fathers engaging in routine care for 40% of the time or more.

Being involved in childcare for less than 40% of the time therefore is the typical contribution by fathers across most households. The proportion of households where fathers provided care yet less than 40% of the total caring time in the household ranged from 38.9% in the case of primary care to 17.2% in the case of routine care.

Multivariate analysis

Table 7 summarises the main results of the regression models of the seven parental well-being outcomes⁵. The coefficients of the models express change in units of the wellbeing scores. The full results are available in the appendix. For models that examine mothers' and fathers' well-being outcomes, control variables included age of the youngest child in the household, maternal and paternal education, a combined variable measuring working-time and whether mother or fathers' main job has a flexible work schedule⁶, in order to avoid collinearity for respondents who were not in paid work. The effect of childcare sharing was tested using a series of three category ordinal indicators comparable to those shown in Table 6: i.e. father not caring (reference category), father caring between 1 and 40% of the total daily caring time⁷, father caring between 41% and 100% of the total caring time on diary day. Six caring types were retained: primary, secondary, solo, joint (i.e. mothers and fathers at the same time), routine childcare, enriched childcare. In the model for children well-being, the main independent variable was the time spent by children respectively with their mother, fathers, and both parents.

Controlling for socio-demographic and job-related characteristics, households in which fathers undertook a substantial amount of caring (more than 40%) were also those where a number of improved well-being outcomes were recorded but in a different fashion for each parent.

⁵ In order to accurately interpret these results, models should be compared across types of care for a given outcome, as the samples size remain identical.

⁶ Seven types of flexible work schedule were recorded in the 2015 TUS: flexible hours, with specified core hours, flexible hours, with no specified core hours, annualised hours contract, term time working, job sharing, a nine-day fortnight, a four-and-a-half day week. Respondents who recorded at least one of these were classified as working flexible hours.

⁷ The denominator used in the calculations is thus the total caring time reported by fathers and mothers as primary and secondary activity

Table 7: OLS models of parental well-being outcomes by sharing of childcare.

	Primary		Secondary		Solo		Joint		Routine		Enriched	
	Moth.	Fath.	Moth.	Fath.	Moth.	Fath.	Moth.	Fath.	Moth.	Fath.	Moth.	Fath.
<i>Anxiety</i>												
(ref: fathers not doing childcare)												
Fathers' share <=40%	-0.05 (.31)	.52 (.41)	.12 (.29)	.55 (.36)	-0.02 (.29)	.37 (.37)	-0.46 (.29)	.40 (.36)	-0.00 (.28)	.28 (.38)	-1.12** (.28)	.18 (.35)
Fathers' share 40-100%	-0.49 (.35)	-0.44 (.44)	1.09 (.66)	.19 (.78)	.58 (.41)	-0.34 (.49)	-0.56 (.34)	-0.46 (.46)	.97* (.38)	-0.22 (.47)	-0.98** (.38)	-0.71 (.51)
<i>Work-life balance satisfaction</i>												
Fathers' share <=40%	-0.04 (.13)	.07 (.15)	.04 (.13)	.01 (.14)	.05 (.13)	.11 (.14)	.27* (.12)	-0.06 (.14)	.03 (.12)	.14 (.14)	-0.00 (.12)	.05 (.13)
Fathers' share 40-100%	.08 (.15)	.15 (.16)	.15 (.27)	.39 (.28)	-0.16 (.17)	.28 (.18)	.28 (.15)	.13 (.17)	-0.06 (.16)	.17 (.18)	.35* (.16)	.23 (.19)
<i>Satisfaction with social life</i>												
Fathers' share <=40%	-0.04 (.13)	.18 (.15)	-0.04 (.12)	-0.14 (.14)	-0.05 (.12)	.21 (.14)	-0.11 (.12)	.07 (.14)	.00 (.12)	.12 (.14)	-0.18 (.12)	-0.04 (.14)
Fathers' share 40-100%	.22 (.14)	.34* (.16)	-0.24 (.25)	.02 (.28)	-0.00 (.16)	.22 (.18)	.17 (.14)	.24 (.17)	.29 (.15)	.57** (.18)	-0.06 (.16)	-0.09 (.19)
<i>Satisfaction with partner</i>												
Fathers' share <=40%	-0.03 (.08)	.06 (.09)	-0.02 (.08)	.05 (.08)	-0.04 (.08)	.04 (.09)	.08 (.07)	-0.10 (.08)	-0.03 (.07)	.12 (.09)	.03 (.07)	.02 (.08)
Fathers' share 40-100%	-0.13 (.09)	-0.03 (.10)	-0.15 (.16)	-0.36* (.17)	-0.09 (.10)	-0.22* (.10)	-0.08 (.09)	.02 (.10)	-0.09 (.10)	-0.01 (.10)	-0.12 (.10)	-0.16 (.11)
<i>Mean daily enjoyment</i>												
Fathers' share <=40%	-0.10 (.08)	.12 (.09)	-0.04 (.08)	.13 (.09)	-0.06 (.08)	-0.03 (.08)	-0.08 (.08)	.08 (.08)	-0.13 (.08)	.05 (.08)	.04 (.08)	.13 (.08)
Fathers' share 40-100%	-0.05 (.09)	.31** (.09)	-0.15 (.16)	.18 (.17)	-0.15 (.11)	.04 (.11)	.06 (.09)	.30** (.10)	-0.16 (.10)	.11 (.10)	.06 (.10)	.31** (.11)

