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## Who suffered most? Parental stress and mental health during the COVID-19 pandemic in Germany

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### Abstract

**Objective:** This study examines gender and socioeconomic inequalities in parental psychological wellbeing (parenting stress and psychological distress) during the COVID-19 pandemic in Germany.

**Background:** The dramatic shift of childcare and schooling responsibility from formal institutions to private households during the pandemic has put families under enormous stress and raised concerns about caregivers' health and wellbeing. Despite the overwhelming media attention to families' wellbeing, to date limited research has examined parenting stress and parental psychological distress during the COVID-19 pandemic, particularly in Germany.

**Method:** We analyzed four waves of panel data (N= 1,771) from an opt-in online survey, which was conducted between March 2020 and April 2021. Multivariable OLS regressions were used to estimate variations in the pandemic's effects on parenting stress and psychological distress by various demographic and socioeconomic characteristics.

**Results:** Overall, levels of parenting stress and psychological distress increased during the pandemic. During the first and third wave of the COVID-19 pandemic, mothers, parents with children younger than 11 years, parents with two or more children, parents working from home as well as parents with financial insecurity experienced higher parenting stress than other sociodemographic groups. Moreover, women, respondents with lower incomes, single parents, and parents with younger children experienced higher levels of psychological distress than other groups.

**Conclusion:** Gender and socioeconomic inequalities in parents' psychological wellbeing increased among the study participants during the pandemic.

**Key words:** COVID-19, parenting, stress, gender inequality, children, mental health, psychological distress, Germany



## 1. Introduction

Work and family life changed abruptly and dramatically with the outbreak of the COVID-19 pandemic in Spring 2020. Within a matter of one week in mid-March 2020, all families in Germany suddenly lost the normality of their daily life. Day care centers and schools were shut down and many parents were temporarily released from work or required to work from home in order to comply with governments' regulations to slow down the spread of COVID-19. Like the rest of the globe, families in Germany were put under enormous stress. Particularly, parents with children of preschool and primary school ages have suffered from the consequences of this disruption, including increased work-family conflict (Buschmeyer et al. 2021), reduced subjective wellbeing (Huebener et al. 2021; Zoch et al. 2021) and elevated parenting stress, depressive syndromes and anxiety disorder (Calvano et al. 2021).

Parenting stress may have been exacerbated by the additional burden of housework that arose as a result of pandemic-related shutdowns: providing children with all three meals per day, closure of external services (e.g., cleaning). Neither was support from grandparents or neighbors available due to the social distancing requirement to reduce contact between children and the elderly. In disadvantaged families with young children, parents' job and income loss and crowded living space may also have exacerbated parenting stress. Likewise, in families where there is considerable unequal distribution of care and housework between the two parents or where a single parent has to do it all, parenting stress level is likely to be especially elevated.

The dramatic shift of child caring and schooling responsibilities from formal institutions to private households during the pandemic raises concerns about caregivers' psychological wellbeing (mental health). However, thus far, only limited research exists in Germany (Calvano et al. 2021) and in other developed countries (Han & Hart 2021; Racine et al. 2021; Wade et al. 2021) about parental psychological wellbeing and gender and socioeconomic inequalities in this outcome during the pandemic. One consistent finding from limited previous studies is that parental gender, child age and income are important predictors of parental psychological wellbeing during the pandemic: mothers, parents with preschool- and school-aged children and parents with financial difficulties experienced higher parenting stress, anxiety disorder and depression during the pandemic. Two of these studies suggest that difficulties in managing child care and social distancing was a contributing factor for declines in parents' psychological wellbeing (Calvano et al. 2021; Racine et al. 2021).

Thus, in the context of the extraordinary circumstances occurring at the work-family interface brought about by the pandemic, and motivated by theories on the work-family interface (Greenhaus & Beutell 1985; Pleck et al. 1980; Voydanoff 2004, 2005) and a sociological perspective of stress process (Pearlin 1989), our study aims to enhance our understanding of parental psychological wellbeing during the pandemic in Germany by quantifying levels of parenting stress and psychological distress (as two indicators of psychological wellbeing) and dynamic changes in them, and examining the following inequality dimensions: 1) age and number of children, 2) parents' work situation; 3) parent gender; 4) parent education and income and 5) family structure. The analyses are based on four waves of a nonprobability, online survey, which was conducted between

March 2020 and April 2021 among respondents aged 25-54 (N= 1,771) with children under age 18 in Germany, thus covering the first and third waves of the pandemic.

## 2. Theoretical perspectives and empirical background

### 2.1 *Work-family interface and parents' psychological wellbeing*

According to Greenhaus and Beutell (1985), work-to-family or family-to-work conflict occurs when the demands of work and family roles are incompatible, whereby participation in one role (e.g., as a worker) constrains the participation in the other role (e.g., as a caregiver). Greenhaus and Beutell (1985) distinguish between three major forms of work-family conflict: (a) time-based conflict, (b) strain-based conflict, and (c) behavior-based conflict.

Time-based conflict occurs when multiple roles compete for a person's time. This type of conflict is likely associated with extensive work time and schedule conflict (Pleck et al. 1980). Strain-based conflict refers to the situation when work stressors produce strain symptoms, such as fatigue and irritability (Pleck et al. 1980) or depressive syndromes (Strazdins et al. 2006) which in turn limit one's ability and capacity for performing another role as a parent. In a similar vein, Pearlin (1989: 245) views role overload as a strain and a stressor for care providers and defines it as a situation when demands from different roles on energy and stamina exceed the individual's capacities, most commonly found in work-family roles. Behavior-based conflict occurs when certain behavioral styles within the workplace, for instance when interacting with co-workers or supervisors, are incompatible with the manner in which an individual interacts with her or his family members. That is, an individual exhibits work-role characteristics at home, such as being impersonal, unemotional, rationale, assertive, or authoritative, or shows family-role characteristics at work, such as being open, warm, emotional or nurturing (Greenhaus & Beutell 1985). Similarly, Pearlin (1989) conceptualizes behavior-based conflict as an "inter-role conflict" which entails incompatible demands from multiple roles, particularly at the interface between work-family. Such conflict is considered as a stressor for the role incumbent. Family life can also interfere with work and produce family-to-work conflict. Greenhaus and Beutell (1985: 78) point out several family characteristics as possible contributors to family-to work conflict, such as low support from partners and high demands associated with a large family or raising young children.

Resources and demands located in the community also influence the work-family interface (Voydanoff 2004, 2005) either by mitigating or magnifying work-family conflict. For example, the availability of child care services and synergy between school hours and parents' work hours help parents balance work and family demands (Voydanoff 2005). The availability of other community resources, such as shops, doctors' clinics and children's activity centers in the vicinity, or support from extended family and friends may also mitigate conflict arising the work-family interface.

Work-to-family or family-to-work conflict can diminish parents' psychological wellbeing as manifested in increased parenting stress and psychological distress.

Experience of work-family conflict is associated with high parenting stress and low parenting satisfaction in dual earner couples with preschool-aged children in Portugal (Vieira et al. 2012) and among low-income fathers and unpartnered mothers in the United States (Hwang & Jung 2020; Nomaguchi & Johnson 2016). Work-to-family or family-to-work conflict is also linked to parents' psychological disorders such as depression, anxiety disorder and alcohol and drug abuse among married couples with or without children (Frone 2000) and in the general adult population (Grzywacz & Bass 2003) in the US.

## *2.2 Social stratification of stress process*

Conflict arising from the work-family interface as a stressor does not affect all sociodemographic groups equally, however, because exposure to such stressors, resource availability and individuals' capacity for coping with stress are socially patterned. Pearlin (1989) contends that the experience of stressful situations is influenced by the social strata of which an individual is part, such as gender, social or economic class. Because these social systems often entail the unequal distribution of resources, opportunities, and self-esteem, a disadvantaged location within them can be a source of stressful life condition (Pearlin 1989: 242). Social institutions and their assignment of status and roles and interpersonal relationships in the workplace and within the home are two other types of structural contexts which are also crucial for understanding the stress process (stressors, mediators, and outcomes). All these structural contexts of people's lives are "the sources of hardship and privilege, threat and security, conflict and harmony" and hence they shape and structure the experience of individuals. Such social structures influence not only the exposure to and meaning of stressors and the resources for mitigating stressful circumstances, but also the manifestation of the impact of stress (Pearlin 1989: 254).

Gender and socioeconomic status are two key factors for understanding the process of stress as they influence the exposure to stressors, types of stressors, resources for coping with stress and the effects of stress on health and wellbeing. Overwhelming evidence for striking socioeconomic inequalities in major chronic diseases and premature mortality for which chronic stress associated with adverse working and living conditions is a contributing factor (Marmot 2004; Wilkinson & Marmot 1998) and evidence for persistent gender inequality in the labour market (Dinh et al. 2017; Hobler et al. 2020: 26) and unequal share of unpaid care work between men and women in the home (Altintas & Sullivan 2016; Hipp & Leuze 2015; Kühhirt 2012) attest to this.

