Gender, Justice and Work: A Distributive Approach to Perceptions of Housework Fairness

1. Introduction

Perceptions of fairness concerning the domestic division of labor refer to beliefs about whether the allocation of household work within couples is just and appropriate. Such perceptions have received a substantial and increasing amount of academic attention, as they are considered important precursors of attitudes and behaviours that promote or undermine gender unequal arrangements at home and at work. If men and women perceive household work divisions which are seemingly unfair to women as 'fair', then this might result in conformity to and inaction against a *status quo* that oppresses women.

One of the puzzles identified in earlier studies is the high proportion of women and men who report that the division of domestic labor, of which women undertake approximately seventy per cent, is fair (Baxter 2000; Lennon and Rosenfield 1994; Smith et al. 1998). This raises questions about how perceptions of housework fairness are developed and suggests that aspects other than involvement in domestic work are important in determining evaluations of housework fairness. One possibility is that individuals assess fairness of housework arrangements in relation to total work hours spent in paid and unpaid work or in relation to economic resources contributed to the household. If men spend more time on paid work than women and earn more than women, both men and women may evaluate arrangements in which women do the bulk of housework as fair. Another possibility is that women and men believe that housework is women's main responsibility and that it is fair for women to spend more time on these tasks than men.

One way to investigate factors associated with perceptions of fairness is to examine how perceptions change as individuals and households change. There is overwhelming evidence that life course events such as the birth of a child and relationship changes result in vast changes in the amount of time men and women spend in paid and unpaid work and the share of the household income they contribute (Baxter et al. 2008; Budig and England 2001; Gupta 1999; Kluwer et al. 2002; Sanchez and Thompson 1997). These life course transitions may change perceptions of fairness of the domestic division of labour because they change the amount of time men and women spend on paid and unpaid work and their contributions to household resources. However, it is also possible that life course transitions change perceptions of housework fairness by changing individual values, comparison referents and identity, as proposed by the distributive justice approach (Thompson 1991). Individuals may experience cognitive or identity changes as a result of changed circumstances and movements across life course stages. These subjective changes might in turn change the way in which individuals form their evaluations of the fairness of housework arrangements. With the exception of qualitative studies specifically designed to investigate these issues (e.g. Gager 1998), few researchers have access to suitable survey items that directly measure the symbolic meaning and subjective evaluations of housework.

There are also just a few longitudinal studies examining variations in perceived fairness of housework divisions (Baxter et al. 2013; Kluwer et al. 2002), and these studies provide relatively limited contributions. First, none of them disentangles the two explanations reported above. Therefore, we do not know whether life course transitions

affect perceptions of housework fairness by shifting objective circumstances or subjective views. Second, these studies are based on small or non-representative groups of people, which limits extrapolation and generalization of results. Third, they are based on data which provide only a small observation window on individuals' attitudes and behaviors, and subsequently only a few event occurrences (Baxter et al. 2013).

In this paper, we examine men's and women's perceptions of the fairness of the domestic divisions of labor in their household using panel data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey. We add to the existing literature in two main ways. First, we examine these issues using long-running longitudinal survey data which enables us to assess whether and how partnered individuals' perceptions of housework fairness change with key life course events over a long period of time. Second, we exploit the panel structure of the HILDA Survey data to residually test whether the changes in perceptions of housework fairness which accompany life course transitions are due to changes in instrumental factors (such as relative resources and time availability) or psychological mechanisms (such as identity changes).

2. Previous research

Scholars usually take two approaches to understand perceptions of fairness of the division of household tasks. The first and most widely used perspective, which we term the *instrumental* approach, encompasses relative resource and time availability theories and highlights the role of time and resources in influencing the division of household labor. The key predictors proposed by these include time spent on domestic work, time spent on paid work and individuals' resources relative to their partners' (e.g. education, earnings and non-labor income). For example, Gager and Hohmann-Marriott (2006) examined how perceptions of housework fairness depend on time spent on paid work and housework, with findings suggesting that they both play an important role. Broadly speaking, these approaches suggest that fairness is evaluated in a rational way proportional to the time and resources contributed to the household. Building on social exchange theory, the relative resource approach argues that couples use personal resources relative to partners as bargaining tools to decide and evaluate the distribution of household labor (Coltrane 2000).

The second perspective used to understand perceptions of housework fairness, which we term the *distributive justice* approach, focuses on symbolic meanings and subjective evaluations of the division of housework, including comparison referents, subjective identity and attitudes (Nordenmark and Nyman 2003). It is unlikely that perceptions of housework fairness are based solely, or even primarily, on instrumental factors such as levels of involvement in domestic labor or time spent in paid work. As suggested by previous research, a broader range of factors that include subjective assessments of household arrangements must be considered. The distributive justice perspective provides a possible framework for identifying relevant broader subjective factors to consider (Hawkins et al. 1995; Kawamura and Brown 2010; Thompson 1991). Following social deprivation theory, the distributive justice perspective proposes that subjective evaluations of equity and justice are based on (i) valued outcomes, (ii) comparison processes, and (iii) values and sense of entitlement (Gager 1998; Greenstein 1996, 2009; Major 1987; Thompson 1991).

In a seminal study, Thompson (1991) stresses that even if all women aspired to an equal (50/50) share of tasks, they may simultaneously value other competing outcomes, such as a stress-free romantic relationship, fulfilling relationships with children, or a sense of enjoyment and reward that comes from taking care of one's family. In addition, her work draws attention to 'comparison referents', those individuals who are used as a point of comparison when evaluating whether a situation is fair. Most research on housework assumes that women will judge the fairness of their housework load in relation to the amount of housework done by their partners. But women may judge their load in comparison to other reference points, such as their mothers or sisters (Thompson 1991). Such comparisons might mean that women judge their own loads as fair, even if these are substantially higher than those of their male partners. Women may also compare their husbands to other men, some of whom may do less housework than their partners. For example, women may judge their partner's contribution in relation to the amount of work their fathers did at home when they were growing up, or in relation to the partners of friends. These kinds of comparisons may mean that women judge their partners contributions as fair by comparison to other men.

