Teleworking and Life Satisfaction during COVID-19: The Importance of Family Structure*

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Abstract

We carry out a difference-in-differences analysis of a real-time survey conducted as part of the German Socio-Economic Panel (SOEP) survey and show that teleworking had a negative average effect on life satisfaction over the first two years of the COVID-19 pandemic. This average effect hides considerable heterogeneity, reflecting gender-role asymmetries: lower life satisfaction is only found for unmarried men, and women with school-age children. The negative effect for women with school-age children disappears in 2021, suggesting adaptation to new constraints and/or the adoption of coping strategies.

JEL Codes: I31, M5.

Keywords: Life Satisfaction, Teleworking, Working from Home, Gender, Childcare, COVID-19, SOEP.

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1. Introduction

As the COVID-19 crisis seems to be partly receding as a public-health threat, the question of what the 'new normal' life will look like is on everyone's mind. One of the major changes imposed by the pandemic was the pervasive and wide-ranging introduction of social distancing, which radically extended the practice of working from home, especially during the lockdown episodes in 2020. One pertinent question is whether this practice will 'stick' (Barrero *et al*., 2021) in post-pandemic times, and if so with which consequences on productivity and worker wellbeing. We here consider the second of these two consequences. We identify the impact of switching to working from home on self-declared life satisfaction, which is the canonical measure of subjective well-being (Barrington-Leigh, 2022), using data from the German Socio-Economic Panel (SOEP). As the panel nature of the SOEP allows the same individuals to be followed over time, we have information on individuals both before and during COVID-19, and in particular during their different working arrangements.

The COVID-19 pandemic acted as an exogenous shock that unexpectedly pushed many people into working from home overnight (if their job allowed it) for public-health reasons that were independent of the labour market. This sudden shock to working arrangements allows us to isolate the causal impact of working from home on workers' subjective wellbeing, by excluding possible confounders such as self-selection into working from home due to personal traits, skills, preferences or constraints. The panel nature of the SOEP data also permits us to control for individual heterogeneity (via the introduction of individual fixed effects) in the empirical analysis, and to separate the impact of the COVID-19 crisis in general (via the associated anxiety, economic uncertainty, and so on) from the pure effect of working from home rather than on-site.

With its sudden unexpected appearance, the quasi 'natural experiment' of COVID-19 provided an opportunity to evaluate the exogenous impact of working from home on subjective wellbeing; it at the same time comes with some limitations as to the generality of the results. These are: (1) the fact that all telework was imposed on workers meant that it was free of any notion of privilege or stigma that may apply in 'normal' times; (2) individuals worked from home in the literal sense, as opposed to other forms of distant work; (3) more than one member of the same household often worked from home at the same time; and (4) children were also at home during the day in the periods when schools were shut. If working from home does indeed stick post-pandemic, these particular features will probably be attenuated, but at the same time will not disappear completely. One way of taking points (3) and (4) above into account is to consider the impact of the family structure as a mediator of the relationship between work from home and subjective wellbeing.

An abundant literature has explored the changes brought about by teleworking on the labour market. This started by the evaluation of the potential for teleworking, using different methods such as time-use data, the task description of jobs, and workers' self-assessments. Across countries such as the US (Dingel and Neiman, 2020; Yasenov, 2020; Hensvik *et al*., 2020), Italy (Barbieri *et al*., 2020), Canada (Béland *et al*., 2023) and Norway (Holgersen *et al*., 2021), about 35 to 45% of jobs are estimated to be teleworkable, with considerable heterogeneity across types of workers and occupations (Yasenov, 2020). Research has also investigated the impact of teleworking during and after COVID-19 on social inequalities on the labour market, looking at the extent and distribution of job losses, reduced work hours and incomes, according to age, ethnic origin, education level and most importantly gender (Bonacini *et al*., 2021; Del Boca *et al*., 2020; Alon *et al*., 2020; Yasenov, 2020; Montenovo *et al*., 2022). A review of this literature is provided in Kosteas *et al*. (2022).

Regarding worker well-being, even before COVID-19 it was suggested that working from home could be of benefit, and in particular for women, as it may improve work-life balance, and in particular the reconciliation between family and job constraints in the presence of children. Existing work has not provided strong support for this supposition, although the characteristics of the data analysed do not always allow the precise identification of the relationship between telework and well-being. For example, Lyttelton *et al.* (2022) and Xiao *et al.* (2021) analyse cross-section data, and hence do not have information on the same individual when they do and do not work from home. Schifano *et al.* (2023) do have panel information, and are able to follow a sample of individuals in five European countries over the May-November 2020 period, but the panel data does not include any pre-COVID-19 waves. Bertoni *et al.* (2021) use the SHARE longitudinal survey, which includes some measures of mental health, but not information on life satisfaction and covers older Europeans only (Perelman *et al.*, 2021, analyse data from the last cross-section wave of this same survey).

We ideally would require nationally-representative data on the same individuals before and during the pandemic, with the latter being taken as the source of an exogenous change in the probability to work at home. This is the approach taken in Felstead and Reuschke (2020), Cheng *et al*. (2021), and Gueguen and Senik (2021)[1] using UKHLS panel data. All three find lower worker well-being when working from home, with significant moderating effects of family structure. We add to these

[1] There are a number of differences between our analysis and that in Gueguen and Senik (2021). The measures of subjective well-being that are analysed differ across the two contributions. Whereas the UKHLS analysis refers to life satisfaction and the general health questionnaire (GHQ), a measure of mental health, our estimations will cover life satisfaction, self-assessed health, and measures of momentary affect and emotions, such as the frequency of feeling happy, angry, worried and sad in the two weeks preceding the survey. Second, we will also be able to investigate potential mechanisms of the link between working from home and subjective well-being via both time use and feelings of loneliness.

UK conclusions via the analysis of one of the other major panel sources of subjective well-being information: the German Socio-Economic Panel.

We find that, on average, working from home reduced the life satisfaction of German workers, and especially that of men without a partner and women with school-aged children, but not that of women with below-school aged children. This pattern for women is consistent with the burden of home-schooling that was predominantly borne by mothers (Petts *et al.*, 2021); this negative impact was smaller in 2021, perhaps as mothers adapted to the new situation or developed coping strategies. As noted above, as home-schooling due to social distancing was a particular feature of COVID-19, this pandemic-related finding may not be generalisable to other time periods. However, it does suggest that working from home is likely associated with work-family conflicts of some kind and a blurring of boundaries that is particularly salient for women, especially with children in the household. The empirical results we present here can be argued to reveal the extent of the asymmetry of gender roles within German households with respect to housework and childcare.

The remainder of the paper is organised as follows. Section 2 describes the data and provides information on the German context at the times of the various survey waves. Section 3 presents the empirical strategy and the sample selection. The main results then appear in Section 4, as well as the robustness checks, the channels and the heterogeneity analysis by family structure. Last, Section 5 concludes.

2. Data and the German Context

2.1. Data

Our empirical analysis uses data from the German Socio-Economic Panel (SOEP) and its complementary COVID-19 survey (SOEP-CoV: see www.soep-cov.de). The SOEP is a large,

long-running representative panel survey, recognised for its high standards of data quality and research ethics. The SOEP contains information on a broad set of individual- and household-level characteristics, such as household composition, health, education, income and wealth. The SOEP-CoV survey covers a random sub-sample of SOEP respondents, and was fielded during the pandemic to understand the effects of the pandemic on households in Germany. The SOEP-CoV 2020 field phase started in March 2020 and finished in July of the same year. The SOEP-CoV 2021 was then fielded between January and February 2021, on the same sample of respondents as SOEP-CoV 2020. Respondents were asked to provide information on the following topics: *a)* Within-household COVID-19 prevalence, health behaviour, and health inequality; *b)* Labour-market activity and gainful employment; *c)* Social life, networks, and mobility; *d)* Mental health and well-being; and *e)* Attitudes towards social cohesion.

