First child and women's perception of fairness in the division of labor

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ABSTRACT

Objective

We contribute to the debate on the divergence between couples' gendered division of labor and women's perception of such division by investigating how the latter vary around first childbirth.

Background

The transition to parenthood is a crucial event in the life course that alters couples' dynamics. The birth of a child affects not only wellbeing and relationship quality but also gender norms and partners' distribution of labor, and hence possibly the perception of fairness of the new arrangements.

Method

Applying OLS Linear Probability Models to the German Panel Analysis of Intimate Relationships and Family Dynamics (pairfam, 2008-2019), we analyze the probability of women to perceive the division of labor as fair around the transition to motherhood and investigate possible mechanisms linking first childbirth to women's perceived fairness.

Results

Compared to childless women, mothers(-to-be) showed a lower probability of reporting a fair division of labor two to one year before childbirth and after the child's second birthday. The division of housework and women's labor market attachment, but not differences in gender attitudes, explain part of the variation in women's fairness perception around first childbirth.

Conclusion

Fairness perceptions differ between childless women and mothers, but not consistely over the entire time around the transition to motherhood. Our findings suggest that sufficiently long pre-and post-birth periods need to be taken into account when evaluating perceptions around childbirth.

Key Words: Perceived fairness, transition to parenthood, labor division, employment, gender attitudes, Germany

INTRODUCTION

The significant increase in female labor force participation witnessed in high income countries during the last decades, has not been accompanied by a comparable increase in men's involvement in housework (Goldscheider et al., 2015; Hochschild & Machung, 2012). Despite their growing commitment to paid work, women still bear the lion's share of unpaid work. Many studies have shown that although being highly gendered, the labor division is still perceived as fair by the majority of women (Jansen et al., 2016; Ruppanner, 2008; Thompson, 1991). The perception of fairness is a crucial concept as it reaches beyond strict equality of outcome by addressing gender equity (McDonald, 2000; Neyer et al., 2013). Perceptions of fairness also have implications for couples' relationship quality and duration: a fair perception of the division of housework is associated with higher relationship satisfaction (Chong & Mickelson, 2016; Dew & Wilcox, 2011), while an unfair perception increases the probability of divorce (Frisco & Williams, 2003).

The paradox between the actual division of unpaid and paid work and the perceived fairness of such division has been widely addressed in previous studies, and the proposed explanations are numerous. The divergence may depend on gender norms, women's socioeconomic resources, the time spent on paid and unpaid work and couple-level dynamics such as partners' distribution of education, income and employment (Jansen et al., 2016; Nordenmark & Nyman, 2003; Öun, 2013; Ruppanner et al., 2017). We contribute to this debate by focusing on how women's perception of fairness of the division of labor varies around the transition to the first child. The transition to parenthood is a salient period in the life course that affects not only wellbeing and relationship quality but also gender norms, partners' distribution of labor (Dechant et al., 2014; Kühhirt, 2012) and possibly the perception of fairness of the new arrangements. On the one hand, women may reduce their involvement in paid work after childbirth and the division of labor may become even more

3

gendered (Kühhirt, 2012), potentially intensifying the perceived unfairness of the division. On the other hand, the transition to motherhood may be associated with increasingly traditional gender attitudes (Baxter et al., 2015), which may reduce the perceived unfairness of the division. A few studies investigated the perception of fairness across the transition to parenthood, focusing either specifically on the division of housework or of labor in general. Results from these studies were mixed and largely dependent on the age of the child (Baxter et al., 2013; Kluwer et al., 2002; Perales et al., 2015). Similarly, studies on the trajectory of life satisfaction around childbirth reported that anticipation processes increase parents' subjective wellbeing already before childbirth, but that after childbirth parents adapt to the new situation and the positive effects tend to fade (Baetschmann et al., 2016; Myrskylä & Margolis, 2014).

In this study, we use eleven waves of the German Panel Analysis of Intimate Relationships and Family Dynamics (pairfam 2008-2019) to answer two research questions: (1) How does the perception of fairness change across the transition to the first child? and (2) Which mechanisms explain such variation in perceived fairness? We use OLS Linear Probability Models to compare the perception of fairness of childless women and mothers before and after the birth of the first child. This approach allows us to investigate processes of anticipation and adaptation around motherhood and to discuss how selection into motherhood may influence differences in perceptions of fairness. The longitudinal character of the pairfam data enables us to track prospective mothers observing a substantial time before and after the birth of the first child but also to compare them to childless women. In addition, the richness of the data allows investigating the role of changes in the division of housework, women's employment status and gender attitudes as possible mechanisms explaining fairness perceptions around childbirth.

4

Perception of Fairness and the Transition to Motherhood

The distributive justice framework sees the perception of fairness of labor division as a result of three factors: outcome, justification and comparison (Davis, 2010; Öun, 2013; Thompson, 1991). The *outcome* factor reflects the division of labor and the personal expectations about that division. An equal division of labor is evaluated as fairer than an unequal division (Ruppanner et al., 2017). In addition, the more the actual division matches expectations, the higher the perception of fairness. The *justification* factor refers to the sense of entitlement about the existing outcome. Individuals justify the division of labor with internalized norms about gender roles (Davis, 2010). Due to existing gender beliefs about housework being a female domain, women may perceive the division of housework as fairer. The justification argument can also be extended to encompass relative resources and time availability (Ruppanner et al., 2017). Women with fewer socioeconomic resources than their partners are expected to perceive an unequal division of labor as more fair. Women who are full-time employed and have less time at their disposal are expected to be less likely to justify an unequal division as fair. Finally, the *comparison* factor indicates that fairness is perceived differently depending on the person individuals compare themselves to (Nordenmark & Nyman, 2003). If the referent is of the same gender, women perceive the distribution as fairer whereas between-gender comparisons lead to a less fair perception.