Major (1993) highlights the importance of women's values and sense of entitlement. She argues that men and women have different experiences of entitlement within families, due to gender-specific socialisation, gender-discriminatory societal norms and values, and gender-biased work opportunities. Women are typically socialised to accept unequal domestic work contributions as socially appropriate, and also have fewer opportunities for paid employment and occupational advancement than men. These processes may make women less likely to judge unequal arrangements at home as unfair. As theoretical assumptions and empirical findings connect women's sense of entitlement to equality and subjective evaluations of household labor to couples' relative resources and power, this implies that women might perceive divisions differently if economic power and other resources shift between couples.

The significance of Thompson's and Major's work is that they both draw attention to the importance of cognitive, psychological and symbolic factors underlying perceptions of housework fairness and encourage research which moves beyond establishing the predictive power of time and resources. Unlike variables such as time spent on unpaid and paid work, education or income, the notions introduced by Thompson and Major are rarely included in household panel studies. Such topics might include asking individuals to identify who they compare themselves to when evaluating the fairness of housework arrangements in their household, whether they would prefer different housework arrangements if these were possible, and their perceptions of the impediments to a more equal sharing of housework tasks. Such data are not routinely available in quantitative empirical studies. This has resulted in a stall in empirical quantitative research aimed at exploring the role of these subjective dispositions in mediating the relationships between life course transitions and perceptions of housework fairness.

3. Life course transitions and perceptions of housework fairness

How men and women evaluate the fairness of their housework time and divisions is likely to vary over time (Baxter et al. 2013; Kluwer et al. 2002). Key life course events such as relationship and parenthood transitions may lead to changes in individual identity, changes in perceptions of relationship priorities, sense of entitlement,

comparison referents and valued outcomes. We know from previous research that each of these transitions leads to important and substantial changes in time spent in paid work (Drobnič et al. 1999; Sanchez and Thompson 1997), unpaid work (Baxter et al. 2008; Sanchez and Thompson 1997), earnings (Budig and England 2001), housing and household composition (Clark and Withers 2007). Both transitions into relationships and transitions into parenthood are known to increase women's time on domestic work (Gupta 1999; Baxter et al. 2008). Consequently, both of these may lead to stronger perceptions of unfairness. For example, some women may perceive housework divisions as more unjust after entering a marital relationship or childbirth because both types of transitions increase their unpaid workload, but have minimal effect on men's unpaid work hours (Baxter et al. 2008). On the other hand, it is possible that some women find the additional housework acceptable because their values and identity change. For example, after marriage or childbirth women may give more salience to their role as mothers and prioritize family life and motherhood over other life domains. Baxter et al. (2014), for instance, showed that entry to parenthood is associated with a stronger prioritization of motherhood as women's key role. If this is the case, then entry to parenthood may be associated with a decrease in perceptions of housework unfairness. Therefore, our first hypothesis is that:

_H1_. _Perceptions of housework fairness will be associated with parenthood and relationship transitions._

In terms of the instrumental approach outlined above, changes in time allocation to paid and unpaid work and associated changes in relative resources in the form of earnings contributed to the household may lead to changes in the perceptions of the fairness of the domestic division of labor. In other words, the instrumental approach expects that life course transitions such as entry to parenthood and relationship changes affect perceptions of housework fairness because they tend to reinforce within-household gender inequalities in the economic realm. We therefore hypothesize that:

_H2_. _The raw associations between parenthood and relationship transitions and perceptions of housework fairness will not be apparent in models that control for time spent on paid and unpaid work and earnings brought to the family by the spouses._

That is, we expect to find that a portion of the change in individuals' perceptions of housework fairness brought about by changes in relationship and parenthood status will be due to shifting circumstances concerning the time allocation and earnings contribution of the spouses. This applies to any effects found immediately after the event and to the general pattern after the event.

In addition, there is also an established body of work from cognitive and social psychology showing that life course transitions lead to changes in identity and self-perceptions (Jessner et al. 1970; Stewart 1982; Stewart et al. 1986). This occurs for a broad range of life events and for both men and women. For example, psychological research has shown that women undergo a process of self-socialization during and after pregnancy with their first child where they both passively and actively construct new

images of themselves as mothers (Deutsch et al. 1988). These new self-images may be associated with changes in views about parenting practices and arrangements, and by extension, evaluations of other aspects of work and family life such as gender divisions of labor. Men undergo a similar process (Doucet 2009; Yeung et al. 2001) and, as for women, the associated self-adjustments may lead to new identities and parenting beliefs and by extension changes in evaluations of gender divisions of labor. Similar psychological processes leading to changes in identity, sense of entitlement and comparison referents are likely to take place in relation to relationship transitions and, in turn, be associated with changes in perceptions of housework fairness (Baucom et al. 1990; Lopata 1973; Pals 1999).

As explained before, the subjective dispositions proposed by the distributive justice perspective are typically unmeasured or unmeasurable in survey data and consequently impossible to model directly in a quantitative framework. We can however test the importance of such mechanisms *residually* by specifying our third hypothesis in the following form:

H3. The associations between parenthood and relationship transitions and perceptions of housework fairness will remain after statistically controlling for observable and time-invariant unobserved factors.

That is, if the relationships between life course transitions and perceptions of housework fairness remain after controlling for objective circumstances, we would conclude that the remaining effects will be due to subjective perceptions. How can such a thing be tested? Thanks to the richness of the HILDA Survey data it is possible to estimate a multivariate regression model that includes virtually all the instrumental factors and socio-demographic variables deemed important in previous literature as statistical controls. It is particularly important to control for as many instrumental factors known or suspected to change across the two life course transitions as possible. With panel data such as those from the HILDA Survey, it is additionally possible to do this while estimating within group regression models of the 'fixed effects' family, which also control for time-constant personal characteristics. Our residual test should therefore establish whether life course transitions appear to have an independent effect on perceptions of housework fairness net of all the observable and unobservable factors for which we control. If this is the case, it would constitute suggestive indication of the role of changing subjective factors in influencing perceptions of housework fairness.