## *2.3 Work-family interface and social inequality in health and wellbeing under the COVID-19 crisis*

During the pandemic, important community resources for families, such as day care centers and schools, as well as extended family and friends, have no longer been available or have been drastically reduced due to the closure of childcare centers and schools and social distancing directives (Calvano et al. 2021; Huebener et al. 2021; Zoch et al. 2020). In mid-March 2020, schools and daycare centers only remained open to children of essential workers and only around 60% of workers (male and female alike) worked in the office as

usual (Blom & Möhring 2021). By mid-May, schools and daycare centers were gradually reopened, and children increasingly alternated between home-schooling and in-class learning on a small scale. Shortly before the summer vacation in June-July 2020, schools and childcare centers were almost back to normal hours (The Local, "State by state: when are schools and KITAS around Germany reopening?" 2020; Unterberg 2020). During the second and third phases of the pandemic (November 2020-May 2021), schools and child care centers closed again in December 2020 and gradually transitioned to alternating schedules again in February 2021.

During the crisis, all three forms of work-family conflicts—time-based, strain-based, and behavior-based conflict (Greenhaus & Beutell 1985)—likely have occurred. As shown in limited previous research in Germany (Buschmeyer et al. 2021), parents experience not only family-to-work but also work-to-family conflict, as the boundaries between work and private life have been blurred or even disappeared entirely when working parents had to perform their work and family roles at the same time (as a care provider and facilitator for online learning from home) and in the same space (home office and family day care in one place). This blurring of work-family boundaries can lead to time-based and behavior-based work-family conflict (Greenhaus & Beutell 1985), making it difficult to switch from work behavioral styles (impersonal, rationale, authoritative, and emotional stability) to family-orientated behavior styles (being affectionate, warm, and nurturing). Moreover, trying to perform two roles at the same time and uncertainties about the further development of the crisis can put parents under pressure and create strain-based conflict. Existing research shows that during the pandemic, parental subjective wellbeing, defined as satisfaction with life, work and family, declined significantly, particularly in mothers with young children (Hipp & Bünning 2020; Huebener et al. 2021; Zoch et al. 2020) in Germany. Calvano et al. (2021) also reported declines in parents' psychological wellbeing as manifested in higher levels of parenting stress, anxiety and depression associated with the closure of schools and childcare centers and social distancing in Germany. Declining parental psychological wellbeing during the pandemic is likely attributable, to a great extent, to elevated work-to-family or family-to-work conflict among parents as a result of the lockdown and other counter measures against the COVID-19 crisis.

The COVID-19 crisis has also laid bare the longstanding social, economic and political inequalities as the root causes of health inequality across the globe. At the aggregate levels (country and region) we observe much higher rates of COVID-19 infections and deaths in socioeconomically deprived communities (Elgar et al. 2020; Marmot & Allen 2020). Ample studies show that socioeconomic stressors, such as job loss and income disruptions, among disadvantaged individuals are linked to increased psychological distress (Ettman et al. 2021; Fancourt et al. 2020; Heisig 2021), including parents (Calvano et al. 2021; Hart & Han 2020; Racine et al. 2021). This socioeconomic patterning of physical and mental health consequences of the pandemic reveals deeply rooted social structures that subject individuals to not a single but clusters of stressors, particularly under the crisis. As Bambra et al. (2020) well put: "For the most disadvantaged communities, COVID-19 is experienced as a syndemic—a co-occurring, synergistic pandemic that interacts with and exacerbates their existing NCDs (noncommunicable diseases) and adverse social conditions."

The pandemic has also exposed deeply entrenched gender inequality in the labour market and in the home. Before the pandemic, Germany (like many other rich countries) was characterized by gendered division of paid and unpaid work (Altintas & Sullivan 2016; Hipp & Leuze 2015). Despite a narrowing of gender gaps in labour force participation since the 1990s, a large gender gap in working hours persisted, with men working long or very long hours versus women mostly working part time or short hours (Hobler et al. 2020: 26). Striking gender inequalities also existed in unpaid work in Germany, particularly among parents (Kühhirt 2012), with women spending on average more than 100 additional minutes per day on household-related tasks prior to the pandemic, compared with men (Altintas & Sullivan 2016).

During the COVID-19 pandemic the care burden has drastically increased for women and families globally (Power 2020). Several studies have also shown that the onset of COVID-19 had a larger negative impact on women than on men in Germany in terms of job loss (voluntary or involuntary) and reduction in work hours as a result of lockdown which mandated the business closure in female-dominated sectors, including retail, restaurants and entertainment sectors (Bünning et al. 2020; Hammerschmid et al. 2020; Kohlrausch & Zucco 2020; Reichelt et al. 2021; Zoch et al. 2020). Also, as a result of the closure of all schools and day care centers, the responsibility of providing daytime child care and schooling was suddenly shifted to parents, particularly mothers who may have been compelled to reduce work hours or stop working temporarily in order to meet family needs. Despite the fact that fathers also increased the time they spent on child care duties, the lion's share of childcare, homeschooling and household work was still shouldered by mothers (Hank & Steinbach 2020; Hipp & Bünning 2020; Huebener et al. 2021; Kreyenfeld & Zinn 2021; Krug et al. 2020; Möhring et al. 2020; Zoch et al. 2020, 2021) throughout the first wave of the pandemic (March - August 2020). This is despite many fathers having had the opportunity to assume equal share of care and household work load as many fathers worked from home or were on "short-time work" during the lockdown (Hipp & Bünning 2020; Zoch et al. 2020). As a result, life satisfaction decreased to a greater degree for women, particularly mothers, than for men (Hipp & Bünning 2020; Huebener et al. 2021; Zoch et al. 2021).

#### *2.4 Hypotheses*

In light of the theoretical perspectives on the work-family interface and empirical literature reviewed above, we expect a dynamic change in the level of parental psychological wellbeing as reflected in parenting stress and psychological distress (anxiety and depression) during the pandemic. Given that care for young and many children is generally more time intensive and therefore related to elevated work-family conflict (Greenhaus & Beutell 1985) and care demands intensify in the absence of community resources during the pandemic (e.g., schools, childcare services, child activity centers (Voydanoff 2004, 2005)), we expect parenting stress during lockdowns to be higher in families with younger children and with more than one child (Hypothesis 1). This is because more work-care schedules need to be synchronized and demands for care and supervision of learning and school work are higher in younger than in older children

during the lockdown periods. We expect the same relationship between child age and the number of children and parents' psychological distress.

Based on the work-family conflict theory (Greenhaus & Beutell 1985) and in the context of the extraordinary circumstances of the work-family interface, such as juggling work, home schooling and child caring at the same time and in the same space, the blurring of the work-family boundary during the lockdown periods can lead to all three types of conflicts from both directions (work-to-family and family-to-work): time-based conflict, behavior-based and strained-based conflict. This motivates our second hypothesis (Hypothesis 2): the level of parenting stress and psychological distress is higher among parents who work from home than those working at their usual workplace outside the home or not working during the pandemic.

Our interest in inequality in parental psychological wellbeing by gender, family structure, parent education and family financial situation during the pandemic stems from the sociological insights into the stress process (Pearlin 1989), and from empirical evidence for socioeconomic inequalities in the impact of the pandemic on mental health in the general population (Bambra et al. 2020; Ettman et al. 2021; Fancourt et al. 2020) and gender and socioeconomic inequalities in wellbeing and mental health among parents under the COVID crisis (Calvano et al. 2021; Hart & Han 2020, 2021; Hipp & Bünning 2020; Huebener et al. 2021; Racine et al. 2021; Zoch et al. 2021). We thus hypothesize that during the pandemic, mothers, single parents, parents with lower education or parents with financial insecurity have higher parenting stress and higher psychological distress than fathers, partnered parents, parents with higher education, and parents who are financially secure (Hypotheses 3-5). Given that mothers shouldered a larger share of care and house work during the lockdown (Hipp & Bünning 2020; Wade et al. 2021; Zoch et al. 2021), we expect that mothers are under more parenting stress and experience higher psychological distress than fathers (Hypothesis 3). Parenting stress is higher for single parents during the pandemic as there is no partner to share care and household work with and only limited or no support can be obtained from grandparents and friends due to the social distancing directives during the pandemic (Hypothesis 4). Parents from low socioeconomic status were found to be at higher risk of losing jobs and income during the lockdown (Han & Hart 2021); they have higher prevalence of existing mental and physical health problems and are thence more vulnerable to the COVID infection (Li & Heisig 2020); they are confronted with more child behavioral and emotional problems in normal times (Kaiser et al. 2019). Hence parents with low socioeconomic status are likely to suffer more from parenting stress and psychological distress during the pandemic (Hypothesis 5).