Existing evidence reported contrasting findings regarding the effect of having a child on the perception of fairness about the division of labor. Some cross-sectional studies showed that a child in the household was associated with a fairer perception of housework for women (Ruppanner et al., 2017). Others instead concluded that one or more children in the household made women feel housework was distributed more unfairly (Davis, 2010; Jansen et al., 2016). Examining Dutch couples in a longitudinal perspective, Kluwer et al. (2002) observed a

decline in women's perceived fairness about the division of both paid work and housework over the transition to parenthood. Baxter et al. (2013) found some evidence for a decline in fairnesss with longitudinal data from Australia regarding the division of housework. Using fixed effects models and the same data, Perales et al. (2015) confirmed that overall, parents perceived the division of housework as more unfair, but also detected an increase in the perception of fairness during the first wave after the first child. In fact, the labor division arrangement right after the birth of a child may be perceived as fair because it is assumed to be temporary (Ruppanner et al., 2017). Directly after birth, mothers may justify the division of labor with obligations such as breastfeeding, but when the child is older and mothers (re)enter the labor market, their judgement about the division of labor may change. Studies looking at life satisfaction have highlighted possible anticipatory and adaptation processes around the transition to parenthood. Although being especially elevated during the year preceding first birth, life satisfaction in these studies increased already five years before childbirth (Baetschmann et al., 2016; Myrskylä & Margolis, 2014). The higher level of life satisfaction persisted up until one year after childbirth but then returned to a lower level (Myrskylä & Margolis, 2014). To the best of our knowledge, no similar studies have been conducted on women's perception of fairness around first childbirth with such a fine-graded time precision.

Mechanisms

In line with the distributive justice theory, the transition to parenthood may influence the perceived fairness of the division of labor through a number of mechanisms. First, the total amount of housework greatly increases after becoming parents (Dribe & Stanfors, 2009). This increase tends to be unequally distributed among partners, especially in more traditional contexts (Dechant et al., 2014; Grunow et al., 2012; Kühhirt, 2012). As the division of labor is an important predictor for fairness evaluations, a child can influence women's fairness

6

perception simply by increasing their relative share of housework (Braun et al., 2008; Jansen et al., 2016).

Second, not only housework division but also the division of paid work varies after couples' transition to parenthood. After childbirth, many women curtail employment or drop out of the labor market, which means they have more time available for housework. Furthermore, women's reduced financial resources and their lower contribution to the household's income may alter their sense of entitlement to a fair division of labor and their perception of fairness (Braun et al., 2008; Jansen et al., 2016). Therefore, women who remain longer out of the labor market or reduce their working hours around childbirth, are more likely to consider an unequal division of labor as fair (Braun et al., 2008; Ruppanner, 2008).

Third, studies have suggested that when having a child, women lean towards more traditional gender role attitudes with regard to motherhood (Baxter et al., 2015). As women adhering to more egalitarian gender role attitudes tend to report a lower perception of fairness (Braun et al., 2008; Jansen et al., 2016), the adoption of more traditional gender role attitudes in the couple after the first child may explain an eventual increase in perceived fairness after childbirth.

Context

Germany, a conservative welfare state, has long been a country promoting the male breadwinner model (Esping-Andersen, 1991). Yet, a recent reform of family policies modeled on the Nordic benefit scheme, has marked a major departure from the previous regime (Kreyenfeld, 2021). The 2007 parental leave reform introduced incentives for a greater involvement of women in the labor market, a more equal share of parental leave and additional support for the combination of work and family responsibilities. The current parental leave benefits in Germany consist of an earnings-related benefit that is paid for a period of up to 14 months, encouraging each parent to take at least two months of leave

(Leitner et al., 2008). Nevertheless, while mothers' employment rate in Germany is high in international comparison, it is still mostly composed of part-time work: in 2019, three quarters of mothers with children under the age of 18 were employed but 67% of them part-time (Destatis, 2021; Wanger, 2009).

Even if current parental leave policies aim at enhancing women's full-time employment, a one and a half earner norm is reinforced by the institutional setting of joint taxation (Krapf, 2014; Neilson & Stanfors, 2014; Schulz, 2010) and an insufficient childcare infrastructure (European Commission, 2018; Evertsson, 2016). With important regional differences – East Germany is generally characterized by more egalitarian values and a higher support for the dual-earner model – studies have confirmed that the most preferred constellation of paid and unpaid work between couples in Germany was the one-and-a-half earner model (Edlund & Öun, 2016). In line with a gender-traditional division of labor, women take over most of the housework, especially after having a child (Dechant et al., 2014; Kühhirt, 2012). Among couples with children, men spend on average three hours per day on care work, while women spent nearly six (Destatis, 2015). Although a more egalitarian division becomes more likely when the children get older, a gendered distribution is very persistent over the course of the relationship (Dechant et al., 2014; Grunow et al., 2012; Kühhirt, 2012).

