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ORIGINAL ARTICLE

The Precarity of Progress: Implications of a Shifting Gendered Division of Labor for Relationships and Well-Being as a Function of Country-Level Gender Equality

Alexandra N. Fisher[1] · Michelle K. Ryan[1,2] · Yuan-Hsi Liao[3] · Gosia Mikołajczak[1] · Larisa Riedijk[4] · N. Pontus Leander[5,6] · Georgios Abakoumkin[7] · Jamilah Hanum Abdul Khaiyom[8] · Vjollca Ahmedi[9] · Maximilian Agostini[10,11] · Moshin Atta[12] · Sabahat Cigdem Bagci[13] · Jocelyn J. Bélanger[14] · Edona Berisha Kida[9] · Allan B. I. Bernardo[15] · Phatthanakit Chobthamkit[16] · Hoon-Seok Choi[17] · Mioara Cristea[18] · Kaja Damnjanovic[19] · Ivan Danyliuk[20] · Daniela Di Santo[21] · Karen M. Douglas[22] · Violeta Enea[23] · Gavan J. Fitzsimons[24] · Ángel Gómez[25] · Ben Gützkow[26] · Ali Hamaidia[27] · Mai Helmy[28,29] · Joevarian Hudiyana[30] · Veljko Jovanović[31] · Veljko Jovanović[1] · Anna Kende[32] · Shian-Ling Keng[33] · Tra Thi Thanh Kieu[34] · Yasin Koc[10] · Jannis Kreienkamp[10] · Anton Kurapov[35] · Nóra Anna Lantos[32] · Edward P. Lemay[36] · Adrian Lueders[37] · Najma Iqbal Malik[12] · Kira O. McCabe[38] · Jasmina Mehulić[39] · Erica Molinario[40] · Manuel Moyano[41] · Hayat Muhammad[42] · Hamdi Muluk[43] · Claudia F. Nisa[44] · Boglárka Nyúl[32] · Paul A. O'Keefe[45] · Jose Javier Olivias Osuna[25] · Evgeny Osin[46] · Joonha Park[47] · Gennaro Pica[48] · Antonio Pierro[49] · Jonas Rees[50] · Anne Margit Reitsema[51] · Marika Rullo[52] · Adil Samekin[53] · Birga M. Schumpe[54] · Heyla A. Selim[55] · Michael Vicente Stanton[56] · Eleftheria Tseliou[7] · Michelle R vanDellen[57] · Alexandra Vázquez[25] · Robin Wollast[58] · Victoria Wai-Lan Yeung[59] · Somayeh Zand[60] · Iris Lav Žeželj[61] · Claudia Zúñiga[62]

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Abstract

The onset of the COVID-19 pandemic saw a shift toward a more traditional division of labor–one where women took greater responsibility for household tasks and childcare than men. We tested whether this regressive shift was more acutely perceived and experienced by women in countries with greater gender equality. Cross-cultural longitudinal survey data for women and men ($N = 10{,}238$) was collected weekly during the first few months of the pandemic. Multilevel modelling analyses, based on seven waves of data collection, indicated that a regressive shift was broadly perceived but not uniformly felt. Women and men alike perceived a shift toward a more traditional division of household labor during the first few weeks of the pandemic. However, this perception only undermined women's satisfaction with their personal relationships and subjective mental health if they lived in countries with higher levels of economic gender equality. Among women in countries with lower levels of economic gender equality, the perceived shift predicted higher relationship satisfaction and mental health. There were no such effects among men. Taken together, our results suggest that subjective perceptions of disempowerment, and the gender role norms that underpin them, should be considered when examining the gendered impact of global crisis.

Keywords Gender roles · Gender equality · Division of labor · Interpersonal relationships · Relationship quality · Well being

The global gender gap in the division of household labor has been slowly but steadily narrowing since the 1960s (Bianchi et al., 2012): More women are engaged in paid work outside the home than ever before, and more men are engaged in unpaid domestic work inside the home. However, the onset of the COVID-19 pandemic threatened this progress. Although women and men both increased their time spent on household and care duties, women took on the lion's share of this work, including caring for children and relatives (Carlson et al., 2022; Collins et al., 2021; Waddell et al., 2021). At the same time, women's paid work hours decreased, whereas men's paid work hours remained the same (Collins et al., 2021). The onset of the pandemic, therefore, saw a shift toward a more *traditional division of household labor*, one where men took on greater responsibility for earning an

Extended author information available on the last page of the article

income and women took on greater responsibility for unpaid domestic and care duties.

Past research has examined how inequitable division of labor can undermine relationship quality during a nationwide lockdown (e.g., Waddell et al., 2021). The current research builds on this research in three important ways. First, it examines the link between perceived *change* in the division of household labor from pre-to-post pandemic onset thereby allowing us to examine how perceptions of change relative to normative gender standards within a country shape individual experiences. Second, it extends the focus outcomes to include both relational and psychological well-being. Finally, it examines the role of country-level gender equality.

Taken together, in the current research, we investigate whether the shift, towards a traditional, gendered division of household labor, was more acutely *perceived* and *experienced* among women than men, especially in countries wherein gender equality was more normative, ultimately undermining relationship satisfaction and subjective mental health.

Gendered Division of Household Labor and Implications for Relationships and Well-Being

Across countries, women consistently complete more housework and caring duties than men (Bianchi et al., 2012; Craig & Powell, 2018; United Nations, 2020). Although this inequality in the division of household labor is often discussed in the context of marriage or cohabiting relationships between men and women, the same pattern of inequality exists across age groups and household types (for example, living alone or with family, parents, or roommates; Alberts et al., 2011; Craig et al., 2016; Crouter et al., 2001), suggesting this phenomenon is not unique to cohabiting or married relationships.

Gender inequalities in the division of household labor can have implications for personal relationships and psychological well-being. For women, perceived and objective time spent doing unpaid housework has been linked to reduced relationship quality with family members and romantic partners (Chai & Schieman, 2023; Greenstein, 2009; Schieman et al., 2018; Piovani & Aydiner-Avsar, 2021), likely due to the personal strain and sense of unfairness related to completing the majority of this work (Ciciolla & Luthar, 2019; Greenstein, 2009; Tosun, 2022). Likewise, housework overload has been linked to increased stress, depression, and other common mental health disorders, especially among women (Esteban-Gonzalo et al., 2020; Glass & Fujimoto, 1994; Pinho & de Araújo, 2012). There is also some evidence that men's relationships and mental health similarly suffer when they take on more domestic work or act as primary caregivers within their households (Carlson, 2022; Waddell et al., 2021). Thus, the reviewed research supports a link between completing the lion's share of domestic labor and care work within a household and lower relational and psychological well-being. However, it does not, to our knowledge, provide insight into perceptions of *change* in the division of household labor, nor how these perceptions and their implications may differ across countries with differing norms around gender equality.

The Moderating Role of Economic Gender Equality

Critically, most research on the division of household labor has been conducted in Western or Westernized countries where women and men have increasingly similar economic potential and opportunities and more egalitarian divisions of labor within the home (Cotter et al. 2011; Knight & Brinton, 2017; Kraaykamp, 2012; Van Egmond et al. 2010). There is, however, considerable variability in the extent to which countries have made progress toward economic gender equality, which has been defined as the degree to which women and men have similar levels of economic participation and opportunity within a country (World Economic Forum, 2023). For instance, whereas countries like Iceland have achieved 80% parity in terms of women and men's economic participation and opportunities, other countries like India have only achieved 37% gender parity (World Economic Forum, 2023). Such differences in country-level gender equality necessarily shape gendered experiences within society but also within the home.

For example, in countries with greater economic gender equality, women and men tend to have more similar roles within society and tend to work similar hours outside the home (Kunovich & Kunovich, 2008). Thus, women in such countries are not only more economically independent from men, but their economic independence translates into greater bargaining power and less time completing housework and care duties within their households (Fuwa, 2004; Kunovich & Kunovich, 2008; Stier & Lewin-Epstein, 2007). Individual gender role attitudes within these countries also tend to be more egalitarian such that men are generally expected to share more equally in household tasks and childrearing (Fetterolf & Rudman, 2014; Kunovich & Kunovich, 2008; Poortman & Van Der Lippe, 2009), though these levels never quite reach that of women (World Economic Forum, 2023). More egalitarian countries are also more likely to offer public and private services and support, such as out of home childcare, that households can access to offset some of the domestic and caring burden that would otherwise fall to women (Crompton & Lyonette, 2006; Olsson et al., 2023).

