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RESEARCH

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The role of gender, stress, and social support in parents' pandemic well-being: A cross-national study

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Abstract

Objective: The goal was to investigate whether and how the well-being of mothers and fathers was differentially affected by the COVID-19 pandemic in four European countries and whether differences in stress and social support explain observed gender differences.

Background: Previous research documents that the COVID-19 pandemic had a significant impact on many people's lives and that some groups, such as women and parents, were affected more negatively than others. This study investigates potential underlying mechanisms and protective factors.

Method: In November 2020, 448 parents (218 fathers and 230 mothers, M_{age} = 41.18, SD = 8.47) from four European countries (Norway, Sweden, Germany, and the United Kingdom) completed an online questionnaire. Parents of elementary schoolchildren reported their stress, well-being, and social support currently and retrospectively for the first lockdown (spring 2020).

Results: Mothers experienced lower well-being than fathers during the pandemic, and parental well-being differed between countries. In addition, the stress caused by the need to combine paid work and child care partly mediated the relationship between gender and well-being, and social support played a protective role by buffering individuals from the negative impact of stress on well-being.

Conclusion: The study allows a more differentiated perspective on the impact of the COVID-19 pandemic on parental well-being in Europe.

Implications: Results suggest in future health-related crises, policymakers and practitioners working with families

should focus on providing additional support to mothers of young children to maintain their well-being.

KEYWORDS

COVID-19 pandemic, cross-country comparison, gender differences, parental well-being, social support, stress

The outbreak of the SARS-CoV-2 virus in winter 2019 and the subsequent worldwide pandemic led to substantial health-related worries and the implementation of severe social restrictions. These restrictions led to major societal and structural changes in many domains such as work, school, family life, and physical and mental health, with a particularly negative impact for families with school-aged children (Gassman-Pines et al., 2020; Patrick et al., 2020; Zamarro & Prados, 2021). Research suggests that these changes affected mothers more negatively than fathers (Möhring et al., 2021; Zhou et al., 2020), but individual countries differed both in their responses (e.g., restrictions) and in the severity of the outbreak in terms of cases and deaths. For this reason, in the present study, we investigate the differential impact of the COVID-19 pandemic on the well-being of mothers and fathers of school-aged children by comparing four different European countries (Norway, Sweden, Germany, and the United Kingdom including England and Scotland). In addition, we test whether pandemic-related stress and worries help explain the expected gender differences in parental well-being. Finally, to address potential protective factors for parents, we investigate the role of social support. We argue that emotional and practical support buffer parents' well-being from the negative effects of the pandemic, allowing for greater flourishing. By directly comparing the well-being of mothers and fathers in four Europeans countries that implemented different restrictions during the pandemic, and measuring stress, worry, and social support, we extend earlier research by exploring not only the mechanisms underlying gender differences in well-being but also protective factors.

Gender differences in well-being and domestic work

Earlier research on gender differences in well-being shows inconsistent results (for summaries see Batz-Barbarich et al., 2018, and Batz & Tay, 2018). Whereas two meta-analyses found slightly higher life satisfaction for men than women (Haring et al., 1984; Pinquart & Sörensen, 2001), one found lower life satisfaction for men than women (Wood et al., 1989), and a more recent meta-analysis showed no significant gender differences in subjective well-being (Batz-Barbarich et al., 2018).

Recent research has also examined gender differences in parents' well-being (Nomaguchi & Milkie, 2020). Gender has been found to moderate the relationship between parenthood and well-being (Nelson-Coffey et al., 2019), such that parenthood benefits men's well-being more than women's. Compared to men without children, Nelson-Coffey et al. (2019) found fathers reported greater well-being and happiness, whereas mothers reported more hassles and less positive emotions than women without children. One explanation for this difference in well-being lies in the unequal distribution of domestic labor: In one analysis of diary data from over 23,000 adults, mothers spent more time in child care, childcare management, cooking, and cleaning, whereas fathers spent more time in play and leisure (Musick et al., 2016). A gender-based division of labor exists in many countries for paid and unpaid work (World Economic Forum, 2021), with a larger gender gap in unpaid domestic work (e.g., child care) than in paid work (European Institute for Gender Equality, 2021).

Taken together, earlier research shows that gender—and especially the gendered distribution of domestic work—plays an important role in parents' well-being. Given recent scholarship

highlighting the role of stressors in mothers' well-being, and the important role that social policies play in supporting parents (Nomaguchi & Milkie, 2020), the present study explores these questions in the context of the pandemic in four European countries.

Parents' well-being during the pandemic

Positive family processes are crucial for the adjustment of children and closely related to a broad range of developmental outcomes (Prime et al., 2020). Children's adjustment is largely contingent on the general climate and relationships in the family (Browne et al., 2015) including parental well-being. Parental well-being is related to family stability and healthy parenting practices (Prime et al., 2020; Voydanoff & Donnelly, 1998). In addition, there is a consistent relationship between parents' mental health and children's outcomes (e.g., Rutter & Quinton, 1984; Smith, 2004; for the link between parents' and children's well-being during the pandemic see, for example, Martiny et al., 2022).

Prime et al. (2020) proposed a conceptual framework highlighting risk and resilience in family well-being during the COVID-19 pandemic, based on the idea that social disruptions from the pandemic would lead to psychological distress for caregivers. Because of the additional challenge for parents of elementary school children created by school closures, we studied the well-being of parents of younger children (age 6–13). Schmidt et al. (2021) showed that children in this age group exhibited a higher increase of negative behavioral patterns during the pandemic compared to adolescents, resulting in a greater need for parental support and higher parental stress. In line with Prime et al. (2020), we therefore predicted that the social disruptions caused by the closure of childcare institutions and the shift to remote work negatively affected parental well-being by increasing parents' worries and stress during the COVID-19 pandemic.