METHOD

Data and Sample

This study is based on the waves 1 (2008/2009) to 11 (2018/2019) of the German Panel Analysis of Intimate Relationships and Family Dynamics Study (pairfam) (Brüderl et al., 2021; Huinink et al., 2010). Information were collected from a random nationwide sample of respondents from four birth cohorts 1991-1993, 1981-1983 and 1971-1973 and a refreshment cohort 2001-2003, which was added in the eleventh wave. The age of respondents ranges

from 15-year-olds to 48-year-olds, corresponding to women's childbearing age. Because the question about the perception of fairness was only asked every other year, we limit the analysis to the six odd waves (Thönnissen et al., 2021).

The analytic sample includes women living in heterosexual and co-residential relationships (cohabitations or marriages), leading to an initial sample of 23,948 observations. All co-residential spells (with different partners) are included, although the majority of women had only one co-residential relationship during the observation time. Women are coded as mothers if they had a first child born and living in the same household during the observed period. Observations of children with unknown date of birth, of mothers earlier than 5 years before the first childbirth and with children older than 5 are dropped (13,981 observations). Finally, we exclude observations with missing information on any independent variable (4,079 observations). The final analytic sample comprises of 5,888 observations: 3,271 from 1,647 women who became mothers at some point during the observed period and 2,617 of 1,457 childless women.

Measures

The dependent variable is women's perceived fairness of the division of labor in co-residential relationships. The original question referred to overall labor division, and asked "Looking at both housework and paid work, how fair is the division of labor between you and your partner?". The answers to this question were measured on a 5-point scale: 1 "I do much more than my fair share", 2 "I do a bit more than my fair share"; 3 "I do about my fair share"; 4 "I do a bit less than my fair share"; and 5 "I do much less than my fair share". To ease the interpretation and since only few respondents answered with the extreme response categories, we dichotomize the variable: 0 for women who perceive the division as "unfair" (1-2 in the original variable) and 1 for "fair" (3-5 in the original variable). A fair division hence also

includes women who feel they are over-benefitted, namely perceiving they receive more than their fair share of labor in the relationship (Ruppanner et al., 2018).

Our primary explanatory variable is the birth of a first child in the couple. We operationalize first childbirth as a categorical variable and distinguish both whether women ever have a first child during the observed period and, among mothers, the time around first childbirth. We exploit the longitudinal character of our data and the extended time period covered to include observations ranging from 60 months before first childbirth, to capture possible anticipatory effects, to 60 months after, to capture possible adaptation effects. We construct this lags and leads variable based on the distance between the month-year date of the interview, when the fairness question was asked, and the month-year date of the first childbirth. We distinguish the following symmetric times around childbirth: "60-25 months before/after", "24-13 months before/after", "12-7 months before/after", "6-1 months" preceding childbirth as well as childbirth and six months after ("0-6 months").

The first mechanism, the actual division of housework, is measured in terms of who does the washing, cooking and cleaning. In analogy with the dependent variable on fairness, we recode the variable (measured on a 5-point scale from 1 (*almost completely my partner)* to 5 *(almost completely me))* as dichotomous: 0 "I do more than 50/50" and 1 "I do 50/50 or less". As women's labor market attachment varies during the transition to motherhood and influences the perception of fairness of the division of labor, women's employment status at the time when fairness is measured is included in the model as a second mechanism. The employment variable is coded into four categories: full-time, part-time, maternal leave, and out of the labor force. The third explored mechanism is women's gender role attitude. This measure is based on the statement "Men should participate in housework to the same extent as women". This variable was originally measured on a 5-point scale from 1 *(disagree*

completely) to 5 *(agree completely)* but we recode it as binary, collapsing the the values 1-3 into 0 "traditional" and 4-5 into 1 "egalitarian" attitudes towards housework.

Other variables are included in the models as controls. Because married individuals tend to have a more traditional labor arrangement compared to cohabiters, and the division of labor becomes more traditional during a relationship (Schulz, 2010), we include marital status (married/cohabiting) and relationship duration (months). Furthermore, we control for women's educational level (no degree or lower secondary education, upper secondary, and tertiary education) and whether they live in West or East Germany. Finally, we include a control for women's age (linear and quadratic), birth cohort (2001-2003, 1991-1993, 1981-1983, 1971-1973), and the eventual birth of a second child.

Analytic strategy

Our aim is to examine how the perception of fairness of the division of labor depends on the birth of a first child. We are hence interested in the event of ever having a child but also in comparing the period from before couples decide to have a first child, to around the time when the decision is made, the conception and pregnancy period, and the time after the child is born. On the one hand, by including childless women, we can address the issue of selection into motherhood. Childless couples differ from parents in a number of characteristics, observed and unobserved, which may be reflected in differences in women's perceptions of fairness of the division of labor. On the other hand, by including lags and leads in the perception of fairness of mothers for a time period of 5 years before and after childbirth, we can not only see if, but also when mothers start to differ from childless women. We thus shed light on how processes of anticipation and adaptation shape fairness perceptions at different time points around childbirth.