Thus, women in these countries tend to do less domestic and care work, on average, compared to women in countries with lower levels of economic gender equality, in part because men in these countries tend to do more housework and in part because of the outsourcing of households' domestic and caring responsibilities to external support and services facilitates women's economic participation. Ultimately, then, in many ways, women and men's goals, roles, and expectations within such countries have become more similar and more egalitarian.

With the onset of the pandemic, however, domestic and caregiving responsibilities (e.g., childcare and homeschooling) increased at the same time that many of these external supports and services within more egalitarian countries disappeared (United Nations, 2020). Despite having similar economic and work responsibilities as men, it was largely women who increased their time spent completing household tasks and taking care of family members while their male counterparts remained relatively unencumbered (Carlson et al., 2022; Collins et al., 2021; Waddell et al., 2021; World Economic Forum, 2020). In this way, egalitarian divisions of household labor gave way to a more traditional division—a shift which may have been perceived as particularly unwelcome, and disempowering, by women in egalitarian countries. In countries with traditional gender roles, a regression may not be as detrimental if it fits with cultural norms of traditional gender roles. Indeed, research on gendered self-regulation demonstrates that people derive positive affect and well-being from living up to gendered standards whereas failing to live up to these standards can lead to suffering (Witt & Wood, 2010).

In egalitarian countries, however, the cultural norms of gender equality – both at work and in the division of household labor – may have made women's increasing domestic contributions relative to men difficult to reconcile (Jansen et al., 2016). Women in such egalitarian countries may experience symptoms of disempowerment or deprivation in the form of compromised relationship quality and psychological well-being (Witt & Wood, 2010). Feeling unfairly burdened with household labor has been linked to lower relationship quality with family members, children, and romantic partners as well as increased distress and depression (Claffey & Mickelson, 2009; Cunha & Atalaia, 2019; Dew & Wilcox, 2011; Glass & Fujimoto, 1994; Greenstein, 2009; Lavee & Katz, 2002; Mikula et al., 2012; Milkie et al., 2002; United Nations, 2020). Moreover, past research shows that women's relationship quality and well-being tend to be more responsive to perceived inequalities in their division of household labor, probably because such inequalities tend to disfavor them (Crompton et al., 2005; Fuwa, 2004; Mikula, 1998; Milkie et al., 2002; United Nations, 2020; Waddell et al., 2021). Thus, we expect that, in egalitarian countries, women's personal relationship satisfaction and subjective mental health will be worse to the extent that they perceive that their household division of labor has shifted to become more traditional (indicating a regression from current gender equality norms; Witt & Wood, 2010).

Less is known, however, about how women in less egalitarian countries will respond to perceived shifts in their household division of labor. In countries with lower levels of gender equality, women and men tend to have more differentiated roles that reinforce inequalities between women and men (Vink et al., 2022b). Indeed, economic gender equality is inversely related to the amount of time women spend engaged in unpaid domestic labor (Ferrant et al., 2014; World Economic Forum, 2020). Although women in such countries may also work outside the home to support their households, their work is often less secure and undervalued compared to that of men (United Nations, 2020). In contrast, men's work tends to be more highly valued and highly paid. Accordingly, it tends to be more normative for men to take primary responsibility for earning the household and for women to take primary responsibility for household tasks and care duties.

As a result, individual women and men are also more likely to personally endorse a traditional division of labor within their households (Kunovich & Kunovich, 2008). In this way, a shift toward an increasingly traditional division of labor, if perceived, may have been considered more economically justifiable given women's relatively lower economic potential compared to men. It may also have been considered more normative and therefore less disruptive to relationship satisfaction and well-being (Jansen et al., 2016; Witt & Wood, 2010). So, although the pandemic may have also increased the time that women in less egalitarian countries spent on domestic and care duties, it may not have been experienced as being as disempowering considering the gendered and economic realities in these countries are more conducive toward a traditional division of labor.

Finally, although men may have also perceived a shift toward a more traditional division of labor (Carlson et al., 2022; Collins et al., 2021), past research indicates that the shift is unlikely to undermine men's relationship satisfaction or mental health to the same extent as women (Waddell et al., 2021), perhaps because they are less sensitive to norms around the division of labor within their households.

The Current Research

The onset of the COVID-19 pandemic provided a rare opportunity to examine the subjective experience of shifting division of labor and its implications for gender inequalities in relationship satisfaction and mental health on a global scale. Although gender is not binary, our research focuses specifically on women and men to shine a light on the ways

in which traditional, binary expectations around gender and household roles shape these outcomes. We use cross-cultural longitudinal data collected across 7 time points from 115 countries. Data was collected between March 2020—when COVID-19 was first classified as pandemic—and November 2020—eight months into the pandemic, enabling us to capture a broader range of early pandemic experiences across countries. At each time point, participants were asked to what extent their division of household labor had become more or less traditional since the onset of the pandemic, how satisfied they were with their personal relationships, and the quality of their mental health.

Whereas gendered division of labor itself has been well-studied (e.g., Braun et al., 2008; Claffey & Mickelson, 2009), few studies have linked subjective shifts in the division of household labor, and its relational and psychological consequences, to objective country-level data such as the level of economic gender equality within a country. By linking these processes, our research sheds light on how individual-level perceptions of, and responses to, changing gender roles are informed by the broader socio-economic context. In doing so, this research reveals the precarity of progress toward gender equality within the home and how normative gendered expectations within a culture can feed into and deepen existing gender inequalities in interpersonal relationships and psychological well-being.

We hypothesize the following:

H1: The division of household labor will be perceived as having become more traditional during the initial months of the COVID-19 pandemic.

H2: Such a perceived shift toward a more traditional division of labor will be negatively associated with women's (but not necessarily men's) personal relationship satisfaction and mental health.

H3: This pattern, predicted in H2, will be more pronounced for women in countries where women and men are more similar in terms of their economic opportunities and potential (Fuwa, 2004; Jansen et al., 2016; Witt & Wood, 2010).

Method

Participants and Procedure

Data were acquired from the PsyCorona research group (Agostini et al., 2022) and the World Economic Forum (2020) Global Gender Gap Index. Participants were from 115 countries, including large ($n > 1{,}000$) samples from 25 countries (Australia, Argentina, Brazil, Canada, China, Egypt, France, Germany, Greece, Indonesia, Italy, Japan, the Netherlands, Philippines, Romania, Russia, Saudi Arabia, Serbia, South Africa, South Korea, Spain, Turkey, Ukraine, United Kingdom, and the United States). This sample was a convenience sample. Participants were initially recruited online via Qualtrics' panel management service to take part in a cross-sectional study. All participants completed the initial baseline survey, which served as a platform for inviting participants to a subsequent longitudinal study. The subset of participants who agreed to participate in the (optional) longitudinal follow-ups were re-contacted via email weekly for follow-up waves at 1-week intervals. Initial participants were also given the option to repost the survey on their social media account as a form of snowball sampling. The study was approved by the Ethics Committees of the University of Groningen (grant no. PSY-1920-S-0390) and New York University Abu Dhabi (grant no. HRPP-2020–42). Hypotheses and analysis plans were registered in advance with the PsyCorona administrators on December 22, 2020. See the online supplements for details (https://osf.io/x3rb9/).

The analysis included seven time points (1, 6, 12, 13, 14, 15, and 16) of data that were collected weekly between March and November 2020 because those time points included the relevant measures. Our sample consisted of 10,348 participants (61.47% women, 38.03% men, and 0.5% other) who completed at least one of the seven time points of data collection. Power calculations for multilevel models of this nature are complex, however, according to Scherbaum and Ferreter (2009) and Lee and Hong (2021), the sample size at Level 1 ($N = 7$ time points), Level 2 ($N = 10,238$ participants), and Level 3 ($N = 115$–108 countries) should provide adequate power (1.00) to detect our cross-level interactions.

Measures

For the purposes of this research, we used a subset of measures included in the larger dataset. The full codebook and data are available on the Open Science Framework (https://osf.io/qhyue/), whereas the analytic scripts and supplemental analyses for this study are available in the online supplements (https://osf.io/x3rb9/). Single item measures were used to encourage the recruitment of larger samples and discourage longitudinal attrition. The survey was made available in 30 languages, including but not limited to English, Spanish, Russian, Korean, and Arabic. All measures were translated (and back-translated or checked by other translators) by native speakers on the original research team.

