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Research Article

**Coronavirus and care: How the coronavirus
crisis affected fathers' involvement in Germany**

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Coronavirus and care: How the coronavirus crisis affected fathers' involvement in Germany

Michaela Kreyenfeld¹

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Abstract

BACKGROUND

Some have hypothesized that the coronavirus crisis may result in a retraditionalization of behaviour. This paper examines this hypothesis by analyzing how the time fathers and mothers spent with their children changed during the first lockdown in the case of Germany.

METHODS

Data for this investigation come from the German Socio-Economic Panel. The outcome variable is the time spent on childcare tasks. We investigate how this time changed between 2019 and spring 2020 and how these patterns differed by gender, education, and employment situation. As a method, we employ linear panel regressions where the dependent variable is the change in childcare time between the two survey years.

RESULTS

We find that fathers and mothers expanded the time they spent on childcare to similar degrees between 2019 and spring 2020, which marks the period of the first lockdown. However, we also observe large differences by level of education. We find that men with low and medium levels of education spent more time with their children than they did before the onset of the crisis.

CONTRIBUTION

Our study provides novel evidence on the effect of the coronavirus crisis on fathers' involvement in childcare. Contrary to expectations based on previous research, we find that fathers expanded the time they were spending with their children during the first lockdown. While we also find that women continue to perform the bulk of childcare tasks, our results cast a positive light on the potential of paternal involvement in contemporary societies.

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1. Introduction

As a response to the spread of the coronavirus, day-care centres and schools in Germany were closed nationwide, leaving families to grapple with additional childcare tasks. This paper examines the question of whether the crisis has led to an increase in paternal involvement in childcare responsibilities in couple households. On the one hand, it may be argued that as a result of German family policies that encourage a more equal labour division within households, there has been a moderate trend in the country towards increases in paternal care and in maternal full-time work. However, this trend is recent. Thus, it is reasonable to be concerned that these developments are fragile and that strong period effects – such as the coronavirus crisis – could easily lead to a backlash and, in turn, to a retraditionalization of care patterns. On the other hand, the single-earner family model, in which the well-being of the household is largely dependent on one earner, is increasingly perceived as risky. High separation and divorce rates as well as growing economic uncertainties are the main factors that have put this family model under pressure. Furthermore, the ‘system-relevant occupations’ that were in the spotlight during the crisis – such as healthcare and retail – are female-dominated. In addition, short-time work arrangements were more prevalent among male than among female workers. As a result, women’s employment may have become more crucial to sustaining the economic well-being of households. Thus, the coronavirus crisis could have pushed men towards taking on more childrearing tasks than they did before the pandemic.

We test these competing hypotheses by examining how paternal and maternal childcare time has changed between 2019 and the first lockdown in spring 2020. Data for this investigation come from the German Socio-Economic Panel (GSOEP) and its supplement study SOEP-CoV, which was in the field during this period. The outcome variable of our investigation is the time spent on childcare tasks, measured by the average daily care time during a working week. Using OLS regression as well as fixed-effects modelling, we investigate how the time parents spent with their children changed between 2019 and spring 2020 and how these patterns differed by gender, education, and employment situation.

2. Background and theory

A large body of literature has investigated the division of household labour, including how it has evolved over time and how it changes across the life course (Altintas and Sullivan 2017; Bianchi 2000; Dechant and Schulz 2014; Grunow and Evertsson 2016; 2019; Lyonette and Crompton 2015; van der Lippe, Treas, and Norbutas 2018). A consistent finding in this literature is that the birth of the first child is a turning point in

the gendered division of household labour. In many cases, the arrival of a child leads to a reconfiguration of behaviour along traditional gender roles, even in couples in which the partners had previously shared household chores equally and had earned equally high wages (Dechant and Schulz 2014; Grunow and Evertsson 2016). While the bulk of childcare and household chores continue to rest squarely on the shoulders of women, we have also observed in recent decades a trend towards men becoming increasingly engaged in the upbringing of their children (Altintas and Sullivan 2017; Hook and Wolfe 2012). Moreover, a slight increase in men's engagement in routine housework (cooking, cleaning, etc.) has been documented (Bianchi et al. 2012).

However, the patterns of the gendered division of household labour differ radically across countries and social policy contexts. Germany is usually characterized as a traditional system in which the tax and transfer system incentivizes a gendered division of work. Recent policy reforms – such as the expansion of childcare for children below age 3 – have resulted in some increases in maternal full-time work (Wrohlich, Geyer, and Haan 2015; Zimmert 2019). Furthermore, the introduction of an earnings-related parental leave benefit together with the 'daddy months' has led to an increase in the share of fathers taking parental leave. Yet despite these recent changes, the patterns of care and work remain strongly gendered. Only a small fraction of men with children are working part-time, while part-time employment is common among women with children, particularly in the western parts of the country (OECD 2017; Schneider, Sulak, and Panova 2019). Likewise, the division of housework is strongly gendered. According to the most recent time-use survey from 2012/2013, there were large gender differences in the division of housework in couple households with children. Klünder and Meier-Gräwe (2017) find that on an average weekday, men spent roughly three hours on childcare and household tasks while women spent almost five and a half hours. These results have been corroborated by a large body of further research, mostly based on data from the GSOEP (e.g., Zabel and Heintz-Martin 2013; Leopold, Skopek, and Schulz 2018).

