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What makes people ready to conceive? Findings from the International Fertility Decision-Making Study

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Abstract   This study investigated fertility decision-making in people currently trying to conceive, and examined whether factors that make people ready to conceive differ by gender and country. The study used data from the International Fertility Decision-Making Study, a cross-sectional study of 10,045 participants (1690 men and 8355 women) from 79 countries. Respondents were aged 18–50 years (mean 31.8 years), partnered and had been trying to conceive for >6 months (mean 2.8 years). Respondents indicated their need for parenthood; their own/partner's desire for a child; and the influence of certain preconditions, motivational forces and subjective norms in relation to readiness to conceive. Factor analysis of preconditions and motivational forces revealed four decisional factors: social status of parents, economic preconditions, personal and relational readiness, and physical health and child costs. Significant gender differences were found for desire for a child, decisional factors and subjective norms. Compared with men, women had higher personal desire for a child, and rated economic and personal and relational readiness as more influential. Men were more likely to rate subjective norms and social status of parents as more influential. Country comparisons found significant differences in personal desire for a child, partner's desire for a child, need for parenthood, preconditions, motivational forces and subjective norms. The results demonstrate that some decisional factors have a universal association with starting families (e.g. desire for a child), whilst the influence of others (e.g. personal and relational readiness) is dependent on contextual factors. These findings support the need for contemporary, prospective and international research on reproductive decision-making, and emphasize the need for effective fertility policies to take contextual factors into account.

KEYWORDS: fertility, decision-making, gender, country

Introduction

The experience of parenthood is considered to be central to individual identity and to the life plan of most people in most societies (Martinez et al., 2012). However, fertility behaviour is changing. Globally, the age of first conception is increasing (Maeda et al., 2015), there are more voluntarily childless people (Miettinen et al., 2015), and there has been a worldwide increase in the use of fertility treatments (Ferraretti et al., 2017). Some of these trends can have significant implications for the well-being of parents and children, and achieving a better understanding of contemporary fertility decision-making is therefore essential. The aim of this study was to investigate fertility decision-making in people currently trying to conceive, and to examine whether factors that make people ready to conceive differ by gender and country.

Numerous studies have attempted to investigate what makes people ready to start a family. Readiness to conceive is linked to the perceived ability to parent (Lampic et al., 2006), but extends beyond that because many people feel able to parent but not yet ready to do so. Research on childbearing motivation and timing of parenthood suggests that readiness to conceive is mainly a matter of nesting; that is, satisfying those preconditions that are deemed necessary for the care of a young child or stability of the family (Gameiro et al., 2010; Peterson et al., 2012). How much nesting one does (i.e. how many preconditions need be met) varies from person to person, and could be as little as having a biological urge or a willing partner, or as much as having a long list of satisfied career, economic and personal goals (Peterson et al., 2012). Knowing the number and nature of preconditions is relevant in reproductive health care because they are proposed to account for the fertility trends noted and are therefore potential targets for public health campaigns (e.g. to raise awareness of the impact of age on fertility; Mills et al., 2011). Demographic and socio-anthropological studies have examined decisional factors as they relate to the intention to conceive or the occurrence of a first birth. These outcomes may have limited relevance to the decisional context of a population of people actively trying to conceive. The correlation between intention and actively trying is, at best, moderate (Berrington, 2004), and associations with first births are difficult to interpret in general populations because one cannot disentangle whether the association exists because it predicts the physical act of starting to conceive (proceptive behaviour) or its success (fecundity). Therefore, little is known of decisional factors in people currently trying to conceive.

Readiness to conceive is likely to be a complex decision, influenced by the importance placed on social, economic and personal factors (Hank and Kreyenfeld, 2003; Kuhnt and Trappe, 2016; Rosina and Testa, 2009). What is less clear is the extent to which the importance of these preconditions and childbearing motivations differs according to demographic and social moderators (e.g. gender, country). Moderator analyses in reproductive research are needed because evidence shows that fertility behaviour is highly sensitive to such contextual factors, and therefore realistic profiles of fertility behaviour cannot be provided to stakeholders (e.g. practitioners, policy makers) involved in reproductive medicine without taking these into account. Demographic studies indicate that men and women may have different requirements when it comes to starting families. For example, compared with men, women place significantly more importance on having children before a certain age and having access to child care (Skoog Svanberg et al., 2006). Although the value and importance of children may be near universal, the distinctive customs, values, religious behaviour, and other social and intellectual aspects of different countries and cultures (communities, kinships, tribes) contribute considerably to how fertility and lack of fertility is experienced (Hynie and Hammer Burns, 2006). For example, lower country-level gender equality (i.e. women's economic and political participation, and their power over economic resources) is reflected in higher disapproval ratings of men and women who opt to remain childless; a stigma that could cause country variation in desire for a child (Rijken and Merz, 2014). Studies on readiness to conceive in individual countries (or within countries by different culture) and demographic studies on age at first birth indicate heterogeneity between countries for fertility decision-making. For example, in Sweden, low income has been linked to a lower likelihood of a first birth (Eggert and Sundquist, 2006), while in the USA, low income predicts a higher likelihood (Myers, 1997).