There are two key variables in our analysis. The first is teleworking. This is measured in 2020 via the question *"In the course of the Corona crisis, have there been the following short-term changes in your work situation?"*. Among the different work situations that are proposed to the respondents, we consider here that a worker started teleworking if she replied *"started working from home full-time"* or *"started working from home part-time"*. We combine these two responses into one dummy variable showing whether an individual had started working from home in 2020.[2] The SOEP-CoV 2021 question about work situations is worded differently: *"Which of the following work situations currently apply to you?"*.[3] However, it does have the same type of response categories as those in the 2020 wave.

[2] We did consider these two separately, but did not find any significant difference between full-time and part-time work from home in terms of their effect on subjective well-being.

[3] The teleworking questions are originally in German in the SOEP, and we provide an English translation in the main text. The 2020 question was *"Gab es im Zuge der Corona-Krise folgende kurzfristige*

The second key variable is life satisfaction. In the SOEP this comes from the question: "*How satisfied are you with your life in the current situation, all things considered?*", with replies on a Likert-scale ranging from 0 to 10. The reliability of the answers to this life-satisfaction question, and to self-declared wellbeing measures in general, has been the subject of ongoing debate. Personality traits and reporting styles may be suspected to blur the association between the latent variable that the question aims to measure and the score that is reported on a discrete and bounded scale (see Bond and Lang, 2019, for example). However, panel data, such as the SOEP, which follow the same individuals over time, can be used to at least partly control for this individual heterogeneity, and in practice subjective well-being measures have been shown to display stable structure, predict the individual's future behaviour and outcomes, and be consistent over time and robust to test-retest analyses. Subjective variables are now starting to be considered as more mainstream by researchers in the social sciences and are often used for policy evaluation (Barrington-Leigh, 2022). Among these measures, life satisfaction has become the standard measure to evaluate the circumstances of individuals' lives (see for instance Deaton, 2008, Kahneman and Krueger 2006, Kahneman and Deaton, 2010, and Layard, 2005). It now appears in very many surveys, including the most widely-used in social-science research (such as the Gallup World Poll, the data from which is used in the annual World Happiness Report).[4] Some large representative surveys also collect short-run positive and negative emotions, and measures of the meaningfulness of life (also called eudaimonia), for example in the UK Office of National Statistics' headline Annual Population Survey.

Änderungen in Ihrer Arbeitssituation?". The 2021 question was *"Welche der folgenden Arbeitssituationen treffen derzeit auf Sie zu?"*.

[4] https://worldhappiness.report/ed/2022/.

2.2. The German context during the collection of SOEP-CoV

The evolution of the two-week moving average of the daily number of COVID-19 cases in Germany from January 2020 to May 2021 is plotted in the top panel of Figure 1. As in most Western European countries, the first COVID-19 wave hit between March and May 2020. The number of COVID-19 cases then rose drastically again during the winter of 2020, and a third time after April 2021.

The same panel of Figure 1 depicts the evolution of the two-week moving average of the Stringency index in Germany. This index is produced by the Oxford COVID-19 Government Response Tracker from the Blavatnik School of Government at the University of Oxford, and is calculated from nine sub-indices accounting, among others, for workplace and school closures. It takes on values from 0 to 100, with higher values corresponding to more-stringent containment measures to limit the spread of COVID-19. This index thus provides a synthetic summary of the government's response to the pandemic. The Stringency Index first peaked at the end of March 2020, corresponding to the partial German lockdown of March 22nd during which restaurants, cinemas, schools and day-care centres (among others) were closed. This is also the period during which teleworking became more common. Health restrictions were then relaxed until the second wave of COVID-19 arrived. This produced first a light form of lockdown in November 2020, and then a stricter lockdown in January 2021, as can be seen from the evolution of the Stringency Index in Figure 1.

The two background grey areas in the top panel of Figure 1 correspond to the periods during which the data from the SOEP-CoV survey was collected. The first data-collection wave took place during the first COVID-19 wave and the first lockdown, and the second just after the second COVID-19 wave and the introduction of the second lockdown. The bottom panel of Figure 1

includes the same background grey areas, and plots the two-week moving average of the School Closing Index and the Workplace Closing Index (two of the sub-indices making up the Oxford COVID-19 Government Response Tracker, and taking on values 0 to 3). The 2020 and 2021 SOEP-CoV surveys both took place during periods when schools and workplaces were the most likely to be closed.

The dates of the SOEP-CoV data collection period are important. First, any self-selection and stigma issues associated with teleworking were probably at their lowest during this period. Second, the closure of workplaces and schools led to an exogenous rise in the amount of time shared within the household. In a period of greater telework, this greater shared time can be either a resource (e.g. Pareto-optimal changes in the sharing of domestic tasks, and less loneliness) or a challenge (e.g. the living space being unsuitable for telework). Our empirical analysis will attempt to determine whether family structure is a boon or a bane for teleworking.

3. Empirical Strategy and Estimation Sample

3.1. Empirical Strategy

Our aim is to establish the effect of working from home during the pandemic on subjective well-being. To do so, we use SOEP panel data from 2016 to 2021 to estimate the following two regressions via OLS, where the first is a pooled cross-section and the second is a panel regression with individual fixed effects:

$$LS_{it} = \alpha Treat_{i20/21} + \beta Post_t + \gamma Treat_{i20/21} * Post_t + \delta X_{it} + \gamma X_{it} * Post_t + \lambda_t + \epsilon_{it} \quad (1a)$$

$$LS_{it} = \beta Post_t + \gamma Treat_{i20/21} * Post_t + \delta X_{it} + \gamma X_{it} * Post_t + \mu_i + \lambda_t + \epsilon_{it} \quad (1b)$$

Here LS_{it} is the life satisfaction of individual *i* in year *t* (standardised, so with mean of zero and standard deviation of one). The variable $Treat_{i20/21}$ is a dummy for those who started to work

from home in 2020 and continued to do so one year later in 2021; this dummy is equal to zero for those who continued to work at their workplace throughout the pandemic.[5] $Treat_{i20/21}$ in Equation (1a) thus captures the influence of any unobserved time-invariant differences between those who teleworked throughout the COVID-19 pandemic and those who did not. $Post_t$ is a dummy for observations in 2020 onwards: this picks up the general impact of the pandemic on the life satisfaction for both those who work from home and those who do not. Equation (1a) is then a standard cross-section difference-in-differences regression. As the treatment group consists of those who started working from home in 2020 and continued to do so in 2021, and the control group those who did not switch to working from home, the coefficient γ on the interaction term $Treat_{i20/21} * Post_t$ will capture the effect of having switched to work from home due to the pandemic. As with any difference-in-differences regression, the control group acts as a counterfactual and to capture, among others, all of the effects that the pandemic has had on life satisfaction except for that of teleworking. We will check the credibility of the control group as a counterfactual below by testing for differences in the pre-COVID trends in life satisfaction between the control and treatment groups.

Equation (1b) is the panel version of the difference-in-differences regression, with individual fixed-effects (μ_i): this is our preferred specification. The comparison of the pooled OLS to the panel results allows us to assess the extent to which the effect of teleworking is orthogonal to any remaining unobserved individual heterogeneity. When individual fixed effects are included, the

[5] There are a small number of individuals who started to work from home in 2020 but were back at the office in 2021, or who conversely only started to work from home in 2021. We drop these individuals in the main analysis. Adding them as a separate category makes no difference to our main results: see column (5) of Table 3.

$Treat_{i20/21}$ variable is dropped, as the two are multicollinear, as well as the time-invariant control variables. Standard errors are clustered at the individual level.