A large number of empirical studies indicate that parental well-being was lower during the pandemic (e.g., Gassman-Pines et al., 2020; Huebener et al., 2021; Patrick et al., 2020). Family-related variables—such as the age of the youngest child—have also been linked to parental well-being during the pandemic (Huebener et al., 2021; Thorsteinsen et al., 2022), as well as financial and work-related worries (Adams-Prassl et al., 2020; Möhring et al., 2021). These pandemic-related stressors, including an increase in family responsibilities, were found to be particularly detrimental to women's well-being (Tharp et al., 2021). School closures in particular had a greater impact on women's childcare responsibilities, mental health, and well-being than men's (Croda & Grossbard, 2021). Thus, it is not surprising that women around the globe showed a greater decline in well-being during the crisis than men (e.g., Adams-Prassl et al., 2020; Choi et al., 2021) and that mothers were more negatively affected than fathers (e.g., Croda & Grossbard, 2021; Huebener et al., 2021; Möhring et al., 2021). Though some studies confirm an increase in time investment in child care for fathers compared to before the pandemic (Kreyenfeld & Zinn, 2021), mothers showed an even greater increase in time investment and even lower well-being (Rania et al., 2022). Thus, in the present work, we seek to further this research by examining whether mothers across different European countries reported lower well-being than fathers during the pandemic and whether any of the countries were able to provide a more positive experience for parents. We further examine potential mechanisms for these gender differences.

The cross-country approach

We collected data from parents in four European countries (Norway, Sweden, Germany, and the United Kingdom) that are relatively similar in terms of their geographical region and religion, but differ in important cultural and political factors. First, they differed in one of the four

dimensions in Hofstede's (2011) framework for categorizing cultures known as "masculinity" versus "femininity." This relates to the division of social gender roles in the culture and the extent to which they overlap (i.e., in feminine societies both men and women should be nurturing and concerned with quality of life). Whereas Sweden and Norway have been categorized as the most and second-most feminine societies (meaning they value consensus, cooperation, and well-being; Hofstede Insights, 2010), the United Kingdom and Germany are categorized as highly masculine (i.e., performance driven and competitive). Relatedly, Norway and Sweden rank higher on gender equality indices (World Economic Forum, 2021). However, when examining how this equality plays out within families, these Nordic countries still have strong mothering norms, and women in Nordic countries actually show a stronger negative correlation between work–family conflict and well-being than in more traditional countries (Hagqvist et al., 2017).

In addition, these four countries differed in their pandemic-era policies. Whereas three countries (Norway, Germany, and the United Kingdom) implemented relatively comparable lockdowns and restrictions in spring 2020, Sweden did not implement severe restrictions. Sweden did not enforce a nationwide closing of schools and did not have a general lockdown of society in spring 2020. The Swedish government only advocated mindful behavior, such as social distancing, handwashing, and wearing facial masks (Ellyatt, 2020). However, some researchers suggest that it was not the lockdowns per se, but country-level severity of COVID-19 infections that negatively affected people's well-being (Foa et al., 2022). Thus, in another form of comparison, the infection and death rates from the virus differed across the four counties. Whereas cases and deaths in all four countries were relatively similar in March 2020, by the time of our data collection in fall 2020, numbers differed greatly (Mathieu et al., 2020). Infection rates were highest in Sweden and lowest in Norway at that time and death rates had spiked in the United Kingdom (Mathieu et al., 2020). Thus, in the present work, we explored whether differences in perceptions of local infection rates were related to country-level differences in parental well-being.

Lastly, as data from the European Social Survey (ESS) from 2018 and the European Quality of Life Survey from 2003 to 2016 have consistently shown elevated well-being in Norway and Sweden compared to Germany and the United Kingdom (European Foundation for the Improvement of Living and Working Conditions, 2018; European Social Survey European Research Infrastructure Consortium, 2018), we also take these cross-country differences into account.

The role of stress in the relationship between gender and well-being

Multiple studies documented an increase in stress during the pandemic. A nationwide poll in the United States found parents experienced higher levels of stress during COVID-19 than adults without children, related to managing children's at-home schooling, dealing with the cancellation of extracurricular activities, and navigating children's emotions around uncertainty and change (American Psychological Association, 2020). In addition, short-term and long-term stress for parents increased during the pandemic, due to changes in children's daily structure and routines, worry and anxiety around COVID-19, and demands related to children's online schooling (Adams et al., 2021). As mentioned previously, the redistribution of housework and child care particularly disadvantaged women, with mothers doing more housework and child care than fathers (Del Boca et al., 2020; Sevilla & Smith, 2020), and reporting higher stress than fathers during the pandemic (e.g., Wade et al., 2021).

In line with this research, we expected gender differences in mean stress levels in our sample, as women tend to experience greater stress regarding family and health-related events than men (Matud, 2004). In addition, based on Prime et al.'s (2020) model and earlier research

consistently showing the negative impact of stress on mental and physical health, including well-being (DeLongis et al., 1988; Thoits, 2010), we expected this stress would negatively impact parental well-being. As women report both greater chronic stress than men and more negative consequences of this stress on both physical and psychological outcomes (Matud, 2004), we tested if the impact of stress on mental health during the pandemic was stronger for women than for men. Other research conducted during the pandemic found that COVID-19–related stress significantly impacted women's—but not men's—life satisfaction (Tharp et al., 2021). Therefore, in the present work, we aim to further test whether gender differences in stress during the pandemic existed and whether these gender differences can—at least partially—explain gender differences in parental well-being during the pandemic.

