

# Is 'Employment during Motherhood' a 'Value Changing Experience'?

*Mireia Borrell-Porta, Valentina Contreras, Joan Costa-Font*

## **Impressum:**

CESifo Working Papers

ISSN 2364-1428 (electronic version)

Publisher and distributor: Munich Society for the Promotion of Economic Research - CESifo GmbH

The international platform of Ludwigs-Maximilians University's Center for Economic Studies and the ifo Institute

Poschingerstr. 5, 81679 Munich, Germany

Telephone +49 (0)89 2180-2740, Telefax +49 (0)89 2180-17845, email [office@cesifo.de](mailto:office@cesifo.de)

Editor: Clemens Fuest

<https://www.cesifo.org/en/wp>

An electronic version of the paper may be downloaded

- from the SSRN website: [www.SSRN.com](http://www.SSRN.com)
- from the RePEc website: [www.RePEc.org](http://www.RePEc.org)
- from the CESifo website: <https://www.cesifo.org/en/wp>

# Is ‘Employment during Motherhood’ a ‘Value Changing Experience’?

## Abstract

Does employment during motherhood change people’s preferences? We study whether the experience of employment during motherhood exerts an effect on attitudes towards gender norms, and more specifically, attitudes towards the impact of women’s employment on children’s wellbeing (which proxy traditional gender attitudes). Drawing on a large, representative and longitudinal data and an instrumental variable (IV) strategy that exploits a Bartik instrument for employment, we find that, that non-mothers who work and mothers who do not work are more likely to agree that pre-school children suffer if mothers work, which we proxy as having more traditional views. However, this is not the case when women experience both working and motherhood it does not significantly change women’s attitudes. These results suggest that exogenous changes in employment during motherhood confirm an individual’s priors, and point towards the critical role of early life value formation. That is, employment during motherhood is not a “value changing experience” but rather a “value preserving experience”. Hence, the so-called ‘motherhood penalty’ cannot be fully explained by a change in attitudes after employment during motherhood.

JEL-Codes: Z100, J220.

Keywords: attitude formation, value changing experiences, confirmation bias, women employment attitudes, women employment after maternity, later life attitudes, children.

*Mireia Borrell-Porta*  
*London School of Economics / UK*  
*m.borrell@lse.ac.uk*

*Valentina Contreras*  
*London School of Economics / UK*  
*v.v.contreras@lse.ac.uk*

*Joan Costa-Font*  
*London School of Economics / UK*  
*j.costa-font@lse.ac.uk*

## 1. Introduction

Traditional economic explanations of human behaviour assume that individuals' attitudes and values toward established norms<sup>1</sup> pre-exist in their behaviour and life experiences<sup>2</sup>. It has been established that sometimes the latter (behaviour) might not coincide with the former (norms), which might lead to cognitive dissonance processes (Akerlof & Dickens, 1982). Instead, individuals might simply work out their attitudes using some form of 'backward induction' (Kahan, 2010). However, whether life experiences (e.g., employment during motherhood) change people's values, and become 'value changing experiences', or whether experiences confirm people's prior values (Akerlof, 1983; Benabou & Tirole, 2011; Brennan et al., 2013), their 'loyalties' (Akerlof, 1983), and identities (Akerlof & Kranton, 2000) is an empirical question<sup>3</sup>. Although attitudes towards social norms are influenced by early life experiences (Brewster & Padavic, 2000; Giuliano & Spilimbergo, 2014; Wilkie, 1993), and intergenerational transmission (Fernández & Fogli, 2009), there is some scope for change from a small level local community interventions (Archaya, 2004) and especially, from life-experiences (Danigelis et al., 2007; Mason & Lu, 1988) that influences them. This paper aims to understand *whether women change their attitudes towards gender norms after the experience of employment and motherhood*.

Understanding behaviour after employment during motherhood is important to further expand our understanding of the motherhood penalty, which is estimated to be around 7% of wages per child (Budig & England, 2001; Burda et al., 2007; Sigle-Rushton & Waldfogel, 2007). Such motherhood penalty is argued to explain a large share of the total gender pay gap, and

---

<sup>1</sup> This paper provides a definition of attitudes towards social norms that would be akin to the 'deep preferences' referred to by Postlewaite and other economists. See Postlewaite in (Benhabib et al., 2010).

<sup>2</sup> Consistently, classical psychological theories of planned behavior (Ajzen, 1985) predict individual preferences and behaviours form their behavior.

<sup>3</sup> New models have summarised the process of belief and value formation (Fehr & Hoff, 2011; Stiglitz & Hoff, 2016).

more generally, influences women's probability to return to employment after motherhood, as well as gaps in old-age pension and the odds of poverty (Schober & Scott, 2012). Both losses of job experience, lower productivity at work (Becker, 1985), a shift to mother-friendly jobs and discrimination by employers (Budig & England, 2001; Sigle-Rushton & Waldfogel, 2007) play a role in explaining the motherhood penalty.

While governments have put in place policies to correct some of these disadvantages (eg., job-protected maternity leave to encourage earlier returns and minimize the loss of job experience, childcare provisions to minimize lower productivity at work or parental leave), other more subtle disadvantages remain, which operate via values and attitudes towards gender norms potentially influencing labour market outcomes. Behavioural explanations can play a significant role in explaining gender inequalities in labour market participation (Farré & Vella, 2013; Fernandez et al., 2004; Fernández & Fogli, 2009; Fortin, 2005; Johnston et al., 2014), on the gender pay gap (Burda et al., 2007), and on the division of domestic work (M. Cunningham, 2008; Davis & Greenstein, 2009; DeMaris & Longmore, 1996; Greenstein, 1996). Hence, understanding attitudinal changes after motherhood can help explain the underlying explanations for lower job satisfaction, lower productivity at work, or the shift to mother-friendly jobs.

This paper examines whether childbirth and employment change women's attitudes towards gender norms and more specifically, attitudes towards the impact of women's employment on children's wellbeing. Although attitudes are formed before reaching adulthood, it is an empirical question whether going through the experience of employment and motherhood, gives rise to visible changes in attitudes. Indeed, some evidence finds that pre-maternity expectations about the needs of children might not be fully anticipated, and parents are caught by surprise by the experience of having children (Deaton & Stone, 2014) Hence, given the fact that individuals seek consistency between their values and their actual behaviour (Akerlof and

Dickerns, 1982), they might switch their beliefs to their new circumstances, consistently with a 'value changing experiences' effect.

Nonetheless, the direction of change is however not theoretically clear. Predictions from theories of exposure (exposure to new circumstances) can explain both either more traditional or more liberal attitudes (see literature review below), and the same is true for cognitive dissonance theories (Schober & Scott, 2012). Alternatively, individuals might engage in confirmation biases (a tendency for individuals to interpret and search for information that confirms one's prior values). Hence, experience confirms and even strengthens individuals 'pre-approved attitudes'<sup>4</sup>, giving rise to belief perseverance, and 'behavioural confirmation effects'. Yet, whether employment during motherhood is a 'value changing experience' or, a 'value confirming experience, is the main purpose of this paper.

We draw from a nationally representative longitudinal survey in Britain from 2005 to 2013 with roughly 43,000 observations, to examine whether childbirth and employment change maternal attitudes towards gender norms and more specifically, attitudes towards the impact of women's employment on children's wellbeing. To alleviate endogeneity concerns we use fixed effects, instrument the work status of women and focus on the birth of the first child. More specifically, we use a Bartik instrument (an interaction of local industry employment shares and national employment growth rates) which allows addressing concerns around the endogeneity of employment decisions. Similarly, we examine the effect on first children to account for the endogeneity concerns associated with first births.

The concept 'attitudes' is understood as 'evaluations of objects, behaviour, events or people as good or bad, which can be expressed by statements such as 'I agree with/disagree with' (Bicchieri, 2017; Schwartz, 2012), and gender norms are understood as 'collective definitions

---

<sup>4</sup> This is , consistent with evolutionary explanations that predict the future to resemble the past (Churchland & Sejnowski, 1992). Experiments in politics suggest that most extreme individuals tend to exaggerate their differences with those holding different beliefs (Chambers et al., 2006).

of socially approved conduct concerning groups constituted in the gender order – mainly distinctions between men and women’ (Pearse & Connell, 2015). Therefore, attitudes towards gender norms are individual evaluations of these gender norms.