The sign of γ is *a priori* ambiguous. Working from home is generally considered as desirable by workers (see, for instance, Mas and Pallais, 2017, and Moens *et al.*, 2022). The saving of commuting time, greater autonomy and flexibility in time arrangements, and potentially a smoother work-life balance are all arguments in favour of this hypothesis. Conversely, however, working from home may entail a loss of social connectedness and work identity, and affect workers' career prospects. In addition, as noted above, working from home may reduce wellbeing if it excessively blurs the boundaries between home and the office. We thus identify three main channels via which teleworking may affect life satisfaction: the work environment, work-life balance and loneliness. While greater loneliness undoubtedly reduces well-being, the net effects of changes in the work environment and work-life balance are ambiguous. Overall, we are agnostic about the predicted sign of γ.

There could be a moderating role of gender and family structure on γ. For example, most schools were closed during the period of SOEP-CoV survey data collection: having school-age children at home likely presents an additional challenge for teleworkers (from, among others, more household tasks or greater tension at home). On a more-positive note, the presence of a partner or children can act as a buffer against loneliness. Determining the way in which gender and family structure moderate γ is then an empirical question.

The identification requirement for γ to be read as the causal impact of working from home on life satisfaction is that the former was not chosen by the individual but rather imposed on them. This seems plausible, as most of the SOEP 2020 survey interviews were in the field in the early stages of pandemic (between March and June). The exogeneity of working from home may be less

evident in 2021. We therefore also separately estimate the effect of teleworking in 2020 and 2021 in the following panel regression:

$$LS_{it} = \sum_{t=2017}^{2021} \gamma_t Treat_{i20/21} * Year_t + \delta X_{it} + \gamma X_{it} * Post_t + \mu_i + \lambda_t + \epsilon_{it} \quad (2)$$

The greater flexibility of Equation (2) has the advantage of providing a test of the parallel-trend assumption. Equation (2) can also be read through the prism of adaptation. First, the treatment group consists only of workers working from home in 2020 AND 2021 (who are thus continuously exposed to the same working-from-home stimulus). Second, pandemic policies were remarkably similar during the 2020 and 2021 SOEP-CoV surveys, and so should not confound the separate-year results: in Figure 1, the Stringency Index and School Closure Index values were similar during the 2020 and 2021 data-collection periods. We will conclude that there was adaptation to telework if $|\gamma_{2020}|$ is larger than $|\gamma_{2021}|$; and if this is the case there is complete adaptation if $\gamma_{2021} = 0$ and partial adaptation if $\gamma_{2021} \neq 0$.

All of the above equations include a vector of individual socio-demographic characteristics X_{it}, including gender, age categories, net monthly household income equivalised using the square root of family size, the size of the house, and dummy variables for post-secondary education, marital status, family size, the number of diagnosed health conditions before the pandemic, employment (assignment to the treatment implies that all our observations come from individuals who were employed in 2020 and 2021, although we are agnostic about the employment status beforehand), and blue-collar employment.[6] Gender, education and pre-Covid health conditions are fixed at the individual level, and so do not appear in the panel regressions.

[6] There is no Industry or Occupation information in SOEP-CoV. The 'blue-collar' dummy we use is the best proxy as it is observed both during the pre-Covid and pandemic waves.

As $Treat_{i20/21}$ may not be orthogonal to X_{it}, we interact X_{it} with $Post_t$, which ensures that the γ (in Equations (1a) and (1b)) and γ_{2020} and γ_{2021} (in Equation (2)) only capture the effect of teleworking and are not spuriously driven by the behaviour of certain socio-demographic groups following the pandemic. Year times Month-of-interview dummies, λ_t, control for seasonality.

3.2. Sample Selection and Descriptive Statistics

Our analysis requires that individuals both had a job in 2020 and provide information on whether they started teleworking since the beginning of the pandemic. To carry out a difference-in-differences regression (and test the parallel-trend assumption), we further restrict the sample to individuals who were observed every year from 2016 to 2020. This produces a balanced sample, and ensures that the estimation results are not affected by changes in sample composition between 2016 and 2020.

The 2016-2020 balanced sample consists of 10,940 observations on 2,188 individuals (853 of whom teleworked in 2020 and 1,335 who did not). We then add to this information on the 1,693 individuals who participated in the 2021 survey and declared the same teleworking status in 2021 as in 2020. The addition of this 2021 information will allow us to investigate whether workers adapt to teleworking. The final estimation sample is then made up of 12,633 observations on 2,188 individuals. The robustness checks will show that introducing the small number of individuals who started to work from home in 2020 but no longer did so in 2021 (or vice-versa) does not affect our conclusions.

Table 1 presents the descriptive statistics of our estimation sample (the statistics first by gender and then by telework status appear in Appendix Table A1).[7] The average life-satisfaction score is around 7.5, and 35% of our observations are in the treatment group (those who switched to teleworking during the pandemic). Figure 2 plots the distribution of life satisfaction in the estimation sample before and during the pandemic. As with most self-reported measures of well-being, both distributions are left-skewed. We also (unsurprisingly) see a clear drop in life satisfaction in the pandemic period.

We estimate separate regressions for the effect of working from home on life satisfaction for women and men, and depending on the presence of school-age or below school-age children, where school starts at age 6 (see http://gpseducation.oecd.org/CountryProfile?primaryCountry=DEU for a detailed description of the German education system). These separate regressions allow the estimated coefficients on all of the right-hand side variables to differ between the analysis groups.

4. Teleworking and Well-being in Germany

4.1. Main Results

Table 2 lists the estimated coefficients on the $Treat_{i20-21} * Post_t$ interaction in Equations (1a) and (1b), which show the effect of teleworking on the standardised value of life satisfaction during the pandemic. The estimated coefficients on the control variables appear in Table A2. The specification in column (1) has no control variables or individual fixed effects, and teleworking is here estimated to have statistically-significantly reduced life satisfaction by 14% of a standard deviation.

[7] The maximum household size of ten may seem extreme. All of our results continue to hold if we exclude household sizes of over five.

To see whether assignment to the treatment (*i.e.* teleworking during the pandemic) was random, we predict in Table A3 the probability of telework in 2020 using 2019 observable socio-demographics $X_{i\,2019}$. The results show that, unsurprisingly, white-collar workers are more likely to telework, as are men, those with post-Secondary education, and those with higher equivalised household incomes. We therefore introduce controls for X_{it} and $X_{it} * Post_t$ to ensure that the $Treat_i * Post_t$ variable only picks up the effect of teleworking. Controlling for X_{it} in column (2) has almost no effect on the estimated teleworking coefficient, but the addition of $X_{it} * Post_t$ in column (3) does reduce it. This drop mostly reflects that workers with higher equivalised household incomes are more likely to both report lower life satisfaction during the pandemic (see Table A2), as in Clark and Lepinteur (2021), and be in the treated group (see Table A3). The estimated teleworking coefficient does nevertheless remain significant and negative. The last column of Table 2 adds individual fixed effects: this has no effect on the estimated γ coefficient. In this preferred specification, teleworking significantly reduces life satisfaction by just under 10% of a standard deviation. From the estimated income coefficient in Table A2, this lower life satisfaction would be compensated by 45% higher equivalised household net monthly income (=exp(.087/0.235) -1).

The difference-in-differences analyses assume that workers who did not switch to teleworking during the pandemic are a valid counterfactual for those who did. Although this hypothesis cannot be explicitly tested, we plot in Figure 3 the life-satisfaction trend for these two groups in the years pre and post the COVID-19 outbreak. The life satisfaction of those who switched into teleworking was always higher pre-pandemic, but crucially the trends were similar. The parallel-trend assumption is formally tested in Figure 4, which shows the estimated interaction coefficients between *Treat* and all the separate wave dummies (with the difference between the treatment and

control groups in 2016 being the reference category), corresponding to Equation (2). None of the pre-2020 trend differences are significant: the evolution of life satisfaction for those who switched to teleworking and those who did not was identical pre-pandemic. As such, non-switchers do seem to be a valid counterfactual for switchers. Figure 4 also shows that the negative impact of teleworking on life satisfaction is the same in 2020 and 2021, suggesting no adaptation to teleworking.[8]

4.2. Robustness Checks

This subsection considers a number of key aspects of the identification strategy; the results of the various robustness checks appear in Table 3, with the preferred coefficient from column (4) of Table 2 being reproduced in the first column of Table 3 to act as a benchmark.