The aims of this study were to examine whether the importance of decisional factors varied by gender and country in men and women actively trying to conceive. Participants were drawn from the International Fertility Decision-Making Study (IFDMS; Bunting et al., 2013). It was hypothesized that significant gender and country variations would exist for decisional factors.

Materials and methods

The IFDMS methodology has been described in detail elsewhere (Bunting et al., 2013), and is reviewed, in brief, here.

Participants

Participants were recruited online, from social research panels and from fertility clinics. The inclusion criteria used in the IFDMS required participants to be between 18 and 49 years of age, currently married or living with their partner, not pregnant, and trying to get pregnant/father a child for $\geq$ 6 months. The final sample consisted of 10,045 participants (8355 women, 1690 men). A power calculation for analysis of variance ($f = 0.25$, $\alpha = 0.05$, power $= 0.85$) and regression ($f^2 = 0.15$, $\alpha = 0.05$, power $= 0.85$) estimated a minimum sample size per country of 97 (G*Power, Faul et al., 2007).

Materials and measures

Sociodemographic information

Participants indicated their country of residence; type of home (urban, not urban); level of education (none, primary, secondary, post-secondary/college, university); age; number of years living together/married; how long they had been trying to conceive; and whether they had ever given

birth/fathered a child, adopted and/or had a step-child(ren).

Desire for a child

Two items rated on a response scale from no desire to very strong desire (range 1−10) assessed the participant's own and their partner's desire for a child (Van Balen and Eimbos-Kempe, 1995).

Need for parenthood

This construct was assessed using items from the Fertility Problem Inventory (Newton et al., 1999) and Collins et al.'s (1992) Child Focus Subscale (six items). Items were measured on a five-point response scale from strongly agree to strongly disagree, and concerned the importance of parenthood for life satisfaction (e.g. 'Having a child is the most important thing in life'). Items were summed and higher scores indicated a stronger need for parenthood (range 6−30). Internal reliability in the study sample was satisfactory (Cronbach's α = 0.71).

Decisional factors

Decisional factors relevant to readiness to conceive included preconditions (eight items, e.g. economic stability, personal readiness) and motivational forces (seven items, e.g. social status of parents, personal fulfilment). Participants rated these on a seven-point scale from strongly disagree to strongly agree according to the influence they had on the decision to have a/another child. Items were adapted from Tough et al. (2007) or Lampic et al. (2006), or generated on the basis of theoretical work (Hoffman and Manis, 1979). A further two items, rated on a five-point response scale, measured personal and partner readiness to conceive. Perceived subjective norms to have a child and motivations to comply with these norms were also measured using a seven-point response scale from strongly disagree to strongly agree (Connor and Norman, 1996).

Procedure

The data collection period was from July 2009 to April 2010. Multiple data collection methods (social research panel, fertility clinic or online) were used according to what was feasible in each target country. The survey was produced in English and translated into 12 languages [see Bunting et al., 2013 for full procedural details]. The IFDMS received ethical review and approval from the ethics committee of the institution and from each clinic, in accordance with the requirements in that country.