### **3. Data and methods**

#### *3.1 Data and study sample*

To test our hypotheses, we analyzed data from four waves of an online survey that were collected between March 23, 2020 and April 6, 2021 in Germany. Study participants were



recruited through email lists, newspaper announcements, and instant messenger services. The study was approved by the Ethics Committee at the WZB Berlin Social Science Center and informed consent was obtained from all study participants. The first wave of data collection (t1) occurred between March 23 and May 10, 2020; this wave also included retrospective questions about respondents' pre-pandemic living and working situations and general and psychological wellbeing (t0). The second wave of data collection (t2) occurred from April 20 to June 14, 2020, the third wave (t3) from June 3 to August 3, 2020, and the fourth wave (t4) from March 16 to April 6, 2021. The first three waves of data collection occurred during the first lockdown phase in Germany; t1 started shortly after the implementation of the first restrictions to contain the pandemic and t2 and t3 were concurrent with the gradual lifting of the lockdown measures. Data collection at t4 took place at the peak of the pandemic's third wave in Germany. The survey included a wide range of questions on individuals' everyday experiences during the lockdown, including demographic and socioeconomic characteristics (age, gender, family structure, employment, education, financial situation, presence of children), work situation, care giving, parenting stress, perceived physical and mental health, and life satisfaction.

Our analytic sample includes 1,771 respondents aged 25 to 54 who lived together with minor children and participated in all four survey waves.<sup>1</sup> In this sample women, persons with an academic degree, those who were gainfully employed before the lockdown and residents in Berlin were overrepresented. Hence, our results cannot be generalized to the general population in Germany.

### 3.2 *Dependent variables*

The two outcome variables of interest are parenting stress and psychological distress which are intended to measure psychological wellbeing of parents. We focus on both measures of psychological wellbeing instead of a single measure, because exposure to the same stressors (e.g., work-family conflict during the pandemic) can lead to different manifestations of outcomes, depending on the constellation of the social and economic contexts (Pearlin 1989) and family and individual characteristics. Inclusion of multiple measures of stress outcomes can help minimize the risk for underestimating differential vulnerability to the same stressors (Pearlin 1989: 254). The questions on these two measures were added to the survey after its initial launch (t1). Hence this information was not collected for all respondents at t1, resulting in a smaller sample size for t1. At wave 1 or wave 2 of the survey (t1 or t2), respondents also retrospectively assessed their parenting stress and psychological distress before the pandemic (t0). For parenting stress, we used two core items from the original parenting scale with four items adapted from the Panel Study of Income Dynamics (PSID). The two chosen items were solicited in two questions

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1 Descriptive statistics for our analytic sample and the full sample of parents aged 25 to 54 show that individuals who participated in all four waves differed in some sociodemographic characteristics from participants in the wave 1 sample but that there were no differences between the two samples in psychological distress and parenting stress at t1 (see Table 2 in Appendix). The main reason why we present the findings on the respondents who participated in all four time points is that we are interested in changes over time. Findings on all respondents, by contrast, also reflect unequal participation rates.

about how respondents felt about child caring and rearing before the pandemic and at each time point of data collection during the pandemic: 1) I often feel tired, worn out, or exhausted from meeting the needs of my children, and 2) I feel trapped by my responsibilities as a parent. Both items are measured on a 7-point scale, with 1 indicating strongly disagree and 7 strongly agree.

Similarly, psychological distress was measured in two key items adapted from the Kessler Psychological Distress Scale (Kessler et al. 2003) and the question read: In the last four weeks, how often did you feel: (1) anxious (e.g., nervous, so nervous that nothing could calm you down again), restless or fidgety, so restless that you could not sit still; and (2) depressed (e.g., feeling hopeless or worthless, so depressed that nothing could cheer you up, or so that everything was an effort for you). The two items are on a 5-point scale: 1 never, 2 very rarely, 3 once in a while (sometimes), 4 most of the time, 5 all of the time.

To construct the parenting stress scale and the psychological distress scale the items were recoded so that the lowest value corresponds to zero and were summed up. The emerging scales ranged from 0 to 12 for the parenting stress scale and from 0 to 8 for the psychological distress scale. A higher score indicates higher level of parenting stress or more severe psychological distress. Based on the previously described items, the Cronbach's Alphas were calculated at each time point for the parenting stress scale and the psychological distress scale. The Cronbach's Alphas of the parenting stress scale ranged from .82 to .90 ( $t_0=.90$ ,  $t_1=.82$ ,  $t_2=.83$ ,  $t_3=.84$ ) indicating good reliability, and for the psychological distress scale, the Cronbach's Alphas ranged from .71 to .88 ( $t_0=.88$ ,  $t_1=.71$ ,  $t_2=.72$ ,  $t_3=.75$ ,  $t_4=.76$ ) indicating acceptable to good reliability of the scale.

We found reasonably high score reliability for both parenting stress and psychological distress in the pre-pandemic time ( $t_0$ ) ( $\alpha=.90$  and  $\alpha=.88$  respectively), although retrospective questions about subjective feelings, such as mental health and psychological distress, have been found to be particularly prone to recall bias (Hipp et al. 2020). To minimize inaccurate answering behaviors due to the high cognitive load of retrospective questions (Tourangeau & Yan 2007) and social desirability biases (Jaspers et al. 2008), questions about the respondents' past experience were short, easy to understand, and referred to a specific anchor point (the pre-pandemic period) that was only a short time (2-6 weeks) before the interview. All of these factors have been shown to increase recall accuracy, even for subjective assessments, such as ratings of health status and subjective wellbeing (Barsky 2002). When interpreting the results, it is important to note that research has shown that people tend to remember the past more similar to the present rather than idealizing it (Barsky 2002; Hipp et al. 2020; Jaspers et al. 2008; Schmier & Halpern 2004). Differences between current and pre-pandemic ratings are therefore likely underestimated.

### 3.3 Explanatory variables and covariates

The main explanatory variables are the age of children (at least one child younger than 11 years old vs. older children), the number of children (1 vs. 2 or more), parent gender (female vs. male), family structure (partnered vs. single parent), two indicators for socioeconomic status—education (with/without tertiary degree) and self-rated financial situation (having difficulties getting by or barely coping vs. getting by or living

comfortably), and work situation (working from home vs. working at usual place or (temporarily) not working). In addition, the models were adjusted for respondent age (ages 25-34, 35-44, and 45-54 years old), migration background (none, first generation migrant, second generation migrant), the size of housing (overcrowded, adequate, more than adequate), population size of the place of residence (50,000 inhabitants or more vs. less than 50,000 inhabitants), and region of residence: South (Bayern, Baden-Württemberg), North (Schleswig-Holstein, Hamburg, Niedersachsen, Bremen), West (Nordrhein-Westfalen, Rheinland-Pfalz, Saarland, Hessen), East (Mecklenburg-Vorpommern, Brandenburg, Thüringen, Sachsen-Anhalt, Sachsen), and Berlin.

### 3.4 Analytical approach

We used multivariable OLS regression models to analyze the four waves of pooled data with clustered, robust standard errors and to estimate the effect of parent gender, child age, the number of children, single-parenthood, education, income, and work situation on the dependent variables, adjusting for a wide array of covariates. The adjustment of these covariates partially addresses potential bias in the results due to an overrepresentation of some socioeconomic groups in our sample (e.g., women, those with tertiary education, working before the pandemic, and Berlin residents). We included interaction terms between the predictors and covariates and time point (t1 – t4) and retrospective assessment of the pre-pandemic situation (t0) in order to elucidate dynamic changes in the effect of predictors on the dependent variables. From this model, we obtain marginal effects for all coefficients of interest by time point.<sup>2</sup>

In the following, we present unweighted descriptive statistics and multivariable regression results and the post-stratification weights are available in the publicly accessible data for t1-t3.<sup>3</sup> Potential biases with regard to sociodemographic characteristics due to respondents' self-selection into the survey is to some extent reduced by the covariate adjustment in the multivariable analyses. The interpretation of all of our findings, however, still requires caution as we cannot account for other sources of respondent self-selection into the survey, such as motivation, time, interest and preferences or taste.

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2 We refrained from estimating fixed-effects models as main models because most of our main predictors of interest are time invariant, namely gender, number of children, age of children, and education. Results from fixed-effects models for the few time-varying covariates are presented in Supplementary Materials (Table S4). Modelling with lagged effects for the time-variant predictors (e.g., income situation or working from home) is also problematic as the time span between the data collection points is uneven and feelings of (dis)stress tend to be very instantaneous and are therefore hard to predict with situations that occurred several weeks or even months before.

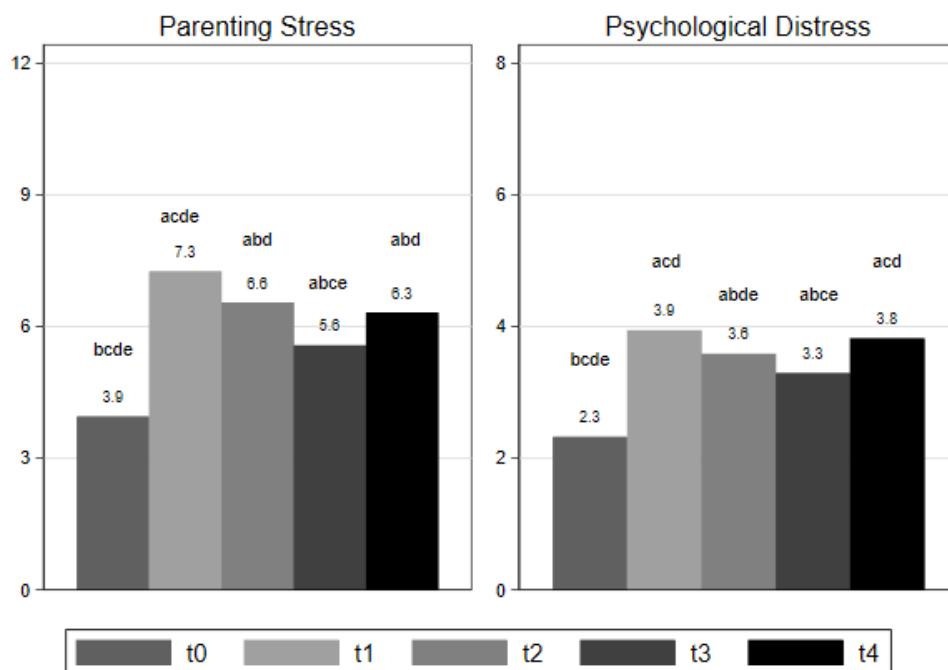
3 Data for waves 1-3 of the survey have been already published via GESIS at <https://data.gesis.org/sharing/#!/Detail/10.7802/2042> and replication syntax is available upon request (Munnes et al. 2020).