Recent studies have suggested that the distance between the date of the interview and of childbirth can be considered (locally) random, as births are not planned according to the

survey interview schedule, and vice versa (Hudde & Jacob, 2021). This means that women are randomly assigned to month-distances between interviews and childbirths, and that our lags and leads variable can be considered exogenous to the perception of fairness. This is useful because it allows to estimate the association between childbirth and fairness perception without using within-individual models to control for unobserved heterogeneity. Fixed effects models are in fact very data-demanding (Allison, 2009) and they would not allow including women who do not have a child. Therefore, we opt for an OLS Linear Probability Model to study how the probability of perceiving the division of labor as fair varies around first childbirth. In a first set of models, we focus on the overall change of women's fairness perception comparing childless women and mothers over the time around first childbirth. In a second set of stepwise models, we investigate the possible mechanisms explaining the change in the perception of fairness around first birth, namely changes in the division of housework, in employment status and in gender attitudes.

RESULTS

Table 1 presents variables' descriptive statistics separately for childless women and women who have a first child over the observed period. Compared to non-mothers, mothers(-to-be) were somewhat older, slightly more likely to have medium or higher education and, as expected, more frequently married. Childless women were more often full-time employed and did relatively less housework compared to mothers(-to-be). In line with other surveys, the majority of women perceived the division of labor as fair, with childless women more frequently so than mothers(-to-be). In particular, Table 2 shows that among mothers(-to-be), the share of those perceiving the division of labor as fair was highest at the time of conception and between 0 and 6 months after childbirth.

Table 1. *Descriptive statistics*

	Childless women (N =2,617)					Mothers (to-be) (N= 3,271)				
	Mean/Prop	Freq	SD	Min	Max	Mean/Prop.	Freq	SD	Min	Max
Cohabitation duration (months)	58.14		59	0	352	70.90		44	0	268
Women's age	29.73		7	16	47	30.70		5	15	47
Fairness										
Unfair	72.41%	1,895				66.71%	2,182			
Fair	27.59%	722				33.29%	1,089			
Time before/after childbirth										
-60 – -25						8.28%	271			
-24 – -13						6.11%	200			
-12 – -7						3.73%	122			
-6 – -1						4.00%	131			
0 – 6						7.37%	241			
7 – 12						7.52%	246			
13 – 24						14.74%	482			
25 – 60						48.24%	1,578			
Childless	100.00%	2,617								
Birth cohort										
1971-1973	21.21%	555				20.51%	671			
1981-1983	39.09%	1,023				69.18%	2,263			
1991-1993	39.51%	1,034				10.30%	337			
2001-2003	0.19%	5				0.00%	0			
Living in East Germany										
No	75.62%	1,979				68.51%	2,241			
Yes	24.38%	638				31.49%	1,030			
Educational level										
No degree	21.51%	563				14.12%	462			
Upper secondary	49.14%	1,286				52.89%	1,730			
Tertiary	29.35%	768				32.99%	1,079			
Marital status										
Married	33.01%	864				65.00%	2,126			
Not married	66.99%	1,753				35.00%	1,145			
Further children										
No	100.00%	2,617				24.21%	792			
Yes						75.79%	2,479			
Division of housework										
I do more than 50/50	55.64%	1,456				69.06%	2,259			
I do 50/50 or less	44.36%	1,161				30.94%	1,012			
Employment status										
Full-time	59.69%	1,562				24.24%	793			
Part-time	10.70%	280				22.29%	729			
Maternal leave						35.46%	1,160			
Out of the labor force	29.61%	775				18.01%	589			
Attitudes towards housework										
Egalitarian	89.49%	2,342				82.51%	2,699			
Traditional	10.51%	275				17.49%	572			

Note: Authors' elaboration based on data from pairfam release 11.0

Table 2. *Fairness perception of the division of labor around first childbirth*

	Unfair		Fair		Total	
	%	N	%	N	%	N
Time before/after childbirth						
-60 – -25	32%	86	68%	185	100%	271
-24 – -13	38%	76	62%	124	100%	200
-12 – -7	26%	32	74%	90	100%	122
-6 – -1	29%	38	71%	93	100%	131
0 – 6	24%	59	76%	182	100%	241
7 – 12	30%	73	70%	173	100%	246
13 – 24	33%	161	67%	321	100%	482
25 – 60	36%	564	64%	1014	100%	1578
Childless	28%	722	72%	1895	100%	2617

Note: Authors' elaboration based on data from pairfam release 11.0.

Table 3 reports the estimates from stepwise Linear Probabily Models of the probability of women perceiving the divison of labor as fair. Model 1 presents the estimates with no controls. Up to two years before the birth of the first child, childless women and mothers-to-be displayed the same chances of perceiving the division of work as fair. Compared to childless women, mothers(-to-be) reported lower perceived fairness only between one and two years before childbirth and similarly lower perceived fairness again one to five years after childbirth. These differences remained significant net of all sociodemographic controls (Model 2). Among mothers(-to-be), the probability of reporting the division as fair was generally rather stable, and the slightly fairer perception observed between conception and the first six months after childbirth emerged actually only relative to the drop in fairness preceeding conception.

