





The COVID-19 pandemic and subjective well-being: longitudinal evidence on satisfaction with work and family

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ABSTRACT



This paper provides a timely evaluation of whether the main COVID-19 lockdown policies – remote work, short-time work and closure of schools and childcare – have an immediate effect on the German population in terms of changes in satisfaction with work and family life. Relying on individual level panel data collected before and during the lockdown, we examine (1) how family satisfaction and work satisfaction of individuals have changed over the lockdown period, and (2) how lockdown-driven changes in the labour market situation (i.e. working remotely and being sent on short-time work) have affected satisfactions. We apply first-difference regressions for mothers, fathers, and persons without children. Our results show a general decrease in family satisfaction. We also find an overall decline in work satisfaction which is most pronounced for mothers and those without children who have to switch to short-time work. In contrast, fathers’ well-being is less affected negatively and their family satisfaction even increased after changing to short-time work. We conclude that while the lockdown circumstances generally have a negative effect on the satisfaction with work and family of individuals in Germany, effects differ between childless persons, mothers, and fathers with the latter being least negatively affected.

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Introduction

The COVID-19 pandemic has fundamentally changed European societies. Many countries across Europe went into lockdown in mid-

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March 2020 to prevent the spread of the coronavirus (Daly *et al.* 2020; Lejeune 2020). This also had immediate effects on the economy and labour markets (Anger *et al.* 2020; Möhring *et al.* 2020; Naumann *et al.* 2020). The trade-off between the health of the population and the economy have usually been the main focus of policy makers. Yet, the social consequences of the lockdown policies seem to be equally important and have so far received much less attention.

In this paper, we explore how two dimensions of subjective well-being (SWB), satisfaction with work and with family life, have changed during the COVID-19 lockdown in Germany. By looking at how these two specific dimensions of well-being are influenced by the changes in the employment and child-care situation induced by the containment measures, we are able to contribute to the scientific and the wider public debate around the effects of containment measures on individuals' and families' well-being (Dolan *et al.* 2011; Kapteyn *et al.* 2015). We examine the effects of stay-at-home policies, and of the shifts to remote work and short-time work for the general population and differentiated for mothers, fathers, and persons without children. Thereby, we go beyond previous research on individuals' well-being during the COVID-19 lockdown as we rely on within-person panel data from a population-representative sample. Previous research either considers more general well-being measures as overall life satisfaction or negative feelings (e.g. Kivi *et al.* 2020; Recci *et al.* 2020; Zacher and Rudolph 2020), is restricted to specific sub-groups of the population (e.g. Kivi *et al.* 2020; Zacher and Rudolph 2020), examines aggregated measures and not within-person changes (e.g. Huebener *et al.* 2020; Recci *et al.* 2020), or relies on convenience samples and explorative analyses (e.g. Czymara *et al.* 2020).

Our analysis relies on individual level panel data measuring satisfaction of the same individuals before and during the COVID-19 lockdown. Exploring how the aggregate satisfaction changes as provided by Huebener *et al.* (2020) and Recci *et al.* (2020) is of high societal and political relevance, yet such an analysis provides much less scientific insights beyond the COVID-19 pandemic. This is because the pandemic and the lockdown simultaneously induce health risks, economic risks but also dramatically change the social life of all citizens (e.g. fewer social contacts, school closures). Therefore, it is not possible to reliably link the observed changes in aggregated satisfaction measures to one of these specific impacts of the pandemic.

Yet, the COVID-19 pandemic brought about two main changes in working life which did not affect everyone equally. First, due to the infection risk, many companies in Germany and other countries affected by the pandemic switched to remote work and obliged their employees to work from home (Möhring *et al.* 2020). Second, the economic consequences of the lockdown implied a loss of revenue and orders for many companies. The main social policy instrument to avoid mass lay-offs during economic crises in Germany is short-time work (Anger *et al.* 2020). Companies affected by the downturn can reduce working hours and wages of their employees, and a governmental earnings replacement compensates for the wage loss so that 60% (67% for those with children) of the previous net income is granted. Therefore, we focus on the effects on well-being of (a) short-time work and (b) of working remotely.