Outcome variables: each one of the above specified wellbeing outcomes, recorded on a score ranging from 1 to 7. Each coefficient denotes the increase/decrease in the wellbeing score for the share of childcare specified in the first column, by contrast with households in which fathers did not do any childcare. Note: ***p < 0.001, **p < 0.01, *p < 0.05. Matched household-level dataset of parents aged 16 and above in heterosexual couples with at least one child under 15. Data: UK TUS 2015. The full regression results are available in the appendix

Mothers

Mothers tended to be more anxious in households where fathers reported doing more than 40% of the routine childcare (a .97 unit increase in their anxiety score, $p < .05$) by comparison with those where they did not engage in caring. On the other hand, mothers reported being less anxious in households where fathers were moderately engaged in enriched care. Interestingly, the effect is stronger (a 1.12 unit decrease in the anxiety score, $p < .001$) in households where the father is engaged in some enriched care (1-40%) compared to those where fathers were engaged for more than 40% of the time ($-.98$, $p < .01$).

No household-level association was found between the sharing of care by fathers and maternal overall life satisfaction, once control variables were taken into account (for more see appendix). Before control variables were introduced, a positive effect on maternal satisfaction with leisure was visible in households where father involvement in primary and routine care was larger than 40% (not shown).

In households where the father took on more than 40% of the enriched care on diary day, mothers tended to be more satisfied with their work-life balance (.35, $p < .05$). The same is true of households where some joint care (1-40%) took place (a .27 increase, $p < .05$).

Although in the bivariate analysis we found a negative association between fathers' involvement in more than 40% of primary care and mothers' mean daily enjoyment (not shown), this association disappears once socio-demographic characteristics are controlled for.

By comparison to those who graduated from higher education, mothers with who only held an A-Level or GCSE seemed to experience markedly lower levels of anxiety. Fathers in households with low qualified mothers tended to experience worse satisfaction with their social life. Mothers also tend to be more anxious, and sometimes more satisfied with their leisure in traditional, male breadwinner households rather than in the dual earner ones. Finally, in some cases, maternal or paternal well-being outcomes improved in households where fathers worked in a medium qualified job, with or without flexible hours (see appendix): this is true of anxiety and life satisfaction. In households in which there is some outsourcing of childcare to nurseries or family mothers have worse maternal anxiety and work-life balance satisfaction but better satisfaction with their partner.

Fathers

No association was found between the share of primary care undertaken by fathers and their level of anxiety, overall life satisfaction and satisfaction with their leisure after controlling for socio-demographic characteristics.