Table 3. *Probability of reporting a fair perception of the division of labor around first childbirth. OLS Linear Probability Models.*

Variable	Model 1 b	Model 1 SE	Model 2 b	Model 2 SE	Model 3 b	Model 3 SE	Model 4 b	Model 4 SE	Model 5 b	Model 5 SE
Time before/after childbirth[a]										
-60- -25	-0.04	0.03	-0.04	0.04	-0.02	0.03	-0.03	0.03	-0.03	0.03
-24- -13	-0.10***	0.04	-0.11***	0.04	-0.11***	0.03	-0.10***	0.03	-0.10***	0.03
-12- -7	0.01	0.04	0.01	0.04	0.05	0.04	0.05	0.04	0.05	0.04
-6- -1	-0.01	0.04	-0.03	0.04	-0.01	0.04	-0.04	0.04	-0.05	0.04
0- 6	0.03	0.03	0.01	0.03	0.06**	0.03	-0.06	0.04	-0.06	0.04
7- 12	-0.02	0.03	-0.03	0.03	0.04	0.03	-0.07*	0.04	-0.07*	0.04
13- 24	-0.06**	0.02	-0.08***	0.03	-0.02	0.03	-0.08***	0.03	-0.08***	0.03
25- 60	-0.08***	0.02	-0.12***	0.02	-0.05**	0.02	-0.09***	0.02	-0.09***	0.02
Age			0.00	0.01	0.01	0.01	0.02	0.01	0.02	0.01
Age sq			-0.00	0.00	-0.00	0.00	-0.00	0.00	-0.00	0.00
Birth cohort			0.01	0.02	0.01	0.02	0.02	0.02	0.02	0.02
Living in East Germany			-0.01	0.02	-0.01	0.02	-0.01	0.02	-0.01	0.02
Educational level[b]										
Upper secondary			-0.03	0.02	-0.02	0.02	0.00	0.02	0.00	0.02
Tertiary			-0.03	0.02	-0.04*	0.02	-0.02	0.02	-0.01	0.02
Married			0.06***	0.02	0.07***	0.02	0.07***	0.02	0.07***	0.02
Cohabitation duration			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Further children			0.02	0.02	0.03	0.02	-0.02	0.02	-0.02	0.02
Housework Division:										
I do 50/50 or less					0.26***	0.01	0.27***	0.01	0.28***	0.01
Employment status[c]										
Part-time employment							0.05***	0.02	0.05***	0.02
Maternal leave							0.16***	0.03	0.16***	0.03
Out of the labor force							0.08***	0.02	0.08***	0.02
Egalitarian attitudes									-0.08***	0.02
Constant	0.72***	0.01	0.67***	0.18	0.43**	0.17	0.25	0.18	0.31*	0.18
Observations	5,888		5,888		5,888		5,888		5,888	
R-squared	0.01		0.01		0.08		0.09		0.09	
F	4.78		3.87		26.26		25.10		24.86	

Note: Authors' elaboration based on data from pairfam release 11.0. Standard errors are clustered at the individual-level. * $p < .1$. ** $p < .05$. *** $p < .01$.
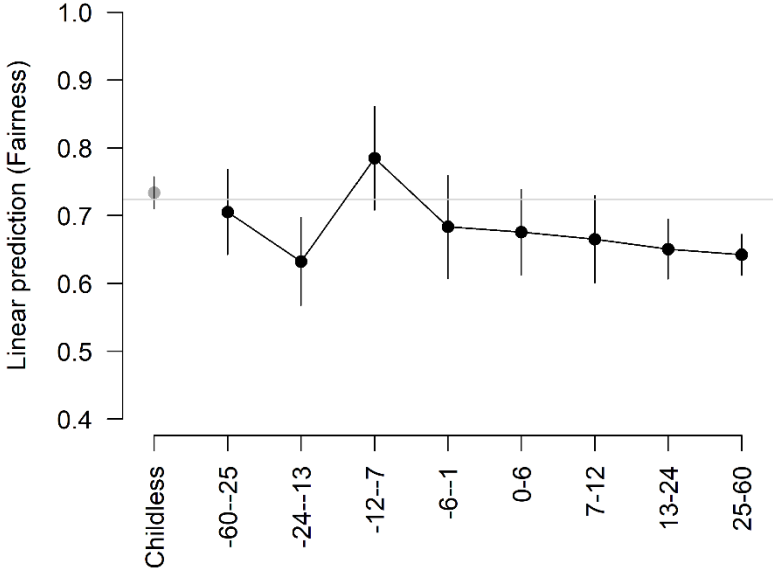[a]Ref. Childless. [b]Ref. No degree or lower secondary. [c]Ref. Full-time

Models 3-5 shows our findings about the possible mechanisms linking first birth to women's fairness perception of the divison of labor. First, women who did 50% or less of the housework reported a greater probability of a fair perception (Model 3). Changes in the division of housework explain an important part of the changes in the perception of fairness after the birth of the first child. In contrast to childless women and net of the actual division of housework, mothers at childbirth displayed a greater probability of perceiving the division of labor as fair. When taking the division of housework into account the drop in fairness perception after the child turned one year old was much smaller (Model 3). Second, compared to full-time employed women with and without a child, those with a weaker labor market attachment (part-time employment, in maternal leave or out of the labor force) perceived the division of labor as fairer (Model 4). Net of employment status and actual divison of housework, the probability of perceiving the division of labor as fair of mothers with a new-born or a toddler was substantially lower than for childless women. The positive estimates on women's perception of fairness in the first 12 months after childbirth were likely driven by mothers on maternity leave, working part-time or who were out of the labor market after childbirth. Once we take into consideration that some mothers returned to full-time employment already a few months after childbirth, the probability of perceiving the division of labor as fair appeared again significantly lower for mothers of children until the age of five compared to childless women. Finally, women who reported more egalitarian gender role attitudes displayed a lower probability of perceiving the division of labor as fair compared to women with traditional attitudes. Heterogenous gender role attitudes, however, neither explained the difference in fairness perception between childless women and mothers nor the variation of fairness perception around childbirth (Model 5).

