Author/s:
Ruppanner, L;Perales, F;Baxter, J

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Ruppanner Leah (Orcid ID: 0000-0002-6111-1914)

Harried and Unhealthy? Parenthood, Time Pressure, and Mental Health

Leah Ruppanner*
University of Melbourne
ARC Centre of Excellence for Children and Families over the Life Course,

Francisco Perales
The University of Queensland
ARC Centre of Excellence for Children and Families over the Life Course,
Institute for Social Science Research,

Janeen Baxter
The University of Queensland
ARC Centre of Excellence for Children and Families over the Life Course,
Institute for Social Science Research,

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*Please direct all correspondence to Leah Ruppanner at leah.ruppanner@unimelb.edu.au; University of Melbourne, Grattan Street, Parkville VIC, 3003 Australia.

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Abstract

Objective: This study investigates the effects of first and second births on time pressure and mental health, and how these vary with time since birth and parental responsibilities. It also examines whether time pressure mediates the relationship between parenthood and mental health.

Background: Childbirth is a major life course transition that adds a new role to parents' role set and contributes to role strain, of which time pressure is one manifestation. Longitudinal analyses can help determine whether the impact of children on parental time pressure endures or eases over time, and whether any changes affect parents' mental health.

Method: This study uses 16 years of panel data from the Household, Income and Labour Dynamics in Australia Survey (n=20,009 individuals). The data are modelled using fixed effects panel regression models.

Results: First and second births increase time pressure to a similar extent. Their estimated effects are larger for women than men and persist over time, but there is limited evidence of moderation by parental responsibilities. Maternal mental health improves after a first child, while second children are associated with declines in paternal mental health. These effects are long-lasting. Mediation analyses suggest that in the absence of time pressure maternal mental health would improve significantly.

Conclusion: Children have a stronger effect on mothers' than fathers' experiences of time pressure. These differences are not moderated by changes in parental responsibilities or work time following births. The increased time pressure associated with second births explains mothers' worse mental health.

Implications: Parenthood is an important factor underpinning gendered experiences of time pressure. Reducing time pressure amongst parents may improve parental mental health, particularly amongst mothers.

The birth of a child is a major life course transition that requires a reshuffling of roles, routines, and schedules (Umberson, Pudrovska, & Reczek, 2010). Role strain, or *"the felt difficulty in fulfilling role obligations"* (Goode, 1960: 483), contributes to stress and is a central mechanism in the stress process model (Pearlin et al., 1981; Pearlin, 1989). The addition of parent into one's role set brings demands that lead to role strain (Nomaguchi & Milkie, 2003; Umberson et al., 2010). Yet, these demands are not equally distributed, with mothers often assuming the primary family carer role and absorbing greater domestic work than fathers (Baxter et al., 2008; Bianchi, 2000; Raley, Bianchi & Wang, 2012). Mothers' greater domestic load often comes at the expense of reductions in paid work time, reinforcing traditional gender divisions of labor (Bianchi & Raley, 2005; Bianchi et al., 2000; Sayer, 2005). The role of father, by contrast, draws on breadwinning norms, with fathers often increasing paid work time following childbirth (Hochschild, 1997; Sayer, 2005).

Even as children age, mothers remain disproportionately responsible for the domestic load relative to fathers (Lachance-Grzela & Bouchard, 2010; Nomaguchi & Milkie, 2003). While children's care needs change over time, mothers remain responsible for the day-to-day educational, physical and emotional needs of their children – as reflected by the amount of time they spend with their children (Craig, 2006). Fathers increase their childcare contributions as children age, but their investments rarely match those of mothers (Maume, 2011; Hook & Wolfe, 2012). The time demands of parenting are not without consequence, exacerbating mothers' reports of feeling rushed relative to childless women and men (Mattingly & Sayer, 2006; Milkie, Raley & Bianchi, 2009) and negatively affecting employed mothers' mental health (Roxburgh, 2004). Since the impact of parenthood on time

is not gender neutral, the mental health costs of parenthood are more severe for mothers than fathers (Nomaguchi, Milkie & Bianchi, 2005).

Existing studies document gender differences in parents' time pressure (i.e. insufficient time to complete tasks), often measured as self reports on a single item of "feeling rushed or pressed for time" (Craig & Brown, 2017; Craig & Mullan, 2009; Milkie, Raley & Bianchi, 2009) or more detailed question batteries (Roxburgh, 2002, 2006). Yet no study has considered how the gendered effects of parenthood on time pressure and mental health increase or diminish over time after first and second births, or the possibility of 'returns to the baseline' (i.e. non-linear effects) as children grow older. Nor has research paid sufficient attention to whether parents' greater time pressure following birth impacts their mental health over extended periods of time. Furthermore, existing research is limited in its methodological scope applying ordinary least squares (OLS) models on cross-sectional data, or restricting longitudinal analyses to random effects models that do not fully account for person-specific unobserved effects (Lewis & Cooper, 1988; Mattingly & Sayer, 2006).

To address these theoretical and methodological gaps, we analyse 16 years of annual panel data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey and deploy fixed effects panel regression models. We theorize the long-term consequences of parenthood on time pressure and mental health by drawing upon different principles of role strain theory (Goode, 1960) and the stress process model (Pearlin, 1989). As more families juggle work and family demands, understanding the relationships between health, time pressure, and parenthood –and how these differ by gender– is of increasing scientific and policy importance.

ROLE STRAIN: GENDER, PARENTING & ROLE OVERLOAD

Role strain theory posits that individuals shoulder multiple roles with different demands that are embedded within social institutions, many of which are assigned ascriptively (e.g. according to gender) and reinforced through institutional norms (e.g. norms relating to family, gender and work) (Goode, 1960). *Intense* role demands foster role overload – (i.e., the extent to which such demands exceed a person's stamina), whereas *competing* role demands foster inter-role conflict (i.e., incompatibility in the demands of multiple roles) (Goode, 1960). In turn, as highlighted in the stress process model, both of these situations contribute to stress (Pearlin, 1989). First births are an important life event that results in a new role as 'parent', and the demands associated with this role are both intense and likely to conflict with the demands of other roles, for example that of 'employee' or 'spouse' (Nomaguchi & Milkie, 2003). As a result, the adoption of the parental role can be seen as a factor that could lead to chronic stress (Pearlin, 1983, 1989). So demanding is the parental role that new mothers often reduce or withdraw from employment to meet children's needs, and those who remain in the labor market face competing work and family demands (Craig, 2007; Stone, 2007).

We assess how first and second births contribute to role overload by investigating their association with experiences of time pressure. We also consider how first and second births contribute to inter-role conflict, by examining how the combination of parenthood and other work demands exacerbate time pressure. We then investigate the health consequences of time pressure associated with first and second births for mental health. Below, we discuss how this research extends the existing literature.

The Transition into Parenthood: The Impact of First and Second Births on Time Pressure

The transition to parenthood is a highly disruptive event that involves large-scale, inter-domain reconfigurations of work and family life, as well as identity changes (Baxter et al., 2015). A key aspect of the transition to parenthood is that it is heavily gendered, with its consequences being broader and more profound for women's than men's lives. For example, mothers' paid work hours, domestic work hours, and leisure time shift more strongly than for fathers (Sayer, 2005), especially when mothers remain employed full-time (Craig, 2007).