Perceived Shift in Division of Household Labor

At each wave, participants were asked to respond to the statement, "Households can divide their labor in different ways. Traditionally, men took more responsibility for earning an income, whereas women took more responsibility

for domestic work (childcare, elderly care, cooking, and cleaning). Compared to before the coronavirus epidemic, the division of labor in my household has become…" using a 5-point scale (-2 = *Much less traditional*, -1 = *Somewhat less traditional*, 0 = *It remained about the same*, 1 = *Somewhat more traditional*, 2 = *Much more traditional*). Single-item measures of this nature are effective when the construct is conceptually narrow and when the phrasing of the question closely reflects the construct definition as in this case where the item assesses exactly what we intended to measure (e.g., high content validity) and where arbitrary re-wording of the question into multiple items could otherwise lead to construct contamination (Colquitt et al., 2019; Fuchs & Diamantopoulos, 2009; Matthews et al., 2022).

Personal Relationship Satisfaction

At each wave, participants were asked, "In the last week, how satisfied were you with your personal relationships?" on a scale from 1 (*Extremely unsatisfied*) to 10 (*Extremely satisfied*). Single-item measures of relationship satisfaction are commonly used and have been found to perform well (Niehuis et al., 2022).

Subjective Mental Health

At each wave, participants were asked, on a scale from 1 (*Terrible*) to 10 (*Excellent*), "How is your current mental health?"The use of a global self-assessment was deemed best given the circumstances – access to professional mental health support may have been unevenly distributed during the early pandemic period. Single-item measures of subjective mental health are commonly used in health research and have been found to correlate with multi-item measures of mental health (Ahmad et al., 2014; Stubbs & Achat, 2023).

Demographic Survey

At baseline, participants reported their gender, age, highest level of education, political orientation, and country of residence (see full codebook for details [https://osf.io/qhyue/]). For gender, participants were asked "What is your gender" to which they could respond "female," "male," or "other." We excluded participants who indicated their gender was "other" ($N = 316$; 0.5%) from our analyses because our hypotheses are based on traditional and binary divisions of labor, and LGBTQ + people typically do not ascribe to traditional gender roles (e.g., Goldberg, 2013). However, because it is important not to summarily exclude non-binary participants, we present some supplemental analyses for these participants in the online supplements (https://osf.io/x3rb9/).

Country-Level Economic Gender Equality

We used scores from the Economic Participation and Opportunity subindex of the Global Gender Gap Index 2020, which measures economic gender parity on a scale from 0 (*0% economic gender parity*) to 1 (*complete [100%] economic gender parity*) (World Economic Forum, 2020). We were able to match economic gender gap scores for 108 of 115 countries in our sample. In 2020, the global average economic gender equality score was .58 whereas the average economic gender equality score in our sample was .68 ($SD = .10$). The lowest score in our sample was .20 (Iran) whereas the highest score was .85 (Benin).

Analytic Approach

We used the *nlme* (Pinheiro et al., 2022) multilevel modeling package in *R* (R Core Team, 2023) to test our hypotheses. In each of the models that follow, we used full maximum likelihood estimation, which uses all of the available information to estimate the model parameters (Raudenbush & Bryk, 2002) and allows for missing data at Level 1 but not at Level 2 or Level 3. Cases with completely missing data at Level 1 are dropped during analysis using list-wise deletion. The sample size for each analysis necessarily varies depending on the amount of information available.

Given the longitudinal nature of the data, time was centered such that 0 reflects participant scores at Time 1, with each successive time point numbered sequentially up to the final time point, Time 6. Moreover, because time (Level 1) was nested within participants (Level 2) and within country (Level 3), we include random intercepts and random slopes for time nested within individual and within country to account for variability in starting points and trends across countries in perceptions of shifting division of labor over time. We also tested for both linear and quadratic effects of time, which allowed us to more accurately model change during the first few months of the pandemic. Subsequent models examined the associations between shifting division of household labor, gender, and country-level economic gender equality and our respective outcome variables, relationship satisfaction or mental health. In these models, our predictor variables are modeled as fixed effects which are common to all clusters (Finch et al., 2019), but we specify random intercepts for individuals nested within countries to account for possible variation across individuals and countries.

Upon a significant interaction, we examined the simple effects using the simple_slopes() function in the reghelper package (Hughes & Beiner, 2022). Finally, for ease of interpretation and because relevant covariates were not always measured at each time point, we report models without the inclusion of demographic or country-level covariates

variables. Results of models with individual-level covariates (e.g., age, education, financial strain) and country-level covariates (e.g., confirmed COVID cases) can be found in the online supplements (https://osf.io/x3rb9/).

Results

Perceived Shifts in the Division of Household Labor

We tested our first hypothesis that the division of household labor would be perceived as becoming more traditional since the onset of the pandemic. Our initial model, predicting perceived change in the division of household labor over time, with time modeled with both linear and quadradic effects, revealed a significant linear effect of time, $b = .03$, $SE_b = .010$, $t(14589) = 3.25$, $p = .001$, indicating that the division of household labor was initially perceived as becoming more traditional. However, this linear effect was qualified by a significant quadradic effect, $b = -.003$, $SE_b = .001$, $t(14589) = -2.57$, $p = .010$, which suggested that the division of household labor was perceived as having become more traditional early in the pandemic, until around August 2020 (time point 4), when this perceived shift leveled off (see Fig. 1). This association was not moderated by participant gender, $b = -.003$, $SE_b = .003$, $t(14523) = -1.12$, $p = .263$, suggesting that women and men did not differ in their perception of shifting household division of labor. This quadratic effect of time was also not moderated by economic gender equality at the country level, $b = .01$, $SE_b = .02$, $t(14525) = 0.58$, $p = .560$, or the interaction between participant's gender and economic gender equality, $b = -.05$, $SE_b = .05$, $t(14457) = -1.10$, $p = .272$, suggesting that women and men perceived a similar shift in the division of household labor during the early months of the pandemic regardless of the level of economic gender equality within their country.

Implications for Personal Relationship Satisfaction

Next, we examined the implications of perceived shifts in the division of household labor for personal relationship satisfaction. At each time point, participants were asked how their division of household labor had changed since the onset of the pandemic. Essentially, then, participants' responses to this question were always anchored to the same pre-pandemic reference point. Therefore, to test H2 and H3, we examined the association between perceived change in the division of household labor since pandemic onset and the