In households where fathers took up more than 40% of the primary or routine caring time, they also reported higher levels of satisfaction with their social life (respectively .34, $p < .05$ and .57, $p < .01$) than in those where they did not engage in caring, as visible in Table 7.

However, Table 7 also shows that in households where they took up more than 40% of secondary and solo care, fathers also reported lower satisfaction with their relationship (respectively $-.36$, $p < .05$ and $-.22$, $p < .05$). In households where fathers took up more than 40% of the primary or enriched caring time, fathers also reported higher levels of mean daily enjoyment than those in which they did not engage in caring (resp. .31, $p < .001$ and .31, $p < .01$). The same is true in

households where more than 40% of the total caring time was carried out jointly by both parents (.30, $p < .01$).

In some cases, and by contrast with households in which fathers are employed in non-flexible low qualified jobs (skills level 4), fathers holding jobs with skills levels 2 or 3 reported lower levels of anxiety, better satisfaction with their life, as well as mean daily enjoyment (see appendix). Whether fathers worked under flexible working-time provisions did not seem to be associated with lower anxiety or increased well-being. Fathers who were not employed reported overall lower levels of work-life balance satisfaction and satisfaction with their social life. Fathers similarly employed in low qualified jobs but benefiting from flexible working-time schedule reported higher levels of mean daily enjoyment. Whether childcare was outsourced did not impact on fathers' well-being outcomes.

Finally, traditional breadwinner arrangements (i.e. where mothers did not engage in full-time work) resulted in mixed well-being outcomes for mothers, such as higher levels of anxiety but also higher levels of work-life balance satisfaction, whereas fathers tended to express more satisfaction with their partner (see Table 11 in the appendix).

Children

Three sets of daily enjoyment models were fit to the data (with the time spent with their mother, their father, and both parents as independent variables respectively). These models controlled for variables such as, gender and age of the child(ren), amount of time spent with the parent, maternal and paternal combined working time/flexible work schedule, maternal/paternal education, whether their mother or father reported that they felt that diary day was a rushed day. Casewise deletion was applied.

The models explain only a small portion of variance in overall daily enjoyment. Four main results are reported in Table 8:

- After controlling for parental characteristics and children age and gender, no significant association was found between the daily enjoyment of children aged 8-14 and the time spent with either their mother, their father or both parents jointly.
- No significant interaction effect was found either between the time spent with each parent or both parents jointly and the gender of the child or whether each parent reported that this was a rushed day.
- Having their mother reporting a rushed day rather than a normal one had a significantly negative impact on the enjoyment children reported on that day both in the models where maternal and joint time were tested (resp. $-.20$ $p < .05$ and $-.24$ $p < .05$).
- At the same time, when the age of the child was not controlled for in the model, a positive effect of time spent with mothers on children enjoyment was visible, meaning that the time spent with their mother matters could matter more for the younger ones (not shown).

Table 8 OLS models of daily enjoyment among children aged 8-14 by time spent with each parent

Model number	Time with mothers			Time with fathers			Time with both parents			
	1	2	3	4	5	6	7	8	9	10
Age	-0.05** (.02)	-0.05** (.02)	-0.05** (.02)	-0.05** (.02)	-0.05** (.02)	-0.05** (.02)	-0.05** (.02)	-0.05** (.02)	-0.05** (.02)	-0.05** (.02)
Girl (ref: Boy)	.00 (.07)	-0.01 (.09)	.00 (.07)	.01 (.07)	.01 (.08)	.01 (.07)	.00 (.07)	-0.01 (.09)	.00 (.07)	.01 (.07)
Mothers'/fathers'/both parents' time	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)	-0.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)
Interaction: Boy with mothers', fathers' or both parents' time		.00 (.00)			-0.00 (.00)			.00 (.00)		
Rushed day(Mothers)			-0.20* (.10)						-0.24* (.10)	
Interaction: Rushed day(mother) with mothers', both parents' time			.00 (.00)						.00 (.00)	
Rushed day(Father)										
Interaction: Rushed day (father) with fathers', both parents' time										
Number of observations	370	370	370	362	362	362	358	358	358	358