As noted above, the results in Appendix Table A3 suggests that assignment to the telework treatment is not random. This is not *a priori* a problem, as identification relies on the parallel-trend assumption in life satisfaction rather than the levels being the same in the treatment and control groups. Despite the confirmatory evidence in Figure 3, we can apply propensity score matching (PSM) to render the control and treatment groups more comparable pre-pandemic. The estimated coefficients in columns (2) and (3) of Table 3 come from re-estimation using "nearest-neighbour matching" and the weighting of observations based on their propensity score matching respectively. The results are similar to those in the main model.

There might also be thought to be potentially confounding effects from the evolution of the pandemic and pandemic policies. Column (4) of Table 3 controls for the number of COVID-19 cases and the Stringency Index and Economic Support Index from the Oxford COVID-19

[8] With the data currently available, we cannot evaluate adaptation to longer telework durations: adaptation might take more than one year.

Government Response Tracker of the Blavatnik School of Government at the University of Oxford. The effect of teleworking remains similar to the baseline estimate.

The small number of individuals who started to work from home in 2020 but were then back at the office in 2021 (or vice-versa) were dropped from the analysis. Including these "partially" treated groups does not change the results (see column (5) of Table 3). Nor does restricting the sample to be balanced from 2016 to 2021 in column (6), as opposed to balanced from 2016 to 2020 in our main sample. Last, the analysis in column (7) refers to a balanced panel from 2013 to 2020, yielding more observations but on fewer individuals: this produces a similar estimated teleworking coefficient (as indeed do samples that started even earlier).

We evaluate convergent validity by considering alternative measures of subjective well-being: if teleworking really does reduce well-being, then this should hold for all measures of the latter. The SOEP-CoV only include a limited number of well-being variables, and our additional measures are self-reported health (on a scale of 1 to 5) and the frequency of feeling happy, angry, worried and sad in the two weeks preceding the survey. Table A4 shows that teleworking is also associated with lower levels of reported health and happiness. However, the three negative-affect measures are not significantly correlated with telework. This is consistent with the correlations between life satisfaction and the frequency of being angry, worried and sad being smaller than those with self-assessed health and the frequency of being happy in our data. Knabe *et al.* (2010) also concluded that the determinants of cognitive and affective well-being may differ, especially for those determinants linked to the labour market.

4.3. Channels

Why does working from home reduce life satisfaction? We above suggested three main channels: changes in the work environment, work-life balance, and increased feelings of loneliness.

We unfortunately do not have data on the work environment (such as autonomy, stress or career prospects). We can however consider the roles of work-life balance and loneliness. For the former, all SOEP surveys include a harmonised time-use module and a question about satisfaction with family life. For loneliness, three items from the UCLA loneliness scale were included in the 2017, 2020 and 2021 SOEP surveys. As in Lepinteur *et al.* (2022), we can combine these three items to produce a loneliness score. There is only one wave with loneliness information pre- pandemic: this produces a much-smaller estimation sample, but does not prevent us from applying difference-in-differences estimation.

The effect of working from home on work-life balance and loneliness appear in Table 4. In the first three columns, teleworking increased the time spent on child care (+19.9 minutes), housework (+7.8 minutes) and hobbies (+9.2 minutes).[9] The net effect of these changes on work-life balance is arguably ambiguous. As such, we also consider a work-life balance proxy, satisfaction with family life, in column (4) of Table 4. Teleworking reduces this satisfaction, consistent with working from home blurring the distinction between personal and professional life and potentially creating tension within the household. In the last column of the same Table, we find an insignificant effect of teleworking on loneliness. It is here possible that virtual professional

[9] There was also a significant drop (of 5 minutes) in the time spent studying. The time spent in all other activities, including working, remained unchanged. As the hours in the day are fixed, the net rise of 31.9 minutes (19.9 + 7.8 + 9.2 - 5 = 31.9) has to be compensated by something else. We suspect that time spent commuting and sleeping (which are not reported in the SOEP surveys we use) fell as a result of teleworking.

interaction and household interactions have substituted for the loss of physical interaction at the workplace.

4.4. The Importance of Gender and Family Structure

The estimations so far have covered all workers, but as working from home involves significant changes in work-life balance we might expect to find different effects by gender[10] and family structure (especially during the periods when schools were shut).[11]

Table 5 first considers heterogeneity by sex, with separate regressions for men (left-hand panel) and women (right-hand panel). The drop in life satisfaction from teleworking during the pandemic is always larger for men, and in the most-complete specifications teleworking does not affect women's life satisfaction (the parallel-trend assumption is formally tested in Figure 5 for both gender and none of the pre-2020 trend differences are significant). This gender difference may reflect the adherence to traditional gender norms, where the mixing of work and home spheres turns out to be more difficult for men. This is confirmed to an extent by the results presented in Appendix Table A5: in the top panel, teleworking for men is associated with more time spent on childcare and lower satisfaction with family life. The results in Table 6, where teleworking is interacted with dummies for marriage and having children below school age or children at school,

[10] There is a very large literature on gender differences in subjective well-being (see Batz and Tay, 2018, for a recent summary). This has, for example, underlined a greater role for material items in male well-being, and of altruism, family and social networks in that of women. Regarding the labour market, the job facets that men and women value turn out to be remarkably similar. In the analysis of 13 OECD countries in ISSP data in Clark and Kozak (2023), slightly more women than men cited job security as being very important, and slightly more women than men flexible hours, and helpful and useful jobs. Overall the differences are only small (see their Table 2).

[11] Gender and family structure are not the only potential mediators of the relationship between teleworking and life satisfaction. We also considered age, personality traits, and the location and size of the house/flat, but found no consistent differences between groups.

are also in line with this interpretation.[12] In column (1), the life satisfaction of married men is much less affected by teleworking. The tension from mixing work and home life may be reduced for married men if, due to traditional gender norms, women take care of the bulk of household tasks. Alternatively, having a partner might reduce the feelings of loneliness associated with teleworking. Both interpretations are consistent with the signs of the interaction terms in columns (2), (5) and (14) in Appendix Table A5.

The results for women in the right-hand panel of Table 6 are strikingly different. The overall zero teleworking effect in Table 3 hides sharp differences by the presence and age of children in the household. In column (7) of Table 6, the life satisfaction of women with below school-age children actually rises significantly with teleworking (by one quarter of a standard deviation: 0.032+0.206). Working from home may well alleviate childcare difficulties and simplify the work-life balance. Women with school-age children do not benefit in this way (the interaction coefficient is negative, but insignificant, in column (7)). When we consider working from home in 2020 only (in the last column of Table 6), when education was seriously disrupted by the pandemic, the life satisfaction of mothers with school-age children is significantly lower (with there being no such effect for men in column (4)). The start of the pandemic then seems to have exacerbated the well-being penalty of 'second shift' mothers (Flèche *et al.*, 2018 and 2020). This is confirmed by the interaction terms in column (6) in Appendix Table A5, where teleworking women with school-age children spent about one more hour per day in childcare during the pandemic.[13] As school closing was

[12] In an alternative specification, we included all the interaction terms together. The results when doing so (available upon request) are very similar to those in Table 4.