These two COVID-19 related changes on the labour market provide a quasi-experimental setting which allows us to better identify the causal effects of reducing working hours and remote work on work and family satisfaction than it is possible under usual circumstances. One important assumption of panel studies is that selection into the treatment is not based on previous values of the dependent variable (Vaisey and Miles 2017). It is very likely though that selection into remote work and/or part-time work exists due to employee and organisation-related characteristics (Lott and Abendroth 2020). For example, employee-friendly employers are more likely to allow and to encourage remote work. If we assume that employee-friendliness already has led to higher work satisfaction, then pre-treatment levels of satisfaction (i.e. our variable of interest) would determine selection into remote work (and not vice versa). The COVID-19 lockdown reduced this self-selection bias since employees had much less choice than usual in deciding whether to work remotely or part-time. Hence, our evidence will possibly much less biased than previous studies. However, of course also under lockdown-conditions entering remote-work and short-time work unequally distributed among employees (Möhring *et al.* 2020).

Theory

First, we explore how SWB has changed in comparison to pre-COVID time. In general, we would expect that the COVID-19 lockdown has negative effects on SWB. In particular, people experience a number of stressors related to lower SWB: economic hardship, job loss, increased health risks and uncertainties, a reduction of social contacts outside of the household, increased screen-time and fewer opportunities for physical activity (e.g.

Mata *et al.* 2012; Blom *et al.* 2017; Stiglic and Viner 2019). While there might be few positive aspects of the lockdown – e.g. more time for your family and at home or more work autonomy while working remotely (Reuschke 2019), we do not expect that these aspects will outweigh the expected negative effects on SWB. Hence, we expect that:

H1: The COVID-19 lockdown has general negative effects on satisfaction with work and with family life.

Short time-work and satisfaction with work and family

With respect to the change to short time work, two mechanisms have to be distinguished. First, short-time work is associated with lower earnings as the compensations only amounts to 60%, 67% respectively of the previous net income (Konle-Seidl 2020; Osiander *et al.* 2020). Besides, it also induces job insecurity as those in short-time work during the COVID-19 lockdown have greater fears to become unemployed than those continuing to work with normal hours (Möhring *et al.* 2020). Both aspects of economic hardship – lower income and higher subjective insecurity – should have a negative effect on satisfaction with work. Similarly, previous research shows that people who experienced economic hardship become less satisfied with their family life (e.g. Conger *et al.* 2010; Drobnic *et al.* 2010; Kornirch and Eger 2016). Moreover, some studies have argued that this effect is stronger for families with children (Blom *et al.* 2017). Second, short-time brings about a reduction in working hours which might have divergent effects on subjective well-being. Gash *et al.* (2012) show that decreasing working hours are associated with higher well-being of mothers. According to Schröder (2018) who also shows that for fathers an increase in working hours is related to higher life satisfaction. Beham *et al.* (2019) show that part-time work is associated with higher satisfaction with work-life balance than full-time work. Hence, we expect that, after controlling for income changes:

H2: Short-time work leads to higher levels of job and family satisfaction for mothers, and lower levels of job and family satisfaction for fathers and workers without children.

Remote work and satisfaction with work and family

We examine how the sudden increase of remote work affects work satisfaction and family well-being. Part-time work but also working remotely has

become an increasingly common strategy for handling work and family; and remote work is key in many stay-at-home lockdown policy packages (Reuschke and Felstead 2020). Notwithstanding the institutional and workplace barriers of part-time work and remote work, it also remains an open question in how far it is an effective strategy everywhere and for everyone (Beham *et al.* 2019). Remote work was found to be related to greater job satisfaction (Binder 2016; Wheatley 2017; Reuschke 2019). However, Wheatley (2017) and Reuschke (2019) find such a positive association between remote work and job satisfaction for employees only and Binder (2016) found a large effect for remote work on job satisfaction only among men but not for women. In contrast, Song and Gao (2019) find that remote work is associated with less happiness and more stress. Moreover, ‘parents, especially fathers, report a lower level of subjective well-being when working at home [...]. Non-parents’ subjective well-being does not vary much by where they work on weekdays.’ (Song and Gao 2019). To sum up, the relationship between remote work and job satisfaction remains unclear as previous results are contractionary.

Studies on the effects of remote work on well-being have investigated job satisfaction but less so the satisfaction in other life domains (e.g. Felstead and Henseke 2017; Wheatley 2017). The situation during the COVID-19 lockdown is rather specific and might not be compared to working from home under usual circumstances. As schools and child care facilities have been closed, combining work from home with child care and home schooling constitutes an extraordinary burden for working parents (Huebener *et al.*, 2020). Benzeval *et al.* (2020), however, report that parents who work from home are more likely to report an improvement of the relationship with their children during lockdown. For those without children the missing social life might have negative effects on their well-being, especially for those who work from home (Recchi *et al.* 2020 for France). Hence, we expect that:

H3: Remote work leads to lower levels of job satisfaction for workers with children, while we expect no effect for workers without children.