Outcome variables: mean daily enjoyment of each child aged 8-14 in the household, recorded on a score ranging from 1 to 7. Each coefficient denotes an increase/decrease in the mean daily enjoyment of respondents. Note: Regression of mean daily enjoyment by time spent with mother (models 1-3), father (models 4-6), both jointly (models 7-10). ***p < 0:001, **p < 0:01, *p < 0:05. Matched household-level dataset: children aged 8-14 in households with two heterosexual parents. Data: UK TUS 2015

3.3 Parental working-time, childcare and well-being

In this section we examined three additional questions:

1. *What is the impact of parental working patterns on fathers' involvement in primary and routine childcare?* – Our goal was to investigate how fathers' working time and flexible working patterns influence how much childcare they provide.
2. *To what extent is fathers' involvement in childcare associated with parental and children well-being?* - Unlike the previous section we wanted to examine separately the impact of fathers engaging in childcare at all, and that of the amount of childcare for those who carried out childcare.
3. *To what extent are these well-being outcomes affected by childcare taking place at the weekend or instead during weekdays?* This question was investigated given that fathers are more likely to take part in childcare activities during the weekend, and that the nature of childcare activities may differ depending on whether it takes place during on weekdays or at the weekend, influencing its potential impact on enjoyment and well-being outcomes.

We used the same matched household dataset drawn from the 2015 UK Time Use Survey as previously. As we wanted to examine the impact of the involvement in childcare by fathers in the context of dual earners families, all the analyses presented in this section were conducted in households in which both parents were in employment.

In order to simplify the analysis, only primary and routine childcare were taken into account since these types of childcare are significant in terms of maternal labour market participation and for gender equality (Bianchi et al., 2012; Craig and Mullan, 2011). As a reminder, primary childcare is defined as the total time spent looking after children, as a primary (i.e. main) activity in the time diary. Routine childcare can be defined as involving the physical care, such as feeding, cleaning/bathing, routine bedtime activities, or taking children to school.

Main findings

- **Fathers working flexible hours or working at the weekend for any reasons⁸ are more likely to be involved in childcare** than those who do not work in these ways.
- Fathers are less likely to be involved in routine childcare in households in which mothers work part-time, but at the same time those who do tend to do for longer period of time than in households where both parents are employed full-time.
- **Being involved in primary childcare is positively associated with fathers' overall enjoyment.** What is more, the relationship between fathers' involvement in childcare and well-being outcomes do not appear to be linear, meaning the smaller incremental changes in the increase in share of care provided by fathers do not matter much.

⁸ Fathers working at the weekend may be working at home or outside home as part of their contracted hours, working overtime, or carrying out additional paid work in another job.

- Examining only households in which fathers were involved in childcare, a share of childcare (relative) exceeding 40% of the total amount of childcare conducted in the household is associated with higher anxiety and lower daily enjoyment among mothers.
- **Both mothers and fathers equally enjoy higher levels of well-being as they care for children at the weekend rather than on a weekday.**

How do working patterns shape the sharing of childcare?

Given the small sample size, and in order to maximize the robustness of the results, we only controlled for both fathers' and mothers' education level as well as the household working-time configuration (i.e. father in full-time paid employment and mother part-time, other arrangements vs both parents in full-time employment) in the model.

We examined this question by focusing on primary and routine childcare.

Four types of parental working patterns were covered:

- Whether fathers worked flexible hours, broadly defined⁹
- Whether fathers worked long hours (> 9 hours per day) during the week the time diary was recorded
- Whether fathers worked unsocial hours on the week the time diary was recorded; these were defined as working either before 8 AM, after 6 PM or at the weekend.

Descriptive results are shown in Table 9 and multivariate analysis in Table 10 below. We followed two perspectives. The left hand-side of the table shows results also *including* fathers who were not involved in childcare in the denominator whereas the right hand side only includes those who reported doing at least 10 minutes of childcare during the reported diaries. The former perspective adequately reflects the impact of the sizeable proportion of fathers who did not engage in childcare. However, these figures do not adequately reflect the typical size of the share of childcare taken on by fathers who did engage in childcare on the day the diary was recorded. The right hand side of the table better represents it, by only taking into account fathers who do take part in care.