[13] Workers might have switched between full-time and part-time telework to accommodate their personal life. These changes would be problematic were they correlated with either gender or family structure. We have checked, and found that none of gender, marital status and the presence of children in the household predict these switches. The marginal effects from the multinomial logit model are available upon request.

recommended by the government during the periods of data collection of both SOEP-CoV waves (see Figure 1), this 2020-2021 difference may not only reflect the institutional context. The lack of a significant effect in 2021 may then reveal that mothers had adapted to the new constraints and/or adopted coping strategies (such as asking grandparents for help).[14]

5. Conclusions

Long-running German panel data has allowed us to separate the effect of working from home during the pandemic from the effect of the pandemic itself and other observed and unobserved individual characteristics. Working from home reduces life satisfaction, with the negative effect being driven by men, and by women with school-aged children in 2020. Women with below-school age children are on the contrary more satisfied with their life when they telework. In 2021, the presence and age of children no longer moderated the effect of telework on life satisfaction, likely reflecting adaptation or coping strategies. Taking COVID-19 as a natural experiment that uncovers causal relations, our results here underline the strength of traditional gender norms in Germany, in particular with respect to childcare.

The COVID-19 pandemic caused by the novel coronavirus SARS-CoV-2 has posed enormous health-related challenges. In Germany, teleworking was one governmental response to address these challenges. When evaluating this policy from a welfare perspective, in addition to the immediate question of effectiveness in terms of the spread of the virus and its health consequences, it is important to consider its unintended side-effects. Our analysis shows that teleworking was associated with lower life satisfaction that differed systematically across social groups, being

[14] We also interacted "Married" with "Children above school-age" and "Children below school-age" to see whether the effect of teleworking is different for single mothers and single fathers. None of these interaction terms was significant. However, we may not have sufficient statistical power here, as there are relatively few single parents in our sample and the standard errors are large.

largest for unmarried men and women with school-age children. The underlying reasons are likely feelings of anxiety and loneliness, and the challenges of moving work to home, on the one hand, with the suspension of care services for young children on the other. Working from home will not disappear in the future. One of the tasks of policymakers is therefore to take its side effects into account and create support services for the groups at risk. One such response is the "Loneliness Competence Network" initiative launched by the German Family Ministry to provide practical help for those affected and to drive research forward. Strategies to reduce the difficulties faced by working (from home) mothers and fathers in caring for their children are also important in this sense.

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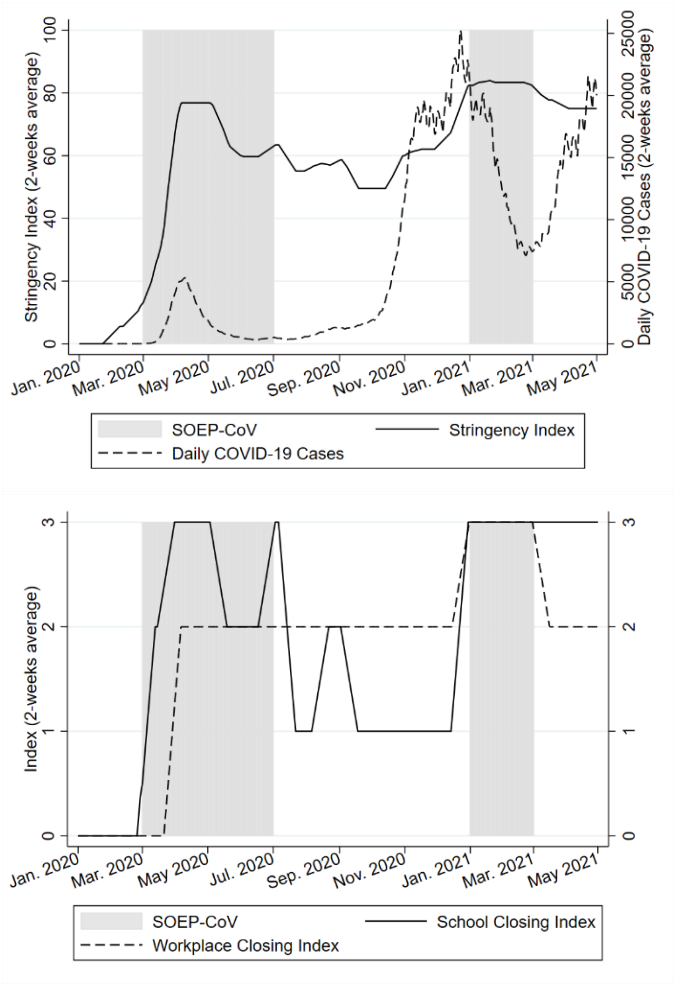
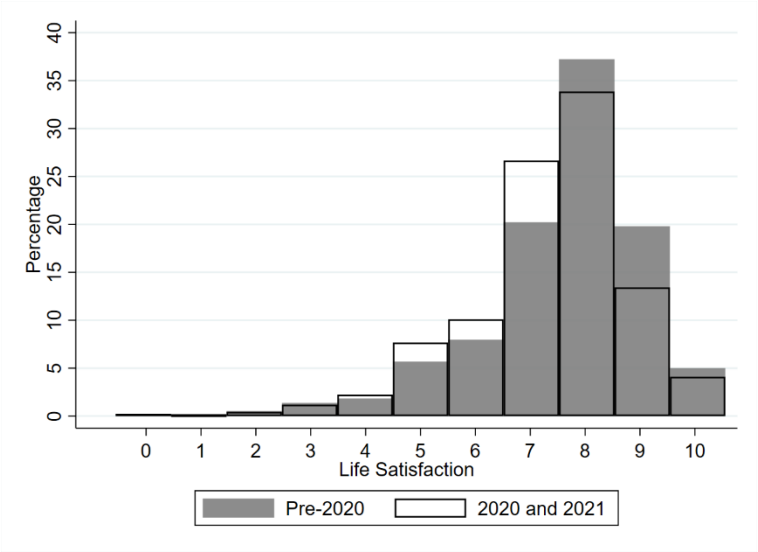
Figures and Tables

Figure 1: The German Context during the Collection of SOEP-CoV data



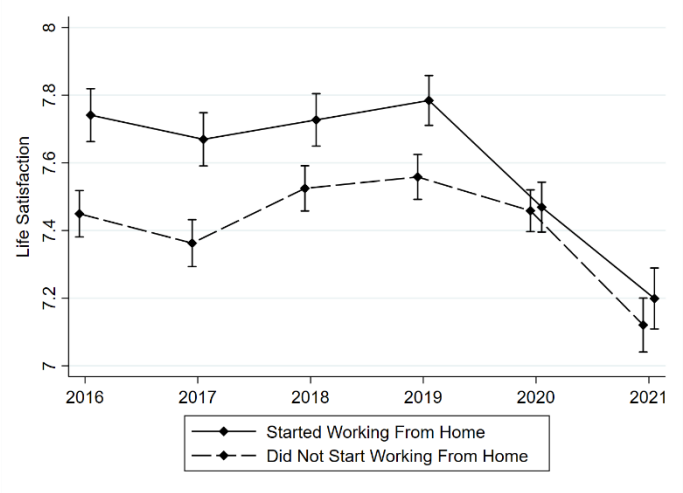
Notes: The grey areas show the periods when the SOEP-CoV surveys were in the field. All of the COVID-19 variables are 2-week averages.

