Children of the (gender) revolution: A theoretical and empirical synthesis of how gendered division of labour influences fertility

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Short title: Children of the (gender) revolution

Abstract

Gender equity theories of fertility broadly predict that the lowest fertility in high-income settings will be seen in women facing a 'dual burden' of both paid and unpaid labour responsibilities, but that fertility will increase when male partners share domestic labour. Here we provide a critique of some gender equity theories of fertility in demography, and restate the hypothesis in terms of complementarity between partners. Further, we suggest authors use an interdisciplinary approach, such as integrating perspectives from evolutionary theory and the 'Traits-Desires-Intentions-Behaviour' framework, to provide some consistency to this diverse literature. Building on this theoretical synthesis, we perform a systematic review of 95 pieces of analysis. This broadly supports the idea that fertility will be low where women face a dual burden, which is particularly evident among macro-level studies, micro-level analyses investigating progression to subsequent children, and studies which do not use gender role attitudes as an independent variable.

Keywords: fertility; fertility intentions; gender equality; gender revolution theory; gender equity; behavioural frameworks; psychosocial theories; evolutionary theory; traits-desires-intentions-behaviour

Introduction

Gender equity has been proposed as a possible determinant of fertility in both higher- and lower-fertility contexts. One idea is that an incomplete 'gender revolution' in higher-income countries results in very low fertility (Goldscheider et al. 2015). This hypothesis predicts a U-shaped relationship between fertility and gender equity at the national level. Fertility will be high where gender equity is very low, before the onset of the revolution, but fertility will fall to very low levels at moderate levels of gender equity, where women experience equity in public institutions, but not in family institutions. Fertility will then increase as the gender revolution completes and women gain equity in both public and private institutions as men contribute more at home. The rationale of the theory is that when women are emancipated in the public but not private sphere, they will experience a 'dual burden': labour market activity outside the home while also bearing the brunt of domestic responsibilities. The difficulty women experience managing both their paid and unpaid labour responsibilities leads to the desire for fewer children, who would only exacerbate this burden.

Here, we conduct a systematic review of empirical work exploring the association between gender equity in the household and fertility. A previous review summarizing relevant fertility intentions literature was published relatively recently (Neyer et al. 2013). The review concluded that there was no uniform effect of gender equity on fertility intentions, but that there was variation by parity and gender. It also recommended that a stronger theoretical distinction between gender equality (absolute fairness) and gender equity (perceived fairness) was needed to understand this literature. However, that review only focused on intentions literature and included multiple measures of gender equality/equity aside from the division of household labour. Furthermore, the number of papers on the topic has doubled since that review was published, indicating both considerable contemporary interest in the topic and the need to continue evaluating evidence for gender revolution arguments.

In this paper, we start by reviewing different formulations of arguments which relate gender equity to fertility. We then consider how research on gender equity in the household and fertility, as well as demographic research more generally, would be strengthened if more attention were paid to theoretical motivations for empirical analysis. Further, we suggest that demographers draw more

explicitly on multiple theories from different disciplines. We demonstrate how this might be done, by using theoretical frameworks in two different ways in our discussion of gender equity and fertility. Firstly, we draw on evolutionary theory to strengthen and broaden the theoretical framework that suggests *why* gender equity should be associated with fertility. Secondly, we consider theoretical frameworks which demographers have used to understand the reproductive decision-making process; in other words, *how* variation in fertility is produced. Here we use the 'Traits-Desires-Intentions-Behaviour' (TDIB) framework to illustrate how such theories can help restate and direct empirical analysis on gender equity in the household and fertility. In outlining the strengths of these theories, we hope to offer guidance for standardizing this area of fertility research; this will also aid our interpretation of the systematic review findings, which span such a wide diversity of studies and measures of fertility. Finally, in our systematic review we assess the evidence that gender equity in the household affects different parts of the reproductive decision-making pathway.

Gender equity theories and fertility

Gender equity and the demographic transition

Several authors have argued that changes in gender equity, in terms of women's decision-making power, help explain the initial stages of the fertility transition from high to low fertility. Fertility began to fall when women became empowered to exercise control over their own reproductive lives, choosing to invest in opportunities in education and wage labour, and having fewer children (Folbre 1983; McDonald 2000a; Campbell et al. 2013). However, such an explanation seems to assume a remarkably homogenous lack of women's autonomy in the pre-transition period, as well as a universal desire for smaller family sizes among women (Mackinnon 1995; Janssens 2007a). These assumptions appear unlikely to be realistic, given the cultural and ecological heterogeneity otherwise observed across human societies, both contemporary and pre-transition (Hewlett 2000; Gray and Anderson 2010). This is not to say that there was necessarily *more* gender equity in all pre-transition societies, but rather not a universal dearth as these theories seem to imply. Empirical evidence has also rarely and inconsistently

found a link between gender equity and the onset of the demographic transition (Coale and Watkins 1986; McDonald 2000a; Bhat 2002; Campbell et al. 2013; Duvendack and Palmer-Jones 2017).

Moreover, Basu has argued that it was actually a 'clamping down' on women's autonomy, rather than women's empowerment, that provided the impetus for the early stages of fertility decline, through the emergence of a restrictive male-breadwinner–female-homemaker nuclear family model (Basu 2002, 2017). There is empirical evidence supporting this argument (Amin and Lloyd 2002; Morgan et al. 2002). The norms accompanying a male-breadwinner–female-homemaker nuclear family model encourage women to sacrifice their leisure time for their husbands and children, making children more of a time burden for women and thus less desirable. Men also adjust their fertility preferences downwards, given the substantial burden involved in single-handedly providing for a large family (Janssens 2007b). The theoretical foundation and empirical evidence for a link between gender equity and the initial stages of the demographic transition therefore remain limited, and may be more likely to support an association between *decreasing* gender equity and early fertility decline.

Gender equity and very low fertility

Empirical studies have also focused on the role of gender equity in determining a fall from moderate to very low levels of fertility in high-income countries over the latter half of the twentieth century. These studies have tended to focus not only on women's decision-making power, but also on gendered division of labour. McDonald (2000a, 2000b) first developed the argument that insufficient support for women to fulfil their responsibilities both in public institutions and at the family level has led to declines in fertility to sub-replacement levels across high-income countries. This will lead to a U-shaped relationship between levels of gender equity and fertility over time, with declining fertility until women receive sufficient support to cause fertility to increase again.

The original rationale for this explanation stems from Becker's (1981) 'new home economics' theory. The theory posits that household role specialization, with women as homemakers and men as breadwinners, results from the goal of creating efficiency within the family. Couple members perform complementary roles to one another, and these roles result in the successful reproduction of the

household through childbearing. Within this framework, the decline in fertility can be explained partly by a conflict between paid labour and child-rearing duties for working women. Efficiency within the family also encompasses child labour. In particular, childcare from older siblings is, and continues to be in some contexts, a very important motivating factor for childbearing (Kramer 2005). During the demographic transition in high-income contexts, the utility of child work relative to parental labour decreased. This resulted in an increased investment in the 'quality' rather than 'quantity' of children, with couples having fewer children, substituting their labour with education (Becker 1981; Willis 1994). This leaves the present-day scenario where household labour is usually confined to parents, without support from other family members or children.

Although Becker's theory is in itself gender neutral, as either partner can specialize in the two areas of paid and unpaid labour, Becker added the assumption that women are more efficient homemakers due to a long history of specializing purely in this type of labour (although he placed less emphasis on this point in his later work (Becker 1985)). This assumption is problematic, given that women throughout human history have contributed productively both inside and outside the home (Hewlett 2000; Ahnert 2006; Giuliano 2015; Johnston et al. 2018). Instead, the male-breadwinner–female-homemaker family form seems to have risen to its peak prevalence in Europe in the mid-twentieth-century post-war era, the time when Becker wrote his theory. It appears to have grown in popularity owing to economic, social, and demographic changes that happened around the beginning of the demographic transition in Western Europe, establishing the construct of public and private spheres; the former largely the preserve of men, the latter the preserve of women (Van Poppel et al. 2009; Basu 2017; Fortunato 2017). The rise in popularity of the male-breadwinner–female-homemaker family as industrialization progresses is still evident globally, with high women's labour force participation in countries with a low GDP per capita, which falls as countries industrialize and urbanize (World Bank 2012). Women's participation rises again as countries move to a service economy, with women engaging in tertiary sector work. The male-breadwinner–female-homemaker family form is therefore a relatively recent phenomenon, rather than being the 'natural' family form assumed in Becker's earlier work (1981).

