# Managing a Household During a Pandemic: Cognitive Labor and Parents' Psychological Well-Being

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**Managing a Household During a Pandemic:**
**Cognitive Labor and Parents' Psychological Well-Being**


## ABSTRACT

Rising domestic burdens for mothers fueled concerns that the COVID-19 pandemic exacerbated gender inequalities in well-being. Yet, survey research has not considered whether and how cognitive labor – planning, organizing, and monitoring family needs – contributed to gendered health disparities during the pandemic. Using data from the Study on Parents' Divisions of Labor during COVID-19 (SPDLC) and a stress process perspective, we examine the association between cognitive labor and parents' psychological well-being, and whether this association (a) differs between mothers and fathers, and (b) is moderated by employment status and telecommuting. Mothers performed more cognitive labor during the pandemic than fathers, and cognitive labor was negatively associated with mothers' psychological well-being – particularly for mothers who never or exclusively telecommuted. Mothers' psychological well-being was higher when fathers did more cognitive labor, especially among mothers who worked outside the home. Overall, cognitive labor appears to be another stressor that contributed to increased gender inequality.

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In addition to millions of deaths and long-term illness, the COVID-19 pandemic has had severe consequences for Americans' psychological well-being. Reports of depression and anxiety have tripled in the US since the start of the pandemic (Cai et al. 2021). By Fall 2020, one-quarter of adults were clinically depressed and 35% suffered from severe anxiety (Thomeer 2022). The effects of the pandemic on psychological well-being have also been uneven; racial/ethnic minorities experienced the largest declines in mental health (Thomeer, Moody, and Yahirun 2022), and parents – mothers in particular – also experienced large declines in mental health (Montazer et al. 2022; Zamarro and Prados 2021).

One primary factor that has contributed to declines in parents' psychological well-being during the pandemic is dramatic increases in domestic workloads (Calarco et al. 2020; Lyttelton, Zang, and Musick 2022; Montazer et al. 2022; Zamarro and Prados 2021). Research on increased domestic labor, and how mothers disproportionately shouldered this labor, is widespread (for review see Yavorsky, Qian, & Sargent 2021), as is pre-pandemic research on the gendered division of domestic labor and parents' psychological well-being (Bird 1999; Fillo et al. 2015; Glass and Fujimoto 1994; Shockley and Allen 2018; Ross, Mirowsky, and Huber 1983). Yet, research, both before and during the pandemic, overwhelmingly examines the division of *physical* housework and childcare tasks (e.g., cooking; cleaning; reading to children) while largely ignoring cognitive labor.

Cognitive labor refers to the anticipating, organizing, managing, evaluating, and decision-making tasks of housework and childcare (Coltrane 1996; Daminger 2019; Dean, Churchill, and Ruppanner 2022; Mederer 1993). Cognitive labor is essential to family functioning, yet most studies on cognitive labor within families are based on in-depth interview or ethnographic data,

and the association between cognitive labor and psychological well-being is not well understood (Daminger 2019; Dean et al. 2022). Because caring for loved ones is never "finished", and parents can always think about family needs (Dean et al. 2022; Robertson et al. 2019), cognitive labor is an unending and unbounded activity which may be experienced as a stressor that contributes to greater stress and lower well-being. Moreover, cognitive labor may have been a particularly acute stressor during the COVID-19 pandemic. During the pandemic, parents not only had to monitor and adapt to the health threat of COVID-19, but they also had to rethink domestic arrangements, revise household schedules, and troubleshoot their children's online learning. Thus, cognitive labor may act as both a chronic (given its never-ending nature) and an anticipatory stressor (as parents actively planned to avoid exposure to the virus, etc.) linked to declines in psychological well-being during the pandemic (Pearlin and Bierman 2013). The negative association between cognitive labor and psychological well-being may be particularly pronounced for mothers; gender and motherhood norms emphasize mothers' primary responsibility for these tasks (Calarco et al. 2020), which may lead mothers to be more exposed to cognitive labor and more vulnerable to it as a stressor (Simon 2020).

Using large scale, national survey data from the Study on U.S. Parents' Divisions of Labor During COVID-19 (SPDLC; Carlson and Petts 2022a) and a stress process perspective, we examine: (1) whether cognitive labor is associated with parents' perceived stress and depressive symptoms, (2) whether these associations vary for mothers and fathers, and (3) whether these associations are moderated by employment status and telecommuting. We use data collected during the COVID-19 pandemic as the constantly changing conditions made it challenging for parents to plan, anticipate family needs, and make decisions. Moreover, we focus on potential variations by employment and telecommuting given recent evidence that work-

family conflict may explain parents' increased psychological distress during the pandemic (Montazer et al. 2022). Considering whether the association between cognitive labor and psychological well-being varies for mothers and fathers provides new insight into cognitive labor as a stressor and its implication for gender inequality during the pandemic and beyond.

## CONCEPTUAL FRAMEWORK

### Parents' Mental Health During the COVID-19 Pandemic

At the beginning of the COVID-19 pandemic, US parents – particularly parents of school-aged children – exhibited significant increases in psychological distress (Babore et al. 2021; Cai et al. 2021; Montazer et al. 2022; Racine et al. 2021; Zamarro and Prados 2021). There is also evidence of enduring effects; American adults' mental health was substantially poorer at the end of 2020 than in Spring of 2020 (Thomeer 2022) and evidence of long-term effects for adults in other countries (Qian and Fan 2022) indicates that parents' psychological well-being may have continued to decline as the pandemic wore on.

Increases in psychological distress among American parents during the pandemic are likely due in part to increases in role strain stemming from substantial changes in domestic and paid labor (Pearlin 1983). The loss of domestic supports and the closures of daycares and schools resulted in substantial increases in domestic labor (Carlson, Petts, and Pepin 2022), and access to in-person care and school remained restricted through the first year of the pandemic (Carlson and Petts 2022b; Landivar et al. 2021). Indeed, increases in time with children were associated with decreases in well-being among mothers (Babore et al. 2021; Calarco et al. 2020; Lyttelton, Zang, and Musick 2022). Additionally, many parents experienced challenging work circumstances. Unemployment rates rose dramatically (U.S. Bureau of Labor Statistics 2021), which may have contributed to psychological distress (Crayne 2020; Inanc 2018; Lennon and Limonic 2010). For

those remaining employed, stress may have also increased. Essential workers may have experienced role conflict as they struggled with concerns over COVID exposure and managing domestic responsibilities whereas telecommuters may have experienced role conflict due to the blurring of work-home boundaries (Chung 2022; Carlson, Fielding-Singh, Petts, and Williams 2022). Indeed, work-family conflict and guilt fueled increases in psychological distress among working parents during the pandemic, particularly among mothers with intense work pressures (Calarco et al. 2020; Montazer et al. 2022).

**Domestic Labor, Well-Being, and Gender**

Research on parents' psychological well-being during the pandemic has largely focused on mothers compared to fathers, due likely to gender gaps in domestic labor and unemployment during the pandemic (Carlson, Petts, and Pepin2022; Landivar et al. 2020). These gender disparities have likely led to different mental health outcomes for mothers and fathers. Indeed, domestic responsibilities may be negatively associated with mental health. Domestic labor is culturally devalued, less personally fulfilling, and associated with less autonomy and control than paid work (Htun 2022; Reskin 1988; Ross, Mirowsky, and Huber 1983; Mirowsky and Ross 2017). The consequences of domestic labor for mental health may vary by gender given differential task responsibilities. Indeed, fathers are largely free from performing undesirable domestic tasks and, when they do participate, are often involved in the most rewarding ones (Carlson, Miller, and Sassler 2018; McDonnell, Luke, and Short 2019). It is no surprise therefore that fathers report higher well-being than non-fathers whereas the opposite is true for mothers and non-mothers (Nelson-Coffey et al. 2019; Zamarro and Prados 2021).

Despite theoretical reasons to believe that domestic labor is negatively associated with mental health – particularly for mothers – empirical research is mixed. Some studies have found

that increases in unpaid housework and childcare are associated with increases in psychological distress (Bird 1999; Glass and Fujimoto 1994; Kalmijn and Monden 2011; Ross et al. 1983). Others, however, have found no association (Glass and Fujimoto 1994; Goldberg and Perry-Jenkins 2004) or find that the association exists only for women (Ervin et al. 2022; Offer 2014).

The lack of clear findings regarding the association between domestic labor and psychological well-being may be due to the largely exclusive focus on physical domestic tasks. Cognitive labor related to childcare and housework has largely been ignored in mental health research, and this hidden aspect of domestic labor (the planning, monitoring, etc.) may matter substantially for parents' psychological well-being. Additionally, mixed findings regarding the association between domestic labor and psychological well-being may be due to heterogeneity in other factors such as employment (e.g., domestic labor may be more likely to reduce mental health for parents, particularly mothers, who are also employed). Thus, we build on previous literature to consider the association between cognitive labor and psychological well-being, whether this association differs between mothers and fathers, and whether employment and telecommuting status moderate this association.

**The Gendered Nature of Cognitive Labor**

Allison Daminger (2019) defines cognitive labor as work for the family that involves: "(1) anticipating needs; (2) identifying options for meeting those needs; (3) deciding among the options; and (4) monitoring the results" (p. 610). Similarly, Dean and colleagues (2022) define cognitive labor as the "thinking, planning, scheduling, and organizing of family members" (p. 13). Taken together, the concept of cognitive labor is intended to capture all of the backstage work that is needed for a family to function and to ensure that all of the physical domestic labor – or frontstage work – gets completed (Goffman 1959). Cognitive labor expands upon other

terms used to describe these hidden tasks, such as mental labor (Offer 2014; Robertson et al. 2019), mental work (Bass 2015; Meier et al. 2006), and household management (Craig 2006; Hochshild 1989; Mederer 1993; Winkler and Ireland 2009). Yet, cognitive labor moves beyond these concepts to more clearly acknowledge this work as a "distinct dimension of household life with qualities that require unique measurement strategies" (Daminger 2019; p. 611).

Cognitive labor is unique for a number of reasons. In contrast to physical domestic tasks that can be more easily quantified, done at particular times and in specific spaces, and [more] easily observed such as laundry or reading to children, cognitive labor is an unbounded activity that can occur at any time, in any place, and while doing other things (Dean et al. 2022). For example, parents can think about organizing their children's schedule while attending soccer practice. As such, cognitive labor can be a secondary activity that parents may not consciously think about as housework or childcare – despite it being a form of domestic labor (Daminger 2019).

Cognitive labor is also unique because it is never-ending. Physical domestic labor tasks can be completed; when the house is cleaned the task is done (until it needs cleaning again), and when a child is put to bed the task is completed (until the next night). In contrast, cognitive labor is all of the thinking, anticipating, organizing, and decision-making needed to maintain and enhance one's family's well-being (Dean et al. 2022; Robertson et al. 2019). One can never "complete" the task of caring for one's family. These are enduring tasks that must be constantly attended to and monitored (Dean et al. 2022). As such, when viewed from a stress process perspective (Pearlin 1989), cognitive labor may be a chronic stressor that is particularly burdensome (Daminger 2019; Dean et al. 2022; Robertson et al. 2019).