The role of social support as a protective factor for well-being

In addition to these risk factors for well-being, we examine social support as a potential protective factor. Numerous studies have documented the important role of social support in the relationship between stress and well-being (e.g., Adar et al., 2022; Cohen et al., 1986; Turner, 1981). In their stress-buffering hypothesis, Cohen and McKay (1984) argued that social support buffers individuals from the negative effects of stress on mental and physical health. This claim has been supported by several empirical studies (e.g., Bowen et al., 2014; Lee & Dik, 2017, Nguyen et al., 2016).

The exchange, reception, and seeking of social support have previously been shown to differ between men and women (e.g., Reevy & Maslach, 2001). In particular, women are more likely to benefit from social support in response to stress (Taylor et al., 2000). Social support includes both emotional support (e.g., empathy and caring) and practical (or instrumental) support (Semmer et al., 2008). Practical support includes more tangible factors such as providing information and assistance in tasks. Findings by Ashton and Fuehrer (1993) suggest that whereas men are more likely to seek instrumental than emotional support, women show equal patterns for both types of support. These findings also suggest that women generally seek more support than men. Furthermore, Balaji et al. (2007) argued that mothers especially benefit from a combination of practical support (e.g., assistance in childcare) and emotional support. The role of social support is particularly interesting in studying the COVID-19 pandemic, as sources of social support were naturally reduced due to contact restrictions. Although Moore et al. (2021) showed that perceived social support was lower for sexual and gender minority groups during the pandemic, gender differences in parents in the impact of this perceived deficit on well-being has not yet been investigated. For this reason, in the present study, we investigate whether the two types of support buffer the effects of stress on parental well-being during the pandemic.

The present research

The main aim of the present work was to investigate the well-being of mothers and fathers of children between the ages of 6 and 13 during the COVID-19 pandemic in four European countries. We further test the relationship between gender, stress, and well-being, and whether these relationships are moderated by emotional and practical support. In detail, we tested five hypotheses (H1–H5), two research questions (RQ1 and RQ2), and conducted additional exploratory analyses to further investigate observed effects. All hypotheses and research questions were preregistered at the Open Science Framework (https://doi.org/10.17605/OSF.IO/VQNH5). First, we hypothesized that mothers would report lower levels of well-being than fathers at both time points: during the first lockdown in spring 2020 (H1; retrospectively) and in fall 2020 (H2).

Additionally, we explored how mothers' and fathers' well-being changed from their retrospective lockdown report to their online fall report (RQ1) and we explored country differences in parental well-being (RQ2). In a second step, we predicted that lockdown stress would mediate the relationship between gender and well-being during the lockdown in spring 2020 (H3) for those countries that enforced lockdowns, whereas general pandemic-related stress would mediate the relationship between gender and well-being in fall 2020 (H4). More precisely, we argued that mothers would experience more stress during lockdown than fathers, and this higher stress would in turn reduce their well-being. We predicted a similar effect for general pandemic-related stress in fall 2020. We also predicted that emotional and practical support would act as a moderating variable in these models, buffering individuals from the effect of stress on their well-being (H5).

METHOD

We collected data with an online questionnaire in Norway, Sweden, Germany, and the United Kingdom in fall 2020. Participants reported well-being and stress with reference to two different times: retrospectively for the first lockdown (spring 2020; referred to as *spring well-being* and *lockdown stress* in the following) and "at the moment" for the time of data collection in fall 2020 (referred to as *fall well-being* and *general pandemic-related stress* in the following).

Participants

Data were collected from parents in four European countries, namely Norway, Sweden, Germany, and the United Kingdom including England and Scotland, via the panel provider Toluna (https://de.toluna.com). We aimed to recruit about 100 parents of children between the ages of 6 and 13 from each country. This is the age children attend elementary school in Norway. As Toluna was not able to acquire the required sample of 100 parents from Norway, an additional 51 participants were recruited by contacting the principals of several elementary schools across Norway. Of the contacted schools, four principals forwarded the information about the study and the study link to parents of their school. In the study period, from November 27th to December 14th in 2020, a total of 556 participants completed the online questionnaire and gave informed consent.

Because low quality responses are a known limitation of web-based surveys (Leiner, 2019), we preregistered quality-control criteria: Seventy-three participants were excluded because they took less than 7 minutes to complete the questionnaire. Seven minutes was set as the cut-off time to indicate speeding before data collection because this was the estimated minimum time needed to answer the questionnaire. We additionally excluded male and female participants who reported an age below 13 years (31 participants) and female participants above the age of 50 (one participant) at the time their child was born. These criteria were not preregistered, but we excluded these cases because as we judged it unlikely that participants became parents at these ages, and it was interpreted as an indication of unreliable answering behavior. Lastly, because only one participant did not identify as either male or female, we did not have a large enough sample size of nonbinary parents to include them in our analysis. Two participants who did not disclose their gender were also excluded from analyses.

The final sample consisted of 448 participants from separate families, including 218 males and 230 females. One hundred and four of the participants were recruited in Germany, 102 in the United Kingdom, 129 in Norway, and 113 in Sweden. An a priori calculation of sample size was not conducted, as this study was a follow-up study of a longitudinal study that was earlier conducted in Norway. Therefore, the panel provider (Toluna) was approached and asked to