⁹ Any one of: flexible hours, with specified core hours; flexible hours, with no specified core hours; annualised hours contract; term time working; job sharing; nine-day fortnight; four-and-a-half day week; zero hours contract

Table 9 Median share of childcare taken by fathers in the household (%)

	All ^a		Carers ^b	
	Primary	Routine	Primary	Routine
All households	19	13	33	23
<i>Any flexible working-time provision</i>				
No flexible working-time	18	14	33	22
Flexible working-time	22	13	32	24
<i>Household-level working-time configurations</i>				
Both full-time	22	14	32	21
Father full-time/Mother Part-time	19	12	33	25
Other arrangements	13	15	31	33
<i>Whether worked long hours on diary day</i>				
Worked less than 9 hours	18	14	29	23
Worked 9 hours or more	18	11	35	22
<i>Whether worked unsocial hours that week</i>				
No unsocial hours	20	12	31	23
Works unsocial hours	18	13	32	23

Note: Within-household median proportion of time spent on childcare by fathers relative to mothers by type, and fathers' / household's working-time arrangements. Denominator: ^a All respondents ^b Fathers and mothers with one parent reporting at least 10 minutes of caring. Matched data in UK households with two cohabitating heterosexual parents in employment and at least one child under 15. Data: UK TUS 2015.

As Table 9 shows, typically, fathers who engaged in primary childcare (carers column) tended to do so for less than one third of the total time spent on childcare in the household (33%). This proportion falls to even less than one quarter (23%) if we consider routine childcare only. When also taking into account households in which fathers did not report doing some childcare on diary day (all column), these numbers dropped respectively to 19% and 13%, reflecting the significant number of households in which fathers did not do any childcare.

Fathers with flexible working-time arrangements appeared to take on a slightly larger share of primary childcare, 22% vs. 18% than those without flexible working time, but only when we take into account those who did not report doing any childcare (all column). This also indicates that fathers who have flexible working arrangements are more likely to engage in primary childcare. Among fathers who did some childcare (caring column), there was no real difference between the two. On the other hand, for routine childcare we see that fathers with flexible working time arrangements do a slightly larger share of routine childcare 24 vs 22%, but only when we look at those who do provide care.

We can see that the differences in the median share of childcare taken by fathers working full-time tend to be small irrespective of their partner's paid working time. However, when including in our data fathers who did not do childcare, fathers with part-time working partners took on a smaller share of primary and routine childcare than those with partners working full-time. At the same time, in households where fathers took on some of the childcare, the typical amount of time spent by fathers was slightly larger in cases when their partner was employed part-time rather than full time.

Interestingly, whereas *not* associated with a lower share of involvement in primary childcare (Table 9), fathers working long hours seem to be slightly less engaged in routine childcare. There are also indications that working long days is actually associated with a larger share of primary childcare, but lower involvement in routine childcare (when we only examine fathers who did some childcare). This may be in part explained by the fact that fathers who worked long days during the week may compensate at the weekend by carrying other types of childcare than the more demanding routine one. Working unsocial hours (either before 8 in the morning, after 6 in the evening, or at the weekend) only seems to marginally affect the propensity to engage in childcare or the typical share taken up by fathers.

Multivariate analysis

Table 10 summarises the results of the multivariate analysis conducted by fitting, respectively, logistic regression models of the probability for fathers to be involved in primary and routine childcare, and linear models of the share of primary and routine childcare fathers did carry out, only including in the sample those who were involved in childcare on the given diary day.

The output from these models shows more instances of working-time patterns being significantly associated with fathers involvement in childcare (four variables), and fewer with the amount of time childcare is carried out by fathers (only two variables).