Finally, gender differences in the effects of life course transitions may be at play. It is well-established that the life course transitions that we consider (especially the transition into parenthood) have a more profound effect on women's than on men's daily lives (Baxter et al. 2008; Gupta 1999; Sanchez and Thompson 1997). Further, there may be variations in perceptions depending on the time since the birth. Initially women may be willing to undertake the bulk of housework while they are on leave or during the early stages of motherhood as they focus on the wellbeing of the new child and develop parenting routines. Consistent with this, previous research shows that following a first birth Australian women spend about 6 hours more per week on housework activities, excluding any additional time on childcare tasks (Baxter et al. 2008). There is also evidence from Australia and the United States that employed women with young children experience the longest total working weeks of all groups if

paid and unpaid work hours are combined (Craig and Mullan 2009; Sayer et. al. 2009). As children age and some women return to work, the reality of juggling paid and unpaid work in addition to childcare may become more evident. Since men are likely to return to work full-time soon after the birth of a child and experience little change in unpaid work time, the effects of childbirth on men's perception of fairness should be less noticeable. We thus further hypothesize that:

H4. *Associations between perceptions of housework fairness and parenthood and relationship transitions will be more pronounced amongst women than men.*

Australia provides a very interesting case study to examine the relationships of interest, given recent changes in women's socio-economic standing and labour market attachment. As for many other developed nations, the labour force participation rate of Australian women has increased over the last few decades, from 52% in 1992 to 59% in 2011 (ABS 2011; Craig et al. 2010). Importantly, there has been a large increase in the proportion of mothers in the paid workforce. Between 1996 and 2006 the participation rate of mothers with children aged 0-14 years rose from 59% to 64%. However, many Australian mothers work part-time, defined as less than 35 hours per week. For example, in 2006, 59% of employed mothers with children aged 0-14 years worked part-time, compared to 45% of all employed women (ABS 2011). This undoubtedly contributes to Australian women's high housework hours relative to other developed nations, as shown in cross-national comparative research (Cooke 2010). Furthermore, women take longer breaks from employment around the birth of children with employed Australian women taking an average of 32 weeks of leave (combining paid and unpaid leave) compared to less than 2 weeks of leave for men (ABS 2013).

4. Data and key variables

To investigate the effects of relationship and parenthood transitions on individuals' perceptions of housework fairness we use 11 waves of data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey. This is a large-scale multipurpose yearly panel survey covering the period 2001-2011 that contains rich information from a representative sample of the Australian population (Watson and Wooden 2012). The HILDA Survey data contains 44,655 observations from 8,369 men and 46,770 observations from 8,715 women in married or cohabiting relationships. As is typical in the literature, we exclude individuals in same-sex relationships, who do not share a common residence with their partners, and who are in partnerships in which both report doing no housework. We also limit the sample to individuals where both partners are aged 18 to 64 years of age, neither partner has been previously observed in another partnership and neither has missing information on key variables. Our final analytical sample comprises 54,936 observations (27,468 for men and 27,468 for women) from 5,790 couples.

The outcome variable of interest is perceptions of housework fairness. These are inferred from a question in a self-completion questionnaire in which respondents are asked: *"Do you think you do your fair share of work around the house?* Possible responses are in an ordered form: *"[1] I do much more than my fair share"*; *"[2] I do a bit more than my fair share"*; *"[3] I do my fair share"*; *"[4] I do a bit less than my fair share"*; and *"[5] I do*

much less than my fair share". The question wording thus captures how each partner thinks about his/her share of the housework. To model this variable using logistic regression we dichotomize it so that categories [1] and [2] take the value 1 and categories [3] to [5] take the value 0, as in Baxter et al. (2013). Therefore, our outcome variable measures whether individuals perceive the domestic division of labor to be *unfair* to them: *[1] I do more than my fair share"* and *"[0] I do my fair share or less"*.

Our key explanatory variables are two types of life course transitions: (i) parenthood transitions and (ii) relationship transitions. Concerning parenthood, we are interested in both the short-term effects of recently having a child and the long-term (i.e. overall) effects of becoming a parent on perceptions of housework fairness. The former is captured by a dummy variable which takes the value 1 if individuals have had a child between wave *t-1* and wave *t*, and the value 0 otherwise.[1] The latter is captured by an exhaustive set of three mutually-exclusive dummy variables which identify respondents who at the time of interview are not parents, are parents of one child, and are parents of two children or more. These variables appear to be 'static'. However, as we will discuss in the next section, we use estimation techniques of the fixed effects family in which 'change' is modelled implicitly.

Relationship transitions capture change and stability in relationship status between time *t-1* and wave *t*. Individuals and their partners can fall into either of the following states: remained married (married at time *t-1* & married at time *t*); remained cohabiting (cohabiting at time *t-1* & cohabiting at time *t*); married from cohabitation (cohabiting at time *t-1* & married at time *t*); married from being unpartnered (unpartnered at time *t-1* & married at time *t*); and began cohabiting from being unpartnered (unpartnered at time *t-1* & cohabiting at time *t*). Since unpartnered individuals (i.e. never married, divorced, separated or widowed individuals) are excluded from analysis, these states are exhaustive and mutually-exclusive.

5. Methodological approach

Perceptions of housework fairness are very subjective. Given the same objective arrangements concerning the domestic division of household labor, different individuals might provide different responses. Similarly, individuals experiencing different objective circumstances might answer with the same score. This occurs because there is no single objective benchmark to which housework arrangements can be compared. Instead, idiosyncratic preferences, attitudes, values, comparison referents and/or expectations of individuals which are typically unobserved in surveys may be important in determining how different individuals perceive fairness in housework arrangements in their household. If these idiosyncratic factors are correlated with the observed explanatory variables and are not included in the model, then the estimates on the observed variables will be affected by omitted variable bias. Thus, estimates from models of perceptions of housework fairness which do not account for person-specific unobserved heterogeneity are likely to be biased.