## 4. Findings

### 4.1 Dynamic shifts in levels of parents' psychological wellbeing

Figure 1 shows the sample mean scores for parenting stress and psychological distress throughout our observation window. Corresponding standard deviations and wave-specific sample sizes are shown in the Appendix (Table A.1). Both parenting stress and parents' psychological distress among our respondents increased considerably at the onset of the pandemic (t1), slowly decreased again across the course of the first wave of the pandemic (t2 and t3) and then they increased again during the second wave of the pandemic (t4). Yet, even in summer 2020 (t3), levels in parenting stress and psychological distress were still above the pre-pandemic levels (t0). This time trend is also confirmed by the fixed-effects models presented in Table S4 in Supplementary Materials. Partial correlations between parenting stress and psychological distress adjusting for all covariates were 0.23 for the pre-pandemic time, 0.47 at t1, 0.42 at t2, 0.48 at t3 and 0.49 at t4. This may suggest that during the pandemic there is a significant increase in the proportion of our sample who were confronted with both types of psychological issues.

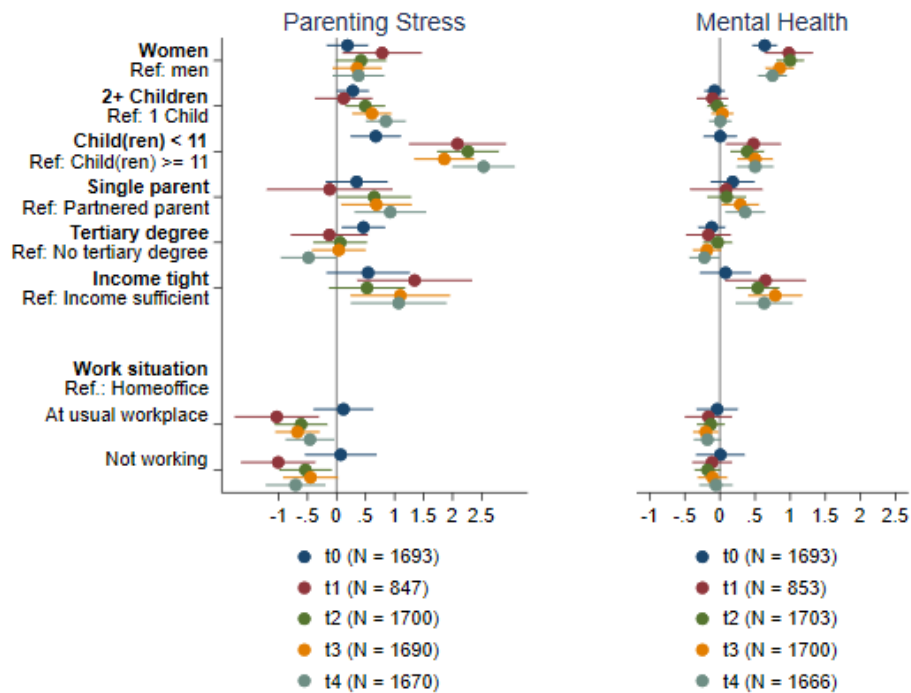
Figure 1: Sample mean scores for parenting stress and psychological distress before and during the pandemic (N=1771).



Note: a) different from t0 at  $p < 0.05$ , b) different from t1 at  $p < 0.05$ , c) different from t2 at  $p < 0.05$ , d) different from t3 at  $p < 0.05$ , e) different from t4 at  $p < 0.05$ .

The multivariable results of OLS regressions on parenting stress and psychological distress are presented in Figure 2. The figure displays the marginal effects with 95% confidence interval of the main independent variables on the outcome variables by time point (t0 to t4), using OLS regressions with clustered, robust standard errors and controlling for covariates. Values on the right-hand side of the plot indicate that respondents in the specified category report higher values of parenting stress and psychological distress than the reference category and vice versa for values on the left-hand side. Stata's `coefplot` command (Jann 2014) was used to generate the figure. The corresponding full regression results and marginal effects for all coefficients are presented in Appendix (Tables A.2-4).

*Figure 2:* Marginal effects with 95% confidence intervals of demographic and socioeconomic predictors on parenting stress and psychological distress by time point.



## 4.2 *Number of children, child age and parents' work situation*

Apart from the beginning of the pandemic (t1), parents with more than one child in our sample reported more parenting stress than parents with one child throughout the observation period (t2-t4), and this disparity grew larger, the longer the pandemic lasted. At t2 and t3 schools and daycare centers gradually reopened after the first lockdown, at t4 they gradually reopened after the second lockdown. The gradual reopening meant that most children could go to school or daycare only for a few hours per day or a few days per week, but not on their regular schedule in the normal time. While this may have helped to reduce parenting stress in families with only one child, parents with two or more children seemed to have benefitted less, because children's schedules may not have been synchronized, thus resulting in a larger gap in parenting stress by the number of children. However, the number of children had no effect on psychological distress among the respondents in our sample.

We also expected that parents with younger children (< age 11) experienced more parenting stress and psychological distress than those with older children, and that this gap would have widened during the pandemic. Figure 2 shows that prior to the pandemic (t0), parenting stress was already higher among parents with younger children than those with older children and that this gap widened substantially during the course of the pandemic. With regard to psychological distress, child age did not make a difference for the pre-pandemic time (t0), but parents with younger children reported significantly more distress during the pandemic (t1- t4). Overall the results are consistent with our Hypothesis 1. Parents who worked from home reported more parenting stress than parents who worked from their usual work place during the pandemic or (temporarily) did not work at all, in line with our Hypothesis 2. Differences in psychological distress were in the same direction but less pronounced.

## 4.3 *Parent gender*

Figure 2 shows that, although the stress level for the pre-pandemic time (t0) did not differ by gender, mothers reported more parenting stress than fathers, especially at the pandemic's onset (t1). Similarly, mothers retrospectively reported more psychological distress than fathers prior to the pandemic (t0). This gender gap widened at the onset of the pandemic (t1) and narrowed again over the course of the pandemic (t2-t4). Overall, the gender inequality in psychological distress is larger than that in parenting stress. These results support our Hypothesis 3.

## 4.4 *Single-parenthood, education, and income*

Single parents in the study sample tended to report more parenting stress than partnered parents at all times with the exception of t1. The confidence interval around this estimate, however, is large, presumably due to the small number of single parents in the sample. Single parents also reported more psychological distress than partnered parents, but the

difference was only significant for the last two time points in Summer 2020 and Spring 2021.

Parents with tight incomes were also more likely to experience parenting stress and psychological distress during the pandemic than parents who reported to have sufficient incomes, consistent with our Hypothesis 5. Parent education was not associated with either outcome variables during the first two phases of the pandemic in 2020 (t1–t3), but parents with a university degree reported less parenting stress and lower psychological distress than parents with lower education during the pandemic's third phase (t4) in Spring 2021, thus also supporting our Hypothesis 5.

Overall, the explanatory variables are more strongly correlated with parenting stress than with psychological distress among the respondents in our study. However, for both outcome variables, gender and income inequalities were equally striking. Moreover, parenting stress and psychological distress seemed to increasingly coincide during the pandemic.

#### 4.5 *Sensitivity analyses*

To assess the degree to which sample attrition may have driven the results presented above, we replicated the analyses using an unbalanced sample of all respondents who participated at least at t1. The observed patterns are very similar to those obtained from the main models (see Figure 4 in Supplementary Materials). Moreover, given that the scale reliability of psychological distress was reasonably good only for the pre-pandemic (t0,  $\alpha = .88$ ) and acceptable for t1 to t4 ( $\alpha = .71$  to  $.75$ ), we also re-estimated the regression models using the individual items of psychological distress (see Figure 3 in Supplementary Materials). The results were remarkably similar to those from the main models using the psychological distress scale with two items combined (Figure 2).