We can see that, controlling for all other working-time characteristics, fathers were almost twice as likely to be involved in primary care and one and a half time as likely in routine childcare duties if they used flexible working-time arrangements (respectively: 1.91 $p < .01$ and 1.56 $p < .05$), or if they worked at the weekend (1.6 $p < .05$)

Compared to households where both mothers and fathers worked full time, those where mothers were employed part-time while fathers worked full time were those where fathers were almost half as likely to be doing any routine childcare (.59 $p < .05$) confirming previous studies based on other large scale data (Norman et al., 2014). Interestingly, and confirming previous studies (Lyonette and Crompton, 2015; van der Lippe et al., 2018), in households characterised by having other working-time arrangements – often involving father working part-time, fathers were also three times less likely to be doing any routine childcare (.34 $p < .05$).

On the other hand, in households where fathers did get involved in routine childcare, the share they took on was higher if mothers were employed part-time rather than full-time (a .06 percentage point increase, $p < .05$), or more understandably, when fathers themselves were employed part-time, reported as other arrangements (.15 percentage point increase, $p < .05$). However, flexible working and other working time patterns did not seem to influence neither the share of primary nor routine care carried out by fathers.

Table 10: Probability of paternal involvement in childcare by working time characteristics

	Probability of fathers doing some childcare (rather than not)		Share of childcare time by fathers (percentage points)	
	Primary	Routine	Primary	Routine
Father full time/ Mothers part-time (ref: both full-time)	.84	.59*	.02	.06*
	(.23)	(.23)	(.03)	(.03)
Other working-time configuration	.44	.34*	-.08	.15*
	(.47)	(.46)	(.07)	(.07)
Works long days	.7	.66	.04	.00
	(.22)	(.21)	(.03)	(.03)
Flexible working-time arrangement	1.91**	1.56*	.05	.05
	(.24)	(.22)	(.03)	(.03)
Works unsocial hours	.99*	1.00	.00	.00
	(.00)	(.00)	(.00)	(.00)
Weekend work	1.53	1.6*	.03	-.02
	(.22)	(.21)	(.03)	(.03)
Num. obs.	469	469	343	325

Left hand side of the table: logit model of the odds for fathers to report childcare on diary day. A value greater than 1 denotes positive odds, whereas values between 0 and 1 denote negative odds. For technical reasons, the standard errors are that of the logarithm of the coefficients shown in the table (i.e. non exponentiated coefficients). Right hand side: OLS model of the percentage of total time spent on childcare in the households by fathers. ***p < 0:001, **p < 0:01, *p < 0:05. Matched household dataset of dual earning parents aged 16 and above in heterosexual couples with at least one child under 15. data: UK TUS 2015

Do households in which fathers are involved in childcare enjoy higher well-being?

We revisited the earlier multivariate models of well-being, first by modelling the association between parental well-being and whether fathers did get involved at all in childcare using a dichotomic variable. This was done for all eight well-being outcomes listed above, focusing on the respective impact of involvement in primary and routine care. Significant results are shown in Table 11. It should be noted however, that the proportion of variance explained by these models is small.

The headline result is that in most cases, we found no significant association between whether fathers were involved in childcare and parental well-being, for either mothers or fathers, with one sizable exception. As shown in Table 11, in households in which fathers took part to primary childcare, they reported a significantly higher level of daily enjoyment (.29, p <.01), by contrast with households in which they did not. These findings therefore confirm previous results showing that the immediate well-being of fathers is positively affected by involvement in childcare. An interesting additional finding was that as could be expected, in households in which fathers either worked part-time or were not employed (i.e. ‘Other arrangements’) they reported higher levels of work-life balance satisfaction than those in which fathers worked full-time (1.01 p<.01).