Similar to other forms of domestic labor, cognitive labor is also highly gendered. The cultural ideal of intensive motherhood suggests that mothers should live child-centered lives (Hays 1996), and mothers are held to higher standards in regard to housework and childcare – which likely extends to cognitive labor as well (Doan and Quadlin 2019; Thébaud, Kornrich, and Ruppanner 2021). Indeed, evidence largely suggests that women perform most of the cognitive labor within families, particularly anticipating needs, organizing, and monitoring results of decisions (Bass 2015; Coltrane 1996; Craig 2006; Daminger 2019; Deutsch 1999; Hochschild 1989;Mederer 1993; Offer 2014). Given that mothers continued to spend more time in physical domestic labor during the pandemic than fathers (Carlson et al. 2022; Carlson and Petts 2022b), it is likely that gender gaps in cognitive labor persisted during the pandemic as well.

**Cognitive Labor and Psychological Well-Being**

From a stress process perspective, the qualities of cognitive labor – unbounded, constant, and unending – suggest that it may act as a stressor that is linked to psychological well-being. Specifically, cognitive labor may be considered a chronic stressor due to its pervasive and enduring nature (Pearlin 1989). Similar to arguments made about eldercare (Pearlin et al. 1990), the constant surveillance, monitoring, and organizing involved with cognitive labor may lead to increases in stress and psychological distress (Barnett 1993; Mirowsky and Ross 2017). Moreover, given that anticipating needs is a key aspect of cognitive labor (Daminger 2019), cognitive labor may also act as an anticipatory stressor that heightens parents' risk for experiencing stress and psychological distress (Pearlin and Bierman 2013). The anticipatory nature of cognitive labor may have been particularly challenging during the COVID-19 pandemic as parents may have become overwhelmed from the unexpected amount of managing, adapting, and organizing needed to deal with shifting and unclear conditions. Conversely,

parents' psychological well-being may be higher when their partners share the burden of cognitive labor. Receiving social support from partners sharing these tasks may help to alleviate the chronic strains and anticipatory stress associated with cognitive labor (Pearlin 1989). Consistent with observations of higher well-being among parents who more equally share physical domestic tasks (Bird 1999; Glass and Fujimoto 1994; Kalmijn and Monden 2011; Ross et al. 1983), we expect:

*H1: One's time in (and share of) cognitive labor is positively associated with perceived stress and depressive symptoms, whereas one's partner's time in (and share of) cognitive labor is negatively associated with perceived stress and depressive symptoms.*

The stress process perspective emphasizes that exposure and vulnerability to stressors depends on the structural conditions in which individuals are embedded (Pearlin 1989). Given the importance of gender as a social structure (Risman 2004), we expect that the associations between cognitive labor and psychological well-being may also vary by gender. Similar to other forms of domestic labor (Simon 2020), exposure to stress may be greater for mothers given that they are more engaged in the ongoing and time-consuming aspects of cognitive labor (monitoring, anticipating, and planning) whereas fathers are more likely to be engaged in the more controlling and rewarding aspect of cognitive labor – decision-making (Daminger 2019). As such, mothers may be more likely to experience chronic stress given their disproportionate responsibility for the less bounded and more consistent aspects of cognitive labor. Mothers may also be more vulnerable to the stress associated with cognitive labor. Mothers face greater pressures to successfully perform cognitive tasks due to cultural norms surrounding intensive mothering and domestic responsibilities (Hays 1996; Thébaud et al. 2021). Such pressure may lead to greater stress and psychological distress if tasks are numerous but also of great

importance, like managing children's education during a pandemic. Indeed, emotional labor is stressful for mothers given the cultural salience of motherhood (Simon 2020), and domestic labor contributed to the gender gap in psychological well-being for parents during the pandemic (Etheridge and Spantig 2022; Ruppanner et al. 2021; Xue and McMunn 2021). In contrast, fathers may be both less exposed to cognitive labor and less vulnerable to the negative consequences of cognitive labor given that these tasks are largely seen as mothers' responsibilities. A lack of expectations surrounding fathers' performance of cognitive labor, in addition to their desires to be more engaged at home, may instead lead to mental health benefits for fathers (e.g., receiving praise) who perform cognitive labor.

Some scholars argue that women value cognitive labor as an expression of their concern and care for their family and note that it generates less work-family conflict than physical domestic tasks, because it is [more] fulfilling (Mederer 1993; Meier et al. 2006). Though the appraisal of a condition as desirable certainly shapes its stress potential (Lazarus and Folkman 1984), valuing cognitive labor does not preclude it from also acting as a stressor for mothers. Therefore, we hypothesize:

*H2: The positive associations of one's own time in (and shares of) cognitive labor with perceived stress and depressive symptoms will be stronger for mothers than fathers.*

The association between cognitive labor and psychological well-being may also vary for certain parents based on their roles and statuses (Pearlin 1989). Notably, responsibilities for housework and childcare are more strongly associated with negative mental health outcomes when one is employed (Bird 1999; Ross and Mirowsky 1988). The need to manage multiple role obligations increases the likelihood of exposure to stressors like role conflict, role spillover, and time pressures for working parents with domestic responsibilities (Schieman, Milkie, and Glavin

2009), heightening the risk of experiencing stress and depressive symptoms (Barnett 1993; Coverman 1989; Roxburgh 2004; Schieman, McBrier, and Van Gundy 2003). During the pandemic, the challenges of worrying about and managing shifting responsibilities may be particularly difficult for working parents who are simultaneously dealing with changing employment conditions. Domestic cognitive labor may inhibit parents' ability to effectively perform paid work responsibilities (and vice versa), leading to increased stress and psychological distress (Haupt and Gelbgiser 2022).

The positive association between cognitive labor and psychological distress may be particularly pronounced for employed mothers. Women likely have poorer mental health than men, on average, because they are more likely to have responsibility for domestic labor when employed (Bird 1999; Ross et al. 1983). Since many mothers altered paid work due to heightened domestic responsibilities during the pandemic (Petts, Carlson, and Pepin 2021), those that maintained employment likely faced challenges in fulfilling obligations for both cognitive labor and paid work (Xue and McMunn 2021). Given the high cultural expectations of motherhood, employed mothers may have also felt that they did not spend as much time with children as they should, which could also contribute to greater stress and psychological distress (Milkie, Nomaguchi, and Schieman 2019). Because role conflict was likely greater for employed parents, and mothers may be particularly vulnerable to this conflict given their responsibilities for cognitive labor, we hypothesize:

> *H3: The positive associations of one's time in (and shares of) cognitive labor with perceived stress and depressive symptoms will be stronger for employed than unemployed parents, particularly employed mothers compared to unemployed mothers.*

Among employed parents, work location may also moderate the association between cognitive labor and psychological well-being. Telecommuting increased dramatically in the early months of the pandemic compared to before the pandemic (Brynjolksson et al. 2020) and remains elevated, though lower than its peak in April 2020 (Brenan 2020). On one hand, telecommuting may enable parents to better maintain work-family balance. Working from home reduces commuting time and provides increased flexibility, both of which may provide parents with a greater sense of control and enable parents to meet both domestic and paid work responsibilities with fewer conflicts (Chung 2022). On the other hand, parents may be more likely to think about work and work during their free time when telecommuting (Chung 2022). This tendency to always be thinking about work while also being more exposed to cognitive labor needs while at home may mean that cognitive labor is particularly detrimental for telecommuting parents as parents who are highly engaged in cognitive labor while also working from home may experience greater role conflict. Indeed, there is evidence that the association between work-family conflict and psychological distress is higher among individuals in more autonomous jobs (Schieman et al. 2003). Thus, we hypothesize:

*H4: The positive associations of one's time in (and shares of) cognitive labor with perceived stress and depressive symptoms will be stronger among parents who work from home compared to parents who work outside the home.*

## DATA AND METHODS

### Data

Data for this study come from the Study of U.S. Parents' Divisions of Labor During COVID-19 (SPDLC). Survey data were collected from Prolific, which is an opt-in online panel that has been shown to produce diverse samples and high-quality data (Peer et al. 2017). To date,

three waves of data have been collected: W1 was administered in April 2020, W2 was administered in November 2020, and W3 was administered in October 2021. At each follow-up wave, all previous panelists are invited to participate again, and a new cohort of parents is also recruited to participate (see full details at: Carlson and Petts 2022a). The SPDLC focuses on a sample of partnered parents (at least at the time they enter the study) who reside with a biological child, and the respondent parent reports on themselves and the behaviors of their partner.

Although the SPDLC is a non-probability sample, the user guide describes efforts to increase sample diversity of groups who are often underrepresented in online opt-in panels. Specifically, men, Black parents, parents who did not complete college, and politically conservative parents were oversampled. The W1 sample looks similar to the population of partnered parents residing with a child in nationally representative datasets (e.g., General Social Survey, Current Population Survey, Survey of American Parents) across a number of sociodemographic characteristics such as percentage married, number of children, income, and political ideology. However, non-religious parents and highly educated parents are over-represented, and Hispanic and Asian parents are underrepresented, in the SPDLC. A post-stratification weight was applied to the SPDLC using a raking procedure, so that the sample also matches national estimates of US parents with resident children by parent gender, age, and race/ethnicity; all results are presented using this weight. Additional details about the study, including survey questionnaires and data files, can be found at: https://doi.org/10.3886/E183142V2.

We examine the associations between cognitive labor and psychological well-being using W2 data. We do this for several reasons. First, the cognitive labor questions were first asked at W2 and were not included in W1. Second, cognitive labor tasks were likely especially intense in

2020 – the first year of the pandemic – compared to 2021. In Fall 2020, the availability of in-person school and childcare was still greatly restricted and many occupations remained remote (Landivar et al. 2021). In addition, rising COVID case rates meant frequent disruptions to in-person work and school. By Fall 2021, there were far fewer disruptions to daily living. Use of W2 data also provides us with a larger sample size than if we were to use longitudinal analyses. Last, although cross-sectional analyses are limited in establishing causality, so too are longitudinal analyses that have long lags between observations (Finkel 1995). The one-year lag between waves in the SPDLC is not necessarily long, but given the numerous shifting conditions between Fall 2020 and Fall 2021 there is a risk of underestimating the association between responsibilities for cognitive labor and parents' psychological well-being.

The W2 sample included a total of 1,966 parents; 828 parents who participated at W1 (72% response rate) and 1,138 new parents who first participated in the W2 survey. We restrict the sample to parents who are in different-gender partnerships and who identify as a man or woman (N = 1,824). Using listwise deletion, our final sample size is 1,000 mothers and 765 fathers (59 cases deleted due to missing data).

**Cognitive Labor**

Parents in the SPDLC were asked separate questions about (a) how various housework and childcare tasks were divided between themselves and their partners (ranging from 1 = *I do it all* to 5 = *My partner does it all*), (b) how much time they spent in the same tasks in the week prior to the survey, and (c) how much time their partners spent in the same tasks in the week prior to the survey. Our measure of cognitive labor focuses on two of these tasks: "(a) household management/organizing (e.g., planning, assigning tasks, keeping track of household needs,

scheduling repairs, etc.)" and (b) "organizing/planning for child (e.g., scheduling doctor appointments, planning play dates, organizing activities)."