Becker was correct to note, however, that women most often perform most of the domestic labour within the household both in pre- and post-transition societies (Fuwa 2004; Kramer 2005; Gray and Anderson 2010; Craig and Mullan 2011; Cloïn 2012; Tanturri 2012; Craig and Powell 2016). This is emphasized in the 'gender revolution theory' (Goldscheider et al. 2015), which builds on the U-shaped relationship noted by McDonald by focusing on a gender norm explanation for falling fertility. Broadly speaking, a gender norm or role encompasses a behaviour or set of behaviours considered appropriate by society for a person of a particular gender to perform. In relation to division of housework in high-income countries, culturally constructed gender roles dictate that the act of being female is confirmed by performing housework, whereas the performance of masculinity is done through avoiding it (Berk 1985; Mason 1997). Gender revolution theory, in contrast to McDonald's work, explicitly recognizes that male-breadwinner–female-homemaker social norms were largely a product of the industrial revolution, arising through the establishment of public and private spheres as productive labour became separated from family life.

Starting from the premise of a post-industrial-revolution worldview, gender revolution theory posits that fertility rates will fall and then rise, in response to two gender revolutions. The first gender revolution occurs in the public sphere. During this phase, fertility will fall as women increasingly engage in paid work, compared with the predominantly male-breadwinner–female-homemaker model of the mid-twentieth century. However, men do not contribute more at home, owing to gender norms in favour of a male-breadwinner–female-homemaker family model. This can result in a working woman experiencing a dual burden, where she must balance her paid work with a 'second shift' of domestic work, unsupported by her partner at home (Hochschild 1989). Fertility will only rise again when there is a second gender revolution at the family level, as men increasingly engage in unpaid labour responsibilities, alleviating this dual burden. In sum, the trend outlined gives the same U-shaped pattern noted by McDonald, with the highest fertility for both male-breadwinner–female-homemaker and egalitarian couples, but the lowest among those who have only experienced the first phase of the two gender revolutions.

Using evolutionary theory to strengthen why gender equity in the household should affect fertility

Demographers have borrowed theories from other disciplines, such as sociology and economics, in order to understand demographic phenomena from macro and micro perspectives. For example, Becker was an economist, and gender equity theories are built on sociological theories relating to gender systems. Evolutionary theory is another theory which can offer a perspective on why fertility varies, and in particular, why gender equity in the household may cause fertility to vary. While evolutionary theory is starting to be implemented by demographers studying childbearing intentions (Park 2012; Schaffnit and Sear 2017a), we urge more fertility scholars to engage with the insights the theory can bring, both generally and in relation to the topic of this review.

Firstly, a general major strength of the theory for the study of fertility is its clear consideration of how the environment can drive particular behaviours, rather than just individual differences as in many theories of fertility behaviour. Evolutionary models assume that conscious and unconscious psychological, biological, and behavioural mechanisms respond flexibly to an individual's environment in order to provide the best 'match' for optimizing survival and reproductive success (fitness). Specifically, these mechanisms have been shaped by natural selection to optimize 'inclusive fitness', which is a measure of genetic representation in subsequent generations, achieved both through an individual's own reproduction and by helping relatives reproduce. Through this framework, variation in human behaviour can be understood as a product of this gene–environment interaction (Sear 2015).

In relation to reproductive behaviour, evolutionary theory outlines that humans have evolved dispositions to recognize environmental cues which imply the alleviation of reproductive costs. As in all animals, human mothers have a finite amount of energy that can be allocated to competing fitness-related characteristics, such as continued childbearing (Burkart et al. 2017). Unlike most other species, however, human mothers suffer a particularly high burden of childcare, given the extended childhood of our species, and relatively short interbirth intervals. This means that mothers must care for multiple dependent children at different developmental stages simultaneously. Helpers other than the mother, known as 'allomothers', can alleviate this energy burden by distributing the costs of child-rearing

between them (e.g. the contribution of the male partner to domestic work). Partners, the social network, and older children therefore become vital sources of support for mothers to be able to raise children 'successfully', that is, to survive into adulthood (Kramer 2005; Hrdy 2009). While it seems that individuals no longer always act in a way that optimizes their reproductive fitness (Goodman et al. 2012), the insight that human behaviour and physiology have evolved to respond to environmental cues in order to maximize reproductive success can lead to a better understanding of behaviour.

A second major strength of evolutionary theory is its ability to provide an ultimate level of explanation for why humans continue to have children despite high potential costs. There are few other behaviours performed so voluntarily by humans that incur such high risks of morbidity and mortality as pregnancy and childbirth. 'Rational actor' models of human decision-making cannot explain this well as a product of rational thought (Keyfitz 1986; Schoen et al. 1997; Holton et al. 2011). In order to understand why women continue to have children, it is necessary to understand the complex range of costs and benefits associated with childbearing, including an appreciation that children have an intrinsic, rather than instrumental, value to their parents—for example the emotional benefits or 'meaning' that parents get from children (Morgan and King 2001). However, some evidence suggests any happiness gains from childbearing can be short-lived, or specific to the child's sex or parity (Pollmann-Schult 2014; Kohler and Mencarini 2016). Intrinsic value is therefore likely to be compounded by the social costs of not childbearing, given that social norms are typically pro-natal. Explanations of why these pro-natal social norms and emotional benefits from children exist, and by extension why most people choose to have children despite the high costs, must ultimately be linked to natural selection designing our physiology and psychology to produce offspring. In other words, it is important to recognize that the ultimate utility our behaviour seeks to maximize is not health, wealth, or happiness, but reproductive success (Wells et al. 2017). Social preferences, cultural transmission, and evolutionary processes all contribute to the sustained intrinsic value of children to humans.

The focus of evolutionary theory on support with child-rearing to alleviate reproductive costs is particularly valuable to the literature on gender equity in the household and fertility. Firstly, it speaks to a strength of the gender revolution theory compared with other gender equity theories, acknowledging that the primary issue with the male-breadwinner–female-homemaker family model for

childbearing is less about the division of labour and more about the gender norms that accompany it (Goldscheider et al. 2015; Brinton and Lee 2016). The male-breadwinner–female-homemaker family form can be deemed an efficient complementary labour division strategy that alleviates reproductive costs, in that couples specialize in the two areas of labour. The issue for fertility arises when the 'public sphere revolution' encourages women to work, but the gender norms from the male-breadwinner–female-homemaker model remain. These strong essentialist gender norms result in a non-complementary labour division strategy, with women facing a second shift of domestic work alongside working in the labour market. A loosening of these gender roles (the 'private sphere revolution') is required before couples can move back to a more complementary labour division strategy.

Secondly, evolutionary theory provides a critical lens with which to highlight some prevailing assumptions in the literature on gendered division of labour and fertility. For example, in this paper, we choose to move away from the definitional dichotomy of 'traditional' (to refer to male-breadwinner–female-homemaker families) and 'egalitarian' attitudes typically used by other authors. We use 'rigid' (instead of traditional) and 'flexible' (instead of egalitarian). We opted for these terms because the problem with the male-breadwinner–female-homemaker model for fertility predominantly stems from the rigidity of the gender role system that accompanies it (Brinton and Lee 2016). 'Egalitarian' is also a problematic term in that, a freely chosen male-breadwinner–female-homemaker family form could be considered both egalitarian and complementary, as couples specialize their division to alleviate reproductive costs. Most importantly, evidence from evolutionary anthropology has highlighted that there is nothing traditional about the male-breadwinner–female-homemaker model. Before the demographic transition, the sexual division of labour was typically such that men and women took complementary roles in both productive and domestic labour (Hewlett 2000; Ahnert 2006; Giuliano 2015). Women were more easily able to combine productive and domestic labour because they received considerable help with childcare, typically from other kin (Sear and Mace 2008; Hrdy 2009), and because women usually took on tasks that could be combined with childcare. It should also be emphasized that the practice of fathers taking on a significant role in childcare is not a modern phenomenon: some fathers in pre-transition societies invest considerably in domestic labour, though not as heavily as mothers (Hewlett 1992; Kramer 2005; Gray and Anderson 2010).