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[1] Respondents in the HILDA Survey are interviewed as close as possible to the anniversary of the previous interview. As a result, in the vast majority of cases, 'recent experience of parenthood' (defined as having had a child between wave *t-1* and wave *t*) refers to having become a parent one to twelve months before the interview.

To prevent this, we exploit the panel structure of the HILDA Survey and account for person-specific time-invariant unobserved heterogeneity via the estimation of panel regression models from the fixed effects family. We estimate a conditional logit model (i.e. a fixed-effect logistic regression model) which takes the following form:

$$Pr(PU_{it} = 1) = \frac{\exp(X_{it}\beta + \upsilon_i + \varepsilon_{it})}{1 + \exp(X_{it}\beta + \upsilon_i + \varepsilon_{it})} \qquad (1)$$

$$PU_{it} = \begin{cases} 1 \text{ if } PF_{it} \leq 2 \\ 0 \text{ if } PF_{it} > 2 \end{cases} \qquad (2)$$

Here, subscripts i and t stand for individual and time period respectively; PF is the original ordered variable capturing perceptions of housework fairness; PU is the new binary variable taking the value 1 if individuals perceive such housework arrangements to be unfair to them and value 0 otherwise; X are observable time-varying explanatory variables; β are coefficients of interest to be estimated; υ is a time-constant error term denoting person-specific unobserved heterogeneity; and ε is the usual time-varying stochastic error term.

Using the well-known Chamberlain (1980) estimator, the model estimates β coefficients on the X variables that are not affected by unobserved time-constant factors correlated with both X and Y (υ). This is because fixed-effect models use only within individual variation in the outcome and explanatory variables, and discard any between individual variation. They tell us how changes over time in individuals' characteristics are associated with changes over time in their outcomes. Individuals effectively act as their own statistical controls (Allison, 2009). As a drawback, in this type of analysis only individuals for whom there is change in the explanatory and outcome variables over time contribute to estimation of model parameters. As a robustness test of whether this influences our results, two other sets of models will be estimated (more details are included in the results section).

These fixed-effect models account for all time-constant factors correlated with life course transitions and perceptions of housework fairness. However, to be confident that the model estimates on the life course transition variables capture the effects of subjective, psychological mechanisms we need to explicitly control for all time-changing factors which accompany parenthood and relationship transitions. We do so by exploiting the rich data on socio-demographic characteristics and paid and unpaid work available in the HILDA Survey, so our final models control for a wide array of individual-, couple- and household-level characteristics known or suspected to affect perceptions of housework fairness. These include factors capturing the actual household division of labor (total couple weekly housework hours and respondent's share of the housework hours), factors deemed important by relative resources and time availability theories (age and its square, self's and partner's education, self's and partner's employment status, total couple weekly paid work hours, respondent's share of paid work hours, total couple income and respondent's share of total couple income) and other factors which might be important and might change with life course transitions (number of

other adults in the household, number of beds per person in the house and relationship duration).[2] Table A1 in the appendix shows descriptive statistics for all model variables.

To examine whether parenthood and marital transitions have an impact on men's and women's perceptions of housework unfairness, we first fit models for each set of transitions with no statistical controls. These provide estimates of the raw relationships between the transitions of interest and our outcome variable. We then estimate a final model including variables for all the transitions plus the full set of control variables described above. If the addition of the control variables to the model moves the odds ratios on a given transition variable towards one (i.e. towards 'no effect'), we would conclude that the association between that transition and perceptions of housework unfairness is (at least partially) due to differences in the 'sort' of individuals who experience the transition. Any remaining statistically significant odds ratios on the transition variables in the final model are consequently taken as suggestive indication of subjective dispositions driving the effect of life course transitions on perceptions of housework. To explore whether the explanatory variables affect men's and women's perceptions of housework unfairness differently, we estimate gender-specific models and compare the effects.

6. Empirical evidence

Descriptive analysis

Our focus is on men's and women's perceptions of housework fairness. To operationalize the concept we use a variable in the HILDA Survey capturing whether individuals perceive that they do more than, less than, or their fair share of work around the house. The gender-specific distributions of responses to this question are presented at the top of Table 1. A substantially higher proportion of women than men report doing more or much more than their fair share of work around the house, whereas a higher share of men than women report doing their fair share, a bit less, or much less. For pragmatic reasons, our main set of regression models will use a reduced version of this variable in which responses 1 to 2 and responses 3 to 5 of the original variable are grouped together. The distribution of the resulting dichotomous variable is shown at the bottom of Table 1. A large proportion of women (60.2%) but only a small proportion of men (14.8%), perceive that they do more than their fair share of work around the house. Given known gender differences in hours of paid and unpaid work in Australia, the gender disparities in perceptions of housework fairness are in line with theoretical predictions. They are, however, surprisingly large.

Table 1. Perceptions of housework fairness, ordered and binary variables, by gender

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[2] Perceptions of housework fairness might also be affected by gender-role attitudes, with individuals holding more traditional views being less likely to perceive arrangements in which women do most of the housework as unfair (Bittman et al. 2003). We do not explicitly control for gender-role attitudes in the presented models, as the relevant measures are only available in four waves of the HILDA Survey. The fixed-effect models however control for the time-constant component of these. In alternative specifications (results not shown), we included these constructions in the model and used only these four data waves. Results on the life course transition variables were remarkably similar. We also lack a measure of whether couples outsource household tasks, as this is only available in selected waves of the survey. While this practice may reduce unfairness reports, there is no evidence suggesting that this is associated with the transitions of interest in ways that would bias our results.

Perceptions of housework fairness	Women		Men	
	n	%	N	%
Ordered variable				
[1] I do much *more* than my fair share	8,447	30.7	1,343	4.9
[2] I do a bit *more* than my fair share	8,084	29.4	2,709	9.9
[3] I do my fair share	9,669	35.2	15,636	56.9
[4] I do a bit *less* than my fair share	1,007	3.7	6,551	23.8
[5] I do much *less* than my fair share	261	1.0	1,229	4.5
Binary variable				
[1] I do *more* than my fair share	16,531	60.2	4,052	14.8
[0] I do my fair share or *less*	10,937	39.8	23,416	85.2
Totals	*27,468*	*100*	*27,468*	*100*

Notes: HILDA Survey data (2001-2011).