*Mothers' cognitive labor* is the number of hours that mothers spent in these two categories combined in the week prior to the survey. *Fathers' cognitive labor* is the number of hours that fathers spent in these activities (hours of cognitive labor were top-coded at the 95$^{th}$ percentile to minimize the influence of extreme outliers). *Division of cognitive labor* indicates how these tasks were divided between mothers and fathers; we use the mean of the two measures and recode to indicate the gendered division of cognitive labor (1 = mother does it all to 5 = father does it all).[1]

**Psychological Well-Being**

Two indicators of psychological well-being are used. Parents' *perceived stress* is measured using Cohen's Perceived Stress Scale (Cohen, Kamarck, & Mermelstein 1983). Parents responded to ten items about how frequently they felt/thought about various things during the month prior to the survey (ranging from 1 = *never* to 5 = *very often*). Responses are combined into a mean scale ranging from 1 to 5 ($\alpha = .91$). Parents' *depressive symptoms* is measured using the 10-item Center for Epidemiological Studies Depression Scale (CES-D-10). Parents responded to ten items about how they felt in the week prior to the survey (ranging from 1 = rarely or none of the time to 4 = most or all of the time). Responses are combined into a mean scale ranging from 1 to 4 ($\alpha = .90$).

**Moderating Variables**

Two sets of moderating variables are tested: mothers' and fathers' *work status* (full-time, part-time, or not employed) and mothers' and fathers' *frequency of working from home* (never, sometimes, or exclusively).

**Control Variables**

We incorporate a number of additional variables that may confound the relationships between cognitive labor and parents' psychological well-being. These include respondents' *education* (ranging from 1 = high school or less to 6 = PhD or professional degree), *age,* and *race/ethnicity* (White, Black, Latino, Asian, or other race). We also include controls for *relationship status* (married or cohabiting), *age of youngest child*, *number of children*, whether their *child attends in-person daycare or school*, *household income* (ranging from 1 = less than $1,000/month to 7 = $9,000 a month or more), a categorical indicator of *relative earnings* (father earns more, earnings shared equally, or mother earns more), whether parents are *essential workers* (1 = *yes*), and whether *parents quit their job or reduced their work hours* during the pandemic (1 = yes). Finally, to minimize the likelihood that our measures of cognitive labor are simply capturing broader gender gaps in domestic labor, we include a variable to indicate the *division of physical domestic labor*. This measure is a mean scale combining information on the division of domestic labor for all other routine housework and childcare tasks that parents reported on, ranging from 1 = mother does it all to 5 = father does it all (a full list of all physical housework and childcare tasks can be found in the SPDLC user guide: Carlson and Petts 2022a).

**Analytic Strategy**

We use linear regression (OLS) models to assess the associations between cognitive labor and each indicator of psychological well-being (alternative models using transformed measures of psychological well-being to account for skewness produce similar results), and present all analyses separately for mothers and fathers. For each outcome (perceived stress and depressive symptoms), we present two main models: one that includes parents' time in cognitive labor and one that includes parents' division of cognitive labor. To test Hypothesis 2, we combine model

estimates and use seemingly unrelated regression estimation to test the equality of coefficients across the models and assess differences between mothers and fathers (Mize, Doan, & Long, 2019). We include interaction terms to assess whether mothers' and fathers' own employment and work from home statuses moderate the associations between cognitive labor and their own psychological well-being. Following best practices for interpreting moderation effects, we present results graphically (Mize 2019). Full results including coefficients from analyses testing for moderation can be found in the appendix.

**RESULTS**

Descriptive statistics are presented in Table 1. Mothers report significantly more time in cognitive labor than fathers: approximately five hours a week compared to two hours a week for fathers ($p < .001$). Similarly, the mean for the division of cognitive labor according to mothers is 1.91, which translates to "mother does more of it." Interestingly, mothers report a more unequal division of cognitive labor than physical domestic tasks (1.91 vs. 2.22; $p < .001$), whereas fathers report this division to be relatively equally shared for both cognitive labor (2.91) and physical domestic labor (2.93). Results in Table 1 also show that mothers report higher perceived stress and depressive symptoms than fathers ($p < .001$).

----- Insert Table 1 About Here -----

Results from models predicting the association between cognitive labor and parents' perceived stress are presented in Table 2. Results provide partial support for H1. As expected, mothers' own time in cognitive labor is positively associated with their perceived stress. Moreover, when fathers perform a greater share of the cognitive labor, mothers report lower stress. Interestingly, in contrast to H1, fathers' shares of cognitive labor are negatively associated with fathers' perceived stress (Model 4). Additionally, we find only limited support that the

associations between cognitive labor and psychological well-being are stronger for mothers (H2). Seemingly unrelated regression suggests that fathers' time in cognitive labor is more strongly associated with mothers' stress than fathers' (difference = -.033; $p < .05$), whereas there is no gender difference in the associations between mothers' time in cognitive labor and stress (difference = .011; $p = .379$) or the division of cognitive labor and stress (difference = .005; $p = .945$).

----- Insert Table 2 About Here -----

Looking at the association between cognitive labor and depressive symptoms in Table 3, we again find partial support for H1. As expected, mothers' own time in cognitive labor is positively associated with their depressive symptoms, whereas fathers' time in cognitive labor is negatively associated with mothers' depressive symptoms (Model 1). Similarly, as shown in Model 2, when fathers perform a greater share of the cognitive labor, mothers report fewer depressive symptoms. Once again, in contrast to H1, fathers' shares of cognitive labor are negatively associated with fathers' depressive symptoms (Model 4) whereas time in cognitive labor is unrelated to fathers' depressive symptoms (Model 3). Similar to results in Table 2, we find limited support for H2. Seemingly unrelated regression suggests that fathers' time in cognitive labor is more strongly associated with mothers' depressive symptoms than fathers' (difference = -.035; $p < .05$), and there is marginal evidence that mothers' time in cognitive labor is more strongly associated with mothers' depressive symptoms (difference = .022; $p = .059$). Yet, the association between the division of cognitive labor and depressive symptoms does not vary by gender (difference = -.055; $p = .293$).

----- Insert Table 3 About Here -----

We next consider whether the associations between cognitive labor and parents' psychological well-being are moderated by parents' employment and work from home status. We present results that are statistically significant in graphical form; results from regression models can be found in the appendix (Tables A1 and A2). In contrast to H3, we do not find evidence that the association between cognitive labor and psychological well-being is stronger among employed parents. Surprisingly, we find that the negative associations between fathers' shares of cognitive labor and their own stress and depressive symptoms is being driven by fathers who are not working full-time. As shown in Figures 1 and 2, the division of cognitive labor is unrelated to full-time working fathers' psychological well-being. However, there is a negative association between shares of cognitive labor and both stress (Figure 1) and depressive symptoms (Figure 2) for non-working fathers and part-time working fathers. In fact, part-time working fathers experience lower stress (difference = -1.17; $p < .05$) and fewer depressive symptoms (difference = -.81; $p < .01$) when they perform all of the cognitive labor compared to when mothers perform all of the cognitive labor. It may be that given the challenges of the pandemic and fathers' realization of all the cognitive labor that needs to be performed, fathers who do not work full-time feel guilty when mothers are shouldering the entire burden. Consequently, psychological well-being is higher among fathers who take on more responsibility for this labor when they have greater availability due to less time in paid work.

----- Insert Figures 1 and 2 About Here -----

In analyses considering whether working from home moderates the association between cognitive labor and working parents' psychological well-being, we do not find any evidence of moderating effects for fathers but we do find some effects for mothers. First, results suggest that the negative associations between fathers' time in cognitive labor and mothers' stress and

depressive symptoms are driven by families where mothers never work from home. As shown in Figures 3 and 4, fathers' time in cognitive labor is negatively associated with mothers' stress and depressive symptoms when mothers work exclusively outside of the home but not when mothers work at least sometimes from home. Thus, fathers' participation in cognitive labor may be most beneficial when mothers may be limited in thinking about cognitive tasks due to working outside the home.

----- Insert Figures 3 and 4 About Here -----

We also find evidence that mothers' telecommuting moderates the association between their own time in cognitive labor and their psychological well-being (Figures 5 and 6). In partial support of H4, the association is more pronounced among mothers who work exclusively from home compared to mothers who sometimes work from home. However, in contrast to our expectations, these positive associations are also more pronounced among mothers who never work from home. These results likely reflect time constraints and work-family pressures associated with working from home. Mothers who work outside the home may experience work-family conflict due to limited time to perform cognitive labor, and mothers who work exclusively from home may feel more pressure to perform cognitive labor. In both instances, psychological well-being may suffer. In contrast, working from home sometimes may enable mothers to achieve better work-family balance, resulting in comparatively higher psychological well-being.

----- Insert Figures 5 and 6 About Here -----

## DISCUSSION

It is no surprise that psychological well-being decreased for parents during the COVID-19 pandemic given the myriad of things parents juggled such as remote work and e-learning

(Montazer et al. 2022; Zamarro and Prados 2021). While much research has documented the increased physical domestic labor parents experienced, much less is known about parents' participation in cognitive labor. Given that parents had to constantly anticipate and adapt plans to meet changing conditions, this study aimed to assess how this labor was associated with parents' psychological well-being during the pandemic. In doing so, results provide additional insight into the effects of the pandemic on gender inequality given mothers' primary responsibility for cognitive labor (Daminger 2019).

Consistent with qualitative studies, we find that mothers did more of the cognitive labor associated with housework and childcare during the pandemic. In fact, mothers spent over twice as much time in cognitive labor tasks as fathers (5 hours/week vs. 2 hours/week). This suggests that the domestic burdens experienced by mothers during the pandemic may have previously been underestimated (Carlson et al. 2022b; Petts et al. 2021).

Using a stress process perspective, we build on previous work on cognitive labor by conceptualizing this form of domestic labor as a stressor. The persistent, unbounded, and never-ending nature of cognitive labor may comprise a chronic stressor that heightens parents' risk for experiencing psychological distress (Pearlin et al. 1990). Moreover, the fear and uncertainty surrounding the pandemic, and concern for children especially (e.g., whether they are falling behind in school, concern about lack of social interaction), may have also meant that cognitive labor acted as an anticipatory stressor during the pandemic as parents had to constantly adapt to new circumstances and plan ahead to avoid these potential threats (Pearlin and Bierman 2013).