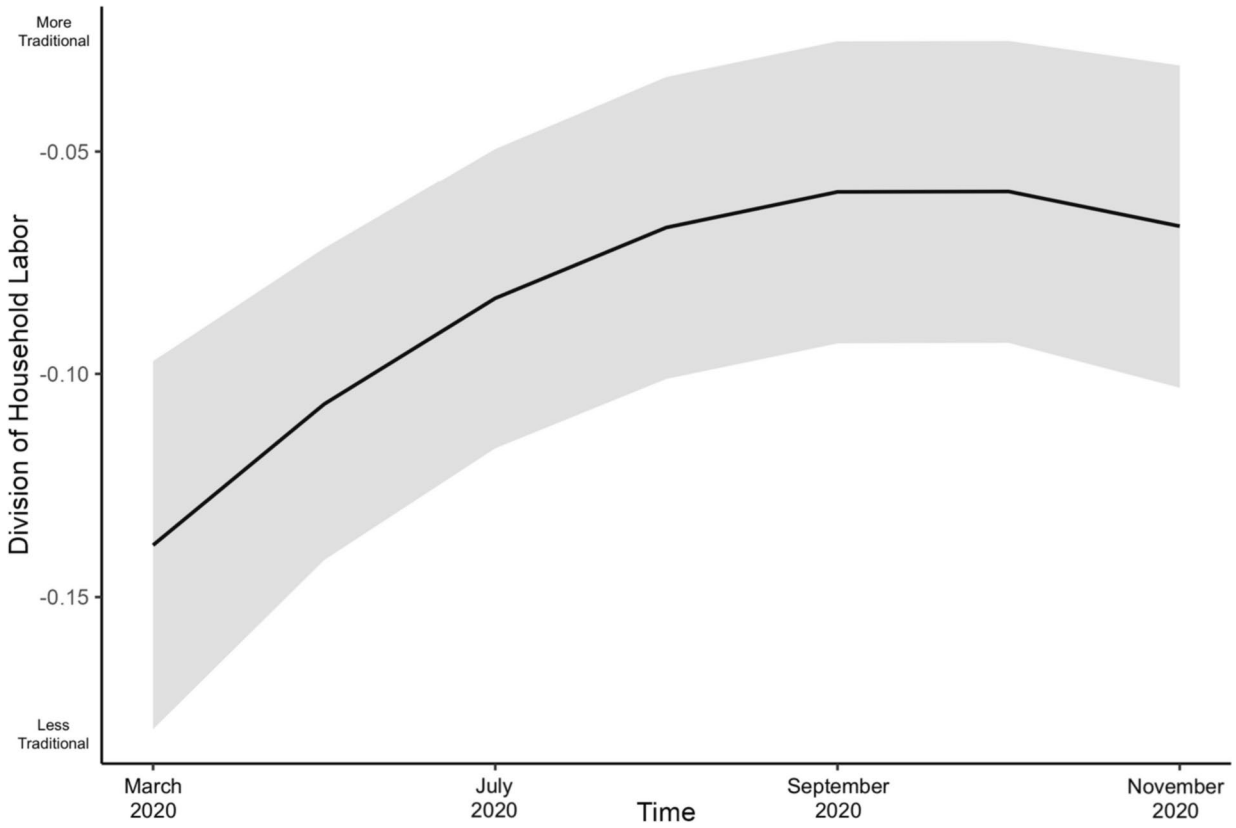


Fig. 1 Division of Household Labor Modeled as a Function of (Quadratic) Time in Study

corresponding change in personal relationship satisfaction, while also modeling this association as a function of gender and economic gender equality at the country level. To control for any time-based trends, we included linear and quadratic time variables as covariates, and then added division of household labor, gender, and economic gender equality (grand mean centered), their two-way interactions, and the three-way interaction between gender, division of household labor, and economic gender equality into a model predicting personal relationship satisfaction (Table 1).

Results revealed a significant main effect of gender such that men reported higher personal relationship satisfaction than women at baseline. There was also a significant two-way interaction between perceived change in the division of household labor and economic gender equality as well as between perceived change in the division of household labor and gender. However, these two-way interactions were qualified by a significant three-way interaction between perceived change in division of household labor, gender, and economic gender equality (see Fig. 2).

Decomposing this three-way interaction by gender revealed a significant interaction between shifting division of household labor and country-level economic gender equality for women, $b = -1.13$, $SE_b = 0.33$, $t(9642) = -3.44$, $p < .001$. For women in countries with higher levels of economic gender equality (+1SD above the mean), a perceived shift toward a more traditional division of labor was associated with lower personal relationship satisfaction, $b = -0.13$, $SE_b = 0.04$, $t(9642) = -3.67$, $p < .001$. The opposite was true for women in countries with lower levels of economic gender equality (-1 SD below the mean), where a perceived shift toward a more traditional division of labor was associated with higher personal relationship satisfaction, $b = 0.10$, $SE_b = 0.04$, $t(9642) = 2.25$, $p = .024$. In contrast, for men, there was no interaction between division of labor and economic gender equality, $b = .44$, $SE_b = 0.41$, $t(4813) = 1.09$, $p = .277$.

Implications for Subjective Mental Health

We repeated the same analysis for self-reported mental health (see Table 2). Once again, results revealed a significant main effect of gender such that men tended to report better mental health than women at baseline. There was a main effect of linear time indicating that mental health significantly worsened over time. There was also a significant two-way interaction between perceived change in the division of household labor and economic gender equality as well as between perceived change in the division of household labor and gender. However, these two-way interactions were qualified by a significant three-way interaction between perceived change in the division of household labor, gender, and economic gender equality (see Fig. 3).

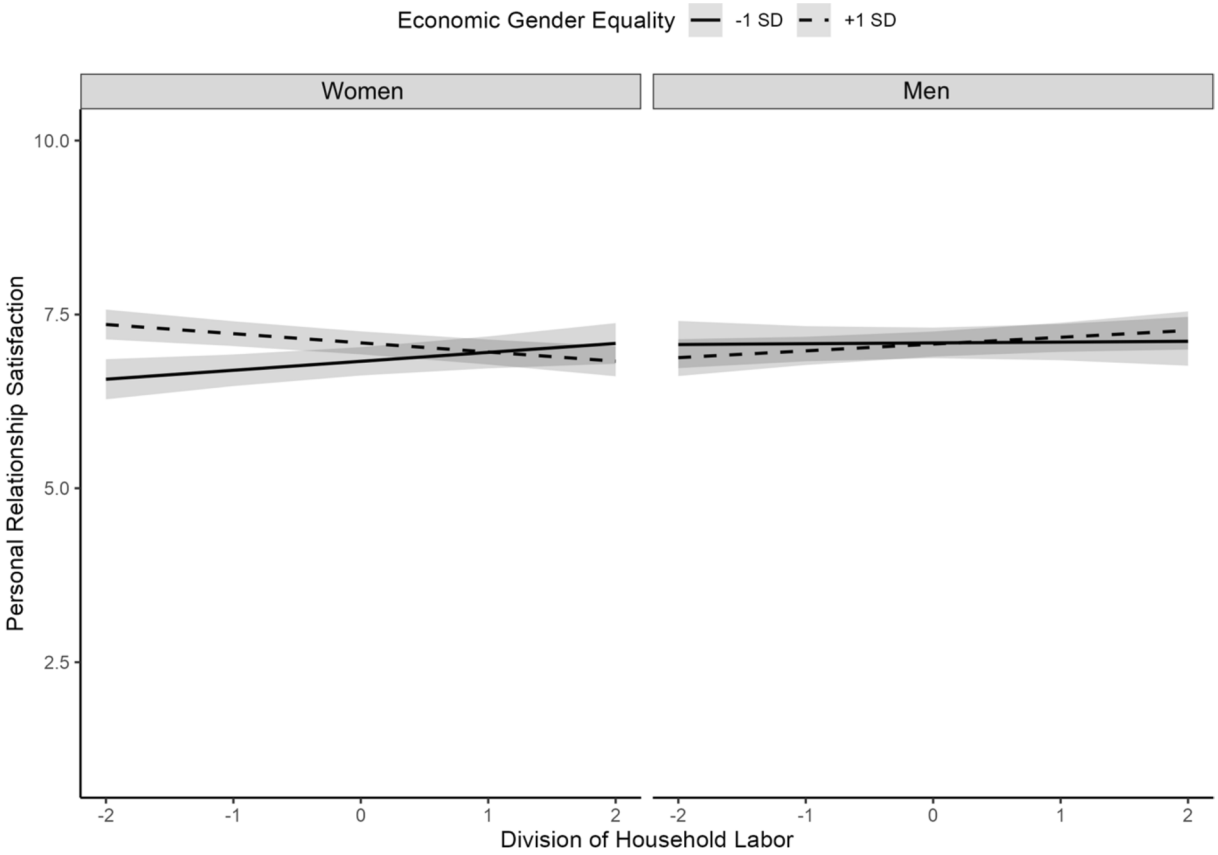
Decomposing this three-way interaction by gender revealed a significant interaction between shifting division of household labor and country-level gender equality for women, $b = -0.92$, $SE_b = 0.31$, $t(9642) = -2.93$, $p = .003$. For women in countries with higher levels of economic gender equality (+1 *SD* above the mean), a perceived shift toward a more traditional division of labor was associated with worse mental health, $b = -0.09$, $SE_b = 0.03$, $t(9642) = -2.57$, $p = .010$. The opposite was true for women in countries with

Table 1 Personal Relationship Satisfaction as a Function of Perceived Division of Household Labor, Gender, Economic Gender Equality (EcGE), and their Interaction

	Personal Relationship Satisfaction				
Fixed Effects	*b*	SE_b	*t*	*df*	*95% CI*[a]
Intercept	7.07***	0.06	112.82	14457	6.95, 7.19
Time	-0.01	0.02	-0.49	14457	-0.05, 0.03
Time^2	-0.004	0.003	-1.25	14457	-0.01, 0.002
Division of household labor	-0.02	0.02	-0.80	14457	-0.06, 0.02
Gender	.10*	0.05	2.27	8786	0.01, 0.19
EcGE	1.10	0.64	1.72	83	-0.17, 2.38
Division of household labor*Gender	.08*	0.04	2.03	14457	0.003, 0.15
Gender*EcGE	-1.17	0.67	-1.74	8786	-2.48, 0.14
Division of household labor*EcGE	-1.12***	0.32	-3.48	14457	-1.75, -0.49
Division of household labor*Gender*EcGE	1.47**	0.53	2.78	14457	0.43, 2.51
Random Effects	***SD***	***95% CI***[a]			
SD (intercept for individual within country)	1.73	1.70, 1.76			
SD (intercept for country)	0.27	0.19, 0.37			
SD (within group)	1.17	1.15, 1.19			
ICC	0.69				