Note: Authors' elaboration based on data from pairfam release 11.0.
Estimates from Model 5 in Table 3.

Figure 1 plots women's predicted probability of reporting a fair perception of division of labor before and after childbirth, as well as for childless women, net of all three mechanisms explored (Model 5, Table 3). The figure shows a significantly lower probability of perceiving the division of labor as fair among mothers compared to childless women 24 and 13 months before childbirth and from the first birthday of the child onward. This lower perceived fairness is neither explained by the different distribution of housework among childless women and mothers, nor by their differential attachment to paid work or gender role attitudes. Furthermore, the figure illustrates more clearly that the peak in fairness perception at the time of conception emerged predominantly in relation to the drop in fairness reported by women two to one year before childbirth. Instead, we detect no difference between mothers and childless women two to five years before childbirth and in the time period from conception until one year after childbirth.

To ensure the soundness of our findings, we ran several robustness checks. First, Table A1 shows the estimates obtained disregarding the time around childbirth, therefore only comparing childless women (here including also mothers before childbirth) with mothers after childbirth. This naïve model shows that having a child was overall associated with a lower probability of perceiving the division of labor as fair by women. These estimates confirm our general finding but disregard the important differences we found across time around the transition to motherhood and the possible bias introduced by selection into motherhood.

To study this issue further, we ran a second robustness check, shown in Table A2, in which we investigate perceptions of fairness before and after childbirth only for mother(-to-be) using fixed effects. These within-person models additionally control for time-invariant unobserved charactistics that may affect both the transition to motherhood and women's perception of fairness of the labor division. Here, the general fairness trajectory followed previous findings but the estimates were smaller and most coefficients became insignificant. Relative to five to two years before having the first child, women's perception of fairness dropped around 24-13 months before childbirth and fell again after the child turned one year old. Yet, the drop in fairness perception among mothers of young children was entirely explained by socio-demographic differences and the changes in the arrangements of paid and unpaid work. The peak in fairness perception at the time of childbirth was also explained by variations in women's employment status. Notably though, the drop in fairness perception two to one year before childbirth persisted using fixed effects and net of all mediators.

In our main analysis we have disregarded a third important factor highlighted by the distributive justice approach to explain fairness perceptions, namely who women compare themselves to. When women compare themselves to their male partners they tend to report a less fair perception of the division of labor, while they tend to report higher fairness if they

compare themselves to female friends or relatives. This information has been rarely collected in surveys and pairfam makes no exception. The closest available proxy was the social environment support. Respondents were asked "With whom do you share personal thoughts and feelings or discuss things that you would not discuss with just anyone" and possible answers included partner and/or a female friend. We did not find differences in fairness perceptions between women who felt they mostly receive support from partners compared to women who felt they mostly receive support from female friends (Table A3). Moreover, adding the social support variable did not change the association between having a child and the fairness perception. This may signal that comparison is not a strong factor linking motherhood to perceived fariness, at least beyond outcome and justification. Yet, the lack of a significant association may be due to the fact that the support variable is an imprecise measure of women's reference person, as it may additionally reflect the actual support received from significant others.

<p style="text-align:center">CONCLUSION AND DISCUSSION</p>

This study investigated how women's perception of fairness of the division of labor depends on the transition to motherhood. Using data from the German longitudinal Family Panel (pairfam), first, we compared the probability of reporting a fair division of labor among childless women and mothers(-to-be) at different times around the birth of the first child. Our findings show that mothers-to-be perceived the division of labor in the couple as similarly fair to childless women until around two years before childbirth. Robustly across model specifications, we find that the probability of perceiving the divison of labor as fair decreased between two and one year before childbirth. In light of this substantial drop, the increased fairness at conception and childbirth represented only a return to the levels of fairness women reported before the decisional process of parenthood started. Moreover, right after the child

was born, mothers' perceptions of fairness started to decline again until resembling the very low perceptions of fairness observed two years before childbirth.

In the second part of the analyses, we explored the role of the possible mechanisms. We find that the division of housework and labor market attachment - but not gender role attitudes - mediated the association between first birth and perceptions of fairness between childless women and mothers. Moreover, the mediation is only partial, meaning that net of outcomes and justification, differences between childless women and mothers still persist. Among mothers, observed and (time invariant) unobserved sociodemographic factors and outcomes completely explain changes in the perception of fairness but only after childbirth. The significant drop detected two to one year before childbirth for mothers-to-be, however, remains. Selection into motherhood certainly plays a role with regard to housework and paid work arrangements adopted by parents after childbirth but does not explain the lower fairness perceived by women before conception.

Other mechanisms, perhaps more closely related to the bargaining process between partners who start planning to become parents, may explain the remaining differences. Two to one year before childbirth is presumably the time when couples start actively planning to become parents and negotiate the timing of a first child more concretely (Corijn et al., 1996; Testa et al., 2014). It appears that during this time, the perception of fairness of mothers-to-be diverges (negatively) from childless women and from their own previous perceptions. This is a crucial finding per se, and in line with evidence suggesting that a fairer perception of the division of labor increases the odds of first births (Köppen & Trappe, 2019). With our time-sensitive perspective we demonstrated that the differences in perceptions between childless and mothers(-to-be) vary substantially depending on when they are observed. Studies looking only at one year before/after childbirth may overestimate the positive short-term effect of childbirth given the drop that precedes the conception period.