This broad-brush summary hides considerable variation between societies in exactly how men and women organize their time; nevertheless, data from subsistence societies suggest it is *complementary* labour division strategies which have defined families for most of human history. This is important to note, as it suggests that a complementary division of labour, with women combining work and family life, is the traditional family form which is likely to suit women's (and men's) evolved preferences. Furthermore, we also choose to use *equity* (perceived fairness), rather than *equality* (absolute fairness) throughout this paper in reference to the review topic. While our review does include papers that study both concepts, as actual share must be measured to establish types of division strategies, we believe that equity lends itself better to our theoretical stance. This is because complementary labour divisions do not necessarily conform to an absolutely equal division, but are nonetheless satisfactory and perceived as fair. Equity is also a more inclusive term, capturing a more complete idea of the complexities of family division strategies.

We rephrase the gender revolution hypothesis, then, in light of our terminology critique: fertility will be at moderate levels when the division of labour is *complementary* between mothers and fathers. In mid-twentieth century Europe, this was predominantly the male-breadwinner–female-homemaker model of labour division, which was accompanied by strong *rigid gender norms*. Fertility will drop to its lowest point in contemporary societies, where these *rigid gender norms* remain, but women take on paid labour that is not compatible with childcare (the public sphere revolution). Couples are now assuming *non-complementary* roles. As a result, fertility intentions are revised downwards as women endure a dual burden of labour. Finally, fertility will begin to rise again in contemporary societies as gender norms become more *flexible*, encouraging a *complementary* division of labour

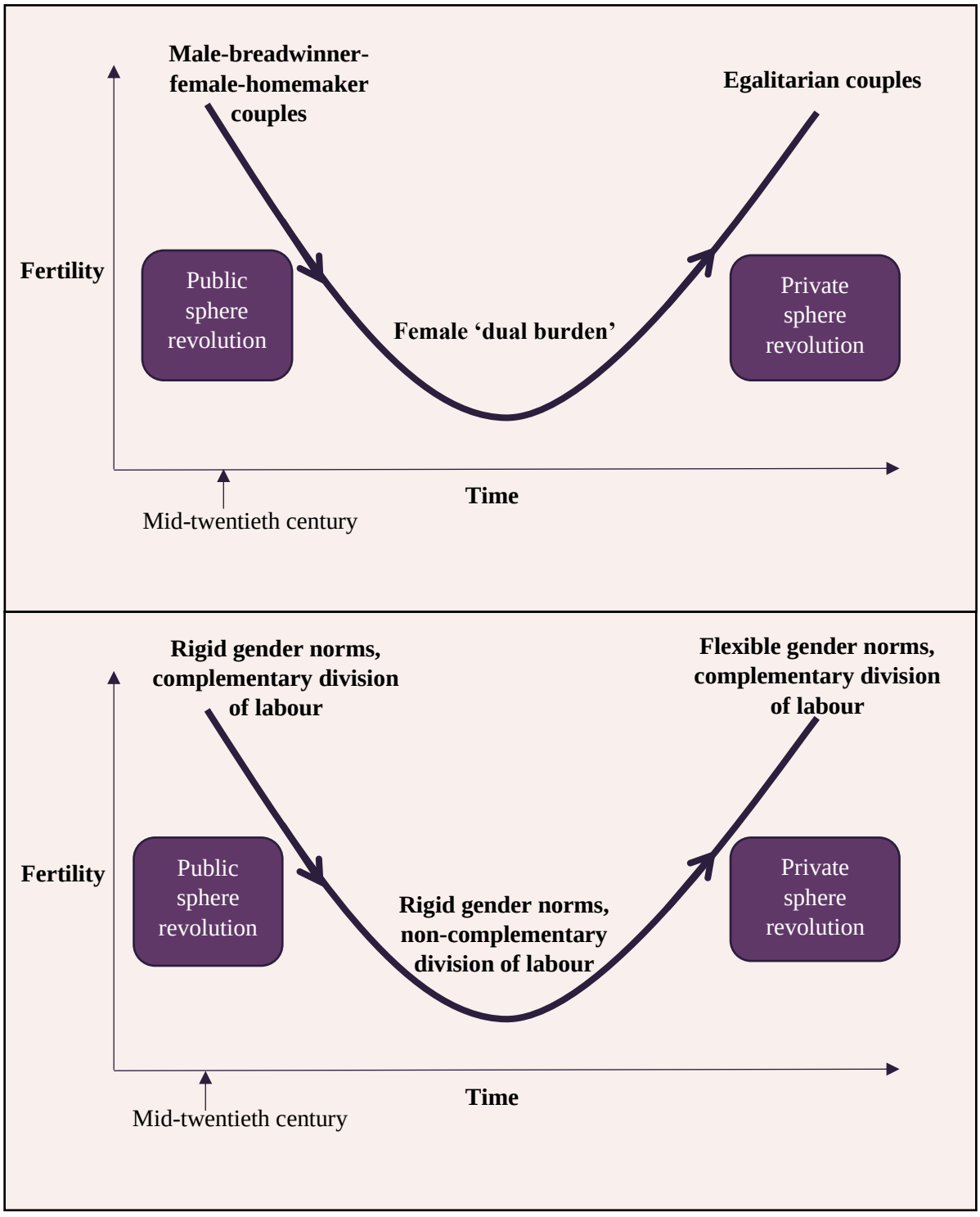


Figure 1 Diagram of the gender revolution theory (upper panel) and our rephrasing of it (lower panel)

between mothers and fathers, where men take on an increasing share of domestic responsibilities (the private sphere revolution). We summarize our synthesis in Figure 1.

Rephrasing the gender revolution hypothesis in this way moves beyond the assumption that the post-war nuclear family is a historical norm, as well as engaging with evolutionary ideas on the role of

the support environment in driving fertility behaviour. In highlighting the importance of complementary labour divisions, we also stress, as other authors have done, the central importance of gender role attitudes and their persistence in driving fertility trends (Goldscheider et al. 2015; Brinton and Lee 2016).

Using the Traits-Desires-Intentions-Behaviour framework to strengthen empirical analysis on *how* gender equity affects fertility

Despite the frequent recourse demographers have made to the theoretical frameworks of other disciplines, there are some 'home-grown' demographic theories in fertility research, such as the 'proximate determinants of fertility' (Bongaarts 1978), and the Easterlin–Crimmins 'supply–demand' framework (Easterlin 1975). These frameworks aim to understand fertility in its entirety, by incorporating both physiological and behavioural factors which influence fertility. In contemporary low-fertility societies, physiological determinants of fertility have become less important and behavioural decisions more prominent in explaining fertility levels. Demographers have used and developed theories from behavioural and cognitive science to understand the childbearing process, and thus how factors like gender equity in the household could affect fertility. Psychosocial or cognitive theories find their roots in traditional rational choice models of behaviour, which typically consider an individual as a rational actor, weighing up (although not necessarily consciously) the perceived costs and benefits of a particular action in order to maximize a particular utility, such as health, wealth, or happiness.

The 'Theory of Planned Behaviour' or TPB (Ajzen 1991) was the first such psychosocial theory to be applied to childbearing behaviour (Vinokur-Kaplan 1978), building on rational choice models of behaviour (e.g. Billari et al. 2009; Dommermuth et al. 2011; Ajzen and Klobas 2013). There are three components to the model: attitudes (perceived costs and benefits of a behaviour); subjective norms that might affect behaviour; and the extent to which behaviour is perceived to be subject to individual control. These three factors are all influenced by the individual's background characteristics, such as their age, education, and employment. Combined, the three aspects form a childbearing 'intention'. An intention is typically defined in fertility research as a short-term 'plan of action' to have a child (Miller

et al. 2004). The underlying rationale, therefore, is that an intention for a child will be indicative of subsequent behaviour, and thus factors that influence intentions will also influence behaviour.