Consistent with previous research showing that mothers are more exposed, and more vulnerable to, the negative psychological consequences associated with domestic and emotional labor (Simon 2020), results from our study show that mothers reported greater perceived stress

and more depressive symptoms when they spent more time on, and performed a greater share of, the cognitive labor. Thus, results suggest that mothers may be particularly vulnerable to the negative consequences of cognitive labor. In fact, consistent with one other study on parents' mental health during the pandemic (Zamarro and Prados 2022), we find that the division of physical domestic labor during the pandemic is unrelated to parents' psychological well-being– suggesting that cognitive domestic labor may be a unique stressor that is more detrimental to mental health for mothers than physical domestic labor.[2] Mothers' vulnerability to chronic and anticipatory stress from cognitive labor may stem both from the greater time they devote to these tasks, especially the more persistent aspects of cognitive labor, and also from the greater pressure they feel to perform these tasks due to intensive motherhood norms and the perceived high stakes of the pandemic where failure to adequately anticipate and monitor needs may have serious consequences for families (Daminger 2019; Hays 1996; Thébaud et al. 2021). Indeed, mothers' disproportionate responsibility for cognitive labor may be one factor that contributes to the enduring gender gap in psychological distress, particularly because previous work has shown that network events (e.g., stressful life events within one's family) and the emotional cost of caring are key factors contributing to the gender gap in distress (Anderson, Monden, and Bukodi 2022; Kessler and McLeod 1984)

In contrast to mothers, fathers' time in cognitive labor was unrelated to their psychological well-being and fathers' shares of cognitive labor were negatively associated with their stress and depressive symptoms. Why would performing a greater share of cognitive labor act as a stressor for mothers but reduce stress for fathers? The stress process perspective argues that the effects of stressors vary by structural contexts such as gender (Pearlin 1989). Whereas mothers may experience cognitive labor as a chronic and anticipatory stressor due to gender

norms surrounding domestic labor (Simon 2020), fathers do not experience similar pressures. Fathers increasingly express a desire to be more equally engaged in domestic labor – including cognitive labor. Yet, involvement in these tasks is not seen as obligatory for fathers in the same way as it is for mothers (Petts 2022). Thus, fathers who perform more shares of cognitive labor may psychologically benefit both from meeting their desires to be more engaged in family life as well as being seen as going above and beyond what is expected of them. Indeed, fathers may experience praise and unexpected positive rewards from performing cognitive tasks.

Fathers' time in, and shares of, cognitive labor were also positively associated with mothers' psychological well-being. Consistent with research showing that fathers' participation in physical domestic labor was beneficial for mothers early in the pandemic (Petts et al. 2021), fathers' participation in cognitive labor may have provided social support that helped to reduce mothers' burdens. In fact, fathers' cognitive labor was more strongly associated with mothers' psychological well-being than their own. Given that mothers were more likely to experience psychological distress than fathers during the pandemic (Montazer et al. 2022; Zamarro and Prados 2021), fathers' involvement in cognitive labor may have helped provide social support that reduced mothers' stress and distress.

Results from this study also illustrate gender differences in how employment and telecommuting moderate the association between cognitive labor and psychological well-being. For full-time working fathers, cognitive labor was unrelated to psychological well-being. However, unemployed and part-time working fathers experienced lower stress and fewer depressive symptoms when they performed greater shares of cognitive labor. Although previous research suggests that fathers who do not fulfill the breadwinner role may retreat from domestic labor (e.g., Rao 2020), there is evidence that these fathers performed more domestic labor during

the pandemic (Carlson et al. 2022b). The uncertainty of the pandemic combined with contemporary fathers' beliefs that they should equally share in domestic tasks (Petts 2022) may provide context for this unexpected finding. Fathers who were not working full-time may have benefited psychologically when they took on more of the cognitive labor because they were being a more engaged father and a more equal partner when they had the time to do so. In contrast, fathers who were not working full-time and not sharing the cognitive labor may have felt guilty for (a) not meeting contemporary expectations of fatherhood during a particularly trying time and (b) letting mothers shoulder all of this burden.[3]

Fathers' involvement in cognitive labor is particularly beneficial when employed mothers worked exclusively outside the home. Fathers' responsibilities for cognitive labor may have reduced role conflict and the worry associated with anticipatory stress for mothers who worked outside the home during the pandemic. In contrast, mothers' who spent more time in cognitive labor and worked exclusively outside the home exhibited worse mental health, perhaps due to heightened stress and distress due to worries about greater exposure to COVID-19, limitations to actively managing and monitoring their home environments, and limited ability to focus exclusively on family needs while at work.

Consistent with our expectations, working mothers also experienced greater stress and distress when they performed more cognitive labor and worked exclusively from home. Working from home may have heightened feelings of role conflict and role overload for mothers as they tried to balance paid work with meeting family demands (Chung 2022). Being home all the time may have raised mothers' exposure to all the hidden tasks that needed to be organized and monitored, resulting in increased stress and depressive symptoms. Given that one-fourth of working women were telecommuting in Fall 2020, it is likely that being responsible for both

domestic and paid labor while at home greatly contributed to increased mental health problems for mothers during the pandemic (Schaeffer 2022; US Bureau of Labor Statistics 2021b).

Although this study contributes to our understanding of cognitive labor, there are some limitations to acknowledge. First, we use cross-sectional data and cannot determine causal order between cognitive labor and psychological well-being. We also cannot assess how changes during the pandemic (employment, work from home, etc.) may be associated with changes in cognitive labor and parents' psychological well-being. Supplementary analyses suggest that the associations between cognitive labor (measured at W2), and parents' psychological well-being (measured at W3; October 2021), are largely consistent in longitudinal analyses (see Appendix Tables A3 and A4).[4] Future studies should continue to examine patterns of cognitive labor and its consequences using longitudinal data. Second, the measure of cognitive labor included in the SPDLC captures planning, scheduling, and organizing, but does not expressly account for other aspects of cognitive labor such as decision-making, anticipating, and thinking (Daminger 2019; Dean et al. 2022), although these may be inferred by respondents. Future studies should incorporate specific measures of cognitive labor domains to better understand the causes and consequences of this form of domestic labor. Third, SPDLC respondents report on both their own and their partner's time in cognitive labor. Given the hidden nature of cognitive labor, respondents may not fully know how much time their partners spend in these tasks. Ideally, having partners both report on their own time in cognitive labor is ideal, but given the lack of survey research on cognitive labor we believe there is still value in these respondent reports, especially since one's well-being may depend especially on one's perceptions of domestic responsibilities (Lazarus and Folkman 1984). In models focusing only on parents' estimates of their own time in cognitive labor (i.e., excluding reports of partners' time; results available upon

request), we find that mothers' time in cognitive labor is positively associated with their stress (b = .02, $p < .01$) and depressive symptoms (b = .01, $p < .10$) and fathers' time in cognitive labor is unrelated to their own psychological well-being – similar to what is presented here. Fourth, recent work suggests that work-family conflict is particularly pronounced for parents with young children (Schieman et al. 2021). Interaction terms to assess whether the associations between cognitive labor and parents' psychological well-being varied between parents of younger and older children were not statistically significant (results available upon request), but limited sample size of parents with older children prevent a full exploration of variations by child age. Future research should consider how cognitive labor burdens vary for parents with children of different ages. Finally, the SPDLC is an opt-in sample of parents. Although attempts were made by the survey team to obtain a diverse sample and there are minimal selection effects by sociodemographic characteristics, there may be selection processes related to mental health and the division of labor that led some parents to participate in the survey and others to not participate that we are unable to determine.

Despite these limitations, this study extends our understanding of the gendered division of domestic labor during the pandemic and its consequences by examining the association between cognitive labor and parents' psychological well-being. This study also uses national survey data on cognitive labor to understand how these tasks contribute to broader patterns of gender inequality in the United States (Dean et al. 2022). Using a stress process perspective, we argued that cognitive labor acts as a stressor – but that the effects of this stressor for psychological well-being vary by parental gender, employment, and work from home statuses. Results showed that mothers were primarily responsible for cognitive labor during the pandemic, leading to increased stress and depressive symptoms – particularly for mothers who worked

exclusively at home or exclusively outside the home. Mothers' psychological well-being was also higher when fathers spent more time in cognitive labor, and this was particularly true for mothers who worked outside the home. Overall, this study further illustrates the consequences of the pandemic for mothers, as they were disproportionately burdened with cognitive labor that contributed to lower well-being.

## NOTES

[1] The question about organizing/planning children's lives is adapted from the American Time Use Survey. The question about household management is novel to the SPDLC. We combine measures of household management and organizing for child because previous studies have identified cognitive labor as a distinct form of labor separate from childcare and housework (Daminger 2019; Dean et al. 2022). Thus, we have no reason to believe that cognitive labor related to childcare and housework will operate differently. Results are largely consistent in models that use separate measures for housework and childcare cognitive labor (Appendix Table A5), although associations appear to be stronger for cognitive labor associated with housework. Measures of the division of household management and organizing for child are strongly correlated (.53). Time spent in household management and organizing child are moderately correlated for fathers (.48) and mothers (.36).

[2] Results are largely consistent in models that exclude the division of domestic physical labor, and actually show a stronger, more consistent relationship between cognitive labor and mothers' psychological well-being (results available upon request).

[3] Relatedly, we find that fathers who are essential workers experience more depressive symptoms when mothers spend more time in cognitive labor compared to fathers who are not essential workers (see Figure A1 in the appendix). We suspect that this may be attributable to the fact that fathers who are essential workers likely have fewer opportunities to assist with cognitive labor tasks than fathers in non-essential occupations. Whereas fathers who did not work full-time may have felt guilty for not taking advantage of their time away from work to help mothers out, fathers who are essential workers may feel guilty that they are unable to spend more time providing social support to mothers who are highly engaged in cognitive labor, contributing to increased depressive symptoms.

[4] These models also include variables indicating changes in mothers' and fathers' employment and work from home statuses between Waves 2 and 3. Not all associations are statistically significant, but some approach significance ($p < .10$) or are in a similar direction, suggesting that the differences may be due to smaller sample sizes or the long time lag. Moderating effects of working from home on mothers' psychological well-being are also similar in the longitudinal analyses (results available upon request).

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# TABLES

**Table 1.** Descriptive Statistics

| | Mothers | | Fathers | | | |
|---|---|---|---|---|---|---|
| | Mean/ Prop. | SD | Mean/ Prop. | SD | Min | Max |
| Stress | 2.74* | 0.77 | 2.47 | 0.69 | 1 | 5 |
| Depressive symptoms | 1.95* | 0.66 | 1.73 | 0.57 | 1 | 4 |
| Fathers' cognitive labor | 1.66* | 2.46 | 3.65 | 3.37 | 0 | 16 |
| Mothers' cognitive labor | 5.19* | 4.49 | 3.87 | 3.24 | 0 | 16 |
| Division of cognitive labor | 1.91* | 0.84 | 2.91 | 0.86 | 1 | 5 |
| *Fathers' Work Status* | | | | | | |
| Not employed | .14 | - | .16 | - | 0 | 1 |
| Part-time | .07 | - | .13 | - | 0 | 1 |
| Full-time | .78 | - | .71 | - | 0 | 1 |
| *Mothers' Work Status* | | | | | | |
| Not employed | .37 | - | .40 | - | 0 | 1 |
| Part-time | .28 | - | .20 | - | 0 | 1 |
| Full-time | .35 | - | .40 | - | 0 | 1 |
| *Fathers' work from home* | | | | | | |
| Exclusively | .22 | - | .39 | - | 0 | 1 |
| Sometimes | .14 | - | .19 | - | 0 | 1 |
| Never | .64 | - | .42 | - | 0 | 1 |
| *Mother works from home* | | | | | | |
| Exclusively | .24 | - | .19 | - | 0 | 1 |
| Sometimes | .17 | - | .11 | - | 0 | 1 |
| Never | .59 | - | .70 | - | 0 | 1 |
| Father is an essential worker | .41 | - | .29 | - | 0 | 1 |
| Mother is an essential worker | .27 | - | .28 | - | 0 | 1 |
| Respondent education | 3.42 | 1.30 | 3.90 | 1.27 | 1 | 6 |
| Respondent age | 41.68 | 10.07 | 44.70 | 11.88 | 19 | 73 |
| *Respondent race/ethnicity (ref = white)* | | | | | | |
| White | .58 | - | .59 | - | 0 | 1 |
| Black | .09 | - | .07 | - | 0 | 1 |
| Latino | .21 | - | .22 | - | 0 | 1 |
| Asian | .04 | - | .09 | - | 0 | 1 |
| Other | .04 | - | .02 | - | 0 | 1 |
| Marital status (1 = married) | .88 | | .96 | | | |
| Age of youngest child | 9.25 | 6.86 | 9.61 | 6.75 | 1 | 22 |
| Number of children | 1.93 | 0.89 | 1.81 | 0.81 | 1 | 4 |
| Father experienced employment reduction | .07 | - | .15 | - | 0 | 1 |
| Mother experienced employment reduction | .16 | - | .13 | - | 0 | 1 |
| Child in daycare/school | .19 | - | .27 | - | 0 | 1 |
| Household income | 4.60 | 1.68 | 5.31 | 1.53 | 1 | 7 |
| *Relative earnings* | | | | | | |
| Father earns more | .61 | - | .60 | - | 0 | 1 |
| Earnings shared equally | .25 | - | .24 | - | 0 | 1 |
| Mother earns more | .14 | - | .16 | - | 0 | 1 |
| Division of domestic physical labor | 2.22* | 0.58 | 2.93 | 0.50 | 1 | 5 |
| N | 1000 | | 765 | | | |

*Note:* Weighted means presented. *Indicates statistically significant ($p < .05$) difference between mothers and fathers for indicators of psychological well-being, cognitive labor, and physical labor.