Our study does not come without limitations. First, the dependent variable is measured only biannually which reduces our sample size. More importantly, the fairness variable included both housework and paid work. Asking only for housework might illustrate the burden women face due to an increase in labor after childbirth more. It is though not clear to what extent women think about paid work if they are asked about the perception of fairness of housework. Previous studies mostly looked at the perception of fairness of housework and a systematic analysis of the differences between these two ways of operationalization is lacking. Moreover, housework additionally includes childcare duties after the birth of a child, which adds to the complexity of the definition. Second, as other subjective perception variables, fairness is quite stable and changes between and within individuals are very difficult to detect which might explain some of the insignificant results. Third, time varying unobserved factors that we did not consider may additionally affect the nexus between childbirth and women's fairness perception of the division of labor in the couple. For instance, partner's perception of fairness (Gordon & Mickelson, 2018) and changes in life satisfaction or quality of the relationship around parenthood (Baetschmann et al., 2016; Myrskylä & Margolis, 2014). Fourth, the measurement of gender role attitudes in our study refers to men's involvement in housework. Yet, there may be other aspects related to women's recombination of family and paid work responsibilities that are not captured by this variable. Finally, Schober and Scott (2012) showed that gender role attitudes after childbirth changed only if the labor arrangements after childbirth did not align with pre-birth attitudes. The association between gender role attitudes and perception of fairness of the division of labor may depend hence on how well outcomes align to expectations.

In future studies it would be important to differentiate between different groups of women in order to clarify to what degree changes in housework and employment after

childbirth depend on pre-birth gender role attitudes and how discrepancies between expectations before childbirth and outcomes afterwards shape mothers' perceptions.

Despite these limitations our study contributes to the existing literature by offering more insights into the variation of the perception of fairness in partners' division of labor over a major life changing event, having a first child. The results cast new light on differences between mothers(-to-be) and childless women and acknowledge changes in the arrangements of housework and paid work as only partial mediators of the association between motherhood and fairness perceptions. We also identify important anticipation effects in the trajectories of fairness perception around childbirth as identified for life satisfaction (Myrskylä & Margolis, 2014). Notably, we highlight the specificity of the period preceding conception in terms of couples dynamics and possible heterogeneities across groups of women as interesting topics for future investigation.

Finally, our study has broader implications. In light of the COVID-19 pandemic and the burden it created especially on parents of young children, the issue of the still gendered division of labor in partnerships has gained renewed attention. While some studies showed an increase in a gendered division of labor (Hipp & Bünning, 2021), others highlighted heterogeneous effects by work arrangements (Hank & Steinbach, 2021) and levels of education (Kreyenfeld & Zinn, 2021). The finding that mothers' fairness perception trajectories after childbirth are explained by women's employment represent additional evidence about the still existing incompatibility of paid work and housework in contemporary societies. It will be crucial in future studies to track the evolution of perceptions in younger cohorts especially because the recent shift in family policies in Germany aims at enhancing mothers' employment and improving public childcare provision.

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Table A1. *Probability of reporting a fair perception of the division of labor with and without a first child. OLS Linear Probability Models.*

Variable	Model 1 b	SE	Model 2 b	SE	Model 3 b	SE	Model 4 b	SE	Model 5 b	SE
Has a first Child	-0.05***	0.01	-0.07***	0.02	-0.01	0.02	-0.07***	0.02	-0.07***	0.02
Age			-0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01
Age sq			0.00	0.00	-0.00	0.00	-0.00	0.00	-0.00	0.00
Birth cohort			-0.00	0.02	-0.01	0.02	-0.01	0.02	-0.01	0.02
Living in East Germany			-0.01	0.02	-0.01	0.02	-0.01	0.02	-0.01	0.02
Educational level[a]										
Upper secondary			-0.02	0.02	-0.02	0.02	0.00	0.02	0.00	0.02
Tertiary			-0.02	0.02	-0.04*	0.02	-0.02	0.02	-0.01	0.02
Married			0.06***	0.02	0.07***	0.02	0.07***	0.02	0.06***	0.02
Cohabitation duration			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Further children			-0.01	0.02	-0.00	0.02	-0.03	0.02	-0.03	0.02
Housework Division:										
I do 50/50 or less					0.26***	0.01	0.27***	0.01	0.28***	0.01
Employment status[b]										
Part-time							0.05***	0.02	0.05***	0.02
Maternal leave							0.17***	0.02	0.16***	0.02
Out of the labor force							0.09***	0.02	0.08***	0.02
Egalitarian attitudes towards housework									-0.08***	0.02
Constant	0.71***	0.01	0.75***	0.21	0.52***	0.20	0.33*	0.20	0.39*	0.20
Observations	5,888		5,888		5,888		5,888		5,888	
R-squared	0.00		0.01		0.08		0.09		0.09	

Note: Authors' elaboration based on data from pairfam release 11.0. Standard errors are clustered at the individual-level. * $p < .1$. ** $p < .05$. *** $p < .01$.
[a]Ref. No degree or lower secondary. [b]Ref. Full-time.