The coronavirus epidemic, which started to sweep across Germany in the early months of 2020, has had severe social and economic repercussions. The efforts of public health officials to prevent the spread of the virus led to a nationwide closure of schools and day-care centres. Authorities also urged parents to reduce contact between their children and the children's grandparents, which left many parents of young children with additional childcare burdens. In light of these developments, some have hypothesized that the coronavirus crisis has led to a retraditionalization of gender-role behaviour, with women bearing the brunt of the additional childcare chores that have arisen (Allemendinger 2020). However, the evidence supporting this claim has been rather inconclusive. A cross-sectional survey conducted by the Institute of Economics and Social Research asked parents to compare how they organized childcare before and during the lockdown (Kohlrausch and Zucco 2020). While the study confirmed that

women have been shouldering the lion's share of the childrearing tasks during the crisis, it also found that the division of care in families has become somewhat more equal. A study based on data from the German family panel corroborated these findings (Hank and Steinbach 2020). Similar results were also reported by a study for the United Kingdom (Sevilla and Smith 2020). A survey conducted by Bünning, Hipp, and Munnes (2020) focuses on employment patterns and how they have changed over the course of the coronavirus crisis in Germany. The results indicate that mothers have reduced their employment activities more than fathers, which suggests that women may have become more engaged in childcare activities. The present study complements these more descriptive findings with an analysis of longitudinal data for Germany. We compare care patterns before and during the crisis, investigating how they varied by gender and how they were affected by past and present employment patterns.

3. Hypotheses

Following the logic of the 'retraditionalization hypothesis,' it may be assumed that the division of labour within households in Germany has become more traditional than it was prior to the onset of the coronavirus crisis. However, traditional family patterns have started to shift only recently in Germany, partially due to family policy reforms. It is, therefore, reasonable to assume that the trend towards a more equal division of labour and greater paternal involvement is not yet entrenched in the deeper mindset of couples. Period events – such as the coronavirus crisis – could easily lead to a retraditionalization of gender-role behaviour under these conditions. If these developments had left paternal involvement largely unaffected and mainly increased the time mothers spent with their children, this would provide strong support for the retraditionalization hypothesis. Thus, our first hypothesis states that the time mothers spend on childcare has increased greatly during the lockdown, while the behaviour of fathers has not changed substantially (Hypothesis 1).

The coronavirus crisis is substantial and may reconfigure gender-role behaviour. However, it is not the first major crisis we have experienced in the 21st century. The global financial crisis already shattered the economic foundations of many families around 2007 and 2008. The research findings on the long-term effects of the global financial crisis are still inconclusive. However, the short-run evidence suggests that the economic downturn pushed women into the labour market and eroded the single-earner model (Bettio et al 2013; OECD 2017). Against this background, it may be assumed that the coronavirus crisis again exposed the riskiness of the single-earner model. Couples may increasingly share the conviction that both partners need to be firmly established in the labour market to shield the family from economic risks. Furthermore, women may

not be willing to fall back into traditional care patterns, while fathers may increasingly value the time they spend with their children. After all, the parents who have been most affected by the coronavirus crisis are those with young children. These parents had their children after 2005, after the main family policy reforms had been implemented in Germany. Thus, these parents are raising their children in a context in which fathers' involvement in childcare is encouraged by national policies. As a result, the parents who have been affected by the coronavirus crisis are different from older cohorts of parents. Thus, it may be argued that these parents are more likely than older generations of parents to regard care obligations as a joint commitment, and that they have therefore tried to manage the additional childcare load together, particularly in the cases in which both parents were previously employed. Thus, we assume that mothers and fathers divided up the additional care time during the crisis equally, and that they therefore experienced similar increases in the time spent on care (Hypothesis 2).

Microlevel evidence suggests that economic shocks, such as the partner's unemployment, can have a profound impact on the division of household labour and childcare time (van der Lippe, Treas, and Norbutas 2018). While the effect is stronger for female than for male unemployment, both female and male unemployment tends to shift the bargaining power in the household and pushes the unemployed partner to increase the time spent on housework and childcare duties (*ibid.*). The coronavirus crisis has affected unemployment and, in the case of Germany, has led to a rapid increase in short-time work (IAB 2020a). These developments have affected various sectors and industries differently. It is clear that system-relevant occupations (retail and health) were the least likely to be exposed to unemployment and short-time work. These are also occupations that are more female-dominated. Against this background, it may be assumed that men increased the time they spent with their children even more than women because they were less likely to be working in a system-relevant occupation and were more likely to be in short-time work (Hypothesis 3).

Short-time work was not evenly distributed during the coronavirus crisis, with low-income males being the most likely to be affected by it (IABb 2020). Men with higher incomes and higher levels of education were the least likely to have their working hours reduced during the crisis. Many of these men were working in occupations that allowed them to work from home, which may have enabled them to spend more time with their children (Möhring et al. 2020). However, they were also more likely to be working in managerial positions for which the workload may have increased due to the coronavirus crisis. As a result, the 'coronavirus effect' should differ depending on prior income and social status. We posit that highly educated men were less likely to increase the time they spent with their children because they were less likely to be unemployed or in short-time work (Hypothesis 4a). The alternative hypothesis states that highly educated men were previously the vanguards of involved fatherhood, as they were most likely to take

advantage of the parental leave benefits that were introduced in Germany in 2007 (Geisler and Kreyenfeld 2018). Thus, we assume that during the coronavirus crisis, highly educated men also increased the time they spent on childcare more than their less-educated counterparts (Hypothesis 4b).