The TPB, however, has been criticized for two main reasons. The first is its limited consideration of macro-level, or environmental, influences. The model originally extended only to micro-level individual processes (e.g. a woman's domestic burden) and meso-influences (an individual's family and social network). However, it is also important to appreciate the role of macro processes in determining fertility behaviour (Billari 2015), for example, the wider societal norms or policies that influence childbearing. Furthermore, behaviour occurring at the micro level can generate patterns of behaviour at the macro level and vice versa (Billari 2015). The cognitive–social (C–S) model of fertility intentions (Bachrach and Morgan 2011) better encapsulates macro-level influences, while also incorporating automatic behavioural processes (e.g. Rackin and Bachrach 2016). The theory, specifically formulated to make sense of existing demographic indicators and data on fertility intentions, outlines that humans view the world through 'schemas', which are mental structures for processing information. These inform an individual about what to expect given prior or informed experience, such as how they should act in a given context (e.g. using contraception), or how we expect others to act, given what we know about them (e.g. gender roles). Most schemas are formed based on lived experience, but some may be innate. Related schemas are connected by neural pathways. These schemas are also imbued with a sense of feeling, influencing the way in which we might act. For example, a 'baby' schema could for one person elicit a warm, happy reaction, whereas for another, the same schema could bring about feelings of stress or irritation. These feelings can become tied into a sense of self-identity and dictate our actions. Continuing with the above example, the former group would more likely envisage themselves as parents than those without positive feelings towards babies. These schemas, along with macro-structural factors such as norms and the socio-cultural environment, form intentions whereby the individual is motivated to act.

The second major criticism of the original TPB model is that it treats behaviour as a product of conscious, reasoned thought, rather than of more automatic, non-conscious processes, such as sensing stimuli and learning new information. An alternative socio-psychological model developed independently of the TPB, by Miller and colleagues (Miller 1994; Miller et al. 2004), incorporates these

non-conscious processes by linking fertility intentions to behaviour through a pathway (e.g. Wagner et al. 2014; Mynarska and Rytel 2018). The model is thus commonly known as the TDIB framework (Traits-Desires-Intentions-Behaviour). The initial motivations are defined as traits or dispositions to feel, think, and act in ways that affect childbearing, and are biologically based and non-conscious (Miller 2011). The motivations form desires for children, which represent the ideal childbearing goal in the presence of no obstacles, and are then translated into intentions, which consider the probability of their execution given contextual factors. The framework therefore explicitly appreciates that an intention for a child is distinct from the related concepts of a childbearing 'expectation' (the number of children thought to be achievable in the presence of obstacles, but independent of whether children are currently wanted) or 'desire' (the ideal number of children wanted when there are no obstacles to childbearing) (Miller et al. 2004; Philipov and Bernardi 2011). Intentions are implemented through instrumental behaviours, such as aiming to achieve or avoid conception. However, the framework also stresses the importance of partners' intentions, life course factors, and fecundity issues for successfully achieving a birth. The authors also acknowledge that desires and intentions will change over time as a result of situational factors, such as the birth of each child and major life events, such as employment or partnership status.

It is the TDIB model that we urge further consideration of by fertility researchers. This is not to suggest that this is the 'best' psychosocial theory for describing the decision-making process, as we consider that all the previous theories have something to offer demographers interested in understanding fertility (see following references for more detailed debate: Ajzen 2011; Barber 2011; Liefbroer 2011; Morgan and Bachrach 2011). However, the TDIB framework does explicitly acknowledge, unlike the TPB or C–S models, that fertility decision-making and behaviour operate within couples (Miller et al. 2004). The incorporation of the couple dyad into the foundations of the framework has clear utility when creating an analysis looking at gender equity within partnerships. In addition, we wish to highlight the practical strengths of this theory for researchers, through its clear and intuitive definitions of the stages on the decision-making pathway. Demographers can operationalize these three stages from desires to action as clear and distinct measurements in their analysis, to better understand causal mechanisms. For example, analysing which factors are most important for forming childbearing desires

(the first stage of the pathway) is a distinct line of enquiry from analysing the factors which result in desires becoming more realistic intentions (the second stage of the pathway), or which impediments are considered most important in determining why intentions are unrealized (the third stage of the pathway). The operational clarity of the framework gives a simple and practical way for researchers to standardize fertility measures in their data collection and analysis. Therefore, we use definitions coherent with the TDIB framework (Miller 2011) to categorize the findings of our systematic review into five groups:

(1) *Fertility desires:* Studies that deal with fertility preferences, likes, and ideals in the presence of no obstacles to achievement. Measurement is achieved through a stated wish to achieve a goal, such as ideal family size.

(2) *General long-term intentions:* Studies whose dependent variable is a general decision-based commitment to pursue a goal with an implementation plan, for example, intentions to have a child or a particular number of children at some point in the future. Expectations for children (evaluating the likelihood of having children) were also included in this category, as they are a closely related concept (Miller 2011).

(3) *Short-term intentions:* Studies that also deal with commitments to pursue a goal, but with an implementation plan of under three years. We decided to separate these studies from the more general long-term plans of action, as it is reasonable to assume that plans of action with shorter time frames are more likely to be acted on, as contextual factors and obstacles are less likely to change in a short time frame than in an undefined time period (Philipov and Bernardi 2011).

(4) *Realizing intentions:* Studies in this group are those that measure both whether an individual intended to have a child, and whether they went on to do so (as the next stage of the behavioural pathway, after an intention is stated, is whether that intention becomes realized). This section of the findings is most relevant to the study of the 'fertility gap' between ideal and actual childbearing in high-income settings.

(5) *Outcomes:* Studies that examine only the fertility outcomes themselves, with no prior consideration of desires or intentions for children.

By enabling us to divide our review in this way, the TDIB framework provides us with validated categories from which we can draw conclusions.

Interim summary

The literature on gender equity in the household and fertility spans multiple contexts and analytical approaches. In order to evaluate this literature, strong theoretical underpinnings from different disciplines are needed to frame both our review and future research in this area. We propose that evolutionary theory and the TDIB framework can contribute to uniting this literature.

Firstly, we argue that both theories have considerable value by approaching the same question from distinct but complementary levels of explanation. Evolutionary theory brings an ultimate *why* level of explanation, explicitly addressing how support from others with child-rearing, given that humans are cooperative breeders, can alleviate reproductive costs. The TDIB framework instead explores *how* gender equity in the household affects fertility. Despite knowing that gender equity in the household affects fertility, it is difficult to explore empirically if we do not know the causal pathway of its influence. The contribution of the TDIB framework is its clear guidance for operationalizing this behavioural pathway, and thus it is a good basis from which to build more standardized data collection and analysis. The framework also provides us with an informed way to group the findings of our systematic review and evaluate the quality of how these studies have operationalized and measured their chosen dependent variable. To build a comprehensive review, we need to evaluate evidence for both *how* and *why* fertility and gender equity are linked.

Secondly, both theories have more specific utility for this area of literature. Evolutionary theory provides a critical lens for other theories of gender equity and fertility. Research from evolutionary anthropology refocuses the attention of gender equity theories in the household to the importance of complementary divisions of labour and the flexibility of gender norms for determining fertility. The TDIB framework also has additional value compared with other psychosocial theories because of its recognition of the partnership dyad in reproductive decision-making. Although couples' decision-making is not the overall focus of this review, keeping couple-level processes at the heart of fertility

behaviour has clear theoretical benefit for any research question exploring the effect of gender equity between partners on fertility.

Systematic review

In the final section of this paper, we describe the results of our systematic review of the literature on the relationship between gender equity in the household and childbearing behaviour (the second, private sphere, gender revolution) in Europe, North America, Australia and East Asia. This is not a review of evidence for the gender revolution theory in its entirety. We aim to evaluate all papers that tested for a relationship between gender equity in the household and fertility, regardless of theoretical stance.