Data analysis

Isolated missing data were handled using prorated scores (need for parenthood) or were not substituted (e.g. age, years married). Internal reliability was assessed using Cronbach's α coefficient (standardized). Descriptive statistics were used to profile the sample in terms of background characteristics. An exploratory factor analysis was performed on childbearing decisional items. Principal component extraction was used with orthogonal rotation. Factor loadings >0.30 were considered significant, in accordance with Tabachnick and Fidell (2001). Factor scores were created using the unit weighting method of Cohen and Cohen (1983), which essentially means that the highest loading items on each factor were summed to create factor scores. These ranged from 4 to 20, with higher scores indicating greater influence on decision-making. To illustrate country differences, desire for a child (personal, partner's), need for parenthood and decisional factor scores were converted to standard scores to plot in the same figure. Univariate and multivariate analysis of variance (ANOVA, MANOVA), t-tests and chi-squared analysis were used for gender and country comparisons (as relevant based on units of measurement). A total of 18 countries had >100 respondents. Countries with <100 respondents were grouped together as 'other'. Tukey post-hoc tests were computed to identify homogeneous subsets among pairwise comparisons in countries; these identify the subsets that do not differ on the target variable. The probability value of 0.05 was considered significant. However, due to the large sample, effect size was also taken into account, following Cohen (1992), with effect sizes of 0.20, 0.50 and 0.80 considered small, medium and large, respectively.

Results

Sociodemographic information

Table 1 shows demographic characteristics of the sample. The majority of respondents were in their early 30s, had been living with their partner for approximately 6 years and had a university education. Women were significantly younger and more likely to have stepchildren compared with men, but distributions were similar for years living with partner (small effect size). Women and men were equally likely to have a biologically related child(ren), but women were less likely to have adopted.

Country differences [$F(17, 9657)$] were found for education [$\chi^2(17) = 768.0$, $P < 0.001$] and time trying to conceive [$F(17, 8934) = 29,902$, $P < 0.001$]. India (91.6%), Russia (80.4%), China (70.2%) and Mexico (68.3%) had higher rates of university education compared with other countries [47.1% (Canada) and 61.9% (New Zealand)], especially Italy (39.6%), Germany (36.2%) and France (31.6%). Although there was variation in years trying to conceive across countries, post-hoc tests did not identify significant differences between countries. The exception was Turkey, where the average period was 4.5 years.

Decisional factors

A factor analysis of childbearing preconditions and motivational forces was performed, and revealed four decisional factors with eigenvalues >1. The Kaiser−Meyer−Olkin measure of sampling adequacy was high (0.787, $P < 0.0001$), indicating that data were appropriate for factor analysis. Table 2 shows the four decisional factors: social status of parents, economic preconditions, personal and relational readiness, and physical health and child costs. There were a few cross-loadings: economic benefits of children and desiring to have secure employment cross-

Table 1   Characteristics of study participants.

Characteristic [a]	Total (n = 10,045)		Women (n = 8355)		Men (n = 1690)		Test statistic
	M	SD	M	SD	M	SD	T
Age [b]	31.83	5.91	31.56	5.80	33.15	6.27	18.19 [e]
Years living with partner	5.90	4.18	5.90	4.10	5.91	4.54	15.71 [e]
Years trying to conceive	2.78	2.90	2.76	2.79	2.87	3.39	33.13 [e]
	n	%	n	%	n	%	χ2
Gave birth to/fathered a child	2581	26.30	2128	26.1	453	27.1	0.64
Adopted	117	1.21	89	1.1	28	1.7	4.37 [d]
Has stepchild	1096	11.15	986	12.1	110	6.6	41.14 [e]
Highest education level							
None	42	0.42	35	0.4	7	0.4	31.99 [e]
Primary	227	2.27	203	2.4	24	1.4	
Secondary	2133	21.31	1813	21.8	320	19.0	
Post-secondary	2218	22.16	1890	22.7	328	19.5	
Undergraduate	3353	33.49	2745	33.0	608	36.1	
Postgraduate	2038	20.36	1642	19.7	396	23.5	
Country of residence (n > 100) [b]							
Australia	243	2.44	215	2.6	28	1.7	1.40 [e]
Brazil	749	7.52	668	8.1	81	4.8	
Canada	404	4.05	358	4.3	46	2.7	
China	399	4.00	199	2.4	200	11.9	
Denmark	529	5.31	492	5.9	37	2.2	
France	812	8.15	718	8.7	94	5.6	
Germany	630	6.32	530	6.4	100	5.9	
India	387	3.88	213	2.6	174	10.3	
Italy	503	5.05	434	5.2	69	4.1	
Japan	481	4.83	280	3.4	201	11.9	
Mexico	975	9.79	878	10.6	97	5.8	
New Zealand	126	1.26	121	1.5	5	0,3	
Portugal	311	3.12	258	3.1	53	3.1	
Russia	408	4.09	202	2.4	206	12.2	
Spain	860	8.63	824	10.0	36	2.1	
Turkey	701	7.04	558	6.7	143	8.5	
UK	714	7.17	664	8.0	50	3.0	
USA	462	4.64	427	5.2	35	2.1	
Other [c]	270	2.71	242	2.9	28	1.7	

n, sample size; M, mean; SD, standard deviation.
[a] Sample size varies per characteristic due to missing data.
[b] Eighty-one participants could not be assigned to a country due to missing (n = 66) or unidentifiable text (n = 15).
[c] Countries with <100 participants (n = 67 countries).
[d] P < 0.05.
[e] P < 0.001.

loaded on the health dimension; personal fulfilment cross-loaded on social status of parents and on economic preconditions, and child costs cross-loaded on economic preconditions.