4. Data and method

4.1 Data

Data for this investigation come from SOEP-CoV. SOEP-CoV is a subsample of the German Socio-Economic Panel (GSOEP) that was surveyed between 1 April and 4 July 2020. To this end, all GSOEP households with a valid telephone number (excluding the so-called 'refugees samples') were contacted by telephone, and one adult person in the household was asked to participate in the survey. Half of the calls were made in the late afternoon or evening (51% in total) to ensure that the working population (or, rather, the people who were not working from home) could also be reached. The SOEP-CoV sample was randomly divided into nine tranches of participants who were contacted once every two to three weeks (for details, see Kühne et al. 2020). In this article, we use data from the first four tranches of SOEP-CoV, which were collected between 1 April and 30 May 2020. This period corresponds fairly well to the time of the lockdown and the period when the German federal states had ordered the closure of schools and day-care centres. To enable us to track respondents' care patterns over time, we linked the SOEP-CoV 2020 data to GSOEP data from 2019.

The analytical sample includes respondents who were sharing a household unit with children aged 0 to 11 years old at the time of the first interview in 2019. We have generated a balanced panel by keeping individuals who participated in GSOEP 2019 and SOEP-CoV 2020. We excluded respondents who were still childless in 2019, regardless of whether they had children thereafter. We also eliminated respondents who dropped out of the panel study or who had stopped living with their children (for example, as a result of union dissolution). In addition, we dropped single parents from the sample. The sample was further restricted to women and men who were aged 20 to 59 at the time of the first interview. Finally, we omitted respondents with missing information on the outcome variable and on the independent variables. We did not conduct any imputation here, as the proportion of missing values was negligible (less than 5% of the overall sample size).

The outcome variable is a continuous variable for the hours spent on childcare tasks per weekday by the father or the mother. Note also that in most cases, the respondents are the biological parents of the children in the household. However, we did not distinguish between biological parents and step-, foster, or adoptive parents.

The independent variables are the gender of the respondent, the region (eastern or western Germany), the age of the youngest child (ages 0 to 2, 3 to 5, or 6 to 11), and the total number of children in the household (one, two, or three or more). Employment status is differentiated by full-time employment, part-time employment (including marginal employment), non-employment, or other. Educational level is categorized as low, medium, or high based on the CASMIN classification scheme. Migration status distinguishes respondents who have a direct migration background from those who are native-born.

Table 1 reports the weighted sample statistics for the characteristics measured in 2019. For employment status, which is our only time-varying covariate, we also report the values for 2020. In total, the analytical sample includes 925 respondents. The distribution of the independent variables by gender provides the expected pattern. The table indicates that, on average, the women have slightly lower levels of education than the men. This pattern can be attributed to the sample composition, which is restricted to respondents with children. In general, women and men have in Germany reached parity in terms of formal education. However, in Germany, having more education is associated with higher levels of childlessness among women but lower levels of childlessness among men (Kreyenfeld and Konietzka 2016). Thus, we tend to find some gender differences in parents' levels of education. Likewise, the share of respondents in our sample who have a migration background is relatively high, at 31%. This disproportionate share can be attributed to the migrant population's low levels of childlessness and age structure. Most of the couples in the sample have two children, which corresponds to the 'two-child norm,' a pattern that has been reported in many western European countries, including in Germany (Testa 2007). Noteworthy are the large gender differences in the work patterns of the respondents. The overwhelming majority of the fathers indicated that they were employed full-time, while most of the mothers reported that they were working part-time in 2019 and 2020. When we look at how these work patterns changed between 2019 and 2020, we see that the share of employed individuals increased, particularly among mothers. This pattern must be attributed in part to the design of our analytical sample, which is a balanced panel. As the children in our sample became older between the two survey dates, parents who had previously reduced their working hours were able to increase their labour market activities. It should also be emphasized that the shares of both the female and the male respondents whose employment status was in the 'other' category increased somewhat from 2019 to 2020, as this category includes respondents who shifted to short-time work during the coronavirus crisis.

Table 1: Sample composition, columns %

	Women in partnership	Men in partnership	All
Gender			
Male	--	--	0.50
Female	--	--	0.50
Region			
Western Germany	0.82	0.78	0.80
Eastern Germany	0.18	0.22	0.20
Migration background			
No migration background	0.70	0.69	0.69
Migration background	0.30	0.31	0.31
Age of youngest child in household			
Age 0–2	0.29	0.32	0.30
Age 3–5	0.26	0.30	0.28
Age 6–11	0.45	0.38	0.41
Number of children in household			
One child	0.41	0.40	0.41
Two children	0.43	0.38	0.40
Three or more children	0.16	0.22	0.19
Level of education			
Low (CASMIN 0,1a,1b,2b)	0.15	0.12	0.14
Medium (CASMIN 1c,2a,2c)	0.51	0.46	0.48
High (CASMIN 3a,3b)	0.34	0.42	0.38
Employment status (2019)			
Full-time	0.18	0.83	0.50
Part-time	0.41	0.06	0.23
Not employed	0.32	0.09	0.21
Other	0.09	0.02	0.06
Employment status (2020)			
Full-time	0.27	0.78	0.53
Part-time	0.47	0.05	0.26
Not employed	0.18	0.04	0.11
Other	0.08	0.12	0.10
Sample size (unweighted)	603	322	925

Note: Weighted statistics.