Multivariate analysis: base models

We will now examine the effects of variables capturing parenthood and relationship transitions on perceptions of housework fairness and test our research hypotheses using panel regression models. Our first set of regression analyses uses conditional logit models in which the outcome variable is a dichotomous indicator taking the value 1 if individuals perceive that they do more than their fair share of work around the house and the value 0 otherwise. These are within group models from the fixed-effect family and consequently compare responses from the same respondents over time. We report model estimates in the form of odds ratios, which give the odds of reporting doing more than one's fair share of work around the house associated with a within person one-unit increase in the explanatory variables. Results are presented in Table 2.

Model 1 includes only variables capturing different dimensions of parenthood, whereas Model 2 includes only variables capturing relationship transitions. Hypothesis 1 stated that perceptions of housework fairness are associated with parenthood and relationship transitions. For this to hold, the estimated odds ratios on variables capturing life course transitions in these models should be statistically significant. For women, the odds of reporting an unfair division of household labor are 2.56 times larger when they are mothers of one child, than when they have not yet had a child. When women are mothers of two or more children, the analogous ratio is close to 4. Interestingly, despite women being much more likely to report that they do *more* than their fair share of work around the house when they are mothers than when they are childless, in years immediately following the birth of a child the odds of women perceiving housework arrangements to be unfair are 16% lower than in all other years (an associated odds ratio of 0.84). For men, the only statistically significant effect suggests that when men are parents of two or more children they are less likely to perceive housework arrangements to be unfair to them (OR=0.69).

Table 2. Fixed-effect conditional logit regression models of perceived housework unfairness

	Women			Men			Wald test *p* (3)
	1	2	3	1	2	3	
<u>Parenthood transitions</u>							
Just experienced parenthood	0.84*		0.75**	0.87		0.87	
Not a parent *(ref. cat.)*							
Parent of one child	2.56***		1.96***	0.79		0.99	**
Parent of two children	3.78***		2.79***	0.69*		0.95	***
<u>Relationship transitions</u>							
Remained married *(ref. cat.)*							
Remained cohabiting		0.74**	0.82		1.27	1.02	
Married from cohabitation		0.56***	0.82		1.18	0.94	
Began cohabiting from unpartnered		0.52**	0.65		1.07	0.81	
Married from unpartnered		0.55*	0.56		1.22	1.07	
<u>Control variables</u>							
Age			0.95			1.11	
Age squared			1.00			1.00**	
Relationship duration (years)			1.07			1.00	
Number of other adults			1.27***			1.13*	
Number of beds per person			0.73***			1.00	*
No partner has univ. qual. *(ref. cat.)*							
Both partners have univ. qual.			0.51			4.99**	***
Only the man has univ. qual.			1.10			2.09	
Only the woman has univ. qual.			0.67			2.64**	**
Both partners are employed *(ref. cat.)*							
No partner is employed			1.30			0.68	*
Only the man is employed			0.65***			1.43*	***
Only the woman is employed			1.73**			0.66	**
Total couple income (in 10,000s)			0.98*			1.00	
Proportion of income			0.87			0.75	
Total couple paid work hours (in 10s)			1.05**			0.98	*
Proportion of paid work hours			0.31***			0.31***	
Total couple housework hours (in 10s)			1.10***			1.08**	
Proportion of total housework hours			5.98***			7.13***	
n (observations)	14,736	14,736	14,732	9,252	9,252	9,244	
n dropped (observations)	12,732	12,732	12,731	18,216	18,216	18,219	
n (individuals)	2,034	2,034	2,034	1,297	1,297	1,296	
n dropped (individuals)	3,756	3,756	3,756	4,493	4,493	4,494	
log likelihood	-5,756	-5,806	-5,526	-3,400	-3,403	-3,260	
chi²	128	27	583	9	3	284	
p(chi²)	0	0	0	0	1	0	
AIC	11,517	11,620	11,099	6,806	6,813	6,568	

<u>Notes:</u> HILDA Survey data (2001-2011). Odds ratios. Significance levels: * 0.05 ** 0.01 *** 0.001.

The effects of relationship transitions on perceptions of housework unfairness are evaluated against the reference category 'remaining married'. Amongst women, the odds of reporting that the division of housework is unfair to them are substantially smaller when, since the previous observation, they remain in a cohabiting relationship (OR=0.74), got married after a cohabitation spell (OR=0.56) or from being unpartnered (OR=0.55), or began a cohabitation spell (OR=0.52), relative to remaining in a marriage. For women, the odds ratios on the variables capturing relationship transitions are all statistically different from 1 at, at least, the 95% confidence level. No statistically significant associations emerge amongst men.

Multivariate analysis: final models

Results so far indicate that, net of person-specific unobserved heterogeneity, there are very strong and statistically significant associations between parenthood and relationship transitions and perceptions of housework fairness amongst women, and virtually none amongst men. Thus, prior to accounting for confounding observable factors women's but not men's perceptions of housework fairness appear to be affected by life course transitions. These results therefore mostly support Hypothesis 1. To test the remaining hypotheses, we need to turn to our final models. Model 3 includes all the transition variables discussed previously plus a range of statistical controls for other factors known or suspected to affect perceptions of housework fairness.[3] Hypothesis 2 stated that time spent in paid and unpaid work and resources brought to the family by the spouses will account for the raw relationships between parenthood and relationship transitions and perceptions of housework fairness. In contrast, Hypothesis 3 stated that the associations between parenthood and relationship transitions and perceptions of housework fairness will remain after statistically controlling for observable and time-invariant unobserved factors. If the odds ratios on the life course transitions lose their magnitude and statistical significance in the final models we would conclude that, in line with Hypothesis 2, time availability and relative resources explain changes in perceptions of housework fairness associated with life course transitions. If, instead, such odds ratios remain statistically significant we would conclude that, in line with