For each identified analysis, we classify the association between more flexible attitudes or divisions of labour and fertility intentions/outcomes as either: (1) positive; (2) negative; (3) curvilinear (where both male-breadwinner–female-homemaker couples and couples that divide both their paid and unpaid work have higher childbearing desires); (4) mixed (identified associations are significantly positive for some groups and negative for others); or (5) no association. As the majority of women across high-income settings engage in paid labour (OECD 2018), we expect that most countries will have completed the first public sphere revolution and will now be positioned along the latter half of the U-shaped curve (Figure 1). We therefore expect most identified associations to be positive.

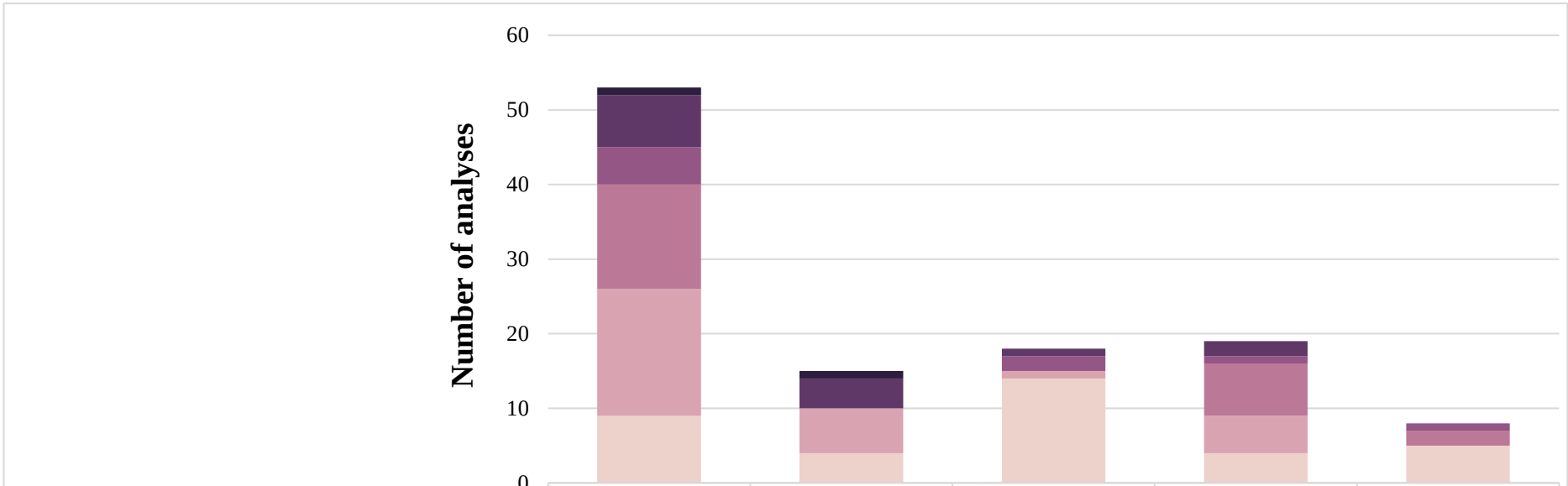
We assess the evidence the selected studies provide to explain behavioural variation in each phase of the TDIB framework. Furthermore, we evaluate whether authors have used theories of fertility behaviour to derive hypotheses and testable research questions.

Method

We implemented a three-stage process to identify relevant papers. Firstly, a document search was performed on the electronic database Scopus (www.scopus.com). Since the gender revolution theory was developed to explain fertility in low-fertility settings, the search was narrowed to include only high-income, low-fertility countries and relevant disciplines. The search terms and exclusion criteria are

detailed in Appendix 1 (in the supplementary material). This search yielded 1,037 results on 22 January 2020. Following the results of the document search, the second step was to use Scopus' citation tracker to check all papers that cited the papers found in stage one. Finally, the reference lists of all selected papers were manually searched to find other relevant papers. This addressed the issue of finding working papers or published papers that are not indexed in online databases. The identification stage of each paper is also detailed in Appendix 1.

Throughout the process, quantitative and qualitative empirical papers were selected if they explored gender equality (absolute fairness) or gender equity (perception of fairness) in relation to three factors: (1) the domestic share between partners or absolute hours of domestic labour carried out by each; (2) gender role attitudes (both relating to women's roles in the public sphere and men's roles in the private sphere); or (3) work–family conflict on fertility intentions or outcomes, either at the micro or macro level. The first criterion was chosen because the gender revolution theory incorporates how men's increasing contribution to household labour (the private sphere revolution) can alleviate the burden on women and increase childbearing (Goldscheider et al. 2015). Thus, papers using actual time use data, approximations of participation (e.g. mostly male partner or mostly female partner), and satisfaction with the division were included. The second factor was included since it is the rigid gender norms accompanying the male-breadwinner–female-homemaker model that are so problematic for fertility. The final factor was included because the gender revolution theory suggests women who both work and provide the majority of home care will have the lowest fertility intentions and outcomes. Together these factors can be split into our six independent variables of interest (Figure 2) that demonstrate more flexible attitudes or division of labour: (1) consistency between gender role attitudes and division of labour; (2) more satisfaction with the division of labour or perception of fairness; (3) fewer domestic hours for a woman relative to other women; (4) more domestic hours for a man relative to other men; (5) more equal share of household labour; and (6) more flexible gender role attitudes.



	Positive	Curvilinear	Negative	None	Mixed (positive and negative)
Consistency between gender role attitudes and division of labour	1	1	0	0	0
More satisfaction with division/perception of fairness	7	4	1	2	0
Fewer domestic hours for a woman relative to other women	5	0	2	1	1
More domestic hours for a man relative to other men	14	0	0	7	2
More equal share of household labour	17	6	1	5	0
More flexible gender role attitudes	9	4	14	4	5

Figure 2 Type of significant association found between fertility indicators and gender equity, broken down by independent variable studied

Notes: 'Positive', 'curvilinear', and 'negative' refer to when these types of significant association were found in any group within a study. 'None' refers to studies where there was no significant association whatsoever found for that independent variable. 'Mixed' is when both significant positive and negative associations were present for different groups for the same independent variable within the study. $N = 113$ associations/non-associations found. Qualitative analyses were excluded due to no empirical test of association being available.

Source: See Appendix 3, supplementary material, for list of studies included.

The selection did not include papers exploring related topics, such as the financial cost of childcare, childcare service provision, parental leave use, women's employment and wages without consideration of their unpaid labour, other measures of gender equity or equality (e.g. women's political empowerment), family policies, gender policies, or the use of wider support networks to assist with child-rearing. These were excluded as they do not explicitly address the concept of domestic time allocation within the couple. Furthermore, papers were excluded if they were only theoretical, not written in English, or written before 2000 when the first U-shape theory was published. The reason for including or excluding each paper found by the Scopus search is reported in Appendix 2 (supplementary material).

The process produced a total of 83 papers (see Appendix 3, supplementary material) covering 95 pieces of analysis, which are summarized individually and collectively in Appendices 4 and 5 (supplementary material). These 95 pieces of analysis reported 113 associations/non-associations between the independent variables of interest and fertility intentions/outcomes. This is because some analyses included more than one sample or independent variable.

Results

(1) Fertility desires. The search yielded six micro-level cross-sectional analyses and one macro-level analysis relating to desires for children (see Appendix 4, Tables 1 and 4). Our definition of a desire is consistent with that outlined in the TDIB model: a preference, like, or ideal for a child in the presence of no obstacles (e.g. 'What is your ideal family size?'). The micro-level papers presented a mixture of findings. Two found positive associations between their independent variables and fertility desires, one a curvilinear relationship, one a null association, and two negative associations. The two positive associations, however, were only found to hold in certain circumstances: Kan and Hertog (2017) found their positive association to hold only for men and not women, and Yang (2017) only for women's, not men's, hours of housework (Yang 2017). Furthermore, Kato (2018) found mixed associations: flexible attitudes towards household task division were associated with decreased desire

for children in Japan, but at the same time, men's preference for sharing childcare increased their desire (although no *p*-values were reported).