H4: Remote work leads to higher levels of family satisfaction for workers with children and lower family satisfaction for workers without children.

Differences between mothers and fathers

Studies on parents’ well-being during the lockdown provide mixed results so far. According to Benzeval *et al.* (2020) a vast majority of

96% of parents report an improvement or stability of the relationship with their children during lockdown. In contrast, Huebener *et al.* (2020) show for Germany that satisfaction with family life especially among mothers with young children on average decreased during the lockdown as mothers bear the main burden of care tasks. Yerkes *et al.* (2020) report for the Netherlands a reduction of satisfaction with work-life-balance among couples with children.

H5: The negative effect of the lockdown on satisfaction with family and work is stronger for mothers than for fathers.

Materials and methods

Data and operationalisation

We use data from the German Internet Panel (GIP). The GIP is based on a random probability sample of the general population in Germany aged 16–75. The study started in 2012 and was supplemented with additional participants in 2014 and 2018. The panel participants were recruited offline using strict statistical procedures (Blom *et al.* 2015). Every other month, panel participants are invited to take part in a voluntary online survey. In reaction to the corona pandemic, the GIP launched a special survey, the Mannheim Corona Study (MCS), on March 20, 2020 (Blom *et al.* 2020). GIP panelists were invited to take surveys every week, yet the content of the questionnaire changed somewhat from week to week.

On average 62.4% of the invited GIP panelists took part in the survey across weeks. Both sampling and response behaviour potentially bias the accuracy of the sample. In the MCS non-German citizens, young people (16–29 years old) and low educated people are underrepresented compared to official statistics, whereas gender, household size, marital status, and geographic region are highly accurate (Blom *et al.* 2020). In our analysis, we use weights to account for attrition and non-response in the MCS (compared to the GIP sample) and also apply weights to extrapolate the characteristics of MCS participants to those of the general population of Germany based on age, gender, marital status, highest level of education, household size, and federal state.

The dependent variables are (a) satisfaction with work, and (b) satisfaction with family life, both coded on a 11-point scale from 0 to 10 with 0 being ‘completely dissatisfied’ and 10 being ‘completely satisfied’. Measures of satisfaction before the COVID-19 lockdown

were collected in September 2019. Data collection during the COVID-19 lockdown took place from April 17 to April 24, 2020. For participants who have been employed in January 2020, we code changes into working remotely and into short-time work in April 2020. Control variables are dummy variables indicating whether the respondent has a partner or children, and a continuous measure for household income (composed of 15 categories).

Although we rely on widely used, standard survey items of satisfaction, one should note that in particular the item on satisfaction with family might be problematic for our purpose as the evaluation of family life may depend on the actual family circumstances. For example, a parent may think about the relationship with their children and partner while for single, childless persons this may refer mostly to the relationship with their parents or siblings. This creates the potential for some bias and should be kept in mind when we compare respondents with and without children.

Analytical strategy

We use first-difference models to examine the change in satisfaction with work and family life between September 2019 and April 2020. First-difference models solely focus on the *change* in a certain outcome between one time-point and another, not considering the *level* of that outcome. Applied to our case of satisfaction with work and family life, we analyse which changes in the individual-level circumstances, like employment or where people work, are related to changes in individuals' satisfaction over time. Focusing on changes within the same person over time, all observed and unobserved stable characteristics of that person, such as gender, education or personality do not bias our results. Hence, our empirical strategy controls for unobserved heterogeneity emerging from these time-invariant factors (Allison 2009). Unobserved heterogeneity in time-varying factors might still cause bias as first difference models rely on the assumption that the growth rate in satisfaction over time does not systematically vary between groups (Brüderl and Ludwig 2014).

The COVID-19 lockdown can be perceived as an exogenous treatment as it was not possible for individuals to self-select into or to avoid the lockdown scenario. In this way, we are able to examine the causal effect of the lockdown and of changes induced by the lockdown measures, in specific, those related to work extent and location. As described above,

we would usually be confronted with the problem that employees with certain characteristics and with a certain growth rate in satisfaction might self-select into remote work or working hours reduction. During the lockdown, these kinds of self-selection are rather not possible, and therefore, unobserved heterogeneity in stable characteristics as well as trends is unlikely.