Scholarship on parenthood and time pressure, more specifically, has documented that individuals who have children experience larger time pressure than those who do not and, in most studies, that motherhood is more conducive to time pressure than is fatherhood (Lewis & Cooper, 1988; Milkie, Raley & Bianchi, 2009; Roxburgh, 2002; see Roxburgh, 2006 for an exception). However, there are limitations in the methodological and substantive scope of this body of evidence. Typically, studies examine cross-sectional associations between time pressure and the presence of children in the home (Roxburgh, 2002, 2006; Raley & Bianchi, 2009). Studies applying longitudinal data compare average time pressure before and after first births, but fail to consider *changes* in time pressure over time as children age (Lewis & Cooper, 1988; Mattingly & Sayer, 2006). Rather, most studies of time pressure measure the presence of children dichotomously or focus on first births (Craig & Brown, 2016; Mattingly & Sayer, 2006; Milkie et al., 2004; Roxburgh, 2002, 2006).

Few studies pay close attention to the effect of second births on time pressure, and how this may differ from the effect of first births. This distinction is important in countries

like Australia, where families have an average of 1.9 children (Australian Institute of Family Studies, 2015). The addition of a second child may have a distinct impact on parents' time pressure and is a lived reality for many Australian families. The combination and duplication of time-consuming and pressure-inducing tasks (e.g. feeding, changing diapers, dressing, and homework) may exacerbate role overload and, consequentially, time pressure. The synchronization of two children's schedules can be difficult, as childcare and school hours are rarely harmonized and pre-school and school-aged care are seldom provided in the same location (Stone, 2007). Balancing two children's schedules requires organization, negotiation, and transportation and increases the total housework load, work that falls disproportionately on women (Daly, 2002; Bianchi et al., 2000). Indeed, the number of children is positively associated with mothers' but not fathers' time in childcare (Sayer, Bianchi & Robinson, 2004). Further, non-employed mothers of multiple children spend more time in domestic labor and less time sleeping and in personal care than fathers or employed mothers (Craig, 2007). The fact that additional children shift parents', especially mothers', time use suggests that second births may increase role overload and contribute to time pressure. Consistent with these postulations, we hypothesize that *time pressure will increase with the birth of a first child (H1a), will increase more for women than men (H1b) and more for second than first births (H1c).*

Continuing Time Pressure? Changes over Time as Children Age

The stress process model differentiates between eventful experiences (i.e. discrete events that disrupt daily life) and chronic strains (i.e. relatively continuous sources of stress) (Avison &

Turner, 1988). On the one hand, parenthood could constitute an eventful experience if the initial 'shock' associated with its experience placed new and immediate demands on new parents leading to role overload and stress, but such demands and/or the associated stress may fade over time. Alternatively, parenthood could constitute a chronic strain if the time and effort demanded by children stretched over prolonged periods of time, with children constituting a durable source of role overload and stress (Roxburgh, 2002, 2004). The latter scenario is consistent with evidence indicating that children's time with their family declines only slightly as children age, and children's time with parents (as reported by children themselves) remains stable over childhood and early adolescence (Hofferth & Sandberg, 2001).

While the demands imposed by children may be lasting, it is unrealistic to conceptualize these as 'static' or unchanging. Instead, demands fluctuate with children's developmental stages, in both nature and intensity. For example, infants require time-intensive and often physically demanding routine care, including day and night feeding, dressing, bathing and changing, as well as unremitting parental surveillance. As children grow older, however, they become more functionally independent and parental time investments shift towards meeting their emotional and organizational demands, such as help with homework, scheduling of extracurricular activities, and participation in leisure activities (Kurz, 2000; Friedman, 2013; Hofferth & Sandberg, 2001; Schieman et al., 2017). While the fluctuating time demands of children are intrinsically understood, most scholarship on the links between parenthood and time pressure has failed to empirically measure the changing strains on parents as children age, and how these changes in turn impact time pressure and

mental health. To our knowledge, no study to date has examined whether children pose long-term durable time pressure and whether this varies by gender.

Here, we argue that parents' role overload, as reflected in their time pressure, will reduce as children age for two reasons. First, older children are more independent and thus require less physical care, which should reduce parents' time pressure. Second, psychological research documents that parenting efficacy (i.e. perceptions of one's ability to effectively perform and manage parenting tasks) increases with time and experience, as individuals become accustomed to dealing with the demands associated with parenthood and develop coping strategies to buffer stress (Gross & Marcussen, 2017). Parenting efficacy, a concept akin to role mastery within role strain theory, also suggests that time pressure should decrease as well-socialized children age (Coleman & Karraker, 2000). Here, we explicitly test whether parents' time pressure fluctuates over children's life courses.

There is reason to believe these relationships are gendered, as women remain disproportionately responsible for childcare as children age –which would make them more susceptible to role overload. Fathers in the US, Germany and the UK have increased their total time with children, but such increases are clustered on non-working days and with pre-school aged children (Maume, 2011; Hook & Wolfe, 2012). In Australia, fathers have increased time in physical and emotional care of children (comparing 1992 to 2006), but their investments pertain mostly to young children ages 0 to 4 (Craig, Powell & Smyth, 2014). As this literature indicates, fathers' childcare contributions have increased over time but are largely restricted to young children, suggesting that fathers' time pressure should be higher when children are young and fade over time. For mothers, who remain more highly involved

in childcare than fathers both when children are young and when they grow older, time pressure should endure.

Based on these discussions, we hypothesize that *parental time pressure will decrease as children grow older (H2a), but less so for women than men (H2b).*

Moderating Factors: Work Hours and Domestic Arrangements

While we expect the birth of first and second children to increase parental time pressure, some parents may be more vulnerable to time pressure than others. Role strain theory (Goode, 1960) posits that balancing competing role demands should increase strain. In our context, parents who face longer work and housework hours may experience greater time pressure associated with first and second births. As previous research documents, these experiences are gendered. While men typically sustain (or increase) their paid work hours with the birth of children, mothers reduce their paid hours or even withdraw from the labor force (Sayer, 2005; Stone, 2007). Although new fathers slightly increase their time in housework and childcare, their domestic load never parallels that of mothers, both at the transition to parenthood and as children age (Bianchi et al., 2012; Baxter et al., 2008; Gupta, 1999; Sayer, 2005, 2016). This suggests that fathers balance demands in one domain (employment) while mothers balance demands across multiple domains (childcare, housework and employment). Mothers balancing a combination of work, parent and homemaker roles report more time pressure than fathers, with each additional role linearly increasing mothers' reported time pressure (Roxburgh, 2002). Indeed, mothers in dual-earner

full-time employed couples report feeling the greatest time pressure of all married couples with a resident child under 6 years of age (Milkie, Raley & Bianchi, 2009).