estimate the number of participants they could provide that fulfilled the criterion for participation (i.e., parent of a child between the ages 6–13) in the four participating countries. According to Fritz and MacKinnon (2007), the acquired sample size enables the detection of small-to-medium parameters of the a- and b-path in a mediation model. The mean age of the sample was 41.18 years ($SD = 8.47$, range 24–70). All parents had at least one child between the ages of 6 and 13 years and an average of 1.99 children under the age of 19 ($SD = 0.94$, range 1–6). Most of the parents cohabitated (82.1%; either married or in a relationship and living together), whereas 17.9% parents were single parents. Additionally, 8.9% of the parents reported having a same-sex partner and 20.5% reported having an immigrant background. The majority of the sample had completed higher education including an undergraduate university degree, master's degree, or PhD (63.1%). The majority of the sample worked 20 hours or more a week (78.7%), and few parents (8.3%) did not work at all. The average income of the sample was ≈ €50,000 ($SD = €25,000$). Of the participants, 22.8% considered themselves to be high risk for developing complications following an infection with SARS-CoV-2 and 40.8% of the participants were considered essential workers in their country. Generally, the participants viewed the rate of infections in their municipality to be moderately high at the time of the data collection ($M = 3.71$, $SD = 1.07$ on a scale from 1 = *no infections* to 5 = *a lot of infections*). Descriptive statistics for the national subsamples can be found in the supplemental materials available at the Open Science Framework (https://osf.io/ztqhn).

Measures

All participants answered the questionnaire in their country's official language. The items for which no validated translation existed were translated and back-translated by native speakers. The original items in all four languages can be found in the supplemental materials. Reliabilities for each scale are reported across all countries in the following paragraphs, and individual reliability measures for each country are reported in the supplemental materials.

Well-being

Well-being was measured twice using the five-item World Health Organization Well-Being Index (WHO-5; Topp et al., 2015) in the officially translated version for each country. The first measurement of well-being was retrospective ("Think back to how you felt while the schools were closed") as it referred to participants' well-being during the lockdown in spring 2020 ($\alpha = .94$; spring well-being). The second measurement of well-being referred to the present ("Please indicate how you have been feeling over the last month"), that is, the data collection period (late November until early December 2020; fall well-being; $\alpha = .94$). As Sweden was the only country in the study that did not have a lockdown, all items and instructions referring to the lockdown were adapted to refer to during the first wave of the pandemic in spring 2020. The five items were answered on a scale from 0 (*none of the time*) to 5 (*all of the time*) and a raw sum score (with a range from 0 to 25) was multiplied by four so that the final score had a possible range from 0 (*absence of well-being*) to 100 (*maximum well-being*).

Stress

Stress was measured using a total of six items created by the research team for a longitudinal study in Norway (Kvalø et al., 2024). The factor structure of these items was examined by conducting exploratory factor analyses on the data of an earlier Norwegian study using identical

items ($N = 112$). The analyses indicated a two-factor structure of the items relevant for the hypotheses. The first subscale ($\alpha = .87$) consisted of the following three items concerning stress during the lockdown in spring 2020: "In general, I was stressed by the closing of society," "I felt stressed about handling work and home schooling," and "I felt stressed about housework during lockdown" (lockdown stress; 1 [*totally disagree*] to 5 [*totally agree*]). The second subscale contained three items ($\alpha = .82$) and targeted general stress related to the pandemic: "Are you worried about how the pandemic will develop?," "Are you stressed over the whole situation surrounding the pandemic?," "Are you worried about the negative consequences of the pandemic?" (general stress; 1 [*not at all*] to 7 [*extremely*]). Responses to the three items for each subscale were averaged to create an index of lockdown stress and general stress.

Social support

Social support was divided into emotional and practical support and reported for the same time periods as well-being. For each time period participants were asked the following two items (on a scale from 1 [*no support*] to 7 [*a lot of support*]): "How much emotional support did you receive from family, neighbours, or friends who do not live in the same household during lockdown/the last month? Emotional support includes for example comfort if you were sad, someone listening to you about problems that burdened you, etc." and "How much support have you received in regard to practical chores like buying groceries, cooking, gardening or housework from family, neighbours, or friends who do not live in the same household during lockdown/the last month?"

Perception of infection rates

To measure how participants perceived their local infection rates, we asked the following: "How did numbers of COVID-19 infections develop in your county over the last month? Were there multiple cases in your county? Please answer without looking up the concrete numbers before." Answers could be given on a scale ranging from 1 (*no infections*) to 5 (*a lot of infections*).

Statistical analysis

Before conducting the main analyses, we used multigroup confirmatory factor analysis to test measurement invariance across the four countries for all scales. Metric invariance was confirmed for the WHO-5 for both spring and fall measurements as well as for the lockdown stress scale, whereas scalar invariance was confirmed for the general stress scale. Fit indices and results of the model comparisons can be found in the supplemental materials.

H1, H2, and RQ1 were tested conducting repeated-measures analysis of variance (ANOVA) with well-being in spring and fall 2020 as the repeated measures factor and gender and time as the independent variables. This was repeated with country as an additional factor to check for differences across countries (RQ2). The PROCESS macro by Hayes (2018) in SPSS was used with a specified bootstrap sample of 5,000 to test mediation effects of stress on well-being. First, H3 was tested using the simple mediation model (Model 4) of the PROCESS macro by Hayes, with gender as the predictor variable, spring well-being as the dependent variable, and lockdown stress as the mediator variable. H4 was then tested using the same model and predictor variable with fall well-being as the dependent variable and general pandemic stress (second subscale) as the mediator variable. Dummy variables for country, with Sweden as the reference

group, were included as covariates. The moderated mediation model (Model 59) of the PROCESS macro by Hayes, which tests moderation for all paths in a mediation model, was used to test H5, with moderation of social emotional and practical support (separately) on all paths in the two mediation models from H3 (spring) and H4 (fall). Country dummies were again used as covariates. To test the robustness of the effects we repeated all analyses including the most important demographics.

RESULTS

Descriptive statistics

Descriptive statistics for spring and fall well-being, stress, and social support measures, as well as correlations between these variables divided by gender can be found in Table 1.