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[3] The estimated odds ratios on the control variables are for the most part consistent with expectations and previous studies. For men and women, the number of additional adults living in the household, the total couple housework hours, and the personal share of these hours increase the likelihood of reporting housework arrangements to be unfair, while the personal share of the total couple paid work hours reduces it. For women, the total couple paid work hours increase the odds of reporting unfair housework arrangements, whereas the number of beds per person and the total couple income decreases such odds. Surprisingly, there is little evidence of independent effects of age or relative income on individuals' reports of fairness in housework arrangements within our sample. Interesting gender-asymmetrical effects emerge for variables capturing changes in the distribution of education and employment within couples. If both partners are observed to achieve university qualifications, the odds of reporting unfair housework arrangements increase fivefold for the male partner but decrease by 50% for the female partner, relative to when both partners had not yet completed tertiary education. Additionally, when women partnered to men with no tertiary education obtain a university qualification they become 2.6 times more likely to report housework arrangements to be unfair to them. Relative to when both partners are employed, when individuals are sole earners they are more likely to report housework arrangements to be unfair to them, and less likely to do so when they are the only non-employed partner.

Hypothesis 3, time-changing subjective factors could be driving changes in perceptions of housework fairness across life course transitions.

Our results indicate that, for women, some of the associations reported previously remain in the final model. Most noticeably, women's recent experiences of parenthood are still associated with a lower propensity to report unfair housework arrangements (OR=0.75) and being a mother is still strongly associated with reporting unfair housework arrangements (the associated odds ratios are 1.96 and 2.79 for having one and two or more children, respectively). The impacts of relationship transitions on our outcome variable amongst women fade in the final model. Results for men are very different. Once relevant statistical controls for socio-demographic factors, time availability and relative resources are included in the model, life course transitions have no effects on men's perceptions of the fairness of current housework arrangements.

Hypothesis 4 stated that associations between perceptions of housework fairness and life course transitions should be more pronounced amongst women than men. This will be supported if the estimated odds ratios on life course transitions are larger in absolute size for women than for men. The final column in Table 2 shows the results of Wald tests comparing the odds ratios in the final models for men and women. Statistically significant gender differences emerge in the impact of a number of variables on perceptions of housework fairness. Most importantly, the impacts of parenthood (being a parent of one child and being a parent of two or more children) are more pronounced amongst women than men. These tests also reveal that the effects of relationship transitions are the same for men and women. Therefore, the prediction in Hypothesis 4 holds for parenthood but not for relationship transitions.[4]

Robustness checks

The models estimated so far have allowed us to gain novel and important insights into the factors driving men's and women's perceptions of fairness regarding housework. However, the methodological approach we used, the conditional logit (CL) model for panel data, is not flawless and has some known limitations. Most importantly, applying this type of estimation technique to an ordered variable 'wastes' information by imposing a subjective, researcher-defined threshold which is then used to collapse the original ordinal variable into a binary indicator. Two ways of estimating fixed-effect models on ordered variables which overcome this issue have been recently proposed, the 'Person-Specific Threshold' (PST) approach by Ferrer-i-Carbonell and Frijters (2004) and the 'Blow-Up and Cluster' (BUC) approach by Baetschmann et al. (2011).

The PST method involves dichotomizing the original ordered outcome variable using a person-specific threshold: values on perceptions of housework fairness that are *equal or lower* than the person-specific mean take the value 1, while values on perceptions of

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[4] However, caution must be exerted when interpreting the results of these Wald tests. As explained by Mood (2010) it is not possible to compare effect sizes across logistic regression models on different samples unless one assumes that the degree of unobserved heterogeneity is the same. To test the robustness of our results, we re-estimated our models as (i) linear models of the five-point measure of housework fairness, and (ii) linear probability models of the binary housework fairness variable. The conclusions drawn from these specifications matched those reported in the main body of the paper.

housework fairness that are *greater* than the person-specific mean take the value 0.[5] This specification has a key advantage over the CL approach, namely that less information is lost in the dichotomization of the outcome variable, as more individuals contribute to the estimation of model parameters when using this specification.[6] The BUC method consists of expanding the dataset as many times as there are potential dichotomizations of the original ordered outcome variable, apply each dichotomization to one set of duplicated observations, and estimate a conditional logit model on the entire data clustering the standard errors to account for the duplication of observations. For a detailed discussion of this method and a formal mathematical formulation see Baetschmann et al. (2011).

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[5] This can be expressed as: $\Pr(\text{PU}_{it}^{*} = 1) = \frac{\exp(X_{it}\beta + \upsilon_i + \varepsilon_{it})}{1 + \exp(X_{it}\beta + \upsilon_i + \varepsilon_{it})}$; $\text{PU}_{it}^{*} = \begin{cases} 1 \text{ if } \text{PF}_{it} \leq \overline{\text{PF}}_i \\ 0 \text{ if } \text{PF}_{it} > \overline{\text{PF}}_i \end{cases}$.

[6] For example, assume that our panel consisted of only two time periods. In this scenario, if the outcome variable is dichotomized following the process illustrated in equation (2), an individual who reports a value of [3] in the original ordered variable PF in Wave 1 and a value of [5] in Wave 2 would score [0] and [0] in the new binary variable PU. Since there would be no variation in the outcome variable over time, such individual would not contribute to the estimation of model parameters in a conditional logit model. The same would apply to individuals who always report values comprised between [1] and [2] for the original ordered variable PF. However, under the dichotomization of the outcome variable in the PST model, the person-specific mean in PF for our example individual would be ([3] + [5]) / 2 = [4], with the PF score for Wave 1 falling below it and consequently being attributed a score of [1] in the new binary variable PU* and the PF score for Wave 2 falling above it and consequently being attributed a new value of [0] in the new binary variable PU*. Thus, when using this approach there is variation over-time in the new binary variable PU* for this individual, who would therefore contribute to estimation of model parameters.