Figure 2: Distribution of Life Satisfaction



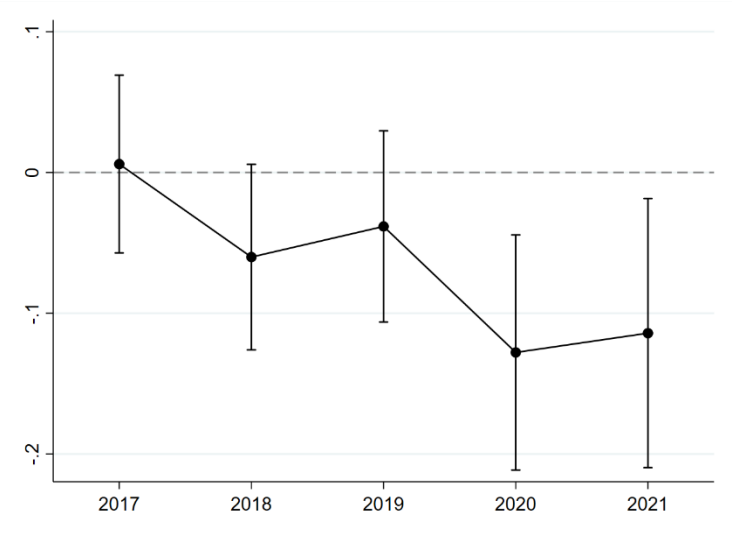
Note: This figure refers to our estimation sample of 12,633 observations (2,188 individuals) coming from the SOEP and the complementary SOEP-CoV survey.

Figure 3: Parallel Trend Assumption – Evolution of Mean Life Satisfaction in the Treatment and Control Groups



Notes: This figure refers to our estimation sample of 12,633 observations (2,188 individuals) coming from the SOEP and the complementary SOEP-CoV survey. Each point refers to the annual average life satisfaction of the workers who started working from home in 2020 and continued to do so in 2021, and of those who never worked from home. 95% confidence intervals are depicted.

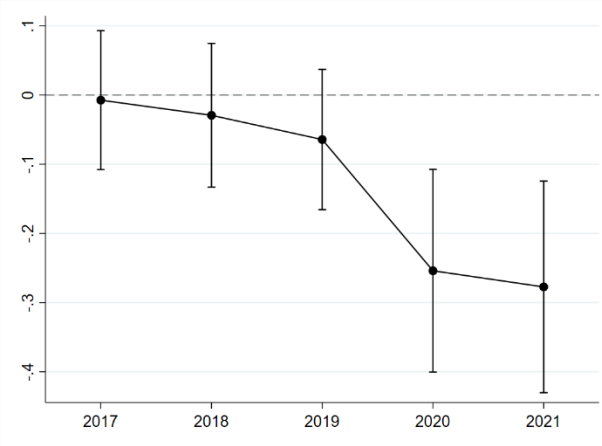
Figure 4: Parallel Trends – Difference-in-Differences Estimates per Year (Reference Period: 2016)



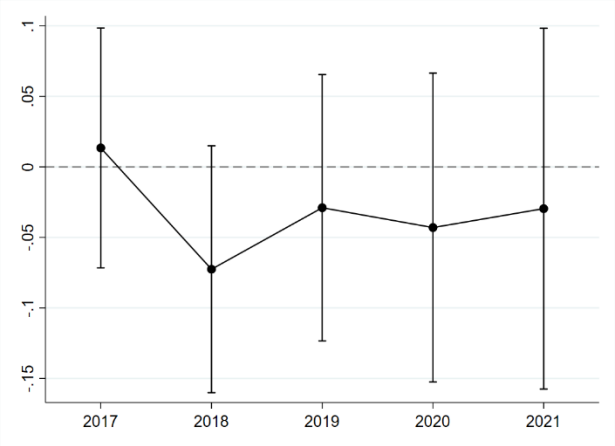
Notes: This figure refers to our estimation sample of 12,633 observations (2,188 individuals) coming from the SOEP and the complementary SOEP-CoV survey. Each point shows the annual effect of belonging to the treatment group, with the difference between the treated and control group in 2016 as the reference. The treatment group is made up of workers who started to work from home in 2020 and continued to do so in 2021, and the control group of those who never worked from home. 95% confidence intervals are depicted.

Figure 5: Parallel Trends – Difference-in-Differences Estimates per Year (Reference Period: 2016)

Panel A: Men



Panel B: Women



Notes: These figures refer to our estimation sample of 12,633 observations (2,188 individuals) coming from the SOEP and the complementary SOEP-CoV survey. The estimation sample of men contains 4,594 observations (on 794 individuals) and that of women 8,039 observations (on 1,394 individuals). Each point shows the annual effect of belonging to the treatment group, with the difference between the treated and control group in 2016 as the reference. The treatment group is made up of the workers who started working from home in 2020 and continued to do so in 2021, and the control group of those who never worked from home. 95% confidence intervals are depicted.

Table 1: Descriptive Statistics

	Mean	SD	Min	Max
Life satisfaction	7.49	1.50	0	10
Treat	0.37		0	1
Post	0.31		0	1
Working from home	0.11		0	1
Female	0.64		0	1
Age	45.93	10.14	18	66
East Germany	0.20		0	1
Post-Secondary education	0.29		0	1
Married	0.56		0	1
Children below-school age	0.18		0	1
School-age children	0.44		0	1
Household Size	2.94	1.42	1	10
Health conditions – pre-COVID-19	0.78	0.92	0	5
Net monthly equivalised HH income (log)	8.09	0.53	5.08	11.76
Blue collar	0.14		0	1
Employed	0.94		0	1
Sq. Metres per head	43.61	23.54	6.25	282

Notes: This table refers to our estimation sample of 12,633 observations (2,188 individuals) from the SOEP and the complementary SOEP-CoV survey. "Treat" and "Post" are respectively a time-invariant dummy variable for the workers who started working from home in 2020, and a dummy variable equal to one in 2020 and 2021.

Table 2: Working from home during the pandemic – Pooled and panel results

	Life satisfaction (std)			
	(1)	(2)	(3)	(4)
Working from home	-0.141***	-0.152***	-0.087**	-0.087**
	(0.037)	(0.037)	(0.044)	(0.043)
Observations	12633	12633	12633	12633
Controls	No	Yes	Yes	Yes
Controls interacted with Post dummy	No	No	Yes	Yes
Individual FE	No	No	No	Yes

Notes: These are linear regressions and our estimation sample of 12,633 observations (2,188 individuals) comes from the SOEP and the complementary SOEP-CoV survey. Standard errors in parentheses are clustered at the individual level. All regressions include month-of-interview*year fixed effects and the Treat and Post dummies. "Working from home" is the interaction between the "Treat" and "Post" dummies. The former is a time-invariant variable for the workers who started working from home in 2020, and the latter is equal to one in 2020 and 2021. The interaction "Working from home" captures the effect of teleworking during the pandemic. The controls are age categories, gender, dummies for living in East Germany, post-Secondary education, and having a partner, household size, the number of health conditions pre-COVID-19, equivalised net monthly household income (in logs), dummies for being employed and a blue-collar worker, and square metres per head. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 3: Working from home during the pandemic – Robustness checks

	Life satisfaction (std)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Working from home	-0.087**	-0.114**	-0.110**	-0.090**	-0.101**	-0.112*	-0.089*
	(0.043)	(0.046)	(0.045)	(0.043)	(0.041)	(0.060)	(0.046)
Observations	12633	10158	12633	12633	13501	9809	14707

Notes: These are linear regressions and our estimation samples come from the SOEP and the complementary SOEP-CoV survey. Standard errors in parentheses are clustered at the individual level. All regressions include month-of-interview*year fixed effects, individual fixed-effects and the Post dummy. "Working from home" is the interaction between the "Treat" and "Post" dummies. The former is a time-invariant variable for the workers who started working from home in 2020, and the latter is equal to one in 2020 and 2021. The interaction "Working from home" captures the effect of teleworking during the pandemic. The controls are age categories, dummies for living in East Germany and having a partner, household size, the number of health conditions pre-COVID-19, equivalised net monthly household income (in logs), dummies for being employed and a blue-collar worker, and square metres per head. Column (1) is the baseline estimate. Column (2) uses a control group made of the nearest-neighbours of the treated group. Column (3) uses propensity score matching weights. Column (4) controls for the evolution of the pandemic (proxied by the 2-week average of daily COVID-19 cases) and of the pandemic policies (proxied by the 2-week averages of the Stringency and Economic Support Indices). Column (5) includes workers who switched teleworking status during the pandemic. Column (6) uses the balanced sample of respondents between 2016 and 2021. Column (7) uses observations from 2013 to 2021. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 4: Working from home during the pandemic – Channels