**Table 2**. Results from OLS Models Predicting the Association Between Cognitive Labor and Stress

| | Mothers | | | | Fathers | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | | 2 | | 3 | | 4 | |
| | b | SE | b | SE | b | SE | b | SE |
| Father cognitive labor | -0.02 | 0.01 | | | 0.01 | 0.01 | | |
| Mother cognitive labor | 0.02** | 0.01 | | | 0.01 | 0.01 | | |
| Division of cognitive labor | | | -0.10* | 0.05 | | | -0.11* | 0.04 |
| *Fathers' Work Status (ref = FT)* | | | | | | | | |
| Not employed | -0.11 | 0.12 | -0.11 | 0.12 | 0.28 | 0.15 | 0.30* | 0.14 |
| Part-time | -0.19 | 0.12 | -0.20 | 0.12 | -0.07 | 0.11 | -0.08 | 0.11 |
| *Mothers' Work Status (ref = FT)* | | | | | | | | |
| Not employed | -0.02 | 0.13 | -0.00 | 0.13 | 0.20 | 0.13 | 0.20 | 0.12 |
| Part-time | 0.08 | 0.10 | 0.09 | 0.09 | -0.05 | 0.09 | -0.07 | 0.09 |
| *Fathers' work from home (ref = never)* | | | | | | | | |
| Exclusively | -0.14 | 0.10 | -0.14 | 0.10 | 0.07 | 0.08 | 0.06 | 0.08 |
| Sometimes | -0.17* | 0.08 | -0.16 | 0.08 | 0.08 | 0.10 | 0.11 | 0.10 |
| *Mother works from home (ref = never)* | | | | | | | | |
| Exclusively | -0.15 | 0.10 | -0.14 | 0.10 | 0.01 | 0.11 | 0.01 | 0.11 |
| Sometimes | 0.09 | 0.11 | -0.07 | 0.10 | 0.07 | 0.10 | 0.08 | 0.10 |
| Father is essential worker | -0.00 | 0.08 | -0.00 | 0.08 | 0.07 | 0.08 | 0.07 | 0.08 |
| Mother is essential worker | 0.16 | 0.10 | 0.17 | 0.09 | 0.06 | 0.09 | 0.08 | 0.09 |
| Respondent education | 0.01 | 0.03 | 0.01 | 0.03 | -0.04 | 0.03 | -0.03 | 0.03 |
| Respondent age | -0.00 | 0.01 | -0.00 | 0.01 | -0.00 | 0.01 | -0.01 | 0.01 |
| *Respondent race/ethnicity (ref = white)* | | | | | | | | |
| Black | -0.25** | 0.09 | -0.24* | 0.09 | -0.09 | 0.09 | -0.08 | 0.09 |
| Latino | -0.09 | 0.13 | -0.06 | 0.12 | 0.14 | 0.09 | 0.14 | 0.09 |
| Asian | 0.14 | 0.13 | 0.15 | 0.13 | 0.14 | 0.09 | 0.18* | 0.09 |
| Other | 0.15 | 0.13 | 0.12 | 0.13 | -0.14 | 0.21 | -0.15 | 0.20 |
| Marital status (1 = married) | -0.30* | 0.12 | -0.30** | 0.11 | -0.08 | 0.13 | -0.11 | 0.14 |
| Age of youngest child | -0.00 | 0.01 | -0.01 | 0.01 | -0.01 | 0.01 | -0.01 | 0.01 |
| Number of children | -0.04 | 0.03 | -0.05 | 0.03 | 0.02 | 0.04 | 0.02 | 0.04 |
| Father experienced employment reduction | 0.01 | 0.12 | 0.04 | 0.11 | -0.06 | 0.13 | -0.00 | 0.12 |
| Mother experienced employment reduction | 0.10 | 0.10 | 0.11 | 0.10 | -0.01 | 0.09 | 0.00 | 0.09 |
| Child in daycare/school | -0.05 | 0.07 | -0.04 | 0.07 | -0.00 | 0.07 | -0.04 | 0.08 |
| Household income | -0.05 | 0.03 | -0.05 | 0.03 | -0.02 | 0.03 | -0.02 | 0.02 |
| *Relative earnings (ref = equal)* | | | | | | | | |
| Father earns more | 0.10 | 0.10 | 0.09 | 0.10 | -0.01 | 0.09 | -0.01 | 0.09 |
| Mother earns more | 0.03 | 0.11 | 0.00 | 0.11 | 0.18 | 0.12 | 0.14 | 0.12 |
| Division of domestic physical labor | -0.04 | 0.07 | -0.00 | 0.08 | -0.03 | 0.08 | 0.04 | 0.08 |
| $R^2$ | .11 | | .11 | | .09 | | 0.09 | |
| *N* | 1000 | | | | 765 | | | |

*Note:* All models weighted. *$p < .05$. **$p < .01$. ***$p < .001$.

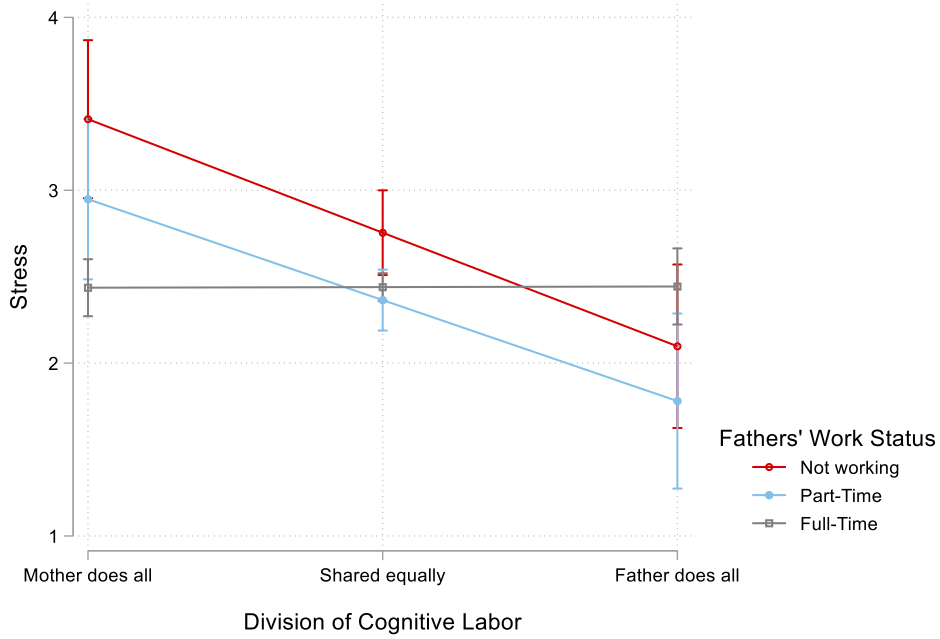
**Table 3**. Results from OLS Models Predicting the Association Between Cognitive Labor and Depressive Symptoms

| | Mothers | | | | Fathers | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | | 2 | | 3 | | 4 | |
| | b | SE | b | SE | b | SE | b | SE |
| Father cognitive labor | -0.03** | 0.01 | | | 0.00 | 0.01 | | |
| Mother cognitive labor | 0.02* | 0.01 | | | -0.01 | 0.01 | | |
| Division of cognitive labor | | | -0.13** | 0.04 | | | -0.07* | 0.04 |
| *Fathers' Work Status (ref = FT)* | | | | | | | | |
| Not employed | -0.09 | 0.11 | -0.10 | 0.11 | 0.28* | 0.13 | 0.29* | 0.13 |
| Part-time | -0.23* | 0.12 | -0.25* | 0.11 | -0.08 | 0.09 | -0.08 | 0.08 |
| *Mothers' Work Status (ref = FT)* | | | | | | | | |
| Not employed | -0.01 | 0.12 | 0.00 | 0.12 | 0.14 | 0.11 | 0.12 | 0.10 |
| Part-time | 0.08 | 0.09 | 0.08 | 0.08 | -0.09 | 0.07 | -0.11 | 0.07 |
| *Fathers' work from home (ref = never)* | | | | | | | | |
| Exclusively | -0.03 | 0.08 | -0.03 | 0.08 | 0.10 | 0.07 | 0.09 | 0.07 |
| Sometimes | -0.14 | 0.08 | -0.13 | 0.08 | 0.06 | 0.08 | 0.07 | 0.08 |
| *Mother works from home (ref = never)* | | | | | | | | |
| Exclusively | -0.12 | 0.09 | -0.11 | 0.09 | 0.04 | 0.08 | 0.04 | 0.08 |
| Sometimes | -0.07 | 0.09 | -0.06 | 0.09 | 0.01 | 0.09 | -0.01 | 0.09 |
| Father is essential worker | 0.08 | 0.07 | 0.07 | 0.07 | 0.14* | 0.06 | 0.13* | 0.06 |
| Mother is essential worker | 0.07 | 0.09 | 0.07 | 0.09 | 0.03 | 0.07 | 0.03 | 0.07 |
| Respondent education | 0.00 | 0.02 | 0.00 | 0.02 | -0.00 | 0.02 | 0.00 | 0.02 |
| Respondent age | -0.00 | 0.00 | -0.00 | 0.00 | -0.01 | 0.00 | -0.01 | 0.00 |
| *Respondent race/ethnicity (ref = white)* | | | | | | | | |
| Black | -0.23** | 0.08 | -0.23** | 0.08 | -0.25** | 0.08 | -0.24** | 0.07 |
| Latino | -0.16 | 0.10 | -0.13 | 0.10 | 0.03 | 0.08 | 0.03 | 0.08 |
| Asian | -0.13 | 0.11 | -0.11 | 0.11 | 0.02 | 0.09 | 0.04 | 0.09 |
| Other | 0.21 | 0.12 | 0.17 | 0.12 | -0.23 | 0.16 | -0.25 | 0.16 |
| Marital status (1 = married) | -0.33** | 0.11 | -0.32** | 0.10 | -0.09 | 0.12 | -0.11 | 0.12 |
| Age of youngest child | -0.00 | 0.01 | -0.00 | 0.01 | 0.00 | 0.01 | 0.01 | 0.01 |
| Number of children | -0.03 | 0.03 | -0.03 | 0.03 | 0.04 | 0.04 | 0.03 | 0.04 |
| Father experienced employment reduction | 0.01 | 0.12 | 0.03 | 0.11 | 0.08 | 0.11 | 0.10 | 0.10 |
| Mother experienced employment reduction | 0.15 | 0.09 | 0.15 | 0.09 | -0.01 | 0.08 | -0.01 | 0.08 |
| Child in daycare/school | -0.09 | 0.06 | -0.08 | 0.06 | 0.02 | 0.07 | -0.00 | 0.07 |
| Household income | -0.04 | 0.02 | -0.04 | 0.02 | -0.01 | 0.02 | -0.01 | 0.02 |
| *Relative earnings (ref = equal)* | | | | | | | | |
| Father earns more | 0.15 | 0.09 | 0.15 | 0.09 | 0.05 | 0.07 | 0.04 | 0.07 |
| Mother earns more | 0.16 | 0.09 | 0.14 | 0.09 | 0.20* | 0.09 | 0.18 | 0.09 |
| Division of domestic physical labor | -0.04 | 0.07 | 0.00 | 0.07 | -0.04 | 0.07 | 0.00 | 0.07 |
| $R^2$ | .14 | | .14 | | .09 | | .09 | |
| *N* | 1000 | | | | 765 | | | |