As a further inquiry, we tested whether gender differences associated with unequal division of childcare were linked to parenting stress and psychological distress by replicating the main analysis and including couples' division of childcare as a new control variable (measured on a five-point scale ranging from 1 (almost exclusively my partner) to 5 (almost exclusively me)).<sup>4</sup> The findings show that parents who performed a larger share of childcare than their partners also reported higher levels of parenting stress and psychological distress during the pandemic (Tables S2 and S3 in Supplementary Materials). Once division of care giving was adjusted for, gender differences in parenting stress were much reduced in at all time points and no longer statistically significant at t1, although gender differences in psychological distress were only slightly attenuated.

Finally, we estimated fixed-effects regression models that included the few time-varying covariates (Table S4 in Supplementary Materials). The results also show significant increases in parenting stress and psychological distress during the pandemic and provide evidence for elevated parenting stress and psychological distress when respondents worked from home, compared to working at usual place or not working. Psychological distress was also higher when respondents reported a tight income.

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4 Single parents were assigned a score of 5.

## 5. Discussions

Building upon the work-family conflict theory, a sociological perspective of stress process and relevant empirical research on family life in normal times and under the COVID-19 crisis, this study examined inequality in parenting stress and psychological distress during the first phase of the COVID-19 pandemic in 2020 and in the third phase in March-April 2021 in Germany. Specifically, we examined how levels of parenting stress and psychological distress varied by parent gender, the number and age of children, family structure, parent education and income, and parents' work situation. Our results reveal dynamic increases in the level of parenting stress and psychological distress during the different phases of the pandemic. The level of these outcomes differs by parent gender, child age and number, whether or not parents work from home, financial insecurity, family structure, and parents' education.

Our findings reveal gender inequality in parents' psychological wellbeing during the pandemic and corroborate with previous research in Germany (Bünning et al. 2020; Hank & Steinbach 2020; Huebener et al. 2021; Kreyenfeld & Zinn 2021; Möhring et al. 2020; Zoch et al. 2021) and in other countries (Wade et al. 2021) which document gender inequality in care giving, household division of labor and declines in subjective wellbeing during the pandemic. Moreover, our findings indicate that the unequal share between men and women in care giving is detrimental to women's (mothers) mental health as reflected in elevated parenting stress and, to a lesser extent, psychological distress (depression and anxiety disorder). Our study further highlights large disparities between parents who were financially secure and those with income insecurity, whereby financial insecurity was associated with higher levels of parenting stress and feeling depressed or overly anxious. Furthermore, in our sample this income inequality was magnified during the pandemic. This suggests that economically disadvantaged parents from the study sample suffer from multiple and intertwining harmful consequences of the pandemic: job and income loss elevated their parenting stress and psychological distress level, as found in other studies in Germany (Calvano et al. 2021) and other developed countries (Han & Hart 2021; Hart & Han 2020; Racine et al. 2021). As the pandemic protracted into its third phase in Spring 2021, inequalities in parents' psychological wellbeing also emerged between those with tertiary education and those without it, regardless of financial situation. This may reflect social inequality in resources and capabilities for coping with the enduring constraints and stressors due to the long-lasting pandemic. Beyond gender and economic inequality, our results reveal other dimensions of inequalities in parental psychological wellbeing: independent of socioeconomic status, parents with younger children or caring for two or more children or those working from home were more stressed with parenting and suffered more from psychological distress than other groups during the pandemic. Although many parents may be grateful for the opportunity to work from home and a de-escalation of demands for child activities for sport and music during the lockdown, the burden of home child care and schooling likely overcompensate these benefits in families with young and more children. One reason for why parents who worked from their usual workplace were less stressed may be that they worked in "essential" jobs and hence qualified for access to emergency child care. Thus, our results



show that the pandemic has a broader negative impact on families and parents in our sample than what we commonly focus on, such as gender and socioeconomic status.

### 5.1 *Limitations*

Several limitations of this study are notable. First, our data was gathered from a convenience sample. The patterns we show reflect the experiences of some sections of the German population, but we do not know to what extent they can be generalized. We have attempted to account for this factor by including a wide range of relevant covariates in our analyses. Nevertheless, we need to acknowledge that our results may be biased by both observable respondent characteristics that we could not account for and unobservable characteristics, such as willingness to participate in the survey. Second, we were not able to ascertain the causal link between parenting stress and psychological distress. Third, parents' reports of parenting stress and psychological distress during pre-pandemic times are prone to recall bias and thus changes in parenting stress and psychological distress since the onset of the crisis are likely underestimated. Insights from research on retrospective questions during COVID-19 suggest that respondents tend to remember their past as more similar to their present (rather than idealizing the past) when the experience or feeling of interest has changed between the time of the interview and the time point of interest in the past (Hipp et al. 2020). However, we found reasonably high score reliability for both parenting stress and psychological distress in the pre-pandemic time (t0) ( $\alpha=90$  and  $\alpha=88$  respectively). Despite the fact that asking retrospective questions has been increasingly used to provide a more comprehensive view of earlier phases of the life course in surveys (Börsch-Supan & Schröder 2011), the reliability of retrospective assessment remains questionable due to its proneness to inaccuracies and answering biases (Jürges 2007). Thus, we remain cautious in interpreting the level of pre-pandemic psychological wellbeing. Previous research shows that subjective wellbeing prior to the pandemic is a predictor of subjective wellbeing in the first wave of the pandemic in Germany (Zoch et al. 2021). However, for the reason provided above, we refrained from estimating the potential impact of parenting stress and psychological distress prior to the pandemic on these outcomes during the pandemic among our respondents. Finally, it is plausible that parents' psychological wellbeing can also lead to family-to-work conflict. Unfortunately, we were unable to test this reciprocal relationship as we did not collect measures of work-to-family or family-to-work conflict. Future research is warranted to address these important issues.

## 6. **Conclusions**

Despite these limitations, our study contributes to a better understanding of the detrimental impact of the pandemic on families in Germany. It extends the limited research on parental psychological wellbeing in Germany and globally. The study reveals multi-faceted inequality dimensions beyond gender and socioeconomic status in these outcomes during the first and third phases of the pandemic in our sample. The temporal

feature of the online survey afforded us the opportunity to elucidate dynamics in the relationship between the demographic and socioeconomic factors of interest and parenting stress and psychological distress across four different time points during the pandemic in Germany, when the government also shifted their directives regarding the closure and reopening of schools and daycare centers, thus altering community resources for parents. In contrast, limited previous studies on parenting stress during the pandemic elsewhere were based on only cross-sectional survey data, omitting important information on changes during the pandemic. Furthermore, our finding indicates that unequal share in caregiving and household work is not only problematic in its own right as it is unjust for women, but it is also detrimental to women's mental health. It will be important for future studies to investigate this issue further by examining the causal link between gender inequality in care provision and women's physical and mental health. We also call for future research to investigate the consequences of elevated parenting stress and parents' psychological distress for children during the pandemic and inequality in this relationship.

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## References

- Altintas, E. & Sullivan, O. (2016). Fifty years of change updated: Cross-national gender convergence in housework. *Demographic Research*, 35, 455-470.  
<https://doi.org/10.4054/DemRes.2016.35.16>.
- Bambra, C., Riordan, R., Ford, J. & Matthews, F. (2020). The COVID-19 pandemic and health inequalities. *Journal of Epidemiology and Community Health*, 74, 964-968.  
<http://dx.doi.org/10.1136/jech-2020-214401>.
- Barsky, A. J. (2002). Forgetting, fabricating, and telescoping: the instability of the medical history. *Archives of Internal Medicine*, 162, 9, 981-984.  
<https://doi.org/10.1001/archinte.162.9.981>.
- Blom, A. G. & Möhring, K. (2021). Soziale Ungleichheit in der Beschäftigungssituation während der frühen Phase der Coronakrise. *Datenreport 2021. Ein Sozialbericht für die Bundesrepublik Deutschland*, 476-483.
- Börsch-Supan, A. & Schröder, M. (2011). Chapter 1: Retrospective data collection in the Survey of Health, Ageing and Retirement in Europe. In Schröder, M. (Ed.), *Retrospective Data Collection in the Survey of Health, Ageing and Retirement in Europe*. Mannheim: Mannheim Research Institute for the Economics of Ageing, 5-10.