The results show that for non-mothers, the working experience turns women more traditional, and the same holds for the experience of motherhood for non-working women. That is, non-mothers who work and mothers who do not work are more likely to agree that pre-school children suffer if mothers work, which we proxy as having more traditional views. However, when women *jointly* have the two experiences stated in the attitudinal statement – i.e when working women become mothers – their attitudes do not change significantly. That is, women's joint experience of both working and motherhood, does not significantly change women's attitudes. This result suggests that the motherhood penalty cannot be explained by a change in attitudes of working women who become mothers. That is, employment during motherhood is not a "value changing experience" but rather a "value preserving experience’.

To our knowledge, this is the first paper to causally examine this question with current data and a large sample. Two previous studies – Berrington et al. (2007) and Schober and Scott (2012) - examine the impact on attitudes of entry into parenthood and change in economic activities at the same time. Both papers conclude that becoming a mother is not associated with a change in gender role attitudes when work patterns remain the same. Both also find that, whenever work patterns change after childbirth, then mothers (and fathers) adjust their attitudes. Our paper improves on their analyses by alleviating endogeneity problems and using a more up-to-date and larger sample. Our results, stated above, are in line with both papers.

The paper is organized as follows. The next section provides the background and a short literature review. Section three describes the data and empirical strategy. Section four displays the results, sections five and six present heterogeneity effects and robustness checks and we conclude in section seven.

## **2. Related Literature**

### *2.1 Malleability of attitudes*

The evolution of attitudes towards social norms has received some attention in the social science literature. Two main theories have emerged to explain its evolution. Cohort replacement theories emphasise that attitudes evolve with cohort change, whereas intra-cohort change theories highlight the importance of life experiences such as marriage, parenthood, and employment patterns, among others, in the evolution of attitudes. Literature in psychology has found that 'affective experience' can influence colour preferences (Strauss et al., 2013). In economics, laboratory experiments indicate that experience can change risk preferences (Ert, E., & Haruvy, 2017), and support for democracy is found to increase with experience with democracy (Fuchs-Schündeln & Schündeln, 2015).

The process of value change can compare to a "silent revolution" (Inglehart, 1971) influencing individuals' perception of their own 'selves' (Giddens, 1991). Karl Mannheim (1952) was one of the first to argue that each generation receives a particular imprint of the social and political events taking place during its youth, exerting a decisive influence on later attitudes and actions. Taking this idea as a starting point, Schuman and Scott (1989) used the concept of 'collective memories', imprinted during adolescence and early adulthood, to argue that these memories persist throughout one's adult life and shape individual behaviour. Two main hypotheses have been developed accordingly: the increasing persistence hypothesis (Glenn,



2003; Inglehart & Baker, 2000) and the impressionable years one (Carlsson & Karlsson, 1970; Krosnick & Alwin, 1989; Ryder, 1965). While they differ in the degree of persistence (Sears, 1983) and their underlying factors (Krosnick & Alwin, 1989), both of them emphasise the importance of adolescence and early adulthood in acquiring attitudes that later on remain rather stable.

An alternative approach suggests that individuals are highly flexible throughout their lives and constantly alter their attitudes (Brim & Kagan, 1980). Throughout adulthood, individuals get involved in major social organizations such as the workplace or households which 'provide specific expectations and definitions of interests that validate some attitudes while discouraging others' (Brooks & Bolzendahl, 2004:110). Similarly, life events such as parenthood, the birth of a child, entry into employment, and marriage, among others may affect attitudes towards employment, mothering and gender attitudes in general (Baxter et al., 2015). These social structural changes and changes in circumstances during adulthood can mediate significantly other early influences, resulting in attitudinal change over the life cycle. Evidence for both theories exists, and therefore, the debate remains open. Several papers examining data in the 1970-the 80s and the 2000s find strong evidence of the stability of attitudes within cohorts (e.g. Brewster & Padavic, 2000; Wilkie, 1993). At the same time, there are other papers (e.g. Mason and Lu 1988, Danigelis et al 2007) whose evidence points to intra-cohort change. Finally, other authors have more nuanced findings. Krosnick (1988) argues and finds that attitudes that are more central or important to individuals are more resistant to change than are noncentral or unimportant. Brooks and Bolzendahl's findings (2004) point to a strong explanatory power of cohort replacement theories, but at the same time find that ideological learning during adulthood mediates early influences on attitudes. Similarly, Fan and Marini (2000) find evidence for both impressionable years theories and the impact of experiences. More specifically, they state that although they find considerable

stability in gender-role attitudes during the transition to adulthood, both men and women – but especially men - experience an attitudinal change in an egalitarian direction with age.

## ***2.2 Gender norms after experiencing employment and childbirth***

Specific research on attitudinal change *towards gender norms* has increased substantially in the last decades, and nonetheless, both the theory and the empirics are still inconclusive.

Some theories follow the cohort replacement ideas and point at the relevance of adolescence and early adulthood stages in acquiring attitudes towards gender norms which later on shall remain rather stable. In this line, psychology research shows that by the age of six, children are already aware of gender stereotypes (Bian et al., 2017) with social pressure to conform to existing gender norms mounting around the early adolescence period (Lane et al., 2017).

Adolescence and early adulthood are known to psychologists as ‘a dynamic period of development – a time when (...) gender norms are shaped’ (Lane et al 2017:S10). In the case of women, some authors suggest that by early adulthood they have already been exposed to gender issues more than men. As a consequence, and despite later exposure to workplace discrimination or work-life balance difficulties, their attitudes may remain unchanged because they have already reached a ‘threshold of exposure’ in their earlier stages of life (Shafer & Malhotra, 2011).

However, there is also a good amount of research highlighting the flexibility of gender norms throughout the life cycle due to life events and changes in circumstances. One of the mechanisms behind this change is the cognitive dissonance between held attitudes and behaviour (Festinger, 1957). To diminish the dissonance, the individual might change attitudes so that they fit with their newly acquired behaviour. Another mechanism of change might be exposed to the new reality (Berrington et al., 2007; Bolzendahl & Myers, 2004;

Fishbein & Ajzen, 1975). A third mechanism involves changes in self-identity and self-concept (see Baxter et al., 2015), by which both men and women construct new identities for themselves, in which parenthood takes a central role. This central role of parenthood could also be the result of the 'persuasive communication' mechanism highlighted by Fishbein and Ajzen (1975), by which the newly acquired social network related to parenthood has an impact on attitudes towards gender norms (Berrington et al., 2007).

In the case of employment and childbirth, the direction of the theoretical change in attitudes induced by the self-identity mechanism or the persuasive communication one would suggest that attitudes towards gender norms become more traditional. However, for the exposure and cognitive dissonance mechanisms, the direction of change remains theoretically ambiguous. If a woman in employment has a child and policies do not allow her to have a work-life balance, she might quit working and 'solve' her cognitive dissonance by believing that children suffer when their mother works. Similarly, she might find it difficult to juggle care and work and this new information acquired via 'exposure' might make her change her previously held attitudes. Conversely, if a woman in employment finds it easy to have a work-life balance and/or policies in place that allow her to combine care and work, both exposure and cognitive dissonance theories would predict a change in attitudes towards more liberal gender norms. Finally, it might also be the case that the perceived difficulty of juggling care and work depends on previously held attitudes. In this case, we would see a confirmation bias in place and a polarization of opinions between women in and out of formal employment.

The literature on the impact of employment on attitudes towards gender norms is quite conclusive. Both cross-sectional studies (see for example Glass, 1992; Huber & Spitze, 1983; Mason & Lu, 1988) (see for example Mason and Lu, 1988; Glass, 1992; Huber and Spitze 1981) and studies using longitudinal data are quite consistent in finding that women's

employment leads to more liberal attitudes towards gender norms. Within the longitudinal studies, most data comes from the US (see for example M. Cunningham, 2008; Mick Cunningham et al., 2005; Thornton et al., 1983; Thornton & Freedman, 1979 for non-nationally representative data, and ; Coverdill et al., 1996 and; Fan & Marini, 2000 for nationally representative data).