To examine the general effect of the Corona lockdown on satisfaction, we first run a model with all respondents who participated in the survey in September 2019 and April 2020 for family satisfaction ($N = 2639$), and all respondents employed at both time-points for work satisfaction respectively ($N = 1663$). To differentiate the effects of changes in the employment situation from the lockdown effect as such, we first include a dummy variable for the second time-point in the regression models; this represents the lockdown effect on satisfaction. In a second step, we include only individuals who have been employed in January 2020 ($N = 1798$) to examine effects of work-related changes. In all models we control for other changes that might possibly impact satisfaction (new partnership or dissolution, birth of a child, increase/decrease in household income). We estimate separate models for parents, mothers, fathers and those without children to detect differences in the effects. As robustness checks we (1) run all models without controlling for household income as reduced work hours may affect work and family satisfaction through reduced pay that employees get; and (2) selecting only parents of young children (below age 12) as these require intensive care and more support with home-schooling. We report these additional estimations in the Online Appendix and in the text in case they differ from our main models. Descriptive results for the aggregated changes in satisfaction with work and family life are included in Online Appendix A, Table A.1.

Results

In a first range of models, we examine the effect of the COVID-19 lockdown on individuals' well-being for different subgroups of gender and family status (Figure 1 and Tables A.2, A.3 in Appendix A). Generally, we find a significant reduction in satisfaction with work and with family life between September 2019 and April 2020. The negative effect on family satisfaction is significantly stronger and amounts to -0.64 scale points ($p = 0.000$) as compared to -0.22 scale points ($p = 0.016$) for work satisfaction. Furthermore, while the effect on work satisfaction

differs between subgroups, we find a very similar significant reduction in family satisfaction for everybody. The reduction in work satisfaction is strongest for mothers (-0.41 scale points, $p = 0.037$), while for fathers exists a slight, albeit insignificant, increase in work satisfaction. For those without children, we also see a significant reduction in work satisfaction of -0.29 scale points ($p = 0.013$).

Figure 2 shows the effects of changes in the employment situation on work satisfaction (left side) and family satisfaction (right side) (Tables A.4, A.5 in Appendix A). We now focus on those who have been employed in January 2020 and examine changes to working from home and to short-time work with continuing to work on-site with usual hours as the reference category. Again, changes in partnership status, having children, and changes in household income serve as controls as well as the dummy variable for the second time-point that controls for the general effect of the lockdown.

We find no significant effects of working from home on work satisfaction for any of the considered subgroups. In turn, short-time work has a

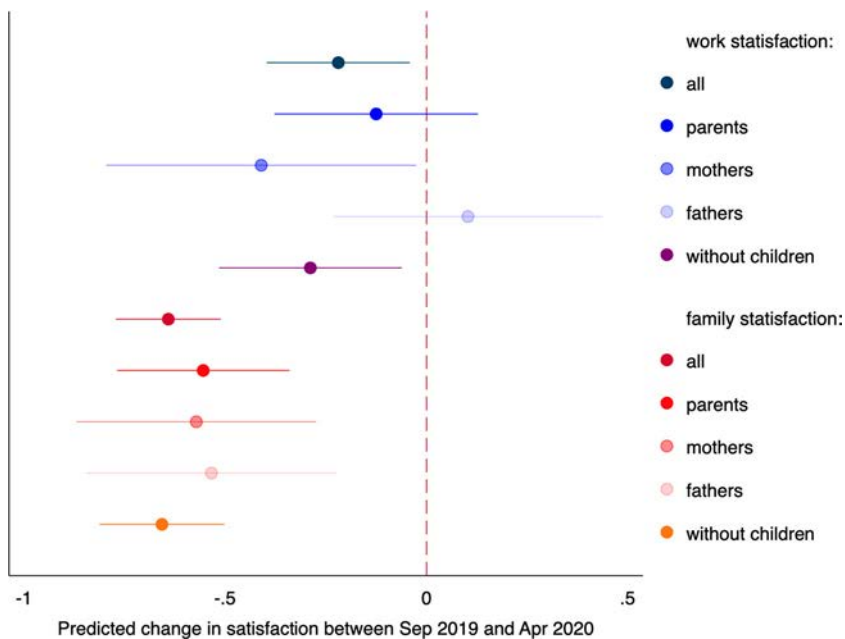


Figure 1. Coefficients of the First Differences with 95% confidence intervals regressions on work and family satisfaction, based on models 1–5 in Appendix A Tables A.2 and A.3.