- Bünning, M., Hipp, L. & Munnes, S. (2020). Erwerbsarbeit in Zeiten von Corona. WZB *Ergebnisbericht*.  
<http://hdl.handle.net/10419/216101>.
- Buschmeyer, A., Ahrens, R. & Zerle-Elsäßer, C. (2021). Wo ist das (gute) alte Leben hin? Doing Family und Vereinbarkeitsmanagement in der Corona-Krise. *GENDER – Zeitschrift für Geschlecht, Kultur und Gesellschaft*, 2, 11-28.  
<https://doi.org/10.3224/gender.v13i2.02>.
- Calvano, C., Engelke, L., Di Bella, J., Kindermann, J., Renneberg, B. & Winter, S. M. (2021). Families in the COVID-19 pandemic: Parental stress, parent mental health and the occurrence of adverse childhood experiences-results of a representative survey in Germany. *European Child & Adolescent Psychiatry*, 1-13.  
<https://doi.org/10.1007/s00787-021-01739-0>.
- Dinh, H., Strazdins, L. & Welsh, J. (2017). Hour-glass ceilings: Work-hour thresholds, gendered health inequities. *Social Science & Medicine*, 176, 42–51.  
<https://doi.org/10.1016/j.socscimed.2017.01.024>.
- Elgar, F. J., Stefaniak, A. & Wohl, M. J. A. (2020). The trouble with trust: Time-series analysis of social capital, income inequality, and COVID-19 deaths in 84 countries. *Social Science & Medicine*, 263.  
<https://doi.org/10.1016/j.socscimed.2020.113365>.
- Ettman, C. K., Abdalla, S. M., Cohen, G. H., Sampson, L., Vivier, P. M. & Galea, S. (2021). Low assets and financial stressors associated with higher depression during COVID-19 in a nationally representative sample of US adults. *Journal of Epidemiology and Community Health*, 75, 6, 501.  
<https://doi.org/10.1136/jech-2020-215213>.
- Fancourt, D., Steptoe, A. & Bu, F. (2020). Trajectories of anxiety and depressive symptoms during enforced isolation due to COVID-19: Longitudinal analyses of 36,520 adults in England. *The Lancet Psychiatry*, 8, 2, 141–149.  
<https://doi.org/10.1101/2020.06.03.20120923>.
- Frone, M. R. (2000). Work-family conflict and employee psychiatric disorders: the National Comorbidity Survey. *Journal of Applied Psychology*, 85, 6, 888-895.  
<https://doi.org/10.1037/0021-9010.85.6.888>.
- Greenhaus, J. H. & Beutell, N. J. (1985). Sources of conflict between work and family roles. *Academy of Management Review*, 10, 1, 76-88.  
<https://doi.org/10.5465/amr.1985.4277352>.
- Grzywacz, J. G. & Bass, B. L. (2003). Work, family, and mental health: Testing different models of work-family fit. *Journal of Marriage and Family*, 65, 1, 248-262.  
<https://doi.org/10.1111/j.1741-3737.2003.00248.x>.
- Hammerschmid, A., Schmieder, J. & Wrohlich, K. (2020). Frauen in Corona-Krise stärker am Arbeitsmarkt betroffen als Männer. *DIW Berlin*, 42.  
<http://hdl.handle.net/10419/222873>.
- Han, W.-J. & Hart, J. (2021). Precarious parental employment, economic hardship, and parenting and child happiness amidst pandemic. *SocArXiv Papers*.  
<https://doi.org/10.31235/osf.io/uyrck>.

- Hank, K. & Steinbach, A. (2020). The virus changed everything, didn't it? Couples' division of housework and childcare before and during the Corona crisis. *Journal of Family Research*, 33, 1, 99-114.  
<https://doi.org/10.20377/jfr-488>.
- Hart, J. & Han, W.-J. (2020). COVID-19 experiences and parental mental health. *Journal of the Society for Social Work and Research*, 12, 2, 283-302.  
<https://doi.org/10.1086/711613>.
- Hart, J. & Han, W.-J. (2021). Precarious parental employment and use of alcohol or substance during COVID-19. *Sociology Mind*, 11, 2, 33-51.  
<https://doi.org/10.31235/osf.io/uyrck>.
- Heisig, J. P. (2021). Soziale Ungleichheit und gesundheitliches Risiko in der Pandemie. *Schriftenreihe der bpb*, 10714, 332-344.  
<http://hdl.handle.net/10419/234052>.
- Hipp, L. & Bünning, M. (2020). Parenthood as a driver of increased gender inequality during COVID-19? *Exploratory evidence from Germany. European Societies*, 23, Sup. 1, S658-S673.  
<https://doi.org/10.1080/14616696.2020.1833229>.
- Hipp, L., Bünning, M., Munnes, S. & Sauermann, A. (2020). Problems and pitfalls of retrospective survey questions in COVID-19 studies. *Survey Research Methods*, 14, 2, 109-114.  
<https://doi.org/10.18148/srm/2020.v14i2.7741>.
- Hipp, L. & Leuze, K. (2015). Institutionelle Determinanten einer partnerschaftlichen Aufteilung von Erwerbsarbeit in Europa und den USA. *KZfSS Kölner Zeitschrift für Soziologie und Sozialpsychologie*, 67, 4, 659-684.  
<https://doi.org/10.1007/s11577-015-0343-4>.
- Hobler, D., Lott, Y., Pfahl, S. & Schulze Buschoff, K. (2020). Stand der Gleichstellung von Frauen und Männern in Deutschland. *Wirtschafts- und Sozialwissenschaftliches Institut Report*, 56.  
<http://hdl.handle.net/10419/225419>.
- Huebener, M., Waights, S., Spiess, C. K., Siegel, N. A. & Wagner, G. G. (2021). Parental well-being in times of Covid-19 in Germany. *Review of Economics of the Household*, 19, 1, 91-122.  
<https://doi.org/10.1007/s11150-020-09529-4>.
- Hwang, W. & Jung, E. (2020). Unpartnered mothers' work-family conflict and parenting stress: The moderating effects of nonstandard work schedules. *Journal of Family and Economic Issues*, 41.  
<https://doi.org/10.1007/s10834-019-09647-x>.
- Jann, B. (2014). Plotting regression coefficients and other estimates. *The Stata Journal*, 14, 4, 708-737.  
<https://doi.org/10.1177/1536867X1401400402>.
- Jaspers, E., Lubbers, M. & De Graaf, N. D. (2008). Measuring once twice: An evaluation of recalling attitudes in survey research. *European Sociological Review*, 25, 3, 287-301.  
<https://doi.org/10.1093/esr/jcn048>.

- Jürges, H. (2007). Unemployment, life satisfaction and retrospective error. *Journal of the Royal Statistical Society: Series A (Statistics in Society)*, 170, 1, 43-61.  
<https://doi.org/10.1111/j.1467-985X.2006.00441.x>.
- Kaiser, T., Li, J. & Pollmann-Schult, M. (2019). The reproduction of educational inequalities – do parenting and child behavioural problems matter? *Acta Sociologica*, 62, 4, 420-439.  
<https://doi.org/10.1177/0001699318785690>.
- Kessler, R. C., Barker, P. R., Colpe, L. J., Epstein, J. F., Gfroerer, J. C., Hiripi, E., . . . Walters, E. E. (2003). Screening for serious mental illness in the general population. *Archives of General Psychiatry*, 60, 2, 184-189.  
<https://doi.org/10.1001/archpsyc.60.2.184>.
- Kohlrausch, B. & Zucco, A. (2020). Die Corona-Krise trifft Frauen doppelt: Weniger Erwerbseinkommen und mehr Sorgearbeit. *Wirtschafts- und Sozialwissenschaftliches Institut Policy Brief*, 5, 40.  
<http://hdl.handle.net/10419/224248>.
- Kreyenfeld, M. & Zinn, S. (2021). Coronavirus and care: How the coronavirus crisis affected fathers' involvement in Germany. *Demographic Research*, 44, 99-124.  
<https://doi.org/10.4054/DemRes.2021.44.4>.
- Krug, G., Bähr, S., Diener, K. & Abraham, M. (2020). Do parents' flexible working hours affect fathers' contribution to domestic work? Evidence from a factorial survey. *IAB-Discussion Paper*, 12.  
<https://doi.org/10.31235/osf.io/euwf7>.
- Kühhirt, M. (2012). Childbirth and the long-term division of labour within couples: How do substitution, bargaining power, and norms affect parents' time allocation in West Germany? *European Sociological Review*, 28, 5, 565-582.  
<https://doi.org/10.1093/esr/jcr026>.
- Li, J. & Heisig, J. P. (2020). Der Teufelskreis von Infektion und Ungleichheit Corona hat soziale Ursachen und Folgen (the vicious cycle feedback loop of infection and inequality: Corona has social causation and social consequences). *WZB Mitteilung*, 168, 42-44.  
<https://bibliothek.wzb.eu/artikel/2020/f-23091.pdf>.
- Marmot, M. (2004). *Status syndrome: How your social standing directly affects your health and life expectancy* (1st ed. Vol. 1). London: Bloomsbury Publishing.
- Marmot, M. & Allen, J. (2020). COVID-19: Exposing and amplifying inequalities. *Journal of Epidemiological Community Health*, 74, 9, 681-682.  
<https://doi.org/10.1136/jech-2020-214720>.
- Möhring, K., Naumann, E., Reifenscheid, M., Blom, A. G., Wenz, A., Rettig, T., . . . Friedel, S. (2020). Die Mannheimer Corona-Studie: Schwerpunktbericht zu Erwerbstätigkeit und Kinderbetreuung. *Universität Mannheim, Working Paper*.
- Munnes, S., Bünning, M., Hipp, L. & Wójcik, P. (2020). *Codebook Corona-Alltag*. Version 1.1.0. WZB Berlin Social Science Center.  
<https://doi.org/10.7802/2122>.
- Nomaguchi, K. & Johnson, W. (2016). Parenting stress among low-income and working-class fathers: The role of employment. *Journal of Family Issues*, 37, 11, 1535-1557.  
<https://doi.org/10.1177/0192513x14560642>.