Conversely, the evidence on the effect of parenthood on attitudes towards gender norms is less conclusive. Some studies have focused on work commitment, which is defined as 'the centrality of the work role as a source of intrinsic satisfaction relative to other adult roles' (Bielby & Bielby, 1984) and it is usually measured with a question on how important work is for the respondent. These studies present mixed evidence<sup>5</sup>. Studies focusing specifically on gender-related attitudes usually find evidence of a relationship between the birth of a child and more traditional attitudes towards gender norms, but not always. Two studies using non-nationally representative data from the US find either little evidence of childbearing influencing attitudes (Cunningham et al., 2005) or evidence depending on race and marital status (Morgan & Waite, 1987). In contrast, three studies from the US using representative longitudinal data find evidence that the birth of a child shifts attitudes towards more traditional stances (Corrigan & Konrad, 2007; Fan & Marini, 2000; Moors, 2003). A similar result is reached by a longitudinal study from Australia in which only the first child is taken into account (Baxter et al., 2015).

---

<sup>5</sup> Cross-sectional studies do not find evidence of the impact of parenthood on attitudes (Doorewaard et al., 2004; Hult & Svallfors, 2002; Svallfors et al., 2001). Bielby and Bielby (1984), using longitudinal data of college graduates from the US also shows no evidence for a relationship. A nationally-representative study from the US (Noonan et al., 2006) finds no evidence of an impact of parenthood on attitudes, whereas two studies with nationally-representative data from Finland and Sweden suggest that entry into motherhood leads to lower work commitment, albeit only temporary.

Research studying the *joint* impact of employment and childbirth, like ours, are still scarce. One of them by Berrington and co-authors (2007) uses the BHPS up until 1997, with a total of 700 observations and using graphical chain model and SEM. They find that it is not entry into parenthood as such, but the change in economic activity that is related to attitudinal change. Schober and Scott (2012) use BHPS data up until 2007 with 300 observations and find that becoming a mother is not associated with a change in gender role attitudes when work patterns remain the same. Instead, whenever work patterns change after childbirth, then mothers (and fathers) adjust their attitudes. We improve on these previous analyses in several ways. First, it uses an instrumental variable for employment, panel fixed-effects and first child only to establish causality. This is important given the important endogeneity problems between childbirth and attitudes and employment and attitudes. Second, it uses a larger sample of 5,000 women and 43,000 observations, and third, it uses current data from 2005 to 2013. Given the fast-paced changes in attitudes during the last decades, the use of current data can shed new light on the issue.

### **3. Data and Empirical Strategy**

#### *3.1 Data.*

We employ the British Household Panel Survey – BHPS (University of Essex, Institute for Social and Economic Research., 2018) and the Understanding Society – UKHLS (University of Essex, Institute for Social and Economic Research, NatCen Social Research, Kantar Public., 2019) datasets. Both are annual surveys consisting of a representative sample of households in which every adult member of the sampled household is interviewed, following them over a period of years. We use the last two BHPS waves, 2005 and 2007. These waves included interviews with around 10,000 individuals, and it is UK-wide. The Understanding Society started in 2009, and we use the first four waves, from 2009 to 2013. UKHLS is a continuation from BHPS. The two

datasets together gather information on health, work, education, income, family, and social life, collecting both objective and subjective indicators.

Amongst the variables, the datasets include attitudes towards working mothers, which is the main focus of the paper. These attitudes are asked every other year. We limit our study to attitudes of female respondents, leaving us with a sample of around 40,000 observations. Table 1 summarises the descriptive statistics for our main dependent variable, which is the answer to the statement 'Pre-school child suffers if the mother works'. The evidence already suggests that *one out of four women in the UK agrees with this statement* and that another third 'neither agrees nor disagrees'. Hence, overall female respondents in the UK seem to uphold values that can potentially limit their labour market participation after maternity.

Table 2 shows the descriptive statistics for our main independent variables, that is, working status and presence of pre-school children at home, and the individual-level control variables. The latter include age and age squared, education levels, presence of other children at home and marital status. About half (51%) of women are employed in the labour market, and one third (64%) do not have children in the household, almost one quarter have children (22%) and 13% have children under 4 years of age. About 20% hold no education at all, 59% are married and the average age of our female respondents is 46.3 years<sup>6</sup>.

**[Insert Table 1 and 2 about here]**

### *3.2 Empirical Strategy*

We are interested in understanding whether the women's experience of working has an impact on the belief that small children suffer if mother works. We suspect that the impact may differ according to the presence of small children at home, therefore we interact working experience

---

<sup>6</sup> The equivalent of Table 2 for men can be found in Table A3 in the appendix, and reveals a comparable distribution.

with presence of small and older children. Suppose we can model the outcome variable described in Table 1 for individual  $i$  in period  $t$ ,  $y_{it}$ , as:

$$y_{it} = \alpha + \beta_1 w_{it} + \beta_2 ch_{it} + \beta_3 w * ch_{it} + \beta_4 X_{it} + \beta_5 R_i + u_{it} \quad (1)$$

where  $w_{it}$  is a dummy representing working status of individual  $i$  at time  $t$ ,  $ch_{it}$  is a dummy for presence of children at home taking value 0 if there are no children at home; value 1 if there are 0 to 4 year old children at home, and 2 if children are older than 4 years old<sup>7</sup>.  $w * ch_{it}$  is the interaction of the two.  $X_{it}$  are individual controls mentioned above,  $R_i$  are regional dummies added to control for institutional factors and  $u_{it}$  are the residuals. Our coefficients of interest are  $\beta_1$ ,  $\beta_2$  and  $\beta_3$ , and measure the effect of each covariate in terms of likert scale unit change in the dependent variable.

Equation (1) may suffer from endogeneity problems on various fronts. First, attitudes might be influencing employment decisions, therefore causing a potential problem of reverse causality. Similarly, there might be omitted variables in the error term. These two problems suggest that the errors in (1) are not independent of the explanatory variables. One strategy for dealing with the omitted variable problem is to control of a wide range of individual characteristics in order to try to account for time-variant characteristics that affect our dependent variable. Taking advantage of the longitudinal nature of the dataset, we can also include individual and area fixed effects to control for time-invariant variables. Area-level fixed effects would for instance account for institutional characteristics –quality, affordability and availability of nurseries – which differ depending to the local area and may be correlated with our dependent and independent variables.

---

<sup>7</sup> For observations reporting no children across the panel, it is not possible to disentangle whether they have had children in the past and have left home, or whether they have never had children. This is because all questions ask about the presence of children *at home*. Nevertheless, with fixed effects these observations leave the sample. This means that the OLS specification may result in biased estimates if women who have had children in the past but have left the panel and therefore are not registered are categorised as having had no children.

The fixed effects strategy alleviates the problem of omitted variable bias for time-invariant variables, but it does not alleviate the problem for time-variant variables, nor the problem of reverse causality problem. To tackle this problem, we instrument maternal working status – i.e. we assume there is an instrumental variable  $z_{it}$  independent of  $u_{it}$  but correlated with  $w_{it}$ . The first-stage of this instrumental variable approach will then be:

$$w_{it} = \pi_1 z_{LSOA,t} + \pi_2 X_{it} + \rho_{it} \equiv \hat{w}_{it} + \rho_{it} \quad (2)$$

The variable used as an instrument is a ‘Bartik’ style variable (Bartik, 1991, Goldsmith-Pinkhame et al, 2000). That is, the instrument is the local employment growth rate predicted by the interaction of local industry employment shares and national industry employment growth rates, which are to exogenously influence labour supply. The idea behind the instrument is that at some point in time people distributed across geographical areas and industries in a random way. The subsequent area level growth in the demand for jobs follows the national level growth rate according to this initial composition. The variation in demand for jobs therefore comes from national level changes. The instrument is defined as follows:

$$C_{at} = \sum_i G_{it} \frac{E_{ia0}}{E_{a0}} \quad (3)$$

Where  $G_{it}$  is the growth rate of industry  $i$  in year  $t$  and  $\frac{E_{ia0}}{E_{a0}}$  is the initial share of employment of industry  $i$  in the area. This instrumental strategy has been widely used and its identification relies on the fact that small area labour market conditions influence individuals probability of employment. The identification of the LATE effect hence, does not rely on individual specific variation but on national level variation, and its valid so long as there are no spatial spillovers and the data consist of a series of steady states (Goldsmith-Pinkhame et al, 2000). Given that some industries (e.g, services) are more ‘female friendly’ than others, its reasonable to expect that changes in the composition of in such industries will influence female employment, and is likely to exert a direct effect on attitudes via female employment only.