The macroanalysis (Testa 2007) found a significant relationship between being in favour of an equal division of tasks and mean ideal family size at the national level.

(2) General fertility intentions. General fertility intentions are distinct from the desires literature, as there is now a commitment to achieve a particular goal but with no particular time period for implementation (e.g. 'Do you intend to have a/another child?' or 'Do you intend to have children in the future?'). We also included general expectations for children (perceived likeliness of having children) in this section as it is a closely related concept (Miller 2011). The search produced 18 micro-level and two macro-level analyses (Appendix 4, Tables 2 and 4).

In contrast to studies exploring mean ideal family size, the most commonly found association between the independent variables of interest and general intentions was positive (11 of 24 associations), followed by null findings (7 of 24). However, the results were often nuanced, with three of the studies (all examining gender role attitudes) presenting mixed findings: Kaufman (2000) found that while flexible attitudes increased desire for children among American men, the opposite association was found for their female partners. This was also found in the UK by Okun and Raz-Yurovich (2019), and Li and Jiang (2019) found flexible attitudes to have opposite effects depending on which policy regime in China the study population belonged to. Similarly, a large number of the analyses reporting a positive association found it to be significant only for some groups within their sample, such as among those with specific parity desires (Pinnelli and Fiori 2008; Chen and Yip 2017), those performing specific tasks (Lee and Hwang 2017), for women but not men (Okun and Raz-Yurovich 2019), or vice versa (Tazi-Preve et al. 2004; Miettinen et al. 2011).

The macroanalysis by Alonso (2004) found a significant relationship between equal sharing of domestic labour between partners and intended number of children. However, Philipov (2008) found mixed results, with more flexible attitudes promoting intention to become a parent among men in some

countries, but the opposite effect among women in other countries, and no effect at all on intentions for second or higher-order births.

(3) Short-term fertility intentions. This section contains eleven cross-sectional, micro-level analyses and one macro-level analysis (Doepke and Kindermann 2019) that specifically measured short-term intentions for children (Appendix 4, Tables 3 and 4). This concept is widely accepted in the literature as a plan for a child in under three years (Philipov and Bernardi 2011).

Nine positive associations between the independent variables and the likelihood of intending a child were found, along with three U-shaped associations, two negative associations, and one null finding. The macro-level analysis also found a positive association between dividing childcare tasks and the likelihood of a woman agreeing when asked if she wanted a/another baby now. However, similar to the general intentions analyses, authors of these studies found their associations to be significant only among certain groups: for example, for childcare division not housework division (Buber 2002), satisfaction with division rather than actual division (Bernardi et al. 2013; Neyer et al. 2013), intentions at specific parities (Cavalli and Rosina 2011; Bernardi et al. 2013; Harknett et al. 2014), specific types of gender role attitudes (Lappegård et al. 2015), specific countries, and working women only (Mills et al. 2008).

(4) Realizing fertility intentions. The next stage on the behavioural pathway after the formation of intentions is whether they become realized. In order to examine this, we identified studies that measured both whether an individual intended to have a child, and whether they went on to do so.

Our search yielded four micro-level analyses, all focusing on the probability of fulfilling an intention for a second child over time (Appendix 4, Table 5). Seven qualitative papers were also included under this subsection; these have been split up into ten individual country analyses in the table in order to summarize the findings in more detail (Appendix 4, Table 6). The rationale for this is that qualitative studies exploring factors important to childbearing decisions link directly to explaining why some intentions are realized and others are not. However, the associations they found are not included in the total summaries as they are not empirically tested.

Two of the empirical analyses found a positive relationship between the male partner's domestic contribution or flexible attitudes and the probability of fulfilling an intention for a second birth (Yoon 2016; Kim 2017). However, there is a temporal mismatch between measurement and conclusion. Both analyses used a general desire to have another child, but then observed subsequent births only over the next three years. One analysis (Rinesi et al. 2011) found no association between domestic division of labour and probability of fulfilling intentions (although the direction of effect for the non-significant findings is positive), but used an independent variable not used by others in this review: the mother's perception of whether their partner increased or decreased his involvement in housework after the first birth. Although this is indicative of paternal investment in new family life, it does not measure how much domestic burden the woman personally experiences or whether she feels well supported. Another independent variable may have yielded a different result. The final analysis, in South Korea, found that those perceiving a fairer division of labour were more likely to have fewer children than desired at marriage (Lee and Hwang 2019). However, again there are apparent temporal issues with this analysis, as 80 per cent of the sample members were under the age of 45 and thus many would not yet have achieved their ideal family size.

The qualitative papers all revealed findings generally supportive of the gender revolution theory, but differed subtly between the country contexts. In all seven countries, the authors found that the main reasons given by interviewed women for not having another child were taking time away from their jobs to care and balancing work and care responsibilities (Nosaka 2012; Brinton et al. 2018; Freeman et al. 2018; Brinton and Oh 2019; Bueno 2019; Suwada 2019). However, in Japan there was a strong acceptance of a 'female caregiver' norm, which may have resulted in the male partner's contribution being cited less frequently as a reason for having no more children (Nosaka 2012; Brinton et al. 2018). Furthermore, Spanish women most commonly cited job stability as their reason for not continuing childbearing (Brinton et al. 2018), with little difference in fertility intentions among economically secure interviewees according to their gender role attitudes (Bueno and Brinton 2019). Nonetheless, qualitative analysis across the last 30 years has shown that persisting gender inequity in the household has become an increasing issue for Spanish women with regard to continued childbearing (Bueno 2019).

(5) Fertility outcomes. The search yielded 33 micro-level and nine macro-level pieces of analysis (Appendix 4, Tables 7 and 8, respectively). Most analyses explored progression to second birth, using longitudinal data sets. Progression to other parities, being a mother, number of children born, and mean number of children born between study groups were also studied. Among the macro-level analyses, three looked at mean family size and six at fertility rates.

The relationship the micro-level analyses present is nuanced. Nine null findings were reported, and eleven negative associations. However, most associations (15) between the independent variables and child outcomes were positive. However, a positive association again seems dependent on country (Brodmann et al. 2007; Cooke 2009), women's employment (Cooke 2009; Schober 2013; Nagase and Brinton 2017), parity-specific outcomes (Mencarini and Tanturri 2004; Nilsson 2010; Komatsu 2011; Goldscheider et al. 2013; Schober 2013; Aassve et al. 2015; Miettinen et al. 2015), the importance of childcare rather than housework division (Cooke 2004; Mencarini and Tanturri 2004; Miettinen et al. 2015; Dommermuth et al. 2017), and gender—for men but not women (Kaufman 2000; Bernhardt and Goldscheider 2006; Brandén et al. 2018) or vice versa (Goldscheider et al. 2013; Aassve et al. 2015), and year (Zhou and Kan 2019). The significance of ideal over actual division of labour in determining higher fertility outcomes is evident (Alonso 2004; Torr and Short 2004; Luppi 2016), although one Australian study finds the opposite (Craig and Siminski 2010). It is noteworthy, that as for the desires and intentions literature, a strongly significant positive relationship exists among the majority of macro studies testing association between domestic division of labour and national birth outcomes.

Discussion

Does our review provide supportive evidence for our rephrasing of the gender revolution theory: that both male-breadwinner–female-homemaker couples and couples that divide both their paid and unpaid work (i.e. with complementary division of labour) have more children than women experiencing a dual burden (a non-complementary division)? While some analyses across all groups found this U-shaped relationship, these studies were in the minority (14 of 113 associations). The studies which did find this association tended to be those that explored the variable which most accurately operationalized the

hypothesis: the share of household labour between the partners (see figure 3 for summary) (Oláh 2003; Alonso 2004; Torr and Short 2004; Schober 2013; Yoon 2014; Luppi 2016; Fukuda 2017). This is because, by looking at *share*, this variable captured all couple types along the curve (male-breadwinner–female-homemaker couples, dual-burdened women, and couples who share both paid and unpaid work equally). This finding was not always consistent, however, with studies looking at *share* also frequently reporting only positive associations. However, this may be because the samples studied had already undergone the public sphere revolution, and thus any recent changes in gender equity were likely to be in the private rather than public sphere.