The intensity of the role of parent may also vary within the couple leading one parent assume a larger share of the childcare (i.e. a more intense role as parent) that leads to role overload and exacerbates strain. One way to mitigate parents' role overload is for couples to more equitably share the childcare. In the terminology of the stress process model, the other parent acts as a source of social support that can buffer stress and reduce or mitigate its manifestations (Pearlin et. al, 1981). As Jacobs and Gerson (2001) argue: *"a decline in support at home rather than an increase in the working time of individuals underlies the growing sense that families are squeezed for time and that work and family life are in conflict"* (p.42). Father support over children's first 24 months of life reduces first-time mothers' depressive symptoms (Simpson et al., 2003; Smith & Howard, 2008); yet paternal involvement in childcare is most intense when children are pre-school age, decreases by the time children enter school and then levels-off (Hook & Wolfe, 2012; Maume, 2011; Smith & Howard, 2008). This highlights the need for longitudinal assessments as children age. Given mothers' persistent childcare burden, fathers' domestic uptake in time spent with children may be the key to alleviating maternal time pressure, with important consequences for gender inequality (Craig, 2006; Hobson, 2002; Hook, 2006).

As this literature indicates, we hypothesise that *the effect of parenthood on time pressure will be greater amongst individuals who hold more intense work and family demands (H3a), and more so for women than men (H3b).* This suggests moderation of the

parenthood/time pressure association by factors such as paid work hours, housework hours and relative childcare contributions.

Time Pressure as a Link between Parenthood and Mental Health

We investigate whether changes in time pressure associated with first and second births are associated with changes in mental health. The literature on parenthood and mental health has a long tradition, and often yields contradictory findings. A review of the early literature by McLanahan and Adams (1987) documents small negative effects of parenthood on psychological wellbeing, with some studies suggesting that these are more pronounced amongst mothers than fathers. More recent evidence portrays mixed findings (Kalucza, Hammarström & Nilsson, 2015). For example, some studies found no significant changes across the transition to parenthood in dimensions of mental health (Bradley & Slade, 2009; Keizer, Dykstra & Poortman, 2010) or depressive symptoms (Nomaguchi & Milkie, 2003), but others found increases in psychological distress (McKenzie & Carter, 2012) and depression (Knoester & Eggebeen, 2006). A small pool of studies reports positive associations between parenthood and mental health, particularly among men (see e.g. Helbig et al., 2006; Leach et al., 2009). Concerning gender differences, some previous studies report that mothers experience higher risks of depressive symptoms than fathers (see discussions in McLanahan and Adams, 1987: 243 or Umberson et al., 2010: 619), while others find no gender effect (Evenson & Simon, 2005; McKenzie & Carter, 2012). Analyses of mental health using longitudinal data from national samples are scarce (see McKenzie & Carter, 2012 for discussion and exception). Although findings from this literature are mixed, on the whole, they suggest that parenthood leads to poorer mental health and, when a gender

difference is observed, women are more vulnerable to poor mental health following childbirth than are men.

We posit that changes in mental health associated with first and second births will be influenced by changes in time pressure. Simply, we argue that parental mental health would be better in the absence of time pressure. This aligns with McLanahan and Adams' (1987) classic argument, repeated in more recent reviews of the literature, (e.g. Umberson et al. 2010), that time constraints intensify the negative consequences of children on parents' psychological well-being. Role strain theory and the stress process model suggest that role overload and inter-role conflict contribute to stress, with time pressure constituting an important pathway through which stress impacts well-being (Roxburgh, 2004). Consistent with this, research documents links between parents' time pressure and depression (Roxburgh, 2012). One mechanism through which time pressure may decrease mental health is through parents' disrupted sleep and reduced leisure time. This process may be gendered as mothers report less and lower quality sleep and leisure than fathers, in part due to their tendency to prioritize family over self-care (Craig & Brown, 2016; Maume, Sebastian & Bardo, 2010; Sayer, 2005). While we do not address specific mechanisms here, we expect the added time pressures associated with first and second births to have a long-lasting impact on parents', especially mothers', mental health over time. This follows existing research documenting that children bring daily and ongoing time pressures that deteriorate mental health (Roxburgh, 2002, 2004).

Formally, we hypothesize that *time pressure will contribute to poor mental health following the birth of first or second children (H4a), and more so for women than men (H4b).*

DATA

Dataset and Sample

We used annual panel data from the HILDA Survey from 2001 to 2016 (Australia). This is a large, household panel survey of the Australian population (Summerfield et al., 2017). The HILDA Survey interviews all household members aged 15 and over through a combination of face-to-face interviews and self-completed questionnaires. New participants join the panel if they join the households of existing panel members, or if they turn 15 years of age while living in them. A refreshment sample, consisting of roughly 4,000 individuals was added to the survey in 2011 (wave 11).

We began by selecting a subsample of HILDA Survey respondents within main childbearing ages (20 to 55 years), which comprises 157,010 person-year observations (76,315 for men and 80,695 for women) from 24,151 individuals (12,073 men and 12,078 women). This included anyone who participated in the study from the first wave or who entered the study at a subsequent wave, and both parents and non-parents at the time of joining the study. Of these, 9,434 (or 6.01%) were dropped due to complete non-response in a given wave, a further 1,264 records (0.86%) due to (seemingly) having lost their children. An additional 35,195 records (24.1%) were subsequently dropped due to missing data on one or more analytic variables, chiefly due to respondents failing to return the self-complete questionnaire, see Table 1. Our final sample comprised 110,904 observations (59,072 for women and 51,832 for men) from 20,009 individuals (10,355 women and 9,654 men). On average, individuals were observed 5.5 times (median=9, SD=4.4). The data were unweighted.

We decided against imputing the missing data for two reasons. First, a large portion of the missing data was on the outcome variables, and imputing outcome variables is not customary or recommendable (Von Hippel, 2007). Second, we fitted fixed effects models which consider change over time in the explanatory and outcome variables. Imputation is likely to result in distortions to individual trends and changes, and this sort of measurement error can lead to bias in their estimation (McKinnish, 2008; Young & Johnson, 2015). In addition, fixed effects models are well-suited to handle unbalanced panel designs (Wooldridge, 2010; Young & Johnson, 2015). We conducted several sensitivity analyses to examine whether missing data was likely to be problematic. First, we found that the variable means in the initial and final analytic sample were very similar. Second, imputing missing data using respondents' person-specific over-time means made little difference to the results. Taken together, these suggest that our results were unlikely to be biased due missing data.

Dependent Variables: Time Pressure and Mental Health

The first outcome variable of interest was time pressure, operationalized through a single-item measure of feeling rushed or pressed for time, consistent with previous research (Craig & Brown, 2017; Craig & Mullan, 2009; Mattingly & Sayer, 2006; Milkie, Raley & Bianchi, 2009). This came from a question in a self-complete questionnaire asking respondents: "How often do you feel rushed or pressed for time?". Possible responses were: (0) *never*, (1) *rarely*, (2) *sometimes*, (3) *often* and (4) *almost always*. The variable's distribution was fairly symmetric around a modal middle category. For simplicity, we treated this as a continuous construct and fit linear models, as little was lost by assuming cardinality (Ferrer-i-Carbonell & Frijters, 2005).