Second, with regard to the probability of having a child, one can argue that fertility is potentially endogenous, yet this is especially the case for subsequent children rather than the for the first child . This is because attitudes towards working and motherhood may affect the number of children a woman wants to have. More generally, if attitudes are malleable, they are likely to change after the first child more than after the subsequent ones, as the experience is not as new as it was. Including observations on second, third and subsequent children might therefore lead to an underestimation of the effect of having children on attitudes towards working mothers. In order to alleviate these problems, our sample in some of our specifications refers to first child only. Hence, the subsample employed in the study is constructed by keeping only household waves with one child only, which allows the data to retain its panel structure.

#### 4. Results

We begin by reporting the main results using OLS, although they are potentially biased due to endogeneity concerns hence we interpret them as correlations. Column (1) displays the association between of working and of having children at home, with individual and regional controls. It suggests that female employment (working) decreases the probability that women agree with the statement that a *pre-school child suffers if mother works* (from this point on, we will interpret a decrease in agreement with the statement is referred to as women becoming 'less traditional, and an increase in agreement with the statement is referred to as women becoming 'more traditional'). See Table A5 in the appendix for the distribution of the variable.

Figure 1 displays the evolution of the average rating score to our central question measuring traditional values (namely, the as agreement with the assertion that "Pre-school child suffers if the mother works") for both mothers and non-mothers, where a higher value refers to disagreement with such assertion and hence measures non-traditional values. The evidence

suggests a reduction of non-traditional values after 2006 among mothers and a milder increase in non-traditional values among non-mothers, indicating a certain preference overall between both after 2010 once the Great Recession was over.

**[Insert Figure 1 about here]**

Our estimates suggest that employment makes women less traditional by 0.35 Likert scale units. The first specification suggests that having children at home is associated with women becoming less traditional by between 0.06 and 0.11 Likert scale units. However, this result changes in the second specification. We are interested in the effect of motherhood on attitudes toward working and non-working women. Column (2) adds an interaction effect between working and the presence of children, and our estimates reveal that while working continues are associated with women becoming less traditional, motherhood (always proxied by the presence of children at home) makes women less traditional only when they work. That is, *motherhood is associated with women turning more traditional by 0.30 Likert scale units when mothers do not work*. In contrast, motherhood is associated with becoming less traditional by 0.31 scale units for working mothers. Yet, given the measurement of the dependent variable – on a scale from 1 to 5, the effect of motherhood alone when working is not jointly insignificant.

Column (3) considers mothers experiencing the first child only to account for potential endogenous fertility, influencing fertility stopping rules. Specifications with the first child only are constructed by keeping only one observation (that of the first child) per woman and summarising information from different survey waves. Column (3)'s interpretation of the results is similar in the direction of change of attitudes, albeit with lower but still significant coefficients at a 1% significance level.

**[Insert Table 3 about here]**

So far, results from Table 3 only take the endogeneity of fertility stopping rules into account. However, these results are potentially biased due omitted variable bias of both time-invariant and time-variant variables. To alleviate these problems, Table 4 displays the effect of motherhood on working and non-working women using individual fixed effects and instrumenting work using the Bartik instrument specified in section 3 of the paper which is relevant and significant and reveals an F test and the Anderson test above the expected cut-off. Thus, column (1) shows the IV results using the same specification as column (2) in Table 3, and column (2) follows the same sequence, but this time with a reduced sample that only includes the first child. Both columns show similar results, and therefore we shall focus on Column (2).

**[Insert Table 4 about here]**

Our estimates suggest that women who experience either working or having children (but not both at the same time), are more traditional. That is, *women with no children at home, that change their working status and start working, become more traditional*. Similarly, women who do not work and become mothers also become more traditional, albeit our estimates are less precise. Conversely, *women who go through both experiences, that is, who become mothers while working do not change their attitudes significantly*. This estimated is displayed by the linear combination of the estimates for working women: women who have a pre-school child become 0.25 unit scales less traditional, albeit not in a significant way. The significance of the coefficient does not change when those children grow older. This result is in line with the earlier literature examining the joint impact of work and motherhood on attitudes towards gender norms. Indeed, such literature establishes that parenthood in their case is not associated with a change in gender role attitudes when work patterns remain the same.

## 5. Heterogeneity effects

Given that such baseline results of Tables 3 and 4 may be concealing heterogeneity of reactions to working on attitudes, we consider several heterogeneous effects. More specifically, it could be that mothers engage in part-time work because they have similar concerns for their children to non-working mothers. If that was the case, the effect would be concealed with the variable working, which is a binary variable (yes/no). Table 5 shows the results employing a binary work variable with a cut-off at 8h and 16h, with columns (1) and (3) distinguishing women who work more than 16h from those who work less than 16h, and column (2) and (4) distinguishing women who work more than 8h from those who work less than 8h. The results, however, are not different from the previous tables, and the standard errors are even bigger.

**[Insert Table 5 about here]**

A different but equally important type of heterogeneity might be given by the level of education of the women in the sample. Education tends to affect attitudes, with highly-educated women having generally more liberal attitudes than low-educated ones. Hence, we test whether the effect of motherhood changes depending on the mother's education level, and this is what we analyse in Table 6. These results however show no significant differences from previous results, and more importantly, they are imprecisely estimated (standard errors are large), and hence inconclusive.

**[Insert Table 6 about here]**

## 6. Robustness checks

Next, we consider several potential robustness checks. Table A.1 in the appendix excludes divorced and separated women. This is especially relevant because when a couple's separation or divorce takes place, it is likely that one of the two in the couple leaves home, and therefore drops out of the sample. This means that some women will have dropped out and others will not, resulting in non-random attrition in our analysis. For the analysis in Table A.1, we drop the divorced and separated women in the sample.

Estimates are consistent with those in Table 3, but this time they are more precisely estimated (lower standard error and significance). Column (2) shows that women who experience either employment or motherhood (but not both at the same time), become more traditional. That is, we find that for women without children at home, starting a job (hence changing their working status), leads them to become more traditional. Similarly, when women do not work, motherhood makes them more traditional on average. Conversely, *women who are exposed to both motherhood and employment, that is, who become mothers while working, do not change their attitudes significantly*. More specifically, the interaction effect in Table 3 reveals that their attitudes increase by 0.026 scale units though estimates are less precisely estimates (10% significance level), resulting in a joint non-significant 0.35 unit scale increase.

The significance of the coefficient does not change when children grow older. This is more robust evidence that while *separately* motherhood and employment result in more traditional attitudes, becoming a mother when working does not change attitudes in a significant way. In other words, rather than 'value changing experience', employment during motherhood is a 'value preserving or confirming experience. Finally, we measure the effect of employment after motherhood on adult men in the households as reported in Figure A4. Importantly we find no effect suggesting that previous estimates are not driven by a change in values and preferences of men in the household.

## 7. Conclusion

This paper has examined whether the experiences of motherhood and employment change attitudes toward children's well-being and the effect of women's employment, proxying traditional gender norms. More specifically, drawing on several different specifications, including an instrumental variable strategy that employs a Bartik instrument (an interaction of local industry employment shares and national employment growth rates) we study whether exogenous changes in female employment during motherhood alters women's view about whether a 'pre-school child suffers if mother works'. This is an important question to understand the behavioural roots of gender employment gaps.