4.2 Method

We employ a simple descriptive measure by calculating the mean of the time (in hours) that the respondents spent on childcare activities per weekday in 2019 and 2020. We calculate group means but also means for the individual changes across time. All descriptive analyses are conducted separately for men in partnerships and women in partnerships. The regression analysis consists of two steps. In a first step, we have estimated two linear regression models in which the outcome variable is the individual change in the time spent on childcare between 2019 and 2020, one for women and one for men. The independent variables are the characteristics measured in 2019. In a second step, we have estimated fixed-effects models in which we study how changes in the respondents' employment status have affected the time they spent with their children, again one model for women and one for men. All analyses are weighted using non-response-adjusted and post-stratified survey weights for the respondents who participated in the first four tranches of the SOEP-CoV study. In the related non-response analysis, particular attention was paid to employment status, income, gender, number of persons in a household, household type, educational level, migration background, and whether a person works in a systemically important occupation, as well as the Covid-19 incidence at the NUTS-3 regional level (on the day of the interview). Post-stratification was based on distributions taken from the German Microcensus 2018 for various regional and socio-economic characteristics, including age, gender, household size, citizenship, size of municipality, and federal state. The derivation of the respective survey weights is roughly described in Kühne et al. (2020, in English) and detailed in Steinhauer, Siegers, and Zinn (2020, in German). To assess whether the analytic sample of this study (i.e., the balanced panel of respondents in 2019 and 2020) represents a random subsample of the 2020 SOEP-CoV sample for which the survey weights were derived, we conducted a selectivity analysis. We estimated a logistic regression model in which the indicator for participation (or non-participation) in the two survey years 2019 and 2020 was the dependent variable, and all of the household and individual characteristics described above, including childcare hours, were the covariates. We found that in both samples, none of the covariates considered had a significant impact on membership. Therefore, the survey weights derived for the SOEP-CoV sample also fit the panel sample used in this study. For statistical analysis we used the software R (version x64 3.6.2).³

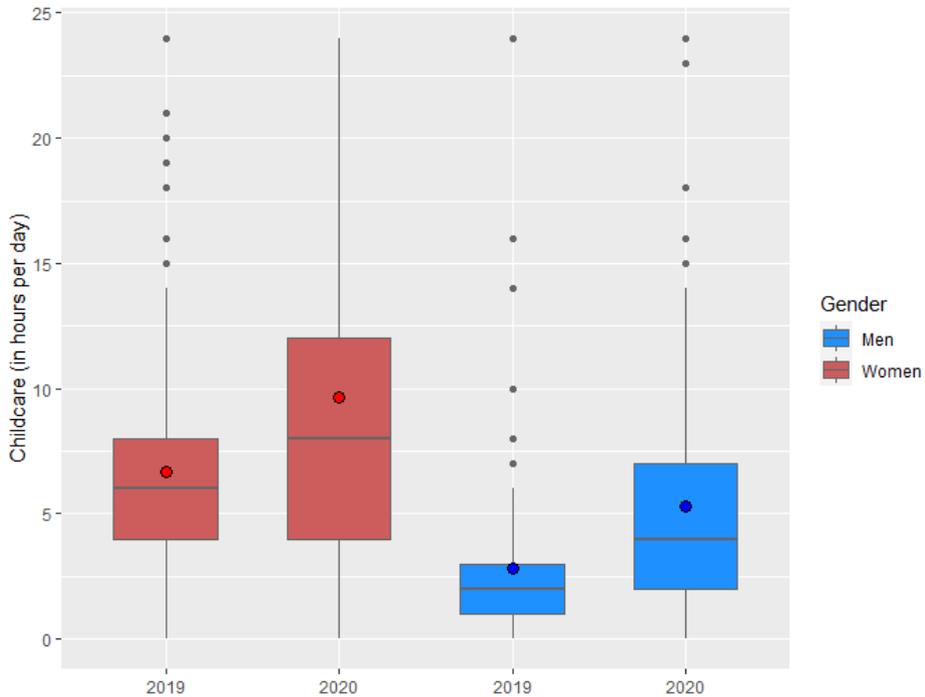
³ All source code for data preparation, descriptive analysis, and regression analysis is freely available at the GitHub link <https://github.com/bieneSchwarze/CoronaLockdownFathersInvolvement>.

5. Results

5.1 Descriptive results

Figure 1 displays box plots with the average hours the fathers and the mothers spent on childcare per weekday. In line with prior findings for Germany, we find that the mothers spent more time on childrearing tasks than the fathers. In 2019, the men in partnerships reported spending 2.8 hours per day on childcare, whereas their female counterparts reported spending 6.7 hours per day. These values had risen sharply by spring 2020, during the first lockdown: At that time, the fathers indicated that they were spending 5.3 hours per day on childcare activities, while the mothers reported spending 9.6 hours. In absolute terms, the increase was slightly larger for the women than for the men. However, in relative terms, the effect was more pronounced for the fathers than for the mothers. The amount of time spent with children increased 89% among the fathers compared to 43% among the mothers. Thus, our results refute Hypothesis 1, which predicts that the mothers would spend more time with their children while the care patterns of the fathers would remain unaffected by the crisis. We also have to discard Hypothesis 3, which argues that the fathers' care patterns would change more radically than those of the mothers. Overall, the analysis supports Hypothesis 2, which states that both the fathers and the mothers would increase the time they spent with their children to similar degrees. The findings also reveal that there was substantial variation in the number of hours the respondents reported spending with their children, including several outliers, who stated that they spent 20 or more hours per day taking care of their children (N = 28 in 2019 and N = 94 in 2020, with 85% of the outliers being women).

Figure 1: Box plots of childcare time (in hours per weekday) by gender and year, 2019 and 2020



Notes: All values are weighted. The red and blue dots mark the weighted mean care times for the years 2019 and 2020. The horizontal lines show the median values, and the coloured boxes show the interquartile ranges (i.e., the differences between the 75th and the 25th percentiles).

Table 2 breaks down the time spent on childcare by socio-demographic characteristics. Furthermore, it displays the mean of the change in the time spent on childcare between 2019 and 2020. We observe substantial increases across all groups. An exception is the group of fathers who had already been highly engaged in childcare or who were either part-time employed or not employed in 2019. However, this group was small and composed in part of fathers who were on parental leave with their newborn children in 2019. The largest increases can be observed for the parents of children aged 3 to 5. The parents of school-aged children also increased their involvement but to a lesser extent. On the one hand, the parents of school-aged children may have been burdened with homeschooling during the lockdown. On the other hand, school-aged children are better able than younger children to take care of themselves, at least for parts of the day.