Moderated analyses: associations between gender, country and desire for a child, need for parenthood and childbearing decisional factors

A series of 2 (gender) × 18 (country) factorial ANOVA tests were performed on childbearing variables to examine variations by gender and country.

Gender

Table 3 shows that, in comparison with women, men had a weaker desire for a child, although desire for a child and need for parenthood were strong for both. A gender x decisional factor score (2 × 4) ANOVA (factor within-subjects) showed a significant effect of gender [$F(1, 9973)$ 42.39, $P < 0.001$], factor [$F(3, 9971) = 3309.10$, $P < 0.001$] and gender x factor interaction [$F(3, 9971) = 125.87$, $P < 0.001$]. In rank order, the factors with the highest influence for men were: personal and relational readiness, physical health, economic preconditions and social status of parents. Women ranked personal and relational readiness the highest and ranked social status of parents the lowest,

Table 2 Factor loadings for decisional items preconditions and motivational forces affecting fertility decision-making.

Item	Social status of parents	Economic preconditions	Relational and personal readiness	Physical health and child costs
Higher social status of mothers	0.918			
Higher social status of fathers	0.917			
Value of children in community	0.699			
Economic benefits of child(ren)	0.609			0.373
Worries about effects on career		0.806		
Need to finish education		0.799		
Financial security		0.789		
Wanting secure employment		0.617		0.401
Partner ready to have a child(ren)			0.837	
Feeling ready to have a child(ren)			0.837	
Stable relationship		0.425	0.592	
Personal fulfilment	0.310		0.575	
Personal health				0.865
Partner's health				0.857
Economic costs of children		0.435		0.485
Eigenvalue	4.56	2.43	1.70	1.38
Percent variance explained	30.4%	16.2%	11.4%	9.2%
Standardized Cronbach alpha coefficients	0.827	0.798	0.753	0.743
Percent scoring all items in factor as highly influential	1.8%	7.0%	36.0%	5.6%

Only factor loadings >0.30 are shown.

but considered economic preconditions more important than physical health.

Perceived subjective norms and motivation to comply are also shown in Table 3. A gender x norm (2 × 3) factorial ANOVA (norm within-subject) showed significant effects of gender [$F(1, 9829) = 29.83$, $P < 0.001$], norm [$F(2, 9828) =$ 1223.00, $P < 0.001$] and gender x norm interaction [$F(2, 0929) = 7.453$, $P < 0.01$]. Compared with women, men were more likely to agree that significant others wanted them to have children. The significant interaction showed that both men and women agreed most readily that their partners, family/in-laws and their community (in this order) wanted

Table 3 Fertility and childbearing motivations of women and men.

Variable	Women [a] (n = 8355)	Men [a] (n = 1690)	Test statistic (gender)
Personal desire for a child	9.11 (1.5)	8.36 (2.0)	14.31 [c]
Partner's desire for a child	8.57 (2.0)	8.59 (2.0)	−0.450
Need for parenthood	22.69 (4.1)	22.48 (4.3)	1.83
Mean decisional factor scores			
Social status of parent	7.41 (3.7)	8.21 (3.9)	−7.79 [c]
Economic preconditions	9.72 (4.4)	8.69 (4.0)	9.63 [c]
Personal and relational readiness	14.72 (4.2)	13.00 (4.2)	15.37 [c]
Physical health and child costs	9.22 (4.3)	9.14 (4.3)	0.637
Subjective norms			
Partner	6.26 (1.4)	6.36 (1.2)	−3.00 [b]
Family and in-laws	5.64 (1.8)	5.83 (1.5)	−4.6 [c]
Community	4.77 (2.0)	5.08 (1.8)	−6.37 [c]
Desire to comply with norms			
Partner	4.30 (1.96)	5.36 (1.6)	−24.19 [c]
Family and in-laws	2.96 (2.0)	4.03 (2.0)	−19.60 [c]
Community	2.69 (1.9)	3.75 (2.1)	−19.11 [c]