	Childcare (daily hours)	Housework (daily hours)	Hobbies (daily hours)	Satisfaction with family life	Loneliness
	(1)	(2)	(3)	(4)	(5)
Working from home	0.332**	0.130***	0.154***	-0.150*	0.038
	(0.143)	(0.040)	(0.054)	(0.085)	(0.138)
Observations	12577	12616	12597	12574	6045

Notes: These are linear regressions and our estimation samples come from the SOEP and the complementary SOEP-CoV survey. All regressions include month-of-interview*year fixed effects, individual fixed-effects and the Post dummy. "Working from home" is the interaction between the "Treat" and "Post" dummies. The former is a time-invariant variable for the workers who started working from home in 2020, and the latter is equal to one in 2020 and 2021. The interaction "Working from home" captures the effect of teleworking during the pandemic. The controls are age categories, dummies for living in East Germany and having a partner, household size, the number of health conditions pre-COVID-19, equivalised net monthly household income (in logs), dummies for being employed and a blue-collar worker, and square metres per head. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 5: Working from home during the pandemic by gender – Pooled and panel results

	Life satisfaction (std)							
	Men				Women			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Working from home	-0.214***	-0.224***	-0.207***	-0.235***	-0.111**	-0.124***	-0.023	-0.009
	(0.058)	(0.058)	(0.076)	(0.074)	(0.048)	(0.048)	(0.055)	(0.053)
Observations	4594	4594	4594	4594	8039	8039	8039	8039
Controls	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Controls*Post dummy	No	No	Yes	Yes	No	No	Yes	Yes
Individual FE	No	No	No	Yes	No	No	No	Yes

Notes: These are linear regressions and our estimation sample of 12,633 observations (2,188 individuals) comes from the SOEP and the complementary SOEP-CoV survey. The estimation sample of men contains 4,594 observations (on 794 individuals) and that of women 8,039 observations (on 1,394 individuals). Standard errors in parentheses are clustered at the individual level. All regressions include month-of-interview*year fixed effects, individual fixed-effects and the Post dummy. "Working from home" is the interaction between the "Treat" and "Post" dummies. The former is a time-invariant variable for the workers who started working from home in 2020, and the latter is equal to one in 2020 and 2021. The interaction "Working from home" captures the effect of teleworking during the pandemic. The controls are age categories, dummies for living in East Germany and having a partner, household size, the number of health conditions pre-COVID-19, equivalised net monthly household income (in logs), dummies for being employed and a blue-collar worker, and square metres per head. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 6: Working from home during the pandemic by gender, marriage and children – panel results

	Life satisfaction (std)							
	Men				Women			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Working from home	-0.391***		-0.260***		0.005		0.032	
	(0.114)		(0.0907		(0.077)		(0.075)	
Interacted with:								
Married	0.258**				-0.022			
	(0.123)				(0.094)			
Children below-school age			0.099				0.206*	
			(0.132)				(0.118)	
School-age children			0.015				-0.140	
			(0.112)				(0.096)	
Working from home in 2020		-0.401***		-0.239**		0.008		0.086
		(0.129)		(0.107)		(0.087)		(0.084)
Interacted with:								
Married		0.293**				-0.047		
		(0.139)				(0.105)		
Children below-school age				0.078				0.203
				(0.176)				(0.126)
Children above-school age				-0.096				-0.279***
				(0.122)				(0.104)
Working from home in 2021		-0.391***		-0.284**		-0.012		-0.076
		(0.135)		(0.113)		(0.099)		(0.099)
Interacted with:								
Married		0.222				0.013		
		(0.157)				(0.129)		
Children below-school age				0.078				0.245
				(0.176)				(0.180)
School-age children				0.062				0.074
				(0.148)				(0.135)
Observations	4594	4594	4594	4594	8039	8039	8039	8039

Notes: These are linear regressions and our estimation sample of 12,633 observations (2,188 individuals) comes from the SOEP and the complementary SOEP-CoV survey. The estimation sample of men contains 4,594 observations (on 794 individuals) and that of women 8,039 observations (on 1,394 individuals). Standard errors in parentheses are clustered at the individual level. All regressions include month-of-interview*year fixed effects, individual fixed-effects and the Post dummy. "Working from home" is the interaction between the "Treat" and "Post" dummies. The former is a time-invariant variable for the workers who started working from home in 2020, and the latter is equal to one in 2020 and 2021. The interaction "Working from home" captures the effect of teleworking during the pandemic. The controls are age categories, dummies for living in East Germany and having a partner, household size, the number of health conditions pre-COVID-19, equivalised net monthly household income (in logs), dummies for being employed and a blue-collar worker, and square metres per head. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Online Appendix

Table A1: Descriptive Statistics by gender and treatment status

	Men				Women			
	Mean	SD	Min	Max	Mean	SD	Min	Max
Life satisfaction	7.56	1.39	0	10	7.45	1.56	0	10
Treat	0.45		0	1	0.34		0	1
Post	0.31		0	1	0.31		0	1
Working from home	0.14		0	1	0.10		0	1
Age	45.66	10.73	18	66	46.08	9.78	18	66
East Germany	0.21		0	1	0.20		0	1
Post-Secondary education	0.29		0	1	0.29		0	1
Married	0.59		0	1	0.55		0	1
Children below-school age	0.21		0	1	0.17		0	1
School-age children	0.40		0	1	0.47		0	1
Household Size	2.88	1.46	1	10	2.98	1.40	1	9
Health conditions – pre-COVID-19	0.74	0.93	0	5	0.80	0.98	0	5
Net monthly equivalised HH income (log)	8.15	0.53	5.60	11.76	8.05	0.53	5.08	11.51
Blue collar	0.20		0	1	0.10		0	1
Employed	0.97		0	1	0.93		0	1
Sq. Metres per head	45.11	26.25	10.86	282	42.76	21.80	6.25	230
	Control Group				Treatment Group			
	Mean	SD	Min	Max	Mean	SD	Min	Max
Life satisfaction	7.41	1.56	0	10	7.62	1.38	0	10
Female	0.68		0	1	0.57		0	1
Age	46.42	10.39	18	66	45.14	9.66	18	66
East Germany	0.22		0	1	0.18		0	1
Post-Secondary education	0.16		0	1	0.51		0	1
Married	0.55		0	1	0.59		0	1
Children below-school age	0.16		0	1	0.21		0	1
School-age children	0.41		0	1	0.50		0	1
Household Size	2.87	1.43	1	10	3.05	1.41	1	9
Health conditions – pre-COVID-19	0.85	1.00	0	5	0.66	0.89	0	5
Net monthly equivalised HH income (log)	7.95	0.52	5.08	11.76	8.30	0.48	5.99	10.24
Blue collar	0.21		0	1	0.02		0	1
Employed	0.93		0	1	0.97		0	1
Sq. Metres per head	42.73	22.40	6.25	282	45.03	25.21	11.43	282

Notes: This table refers to our estimation sample of 12,633 observations (2,188 individuals) coming from the SOEP and the complementary SOEP-CoV survey. "Working from home" is the interaction between the "Treat" and "Post" dummies. "Treat" and "Post" are respectively a time-invariant dummy variable for the workers who started working from home in 2020, and the latter is a dummy variable equal to one in 2020 and 2021.