Note. [a]*CI* denotes confidence interval

***$p < .001$, **$p < .01$, *$p < .05$



Note. Shaded area reflects 90% confidence intervals. On the x-axis, values less than zero correspond to a shift toward a less traditional division of household labor whereas values greater than zero correspond to a shift toward a more traditional division of household labor (0 reflects no change)

Fig. 2 The Association Between Perceived Change in the Division of Household Labor and Personal Relationship Satisfaction as a Function of Participant's Gender and Country-Level Economic Gender Equality

lower levels of economic gender equality (-1 *SD* below the mean); for these women, a perceived shift toward a more traditional division of labor was associated with better mental health, $b = 0.10$, $SE_b = 0.04$, $t(9642) = 2.37$, $p = .018$. In contrast, for men, there was once again no interaction between division of household labor and country-level economic gender equality, $b = .45$, $SE_b = 0.37$, $t(4812) = 1.21$, $p = .228$.

Exploratory Analyses

Because maintaining high quality personal relationships is known to be important for mental health and well-being (e.g., Umberson & Montez, 2010), we explored whether the trajectory of mental health varied as a function of personal relationship satisfaction, gender, economic gender equality, and time. This four-way interaction was not significant, $b = 0.10$, SE_b 0.07, $t(16635) = 1.41$, $p = .160$. However, there was a significant three-way interaction between relationship satisfaction, economic gender equality, and time, $b = -0.11$, $SE_b = 0.04$, $t(16635) = -2.62$, $p = .009$. In countries with higher levels of economic gender equality (1 SD above the mean), there were similar rates of decline in mental health for those low (1 SD below the mean), $b = -0.04$, $SE_b = 0.01$, $t(16727) = -3.11$, $p = .002$, and high (+ 1 SD above the mean), $b = -0.05$, $SE_b = 0.01$, $t(16727) = -3.92$, $p < .001$, in personal relationship satisfaction. In contrast, in countries with lower levels of economic gender equality (1 SD below the mean), the steepest declines in mental health were observed for people with low levels of personal relationship satisfaction (1 SD below the mean), $b = -.08$, $SE_b = .015$, $t(16727) = -5.19$, $p < .001$; whereas those with high levels of personal relationship quality (1 SD above the mean) did not experience a significant decline in mental health over time, $b = -.03$, $SE_b = 0.02$, $t(16727) =$—1.78, $p = .075$. See Fig. 4 for mental health over time as a function of relationship satisfaction and economic gender equality.

Table 2 Mental Health as a Function of Perceived Division of Household Labor, Gender, Economic Gender Equality (EcGE) and their Interaction

	Mental Health				
Fixed Effects	*b*	SE_b	*t*	*df*	*95% CI*[a]
Intercept	6.92***	0.07	98.13	14456	6.78, 7.06
Time	-.07**	0.02	-3.25	14456	-0.11, -0.03
Time^2	0.000	0.003	0.15	14456	-0.01, 0.01
Division of household labor	0.004	0.02	0.24	14456	-0.03, 0.04
Gender	.54***	0.05	11.95	8785	0.46, 0.63
EcGE	0.99	0.71	1.40	83	-0.42, 2.41
Division of household labor*Gender	0.01	0.04	0.16	14456	-0.06, 0.07
Gender*EcGE	-1.44*	0.67	-2.16	8785	-2.75, -0.14
Division of household labor*EcGE	-.91**	0.30	-2.98	14456	-1.50, -0.31
Division of household labor*Gender*EcGE	1.40**	0.50	2.80	14456	0.42, 2.39
Random Effects	***SD***	***95% CI***[a]			
SD (intercept for individual within country)	1.73	1.70, 1.77			
SD (intercept for country)	0.35	0.27, 0.46			
SE (within group)	1.10	1.08, 1.11			
ICC	0.71				

[a] *CI* denotes confidence interval

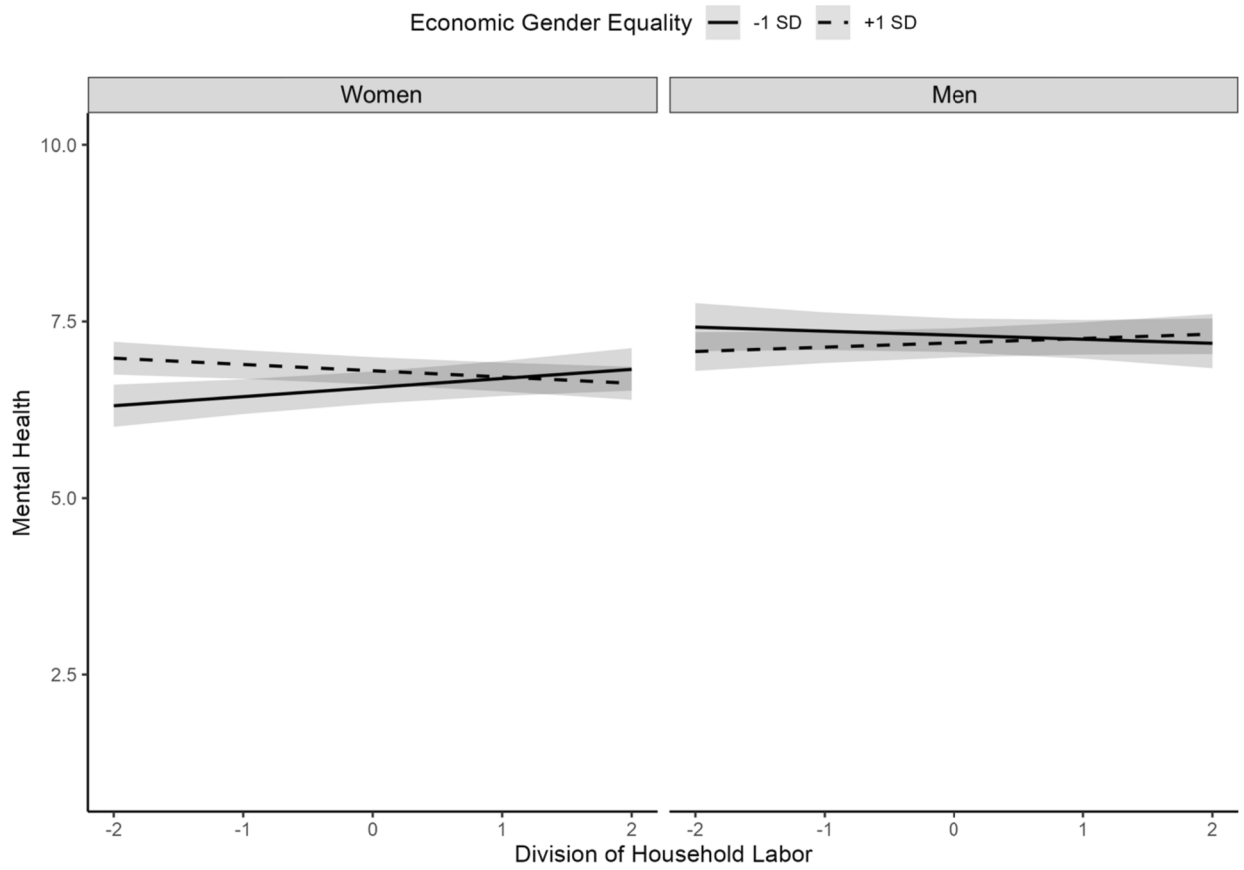
*** $p < .001$, ** $p < .01$, * $p < .05$

Discussion

The current research investigated the impact of perceived shifts in the division of household labor during the global COVID-19 pandemic and its consequences for gender inequalities in relational and mental health. Consistent with H1, division of labor was perceived as becoming increasingly more traditional during the first few months of the pandemic before this perception levelled off. This trend was similar for women and men across countries with varying levels of economic gender equality, signalling a somewhat universal shift in household division of labor during the early pandemic period. This perceived shift in the division of household labor corresponded to changes in personal relationship satisfaction that varied as a function of gender and the level of economic gender equality in the country. Consistent with H2, in countries with high economic gender equality, women reported lower personal relationship satisfaction and mental health when they perceived that the division of labor within their household had become more traditional since the onset of the pandemic. Unexpectedly, however, this same perceived shift corresponded to greater personal relationship satisfaction and better mental health for women in countries with lower levels of economic gender equality. In contrast, and as expected, men's personal relationship satisfaction and mental health were unaffected by perceived shifts in their division of household labor, regardless of country-level economic gender equality. Thus, H2 and H3 were partially supported.