Values are mean (standard deviation), unless otherwise stated.
For all response scales, higher scores indicate more of the attribute.
[a] Sample size varies due to missing data.
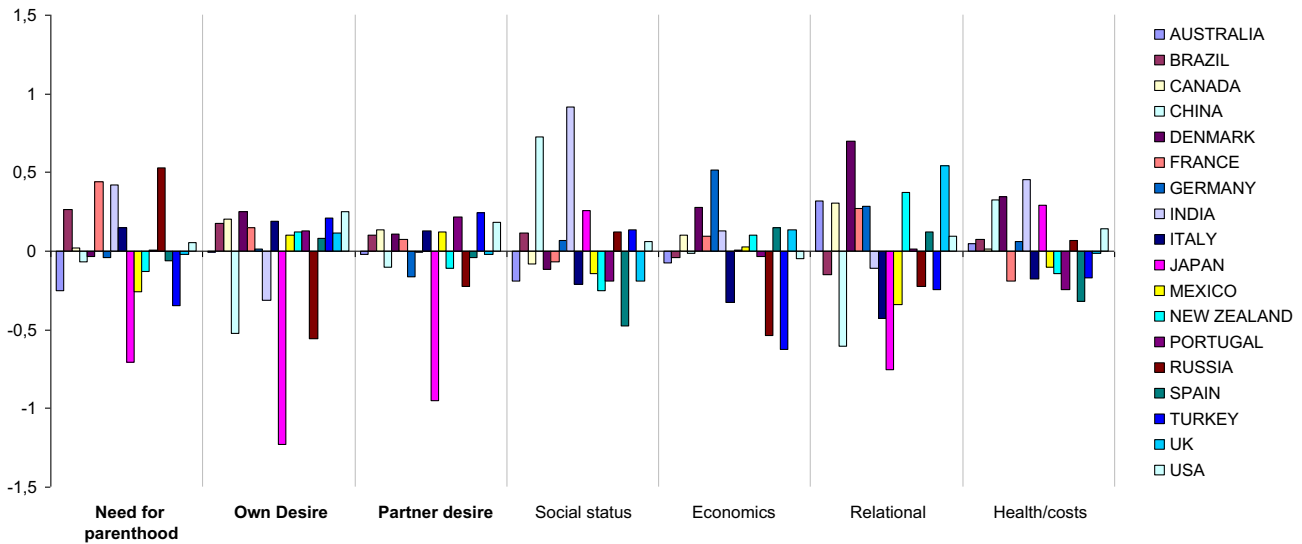[b] $P < 0.01$.
[c] $P < 0.001$.

Fig. 1   Standard scores for need for parenthood, desire for a child (own, partner's) and decisional factor scores according to count.

them to have children, but this was especially true for men. In terms of compliance with norms, the gender x norm ANOVA showed a significant effect of gender [$F(1, 9678)$ = 571.70, $P < 0.001$] and norm [$F(2, 9677)$ = 1892.032, $P < 0.001$], but a non-significant interaction [$F(2, 9677)$ = 0.103, $P = 0.902$]. Men were more likely to want to comply than women. Stronger compliance with partner norms versus compliance with family/in-laws and their community was true for both men and women.