The second outcome variable was mental health, operationalized using the Mental Health Inventory of the SF-36 (Ware Jr & Sherbourne, 1992). This included items from each of the four major mental health dimensions: anxiety, depression, loss of behavioural/emotional control, and psychological well-being (Ware Jr & Sherbourne, 1992). This mental health index was constructed out of responses to five questions located within the HILDA Survey's self-complete questionnaire asking respondents how much of the time in the past four weeks the respondent: (i) has been a nervous person, (ii) felt so down in the dumps that nothing could cheer them up, (iii) felt calm and peaceful, (iv) felt down, and (v) has been a happy person. Possible answers to these questions were: (1) *all of the time*, (2) *most of the time*, (3) *a good bit of the time*, (4) *some of the time*, (5) *a little of the time* and (6) *none of the time*. Where necessary, items were reverse coded so that high values always represent good mental health. The resulting index is highly reliable (Alpha=0.85) and was rescaled from its cumulative range of 5-30 to a more intuitive range of 0-100 by the following linear transformation: *transformed score = (raw score – 5) / 30) x 100*. Therefore, our operational mental health measure ranged from 0 (worst possible outcome) to 100 (best possible outcome).

Key Independent Variables: Parenthood

The key explanatory variable was parenthood. First, we created a parenthood variable by recoding the number of children respondents have ever had into the categories 'zero', 'one' and 'two or more'. Each of these categories was used as a dummy variable (with 'zero' children as the reference category). In more complex analyses of time dynamics, we also developed and used variables counting the number of years (i) before the birth of the first

child, (ii) after the birth of the first child, and (iii) after the birth of the second child. In a final set of models, we also included squared terms for each of these three variables to allow for non-linear relationships between these and our outcome variables. A detailed description of the data structure is available in supplementary materials (Online Appendix I). In the initial sample, there were 2,524 first births (12.2% of the sample) and 2,084 second births (10%), but only 1,019 third births (4.9%). Therefore, due to low statistical power and for simplicity, we only considered transitions into first and second births. Results from models using third births as a distinct category did not alter the study conclusions (see Online Appendix V).

Moderators: Paid work, Domestic Work and Childcare Contributions

Several variables were expected to moderate the associations between parenthood and time pressure. The first potential moderator was the number of usual paid work hours in all jobs, including the amount of time travelling to and from work. The second potential moderator was the number of usual hours of domestic work. This was operationalized as the sum of the weekly hours spent by respondents on (i) housework tasks (e.g. preparing meals, washing dishes, cleaning the house, washing clothes, ironing and sewing), (ii) undertaking household errands (e.g. shopping, banking, paying bills, and keeping financial records), (iii) outdoor tasks (e.g. home maintenance, car maintenance, repairs and gardening), and (iv) caring for a disabled or elderly spouse or relative. The third potential moderator was the relative share of the childcare taken up by the respondent, vis-à-vis his/her partner. To construct this, we used respondents' reports of the number of childcare hours that they undertook in a typical week, where childcare was defined as *"playing with your children, helping them with personal care, teaching, coaching or actively supervising them, or getting them to child care, school*

and other activities". We leveraged the couple-level design of the HILDA Survey to match the weekly childcare hours reported by respondents and their partners, and construct a variable capturing the total couple childcare hours (*respondent's childcare hours + partner's childcare hours*). Using this information, we then derived a variable capturing respondents' share of the total couple childcare hours *[(respondent's childcare hours/ total couple childcare hours) x 100]*. We split this variable into the following categories: (i) respondent undertakes over 60% of the total couple childcare hours (main carer), (ii) respondent undertakes 40-60% of such hours (equal carer), and (iii) respondent undertakes less than 40% of such hours (secondary carer). This information was only available for partnered parents whose partners agreed to participate in the survey and provided valid information on all model variables. As a result, the sample sizes in models using this variable were smaller. Although it would be informative to also consider moderation by each parent's childcare hours (e.g., such models would retain single mothers), this was unfeasible in our fixed effects models – as individuals' childcare hours were constrained to zero prior to becoming parents.

Control Variables

All models controlled for a set of time-varying variables that may confound the relationships between parenthood, time pressure, and mental health: age and its square, household financial year disposable regular income (expressed in 10,000s), and dummy variables for highest educational qualification (degree or higher; professional qualification; school year 12; below school year 12), marital status (single; partnered; divorced, separated or widowed), other employment statuses (full-time student; retired), and presence of a long-term health impairment (yes; no). Descriptive statistics for these variables are presented in Table 1.

Detailed sample sizes for the variables capturing time before and after births are shown in Table A3 in Online Appendix VI.

METHODS

We modelled the relationships between parenthood, time pressure, and mental health using fixed effects panel regression models fitted separately for men and women. These models required time-varying variables, and used the panel data to assess how within-individual change over time in the explanatory variables was associated with within-individual change over time in the outcome variables. In doing so, they implicitly accounted for omitted-variable bias due to time-constant unobserved characteristics of individuals (Wooldridge, 2010). This analytical approach was often the choice in studies of parenthood effects on socio-economic and attitudinal outcomes (see e.g. Budig & England, 2001, Baxter et al., 2015).

In our context, fixed effects models compared the time pressure (or mental health) of the same individuals at times in which they are observed being childless and at times in which they are observed to have one child or two children. This means that only individuals who experienced change over time in their parenthood status contribute to estimation of the parenthood coefficients in these models. In our application, fixed effects models were preferable to both OLS models and random effects panel regression models because our outcomes (time pressure and mental health) were highly subjective, and hence likely affected by individual-specific unobserved heterogeneity. OLS models cannot handle this sort of heterogeneity, while random effects models assume that the unobserved effects are orthogonal to the effects of observed covariates. This is often an unrealistic or 'heroic'

assumption. In our case, such assumption was violated and thus fixed effects models were more appropriate. Hausman tests comparing fixed and random effects models of both time pressure and mental health for both men and women rejected random effects specification as a suitable alternative ($p<0.001$). A more detailed account of the properties and advantages of the fixed effects models that we estimate can be found in Online Appendix II, and a comparison of our fixed effects results and results from OLS and random effects models in Online Appendix III.

We also extended previous research by estimating fixed effects models of over time changes in time pressure and mental health prior to the birth of the first child, and following from the birth of the first and second child. This was accomplished through the inclusion of the aforementioned variables capturing the number of years until the birth of the first child, since the birth of the first child, and since the birth of the second child. The latter two variables captured changes in time pressure and mental health as first and second children grow older. Given the 16-year span of the HILDA Survey, we were able to assess outcomes for a maximum of 15 years before and after any observed parenthood transitions – although our discussions will focus on those years in which we had a higher number of observations (see Table A3 in Online Appendix VI). In addition, as argued earlier, it is possible that the age of children is not linearly related to parental time pressures. For example, parents may become progressively more time-pressed up to the point at which children enter kindergarten/school, and progressively less time-pressed thereafter. Other processes affecting parental time-pressure may also be dependent on children's age. We allowed for these

possibilities in the empirical analyses by including polynomial terms for the three time variables.

RESULTS

Base Effect of Parenthood on Time Pressure

Models 1 and 2 in Table 2 show the results of fixed effects panel regression models that exploit the 16-year panel design to control for unobservable and stable characteristics of individuals. In these fixed effects models, the coefficient for having one child gives the estimated difference in time pressure for *the same individuals* when they were observed being childless (the reference category), relative to when they were observed having one child –all else being equal. For example, for a respondent observed without children in waves 1 to 8 and with one child in waves 9 to 16, the respondent's average time pressure in those two time windows would be compared –adjusting for changes in other covariates. Similarly, the coefficient on having two children gives the predicted difference for the same individuals when they have zero and two children.