Table 3. Fixed-effect conditional and ordered logit models of perceived housework unfairness

	Women			Men		
	3	4	5	3	4	5
	(CL)	(PST)	(BUC)	(CL)	(PST)	(BUC)
Parenthood transitions						
Just experienced parenthood	0.75**	0.73***	0.91***	0.87	0.95	0.99
Not a parent *(ref. cat.)*						
Parent of one child	1.96***	2.03***	1.29***	0.99	1.19	1.03
Parent of two children	2.79***	3.02***	1.45***	0.95	1.09	1.01
Relationship transitions						
Remained married *(ref. cat.)*						
Remained cohabiting	0.82	0.83	0.91	1.02	0.95	0.99
Married from cohabitation	0.82	0.80	0.93	0.94	0.86	0.96
Began cohabiting from being unpartnered	0.65	0.62*	0.82*	0.81	1.12	1.01
Married from being unpartnered	0.56	0.82	0.94	1.07	1.47	1.08
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
n (observations)	14,732	20,828	24,813[a]	9,244	19,917	26,998[a]
n dropped (observations)	12,731	6,635	2,650[a]	18,219	7,546	465[a]
n (individuals)	2,034	2,933	4,786[a]	1,296	2,798	5,495[a]
n dropped (individuals)	3,756	2,857	1,004[a]	4,494	2,992	295[a]
log likelihood	-5,526	-8,537	-47,503	-3,260	-7,723	-60,540
chi²	583	688	553	284	599	485
p(chi²)	0	0	0	0	0	0
AIC	11,099	17,123	95,054	6,568	15,494	121,127

Notes: HILDA Survey data (2001-2011). Odds ratios. Significance levels: * 0.05 ** 0.01 *** 0.001. Control variables: age and its square, relationship duration, number of other adults in household, number of beds per person, self and partner's education, self's and partner's employment status, total and respondent's share of couple income, total and respondent's share of couple paid work hours, total and respondent's share of couple housework hours. CL = Conditional fixed-effect logit model. PST = Person-Specific Threshold ordered fixed-effect logit model. BUC = Blow-Up and Cluster ordered fixed-effect logit model. [a] = The statistic relates to the 'unexpanded sample'.

In Table 3 we compare the results for key variables from our final model in Table 2 (Model 3) to the results obtained from analogous models estimated using the PST (Model 4) and BUC (Model 5) techniques. The conclusions drawn from this comparison are reassuring: the estimated parameters on key variables of interest change little across models estimated using different techniques and are very rarely statistically significant in one model but not in others. There are very few exceptions and the magnitudes of between model divergences are fairly minor. Therefore, we are confident that the impacts of life course transitions and other factors on perceptions of housework fairness reported here are robust to the estimation method used.

7. Conclusion and discussion

In this paper we have investigated whether parenthood and relationship transitions influence men's and women's perceptions of fairness of the domestic division of labor in their households using rich panel data from the HILDA Survey and fixed-effect panel regression models. Most previous research has used cross-sectional data to examine factors associated with variations in perceptions of housework fairness. The added value of the approach we take is that we are able to observe perceptions of fairness before and after key life course transitions, which allows for finer estimation of the relationships of interest by examining within individual change over time.

As reported in older, previous studies (Baxter et al. 2013; Lennon and Rosenfeld 1994), we find that the majority of women still report that they do more than their fair share of housework. This is not surprising given what we know about the domestic division of labor. Theoretical explanations for these patterns have focused on relative resources and time spent on paid and unpaid work, what we broadly term *instrumental* theories or subjective identity and psychological processes concerning entitlement and comparison referents, what we broadly term *distributive justice* theories. An important limitation of previous studies has been the difficulty in empirically assessing the distributive justice approach as it is not clear which subjective factors are important and surveys do not typically include the measures needed to assess this. We are able to go some way toward this goal by examining how perceptions of fairness change as a result of key life course transitions. Our proposition is that, if life course transitions are associated with perceptions of housework fairness in models that control for person-specific unobserved effects and an encompassing set of variables capturing time availability and relative resources (as well as other confounders), any remaining effects of life course transitions on perceptions of housework fairness are likely to be due to changes in subjective or psychological evaluations. This is therefore a *residual* test, but an important first step in determining whether subjective dispositions matter. We focus on parenthood and relationship transitions because a large body of research has established that both of these change the gendered allocation of time and resources within households. Further, emerging research suggests that these transitions also lead to changes in individuals' identity, feelings of entitlement and priorities around gender roles (Moors 2003; Cunningham et al. 2005; Cunningham, 2008; Baxter et al. 2014).

Different patterns of results emerge for each of the two types of life course transitions examined. For relationship transitions we find some bivariate effects on housework fairness amongst women, but these become non-significant when factors such as time in paid work, time on housework and earnings contributions are controlled. We thus conclude that relationship changes alter perceptions of housework fairness only insofar

as they alter other household arrangements concerning time allocations to paid and unpaid work and earnings contributions.

For parenthood transitions, however, we find more interesting and patterned results that provide broad support to our hypotheses. We observe no effects of parenthood variables on men's perceptions of housework fairness, but several substantial and statistically significant effects on women's. Strikingly, the effects of parenthood on perceived housework fairness amongst women weaken only slightly when all the relevant objective factors are included in the model. People evaluate housework arrangements differently after they experience parenthood. We read these findings as telling us that the way in which judgments about perceptions of fairness are constructed is not uniform, but is instead dependent on the life course stage in which respondents find themselves. This, we argue, provides support for a distributive justice explanation. That is, the fact that women's perceptions of housework fairness change markedly with the birth of children net of actual housework hours, employment hours and other relevant factors, is highly suggestive that the remaining parenthood effects are due to changes in women's subjective identity as mothers. These might include changes in their feelings of entitlement, their comparison referents and their evaluations of appropriate parenting and household arrangements.[7]

Altogether, these findings contribute to an established body of evidence on how parenthood affects individuals' (particularly women's) lives. Previous research has documented pervasive effects of parenthood on women's paid work time, earnings and housework time. We show that parenthood also seems to bring about changes in less tangible and more subjective outcomes, such as women's perceptions of household arrangements and their evaluations of their fairness. Simultaneously, our findings add to recent evidence that beliefs and attitudes are not static over the life course, but instead can be affected and molded by important life course events such as the experience of parenthood. Within the context of contemporary Australian society, these results can be interpreted as suggesting that entry to parenthood remains an important life course stage for women and key to understanding stubbornly persistent patterns of gender inequality in paid and unpaid work. As noted above, women with young children in Australia experience some of the longest working weeks when paid and unpaid work hours are combined. Our results suggest that these changes are also accompanied by complex changes in subjective identity and cognitive processes associated with motherhood.