*Note:* All models weighted. *$p < .05$. **$p < .01$. ***$p < .001$

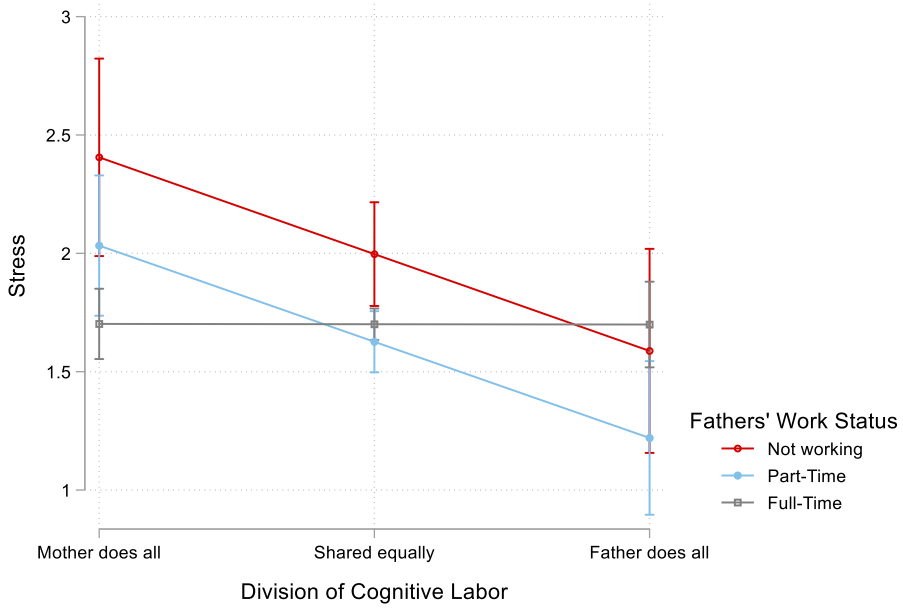
## FIGURES

**Figure 1.** Association between Division of Cognitive Labor, Fathers' Work Status, and Fathers' Stress



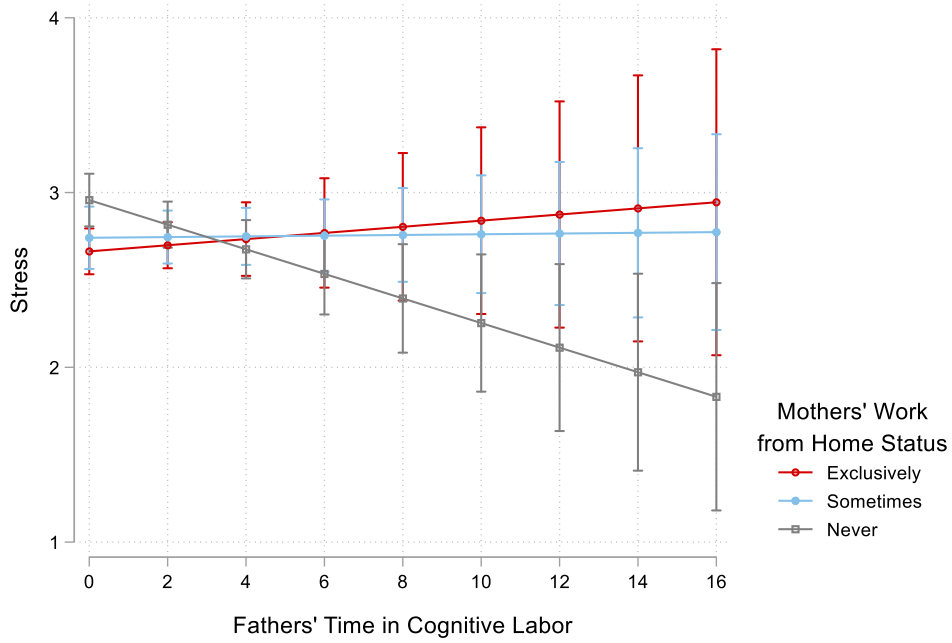

*Note:* Vertical bars indicate 95% confidence intervals around point estimates.

**Figure 2.** Association between Division of Cognitive Labor, Fathers' Work Status, and Fathers' Depressive Symptoms



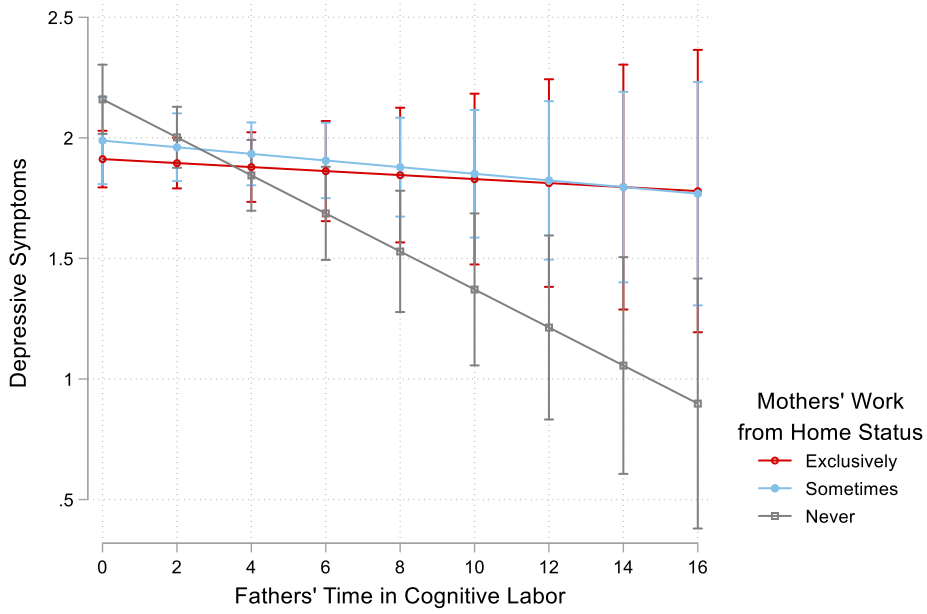

*Note:* Vertical bars indicate 95% confidence intervals around point estimates.

**Figure 3.** Association between Fathers' Time in Cognitive Labor, Mothers' Work from Home Status, and Mothers' Stress



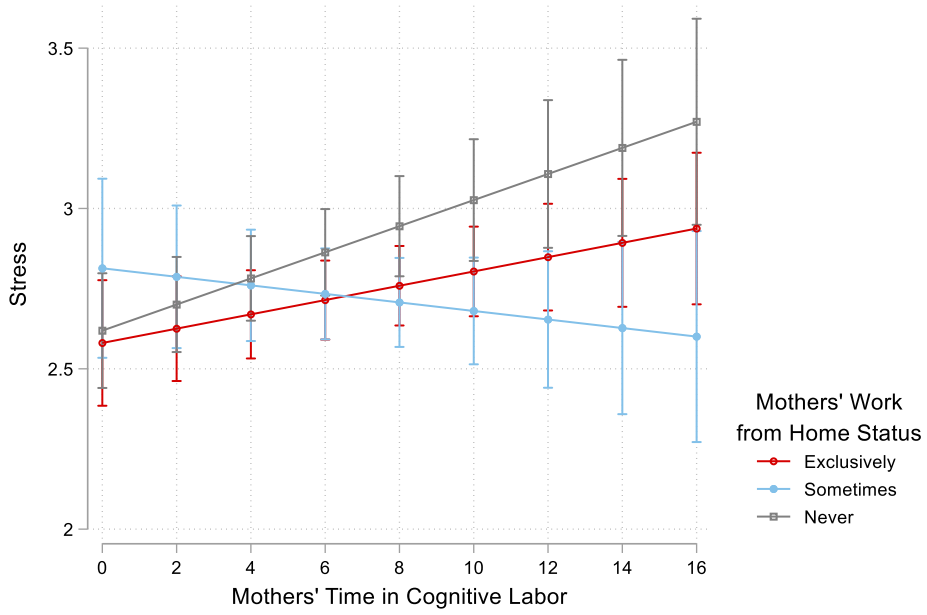

*Note:* Vertical bars indicate 95% confidence intervals around point estimates.

**Figure 4.** Association between Fathers' Time in Cognitive Labor, Mothers' Work from Home Status, and Mothers' Depressive Symptoms



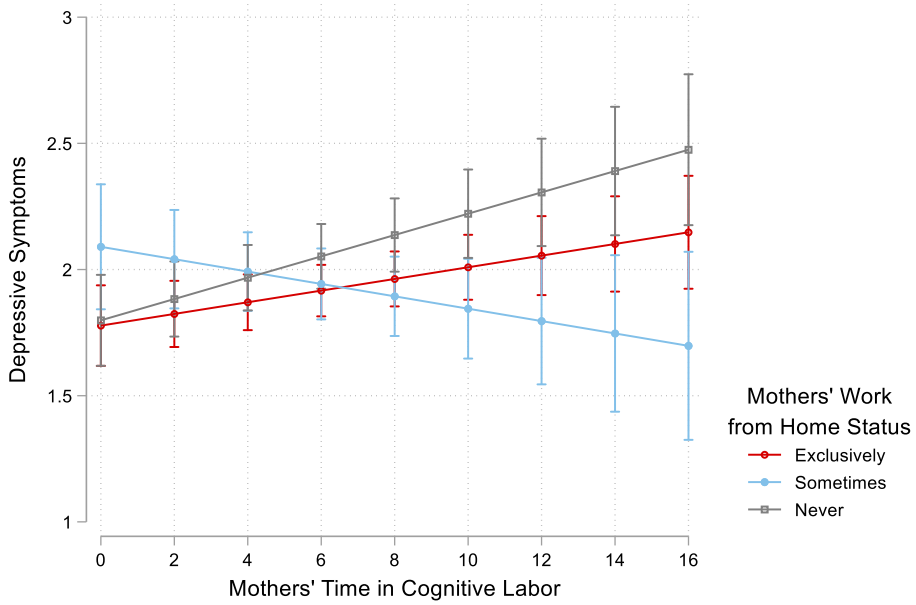

*Note:* Vertical bars indicate 95% confidence intervals around point estimates.