Table 11: OLS model of paternal well-being by whether fathers are involved in primary childcare

	Work Life Balance satisfaction	Enjoyment
Father involved (reference: not involved)	.11	.29**
	(.17)	(.10)
Fathers full time/ Mothers part-time (reference: both full-time)	.01	-.02
	(.16)	(.09)
Other arrangements	1.01**	.02
	(.35)	(.20)
Num. obs.	371	266

Outcome variables: work-life balance satisfaction and mean daily enjoyment, recorded on a score ranging from 1 to 7. Each coefficient denotes the increase/decrease in the wellbeing score for the category specified in the first column, by contrast with the reference category. ***p < 0:001, **p < 0:01, *p < 0:05. Matched household dataset of dual earning parents aged 16 and above in heterosexual couples with at least one child under 15. data: UK TUS 2015

Is the extent of fathers' involvement in childcare associated with improved well-being?

We then modelled the impact of *the share* of total childcare carried out by fathers on the well-being outcomes of parents in dual earner families, measured on scales ranging from 1 to 7. We used the same well-being outcomes as we have in the earlier sections of this report, and focused only on households where fathers did get involved in childcare (at least 10 minutes of reported childcare). The share of childcare taken on by fathers was modelled using the same indicators as previously, recording whether father took on respectively less than 40% of the total amount of childcare time, or instead 40% or more. Results are shown in Table 12.

Here again, the number of significant associations is limited, but seems to confirm previous results:

We found that in households in which fathers were involved in routine childcare for 40% or more of the time, mothers also displayed higher levels of anxiety (1.10, p <.05), as well as, initially lower daily enjoyment (-.33, p <.05), in comparison with those in which fathers took on a smaller share of routine childcare. However, the latter effect disappeared once we controlled for whether childcare took place at the weekend rather than on a weekday (see Table 18 in the appendix).

Further analysis conducted with the share of childcare done by fathers as a continuous variable (ranging from 1 to 100) did not yield significant results, suggesting that the above effect is non-linear (not shown).

Table 12: OLS model of maternal well-being by extent of paternal involvement in routine childcare

	Anxiety	Happiness	Satisfaction with social life	Satisfaction with partner	Enjoyment
More than 40% share of childcare	1.10*	-0.27	.25	-.01	-.33*
(Ref: less than 40%)	(.48)	(.30)	(18)	(.11)	(.13)
Father full-time / Mother part-time (ref: both full-time)	.95*	-.66*	.02	-.26**	.03
	(.41)	(.26)	(.16)	(.10)	(.11)
Other working-time arrangements	1.99*	-1.80**	-.94*	-.21	-.31
	(.90)	(.57)	(.40)	(.27)	(.22)
Num. obs.	196	196	363	289	174

Outcome variables: each one of the above specified wellbeing outcomes, recorded on a score ranging from 1 to 7. Each coefficient denotes the increase/decrease in the wellbeing score for the share of childcare specified in the first column, by contrast with households in which fathers do not do any childcare. ***p < 0:001, **p < 0:01, *p < 0:05. Matched household dataset of dual earning parents aged 16 and above in heterosexual couples with at least one child under 15. data: UK TUS 2015

Impact of the day of the week

The above models of daily enjoyment of parents and children, were also run with the day of the week (i.e. weekend vs weekday) as a covariate, both as an additive and interaction term, although the reliability of the latter is limited, given the sample size. Results (not shown) suggest that there is a positive impact of being involved in childcare at the weekend on immediate well-being across the board, but that this impact is not specifically interacting with fathers' involvement in childcare – with the exception previously described of the association routine childcare and maternal wellbeing. In other words, both mothers and fathers equally enjoy higher levels of well-being as they care for children at the weekend rather than on a weekday.

It should be reminded that the above findings rely on small sample size and therefore extrapolations should be made with caution.

3.4 COVID-19 and impact of sharing of care between parents

We should remind readers again that this report is based on data gathered in 2015, before the COVID-19 pandemic. Studies that examined the sharing of childcare and housework among parents during the pandemic, especially during the lockdown periods, have found a general trend towards an increase in fathers' involvement in childcare. For example, an experimental survey carried out in May 2020 has shown that the Spring lockdown led to a 58% increase in the amount of childcare done by men compared to the data we are using here (ONS, 2020b). Regardless, women remained largely responsible for providing childcare, spending on average an additional 15 minutes per day on it. However, the childcare gap between men and women was reduced somewhat during the first stage of the UK lockdown – as the men's share (i.e. amount of time) represented about 2/3rd of women's. This is a significant increase from 2015, where the corresponding figure was 39%. This result was confirmed by several other studies and surveys for

the UK (Chung, Birkett et al., 2020; Chung, Seo et al., 2020) as well as other countries, such as Australia, the US and the Netherlands (Carlson et al., 2020; Craig and Churchill, 2020; Yerkes et al., 2020).