Thus, the results displayed in the table suggest that the parents of preschool children were the most affected by the coronavirus crisis, or at least changed their care patterns the most in response to it.

Our main variable of interest is the level of education. The results indicate that the highly educated parents – particularly the fathers – were the least likely to report spending more time with their children over the course of the crisis. Highly educated fathers have often been viewed as vanguards of involved fatherhood (Geisler and Kreyenfeld 2018). It has, for example, been shown that highly educated fathers in Germany expanded their involvement more than their less-educated counterparts in reaction to the introduction of the earnings-related parental leave scheme in 2007 (*ibid.*). However, the present analysis reveals that the coronavirus crisis pushed fathers with low or medium levels of education towards greater involvement with their children. Thus, our analysis provides support for Hypothesis 4b, which states that men with low and medium levels of education in particular would be more likely to increase the time they spent with their children largely because they had more time at their disposal as a result of being in short-time work or unemployed.

Table 2 also displays differences by employment status, as measured in 2019. Because the overwhelming majority of the fathers were full-time employed at that time, the sample sizes for the other categories were too small to generate robust results. However, a comparison of the full-time employed women and men yields important insights. It shows that the care patterns in 2019 were unequal. The full-time employed mothers spent roughly two hours more per day on childcare than the full-time employed fathers. Between 2019 and 2020, these mothers and fathers expanded the time they spent on childcare about equally. However, given the different ‘a priori conditions,’ the care burden the mothers had to shoulder in addition to their full-time job increased to almost eight hours per day.

The table also shows that the level of childcare time measured in 2019 is of key importance. Among those respondents who were already heavily involved in childcare, their involvement levels increased less. An important reason why the men could expand their care activities from 2019 to 2020 is that prior to the coronavirus crisis, most were only moderately engaged in childcare tasks. As most of the women were already heavily involved in the upbringing of their children before the crisis, they had less room to further expand their engagement levels.

Although these analyses provide important insights into the effect of the coronavirus crisis on parental care, several methodological issues must be considered. We tried to link the change in behaviour between 2019 and 2020 to the coronavirus crisis. However, the changes in the time spent on childcare between 2019 and 2020 cannot be attributed to the crisis alone, as the respondents’ circumstances likely changed in other ways as well during this time frame. Technically, this means that time-varying heterogeneity may have

affected our results. A possible confounder could be gender-role attitudes, which have become more supportive of men's involvement in childcare tasks. Although our observation window is narrow (in most cases, shorter than one year), we cannot rule out the possibility that attitudinal changes affected the results. It also needs to be emphasized that the children in our sample grew older over the study period. Thus, the parents' opportunities to expand their employment increased over this time period as well. This may have downwardly biased the results, as it would generally be expected that parental engagement declines as children grow older.⁴

Table 2: Mean childcare time (in hours) and mean difference in childcare time, 2020–2019

	Childcare time 2019		Change from 2019 to 2020	
	Men in partnership	Women in partnership	Men in partnership	Women in partnership
Age of youngest child in household				
Age 0–2	4.43	10.16	1.36	1.88
Age 3–5	2.24	6.42	3.53	4.09
Age 6–11	1.93	4.67	2.53	2.94
Employment status 2019				
Full-time	2.48	4.76	2.85	3.04
Part-time	(3.38)	5.20	(3.61)	3.34
Not employed	(5.96)	9.81	(–2.81)	2.70
Other	(1.17)	6.53	(6.52)	1.64
Level of education 2019				
Low (CASMIN 0,1a,1b,2b)	(2.43)	6.91	(4.00)	2.86
Medium (CASMIN 1c,2a,2c)	2.25	7.21	3.75	3.13
High (CASMIN 3a,3b)	3.57	5.87	0.59	2.68
Childcare time in 2019				
0–2 hours	1.26	1.38	3.06	3.79
3–5 hours	3.69	4.23	3.10	3.98
6 and more hours	(13.17)	9.85	(–4.92)	1.98
All	2.82	6.70	2.46	2.93

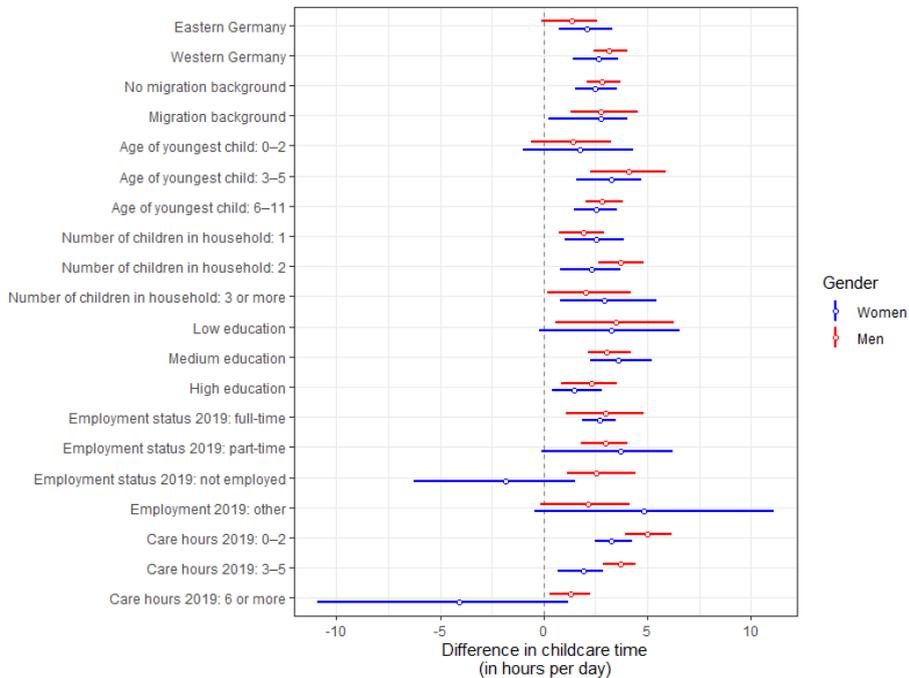
Note: Weighted estimates. Sample sizes below N=30 are marked by parentheses.