**Figure 5.** Association between Mothers' Time in Cognitive Labor, Mothers' Work from Home Status, and Mothers' Stress




*Note:* Vertical bars indicate 95% confidence intervals around point estimates.

**Figure 6.** Association between Mothers' Time in Cognitive Labor, Mothers' Work from Home Status, and Mothers' Depressive Symptoms




*Note:* Vertical bars indicate 95% confidence intervals around point estimates.

# ONLINE SUPPLEMENTAL APPENDIX

**Table A1**. Results from OLS Models Assessing Whether Employment Moderates Association between Cognitive Labor and Psychological Well-Being

| | Mothers | | | | Fathers | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | | 2 | | 3 | | 4 | |
| | b | SE | b | SE | b | SE | b | SE |
| **PANEL A: STRESS** | | | | | | | | |
| Father cognitive labor | -0.02 | 0.02 | | | 0.02 | 0.01 | | |
| Mother cognitive labor | 0.02 | 0.01 | | | 0.01 | 0.01 | | |
| Division of cognitive labor | | | -0.05 | 0.07 | | | 0.00 | 0.05 |
| *Parents' Work Status (ref = FT)* | | | | | | | | |
| Not employed | -0.07 | 0.15 | 0.23 | 0.23 | 0.41* | 0.19 | 1.31*** | 0.34 |
| Part-time | 0.14 | 0.13 | 0.19 | 0.23 | -0.07 | 0.18 | 0.81* | 0.37 |
| *Interactions with Parents' Work Status* | | | | | | | | |
| Not employed x Father CL | -0.00 | 0.03 | | | -0.03 | 0.03 | | |
| Part-time x Father CL | 0.00 | 0.03 | | | -0.03 | 0.04 | | |
| Not employed x Mother CL | 0.01 | 0.02 | | | -0.00 | 0.04 | | |
| Part-time x Mother CL | -0.01 | 0.02 | | | 0.04 | 0.06 | | |
| Not employed x Division CL | | | -0.12 | 0.10 | | | -0.33** | 0.11 |
| Part-time x Division CL | | | -0.05 | 0.10 | | | -0.29* | 0.12 |
| $R^2$ | .11 | | .11 | | .09 | | .12 | |
| **PANEL B: DEPRESSIVE SYMPTOMS** | | | | | | | | |
| Father cognitive labor | -0.04* | 0.02 | | | 0.01 | 0.01 | | |
| Mother cognitive labor | 0.03* | 0.01 | | | 0.00 | 0.01 | | |
| Division of cognitive labor | | | -0.10 | 0.06 | | | -0.00 | 0.04 |
| *Parents' Work Status (ref = FT)* | | | | | | | | |
| Not employed | -0.02 | 0.14 | 0.08 | 0.22 | 0.55** | 0.16 | 0.91** | 0.31 |
| Part-time | 0.17 | 0.12 | 0.19 | 0.23 | 0.02 | 0.15 | 0.53* | 0.25 |
| *Interactions with Parents' Work Status* | | | | | | | | |
| Not employed x Father CL | 0.01 | 0.03 | | | -0.02 | 0.03 | | |
| Part-time x Father CL | 0.00 | 0.02 | | | -0.02 | 0.04 | | |
| Not employed x Mother CL | -0.01 | 0.01 | | | -0.05 | 0.03 | | |
| Part-time x Mother CL | -0.02 | 0.02 | | | -0.00 | 0.04 | | |
| Not employed x Division CL | | | -0.04 | 0.08 | | | -0.20* | 0.10 |
| Part-time x Division CL | | | -0.06 | 0.09 | | | -0.20* | 0.08 |
| $R^2$ | .14 | | .14 | | .10 | | .11 | |
| *N* | 1000 | | | | 765 | | | |

*Note:* All control variables included but not shown here. Parents' work status refers to parents' own work status (employment status for mothers in Models 1 and 2; employment status for fathers in Models 3 and 4). All models weighted. *$p < .05$. **$p < .01$. ***$p < .001$

**Table A2**. Results from OLS Models Assessing Whether Working from Home Moderates Association between Cognitive Labor and Psychological Well-Being Among Employed Parents

| | Mothers | | | | Fathers | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | | 2 | | 3 | | 4 | |
| | b | SE | b | SE | b | SE | b | SE |
| **PANEL A: STRESS** | | | | | | | | |
| Father cognitive labor | -0.07** | 0.02 | | | -0.00 | 0.02 | | |
| Mother cognitive labor | 0.04** | 0.01 | | | 0.02 | 0.01 | | |
| Division of cognitive labor | | | -0.11 | 0.07 | | | -0.06 | 0.07 |
| *Parent works from home (ref = never)* | | | | | | | | |
| Exclusively | -0.20 | 0.13 | -0.30 | 0.21 | 0.03 | 0.12 | -0.07 | 0.25 |
| Sometimes | 0.06 | 0.16 | -0.10 | 0.26 | 0.05 | 0.19 | 0.46 | 0.31 |
| *Interactions with parent works from home* | | | | | | | | |
| Exclusively x Father CL | 0.08* | 0.04 | | | 0.03 | 0.02 | | |
| Sometimes x Father CL | 0.07* | 0.03 | | | 0.02 | 0.03 | | |
| Exclusively x Mother CL | -0.02 | 0.02 | | | -0.01 | 0.02 | | |
| Sometimes x Mother CL | -0.05* | 0.02 | | | -0.02 | 0.03 | | |
| Exclusively x Division CL | | | 0.10 | 0.10 | | | 0.04 | 0.09 |
| Sometimes x Division CL | | | 0.03 | 0.12 | | | -0.13 | 0.12 |
| $R^2$ | .20 | | .18 | | .09 | | .08 | |
| | | | | | | | | |
| **PANEL B: DEPRESSIVE SYMPTOMS** | | | | | | | | |
| Father cognitive labor | -0.08*** | 0.02 | | | -0.00 | 0.02 | | |
| Mother cognitive labor | 0.04** | 0.01 | | | 0.01 | 0.01 | | |
| Division of cognitive labor | | | -0.17** | 0.06 | | | -0.00 | 0.06 |
| *Parent works from home (ref = never)* | | | | | | | | |
| Exclusively | -0.15 | 0.12 | -0.35 | 0.18 | 0.13 | 0.11 | 0.26 | 0.22 |
| Sometimes | 0.17 | 0.14 | -0.10 | 0.26 | 0.04 | 0.15 | 0.36 | 0.25 |
| *Interactions with parent works from home* | | | | | | | | |
| Exclusively x Father CL | 0.07* | 0.03 | | | 0.01 | 0.02 | | |
| Sometimes x Father CL | 0.07* | 0.03 | | | 0.02 | 0.02 | | |
| Exclusively x Mother CL | -0.02 | 0.02 | | | -0.01 | 0.02 | | |
| Sometimes x Mother CL | -0.07** | 0.02 | | | -0.02 | 0.02 | | |
| Exclusively x Division CL | | | 0.13 | 0.08 | | | -0.05 | 0.08 |
| Sometimes x Division CL | | | 0.03 | 0.12 | | | -0.11 | 0.09 |
| $R^2$ | .23 | | .20 | | .09 | | .09 | |
| *N* | 624 | | | | 683 | | | |

*Note:* All control variables included but not shown here. Parent works from home refers to parents' own work from home status (work from home status for mothers in Models 1 and 2; work from home status for fathers in Models 3 and 4). All models weighted. *$p < .05$. **$p < .01$. ***$p < .001$.

**Table A3**. Results from OLS Models Predicting the Association Between Cognitive Labor at W2 and Stress at W3

| | Mothers | | | | Fathers | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | | 2 | | 3 | | 4 | |
| | b | SE | b | SE | b | SE | b | SE |
| Father cognitive labor | -0.02 | 0.02 | | | -0.00 | 0.02 | | |
| Mother cognitive labor | 0.01 | 0.01 | | | 0.03 | 0.01 | | |
| Division of cognitive labor | | | 0.00 | 0.06 | | | -0.06 | 0.06 |
| *Fathers' Work Status (ref = FT)* | | | | | | | | |
| Not employed | -0.25 | 0.21 | -0.29 | 0.20 | 0.67** | 0.25 | 0.68** | 0.25 |
| Part-time | 0.04 | 0.14 | 0.02 | 0.14 | -0.02 | 0.16 | -0.02 | 0.16 |
| *Mothers' Work Status (ref = FT)* | | | | | | | | |
| Not employed | -0.52** | 0.19 | -0.50** | 0.19 | 0.04 | 0.21 | 0.08 | 0.21 |
| Part-time | 0.06 | 0.12 | 0.08 | 0.12 | -0.13 | 0.14 | -0.12 | 0.15 |
| *Fathers' work from home (ref = never)* | | | | | | | | |
| Exclusively | -0.16 | 0.14 | -0.13 | 0.14 | 0.56*** | 0.14 | 0.55*** | 0.14 |
| Sometimes | -0.25* | 0.12 | -0.25* | 0.12 | 0.39* | 0.15 | 0.40* | 0.16 |
| *Mother works from home (ref = never)* | | | | | | | | |
| Exclusively | -0.49** | 0.15 | -0.49** | 0.15 | 0.08 | 0.19 | 0.07 | 0.19 |
| Sometimes | -0.47** | 0.18 | -0.48** | 0.17 | 0.35 | 0.21 | 0.34 | 0.21 |
| *Fathers' employment change between waves (ref = no change)* | | | | | | | | |
| Became employed | 0.46* | 0.20 | 0.50* | 0.20 | -0.44 | 0.30 | -0.42 | 0.31 |
| Became unemployed | 0.08 | 0.15 | 0.08 | 0.15 | 0.67*** | 0.16 | 0.66*** | 0.16 |
| *Mothers' employment change between waves (ref = no change)* | | | | | | | | |
| Became employed | 0.04 | 0.15 | 0.04 | 0.15 | 0.00 | 0.18 | -0.06 | 0.18 |
| Became unemployed | -0.12 | 0.18 | -0.14 | 0.17 | -0.04 | 0.17 | -0.00 | 0.18 |
| *Fathers' change in WFH status between waves (ref = no change)* | | | | | | | | |
| WFH more frequently | 0.01 | 0.12 | 0.01 | 0.12 | 0.05 | 0.20 | 0.07 | 0.21 |
| WFH less frequently | -0.00 | 0.15 | -0.02 | 0.16 | -0.46*** | 0.11 | -0.45*** | 0.11 |
| *Mothers' change in WFH status between waves (ref = no change)* | | | | | | | | |
| WFH more frequently | 0.04 | 0.13 | 0.05 | 0.13 | -0.32 | 0.17 | -0.23 | 0.17 |
| WFH less frequently | 0.11 | 0.17 | 0.10 | 0.17 | -0.04 | 0.17 | -0.01 | 0.17 |
| Father is essential worker | 0.03 | 0.09 | 0.04 | 0.09 | 0.31** | 0.10 | 0.32** | 0.11 |
| Mother is essential worker | -0.17 | 0.13 | -0.16 | 0.13 | 0.06 | 0.12 | 0.06 | 0.12 |
| Respondent education | -0.01 | 0.02 | -0.00 | 0.03 | 0.02 | 0.04 | 0.01 | 0.03 |
| Respondent age | 0.01 | 0.01 | 0.02* | 0.01 | -0.00 | 0.01 | -0.00 | 0.01 |
| *Respondent race/ethnicity (ref = white)* | | | | | | | | |
| Black | -0.44* | 0.15 | -0.45** | 0.15 | -0.08 | 0.20 | -0.08 | 0.21 |
| Latino | -0.16 | 0.14 | -0.16 | 0.14 | 0.21 | 0.13 | 0.22 | 0.13 |
| Asian | 0.28 | 0.18 | 0.24 | 0.18 | -0.06 | 0.19 | -0.04 | 0.18 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Other | -0.28 | 0.16 | -0.32 | 0.16 | -0.51 | 0.37 | -0.49 | 0.36 |
| Marital status (1 = married) | -0.25 | 0.15 | -0.25 | 0.15 | -0.21 | 0.24 | -0.21 | 0.24 |
| Age of youngest child | -0.02 | 0.01 | -0.02 | 0.01 | 0.00 | 0.01 | 0.00 | 0.01 |
| Number of children | -0.02 | 0.05 | -0.03 | 0.05 | -0.00 | 0.05 | 0.00 | 0.05 |
| Father experienced employment reduction | 0.11 | 0.16 | 0.14 | 0.16 | 0.04 | 0.14 | 0.04 | 0.13 |
| Mother experienced employment reduction | 0.01 | 0.11 | 0.01 | 0.11 | 0.31* | 0.13 | 0.30* | 0.13 |
| Child in daycare/school | -0.12 | 0.11 | -0.10 | 0.11 | 0.11 | 0.11 | 0.10 | 0.11 |
| Household income | -0.07* | 0.03 | -0.07* | 0.03 | -0.12*** | 0.03 | -0.11** | 0.03 |
| *Relative earnings (ref = equal)* | | | | | | | | |
| Father earns more | 0.03 | 0.15 | -0.03 | 0.15 | -0.06 | 0.13 | -0.06 | 0.13 |
| Mother earns more | -0.01 | 0.17 | 0.01 | 0.17 | 0.00 | 0.14 | -0.00 | 0.14 |
| Division of domestic physical labor | 0.07 | 0.09 | 0.03 | 0.09 | 0.08 | 0.09 | 0.12 | 0.09 |
| $R^2$ | .16 | | .15 | | .20 | | .19 | |
| *N* | 497 | | | | 354 | | | |