These shifts in men's behaviours could be due to a number of factors. One reason could be that during the first UK lockdown between March and July 2020, a majority of schools and childcare facilities were closed except for children of key workers. Thus, in dual-earner households, fathers may have had no other option but to increase the amount of childcare they were providing, especially routine childcare, given the extensive amount of time that was required of parents to care for children. Another reason behind this change may be due to the fact that half of the workforce was working from home full time during the lockdown (ONS, 2020a). This would have reduced commuting time for workers, especially for men who are known to have longer commutes (ONS, 2020b), thus providing many fathers with the opportunity to spend more time with children (see also, Chung, Birkett et al., 2020). In a recent UK survey of working parents during the Spring lockdown in May-June, $\frac{3}{4}$ of all fathers agreed that they would like to work flexibly to spend more time with their family (Chung, Seo et al., 2020). What is more in recent survey of managers, a majority were reported to believe that organisations will support workers to work flexibly in the future – including working from home (Forbes et al., 2020). Based on these reports, we could expect that fathers will be likely to engage more in the care of children in the future, especially when meaningful support is provided by employers.

As we see from this report that spending more time caring for children can help improve well-being outcomes for parents. At the same time we have seen a significant degradation of mental health among the population over this pandemic, especially mothers (Chung, Seo et al., 2020; Xue and McMunn, 2020). In this sense, the sharing of childcare may be a crucial tool to address issues of mental health and well-being, in addition to ensuring that women's labour market positions are maintained during this crisis (see also, Collins et al., 2020; Petts et al., 2020).

Conclusion

This study finds that despite a few advances, women still remain largely responsible for childcare across the UK. Although we do see men engaging in childcare, they are more likely to do so jointly with the mother, take on the more enjoyable enrichment childcare, mainly at the weekend. This leaves most of the routine care of children to mothers, especially on weekdays. Routine care (such as doing the school run or feeding children) is necessary but by nature more rigid, and more likely to hinder labour market participation of parents.

What is more, we saw a surprising number of fathers who did not take part in giving any childcare, in particular routine care and care as a secondary activity. Furthermore, more than half of dads in our survey reported not doing enrichment care on the day they recorded their daily activities. Our analysis shows that in general, households where fathers were involved in childcare were the ones we found positive well-being outcomes for parents. For example, fathers' involvement in care increased mothers' sense of work life balance, and reduced mothers' feelings of anxiety. For fathers themselves, being involved in childcare increased satisfaction with social life, and more importantly their sense of enjoyment. However, we also found that fathers who were significantly involved in childcare were less satisfied with their relationship, and their partners were more likely to experience anxiety. These results need further investigation to explore the mechanisms behind the result.

Our analysis also shows that fathers who were able to use flexible working time arrangements, or had partners who also worked full-time were much more likely to provide some primary or routine care. This provides us with some evidence that providing fathers better access to flexible working arrangements may be a good policy instrument in order to increase their participation in care giving (see also Chung, Birkett et al., 2020). We know from previous studies that there is great demands among fathers to be more involved in childcare (Working Families, 2017). Fathers have also displayed an increased preference for flexible working for care purposes due to their experience of it during the COVID-19 lockdown (Chung, Seo et al., 2020).

The present study further shows that the involvement of fathers in childcare could contribute to the well-being needs of working parents, in addition to helping to achieve gender equality at home and in the labour market (see also, Ruppanner et al., 2018; Chandola et al., 2019). Given the trends we see during the COVID-19 pandemic and the changes in preferences of parents, we expect to see a rising trend in fathers involvement in childcare in the future if relevant support is provided.

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