Table A2: Working from home during the pandemic – Full results from Table 2

	Life satisfaction (std)			
	(1)	(2)	(3)	(4)
Working from home	-0.141***	-0.152***	-0.087**	-0.087**
	(0.037)	(0.037)	(0.044)	(0.043)
Treat	0.178***	0.046	0.027	
	(0.034)	(0.036)	(0.036)	
Post	-0.110***	-0.140***	0.829**	1.187***
	(0.024)	(0.029)	(0.412)	(0.383)
Female		-0.000	0.039	
		(0.030)	(0.033)	
Age category [ref category: 18-29]				
30-39		-0.177***	-0.235***	-0.102
		(0.056)	(0.058)	(0.070)
40-49		-0.227***	-0.287***	-0.134
		(0.057)	(0.059)	(0.086)
50-59		-0.240***	-0.337***	-0.109
		(0.058)	(0.061)	(0.095)
60+		-0.161**	-0.276***	-0.252**
		(0.074)	(0.086)	(0.112)
East Germany		0.020	0.023	0.056
		(0.036)	(0.039)	(0.205)
Post-Secondary Education		-0.006	0.010	
		(0.034)	(0.037)	
Married		0.154***	0.215***	0.052
		(0.035)	(0.039)	(0.071)
Family Size		-0.016	-0.038**	-0.058**
		(0.015)	(0.017)	(0.027)
Health conditions pre-COVID-19		-0.158***	-0.178***	
		(0.018)	(0.020)	
Net monthly equivalised HH income (log)		0.282***	0.332***	0.235***
		(0.036)	(0.040)	(0.044)
Blue collar		0.022	0.037	0.012
		(0.041)	(0.046)	(0.041)
Employed		0.138**	0.144**	0.131**
		(0.059)	(0.066)	(0.052)
Sq. Metres per head (std)		0.007	0.001	-0.046*
		(0.017)	(0.019)	(0.027)
Controls interacted with Post:				
Female			-0.136***	-0.135***

			(0.038)	(0.037)
Age category [ref category: 18-29]				
30-39			0.242***	0.257***
			(0.100)	(0.096)
40-49			0.251***	0.302***
			(0.097)	(0.094)
50-59			0.362***	0.365***
			(0.097)	(0.095)
60+			0.361***	0.398***
			(0.118)	(0.111)
East Germany			-0.007	-0.011
			(0.045)	(0.044)
Post-Secondary Education			-0.058	-0.036
			(0.043)	(0.042)
Married			-0.187***	-0.184***
			(0.046)	(0.047)
Family Size			0.062***	0.057***
			(0.020)	(0.020)
Health conditions pre-COVID			0.069***	0.075***
			(0.023)	(0.022)
Net monthly equivalised HH income (log)			-0.156***	-0.192***
			(0.053)	(0.049)
Blue collar			-0.052	-0.038
			(0.064)	(0.060)
Employed			-0.048	-0.168
			(0.126)	(0.113)
Sq. Metres per head (std)			0.012	0.040*
			(0.021)	(0.021)
Observations	12633	12633	12633	12633
Individual FE	No	No	No	Yes

Notes: These are linear regressions. Standard errors in parentheses are clustered at the individual level. All regressions include month-of-interview*year fixed effects* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A3: The Probability of Working from Home in 2020

	P(Treatment group)
Female	-0.113***
	(0.020)
Age category [ref category: 18-29]	
30-39	0.046
	(0.042)
40-49	0.018
	(0.040)
50-59	-0.042
	(0.040)
60+	-0.058
	(0.049)
East Germany	-0.031
	(0.023)
Post-Secondary Education	0.269***
	(0.021)
Married	-0.054*
	(0.024)
Family Size	-0.022*
	(0.010)
Health conditions pre-COVID-19	-0.002
	(0.010)
Net monthly equivalised HH income (log)	0.230***
	(0.024)
Blue collar	-0.279***
	(0.028)
Employed	0.060
	(0.046)
Sq. Metres per head (std)	0.009
	(0.017)
Observations	2188

Notes: This is a linear-probability model. All control variables are measured in 2019. Standard errors are in parentheses. The regression includes month-of-interview fixed-effects. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A4: Working from home during the pandemic and other measures of well-being –panel results

	Self-Assessed Health	Happy	Angry	Worried	Sad
	(1)	(2)	(3)	(4)	(5)
Treatment	-0.078**	-0.057*	-0.039	0.041	-0.023
	(0.032)	(0.032)	(0.041)	(0.039)	(0.041)
Observations	12632	12624	12629	12598	12610

Notes: These are linear regressions and our estimation samples come from the SOEP and the complementary SOEP-CoV survey. All regressions include month-of-interview*year fixed effects, individual fixed-effects and the Post dummy. "Working from home" is the interaction between the "Treat" and "Post" dummies. The former is a time-invariant variable for the workers who started working from home in 2020, and the latter is equal to one in 2020 and 2021. The interaction "Working from home" captures the effect of teleworking during the pandemic. The controls are age categories, dummies for living in East Germany and having a partner, household size, the number of health conditions pre-COVID-19, equivalised net monthly household income (in logs), dummies for being employed and a blue-collar worker, and square metres per head. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A5: Working from home during the pandemic by gender, marriage and children – Channels

	Satisfaction with family life			Childcare (daily hours)			Housework (daily hours)			Hobbies (daily hours)			Loneliness Score		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Panel A: Men															
Working from home	-0.249*	-0.387*	-0.240	0.319*	0.444*	0.365***	0.098	0.111	0.117	0.117	0.145	0.225	-0.087	0.167	0.117
	(0.136)	(0.226)	(0.183)	(0.186)	(0.238)	(0.116)	(0.066)	(0.082)	(0.071)	(0.101)	(0.170)	(0.148)	(0.225)	(0.320)	(0.292)
Interacted with:															
Married		0.218			-0.206			-0.025			-0.054			-0.420	
		(0.235)			(0.313)			(0.098)			(0.193)			(0.379)	
Children below-school			0.115			-0.418			-0.009			-0.155			-0.789*
age			(0.236)			(0.567)			(0.144)			(0.166)			(0.448)
School-age children			-0.108			-0.086			-0.060			-0.158			-0.054
			(0.202)			(0.355)			(0.112)			(0.166)			(0.357)
Observations	4561	4561	4561	4568	4568	4568	4584	4584	4584	4581	4581	4581	2203	2203	2203
	Satisfaction with family life			Childcare (daily hours)			Housework (daily hours)			Hobbies (daily hours)			Loneliness Score		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Panel B: Women															
Working from home	-0.067	-0.122	-0.229	0.321	0.111	-0.114	0.130***	0.094	0.123*	0.177***	0.155	0.141	0.140	0.168	0.235
	(0.109)	(0.165)	(0.160)	(0.202)	(0.251)	(0.177)	(0.050)	(0.067)	(0.063)	(0.063)	(0.096)	(0.101)	(0.177)	(0.262)	(0.243)
Interacted with:															
Married		0.105			0.403			0.067			0.038			-0.057	
		(0.194)			(0.327)			(0.093)			(0.118)			(0.328)	
Children below-school			0.131			-0.380			0.138			0.147			-1.061***
age			(0.228)			(0.641)			(0.140)			(0.158)			(0.408)
School-age children			0.264			0.967***			-0.035			0.024			0.206
			(0.189)			(0.354)			(0.097)			(0.118)			(0.327)
Observations	8013	8013	8013	8009	8009	8009	8032	8032	8032	8016	8016	8016	3842	3842	3842

Notes: These are linear regressions and our estimation samples come from the SOEP and the complementary SOEP-CoV survey. All regressions include month-of-interview*year fixed effects, individual fixed-effects and the Post dummy. "Working from home" is the interaction between the "Treat" and "Post" dummies. The former is a time-invariant variable for the workers who started working from home in 2020, and the latter is equal to one in 2020 and 2021. The interaction "Working from home" captures the effect of teleworking during the pandemic. The controls are age categories, dummies for living in East Germany and having a partner, household size, the number of health conditions pre-COVID-19, equivalised net monthly household income (in logs), dummies for being employed and a blue-collar worker, and square metres per head. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.