Against the backdrop of employment during motherhood qualifying as what Akerlof (1983) defines as 'value changing experience', we document evidence consistent with what we call 'value confirming experiences'. That is, preferences are guided by deep values and confirm individual priors, which are confirmed by individuals' experience. More specifically, we find that when women – non-mothers - start working, or when non-working women become mothers, their attitudes become more traditional (namely, are more likely to agree that a child suffers when a mother works). However, *when women jointly go through the two experiences of employment and motherhood, their attitudes do not change significantly*. This is the result is consistent with findings of earlier p studies (Berrington et al, 2008 Schober and Scott, 2012).

Compared to earlier studies, our estimates are not only retrieved from larger and more contemporary datasets, but also address the important endogeneity concerns that come from both employment (which we address with a Bartik instrument), and endogenous fertility stopping rules (when we examine first children only). Our results carry significant behavioural implications for the future understanding of the behavioural roots of a motherhood penalty. More specifically, our

results indicate that individuals' priors and early life exposure are critical to the formation of women's attitudes towards motherhood and employment. Second, it suggests that the motherhood penalty, associated with lower productivity and a change to mother-friendly jobs, cannot be explained by a change in attitudes of working women when they become mothers

.

## REFERENCES

- Ajzen, I. (1985). From Intentions to Actions: A Theory of Planned Behavior. In J. Kuhl & J. Beckmann (Eds.), *Action Control: From Cognition to Behavior* (pp. 11–39). Springer Berlin Heidelberg.  
[https://doi.org/10.1007/978-3-642-69746-3\\_2](https://doi.org/10.1007/978-3-642-69746-3_2)
- Akerlof, G. A. (1983). Loyalty Filters. *The American Economic Review*, 73(1), 54–63. JSTOR.
- Akerlof, G. A., & Kranton, R. E. (2000). Economics and Identity\*. *The Quarterly Journal of Economics*, 115(3), 715–753. <https://doi.org/10.1162/003355300554881>
- Akerlof, G., & Dickens, W. T. (1982). The Economic Consequences of Cognitive Dissonance. *American Economic Review*, 72(3), 307–319.
- Baxter, J., Buchler, S., Perales, F., & Western, M. (2015). A Life-Changing Event: First Births and Men’s and Women’s Attitudes to Mothering and Gender Divisions of Labor. *Social Forces*, 93(3), 989–1014. <https://doi.org/10.1093/sf/sou103>
- Becker, G. S. (1985). Human Capital, Effort, and the Sexual Division of Labor. *Journal of Labor Economics*, 3(1), S33–S58.
- Benabou, R., & Tirole, J. (2011). Identity, Morals, and Taboos: Beliefs as Assets. *The Quarterly Journal of Economics*, 126, 805–855. <https://doi.org/10.2307/23015689>
- Benhabib, J., Bisin, A., & Jackson, A. (Eds.). (2010). *Handbook of Social Economics* (1st ed., Vol. 1A). Elsevier.
- Berrington, A., Hu, Y., Smith, P. W. F., & Sturgis, P. (2007). A graphical chain model for reciprocal relationships between women’s gender role attitudes and labour force participation. *Journal of the Royal Statistical Society: Series A (Statistics in Society)*, 0(0), 071029094155002-???.  
<https://doi.org/10.1111/j.1467-985X.2007.00510.x>
- Bian, L., Leslie, S.-J., & Cimpian, A. (2017). Gender stereotypes about intellectual ability emerge early and influence children’s interests. *Science*, 355(6323), 389–391.  
<https://doi.org/10.1126/science.aah6524>
- Bicchieri, C. (2017). *Norms in the Wild: How to Diagnose, Measure, and Change Social Norms*. Oxford : Oxford University Press.



- Bielby, D. D. V., & Bielby, W. T. (1984). Work Commitment, Sex-Role Attitudes, and Women's Employment. *American Sociological Review*, *49*(2), 234–247.  
<https://doi.org/10.2307/2095573>
- Bolzendahl, C. I., & Myers, D. J. (2004). Feminist Attitudes and Support for Gender Equality: Opinion Change in Women and Men, 1974-1998. *Social Forces*, *83*(2), 759–789.
- Brennan, G., Eriksson, L., Goodin, Robert. E., & Southwood, N. (2013). *Explaining Norms* (1st edition). Oxford : Oxford University Press.
- Brewster, K., & Padavic, I. (2000). Change in Gender-Ideology, 1977-1996:The Contributions of Intracohort Change and Population Turnover. *Journal of Marriage and Family*, *62*, 477–487.  
<https://doi.org/10.1111/j.1741-3737.2000.00477.x>
- Brim, O. G., & Kagan, J. (1980). *Constancy and Change in Human Development*. Harvard University Press.
- Brooks, C., & Bolzendahl, C. (2004). The transformation of US gender role attitudes: Cohort replacement, social-structural change, and ideological learning. *Social Science Research*, *33*(1), 106–133. [https://doi.org/10.1016/S0049-089X\(03\)00041-3](https://doi.org/10.1016/S0049-089X(03)00041-3)
- Budig, M. J., & England, P. (2001). The Wage Penalty for Motherhood. *American Sociological Review*, *66*(2), 204. <https://doi.org/10.2307/2657415>
- Burda, M., Hamermesh, D., & Weil, P. (2007). *Total Work, Gender and Social Norms* (No. w13000; p. w13000). National Bureau of Economic Research. <https://doi.org/10.3386/w13000>
- Carlsson, G., & Karlsson, K. (1970). Age, Cohorts and the Generation of Generations. *American Sociological Review*, *35*(4), 710–718. <https://doi.org/10.2307/2093946>
- Chambers, J. R., Baron, R. S., & Inman, M. L. (2006). Misperceptions in Intergroup Conflict: Disagreeing About What We Disagree About. *Psychological Science*, *17*(1), 38–45.  
<https://doi.org/10.1111/j.1467-9280.2005.01662.x>
- Churchland, P. S., & Sejnowski, T. J. (1992). *The Computational Brain*. The MIT Press.
- Corrigall, E. A., & Konrad, A. M. (2007). Gender Role Attitudes and Careers: A Longitudinal Study. *Sex Roles*, *56*(11–12), 847–855. <https://doi.org/10.1007/s11199-007-9242-0>

- Coverdill, J. E., Kraft, J. M., & Manley, K. S. (1996). Employment History, the Sex Typing of Occupations, Pay and Change in Gender-Role Attitudes: A Longitudinal Study of Young Married Women. *Sociological Focus, 29*(1), 47–60. <https://doi.org/10.1080/00380237.1996.10571071>
- Cunningham, M. (2008). Changing Attitudes toward the Male Breadwinner, Female Homemaker Family Model: Influences of Women's Employment and Education over the Lifecourse. *Social Forces, 87*(1), 299–323. <https://doi.org/10.1353/sof.0.0097>
- Cunningham, Mick, Beutel, A. M., Barber, J. S., & Thornton, A. (2005). Reciprocal relationships between attitudes about gender and social contexts during young adulthood. *Social Science Research, 34*(4), 862–892. <https://doi.org/10.1016/j.ssresearch.2005.03.001>
- Danigelis, N. L., Hardy, M., & Cutler, S. J. (2007). Population Aging, Intracohort Aging, and Sociopolitical Attitudes. *American Sociological Review, 72*(5), 812–830. <https://doi.org/10.1177/000312240707200508>
- Davis, S. N., & Greenstein, T. N. (2009). Gender Ideology: Components, Predictors, and Consequences. *Annual Review of Sociology, 35*(1), 87–105. <https://doi.org/10.1146/annurev-soc-070308-115920>
- Deaton, A., & Stone, A. A. (2014). Evaluative and hedonic wellbeing among those with and without children at home. *Proceedings of the National Academy of Sciences of the United States of America, 111*(4), 1328–1333. PubMed. <https://doi.org/10.1073/pnas.1311600111>
- DeMaris, A., & Longmore, M. A. (1996). Ideology, Power, and Equity: Testing Competing Explanations for the Perception of Fairness in Household Labor. *Social Forces, 74*(3), 1043–1071. <https://doi.org/10.2307/2580392>
- Doorewaard, H., Hendrickx, J., & Verschuren, P. (2004). Work Orientations of Female Returners. *Work, Employment and Society, 18*(1), 7–27. <https://doi.org/10.1177/0950017004038387>
- Fan, P.-L., & Marini, M. M. (2000). Influences on Gender-Role Attitudes during the Transition to Adulthood. *Social Science Research, 29*(2), 258–283. <https://doi.org/10.1006/ssre.1999.0669>
- Farré, L., & Vella, F. (2013). The Intergenerational Transmission of Gender Role Attitudes and its Implications for Female Labour Force Participation. *Economica, 80*(318), 219–247. <https://doi.org/10.1111/ecca.12008>