- Pearlin, L. I. (1989). The sociological study of stress. *Journal of Health and Social Behavior*, 30, 3, 241-256.  
<https://doi.org/10.2307/2136956>.
- Pleck, J. H., Staines, G. L. & Lang, L. (1980). Conflicts between work and family life. *Monthly Labor Review*, 103, 29.  
<https://doi.org/10.2307/258214>
- Power, K. (2020). The COVID-19 pandemic has increased the care burden of women and families. *Sustainability: Science, Practice and Policy*, 16, 67-73.  
<https://doi.org/10.1080/15487733.2020.1776561>.
- Racine, N., Hetherington, E., McArthur, B. A., McDonald, S., Edwards, S., Tough, S. & Madigan, S. (2021). Maternal depressive and anxiety symptoms before and during the COVID-19 pandemic in Canada: a longitudinal analysis. *The Lancet Psychiatry*, 8, 405-415.  
[https://doi.org/10.1016/S2215-0366\(21\)00074-2](https://doi.org/10.1016/S2215-0366(21)00074-2).
- Reichelt, M., Makovi, K. & Sargsyan, A. (2021). The impact of COVID-19 on gender inequality in the labor market and gender-role attitudes. *European Societies*, 23, S228-S245.  
<https://doi.org/10.1080/14616696.2020.1823010>.
- Schmier, J. K. & Halpern, M. T. (2004). Patient recall and recall bias of health state and health status. *Expert Rev Pharmacoecon Outcomes Res*, 4, 2, 159-163.  
<https://doi.org/10.1586/14737167.4.2.159>.
- State by state: when are schools and K-12s around Germany reopening? (2020, 29 May 2020). *The Local*.  
<https://www.thelocal.de/20200529/state-by-state-when-are-schools-and-k-12s-around-germany-reopening/> [retrieved on 27 April 2021].
- Strazdins, L., Clements, M. S., Korda, R. J., Broom, D. H. & D'Souza, R. M. (2006). Unsociable work? Nonstandard work schedules, family relationships, and children's well-being. *Journal of Marriage and Family*, 68, 2, 394-410.  
<https://doi.org/10.1111/j.1741-3737.2006.00260.x>.
- Tourangeau, R. & Yan, T. (2007). Sensitive questions in surveys. *Psychological Bulletin*, 133, 5, 859-883.  
<https://doi.org/10.1037/0033-2909.133.5.859>.
- Unterberg, S. (2020). German states move to close educational and daycare facilities. *Spiegel International*.  
<https://www.spiegel.de/international/germany/germany-states-move-to-close-educational-and-daycare-facilities-a-e9c13296-002b-484b-88bc-e14ea295ff10> [retrieved on April 27, 2021].
- Vieira, J. M., Ávila, M. & Matos, P. M. (2012). Attachment and parenting: The mediating role of work-family balance in Portuguese parents of preschool children. *Family Relations*, 61, 1, 31-50.  
<https://doi.org/10.1111/j.1741-3729.2011.00680.x>.
- Voydanoff, P. (2004). The effects of work demands and resources on work-to-family conflict and facilitation. *Journal of Marriage and Family*, 66, 398-412.  
<https://doi.org/10.1111/j.1741-3737.2004.00028.x>.

- Voydanoff, P. (2005). The differential salience of family and community demands and resources for family-to-work conflict and facilitation. *Journal of Family and Economic Issues*, 26, 3, 395-417.  
<https://doi.org/10.1007/s10834-005-5904-7>.
- Wade, M., Prime, H., Johnson, D., May, S. S., Jenkins, J. M. & Browne, D. T. (2021). The disparate impact of COVID-19 on the mental health of female and male caregivers. *Social Science & Medicine*, 275.  
<https://doi.org/10.1016/j.socscimed.2021.113801>.
- Wilkinson, R. G. & Marmot, M. (1998). *Social determinants of health: the solid facts* (2nd ed.). Copenhagen: WHO Regional Office for Europe.
- Zoch, G., Bächmann, A.-C. & Vicari, B. (2020). Care-arrangements and parental wellbeing during the COVID-19 pandemic in Germany. *Leibniz Institute for Educational Trajectories - Working Papers*, 91.  
<https://doi.org/10.5157/LifBi:WP91:2.0>.
- Zoch, G., Bächmann, A.-C. & Vicari, B. (2021). Gender differences in reduced well-being during the COVID-19 pandemic – the role of working conditions. *IAB-Discussion Paper*, 4.  
<http://hdl.handle.net/10419/234299>.

## Appendix

Table A.1: Sample Means and Standard Deviations in Dependent Variables

	t0		t1		t2		t3		t4	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Parenting Stress	3.95	2.73	7.26	3.55	6.55	3.48	5.57	3.40	6.32	3.52
Psychological distress	2.32	1.45	3.94	1.57	3.59	1.50	3.29	1.58	3.82	1.59
<i>N</i>	1771		892		1771		1771		1771	

Note: The parenting stress scale ranges from 0 to 12 and the psychological distress scale from 0 to 8. The sample size at t1 is smaller than at the other time points, because the psychological distress/parenting stress questions were only integrated into the survey after its initial launch.

Table A.2: OLS Regressions on Parenting Stress and Psychological Distress

	Parenting Stress	Psychological Distress
t0	ref.	ref.
t1	0.70	0.62
t2	-0.03	0.42
t3	-0.40	0.34
t4	-0.21	0.86**
Men	ref.	ref.
Women	0.19	0.64***
Women*t1	0.60	0.34*
Women*t2	0.23	0.36***
Women*t3	0.17	0.21*
Women*t4	0.19	0.11
1 Child	ref.	ref.
2+ Children	0.28*	-0.08
2+ Children*t1	-0.16	-0.03
2+ Children*t2	0.21	0.04
2+ Children*t3	0.33	0.11
2+ Children*t4	0.57**	0.08
Child(ren) >= 11 years	ref.	ref.
Child(ren) <11 years	0.67**	0.00
Child(ren) <11 years*t1	1.41**	0.47*
Child(ren) <11 years*t2	1.59***	0.38**
Child(ren) <11 years*t3	1.18***	0.50***
Child(ren) <11 years*t4	1.86***	0.50***

Note: The parenting stress scale ranges from 0 to 12 and the psychological distress scale from 0 to 8.

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$



Table A.2: OLS Regressions on Parenting Stress and Psychological Distress (continued)

	Parenting Stress	Psychological Distress
Partnered parent	ref.	ref.
Single parent	0.35	0.18
Single parent*t1	-0.47	-0.09
Single parent*t2	0.30	-0.08
Single parent*t3	0.34	0.11
Single parent*t4	0.58	0.18
At usual workplace*t4	-0.58	-0.14
Not working*t1	-1.08*	-0.12
Not working*t2	-0.61	-0.18
Not working*t3	-0.52	-0.11
Not working*t4	-0.78	-0.06
No tertiary degree	ref.	ref.
Tertiary degree	0.46*	-0.12
Tertiary degree*t1	-0.59	-0.05
Tertiary degree*t2	-0.40	0.09
Tertiary degree*t3	-0.42	-0.07
Tertiary degree*t4	-0.95***	-0.10
Income sufficient	ref.	ref.
Income tight	0.54	0.08
Income tight*t1	0.80	0.57
Income tight*t2	-0.02	0.46*
Income tight*t3	0.55	0.71**
Income tight*t4	0.53	0.55*
25-34 Years old	ref.	ref.
35-44 Years old	0.04	0.16
45-54 Years old	0.11	0.16
35-44 Years old*t1	0.06	-0.06
35-44 Years old*t2	0.44	0.12
35-44 Years old*t3	0.15	-0.07
35-44 Years old*t4	0.44	-0.02
45-54 Years old*t1	-0.02	-0.23
45-54 Years old*t2	-0.16	-0.18
45-54 Years old*t3	0.20	0.04
45-54 Years old*t4	0.28	-0.11
No migration background	ref.	ref.
1st Generation migrant	0.18	0.01
2nd Generation migrant	-0.16	0.10
1st Generation migrant*t1	0.14	0.12
1st Generation migrant*t2	-0.27	0.06
1st Generation migrant*t3	-0.09	0.14
1st Generation migrant*t4	-0.06	0.12
2nd Generation migrant*t1	-0.94	-0.34
2nd Generation migrant*t2	-0.01	0.15
2nd Generation migrant*t3	0.46	0.18
2nd Generation migrant*t4	0.53	0.03

Note: The parenting stress scale ranges from 0 to 12 and the psychological distress scale from 0 to 8.