Gender and time differences in parental well-being

To investigate whether well-being in mothers and fathers differed during the pandemic, we analyzed gender differences in the WHO-5 at the start of the first lockdown in spring 2020 (H1) and in November 2020 (H2). We expected mothers to report lower well-being than fathers at both points in time. We also analyzed how well-being developed over time (RQ1), as well as how results vary across the different countries (RQ2).

In line with our hypotheses, a repeated-measures ANOVA showed a significant main effect of gender, $F(1, 445) = 10.69$, $p = .001$, partial $\eta^2 = .02$. At both points in time, fathers reported higher well-being ($M_{T1} = 56.50$, $SD = 25.00$, confidence interval [CI] = [51.60, 61.40]; $M_{T2} = 56.68$, $SD = 25.28$, CI = [51.72, 61.64]) than did mothers ($M_{T1} = 47.76$, $SD = 25.70$, CI = [42.72, 52.80]; $M_{T2} = 51.00$, $SD = 24.42$, CI = [46.22, 55.78]). In trend, well-being increased over time, $F(1, 445) = 3.76$, $p = .053$, partial $\eta^2 = .01$. This trend seems to mainly be driven by mothers as can be seen in Figure 1, even though the interaction effect of gender and time did not reach the conventional significance level, $F(1, 445) = 3.00$, $p = .084$, partial $\eta^2 = .01$. When we controlled for income, education level, relationship status, and age of youngest child, the effects remained in the same direction, although some were no longer statistically significant. The results of the analyses with covariates are reported in the supplemental materials.

Additional analyses also revealed a significant main effect of country, $F(3, 439) = 5.25$, $p = .001$, partial $\eta^2 = .04$. Post hoc comparisons showed that parental well-being in Sweden ($M_{T1} = 47.26$, $SD = 23.70$; $M_{T2} = 46.69$, $SD = 22.69$) was significantly lower than in Norway ($M_{T1} = 54.29$, $SD = 23.58$; $M_{T2} = 56.09$, $SD = 22.86$; $p = .029$) and the United Kingdom ($M_{T1} = 58.98$, $SD = 25.98$; $M_{T2} = 59.45$, $SD = 25.61$; $p < .001$). The German sample also reported significantly lower parental well-being ($M_{T1} = 47.50$, $SD = 28.38$; $M_{T2} = 53.01$, $SD = 27.60$) than the U.K. sample ($p = .027$). Figure 2 shows differences in well-being between the countries divided by gender. A similar figure divided by time, and results of the analyses with covariates, can be found in the supplemental materials. Neither the interactions of gender nor time with country were significant.

Next, in order to explore the country-level differences in well-being, we tested whether participants' perception of the current number of COVID-19 infections in their country (in fall 2020) significantly differed between countries. Results of an ANOVA showed a significant difference between countries, $F(3, 444) = 15.96$, $p < .001$, $\eta^2 = .09$. Post hoc comparisons revealed that perceived infection rates were significantly higher in Sweden ($M_{SW} = 4.15$, $SD_{SW} = .85$) than in any other country ($M_{GER} = 3.73$, $SD_{GER} = 1.11$, $p = .016$; $M_{UK} = 3.77$, $SD_{UK} = .92$,

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TABLE 1 Descriptive statistics and correlations for study variables divided by gender.

Variable	Gender	*n*	*M*	*SD*	1	2	3	4	5	6	7	8
1 Spring WB	Male	218	56.50	25.00	—							
	Female	229	47.76	25.70	—							
2 Fall WB	Male	218	56.68	25.28	.71**	—						
	Female	230	50.94	24.39	.74**	—						
3 Ld. stress	Male	218	3.16	1.13	−.07	−.12	—					
	Female	230	3.18	1.15	−.48**	−.32**	—					
4 Gen. stress	Male	218	4.72	1.47	.04	.09	.50**	—				
	Female	230	4.80	1.53	−.35**	−.30**	.41**	—				
5 Spring ES	Male	218	4.61	1.70	.50**	.52**	.13*	.09*	—			
	Female	230	4.48	1.81	.30**	.30**	−.12	.07	—			
6 Spring PS	Male	217	4.09	1.94	.36**	.41**	.27**	.16*	.67**	—		
	Female	230	3.37	2.00	.17*	.21*	.09	.04*	.52**	—		
7 Fall ES	Male	217	4.29	1.87	.43**	.50**	.28**	.16*	.77**	.71**	—	
	Female	230	4.27	1.86	.18**	.25**	−.07	.12	.76**	.56**	—	
8 Fall PS	Male	217	4.03	1.96	.38**	.46**	.31**	.15*	.66**	.79**	.81**	—
	Female	229	3.22	1.98	.03	.14**	.16*	.15*	.**	.78**	.58**	—

Note: ES = emotional support; Gen. = general; Ld. = lockdown; PS = practical support; WB = well-being.
*$p < .05$.**$p < .01$.