- Fehr, E., & Hoff, K. (2011). Introduction: Tastes, Castes and Culture: the Influence of Society on Preferences\*. *The Economic Journal*, *121*(556), F396–F412. <https://doi.org/10.1111/j.1468-0297.2011.02478.x>
- Fernández, R., & Fogli, A. (2009). Culture: An Empirical Investigation of Beliefs, Work, and Fertility. *American Economic Journal: Macroeconomics*, *1*(1), 146–177. <https://doi.org/10.1257/mac.1.1.146>
- Fernandez, R., Fogli, A., & Olivetti, C. (2004). Mothers and Sons: Preference Formation and Female Labor Force Dynamics. *The Quarterly Journal of Economics*, *119*(4), 1249–1299. <https://doi.org/10.1162/0033553042476224>
- Festinger, L. (1957). *A theory of cognitive dissonance*. Stanford University Press.
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention and behaviour: An introduction to theory and research* (Vol. 27).
- Fortin, N. M. (2005). Gender Role Attitudes and the Labour-market Outcomes of Women across OECD Countries. *Oxford Review of Economic Policy*, *21*(3), 416–438. <https://doi.org/10.1093/oxrep/gri024>
- Fuchs-Schündeln, N., & Schündeln, M. (2015). On the endogeneity of political preferences: Evidence from individual experience with democracy. *Science (New York, N.Y.)*, *347*, 1145–1148. <https://doi.org/10.1126/science.aaa0880>
- Giddens, A. (1991). *The Consequences of Modernity*. Polity Press.
- Giuliano, P., & Spilimbergo, A. (2014). Growing up in a Recession. *The Review of Economic Studies*, *81*(2), 787–817. <https://doi.org/10.1093/restud/rdt040>
- Glass, J. (1992). Housewives and Employed Wives: Demographic and Attitudinal Change, 1972-1986. *Journal of Marriage and Family*, *54*(3), 559–569. JSTOR. <https://doi.org/10.2307/353242>
- Glenn, N. D. (2003). Distinguishing Age, Period, and Cohort Effects. In J. T. Mortimer & M. J. Shanahan (Eds.), *Handbook of the Life Course* (pp. 465–476). Springer US. [https://doi.org/10.1007/978-0-306-48247-2\\_21](https://doi.org/10.1007/978-0-306-48247-2_21)
- Goldsmith-Pinkham, P., Sorkin, I. and Swift, H., 2020. Bartik instruments: What, when, why, and how. *American Economic Review*, *110*(8), pp.2586-2624.

- Greenstein, T. (1996). Gender Ideology and Perceptions of the Fairness of the Division of Household Labor: Effects on Marital Quality. *Social Forces*, 74, 1029–1042.  
<https://doi.org/10.2307/2580391>
- Huber, J., & Spitze, G. (1983). *Sex Stratification: Children, Housework, and JOBS*. New York: Academic.
- Hult, C., & Svallfors, S. (2002). Production Regimes and Work Orientations: A Comparison of Six Western Countries. *European Sociological Review*, 18(3), 315–331.  
<https://doi.org/10.1093/esr/18.3.315>
- Inglehart, R. (1971). The Silent Revolution in Europe: Intergenerational Change in Post-Industrial Societies. *The American Political Science Review*, 65(4), 991–1017.  
<https://doi.org/10.2307/1953494>
- Inglehart, R., & Baker, W. (2000). Modernization, Cultural Change, and the Persistence of Traditional Values. *American Sociological Review*, 65, 19–51. <https://doi.org/10.2307/2657288>
- Johnston, D., Schurer, S., & Shields, M. (2014). Maternal gender role attitudes, human capital investment, and labour supply of sons and daughters. *Oxford Economic Papers*, 66(3), 631–659.
- Kahan, D. (2010). Fixing the communications failure. *Nature*, 463(7279), 296–297.  
<https://doi.org/10.1038/463296a>
- Krosnick, J. A. (1988). Attitude importance and attitude change. *Journal of Experimental Social Psychology*, 24(3), 240–255. [https://doi.org/10.1016/0022-1031\(88\)90038-8](https://doi.org/10.1016/0022-1031(88)90038-8)
- Krosnick, J. A., & Alwin, D. E. (1989). *Aging and Susceptibility to Attitude Change*. 10.
- Lane, C., Brundage, C. L., & Kreinin, T. (2017). Why We Must Invest in Early Adolescence: Early Intervention, Lasting Impact. *The Journal of Adolescent Health*, 61(4 Suppl), S10–S11.  
<https://doi.org/10.1016/j.jadohealth.2017.07.011>
- Mannheim, K. (1952). The Problem of Generations. In *Essays on the Sociology of Knowledge*. Routledge.
- Mason, K. O., & Lu, Y.-H. (1988). Attitudes Towards Women's Familial Roles: Changes in the United States, 1977-1985. *Gender & Society*, 2(1), 39–57.  
<https://doi.org/10.1177/089124388002001004>

- Moors, G. (2003). *Estimating the Reciprocal Effect of Gender Role Attitudes and Family Formation: A Log-linear Path Model with Latent Variables*. 24.
- Morgan, S. P., & Waite, L. J. (1987). Parenthood and the Attitudes of Young Adults. *American Sociological Review*, 52(4), 541–547. <https://doi.org/10.2307/2095299>
- Noonan, M., Rippeyoung, P., & Glass, J. (2006). *Does women's work commitment change after marriage and childbirth?* 2006 Annual Meeting of the American Sociological Association, Montreal, Canada.
- Pearse, R., & Connell, R. (2015). Gender Norms and the Economy: Insights from Social Research. *Feminist Economics*, 22, 1–24. <https://doi.org/10.1080/13545701.2015.1078485>
- Ryder, N. B. (1965). The Cohort as a Concept in the Study of Social Change. *American Sociological Review*, 30(6), 843–861. <https://doi.org/10.2307/2090964>
- Schober, P., & Scott, J. (2012). Maternal employment and gender role attitudes: Dissonance among British men and women in the transition to parenthood. *Work, Employment and Society*, 26(3), 514–530. <https://doi.org/10.1177/0950017012438577>
- Schuman, H., & Scott, J. (1989). Generations and Collective Memories. *American Sociological Review*, 54(3), 359. <https://doi.org/10.2307/2095611>
- Schwartz, S. (2012). An Overview of the Schwartz Theory of Basic Values. *Online Readings in Psychology and Culture*, 2, 11.
- Sears, D. (1983). The persistence of early political predispositions: The roles of attitude object and life stage. *Review of Personality and Social Psychology*, 4, 79–116.
- Shafer, E. F., & Malhotra, N. (2011). The Effect of a Child's Sex on Support for Traditional Gender Roles. *Social Forces*, 90(1), 209–222. <https://doi.org/10.1093/sf/90.1.209>
- Sigle-Rushton, W., & Waldfogel, J. (2007). Motherhood and women's earnings in Anglo-American, Continental European, and Nordic Countries. *Feminist Economics*, 13(2), 55–91. <https://doi.org/10.1080/13545700601184849>
- Stiglitz, J., & Hoff, K. (2016). *Striving for Balance in Economics: Towards a Theory of the Social Determination of Behavior*. 75.