Consistent with Hypothesis 1a, both women and men reported higher time pressure upon the transition to parenthood, compared to when they were childless ($^{2}_{w}$=0.336, p<0.001; $^{2}_{m}$=0.133, p<0.001). The time pressure experienced by individuals with two children increased compared to when these same individuals had no children ($^{2}_{w}$=0. 674, p<0.001; $^{2}_{m}$=0.275, p<0.001). The increase from having one to two children (0.674-0.336=0.338 for women, and 0.275-0.133=0.142 for men) was very similar to the increase from being childless to having one child (0.336 for women, and 0.133 for men). Thus, consistent with Hypothesis 1c, the birth of a second child doubled time pressure for those with one child.

Consistent with Hypothesis 1b, increases in time pressure with first and second births were 2 and 2.5 times larger, respectively, for women than men, with the differences being statistically significant in Wald tests.

Changes over Time as Children Grow Older

Models 3 and 4 in Table 2 examined women's and men's time pressure trajectories prior to and following the birth of first and second children. For women, there was evidence of a slight reduction in time pressure as the first birth approaches ($^{2}_{w}$= 0.018, p<0.001), and slight increases as the first ($^{2}_{w}$=0.012, p<0.05) and second ($^{2}_{w}$=0.008, p<0.01) child grow older. For men, there was evidence of a slight increase in time pressure as the first birth approaches ($^{2}_{w}$=0.010, p<0.01) and as the second child ($^{2}_{w}$=0.006, p<0.05) grows older.

The possibility that time pressure pre and post the birth of children does not follow a linear function was tested in Models 5 and 6 in Table 1 and Figure 2. Results are presented in Figure 1, as marginal means. For the purpose of exposition, we plotted the period comprised between 4 years prior to the first birth and 9 years after it, assuming a second birth 3 years after the first (the Australian average in child spacing). This also coincided with those time points in which the data were denser (see Table A3 in Online Appendix VI). It is important to note that, in most cases, the same respondents were not observed across all of these stages and years. Hence, these figures represent 'synthetic cohorts', and pieced together the experiences of different individuals who contributed to different portions of the estimated functions. While the statistically significant coefficients on the squared variables provided some evidence of non-linearities, the graph clearly reveals that their magnitude was modest. In fact, there seemed to be little change over time in parental time pressure as children grow

older. Instead, changes in time pressure with the arrival of first and second children took the form of upwards 'jumps' at birth. Hence, the increases in time pressure accompanying childbirth appear to be rather permanent. Gender differences became more pronounced with each birth: prior to the birth of the first child, mothers' and fathers' experiences of time pressure were very similar, and each additional child increased time pressure at a greater rate among women. However, this gender gap did not widen as children grow older. Versions of Figures 1 and 2 assuming no second children are born are shown in Online Appendix IV. Altogether, the results were inconsistent with Hypothesis 2a and Hypothesis 2b.

Moderators of the Parenthood/Time Pressure Association

In Table 3, we examined whether the effect of parenthood on time pressure was moderated by changes in paid work hours, domestic work hours, and relative childcare contributions. Models 1 and 2 considered paid work hours, and provided minimal evidence that these moderate the parenthood effects on time pressure. There was only one negative and statistically significant interaction term between paid work hours and having one child for men ($^{2}_{m}$= 0.014, p<0.05), which indicated that becoming a father was associated with a smaller increase in time pressure amongst men who work longer compared to fewer hours. This resonates with accounts that fathers increase paid work and mothers increase domestic work upon the transition to parenthood (Sayer, 2006) which, our results indicate, marginally alleviated working fathers' time pressure. Models 3 and 4 tested whether respondents' domestic work hours moderated the relationship between parenthood and time pressure. We found only one instance of moderation, namely a positive and statistically significant interaction between domestic work hours and having two children for mothers ($^{2}_{w}$=0.018,

$p<0.01$), indicating that having a second child had a (slightly) stronger effect on women's time pressure when they did more weekly hours of domestic work.

Finally, Models 5 and 6 examined whether parental time pressure was lower when partners contribute more heavily to childcare. These models had a slightly different sample and interpretation. For example, the coefficient on the interaction term '1 child * Main carer' gave the expected difference in time pressure for individuals between (i) their observations before becoming parents, and (ii) their observations when they have one child *and* are the main carer, all else being equal. We formally tested for moderation in these models by comparing the estimated effects for the 'main carer' category to those of the 'equal carer' and secondary carer categories, using Wald tests (i.e. $^{2}_{main\_carer}=^{2}_{equal\_carer}$ and $^{2}_{main\_carer}=^{2}_{secondary\_carer}$). Women who acted as main carers across the initial transition to parenthood experienced a smaller increase in their time pressure ($^{2}_{w}=0.295$, $p<0.001$) than women who acted as equal ($^{2}_{w}=0.342$, $p<0.001$) or secondary carers ($^{2}_{w}=0.333$, $p<0.001$). Wald tests (not shown in the table) indicated that only the difference between female main and equal carers was statistically significant, at $p<0.01$. A similar pattern emerged for men who were main carers ($^{2}_{m}=0.064$, $p>0.1$) compared to those who were equal ($^{2}_{m}=0.110$, $p<0.001$) or secondary carers ($^{2}_{m}=0.123$, $p<0.001$). However, these differences were not significant.

The picture was different for second children where women and men who act as main carers experienced a larger increase in their time pressure ($^{2}_{w}=0.615$, $p<0.001$; $^{2}_{m}=0.218$, $p<0.001$) than women and men who were equal ($^{2}_{w}=0.576$, $p<0.001$; $^{2}_{m}=0.219$, $p<0.001$) or secondary carers ($^{2}_{w}=0.574$, $p<0.001$; $^{2}_{m}=0.226$, $p<0.001$). However, differences between

the main carer category and the other categories were only statistically significant among women, identifying that this process was gendered. Thus, our results lend mixed support for our hypotheses based on notions of competing and intense roles (H3a and H3b) with changes in employment and housework time playing a limited role in explaining parents' time pressure following first and second births, but the allocation of main carer role, a form of role overload, exacerbating mothers' time pressure after second births.

Parenthood, Time Pressure and Mental Health

Hypothesis 4a posited that the time pressure children bring should contribute to the deterioration of parents' mental health. Before testing this, we outlined the associations between parenthood and mental health in our sample. In Models 1 and 2 in Table 4 we found significantly different outcomes for first and second births. For first births, becoming a parent improved women s mental health (^2_w=1.335, p<0.001), and had no effects on men's mental health (^2_m=0.169, p>0.1). Having a second child reduced men s mental health (^2_m= 1.341, p<0.001), but incured only a statistically non-significant reduction in women's mental health (^2_w= 0.319, p>0.1). Both gender differences were statistically significant.

Models 3 to 6 examined women's and men's mental health trajectories prior to and following from the birth of children. These results are more easily interpreted by inspection of the marginal means for a synthetic cohort shown in Figure 2, based on the results of Models 5 and 6 (the preferred models that allow for non-linear effects). Men's and women's mental health improved prior to the birth of the first child, but time elapsed since the birth of the first child led to a progressive decline in mental health amongst both men and women. While this appeared to be steeper for men than women, a rebound effect was observed for

men in the longer run (see Figure A2 in Online Appendix IV excluding second births). The birth of the second child also had a distinct effect by gender, leading to a larger drop in mothers' than fathers' mental health, and a steeper downwards trend over time for mothers than fathers. As a result, gender differences in mental health favoring men were more pronounced in two-child families than in one-child, and progressively more so as second children age.