Table A2. *Probability of reporting a fair perception of the division of labor around first childbirth. Fixed Effects Linear Probability Models.*

Variable	Model 1 b	Model 1 SE	Model 2 b	Model 2 SE	Model 3 b	Model 3 SE	Model 4 b	Model 4 SE	Model 5 b	Model 5 SE
Time before/after childbirth[a]										
-24- -13	-0.12***	0.04	-0.07	0.05	-0.08*	0.05	-0.09*	0.05	-0.08*	0.05
-12- -7	0.01	0.05	0.08	0.06	0.08	0.06	0.07	0.06	0.08	0.06
-6- -1	0.04	0.05	0.10	0.06	0.10	0.06	0.07	0.06	0.07	0.06
0- 6	0.07	0.04	0.15**	0.06	0.16**	0.06	0.09	0.07	0.10	0.07
7- 12	0.01	0.05	0.11	0.07	0.12*	0.07	0.06	0.08	0.06	0.08
13- 24	-0.07*	0.04	0.05	0.07	0.06	0.07	0.02	0.08	0.02	0.08
25- 60	-0.06*	0.03	0.12	0.09	0.12	0.09	0.08	0.10	0.09	0.10
Age			-0.01	0.03	-0.01	0.03	0.00	0.04	0.00	0.03
Age sq			-0.00	0.00	-0.00	0.00	-0.00	0.00	-0.00	0.00
Currently living in East Germany			0.14	0.11	0.13	0.11	0.12	0.11	0.12	0.11
Educational level[b]										
Upper secondary and non-Tertiary			-0.04	0.08	-0.05	0.07	-0.02	0.08	-0.01	0.08
Tertiary			-0.12*	0.07	-0.13**	0.07	-0.09	0.07	-0.09	0.07
Married			0.07**	0.03	0.07**	0.03	0.07**	0.03	0.07**	0.03
Cohabitation duration			-0.00	0.00	-0.00	0.00	-0.00	0.00	-0.00	0.00
further children			-0.02	0.03	-0.01	0.03	-0.04	0.04	-0.04	0.04
Housework Division:										
I do 50/50 or less					0.11***	0.03	0.12***	0.03	0.12***	0.03
Employment status[c]										
Part-time employment							-0.01	0.04	-0.01	0.04
Maternal leave							0.06	0.04	0.06	0.04
Out of the labor force							0.06	0.04	0.05	0.04
Egalitarian attitudes									-0.07**	0.03
Constant	0.70***	0.03	1.06*	0.62	0.88	0.62	0.63	0.63	0.70	0.63
Observations	3,271		3,271		3,271		3,271		3,271	
R-squared	0.02		0.03		0.04		0.04		0.05	
Number of id	1,647		1,647		1,647		1,647		1,647	
F	4.777		3.669		4.412		3.931		3.974	

Note: Authors' elaboration based on data from pairfam release 11.0. Standard errors are clustered at the individual-level. * $p < .1$. ** $p < .05$. *** $p < .01$.
[a]Ref. Childless. [b]Ref. No degree or lower secondary. [c]Ref. Full-time

Table A3. *Probability of reporting a fair perception of the division of labor with and without a first child. Social support mechanism. OLS Linear Probability Models.*

Variable	Model 1 b	Model 1 SE	Model 2 b	Model 2 SE	Model 3 b	Model 3 SE	Model 4 b	Model 4 SE	Model 5 b	Model 5 SE
Child	-0.09***	0.03	-0.10***	0.03	-0.03	0.03	-0.13***	0.04	-0.14***	0.04
Age			-0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.02
Age sq			0.00	0.00	-0.00	0.00	-0.00	0.00	-0.00	0.00
Birth cohort			-0.03	0.06	-0.04	0.06	-0.04	0.06	-0.05	0.06
Living in East Germany			0.01	0.03	-0.00	0.03	0.01	0.03	0.01	0.03
Educational level[a]										
Upper secondary			-0.04	0.03	-0.04	0.03	-0.04	0.03	-0.04	0.03
Tertiary			-0.05	0.04	-0.08**	0.03	-0.08**	0.04	-0.07**	0.04
Married			0.08**	0.03	0.08***	0.03	0.09***	0.03	0.08***	0.03
Cohabitation duration			-0.00	0.00	-0.00	0.00	-0.00	0.00	-0.00	0.00
Further children			-0.00	0.04	0.01	0.04	-0.03	0.04	-0.02	0.04
Social environment support[b]										
female friend only			-0.06	0.05	-0.07	0.04	-0.06	0.04	-0.06	0.04
both			-0.01	0.03	-0.02	0.03	-0.02	0.03	-0.01	0.03
neither partner nor friend			-0.12	0.09	-0.14*	0.08	-0.14*	0.08	-0.15*	0.08
Housework Division:										
I do 50/50 or less					0.29***	0.02	0.31***	0.02	0.31***	0.02
Employment status[c]										
Part-time employment							0.07*	0.03	0.06*	0.03
Maternal leave							0.24***	0.04	0.24***	0.04
Out of the labor force							0.03	0.03	0.03	0.03
Egalitarian attitudes									-0.08**	0.03
Constant	0.72***	0.01	0.91***	0.30	0.46	0.28	0.37	0.28	0.44	0.28
Observations	1,899		1,899		1,899		1,899		1,899	
R-squared	0.01		0.02		0.11		0.12		0.13	
F	10.98		1.870		14.47		15.03		14.46	

Note: Authors' elaboration based on data from pairfam release 11.0. Standard errors are clustered at the individual-level. * $p < .1$. ** $p < .05$. *** $p < .01$. [a]Ref. No degree or lower secondary. [b]Ref. Partner only. [c]Ref. Full-time.