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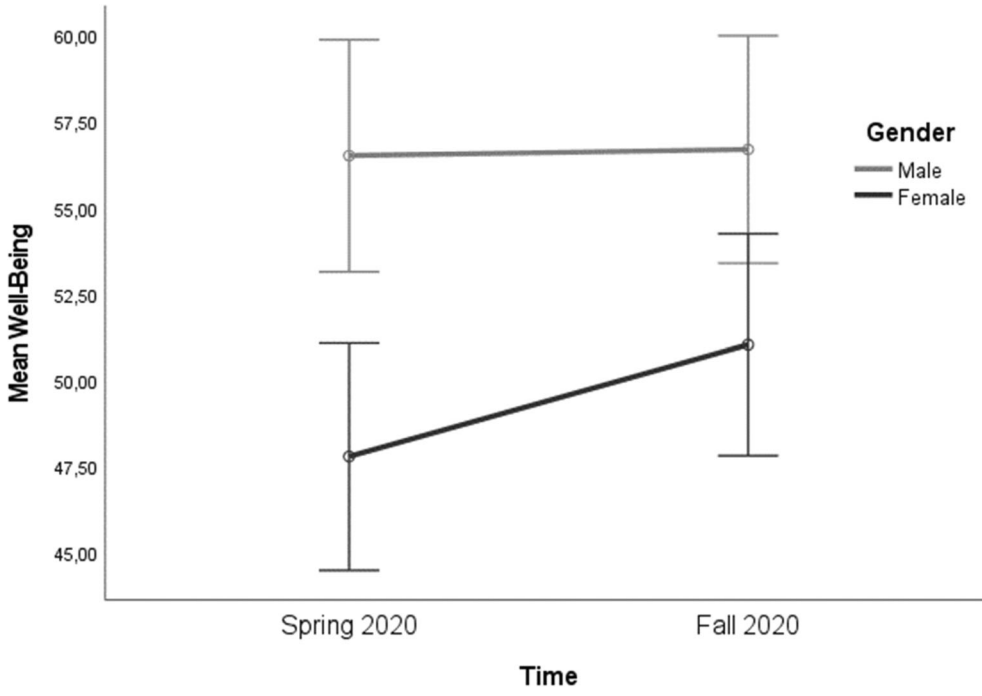

FIGURE 1 Mean well-being (95% confidence interval) of mothers and fathers over time.

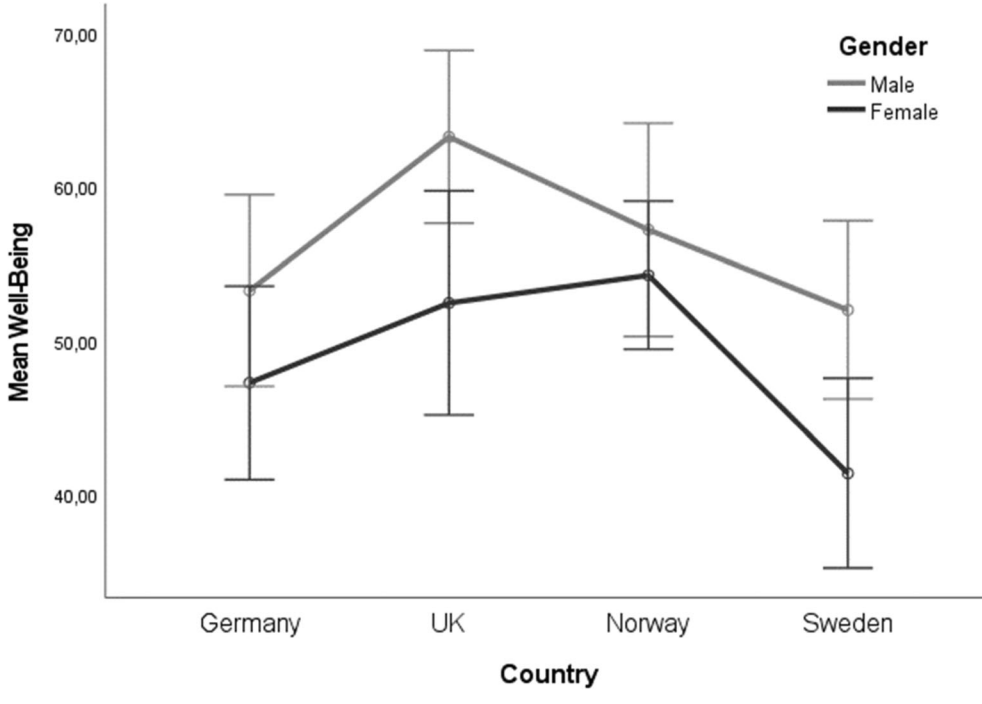

FIGURE 2 Mean of spring and fall well-being (95% confidence interval) in the four European countries by gender.

$p = .044$; $M_{NO} = 3.25$, $SD_{NO} = 1.15$, $p < .001$). Nonsignificant negative correlations were found between perceived infection rates and well-being in all countries ($-.16 < r < -.06$; $.07 < p < .53$).

Mediation by stress

A simple mediation model (PROCESS, Model 4; Hayes, 2018) was computed to analyze whether the observed relationship between gender and spring well-being was mediated by lockdown stress (H3). Gender was coded as 1 = male, 2 = female. As observed in the first model, there was a direct effect of gender on well-being, $b = -7.98$, $p < .001$. Gender did not significantly predict lockdown stress, $b = .15$, $p = .169$, whereas higher lockdown stress did significantly predict lower spring well-being, $b = -6.94$, $p < .001$. The bootstrapped unstandardized indirect effect was not significant ($b = -1.03$, $SE = .76$, CI = [−2.59, .407]). Contrary to our hypothesis, lockdown stress did not mediate the relationship between gender and spring well-being.

Next, we explored whether the relationship between gender and spring well-being might be explained by the specific stress that was triggered by the need to combine homeschooling and paid work during the spring 2020 lockdown instead of general stress related to the lockdown. Therefore, we tested the mediation of the relationship between gender and spring well-being by a single item of the lockdown stress scale ("I felt stressed about handling work and home schooling"; in Sweden this item was rephrased to "I felt stressed about handling work and family life"). Again, there was a direct relation between gender and well-being, $b = -7.32$, $p = .002$. Gender also predicted the mediator significantly, $b = .27$, $p = .034$, which in turn predicted spring well-being significantly, $b = -6.10$, $p < .001$. The bootstrapped unstandardized indirect effect was significant ($b = -1.65$, $SE = 0.81$, CI = [−3.29, −0.78]). This means that the lower well-being of mothers compared to fathers in spring 2020 was partly explained by the fact that mothers reported higher stress about having to simultaneously handle both paid work and homeschooling.