In addition, studying satisfaction with division of household tasks also produced U-shaped findings, with both male-breadwinner–female-homemaker and couples that divide both their paid and unpaid labour having more children (Alonso 2004; Cavalli and Rosina 2011; Andrade and Bould 2012; Luppi 2016). These papers reiterate the need to distinguish between gender equality (absolute fairness) and gender equity (perceived fairness), as it may not be egalitarianism in itself that drives fertility into a 'U' shape, but the resulting dissatisfaction experienced by women when the second stage of the gender revolution is not completed (Neyer et al. 2013). This is in line with our rephrasing of the gender revolution theory, that it is a non-complementary division of labour, resulting from lingering rigid gender norms, that results in lower fertility.

The most common finding (53 of 113 associations) was a positive association between the independent variables of interest and childbearing. This is also congruent theoretically if we appreciate that these studies focus on only the *private sphere* revolution part of the theory (the latter half of the curve). For example, studies most likely to report a positive relationship were those that studied working or 'career-orientated' women and their intentions for children (Brodmann et al. 2007; Mills et al. 2008; Pinnelli and Fiori 2008; Fiori 2011; Park 2012; Harknett et al. 2014; Lee and Hwang 2017) and those that studied the father's absolute time contribution to domestic labour, rather than the couple's share (Mencarini and Tanturri 2004; Tazi-Preve et al. 2004; Brodmann et al. 2007; Mills et al. 2008; Park 2012; Testa 2012; Kan and Hertog 2017; Kim 2017). As the time men contribute to household labour increases, the increasingly complementary division of labour positively impacts childbearing by alleviating the excessive burden for working women. Apart from four pieces of analysis looking at

gender role attitudes, all macro-level studies reported a significant positive relationship between the independent variables of interest and childbearing (see Appendix 5 visual summaries, supplementary material), although the relationship may be confounded. In nearly all high-income settings, the majority of women engage with paid labour (OECD 2018) and, therefore, it is likely that most countries have completed their public sphere revolution, and now lie along the latter half of the U-shaped curve, at different stages of the private sphere revolution. Again, this is compatible with our rephrasing of the gender revolution theory.

Eighteen of 113 associations involved a negative relationship between the selected independent variables and childbearing, with only male-breadwinner–female-homemaker couples intending and having the most children. Furthermore, another eight associations were classified as mixed. On a descriptive basis, analyses finding negative associations typically focus on first birth as the outcome (Kaufman 2000; Bernhardt and Goldscheider 2006; Bernhardt et al. 2016; Dommermuth et al. 2017; Osiewalska 2018). Progression to a second birth is well recognized as a critical decision point in low-fertility contexts, with many choosing to forego transitioning to a second child (Goldscheider et al. 2013; Aassve et al. 2015). In light of this, gender equity in the household may be particularly important for transitions to higher-order births, rather than first births. Several studies in the review found that associations between their independent variable and higher-order parity intentions/outcomes disappeared when examining desire for or outcome of a first child, lending support to this theory (Park et al. 2010; Komatsu 2011; Goldscheider et al. 2013; Harknett et al. 2014; Lee and Hwang 2017; Freeman et al. 2018; Puur et al. 2018). This is logical, given that domestic load is known to increase with the presence of a child (Craig and Bittman 2008), and that childcare is more likely to be performed by the woman, even if the couple had a gender equal distribution of domestic work before the birth (González et al. 2018).

Another clear finding is that the majority of these analyses reporting a negative or mixed association used gender role attitudes as their explanatory variable (19 of 26). This can perhaps be explained by examining the type of gender role attitudes included in this analysis. Flexible attitudes regarding the role of women in society (e.g. disagreement with the statement ‘On the whole, men make better political leaders than women do’ or answering no to ‘Does a woman have to have children to be

fulfilled?') tend to be associated with lower fertility intentions. However, flexible attitudes related to the role of men in the family (e.g. agreement with the statement 'Family life suffers because men focus too much on their work') are broadly associated with higher intentions. These two groups of attitudes lie in two different halves of the fertility curve and, respectively, in the public and private sphere phases of the gender revolution (Goldscheider et al. 2010). However, this result was not always consistent, with flexible private sphere attitudes sometimes being associated with only lower fertility or vice versa (Bernhardt and Goldscheider 2006; Goldscheider et al. 2015; Brinton and Lee 2016). The variability of associations found with gender role attitudes also appears to be particularly determined by the gender of the participant. A recurring finding was that flexible attitudes among men are associated with higher fertility intentions and outcomes, while the opposite is true for women.

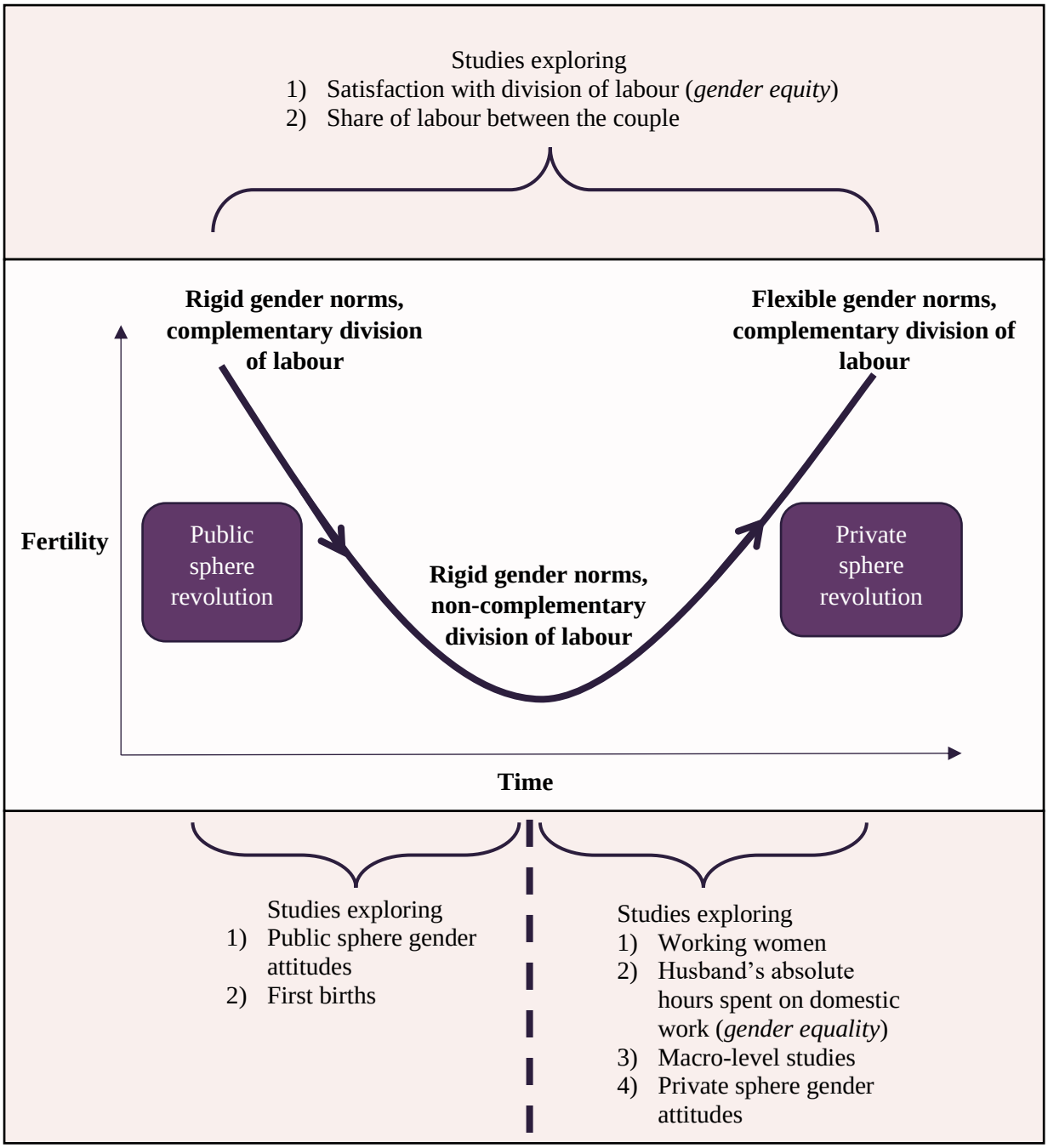


Figure 3 Matching study types to the part of the gender revolution U-shaped curve that they measure

Source: See Appendix 3, supplementary material, for list of studies included.