Note: All models control for partnering, child birth, income changes, and include a period-dummy for April 2020. Source: German Internet Panel and Mannheim Corona Study, own estimations.

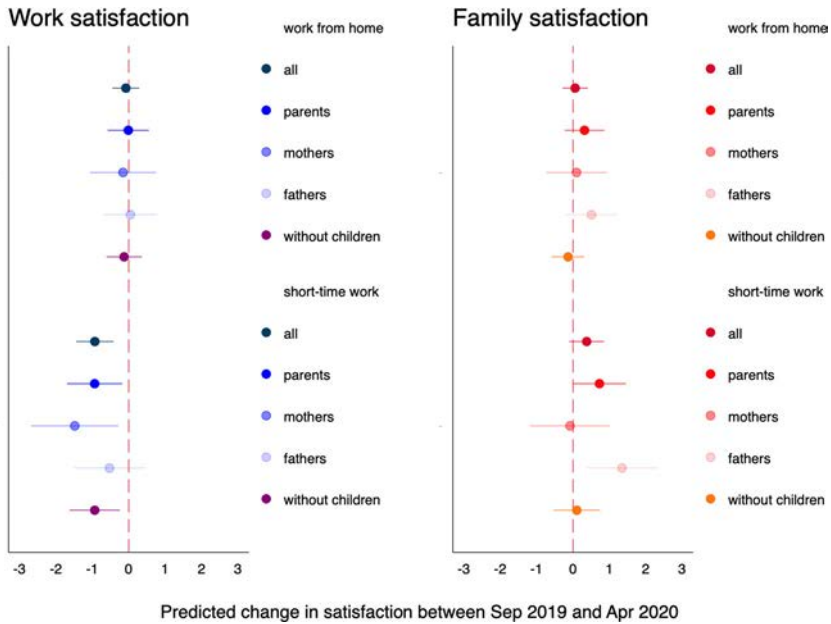


Figure 2. Coefficients of the First Differences with 95% confidence intervals regressions on work and family satisfaction, based on models 1–5 in Appendix A Tables A.4 and A.5.

Note: All models control for partnering, child birth, income changes, and include a period-dummy for April 2020. Source: German Internet Panel and Mannheim Corona Study, own estimations.

significant negative effect on work satisfaction (-0.93 scale points, $p = 0.000$), especially for mothers (-1.48 scale points, $p = 0.016$), while for fathers the change is insignificant. Those without children experience a significant reduction of work satisfaction as well (-0.93 scale points, $p = 0.008$).

For satisfaction with family life, working from home has no significant effect. The effects of short-time work are not significant as well. The only exception are fathers in short-time work: they show a significant increase in family satisfaction as compared to September 2019 (1.35 scale points, $p = 0.008$).

As robustness check we calculated regression models without controlling for changes household income (Tables B.1–B.4 in Appendix B), with results being largely identical to the models controlling for income. As only difference the negative lockdown effect on parents' work satisfaction turns significant when not controlling for income. This shows that the effect of the COVID-19 lockdown on working parents' SWB – especially on working mothers as we explain below – also stems from the increase in financial insecurity.

As additional analyses, we estimated the regression models selecting only parents living with children below age 12 (Tables C.1–C.4 in Appendix C). The results for parents in general and parents of young children differ substantially only for mothers' work satisfaction, more specifically, for the effect of short-time work on their satisfaction with work. The coefficients become insignificant when we select only mothers with small children, which might also be due to the lower number of cases. However, lower work satisfaction of mothers who have to change to short-time might result from them being more concerned about their future job security and earnings. Therefore, the age of their children is irrelevant as children of any age, and older children even to a greater extent, add to household's consumption needs.

Discussion and conclusion

In this study, we explored the effects of the COVID-19 lockdown and the related changes in employment to working from home and short-time work on the satisfaction with work and family life in Germany. We used information from the MSC of April 2020 and combined it with information of the same respondents from the GIP of September 2019, thereby focusing on within-person changes and causal relationships. Our results show a general, pronounced decrease in family satisfaction in the aftermath of the lockdown that exists for mothers, fathers, and those without children alike. This decrease cannot be attributed to any specific change in the employment situation, as well as a less pronounced decline in work satisfaction. Therefore, our Hypothesis 1 on a general negative effect of the COVID-19 lockdown on satisfaction with work and family is confirmed. This result is in line with Zacher and Rudolph (2020), however, contradicts previous results for France by Recci *et al.* (2020) and for Germany by Czymara *et al.* (2020). Both of these studies, however, apply different methodologies than ours. Recci *et al.* (2020) use the ELIPSS panel which is similar to the GIP, yet they do not look at domain satisfactions, but at a combined index of negative feelings aggregated for social and occupational groups. Czymara *et al.* (2020) rely on topic modelling of open answers in a non-representative survey whose respondents were recruited through advertisements in a German mainstream Psychology journal.