Another meditation analysis was performed to test whether the observed relationship between gender and fall well-being was mediated by general stress related to the pandemic (H4). Again, there was a direct relation between gender and fall well-being, $b = -5.70$, $p = .017$. Although all paths were in the predicted direction, gender did not significantly predict general stress related to the pandemic, $b = .25$, $p = .083$, which in turn also did not significantly predict fall well-being, $b = -1.53$, $p = .056$. The bootstrapped unstandardized indirect effect was not significant ($b = -0.38$, $SE = 0.35$, CI = [−1.22, 0.13]). Contrary to our hypothesis, general stress related to the pandemic did not mediate the relationship between gender and fall well-being in 2020. All patterns of results for the mediation models remained when controlling for covariates and are reported in the supplemental materials.

Buffering effect of social support

To explore the buffering effect of social support, both mediation analyses were repeated twice with emotional or practical support at each time point as moderating variables according to Model 59 of the PROCESS macro by Hayes (2018; H5). The model based on measures from the spring revealed significant interaction effects with emotional support for all paths (see Figure 3). The interactive effect of gender and emotional support on lockdown stress ($b = -0.12$, $SE = 0.06$, CI = [−0.24, −0.01], $p = .041$) revealed that mothers reported higher stress than fathers when they perceived low emotional support ($b = 0.33$, $p = .018$), but not when they perceived high emotional support ($b = -0.16$, $p = .384$). Additionally, the interactive

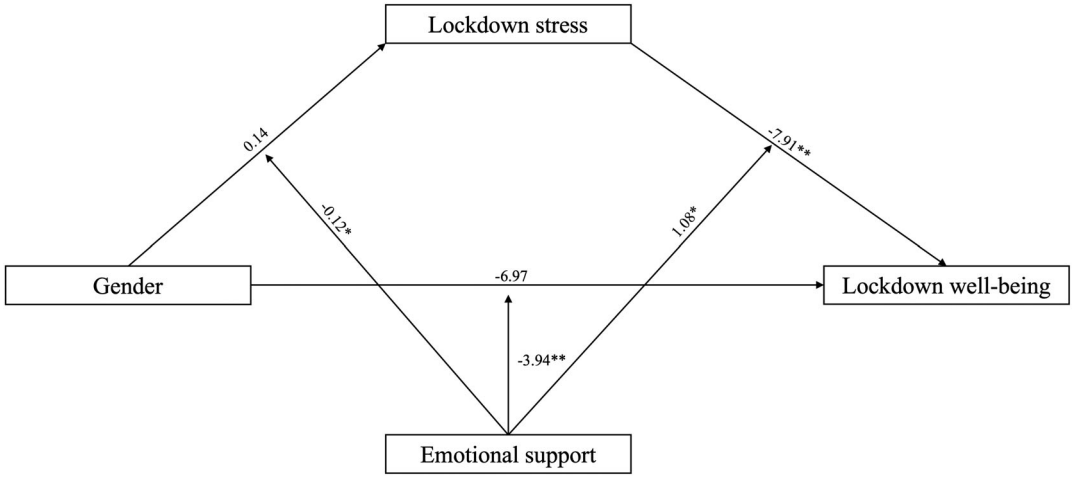

FIGURE 3 Unstandardized regression coefficients for the moderated mediation of emotional support during lockdown including countries as covariates, $N = 447$.
*$p < .05$. **$p < .001$.

effect of gender and emotional support on spring well-being ($b = -3.94$, $SE = 1.17$, CI = [−6.23, −1.66] $p < .001$) revealed that at high levels of emotional support ($b = -16.66$, $p < .001$) fathers report higher spring well-being than mothers, but that this was not the case at low levels of emotional support ($b = -0.88$, $p = .75$). Lastly, the interactive effect of lockdown stress and emotional support ($b = 1.08$, $p = .017$) showed that the more emotional support is received, the weaker the negative relationship between lockdown stress and spring well-being ($b = -8.91$, $p < .001$ low support; $b = -4.59$, $p = .001$ high support). The indirect effect of gender on spring well-being through lockdown stress was only significant for participants with low emotional support ($b = -2.97$, $SE = 1.33$, CI = [−5.73, −0.40]) and not for those with high emotional support ($b = 0.74$, $SE = 1.07$, CI = [−1.13, 3.15]). The same effects to a lesser extent were observed for practical support during the lockdown in spring 2020. Both models testing for moderation effects in fall 2020 did not reveal significant interactions. All patterns of results remained unchanged when controlling for covariates. Figures and tables containing information for all models and analyses including covariates can be found in the supplemental materials.

DISCUSSION

In line with earlier research, the results of this study consistently show lower well-being in mothers than in fathers over the course of the COVID-19 pandemic (H1, H2). We also found significant differences in parental well-being across four European countries (Norway, Sweden, Germany, and the United Kingdom). Whereas British and Norwegian participants reported the highest well-being, Swedish participants consistently reported the lowest well-being. As shown in our exploratory analyses, Swedish participants perceived the infection rate in their county to be significantly higher than participants from all other countries, but the negative relationship between perceived infection rates and well-being was not significant. The finding that Swedish participants perceived infection rates to be higher in their country than participants in the other three countries is consistent with other research looking at country-level differences in well-being, which suggest that infection rates are a major contributor to country-level well-being

(Foa et al., 2022). However, the country-level differences in perceived infection rates in the present study need to be interpreted with caution because the infection rate measure consisted of only one item and therefore measurement invariance could not be ensured. In addition, perceived infection rates and well-being did descriptively correlate negatively, but the relationship was not particularly strong. This might indicate that a third variable—such as perceived personal risk of infection—might mediate this relationship.