- Strauss, E., Schloss, K., & Palmer, S. (2013). Color preferences change after experience with liked/disliked colored objects. *Psychonomic Bulletin & Review*, 20. <https://doi.org/10.3758/s13423-013-0423-2>
- Svallfors, S., Halvorsen, K., & Andersen, J. (2001). Work Orientations in Scandinavia: Employment Commitment and Organizational Commitment in Denmark, Norway and Sweden. *Acta Sociologica - ACTA SOCIOLOGICA*, 44, 139–156. <https://doi.org/10.1177/000169930104400203>
- Thornton, A., Alwin, D. F., & Camburn, D. (1983). Causes and Consequences of Sex-Role Attitudes and Attitude Change. *American Sociological Review*, 48(2), 211–227. <https://doi.org/10.2307/2095106>
- Thornton, A., & Freedman, D. (1979). Changes in the Sex Role Attitudes of Women, 1962-1977: Evidence from a Panel Study. *American Sociological Review*, 44(5), 831–842. <https://doi.org/10.2307/2094530>
- University of Essex, Institute for Social and Economic Research. (2018). *British Household Panel Survey: Waves 1-18, 1991-2009. [Data collection]*. UK Data Service. SN: 5151. <http://doi.org/10.5255/UKDA-SN-5151-2>
- University of Essex, Institute for Social and Economic Research, NatCen Social Research, Kantar Public. (2019). *Understanding Society: Waves 1-9, 2009-2018 and Harmonised BHPS: Waves 1-18, 1991-2009. [Data collection]*. UK Data Service, SN: 6614. <http://doi.org/10.5255/UKDA-SN-6614-13>.
- Wilkie, J. R. (1993). Changes in U.S. Men's Attitudes toward the Family Provider Role, 1972-1989. *Gender and Society*, 7(2), 261–279.

## Tables and Figures

**Table 1** Descriptive statistics for attitude variables for the British Household Panel and Understanding Society sample.

Variable	N	Percentage
<i>Pre-school child suffers if mother works</i>		
strongly agree	2,584	7.01
agree	7,303	19.81
not agree/disagree	12,448	33.76
disagree	10,781	29.24
strongly disagree	3,752	10.18
Total	<b>36,868</b>	100

**Table 2** Descriptive statistics for individual working status, presence of pre-school children at home and individual-level control variables for the British Household Panel and Understanding Society sample.

Variable	Mean	Std. Dev.	Min	Max	N
Working	.514	.5	0	1	43358
No presence of children	.644	.479	0	1	43183
Presence of 0 to 4 year-old at home	.129	.335	0	1	43183
Presence of older children at home	0.223	.419	0	1	43183
No education	.196	.397	0	1	42422
Education at GCSE level	.238	.426	0	1	42422
Education at A-levels	.185	.388	0	1	42422
Education between A-levels and degree	.088	.284	0	1	42422
Education at degree level	.192	.394	0	1	42422
Education at high degree level	.101	.301	0	1	42422
Presence of other children at home	.237	.425	0	1	43465
Married	.59	.492	0	1	43616
Age	46.347	18.535	15	104	43682

*Note:* All variables except for age are dummies constructed upon affirmative replies.

**Table 3:** Impact of working on attitudes towards working mothers with pre-school children. OLS specifications.

Variables	(1) OLS M1	(2) OLS M2	(3) OLS M2 - FC
<b>Presence of children</b>			
<i>[base: no children]</i>			
Pre-school children	0.064** (0.025)	-0.303*** (0.035)	-0.157*** (0.049)
Older children	0.107*** (0.029)	-0.148*** (0.038)	-0.208*** (0.066)
<b>Work status</b>			
<i>[base: not employed]</i>			
<b>Presence of child <math>\times</math> employed</b>	0.346*** (0.017)	0.146*** (0.019)	0.143*** (0.020)
Pre-school children		0.614*** (0.040)	0.457*** (0.059)
Older children		0.377*** (0.037)	0.399*** (0.052)
<b>Education level</b>			
<i>[base: no qual]</i>			
GSCE	0.090*** (0.024)	0.100*** (0.023)	0.058** (0.025)
A-level	0.121*** (0.026)	0.108*** (0.025)	0.102*** (0.027)
Between A-level - degree	0.078*** (0.029)	0.089*** (0.027)	0.073** (0.029)
Degree	0.196*** (0.027)	0.198*** (0.025)	0.167*** (0.028)
High degree	0.148*** (0.029)	0.157*** (0.027)	0.144*** (0.030)
<b>Siblings</b>	-0.137*** (0.026)	-0.140*** (0.025)	-0.036 (0.052)
<i>[base: none]</i>			
<b>Marital status</b>	-0.067*** (0.018)	-0.056*** (0.015)	-0.043*** (0.017)
<i>[base: not married]</i>			
<b>Age</b>	-0.008*** (0.002)	-0.003 (0.002)	-0.002 (0.002)
<b>Age squared</b>	0.000 (0.000)	-0.000** (0.000)	-0.000** (0.000)
<b>Constant</b>	3.314*** (0.053)	3.338*** (0.049)	3.339*** (0.052)
<b>Linear combination of estimates: effect for working mothers</b>			
Pre-school children		0.311*** (0.029)	0.300*** (0.036)
Older children		0.230*** (0.029)	0.192 (0.055)
Observations	31,940	31,940	25,074
R-squared	0.065	0.075	0.065
Region dummies	Yes	Yes	Yes

Individual-clustered and robust standard errors in parenthesis: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. OLS regressions. Specifications: (1) Presence of children, work status and controls included. (2) Full model with interactions. (3) Full model with interactions for the subsample with first child only.



**Table 4** Impact of working on attitudes towards working mothers with pre-school children. Addressing endogeneity concerns related to the work variable.

Variables	(1) IV	(2) IV- FC
<b>Work status</b> <i>[base: not employed]</i>	-2.439*** (0.835)	-2.155*** (0.794)
<b>Presence of child <math>\times</math> employed</b>		
Pre-school children	0.250 (4.974)	1.818 (1.807)
Older children	2.066** (0.892)	1.373 (1.312)
<b>Presence of child</b> <i>[base: no children]</i>		
Pre-school children	-0.479 (3.539)	-1.563 (1.360)
Older children	-1.572** (0.726)	-1.211 (1.015)
<b>Linear combination of estimates: effect for working mothers</b>		
Pre-school children	-0.288 (1.446)	0.255 (0.477)
Older children	0.494 (0.475)	0.162 (0.386)
Observations	27,993	20,982
R-squared	-0.625	-0.484
F Test	24.34	15.23
Number of pid	11,605	8,942
Region dummies	Yes	Yes

Individual-clustered and robust standard errors in parenthesis: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

*Note:* All models include controls for age, education, marital status, presence of other children at home and regional dummies. *rie* Specifications: (1) Instrumental variable strategy specification with individual fixed effects. (2) Instrumental variable strategy specification with individual fixed effects for the subsample with first child only.

**Table 5** Impact of hours of work on attitudes towards working mothers with pre-school children. Addressing endogeneity concerns related to the hours of work dummy variables.