Together, the results indicate how the broader economic context shapes gender inequalities within the households and personal lives of women and men. In countries where men and women are more similar in terms of their economic potential and opportunities, women's roles have expanded to include work responsibilities as well as caregiving responsibilities while men's uptake of caregiving and domestic responsibilities has been much slower (Vink et al., 2022a; Eagly et al., 2020). Consequently, the disproportionate increase in care and domestic responsibilities associated with the pandemic likely exacerbated women's experiences of role strain and perceptions of inequalities within their households, which in turn, may have eroded women's personal relationship satisfaction and mental health (Waddell et al., 2021). This explanation is consistent with past research which finds that the more hours women engage in paid work, the stronger their perceptions of unfairness in response to increasingly unequal divisions of labor within their households (Braun et al., 2008).

In contrast, a more traditional division of labor was positively associated with women's personal relationship satisfaction and mental health in countries with lower economic gender equality. One possible explanation is related to the uncertainty and economic conditions related to the COVID-19 pandemic. The onset of the pandemic had a disproportionate effect on women's work and earnings, especially in countries where women have less economic potential and are therefore more likely to work in precarious or informal industries (World Economic Forum, 2020). Under these circumstances, it follows that households would benefit from dividing their labor in ways that take advantage of men's



Note. Shaded area reflects 90% confidence intervals. On the x-axis, values less than zero correspond to a shift toward a less traditional division of household labor whereas values greater than zero correspond to a shift toward a more traditional division of household labor (0 reflects no perceived change)

Fig. 3 The Association Between Perceived Change in the Division of Household Labor and Mental Health as a Function of Participant's Gender and Country-Level Economic Gender Equality

greater economic potential. Familiarity in the form of traditional gender roles may have also offered some comfort and stability in the wake of pandemic uncertainty and anxiety (Brescoll et al., 2013; Hennes et al., 2012). Women in such countries may have been happier with their personal relationships to the extent their division of labor prioritized their economic potential and stability as a household as well as conforms to a more traditional and culturally normative exchange of economic and domestic contributions. More cross-cultural research is needed to understand the nuances and mechanisms behind these results.

Our results could also be interpreted in light of research on gendered self-regulation, which proposes that people derive positive affect and self-esteem from abiding by or living up to gender standards and suffer to the extent they feel they are not living up to such standards (Witt & Wood, 2010). In countries with higher levels of gender equality, gender standards are such that women and men are expected to participate equally in the workplace and within the home. Thus, for women in egalitarian countries, a sudden shift toward a more traditional division of labor may have been experienced as a form of disempowerment or deprivation that ultimately compromised their relationships and well-being. The opposite may have been true for women in countries with lower levels of gender equality. For these women, the perceived shift toward a more traditional division of household labor may have brought them into closer alignment with country-level traditional gender norms, ultimately fostering a greater sense of satisfaction with their relationships and mental health.

Finally, given that men are economically advantaged compared to women across the world (e.g., no country in our sample reached parity in economic gender equality), and given the nature of the shift tended to be toward more traditional divisions, it is not surprising that country-level economic gender equality did not significantly impact the

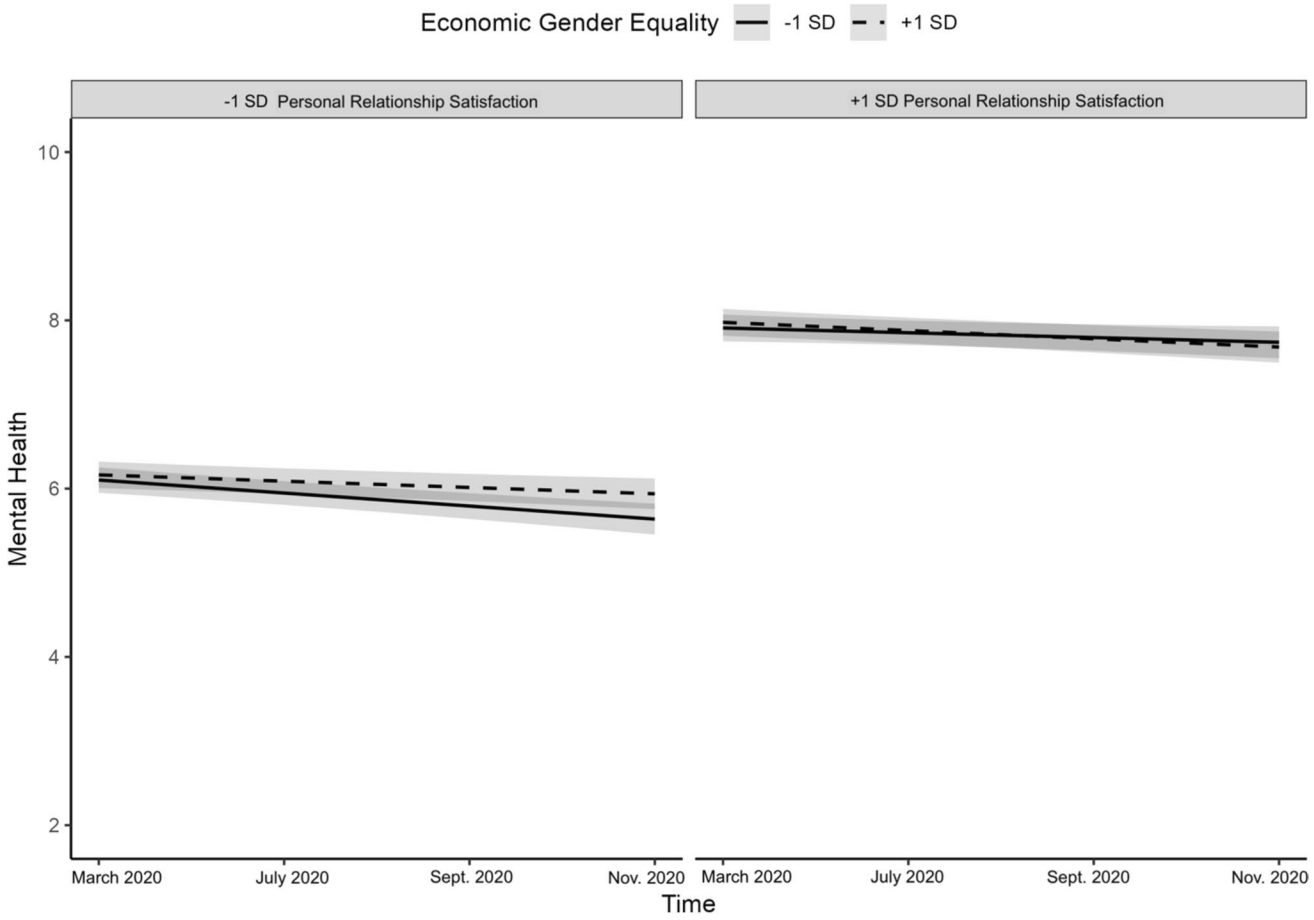


Fig. 4 Exploratory Analyses of Mental Health Over Time as a Function of Personal Relationship Satisfaction and Economic Gender Equality. *Note*. Shaded area reflects 90% confidence intervals

association between men's perceived division of labor and their personal relationship satisfaction or well-being. This finding is consistent with recent research from New Zealand, a country with relatively high gender equality, which found that men's perceptions of their division of household labor were generally unrelated to their relationship satisfaction during the onset of the COVID-19 pandemic (Waddell et al., 2021). This finding is also emblematic of traditional masculine gender role norms whereby men are socially and psychologically rewarded for providing financially for their families and penalized for participating in care work (Croft et al., 2015; Vink et al., 2022a; b). In turn, these norms may discourage men from attending to the balance of their financial versus domestic contributions within a household (Aarntzen et al., 2019). Indeed, that men are unaffected by changing division of household labor is also telling about the nature of gender roles as a means of preserving the existing status quo that favors men's economic freedom and empowerment over that of women.