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Table A.2: OLS Regressions on Parenting Stress and Psychological Distress (continued)

	Parenting Stress	Psychological Distress
Adequate	-0.01	-0.02
More than adequate	0.02	-0.08
Adequate*t1	0.63	0.41
Adequate*t2	0.38	-0.07
Adequate*t3	0.59	-0.02
Adequate*t4	0.42	-0.04
More than adequate*t1	0.37	0.40
More than adequate*t2	0.23	-0.04
More than adequate*t3	0.36	-0.05
More than adequate*t4	0.24	0.00
Place of residence < 50000 inhabitants	ref.	ref.
50,000+ Inhabitants	-0.01	0.20*
50,000+ Inhabitants*t1	0.17	-0.07
50,000+ Inhabitants*t2	0.08	-0.01
50,000+ Inhabitants*t3	0.06	0.01
50,000+ Inhabitants*t4	0.39	-0.03
Region: Berlin	ref.	ref.
South	-0.10	-0.09
North	-0.00	-0.00
West	0.02	-0.01
East	-0.34	-0.09
South*t1	0.52	0.07
South*t2	0.64*	0.20
South*t3	0.29	0.06
South*t4	-0.01	0.11
North*t1	-0.07	-0.08
North*t2	0.29	0.07
North*t3	0.10	-0.15
North*t4	0.29	0.11
West*t1	-0.01	0.01
West*t2	0.51	0.13
West*t3	-0.13	-0.11
West*t4	0.09	0.12
East*t1	0.61	-0.14
East*t2	0.06	-0.20
East*t3	-0.71*	-0.49***
East*t4	-0.33	-0.18
_cons	2.66***	1.72***
R2	0.17	0.19

Note: The parenting stress scale ranges from 0 to 12 and the psychological distress scale from 0 to 8.

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Table A.3: Marginal Effects obtained from OLS Regressions on Parenting Stress

	t0	t1	t2	t3	t4
Men	ref.	ref.	ref.	ref.	ref.
Women	0.19	0.79*	0.42	0.35	0.38
1 Child	ref.	ref.	ref.	ref.	ref.
2+ Children	0.28*	0.12	0.50**	0.61***	0.85***
Child(ren) >= 11 years	ref.	ref.	ref.	ref.	ref.
Child(ren) <11 years	0.67**	2.08***	2.26***	1.86***	2.53***
Partnered parent	ref.	ref.	ref.	ref.	ref.
Single parent	0.35	-0.12	0.65*	0.69*	0.93**
Homeoffice	ref.	ref.	ref.	ref.	ref.
At usual Workplace	0.12	-1.03**	-0.61**	-0.67***	-0.46*
Not working	0.07	-1.01**	-0.54*	-0.45	-0.71**
No tertiary degree	ref.	ref.	ref.	ref.	ref.
Tertiary degree	0.46*	-0.12	0.06	0.04	-0.48*
Income sufficient	ref.	ref.	ref.	ref.	ref.
Income tight	0.54	1.34**	0.53	1.10*	1.07*
25-34 Years old	ref.	ref.	ref.	ref.	ref.
35-44 Years old	0.04	0.10	0.48*	0.19	0.48*
45-54 Years old	0.11	0.09	-0.05	0.31	0.39
No migration background	ref.	ref.	ref.	ref.	ref.
1st Generation migrant	0.18	0.33	-0.08	0.09	0.13
2nd Generation migrant	-0.16	-1.11*	-0.17	0.29	0.36
Overcrowded household	ref.	ref.	ref.	ref.	ref.
Adequate	-0.01	0.62	0.37	0.57	0.40
More than adequate	0.02	0.39	0.25	0.38	0.26
Place of residence < 50000 inhabitants	ref.	ref.	ref.	ref.	ref.
50,000+ Inhabitants	-0.01	0.17	0.07	0.05	0.39
Region: Berlin	ref.	ref.	ref.	ref.	ref.
South	-0.10	0.43	0.54*	0.19	-0.10
North	-0.00	-0.07	0.29	0.10	0.29
West	0.02	0.01	0.54*	-0.11	0.11
East	-0.34	0.28	-0.28	-1.04***	-0.67*
N	1693	847	1700	1690	1670
R2	0.17	0.17	0.17	0.17	0.17

Note: The table presents marginal effects and 95% confidence intervals based on OLS regressions with clustered, robust standard errors (as shown in Table 2). The parenting stress scale ranges from 0 to 12. Higher values indicate higher levels of parenting stress. The model was fully interacted with measurement time points. The sample size at t1 is smaller than at the other time points, because the psychological distress/parenting stress questions were only integrated into the survey after its initial launch.

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Table A.4: Marginal Effects obtained from OLS Regressions on Psychological Distress

	t0	t1	t2	t3	t4
Men	ref.	ref.	ref.	ref.	ref.
Women	0.64***	0.98***	1.00***	0.85***	0.75***
1 Child	ref.	ref.	ref.	ref.	ref.
2+ Children	-0.08	-0.11	-0.04	0.04	0.00
Child(ren) >= 11 years	ref.	ref.	ref.	ref.	ref.
Child(ren) <11 years	0.00	0.48*	0.39**	0.50***	0.50***
Partnered parent	ref.	ref.	ref.	ref.	ref.
Single parent	0.18	0.09	0.10	0.29*	0.36*
Home office	ref.	ref.	ref.	ref.	ref.
At usual workplace	-0.04	-0.16	-0.13	-0.20*	-0.18
Not working	0.01	-0.11	-0.18	-0.11	-0.06
No tertiary degree	ref.	ref.	ref.	ref.	ref.
Tertiary degree	-0.12	-0.16	-0.03	-0.18	-0.22*
Income sufficient	ref.	ref.	ref.	ref.	ref.
Income tight	0.08	0.65*	0.54***	0.79***	0.63**
25-34 Years old	ref.	ref.	ref.	ref.	ref.
35-44 Years old	0.16	0.11	0.28**	0.09	0.14
45-54 Years old	0.16	-0.06	-0.02	0.20	0.05
No migration background	ref.	ref.	ref.	ref.	ref.
1st Generation migrant	0.01	0.13	0.07	0.15	0.13
2nd Generation migrant	0.10	-0.23	0.25	0.28	0.14
Overcrowded household	ref.	ref.	ref.	ref.	ref.
Adequate	-0.02	0.39	-0.09	-0.04	-0.06
More than adequate	-0.08	0.31	-0.12	-0.13	-0.08
Place of residence < 50000 inhabitants	ref.	ref.	ref.	ref.	ref.
50,000+ Inhabitants	0.20*	0.13	0.19*	0.21*	0.17
Region: Berlin	ref.	ref.	ref.	ref.	ref.
South	-0.09	-0.01	0.12	-0.02	0.02
North	-0.00	-0.09	0.06	-0.16	0.10
West	-0.01	-0.00	0.12	-0.12	0.10
East	-0.09	-0.23	-0.29*	-0.58***	-0.27*
N	1693	853	1703	1700	1666
R2	0.19	0.19	0.19	0.19	0.19

Note: The table presents marginal effects and 95% confidence intervals based on OLS regressions with clustered, robust standard errors (as shown in Table 2). The psychological distress scale ranges from 0 to 8. Higher values indicate higher levels of psychological distress. The model was fully interacted with measurement time points. The sample size at t1 is smaller than at the other time points, because the psychological distress/parenting stress questions were only integrated into the survey after its initial launch.

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

## Information in German

### Deutscher Titel

Wer leidet am stärksten? Erziehungsstress und psychische Belastungen bei Eltern während der COVID-19 Pandemie in Deutschland

### Zusammenfassung

**Fragestellung:** Diese Studie untersucht geschlechtsspezifische und sozioökonomische Ungleichheiten bei elterlichem Stress und psychischen Belastungen während der COVID-19 Pandemie in Deutschland.

**Hintergrund:** Zur Eindämmung der COVID-19 Pandemie wurde die Verantwortung für Kinderbetreuung und schulische Bildung von formellen Institutionen auf die Eltern verlagert, was diese mutmaßlich unter enormen Stress gesetzt und ihr psychisches Wohlbefinden beeinträchtigt hat. Obwohl medial ausführlich über die zusätzlichen Belastungen von Familien berichtet wurde, haben elterlicher Stress und psychische Belastungen während der Krise im Rahmen wissenschaftlicher Untersuchungen wenig Aufmerksamkeit erhalten. Das gilt insbesondere für Untersuchungen zu Deutschland.

**Methode:** Die vorliegende Studie nutzt daher vier Wellen (N= 1.771) einer Opt-in-Panelbefragung, die zwischen März 2020 und April 2021 durchgeführt wurde. Mithilfe multivariabler OLS-Regressionen untersuchen wir die Auswirkungen der Pandemie auf elterlichen Stress und psychische Belastungen unter Einbeziehung einer Vielzahl demographischer und sozio-ökonomischer Merkmale.

**Ergebnisse:** Insgesamt haben sich Stress und psychische Belastungen von Eltern durch die Pandemie erhöht. Während der 1. und 3. Pandemiewelle hatten Mütter sowie Eltern mit Kindern unter 11 Jahren, Eltern mit zwei und mehr Kindern, Eltern, die im Homeoffice arbeiteten, ebenso wie Eltern in finanziell prekären Lagen eine größere Verschlechterung bei Stress zu verzeichnen als andere soziodemografische Gruppen. Eine Verschlechterung bei psychischen Belastungen scheint es bei Frauen, Haushalten mit geringerem Einkommen, Alleinerziehenden und Eltern jüngerer Kinder gegeben zu haben.

**Schlussfolgerung:** Die geschlechtsspezifischen und sozialen Ungleichheiten beim psychischen Wohlbefinden der Eltern nahmen bei den Studienteilnehmern während der Pandemie zu.

**Schlagwörter:** COVID-19, Elternschaft, Stress, Geschlechterungleichheit, Kinder, psychische Gesundheit, psychische Belastung, Deutschland

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