	(1)	(2)	(3)	(4)
<b>Variables</b>	16 hrs	+8 hrs	16 hrs- FC	8 hrs -FC
<b>Presence of child</b>				
<i>[base: no children]</i>				
Pre-school children	-4.528*	-3.699*	-0.190	-2.446
	(2.746)	(1.954)	(27.965)	(2.817)
Older children	-3.421	-2.768*	0.838	-1.961
	(2.258)	(1.496)	(24.877)	(1.891)
<b>Hours worked +16</b>				
<i>[base: hrs&lt;16]</i>				
	-4.623**		-3.484	
	(2.265)		(2.448)	
<b>Presence of child <math>\times</math> +16 hrs</b>				
Pre-school children	6.460		-0.764	
	(4.015)		(46.577)	
Older children	4.111		-2.431	
	(2.896)		(38.459)	
<b>Hours worked +8</b>				
<i>[base: hrs&lt;8]</i>				
		-3.976**		-3.398**
		(1.668)		(1.407)
<b>Presence of child <math>\times</math> +8 hrs</b>				
Pre-school children		4.800*		3.017
		(2.550)		(3.831)
Older children		3.251*		2.256
		(1.742)		(2.300)
<b>Linear combination of estimates: effect for working mothers</b>				
Pre-school children	1.932	1.101*	-0.954	0.571
	(1.290)	(0.613)	(18.618)	(1.035)
Older children	0.690	0.483	-1.593	0.295
	(0.782)	(0.352)	(13.599)	(0.559)
Observations	28,227	28,227	21,170	21,170
R-squared	-1.684	-1.188	-1.859	-1.120
F test	8.38	11.26	3.05	4.77
Number of pid	11,694	11,694	9,021	9,021
Region dummies	Yes	Yes	Yes	Yes

Individual-clustered and robust standard errors in parenthesis: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

*Note:* All models include controls for age, education, marital status, presence of other children at home and regional dummies. Specifications: (1) and (2) Instrumental variable strategy specification with individual fixed effects. (3) and (4) Instrumental variable strategy specification with individual fixed effects for the subsample with first child only.

**Table 6** Impact of working on attitudes towards working mothers with pre-school children. Addressing endogeneity concerns related to the work variable; separating by level of education.

Variables	Education: Below A-levels		Education: Above A-levels	
	(1) IV	(2) IV- First Child	(3) IV	(4) IV- First Child
<b>Work status</b> <i>[base: not employed]</i>	-3.331 (3.813)	-2.980** (1.438)	-2.635 (8.015)	-1.747 (1.663)
<b>Presence of child <math>\times</math> employed</b>				
Pre-school children	-1.027 (51.626)	-2.209 (7.565)	19.636 (73.029)	7.068 (7.872)
Older children	2.605 (3.998)	1.553 (2.156)	-5.779 (16.217)	-0.808 (2.800)
<b>Presence of child</b> <i>[base: no children]</i>				
Pre-school children	0.221 (31.513)	1.071 (4.800)	-16.027 (59.657)	-5.976 (6.717)
Older children	-1.853 (1.489)	-1.013 (1.449)	2.701 (6.445)	0.054 (2.180)
<b>Linear combination of estimates: effect for working mothers</b>				
Pre-school children	-0.806 (20.116)	-1.138 (2.788)	3.609 (13.384)	1.092 (1.171)
Older children	0.751 (2.680)	0.539 (0.9211)	-3.077 (10.570)	-0.753 (1.149)
Observations	16,845	12,733	10,453	7,649
R-squared	-1.373	-1.178	-16.215	-0.919
F Test	13.09	7.84	5.39	6.28
Number of pid	7,005	5,417	4,656	3,496
Region dummies	Yes	Yes	Yes	Yes

*Note:* All models include controls for age, education, marital status, presence of other children at home and regional dummies. Specifications: (1) and (3) Instrumental variable strategy specification with individual fixed effects. (2) and (4) Instrumental variable strategy specification with individual fixed effects for the subsample with first child only.

## Online Appendix

**Table A.1** Impact of working on attitudes towards working mothers with pre-school children. Addressing endogeneity concerns related to the work variable; sample excluding divorced and separated women.

Variables	(1) IV	(2) IV- FC
<b>Work status</b>	-2.930***	-2.649**
<i>[base: not employed]</i>	(1.087)	(1.039)
<b>Presence of child <math>\times</math> employed</b>		
Pre-school children	0.349 (2.840)	2.554* (1.335)
Older children	2.886** (1.248)	2.017 (1.752)
<b>Presence of child</b>		
<i>[base: no children]</i>		
Pre-school children	-0.654 (2.027)	-2.209** (1.047)
Older children	-2.237** (0.991)	-1.830 (1.365)
<b>Linear combination of estimates: effect for working mothers</b>		
Pre-school children	-0.306 (0.850)	0.345 (0.355)
Older children	0.649* (0.386)	0.187 (0.462)
Observations	24,696	18,534
R-squared	-0.933	-0.741
F test	19.07	12.14
Number of pid	10,262	7,891
Region dummies	Yes	Yes

Individual-clustered and robust standard errors in parenthesis: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

*Note:* All models include controls for age, education, marital status, presence of other children at home and regional dummies. Specifications: (1) Instrumental variable strategy specification with individual fixed effects. (2) Instrumental variable strategy specification with individual fixed effects for the subsample with first child only.

**Table A.2** Impact of working on attitudes towards working mothers with pre-school children and pregnant women. Addressing endogeneity concerns related to the work variable.

Variables	(1) IV	(2) IV- FC
<b>Work status</b> <i>[base: not employed]</i>	-2.196** (0.887)	-2.066** (0.920)
<b>Presence of child <math>\times</math> employed</b>		
Pre-school children or pregnant	0.174 (12.313)	1.242 (2.002)
Older children	1.638 (1.712)	1.139 (1.386)
<b>Presence of child</b> <i>[base: no children]</i>		
Pre-school children or pregnant	-0.087 (8.037)	-0.927 (1.660)
Older children	-0.951 (1.021)	-0.776 (1.226)
Observations	27,993	20,982
R-squared	-0.516	-0.442
F Test	20.76	12.47
Number of pid	11,605	8,942
Region dummies	Yes	Yes

Individual-clustered and robust standard errors in parenthesis: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

*Note:* All models include controls for age, education, marital status, presence of other children at home and regional dummies. *rie* Specifications: (1) Instrumental variable strategy specification with individual fixed effects. (2) Instrumental variable strategy specification with individual fixed effects for the subsample with first child only.

**Table A.3** Descriptive statistics for attitude variables for the British Household Panel and Understanding Society sample, **Males**.

Variable	N	Percentage
<b><i>Pre-school child suffers if mother works</i></b>		
strongly agree	4,402	9.10
agree	14,490	29.96
not agree/disagree	16,322	33.75
disagree	10,480	21.67
strongly disagree	2,673	5.53
Total	48,367	100.00

**Table A.4** Impact of working on attitudes towards working mothers in **males** with pre-school children. OLS specifications.

Variables	(1) OLS M1	(2) OLS M2
<b>Presence of children</b> <i>[base: no children]</i>		
Pre-school children	0.133*** (0.023)	0.185*** (0.056)
Older children	0.112*** (0.023)	0.103*** (0.040)
<b>Work status</b> <i>[base: not employed]</i>	0.068*** (0.014)	0.070*** (0.015)
<b>Presence of child <math>\times</math> employed</b>		
Pre-school children		-0.057 (0.058)
Older children		0.011

		(0.040)
<b>Education level</b>		
<i>[base: no qual]</i>		
GSCE	0.055*** (0.020)	0.055*** (0.020)
A-level	0.036* (0.019)	0.037* (0.019)
Between A-level - degree	-0.011 (0.022)	-0.011 (0.022)
Degree	0.104*** (0.021)	0.105*** (0.021)
High degree	0.018 (0.024)	0.019 (0.024)
<b>Siblings</b>	-0.068*** (0.023)	-0.069*** (0.023)
<i>[base: none]</i>		
<b>Marital status</b>	0.015 (0.013)	0.014 (0.013)
<i>[base: not married]</i>		
<b>Age</b>	(0.015) -0.008***	(0.015) -0.008***
<b>Age squared</b>	(0.002) -0.000*	(0.002) -0.000*
<b>Constant</b>	3.180*** (0.043)	3.180*** (0.043)
Observations	46,666	46,666
R-squared	0.060	0.060
Region dummies	Yes	Yes

**Table A.5** Descriptive statistics for attitude variables for the British Household Panel and Understanding Society sample. Includes within variation across waves

Variable	N	Percentage	Within percent
<i>Pre-school child suffers if mother works</i>			
strongly agree	2,584	7.01	70.12
agree	7,303	19.81	71.04
not agree/disagree	12,448	33.76	74.20
disagree	10,781	29.24	71.74
strongly disagree	3,752	10.18	68.05
Total	<b>36,868</b>	100	71.88

**Figure 1** Average response by wave to the question “Pre-school child suffers if mother works”.  
1:strongly agree - 5: strongly disagree