Limitations and Future Research Directions

Our research is not without its limitations. PsyCorona was a rapid-response research initiative, launched at the onset of a global crisis without a known timeline. Thus, it is important to note that, although participants came from over 100 countries, the survey was not designed to be representative of, nor necessarily generalizable to, the broader global population (see the American Association for Public Opinion Research, 2022). Our results should therefore be interpreted with caution because they are drawn from a non-representative sample. Nonetheless, there are different approaches within psychological research depending on whether the purpose is to describe and generalize a phenomenon to the broader population or whether the purpose is to test the plausibility of a theory as an initial step in a broader program of research. The current research focused on the latter. Thus, rather than comparing participants experiences in different countries to one another in a categorical fashion, we aggregated across participants in different countries to analyze

the association between where participants fall on a continuous index of country-level economic gender equality and their subjective experiences of relational and psychological well-being. Hence, we can only conclude that country-level gender equality is associated with gendered outcomes in personal relationship satisfaction and mental health. Future research should collect representative samples to provide more descriptive and generalizable data on which specific countries show these effects.

Likewise, some of the measures in this study were developed ad hoc to capture events as they unfolded and so, while valuable, may not have been perfectly suited to the longitudinal design. Namely, our measure of the division of household labor was anchored such that, at each time point, it asked about perceptions of shifting division of household labor *since the onset of the pandemic*. Thus, participants may have been thinking about a singular pre-pandemic point of reference at each measurement occasion therefore limiting our ability to examine how perceptions of household division of labor may have compounded over time to affect personal relationship satisfaction and well-being from one timepoint to the next. It may also explain why we did not see any clear time-based trends in the division of household labor on personal relationship satisfaction and mental health. Although our research offers a robust test of the associations between perceived division of labor and relational and psychological well-being independent of time, future research should seek to replicate these findings with a measure of division of household labor that better allows for the examination of the compounding effects of changing division of household labor over time.

Another limitation is that we did not directly assess whether perceived shifts in household division of labor aligned with objective changes in the division of household labor. Although our research used objective, country-level cultural data to predict individual-level subjective experiences of gendered deprivation or disempowerment, future research could contrast objective and subjective shifts against one another to determine if they show the same downstream patterns. For example, subjective experiences of shifting division of labor may correspond to more immediate psychological consequences, as observed in this research, whereas objective shifts in the division of household labor may eventually lead to objective changes in work outcomes, such as advancement and income opportunities, that undermine well-being albeit on a longer timeline. Future research could thus indicate whether subjective measures of disempowerment or deprivation function as an early warning sign, signalling the need for intervention.

Moreover, although our longitudinal and cross-cultural data is rich, it does not lend direct insight into the psychological mechanisms behind some of the gendered and cultural differences we observed. Although previous research suggests that factors such as fairness perceptions and gender role ideology may influence people's relationship satisfaction and well-being outcomes across countries (Fuwa, 2004; Jansen et al., 2016; Pinho & Gaunt, 2021; Vink et al., 2022b), our results are consistent with theorizing on gendered self-regulation (Wood & Eagly, 2012, for a review). In countries with lower economic gender equality, a more traditional division of labor may have been perceived more positively by women to the extent it is more normative and socially sanctioned. Whereas in countries with higher levels of economic gender equality, a traditional division of labor may have been perceived more negatively by women to the extent that it reflected a reversal of progress toward gender equality in the home sphere. Though we cannot know for sure, the opposing responses in women's relationship satisfaction and mental health as a function of economic gender equality suggests that women's economic empowerment within a country may itself deviate from cultural norms, leading some women to appraise a traditional shift within their households in positive terms – as providing a means to live up to such gendered expectations, albeit at a cost to economic empowerment.

Finally, our exploratory analyses supported past research on the importance of social relationships for health and well-being (Proulx et al., 2007; Umberson & Montez, 2010), in that personal relationship satisfaction may have a protective effect on mental health, both in kind and degree. Across gender and countries with varying levels of economic gender equality, those with higher personal relationship quality tended to experience better mental health. For women and men in countries with lower economic gender equality, better personal relationship quality was also associated with smaller or no declines in mental health over time. These findings suggest that inequalities in the division of household labor may contribute to downstream gender inequalities in mental health via their impact on relationship quality. Our findings may speak to cultural differences in how households are situated within communities and how they rely on their social networks for support both in general and during times of crisis. It is possible that women in countries with high levels of economic gender equality may have lacked the necessary social support to buffer against the increasing household burden and emotional impact of the pandemic (Arnberg et al., 2012). Future research should test this possibility.

Practice Implications

Our research has practical implications for public health and policy. Specifically, the findings stress the importance of applying a gendered and social psychological lens to times of crisis and abrupt social change. Too often, gender is an afterthought and is not considered until far too late when inequalities have deepened. Government responses to the

COVID-19 pandemic were no exception. Only twenty percent of COVID-19 response policies during the early stages of the pandemic were gender sensitive (Azcona et al., 2020). Likewise, our findings make a case for the importance of adopting a social psychological lens in matters of public health and policy. Specifically, our results suggests that policymakers and public health officials should consider individuals' psychosocial experiences of relative deprivation and (dis)empowerment related to the division of household labor, in addition to more objective indicators, as key predictors of public health and well-being. Neglecting these considerations may obscure the true impact of disaster and may stand to deepen existing inequalities. Indeed, it also suggests that addressing the broader gender role norms and expectations that underpin these experiences of disempowerment may be a promising point of intervention for policymakers.

Practice professionals may aptly recognize that although this research focused on a global crisis, the same processes could also occur at the micro- or meso-level. When time and mental resources are low – such as in times of crisis, familiar gender stereotypes and scripts are more easily activated (e.g., de Lemus et al., 2018), and more likely to guide individual behavior and outcomes. In this way, traditional gender role scripts may be especially likely to creep in and inform behavior during personal or life changing experiences (e.g., the death of a relative, the birth of a new child). Indeed, in countries where women and men have similar economic potential, traditional notions of gender continue to lurk just below the surface waiting for their opportunity to re-emerge to undermine women's relational and psychological well-being (Bear & Glick, 2017). Households that are aware of this potentiality and plan accordingly may be better equipped to notice and correct for possible regressions to traditional gendered divisions of household labor during times of crisis or change. Conversely, in countries where women and men have less similar economic potential, adherence to traditional gender roles may support women's relational and psychological well-being but may come at a cost to their economic well-being. Thus, practitioners, policymakers, counsellors, and individuals alike should consider the ways in which conforming (or not) to gender role expectations may be conducive to (or at odds with) different facets of well-being, and how women's experiences of well-being are uniquely shaped by their broader socio-economic context.

Conclusion

The onset of the COVID-19 pandemic increased the care and domestic burden placed on women, thereby prompting a shift toward a more traditional, gendered division of labor within many households (United Nations, 2020). In the current research, we investigated whether this shift was more acutely perceived and experienced among women than men, and whether this perception undermined women's relationship satisfaction and mental health particularly in countries where gender quality is more normative. Apparently, a regressive shift was broadly perceived, among men as well as women, but the adverse psychological consequences of this perception were mainly experienced by women who lived in egalitarian countries. Men did not experience the same adverse consequences, and women in countries with lower economic gender reported positive relational and psychological consequences. Not only does this imply that women in egalitarian countries experienced a unique form of disempowerment in the wake of the COVID-19 pandemic but also that women in less egalitarian countries could face social-psychological barriers when seeking a return to a more egalitarian division of household labor. Together, these findings demonstrate the importance of gender role norms and expectations, how fragile gender equality can be in times of crisis, and how susceptible people are to being disempowered by the re-emergence of historical structural inequalities.

Authors' Contribution A.N.F. and M.K.R. conceived of the research questions for the current study. N.P.L., M.K.R. and members of the PsyCorona Collaboration collected the original data. A.N.F. and Y.H.L. collected additional country-level data and analysed the data. A.N.F. wrote the first draft and M.K.R., N.P.L., Y.H.L., G.M., and L.R. provided feedback on subsequent versions of the manuscript. All authors read and approved the final manuscript.