Closer inspection of our results suggests two separate and divergent effects of parenthood on perceptions of housework fairness. On the one hand, women are more likely to declare household arrangements to be *fair* to them immediately after they have had a child (i.e. in the succeeding 12 months), irrespective of the birth number, than in all other years. On the other hand, in the overall time period when women are observed as mothers, and with each subsequent child, women are generally more likely to report that household arrangements are unfair to them than in the overall time period when they are observed as 'not-yet-mothers'. The first effect might mean that women who

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[7] Additionally, while the question on housework fairness does not encompass childcare activities, it is possible that individuals mentally include childcare arrangements in their responses after experiencing parenthood. Since early age childcare in Australia is disproportionately done by mothers, and as noted above, women take much longer periods of leave than men around the time of the birth, this might explain the shifting perceptions of housework fairness of women across the parenthood transition.

have just experienced parenthood go through an adjustment process: they may be on leave from paid work and anticipate that their partners will take on a greater share of the housework as the child grows older and the biological imperative of breastfeeding recedes. The second effect might indicate that, after an initial period, women find it difficult to cope with parenting and the associated responsibilities, particularly as they start to think about returning to employment or activities that they enjoyed prior to motherhood. If men have not adjusted their levels of involvement in unpaid work – previous research suggests they do not – women's realization that men are not contributing as much to household work as anticipated would explain why they become likely to report household arrangements to be unfair to them after the first year (Baxter et al. 2008).

As mentioned above, we can only test the psychological mechanisms suggested by the distributive justice perspective using an indirect or residual approach. This poses that, if none of the observable factors controlled for explain the observed impacts of life course transitions on perceptions of housework fairness, some other unobservable time-changing factor must be associated with changes in perceptions of fairness. Based on the literature on distributive justice, psychological mechanisms are clear candidates. However, we can only declare that subjective dispositions are in fact behind the relationships between life course transitions and perceptions of housework fairness if we assume that our model contains all possible instrumental factors influencing perceptions of housework fairness. We are reasonably confident that the richness of the HILDA Survey data allowed us to cover a vast majority of – if not all – the factors identified in previous studies, plus some additional ones. If we did however miss certain factors, we could be attributing their effect to subjective dispositions and our estimates could be biased. This constitutes an important *caveat* for our research.

It follows that large-scale panel surveys should begin to include questions that more directly measure distributive justice concepts such as 'valued outcomes' or 'comparison referents' that enable us to gain a deeper understanding of housework divisions and perceived fairness with these. Routine inclusion in this sort of data of questions previously used in small and/or cross-sectional surveys such as *"Do you feel appreciated by your partner when you do housework?"* or *"When you compare the division of paid and family labor in your relationship with that of same-gender others, how would you rate the division of labor in your relationship?"* (Hawkins et al. 1995; Kluwer et al. 2002) would open many analytical pathways. There is also room for new questions that seek clarification about 'comparison referents' (e.g. *"Who did you compare to when assessing your perceptions of the fairness of the division of household labour?"*) and 'valued outcomes' (e.g. ranking relationship outcomes on different domains by order of desirability).

Having established that time availability and relative resources can explain some, but not all, changes in perceptions of housework fairness across life course transitions, subsequent research should be devoted to identifying which of the different subjective mechanisms (comparison referents, valued outcomes, sense of entitlement) deemed important by the distributive justice perspective best explains the observed patterns. Given our focus on gender differences, we have only examined the impacts of life course events on individual-level perceptions of housework fairness. However, such perceptions need not be symmetrical across partners. Examining the consistency of such perceptions across partners, and the role of life course transitions in promoting disagreement (a precursor to conflict), would constitute another promising avenue for

further investigation (see Smith et al. 1998). Further research is also needed to examine how attitudes change in relation to other life events such as rehousing, children's educational transitions or children leaving the parental home, as these attitudes may also be important drivers of subsequent behavior.

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9. Appendices

Table A1. Means and standard deviations on model variables by gender

	Mean (sd) Women	Men	Couple
Perceptions of housework fairness (ordered)	2.15 (0.93)	3.13 (0.83)	
Perceptions of housework unfairness (binary)	0.60	0.15	
Remained married	0.80	0.80	
Remained cohabiting	0.16	0.16	
Married from cohabitation	0.02	0.02	
Began cohabiting from being unpartnered	0.02	0.02	
Married from being unpartnered	0.00	0.00	
Age	41.4 (11.0)	43.7 (11.3)	
Proportion of couple personal income	0.37 (0.21)	0.63 (0.21)	
Proportion of couple paid work hours	0.35 (0.25)	0.65 (0.25)	
Proportion of couple housework hours	0.73 (0.22)	0.27 (0.22)	
Just experienced parenthood			0.07
Not a parent			0.20
Parent of one child			0.15
Parent of two children			0.67
Relationship duration (years)			15.4 (11.8)
Number of other adults in the household			0.43 (0.79)
Number of beds per person			1.13 (0.44)
No partner has university qualifications			0.60
Both partners have university qualifications			0.16
Only the man has university qualifications			0.11
Only the woman has university qualifications			0.13
No partner is employed			0.08
Both partners are employed			0.65
Only the man is employed			0.22
Only the woman is employed			0.05
Total couple personal income			76,795 (48,845)
Total couple paid work hours			61.49 (29.32)
Total couple housework hours			24.57 (14.40)
n (observations)	*27,468*	*27,468*	*54,936*
n (individuals)	*5,790*	*5,790*	*11,580*

Notes: HILDA Survey data (2001-2011). Statistics on the couple-level variables are common for the subsamples of men and women.