⁴ We have conducted a 'sensitivity analysis' by analyzing data from GSOEP 2018 and 2019. Similar to the analysis presented in the main part of this paper, we have selected parents with children ages 0 to 11 in 2018 and examined how they changed their behaviour in the course of one year (see Table A-2 in the Appendix). This analysis also shows that maternal childcare time decreased slightly from one year to the next as the child/children grew older (by approximately 0.65 hours per working day). However, for fathers, we observe almost no change in childcare time from 2018 to 2019.

5.2 Regression results

Figure 2 plots the margins (predicted values) from the regression analyses (see Table A-1 in the Appendix for the full model results). The models include all the abovementioned covariates, as well as standard confounders (region, migration background, and number of children). It shows that the western Germans increased the time they spent with their children more than the eastern Germans and that there were no differences by migration background. The rest of the models corroborate the previous descriptive analysis. In particular, the model for men again shows that there were differences by level of education. Unlike the less-educated fathers, the highly educated fathers barely changed the time they spent with their children in response to the crisis. Surprisingly, employment status did not seem to affect the time spent with children – except among the non-working and part-time employed fathers, for whom, however, the sample sizes were too small to warrant a meaningful interpretation. In order to exclude problems of endogeneity due to a possible dependence of the dependent variable in our models (i.e., a change in childcare time between 2019 and 2020) and childcare time in 2019 (one of the explanatory variables) on an unobserved confounder, we conducted a statistical ex-post test. Specifically, we regressed the residuals of the two linear models estimated for men and women on the childcare hours in 2019. The corresponding two regressions did not show any significant dependence between the residuals and the childcare hours in 2019. Thus, there is no indication of an endogeneity problem in the present case.

Figure 2: Results from OLS regression. Outcome variable: differences in childcare time (in hours per weekday) between 2019 and 2020. Displayed are predicted values from the model



Note: Horizontal lines mark 95% confidence intervals (derived using basic bootstrap). For the table with the model results, see Table A-1 in the Appendix.

The employment status is measured in 2019 in the regression models above. However, these models do not reflect changes in employment over the course of the crisis. In order to account for changes in employment and to unravel the effect of employment on the time spent on childcare, we have also estimated two fixed-effects models (one for women and one for men) in which employment is integrated as a time-varying covariate together with a dummy for the time period. Table 3 reports the margins (predicted values) from these analyses. In contrast to the previous investigation, the fixed-effects models show that non-employment led to an increase in the time spent on childcare for both the men and the women. The table indicates that the non-employed women spent about 12 hours per day caring for their children, whereas the non-employed men spent 7 hours. We also see a similar gendered pattern among the full-time employed respondents, with the men spending 3.6 hours per day on childcare and the women

spending 6.3 hours. Thus, even keeping the employment status constant, we see that the women were spending almost twice as much time with their children as the men. Nevertheless, the sample size of the non-employed men is small, leading to large confidence bounds. Note also that a fraction of the non-employed parents, and of the men in particular, were on parental leave. An analysis in which we excluded the parents with children below age 1 led to smaller values for the non-employed (see Table 2, right column). The model results also show that the parents in 'other' types of employment spent more time with their children. This category was heterogeneous, but it included a large fraction of parents in short-time work, particularly in 2020. Of the 'other' category, 60% of the men and 55% of the women were in short-time work. Thus, it appears that the shift to other types of employment, such as short-time work, triggered an increase in parental involvement.

Table 3: Results from fixed-effects regression. Outcome variable: predicted childcare time (in hours per day) in 2019 and 2020. Displayed are predicted values from the model

	All		Sensitivity analysis (Excluded: persons who had children below age 1)	
	Men in partnerships	Women in partnerships	Men in partnerships	Women in partnerships
Year				
2019	2.77 (2.07,3.43)	6.26 (5.77,6.65)	2.56 (1.84,3.04)	5.45 (4.99,5.85)
2020	5.28 (4.25,6.32)	9.60 (8.68,10.41)	5.26 (4.12,6.19)	8.97 (8.04,9.83)
Employment status				
Full-time	3.63 (2.97,4.31)	6.28 (5.15,7.19)	3.74 (3.01,4.36)	5.76 (4.61,6.87)
Part-time	5.28 (3.52,6.53)	6.28 (5.15,7.19)	5.58 (3.68,7.18)	6.89 (6.40,7.52)
Not employed	6.76 (1.27,10.60)	11.71 (10.61,12.69)	4.28 (-0.36,6.67)	9.49 (8.03,10.91)
Other	5.52 (1.16,8.59)	8.70 (6.87,10.42)	3.57 (0.94,5.25)	8.66 (5.83,10.44)
Sample size (unweighted)	322	603	283	536
Model fit (adj. r square)	0.10	0.20	0.10	0.14

Notes: Outcome variable: daily childcare time. Weighted analysis. Values in parentheses denote the 95% confidence intervals for the predicted difference values derived using basic bootstrap.