*Note:* All models weighted. *$p < .05$. **$p < .01$. ***$p < .001$.

**Table A4**. Results from OLS Models Predicting the Association Between Cognitive Labor at W2 and Depressive Symptoms at W3

| | Mothers | | | | Fathers | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | | 2 | | 3 | | 4 | |
| | b | SE | b | SE | b | SE | b | SE |
| Father cognitive labor | -0.03* | 0.01 | | | 0.01 | 0.01 | | |
| Mother cognitive labor | 0.01 | 0.01 | | | 0.01 | 0.01 | | |
| Division of cognitive labor | | | -0.09* | 0.05 | | | -0.02 | 0.05 |
| *Fathers' Work Status (ref = FT)* | | | | | | | | |
| Not employed | -0.11 | 0.18 | -0.11 | 0.18 | 0.55** | 0.19 | 0.56** | 0.19 |
| Part-time | -0.04 | 0.12 | -0.05 | 0.12 | -0.03 | 0.12 | -0.02 | 0.12 |
| *Mothers' Work Status (ref = FT)* | | | | | | | | |
| Not employed | -0.19 | 0.15 | -0.23 | 0.16 | -0.09 | 0.17 | -0.07 | 0.17 |
| Part-time | 0.02 | 0.11 | 0.01 | 0.11 | -0.18 | 0.12 | -0.17 | 0.12 |
| *Fathers' work from home (ref = never)* | | | | | | | | |
| Exclusively | -0.01 | 0.11 | -0.01 | 0.11 | 0.40*** | 0.10 | 0.40*** | 0.10 |
| Sometimes | -0.19 | 0.11 | -0.18 | 0.11 | 0.19 | 0.10 | 0.19 | 0.11 |
| *Mother works from home (ref = never)* | | | | | | | | |
| Exclusively | -0.27* | 0.12 | -0.30* | 0.12 | 0.01 | 0.16 | 0.00 | 0.16 |
| Sometimes | -0.30* | 0.12 | -0.33** | 0.12 | 0.27 | 0.15 | 0.28 | 0.15 |
| *Fathers' employment change between waves (ref = no change)* | | | | | | | | |
| Became employed | 0.26 | 0.16 | 0.28 | 0.16 | -0.62** | 0.21 | -0.62** | 0.21 |
| Became unemployed | 0.08 | 0.13 | 0.07 | 0.13 | 0.38* | 0.16 | 0.37* | 0.16 |
| *Mothers' employment change between waves (ref = no change)* | | | | | | | | |
| Became employed | -0.03 | 0.12 | -0.03 | 0.12 | -0.08 | 0.14 | -0.13 | 0.13 |
| Became unemployed | -0.14 | 0.12 | -0.16 | 0.13 | -0.08 | 0.16 | -0.06 | 0.16 |
| *Fathers' change in WFH status between waves (ref = no change)* | | | | | | | | |
| WFH more frequently | -0.06 | 0.10 | -0.07 | 0.10 | 0.02 | 0.14 | 0.07 | 0.15 |
| WFH less frequently | 0.01 | 0.11 | -0.03 | 0.11 | -0.22 | 0.12 | -0.22 | 0.12 |
| *Mothers' change in WFH status between waves (ref = no change)* | | | | | | | | |
| WFH more frequently | 0.03 | 0.11 | 0.04 | 0.11 | -0.16 | 0.11 | -0.11 | 0.11 |
| WFH less frequently | 0.06 | 0.12 | 0.07 | 0.12 | -0.06 | 0.15 | -0.04 | 0.15 |
| Father is essential worker | 0.07 | 0.08 | 0.07 | 0.08 | 0.15* | 0.07 | 0.15* | 0.07 |
| Mother is essential worker | -0.04 | 0.10 | -0.05 | 0.10 | 0.00 | 0.08 | 0.00 | 0.08 |
| Respondent education | -0.02 | 0.02 | -0.02 | 0.02 | -0.02 | 0.03 | -0.03 | 0.03 |
| Respondent age | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | 0.01 | 0.00 | 0.01 |
| *Respondent race/ethnicity (ref = white)* | | | | | | | | |
| Black | -0.28* | 0.14 | -0.30* | 0.14 | -0.28 | 0.14 | -0.29 | 0.15 |
| Latino | -0.18 | 0.10 | -0.17 | 0.11 | 0.16 | 0.12 | 0.17 | 0.12 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Asian | 0.11 | 0.15 | 0.14 | 0.15 | -0.13 | 0.16 | -0.09 | 0.15 |
| Other | -0.16 | 0.17 | -0.19 | 0.17 | -0.28 | 0.20 | -0.25 | 0.20 |
| Marital status (1 = married) | -0.33* | 0.13 | -0.32* | 0.13 | -0.17 | 0.16 | -0.16 | 0.16 |
| Age of youngest child | -0.01 | 0.01 | -0.01 | 0.01 | -0.01 | 0.01 | -0.01 | 0.01 |
| Number of children | 0.03 | 0.04 | 0.02 | 0.04 | -0.06 | 0.04 | -0.05 | 0.04 |
| Father experienced employment reduction | 0.23 | 0.14 | 0.24 | 0.15 | 0.07 | 0.11 | 0.08 | 0.11 |
| Mother experienced employment reduction | 0.22* | 0.11 | 0.21 | 0.11 | 0.22* | 0.10 | 0.22* | 0.10 |
| Child in daycare/school | -0.02 | 0.10 | -0.02 | 0.09 | 0.01 | 0.11 | -0.01 | 0.11 |
| Household income | -0.03 | 0.02 | -0.03 | 0.02 | -0.08** | 0.03 | -0.07** | 0.02 |
| *Relative earnings (ref = equal)* | | | | | | | | |
| Father earns more | 0.05 | 0.12 | 0.04 | 0.12 | -0.15 | 0.11 | -0.15 | 0.11 |
| Mother earns more | 0.03 | 0.13 | 0.01 | 0.13 | -0.01 | 0.12 | -0.02 | 0.12 |
| Division of domestic physical labor | 0.03 | 0.07 | 0.06 | 0.07 | 0.05 | 0.07 | 0.07 | 0.07 |
| $R^2$ | .15 | | .15 | | .19 | | .19 | |
| *N* | 497 | | | | 354 | | | |

*Note:* All models weighted. *$p < .05$. **$p < .01$. ***$p < .001$.

**Table A5**. Results from OLS Models Using Separate Indicators of Cognitive Labor for Housework and Childcare Tasks

| | Mothers | | | | Fathers | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | | 2 | | 3 | | 4 | |
| | b | SE | b | SE | b | SE | b | SE |
| **PANEL A: STRESS** | | | | | | | | |
| Model 1: Housework cognitive labor | | | | | | | | |
| Father cognitive labor | -0.02 | 0.02 | | | 0.02 | 0.02 | | |
| Mother cognitive labor | 0.03* | 0.01 | | | 0.04* | 0.02 | | |
| Division of cognitive labor | | | -0.07* | 0.04 | | | -0.09* | 0.04 |
| Model 2: Childcare cognitive labor | | | | | | | | |
| Father cognitive labor | -0.04† | 0.03 | | | 0.01 | 0.02 | | |
| Mother cognitive labor | 0.03* | 0.02 | | | 0.00 | 0.02 | | |
| Division of cognitive labor | | | -0.04 | 0.04 | | | -0.04 | 0.04 |
| **PANEL B: DEPRESSIVE SYMPTOMS** | | | | | | | | |
| Model 1: Housework cognitive labor | | | | | | | | |
| Father cognitive labor | -0.04† | 0.02 | | | 0.00 | 0.01 | | |
| Mother cognitive labor | 0.02† | 0.01 | | | 0.00 | 0.02 | | |
| Division of cognitive labor | | | -0.09** | 0.03 | | | -0.06* | 0.03 |
| Model 2: Childcare cognitive labor | | | | | | | | |
| Father cognitive labor | -0.04* | 0.02 | | | -0.01 | 0.02 | | |
| Mother cognitive labor | 0.02 | 0.01 | | | -0.01 | 0.02 | | |
| Division of cognitive labor | | | -0.06† | 0.03 | | | -0.03 | 0.03 |
| *N* | 1000 | | | | 765 | | | |

*Note:* All control variables included but not shown here. All models weighted. †$p < .10$; *$p < .05$. **$p < .01$. ***$p < .001$.

**Figure A1.** Association between Mothers' Time in Cognitive Labor, Fathers' Essential Worker Status, and Fathers' Depressive Symptoms