Models 7 and 8 in Table 4 added the variable capturing time pressure to the base model. Comparing the coefficients on the parenthood variables in Models 7 and 8 with those in Models 1 and 2 served as a test of whether the association between parenthood and mental health was driven by increases in time pressure accompanying the birth of a first and second child. As expected, increases in time pressure were associated with large and statistically significant decreases in mental health for both women and men ($^{2}_{w}$= 3.239, p<0.001; $^{2}_{m}$= 3.351, p<0.001). For women, the addition of the time pressure variable to the model modified the coefficient on the variable capturing having a first child in Model 1, so that its effect on mental health became more positive and statistically significant ($^{2}_{w}$=2.424, p<0.001). It also shifted the coefficient on the variable capturing having a second child so that this was no longer negative, but large, positive and statistically significant ($^{2}_{w}$=1.863, p<0.001). The mediating effect of time pressure on the relationship between parenthood and mental health was tested formally using Wald tests. The results (not shown in the tables) revealed that changes in the coefficients for the motherhood variables across the two models were statistically significant (p<0.05). For men, the addition of the time pressure variable made the positive effect of having one child on mental health larger than in Model 2 and

statistically significant (^2_m=0.616, p<0.05). It also eliminated the decrease in mental health associated with the birth of second children. Results from Wald tests (not shown) indicated that these changes are not statistically significant (p>0.05). Wald tests were also used to test gender differences in Models 7 and 8. Net of time pressure, having a first or second child had a more positive effect on mothers' than fathers' mental health. Altogether, these results indicated that the time pressure associated with the birth of a child is a factor that contributed negatively to parental mental health (consistent with Hypothesis 4a), and more so to maternal mental health (consistent with Hypothesis 4b).

DISCUSSION & CONCLUSION

In this study, we used 16 years of Australian panel data to investigate how parenthood is associated with time pressure and mental health, paying careful attention to gender differences and changes as children age. We theorized these relationships as a form of role strain, expecting that the addition of parental roles (first and second births) and balancing multiple roles (work and family) exacerbate time pressure. Our methodological approach, consisting of a series of fixed effects panel regression models, provides robust estimation of changes over time for Australian parents.

Our first set of results indicated that, all else being equal, first births increased fathers' and mothers' time pressure, with substantially stronger effects for mothers than fathers. These results are consistent with previous research based on cross-sectional samples or using less powerful longitudinal approaches (Lewis & Cooper, 1988; Mattingly & Sayer, 2006). They also lend support to the prediction, based on role strain theory, that the demands associated with the role of parent would contribute to role overload. While it is possible parents gain

parenting efficacy with second births, our results suggested that this does not alleviate time pressure. In addition, we find that these effects are gendered, with second births exacerbating the large and robust gender gap in time pressure. Mothers' greater time pressure following second births may help explain Australian mothers' employment patterns (notably, their concentration in part-time work).

Against our predictions, after the initial childbirth 'shock', time pressure remained at a comparable level as children grew older. This finding indicates that time pressure following childbirth can be best characterised as a chronic strain, or a continuous source of stress (Avison & Turner, 1988). Mothers' time in domestic work declines with the age of the youngest child, with many mothers replacing unpaid with some paid work (Craig & Sawrikar, 2009). Our results suggest that such time reductions and reallocations did not translate into reduced time pressure, consistent with previous cross-sectional findings using Australian data (Craig & Sawrikar, 2009). In addition, the gender gap in time pressure remained stable with children's age, suggesting that mothers' responsibility for children remained taxing net of changes in employment and domestic time. Taken together, these results paint a clear picture: children imposed substantial and durable demands on parents.

We also assessed the moderating effects of paid and domestic work hours and relative childcare contributions on parent's reports of time pressure. Against predictions based on the principle of competing role demands, we found little evidence that changes in work and housework time moderated the influence of parenthood on time pressure. Where moderation effects were *statistically* significant, these were not *substantially* significant (i.e. their magnitude was negligible). These results therefore indicate that the negative effects of

parenthood and second births on time pressure were not experienced (or not experienced more strongly) by mothers or fathers who work more hours or do more hours of domestic labor –a possibility that raised in previous research (Hansen, 2012; McLanahan & Adams, 1987; Umberson & Gove, 1989; Umberson et al., 2010). Rather, we find that all parents (particularly mothers) were vulnerable to time pressure net of their paid and domestic work, and childcare contributions. This suggests that that the role of 'parent', rather than 'working parent', was sufficient to raise time pressure.

Finally, our study contributed to knowledge by more clearly delineating the links between parenthood, time pressure, and mental health using high quality panel data. First, before accounting for time pressure, we found evidence of complex relationships between parenthood and mental health: first but not second children improved maternal mental health, while second but not first children decreased paternal mental health. The fact that first children improved maternal mental health is interesting, given that a majority of the literature documents an inverse relationship. Yet this finding is not unprecedented; it is consistent with a small number of studies reporting positive associations between parenthood and mental health (see e.g. Helbig et al., 2006; Leach et al., 2009). It stresses that the experience of motherhood need not be a factor contributing to psychological distress, and may in fact improve maternal psychological wellbeing. Yet, critically, when we factored in the time pressure brought about by having children, this was intrinsically intertwined with mental health changes accompanying parenthood. For women, net of time pressure, becoming a mother and having a second child were both a positive source of mental health. For men, net of time pressure, the first child improved mental health, while the second had no effect. This

pattern of results is consistent with both role strain theory (Goode, 1960) and the proposition that time constraints are responsible for the negative consequences of having children on mental wellbeing (Umberson et al., 2010). Notably, the gender gap in mental health favoring men faded substantially when time pressure was controlled. This suggests that the roots of such a gap can be traced back to the greater 'time squeeze' experienced by women compared to men upon the transition to parenthood and with second births.

Despite these contributions, our research has limitations that point towards avenues for further research. First, our measurement of time pressure was a single item. While this measure has been used in previous research (see e.g. Craig & Sawrikar, 2009; Craig & Brown and Mattingly & Sayer, 2006), it is less nuanced than index measures combining information from multiple items (see e.g. Dapkus, 1985 and Roxburgh 2002, 2006). It is therefore possible that our time pressure measure masks heterogeneity in respondents' actual life experiences or underestimates respondents' experiences of time pressure. Our fixed effects models comparing individuals to themselves over time reduced the likelihood of bias due to subjectivity in question interpretation (Ferrer-i-Carbonell & Frijters, 2005), but the collection of a more expansive measurements of time pressure within the HILDA Survey and other datasets would open new avenues for research on work-family balance. Relatedly, the time pressure measure available in the HILDA Survey data enabled more direct examination of role overload than competing role demands (i.e. inter-role conflict). Here, we examined competing role demands by considering interactive effects of parenthood and parental responsibilities on time pressure. Inclusion of measures that directly capture incompatibility in the demands of parenthood and other social roles would open new analytic pathways.