6. Concluding remarks

This paper has examined how parents changed their levels of parental involvement between 2019 and spring 2020, thus, during the first lockdown in Germany when schools and day-care facilities were closed nationwide. It was suspected at the time that the coronavirus crisis would cause the already unequal division of childcare tasks to shift in the direction of an even stronger traditionalization of behaviour. Our analysis, which was based on representative and longitudinal data from the German Socio-Economic Panel (GSOEP), instead showed that both the fathers and the mothers in our sample reported spending substantially more time with their children during the crisis than they did in the previous year. Although the absolute increase was a bit larger for the mothers, we still found that the fathers spent, on average, 2.5 more hours per day with their children. Overall, this result paints a rather positive picture of the potential for fathers' involvement. It also leads us to reject the retraditionalization hypothesis, which argues that the additional household work generated by the coronavirus crisis would fall squarely on the shoulders of women. On the one hand, Germany had indeed in the past been regularly characterized as a conservative society that upholds traditional attitudes towards maternal employment and care. Against this background, a retraditionalization could have largely been expected. On the other hand, German family policies have been radically reformed in recent years, including a major parental leave benefit reform in 2007 that incentivized paternal engagement through the introduction of 'daddy months,' as well as a large-scale expansion of childcare starting in 2005. The respondents in our sample have all profited from these reforms, as the children in our sample were younger than age 12 in 2019. Our results suggest that these reforms helped to create the conditions that increased the likelihood of fathers becoming more engaged in the upbringing of their children. Another important finding of our study is that the low and medium educated men in our sample changed their behaviour markedly. This shift may be related in part to the specific sectors in which they worked, as employees in these industries were especially likely to be not employed or in short-time work during the crisis. This finding is important, as the coronavirus crisis may have been an external shock that has pushed men who were previously less involved with their children to spend more time on childcare.

However, there are many factors that need to be accounted for in this comparison across time. For example, parents usually engage less with children as they get older. As we compared the behaviour of the same individuals across two years, this has important implications. We had assumed that the differences in behaviour between 2019 and 2020 could be attributed to the impact of the coronavirus crisis. However, as the children grew older between the survey years, *ceteris paribus*, the total time spent on care should have declined. Thus, our 'estimate' is downwardly biased, and this bias is stronger for the

women than for the men. The 'a priori conditions' also matter when judging the total care load. If, for example, we compared the full-time employed mothers and fathers in 2019, we would find that the women were spending 4.8 hours per day with their children, while the men were spending only 2.5 hours, even though they were equally involved in the labour market. The absolute increase from 2019 to 2020 was similar for men and women, but it nevertheless resulted in a gendered care pattern.

An important finding from our analysis was, however, that the fathers who increased the time they were spending on childcare the most were not those with high levels of education but those with medium or low levels of education. Thus, the coronavirus crisis seems to have pulled less-educated fathers more strongly into childcare tasks than highly educated fathers. This finding challenges the results of prior investigations, which have regarded the highly educated as the vanguards of involved fatherhood. Whether these patterns were due to the type of employment of the less-educated fathers, or whether these men were more likely to have a spouse who was working in a 'systematically relevant industry branch' (such as healthcare or retail), could not be answered with our data. We were also unable to assess how durable these patterns might be and whether they will have any long-term implications for paternal involvement and care.

A major caveat of our investigation is that the analysis was restricted to the individual level. With the available data, it was, unfortunately, not possible to study the gendered division of care within the household context. Thus, while our study was able to provide insights into how the coronavirus crisis affected the time the fathers and the mothers were spending with their children, it did not show how the gendered division of care obligations within the household may have been shifted. A comprehensive test of the retraditionalization hypothesis would require this type of data. A related issue was our inability to differentiate between biological and stepparents. Fathers are more likely than mothers to live in stepfamily arrangements. As it may be assumed that fathers invest more time in their biological than in their stepchildren, the gender differences in care may be smaller than those reported in our study.

Another disadvantage of our investigation was that we relied on a self-reported measure of the time the parents spent with their children. There is strong evidence that there is often a mismatch between an individual's own perceptions of his/her personal contributions to childcare and housework and those of his/her partner (Geist 2010). From the perspective of mothers, fathers tend to overrate their engagement levels (*ibid.*). However, this measurement problem was attenuated in our modelling strategy because we were comparing data from the same individuals for 2019 and 2020. Thus, if we assume inter-individual measurement invariance, this problem levels off. Moreover, our data rely on a rather rough measure of childcare involvement that does not take into account the gender differences in the activities that fathers and mothers engage in with their children (Raley, Bianchi, and Wang 2012).

Our study compared behaviour before and during the first lockdown in Germany. We found that low and medium educated males substantially increased the time they spent with their children. Whether this was only a short-run effect that is attributable to the exceptional circumstances of the lockdown cannot be assessed yet. To examine the question, we will need observations over a longer period. A further wave of the SOEP-CoV study was collected in early 2021 and will provide information on the stability of the changes induced by the coronavirus crisis. Other longitudinal studies (for Germany in particular pairfam, the National Educational Panel Study, and the Institute for Employment Research's high frequency online personnel panel) will also generate data that can shed light on the question of whether fathers who were pushed towards engaging in childcare during the crisis go on to change their long-term behaviour.

Last but not least, selective unit non-response is a general concern in survey research, but this problem was aggravated during the coronavirus crisis, when the interviews could be conducted only via telephone. Thus, it is likely that the interviewed fathers represented a highly selected group who were particularly involved in caregiving. Unlike many other studies that relied on convenience sampling strategies, our data were drawn from an existing panel survey. This survey also provided detailed information on the characteristics of the individuals who did not participate in the survey, which enabled us to use carefully constructed non-response-adjusted and post-stratified weighting factors. Nevertheless, data quality issues are a much-neglected area in the growing body of coronavirus-related survey research. These pressing issues have only recently started garnering the attention that they deserve (Auspurg 2020). In order to evaluate their long- and short-term consequences, further high-quality studies are required. We hope that this investigation adds to this body of research.