We can only speculate about the drivers for these effects. For parents, it may result from increased stress due to the necessity to reconcile child care and schooling with work – irrespective of whether they continue

to work on-site or switch to remote work. Especially mothers seem to be negatively affected by the COVID-19 lockdown as they usually bear the main burden of care work (Rosenfeld *et al.* 2004; Schober 2014). For those without children, the negative lockdown effect may result from the impoverishment of social contacts (Best *et al.* 2020). This is in line with childless being the only group that shows a negative, albeit insignificant, effect of working from home on family satisfaction and provides weak support for Hypothesis 4.

With respect to work satisfaction the results are rather mixed for different subgroups and also depend more on changes in the employment situation. While mothers with older children and people without children report a significant reduction in work satisfaction especially if they changed to short-time work, the effect is not as straightforward for fathers. They are the only subgroup without a significant negative effect of short-time employment on work satisfaction and their family satisfaction even increased after a change to short-time work. Our Hypotheses 6 on stronger negative effects for mothers compared to fathers is therefore confirmed, while Hypothesis 2 is contradicted. In fact, we find a negative effect of changing to short-time work on mothers' satisfaction with work, however to a lesser extent for mothers of young children. For fathers we find no significant effect on job satisfaction, but a positive effect on family satisfaction.

Again, we can only speculate about the exact reasons for these differences. Several studies show that mothers bear the main burden of care work before and during the COVID-19 lockdown (Collins *et al.* 2020; Huebener *et al.* 2020; Yerkes *et al.* 2020). As mothers often work part-time in Germany (Rosenfeld *et al.* 2004), the gain in free-time from a change to short-time work may carry less weight than the increase in uncertainty about future employment security and shortage in earnings. This may even more apply to mothers of older children as these require less care, yet, have higher consumption than younger children (Gray and Stanton 2010). Fathers, who in Germany work mainly full-time, are doing less care work than mothers, yet, similarly increased their engagement during the lockdown (Yerkes *et al.* 2020). Short-time work may give them more freedom to care for their families, and therefore, be associated with higher family satisfaction. This result, however, contradicts previous studies that show positive effects on general SWB of fathers working long hours (Schröder 2018). Therefore, additional research is required on the causal relationship of fathers' working hours and their well-being.

Changing to work from home is neither significantly related to satisfaction with work nor to satisfaction with family life for any of the considered subgroups. This result contradicts our expectation that remote work is related to a decrease in job satisfaction (Hypothesis 3) and an increase in family satisfaction (Hypothesis 4). Therefore, we can conclude that only changing the work location does not bring about pronounced changes in well-being if other factors are not simultaneously adapted. For example, parents' family satisfaction will not be enhanced without further improvements in the care situation and the working hours (Schober and Schmitt 2013). In Germany, as in many other European countries, parents who had the possibility to work from home were not eligible for the so called 'emergency childcare' that operated during the lockdown for children of key workers (Groll 2020). Thus, the advantages of working from home for parents came with increased stress from reconciling paid work and care. Furthermore, it has also to be emphasised that remote work does not harm work satisfaction, even if – as during the lockdown – it is imposed to many employees.

The main advantage of our study is that we are able to track SWB of the same individuals during the COVID-19 lockdown and compare this with SWB from before the lockdown. However, the present study also has some limitations. We explore the immediate effects one month into the lockdown. It remains an open question which of these changes are only temporarily and which are permanent and long lasting. For this the GIP provides an ideal data set as respondents have been continuously reporting their working situation and SWB also during the re-opening of the country until July. With respect to remote work, the results are not necessarily generalisable to 'normal' circumstances and might look quite differently if children are for example in childcare or at school. But also for respondents without children, the effect of remote work on SWB might be different if social contacts are possible. Lastly, Germany's crisis experience might not be representative for other contexts. This applies to the institutional and economic context (strong economy, strong welfare state) but also to the extent that Germany was not affected as badly as other countries by the COVID-19 pandemic (in terms of case numbers and deaths; Johns Hopkins Coronavirus Resource Center [n.d.](#)).

Disclosure statement

No potential conflict of interest was reported by the author(s).

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