Partial associations were a very common finding from this review, with a large amount of subtle variation in findings reported within papers, often only for particular countries or samples. In light of this variability, and since our review is interpretive rather than a meta-analysis, we can only conclude with caution that there appears to be support for our rephrasing of the gender revolution theory. Particularly as our review does not focus on aspects of gender equity outside the domestic division of labour, our conclusions may overlook some key findings and alternative hypotheses for explaining the

variation in fertility behaviour. For example, use of paternal leave (Duvander and Andersson 2006), provision of childcare services (Fukai 2017), and support with child-rearing from the family network (Balbo and Mills 2011; Schaffnit and Sear 2017b) have all been shown to influence individuals' fertility behaviour but were not analysed in this review. Similarly, state-level measures of gender equity (including education, health, economic equality, and political empowerment) have been shown to be important determinants of fertility at the national level (Myrskylä et al. 2013).

Regarding the quality of papers included in the review, there were many strengths to note. The majority of analyses employed multivariate techniques and had large sample sizes. Authors were often careful to define and operationalize concepts, such as the distinction between private and public sphere attitudes (Miettinen et al. 2015). The diversity of findings, in particular the reporting of null results (20 of 113 associations), also suggests that publication bias has been minimized and that authors may not have been selectively reporting positive results. However, we also noted that findings were sometimes reported inaccurately in abstracts, for example, associations stated in abstracts did not always accurately reflect data and statistical results. This has led to a trend of mis-citation: some authors cited findings from previous publications that were not present in the original papers, presumably as a result of only reading abstracts. This issue is not new to academic writing (Bishop 2017; Mogull 2017), but we would like to reiterate to authors the importance of taking the time to consult original sources before comparing their findings with existing studies.

A notable observation which emerged from this review was that surprisingly few papers cited or used theories of reproductive decision-making (i.e. theories that can help explain how gender equity in the household affects fertility). None of the papers focusing only on fertility outcomes referenced these theories, perhaps because the authors were not focused on the decision-making process. However, as we argue in this paper, such theories could still be helpful in guiding the conceptual framework of these papers, even if they are not tested, so that there is a clear consideration of the causal pathway. Even among the other 48 papers that focused on fertility desires, intentions and their realisation, only 16 psychosocial theories of fertility behaviour (see Appendix 5 general summary, supplementary material). Furthermore, of these papers, most cited the theories only briefly without using them to guide their research design. Aside from one paper written by the authors of the TDIB model (Miller et al.

2010), only two papers made explicit use of a decision-making theory to build their conceptual framework (Testa 2012; Lee and Hwang 2019).

A lack of behavioural theory guiding the research questions and operationalization of variables in this literature reaffirms our championing the TDIB model for its practical clarity, and confirms that too many studies focus overly on why and not how fertility varies in relation to gender equity in the household. If we are to believe that declining fertility rates are the result of a fertility gap between ideal and actual childbearing (Philipov 2009), it is more important than ever to employ these frameworks and operationalize them correctly to understand how 'real' this gap is, and which factors lead to intentions remaining unrealized. Indeed, the papers exploring realization of intentions in our review particularly struggled without a clear conceptual framework, as they compared the number of children a respondent had at one point in time or within a three-year interval with their ideal family size, creating a censoring issue. Greater theoretical clarity would help improve consistency between definitions, measurement, and conclusions in the study of gender equity and fertility, and particularly the literature on realizing intentions (Goldscheider et al. 2010; Neyer et al. 2013). Further hampering the production of definitive conclusions from this review is that a multitude of different predictor and outcomes variables were used across analyses, making it difficult to adequately compare across studies (and making formal meta-analyses impossible). To some extent authors are limited by the data available, but introducing more theoretical rigour into both data analyses and data collection exercises is likely to enhance the comparability of research by forcing researchers to think more carefully about the ideal methods for operationalizing concepts and testing hypotheses.

One final comment about the generalizability of results presented here: we limited our review to high-income, low-fertility societies in Europe, North America, Australia, or East Asia. A more thorough understanding of the associations between gender equity in the household and fertility would come from performing analyses across a much broader range of societies, including those still undergoing the first public sphere gender revolution. While we think such analyses are vital in fully understanding how gender equity links to fertility, we caution against assuming exactly the same relationships will be seen in all contexts. Gender revolution theory stems from observations made

during the European fertility transition, and the causes and consequences of the fertility transition are somewhat different in other regions of the world.

Conclusion

The aim of this paper was to highlight how theories of gender equity in the household and fertility behaviour have been constructed and operationalized in empirical work, with a restated gender revolution theory as our preferred framework of explanation. We interpret our empirical overview of this literature, despite its heterogeneity, as providing some qualified evidence to support the assertion that those with complementary divisions of labour will have higher fertility intentions and outcomes. Support was most consistent at the macro level of analyses, in microanalyses looking at subsequent, rather than first, births, and for studies using independent variables other than gender role attitudes.

Moreover, as an ode to the benefits of interdisciplinary approaches in demography, we aimed to establish some theoretical consistency across these empirical studies by integrating two theoretical perspectives: evolutionary theory and the TDIB framework. We argued that evolutionary theory can provide an ultimate level of explanation for why people have children and also a critical perspective to current gender equity theories of fertility. In particular, we used evolutionary ideas to rephrase some aspects of the gender revolution theory to make clear the joint roles of sexual division of labour and gender role norms in influencing fertility, and to move away from the assumption that the male-breadwinner–female-homemaker nuclear family is the 'traditional' family form. The focus of evolutionary theory aided the interpretation of our review findings. For example, we found that U-shaped associations were most common among studies looking at share of labour and satisfaction with that division. This fits well with our rephrasing to focus on *complementary* divisions of labour, and the need to move away from the problematic dichotomy of 'egalitarian' and 'traditional' labels. Moreover, it helps to explain why gender role attitudes in favour of the male-breadwinner–female-homemaker family model were consistently associated with higher fertility measures. By focusing on complementary roles, evolutionary theory emphasizes that it is not the gender role attitudes in themselves that are problematic for fertility, but the rigidity and persistence of these attitudes.

We also discussed the clarity the TDIB behavioural model can bring to the literature, including our review. However, we found limited evidence in our systematic review that the TDIB framework, or any behavioural theories, were being used to inform empirical analyses. As a result, there was some evidence of methodological confusion, such as measuring the probability of realizing intentions based on a stated desire, rather than an intention to act. Given growing interest in explaining the fertility gap (between ideal and actual childbearing), we recommend that future studies of gender equity in the household and fertility pay greater attention to behavioural frameworks of reproductive decision-making. In particular, more concerted attempts should be made to understand the realization, or not, of fertility intentions rather than simply studying fertility outcomes. This review also highlighted substantial variability in how the same hypothesis is operationalized and tested in different data sets. We therefore agree with the growing concern over 'researcher degrees of freedom' and how this influences which parts of an analysis the author chooses to publish (Stulp et al. 2016; Schaffnit and Sear 2017a), as well as how work is summarized and cited.

We conclude that a call towards greater standardization of data collection and analysis would aid a more fruitful comparison of studies exploring the association between household division of labour and fertility behaviour. The TDIB definitions of fertility measures and the critical lens of evolutionary theory offer an effective starting point for this process.

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Notes and acknowledgements

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