Second, our results showed little evidence that changes in work and domestic hours and childcare contributions moderated the relationships between parenthood and time pressure. Subsequent research could consider more specific work-related factors as potential moderators, including the nature and quality of parents' jobs (e.g. how physically and emotionally demanding they are), and parental connections to the labor force and preferences for employment (see Usdansky et al., 2012). In the same vein, future studies should pay attention to other potential moderators of the parenthood time pressure/mental health relationships, including whether and how any parenthood effects vary systematically by parents' education, occupation, income and perceived social support.

Finally, three data-driven limitations may restrict the generalisability of the results. First, individuals excluded from the analytic sample due to missing data did more paid and domestic work hours, and had lower incomes and lower educational credentials than individuals in the analytic sample – although differences were modest in magnitude. Second, panel attrition in the HILDA Survey was higher amongst respondents who are young (15-24 years), Indigenous, born in a non-English-speaking country, unemployed or working in low-skilled occupations (Summerfield et al., 2016). Taken together, these suggest that individuals, and parents, who are relatively 'well off' may be over-represented in our analytic sample. If such parents dispose of better resources to combat time pressure and psychological strain, it is possible that this may have resulted in downward-biased parameters on the parenthood variables. Third, as discussed earlier, HILDA Survey respondents were observed at different stages of parenthood and for a different number of time points. As a result, sample sizes for the variables capturing time before and after births were denser in some years (those with

smaller values) than in others (those with higher values). Therefore, the estimated results may be disproportionately driven by –and hence more robust– for those time periods. Analyses of more uniform birth-cohort studies could therefore complement those presented here.

In addition to addressing these data-driven shortcomings, subsequent research could move beyond our findings by considering more complex issues around birth timing. For example, it is possible that the effects of second births depend on the age of the first child. Further, the role of social support (e.g. help from friends and family, or via institutions such as universal childcare and parental leave) may ameliorate time pressure and its impact on parents' mental health. Assessing broader cultural (through cross-national data) and structural (by considering parental leave and childcare resources) differences in parents' time pressure and mental health following first and second births would illuminate potential policy mechanisms to alleviate these burdens.

To conclude, the results of this study were clear: the transition to parenthood and the birth of subsequent children were important drivers of the 'time squeeze'. The effects of these life course transitions were gendered, with women experiencing more severe time pressure than men. In addition, these experiences were boundary spanning, with parental time pressure bearing consequences for mental health. Given this, we advocate that parental time pressure and the gender gap in parental time poverty should feature prominently in government agendas concerned with the health and wellbeing of parents.

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Tables and figures

Table 1. Descriptive statistics on model variables

	Women		Men		All		
	Mean/%	SD	Mean/%	SD	Mean/%	SD	% missing
Time pressure	2.5	0.9	2.3	0.9	2.4	0.9	11.84
Mental health	72.4	17.4	74.4	16.7	73.3	17.1	11.77
Parenthood							<0.01
No children	34.4		41.3		37.6		
1 child	14.5		13.6		14.1		
2+ more children	51.1		45.1		48.3		
Age	37.4	10.3	37.6	10.4	37.5	10.4	<0.01
Marital status							0.02
Partnered	69.6		69.1		69.3		
Single	20.1		24.5		22.1		
Divorced, separated, widowed	10.3		6.4		8.5		
Highest educational qualification							0.03
Lower than Year 12	23.0		18.9		21.1		
Year 12	18.0		16.4		17.3		
Professional qualification	27.0		38.2		32.2		
Degree	32.0		26.5		29.5		
Student	6.7		5.5		6.1		<0.01
Retired	1.1		0.9		1.0		<0.01
Household income (in 10,000s)	9.9	6.5	10.0	6.2	10.0	6.4	<0.01
Long-term impairment	19.3		18.6		19.0		<0.01
Weekly paid work hours (in 10s)	2.7	2.1	4.2	2.0	3.4	2.2	14.95
Weekly domestic work hours (in 10s)	2.4	1.9	1.4	1.4	1.9	1.8	22.47
Relative childcare contributions							N/A
Of those with one child							
Main carer	59.0%		13.1%		36.1%		
Equal carer	28.5%		28.2%		28.3%		
Secondary carer	11.6%		58.5%		35.1%		
Of those with two children							
Main carer	48.6%		14.6%		32.6%		
Equal carer	35.2%		32.6%		34.0%		
Secondary carer	15.4%		52.3%		32.7%		

Notes: HILDA Survey data, 2001-2016. Sample: 110,904 observations (59,072 for women and 51,832 for men) from 20,008 individuals (10,355 women and 9,654 men). All variables are time-varying. Data are unweighted. % (missing) refers to the percentage of missing person-year observations in the *initial* sample.

Table 2. Associations between parenthood and time pressure (fixed effects models)

	Women	Men	Diff.	Women	Men	Diff.	Women	Men	Diff.
	(1)	(2)		(3)	(4)		(5)	(6)	
No children *(ref.)*									
1 child	0.336***	0.133***	†	0.372***	0.108***	†	0.360***	0.059*	†
2+ children	0.674***	0.275***	†	0.694***	0.245***	†	0.671***	0.197***	†
Years until 1st birth				-0.018***	0.010**	†	-0.024*	0.030**	†
Years since 1st birth				0.012*	0.002		0.047***	0.024*	
Years since 2nd birth				0.008**	0.006*		0.030***	0.014*	
Years until 1st birth ^{2}							-0.001	0.002*	†
Years since 1st birth ^{2}							-0.004***	-0.002*	
Years since 2nd birth ^{2}							-0.002***	-0.001	
N (observations)	59,072	51,832		59,072	51,832		59,072	51,832	
N (individuals)	10,355	9,704		10,355	9,704		10,355	9,704	
R^2 (within)	0.063	0.043		0.064	0.043		0.064	0.043	

Notes: HILDA Survey data, 2001-2016. Control variables include paid work hours, domestic work hours, age, age squared, marital status, education, other employment statuses (student, retired), household income and long-term impairments. Data are unweighted. † $p<0.05$ in Wald tests comparing coefficients for men and women. Significance levels: * $p<0.05$, ** $p<0.01$, *** $p<0.001$

Table 3. Associations between parenthood and time pressure (fixed effects models), moderating factors

	Women (1)	Men (2)	Diff.	Women (3)	Men (4)	Diff.	Women (5)	Men (6)	Diff.
No children *(ref.)*									
1 child	0.351***	0.200***	†	0.333***	0.134***	†			
2+ children	0.688***	0.314***	†	0.637***	0.274***	†			
Paid work hours (in 10s)	0.106***	0.089***	†	0.103***	0.084***	†	0.106***	0.082***	†
1 child * Paid work hours	-0.005	-0.014*							
2+ children * Paid work hours	-0.005	-0.008							
Domestic work hours (in 10s)	0.016***	0.013***		0.003	0.013*		0.014***	0.016***	
1 child * Domestic work hours				0.006	-0.000				
2+ children * Domestic work hours				0.018**	0.001				
1 child * Main carer							0.295***	0.065	†
1 child * Equal carer							0.342***	0.110***	†
1 child * Secondary carer							0.333***	0.123***	†
2+ children * Main carer							0.615***	0.218***	†
2+ children * Equal carer							0.576***	0.219***	†
2+ children * Secondary carer							0.574***	0.226***	†
N (observations)	59,072	51,832		59,072	51,832		33,889	30,904	
N (individuals)	10,355	9,704		10,355	9,704		6,711	6.334	