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Materials, Code, and Data Availability The data and codebook on which the findings of this study are based are available at https://dataverse.nl/dataset.xhtml?persistentId=doi:https://doi.org/10.34894/PX5IVZ or https://osf.io/qhyue/. Analytic scripts and supplemental materials for the current study are available at: https://osf.io/x3rb9/

Declarations

Ethical Approval and Consent to Participate The study was approved by the Ethics Committees of the University of Groningen (grant no. PSY-1920-S-0390) and New York University Abu Dhabi (grant no. HRPP-2020–42). All participants provided informed consent electronically.

Competing Interests The authors declare no competing interests.

Data Reuse Disclosure The examination of perceived household division of labor is unique to this report. The mental health item was previously reported in a study of the association between risk perceptions of COVID-19 infection and mental health (Han et al., 2021).

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Authors and Affiliations

Alexandra N. Fisher[1] · Michelle K. Ryan[1,2] · Yuan-Hsi Liao[3] · Gosia Mikołajczak[1] · Larisa Riedijk[4] · N. Pontus Leander[5,6] · Georgios Abakoumkin[7] · Jamilah Hanum Abdul Khaiyom[8] · Vjollca Ahmedi[9] · Maximilian Agostini[10,11] · Moshin Atta[12] · Sabahat Cigdem Bagci[13] · Jocelyn J. Bélanger[14] · Edona Berisha Kida[9] · Allan B. I. Bernardo[15] · Phatthanakit Chobthamkit[16] · Hoon-Seok Choi[17] · Mioara Cristea[18] · Kaja Damnjanovic[19] · Ivan Danyliuk[20] · Daniela Di Santo[21] · Karen M. Douglas[22] · Violeta Enea[23] · Gavan J. Fitzsimons[24] · Ángel Gómez[25] · Ben Gützkow[26] · Ali Hamaidia[27] · Mai Helmy[28,29] · Joevarian Hudiyana[30] · Veljko Jovanović[31] · Veljko Jovanović[1] · Anna Kende[32] · Shian-Ling Keng[33] · Tra Thi Thanh Kieu[34] · Yasin Koc[10] · Jannis Kreienkamp[10] · Anton Kurapov[35] · Nóra Anna Lantos[32] · Edward P. Lemay[36] · Adrian Lueders[37] · Najma Iqbal Malik[12] · Kira O. McCabe[38] · Jasmina Mehulić[39] · Erica Molinario[40] · Manuel Moyano[41] · Hayat Muhammad[42] · Hamdi Muluk[43] · Claudia F. Nisa[44] · Boglárka Nyúl[32] · Paul A. O'Keefe[45] · Jose Javier Olivias Osuna[25] · Evgeny Osin[46] · Joonha Park[47] · Gennaro Pica[48] · Antonio Pierro[49] · Jonas Rees[50] · Anne Margit Reitsema[51] · Marika Rullo[52] · Adil Samekin[53] · Birga M. Schumpe[54] · Heyla A. Selim[55] · Michael Vicente Stanton[56] · Eleftheria Tseliou[7] · Michelle R vanDellen[57] · Alexandra Vázquez[25] · Robin Wollast[58] · Victoria Wai-Lan Yeung[59] · Somayeh Zand[60] · Iris Lav Žeželj[61] · Claudia Zúñiga[62]

✉ Alexandra N. Fisher
Alexandra.fisher@anu.edu.au

[1] Global Institute for Women's Leadership, The Australian National University, Beryl Rawson Building, 13 Ellery Crescent, Acton, ACT 2601, Australia

[2] Faculty of Economics and Business, University of Groningen, Groningen, Netherlands

[3] Department of Psychology, University of Exeter, Exeter, England

[4] Social, Health, and Organizational Psychology, Utrecht University, Utrecht, Netherlands

[5] Center for Peace and Conflict Studies, Wayne State University, Detroit, USA

[6] Department of Psychology, University of Groningen, Groningen, Netherlands

[7] University of Thessaly, Volos, Greece

[8] International Islamic University Malaysia, Selangor, Malaysia

[9] University of Pristine, Prishtina, Kosovo

[10] University of Groningen, Groningen, Netherlands

[11] Wayne State University, 42 W Warren Ave, Detroit, MI 48202, United States

[12] University of Sargodha, Sargodha, Punjab 40100, Pakistan

[13] Sabanci University, İstanbul, Türkiye

[14] Carnegie Mellon University Qatar, Ar-Rayyan, Qatar

[15] De La Salle University, Manila, Metro Manila, Philippines

[16] Thammasat University Rangsit Center, 99 Moo 18 Paholyothin Road, Klong Nueng, Klong Luang, Pathumthani 12121, Thailand

[17] Sungkyunkwan University, 25-2 Seonggyungwan-ro, Seoul, South Korea

[18] Heriot Watt University, Edinburgh EH14 4AS, United Kingdom

[19] University of Belgrade, Beograd, Serbia

[20] Taras Shevchenko National University of Kyiv, Volodymyrska St, Kyiv, Ukraine

[21] University of Pisa, Pisa 56126, Italy

[22] University of Kent, Canterbury CT2 7NZ, United Kingdom

[23] Alexandru Ion Cuza University, Bulevardul Carol I 11, Iași 700506, Romania

[24] Duke University, Durham, NC 27708, United States

[25] Universidad Nacional de Educación a Distancia, Madrid, Spain

[26] University of Groningen, Groningen, Netherlands

[27] Setif 2 University, Setif, Algeria

[28] Sultan Qaboos University, Muscat, Oman

[29] Menoufia University, Shibin el Kom 6131567, Egypt

[30] Universitas Indonesia, Kota Depok 16424, Indonesia

[31] University of Novi Sad, Dr Zorana Đinđića 2, Novi Sad 21000, Serbia

[32] Department of Social Psychology, ELTE Eötvös Loránd University, Egyetem tér 1-3, Budapest 1053, Hungary

[33] Department of Psychology, School of Medical and Life Sciences, Sunway University 5 Jalan University, Bandar Sunway, Selangor 47500, Malaysia

[34] HCMC University of Education, Thành phố Hồ Chí Minh 720000, Vietnam

[35] University of Salzburg, Kapitelgasse 4/6, Salzburg 5020, Austria

[36] University of Maryland, College Park, MD 20742, United States

[37] University of Hohenheim, Schloß Hohenheim 1, 70599 Stuttgart, Germany

[38] Carleton University, Ottawa, Canada, ON K1S 5B6

[39] University of Zagreb, Ul. Radoslava Cimermana 88, 10000 Zagreb, Croatia

[40] Florida Gulf Coast University, 10501 FGCU Blvd, Fort Myers, FL 33965, United States

[41] University of Cordoba, Córdoba, Spain

[42] University of Peshawar, Rahat Abad, Peshawar, Khyber Pakhtunkhwa 25120, Pakistan

[43] Universitas Indonesia, Jl. Lingkar, Pondok Cina, Kecamatan Beji, Kota Depok, Jawa Barat 16424, Indonesia

[44] Duke Kunshan University, Suzhou, China

[45] University of Exeter Business School, Exeter EX4 4PU, United Kingdom

[46] University of Paris Nanterre, 200 Av. de la Républiqu, Nanterre 92000, France

[47] nucb business school, 1 Chome-3-1 Nishiki, Aichi 460-0003, Japan

[48] University of Camerino, Macerata 62032, Italy

[49] University “La Sapienza” Rome, Roma 00185, Italy

[50] Bielefeld University, Universitätsstraße 25, Bielefeld 33615, Germany

[51] Utrecht University, Heidelberglaan 8, Utrecht 3584 CS, Netherlands

[52] University of Siena, Siena, Italy

[53] School of Liberal Arts, M. Narikbayev KAZGUU University, Astana 010000, Kazakhstan

[54] University of Amsterdam, Amsterdam 1012 WP, Netherlands

[55] King Saud University, Riyadh, Saudi Arabia

[56] California State University, East Bay, 25800 Carlos Bee Blvd, Hayward, CA 94542, United States

[57] University of Georgia, Athens, GA 30602, United States

[58] Université Clermont-Auvergne, 26 Av. Léon Blum, Clermont-Ferrand 63000, France

[59] Lingnan University, 8 Castle Peak Rd, Tuen Mun, Hong Kong

[60] University of Milano-Bicocca, Milan 20126, Italy

[61] University of Belgrade, Studentski trg 1, Beograd, Serbia

[62] Universidad de Chile, Av. Libertador Bernardo O’Higgins 1058, Santiago 8330111, Chile