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Appendix

Table A-1: Model results – Dependent variable: difference in childcare time (in hours per weekday) between 2020 and 2019. Method: OLS. Reported values: predicted values (and 95% confidence level in parentheses)

	Women in partnerships	Men in partnerships
Region		
Eastern Germany	1.39 (-0.36, 2.69)	2.11 (0.68, 3.43)
Western Germany	3.18 (2.23, 4.13)	2.67 (1.60, 3.55)
Migration background		
No migration background	2.86 (1.82, 3.78)	2.48 (1.28, 3.52)
Migration background	2.75 (1.23, 4.63)	2.80 (0.66, 4.15)
Age of youngest child in household		
Age 0–2	1.40 (-0.34, 3.23)	1.76 (-0.62, 4.14)
Age 3–5	4.06 (2.26, 5.68)	3.26 (1.44, 4.74)
Age 6–11	2.87 (1.94, 3.77)	2.55 (1.35, 3.78)
Number of children in household		
One child	1.96 (0.56, 3.09)	2.54 (1.09, 3.67)
Two children	3.73 (2.55, 4.76)	2.29 (0.90, 3.82)
Three or more children	2.02 (-0.19, 4.15)	2.97 (0.44, 5.23)
Level of education		
Low (CASMIN 0,1a,1b,2b)	3.57 (0.45, 5.93)	3.24 (-0.49, 5.45)
Medium (CASMIN 1c,2a,2c)	3.04 (1.88, 4.28)	3.62 (1.96, 5.29)
High (CASMIN 3a,3b)	2.35 (1.06, 3.52)	1.46 (0.45, 2.56)
Childcare time in 2019		
0–2 hours	5.03 (3.71, 6.21)	3.29 (2.44, 4.27)
3–5 hours	3.71 (2.89, 4.56)	1.92 (0.54, 2.86)
6 or more hours	1.30 (0.27, 2.33)	-4.08 (-10.79, 0.50)
Employment status 2019		
Full-time	3.06 (1.38, 4.76)	2.73 (1.83, 3.64)
Part-time	3.05 (2.04, 4.06)	3.70 (0.00, 5.87)
Not employed	2.46 (0.39, 4.30)	-1.76 (-6.46, 1.34)
Other	2.12 (0.07, 4.41)	4.73 (-0.18, 10.55)
Sample size (unweighted)	603	322
Model fit (adj. r square)	0.14	0.29

Note: Weighted analysis. Values in parentheses denote the 95% confidence intervals for the predicted difference values derived using basic bootstrap.

Table A-2: Model results – Dependent variable: difference in childcare time (in hours per weekday) between 2018 and 2019. Method: OLS. Reported values: predicted values (and 95% confidence level in parenthesis)

	Women in partnerships	Men in partnerships
Region		
Eastern Germany	-0.67 (-1.12, -0.54)	-0.22 (-0.28, 0.11)
Western Germany	-0.49 (-0.70, -0.21)	0.06 (-0.07, 0.22)
Migration background		
No migration background	-0.31 (-0.40, 0.22)	0.06 (-0.08, 0.23)
Migration background	-0.54 (-0.83, -0.19)	-0.02 (-0.24, 0.11)
Age of youngest child in household		
Age 0–2	-0.54 (-0.83, -0.19)	-0.04 (-0.31, 0.05)
Age 3–5	-0.53 (-0.81, -0.27)	0.03 (-0.16, 0.18)
Age 6–11	-0.51 (-0.77, -0.23)	0.08 (-0.03, 0.28)
Number of children in household		
One child	-0.50 (-0.75, -0.17)	-0.01 (-0.24, 0.08)
Two children	-0.50 (-0.75, -0.20)	0.03 (-0.13, 0.17)
Three or more children	-0.59 (-0.95, -0.33)	0.11 (0.00, 0.36)
Level of education		
Low (CASMIN 0,1a,1b,2b)	-0.38 (-0.61, 0.13)	-0.02 (-0.31, 0.17)
Medium (CASMIN 1c,2a,2c)	-0.53 (-0.79, -0.26)	0.03 (-0.12, 0.17)
High (CASMIN 3a,3b)	-0.58 (-0.94, -0.34)	0.11 (-0.01, 0.35)
Childcare time in 2019		
0–2 hours	-0.35 (-0.57, 0.11)	0.06 (-0.08, 0.21)
3–5 hours	-0.49 (-0.72, -0.21)	-0.01 (-0.25, 0.11)
6 or more hours	-0.61 (-0.92, -0.40)	0.00 (-0.26, 0.48)
Employment status 2019		
Full-time	-0.54 (-0.87, -0.25)	0.05 (-0.10, 0.18)
Part-time	-0.52 (-0.76, -0.27)	0.05 (-0.21, 0.40)
Not employed	-0.60 (-0.95, -0.37)	-0.01 (-0.34, 0.28)
Other	-0.29 (-0.44, 0.45)	-0.10 (-0.72, 0.31)
Sample size (unweighted)	2,425	2,078
Model fit (adj. r square)	0.32	0.26

Note: Weighted analysis. Values in parentheses denote the 95% confidence intervals for the predicted difference values derived using basic bootstrap. Note also that the sensitivity analysis was based on a sample of respondents in partnerships who had a child aged 0 to 11 in 2018.