R^2 (within)	0.063	0.043	0.063	0.043	0.066	0.037

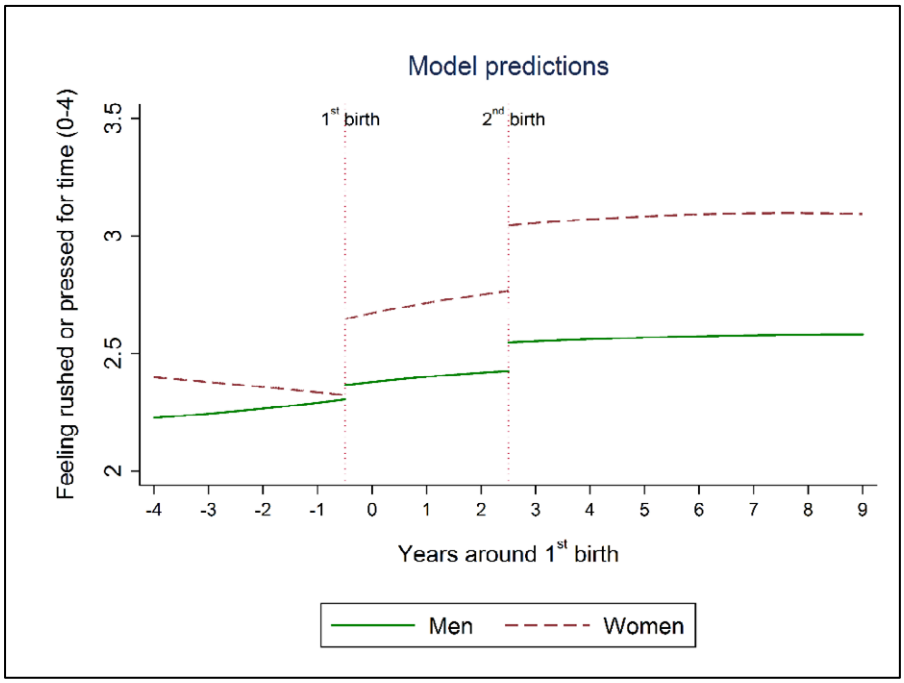
Notes: HILDA Survey data, 2001-2016. Control variables include age, age squared, marital status, education, other employment statuses (student, retired), household income and long-term impairments. Data are unweighted. † $p<0.05$ in Wald tests comparing coefficients for men and women. Significance levels: * $p<0.05$, ** $p<0.01$, *** $p<0.001$

Table 4. Associations between parenthood and mental health (fixed effects models)

	Women	Men	Diff.	Women	Men	Diff.	Women	Men	Diff.	Women	Men	Diff.
	(1)	(2)		(3)	(4)		(5)	(6)		(7)	(8)	
No children *(ref.)*												
1 child	1.335***	0.169	†	0.499	-0.464		-0.134	0.081		2.424***	0.616*	†
2+ children	-0.319	-1.341***	†	-0.659	-1.765***	†	-1.029	-1.388**		1.863***	-0.417	†
Years until 1st birth				0.373***	0.254***		0.733***	0.112	†			
Years since 1st birth				-0.224*	-0.049		-0.157	-0.505**				
Years since 2nd birth				-0.217***	-0.048	†	-0.384**	-0.120				
Years until 1st birth ^{2}							0.034*	-0.013	†			
Years since 1st birth ^{2}							-0.008	0.048**	†			
Years since 2nd birth ^{2}							0.015	0.007				
Time pressure										-3.239***	-3.351***	
N (observations)	59,072	51,832		59,072	51,832		59,072	51,832		59,072	51,832	
N (individuals)	10,355	9,704		10,355	9,704		10,355	9,704		10,355	9,704	
R^2 (within)	0.015	0.015		0.016	0.015		0.016	0.015		0.044	0.050	

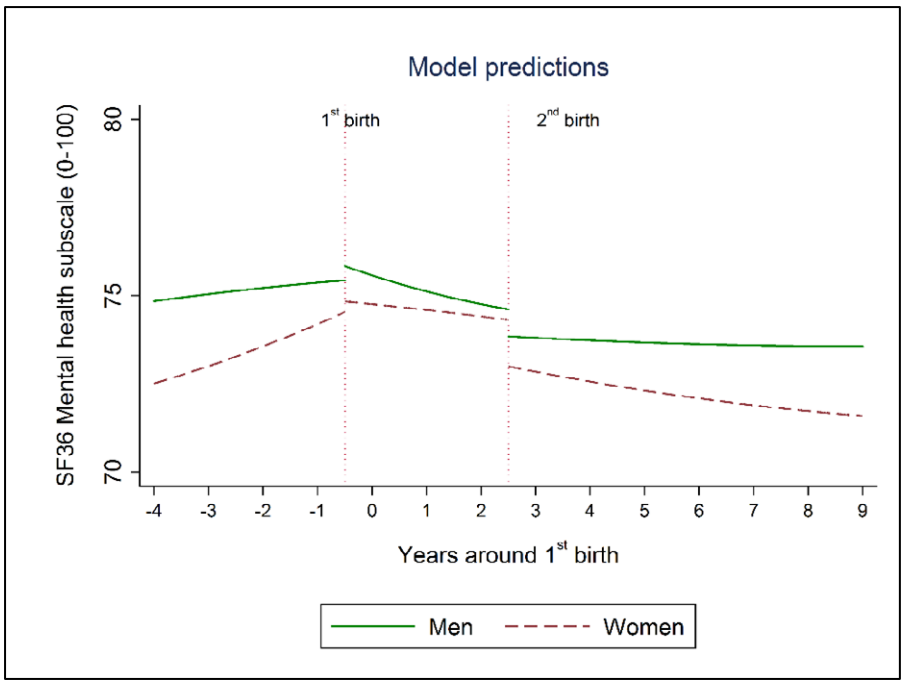
Notes: HILDA Survey data, 2001-2016. Control variables include paid work hours, domestic work hours, age, age squared, marital status, education, other employment statuses (student, retired), household income and long-term impairments. Data are unweighted. † $p<0.05$ in Wald tests comparing coefficients for men and women. Significance levels: * $p<0.05$, ** $p<0.01$, *** $p<0.001$

Figure 1. Predicted time pressure across parenthood transitions



Notes: HILDA Survey data, 2001-2016. Marginal effects based on results from models 5 and 6 in Table 2 pertaining to representative individuals who have experienced a second birth 3 years after the birth of their first child, are 30 years old, partnered, University educated, do 40 of paid work and 15 hours of domestic work per week, have a household income of AU$80,000, and have no impairment. The models consider time before/after births to a maximum of 15 years. In the figure, we restrict the range for better visualization.

Figure 2. Predicted mental health across parenthood transitions



Notes: HILDA Survey data, 2001-2016. Marginal effects based on results from models 5 and 6 in Table 4 pertaining to representative individuals who have experienced a second birth 3 years after the birth of their first child, are 30 years old, partnered, University educated, do 40 of paid work and 15 hours of domestic work per week, have a household income of AU$80,000, and have no impairment. The models consider time before/after births to a maximum of 15 years. In the figure, we restrict the range for better visualization.