Our exploratory analyses did not reveal the expected mediating effect of lockdown stress or general pandemic-related stress on well-being (H3, H4). Interestingly, however, we found a partial mediation between gender and spring well-being by one specific stress item, namely the stress that was caused by coordinating paid work and the homeschooling of children. Thus, it seems that it was not differences in lockdown stress in general that were related to the differences in mothers' and fathers' well-being, but the particular stress associated with combining paid work with homeschooling. This finding is in line with earlier studies that have shown mothers bear most of the additional housework and child care, independent of their (or their partners') paid work (Del Boca et al., 2020; Sevilla & Smith, 2020). As our results remain stable when controlling for important demographic variables like income and education, the effects are likely due to gender roles. According to the framework by Prime et al. (2020), this lowered well-being in mothers could impact family resilience and well-being, as well as the general family climate, relationships in the family, and children's adjustment (Browne et al., 2015; Martiny et al., 2022). Therefore, in future health-related crises, governments should provide support to families to maintain maternal well-being. These findings should additionally be considered when determining governmental and educational policies regarding school closings.

Lastly, results supported the hypothesized moderating effect of social support on the relationship between gender, stress, and well-being during the lockdown (H5). When perceptions of social support were high, gender differences in lockdown stress were reduced. Additionally, greater perceived social support was associated with a weaker negative relationship between lockdown stress and spring well-being, thereby supporting the idea that social support buffers individuals' well-being from the negative effects of stress (Cohen & McKay, 1984). This highlights the importance of both emotional and practical support in protecting parents from the potential negative impacts of societal disruptions as seen in the COVID-19 pandemic. The social restrictions enforced by many countries during the pandemic may have hindered parents' access to their regular sources of social support (e.g., grandparents who normally help with caregiving, work colleagues, and friends), including in countries where official restrictions were not enforced. For example, although Sweden's official governmental restrictions were minimal, research using Google mobility data suggests that the actual reduction in movement in Sweden was similar to neighboring countries (Sulyok & Walker, 2021). Taken together, the present work makes an important contribution to our understanding of parental well-being during times of crisis. Rather than studying simple gender differences, we examined a complex model additionally including country-level differences, stress, well-being, and social support.

Limitations and future research directions

Although the results of this study add to our knowledge and understanding of the differential impact of the COVID-19 pandemic on mothers and fathers in different countries, limitations in the present research exist that require further consideration. One limitation of this study design is the retrospective nature of the measures for spring 2020 (i.e., during the lockdown). Although retrospective measures can be distorted due to memory effects, Little et al. (2020) argued that a benefit of the retrospective pretest–posttest design is that it can help participants "gauge the

degree of change that they experience with greater awareness and precision than a traditional approach" (p. 175). In our study, our interest was in participants' subjective experience of the lockdown including their stress, well-being, and perceived social support (rather than a memory-dependent objective value). As argued by Blome and Augustin (2015), when researchers are interested in perceptions (rather than a "true effect"), retrospective assessments are less problematic.

Another limitation to the study was our measurement of stress. Due to the differences in the implementations in the four different countries, some items we included to measure stress could not be used in the final analyses. In addition, as the specific stressors we were measuring were new and unique to the pandemic (e.g., the stress of combining working from home and homeschooling), we could not use previously validated scales. A further limitation involved our sample: We did not have a sufficient sample of nonbinary parents to include them in our analyses as a separate gender category. Future researchers may need to recruit participants through LGBTQ-related organizations and listservs to adequately sample this population of parents (Warren et al., 2016). Lastly, further studies are needed to identify or control for other potentially confounding factors such as the work status of both parents and the presence of already-established support systems, as well as considering how these factors lead to differences into how parents experience their situation. The findings of the present study provide a jumping-off point for many important future studies.

Implications

One major takeaway from this work is the importance of social support for women in times of crisis. Mothers only reported higher stress than fathers during the lockdown when they did not receive emotional support from others. In addition, the less emotional support mothers received, the more their well-being was impacted by stress. It is important to learn from this, as virologists and cell researchers warn that more pandemics should be expected (e.g., Morens & Fauci, 2020). In future health-related crises, policymakers and practitioners working with families should focus on providing additional support to mothers of young children to maintain their well-being. Support could be provided through programs that provide practical assistance to mothers of young children, or digital support groups where mothers can share their experiences and connect to local support providers. Already one generation of progress in gender equality is estimated to be lost due to the COVID-19 pandemic (World Economic Forum, 2021). Thus, the present research highlights the urgent need to address the inequality in child care and domestic labor—and the resultant stress for women—to prevent further delays to gender equality in future (health-related) crises.

Conclusion

The findings of this study contribute to the understanding of the differential effects of the COVID-19 pandemic on mothers' and fathers' well-being as well as possible mechanisms explaining these effects. We suggest that in future health-related crises greater emphasis should be placed on ensuring the maintenance of maternal well-being to prevent possible subsequent negative effects on the families—and particularly children. Especially in cases of extreme societal restrictions, such as lockdowns, mothers should be particularly supported in the additional burdens of increased child care. Furthermore, the present results have shown that parental well-being during the pandemic differed between the four European countries (Norway, Sweden,

Germany, and the United Kingdom). As Sweden stands out with particularly low levels of well-being, further research should be conducted to reveal possible reasons for this difference. A deeper understanding of the broader impact of actions taken by governments in times of crisis on the well-being of vulnerable groups could help prevent negative effects, such as the ones observed during the COVID-19 pandemic, in the future and allow parents and their children to thrive in such challenging times.

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