Country

Fig. 1 shows need for parenthood, and personal and partner's desire for a child according to country. Factorial ANOVA demonstrated significant country differences for all dimensions considered [need for parenthood: $F(17,9594)$ = 52.287, $P < 0.001$; personal desire for a child: $F(17,9594)$ = 81.348, $P < 0.001$; partner's desire for a child: $F(17,9594)$ = 37.848, $P < 0.001$]. Post-hoc tests suggest three homogeneous country subsets regarding need for parenthood: (1) Japan, which
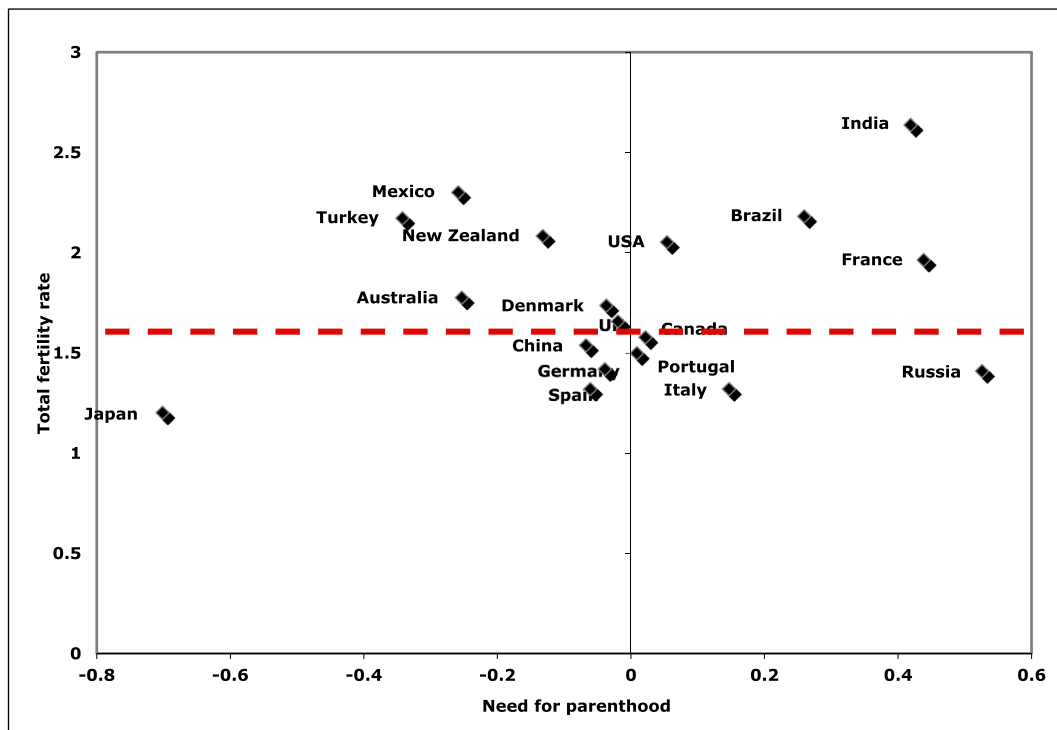

Fig. 2   Need for parenthood according to national total fertility rate.

presents the lowest need; (2) Italy, Brazil, India, France and Russia, which present the highest need; and (3) the remaining 12 countries which present low to moderate need. Fig. 2 shows the need for parenthood within each country plotted according to national total fertility rate (comparable time period 2010).

Regarding desire for a child, post-hoc tests suggest one homogenous subset of 14 homogeneous countries and a second subset composed of India, China, Russia and Japan, which present lower personal desire for a child (see Fig. 3). Fig. 3 shows childbearing desire within each country plotted against the national total fertility rate (for 2010). Japan also differentiates from the remaining 17 homogeneous countries by presenting desire for children.

The interactions between country and gender were significant − need for parenthood: $F(17, 9656) = 4.135$, $P < 0.001$; personal desire for a child: $F(17, 9650) = 3.994$, $P < 0.001$; and partner's desire for a child: $F(17,9639) = 1.887$, $P < 0.05$. In terms of need for parenthood, men from Germany and Japan reported a higher need for parenthood than women from these countries. In terms of desire for a child, men from Turkey reported higher desire than women from Turkey. In terms of partner's desire for a child, with the exception of Japan and Portugal where values reported by men and women were similar, men reported higher partner's desire than women.

Fig. 1 also shows childbearing preconditions and motivational forces by country. ANOVA showed significant country variation for the social status of parents [$F(17, 9594) = 59.367$, $P < 0.001$], economic preconditions [$F(17, 9594) = 44.809$, $P < 0.001$], personal and relational readiness [$F(17, 9594) = 94.539$, $P < 0.001$], and physical health and costs [$F(17, 9594) = 26.401$, $P < 0.001$]. Post-hoc tests show that the social status of parents is highly valued in India and China compared with the remaining 16 countries which presented greater homogeneity. Concerning economic preconditions, there was a main subset of 13 homogeneous countries. Germany and Denmark differentiated from the other countries by rating economic preconditions the highest, and Italy, Russia and Turkey rated economic preconditions the lowest. Countries were heterogeneous concerning personal and relational readiness, with Japan and China rating it the lowest and Denmark and UK rating it the highest. Finally, countries were homogeneous concerning physical health and costs, with no country differentiating from the remaining countries (small effect size for differences). Significant interactions of gender by country were found for economic preconditions [$F(17, 9539) = 1.778$, $P < 0.05$] and personal and relational readiness [$F(17, 9538) = 1.636$, $P < 0.05$]. While, in general, men reported lower scores than women in these two dimensions, no significant gender differences were found in Mexico.
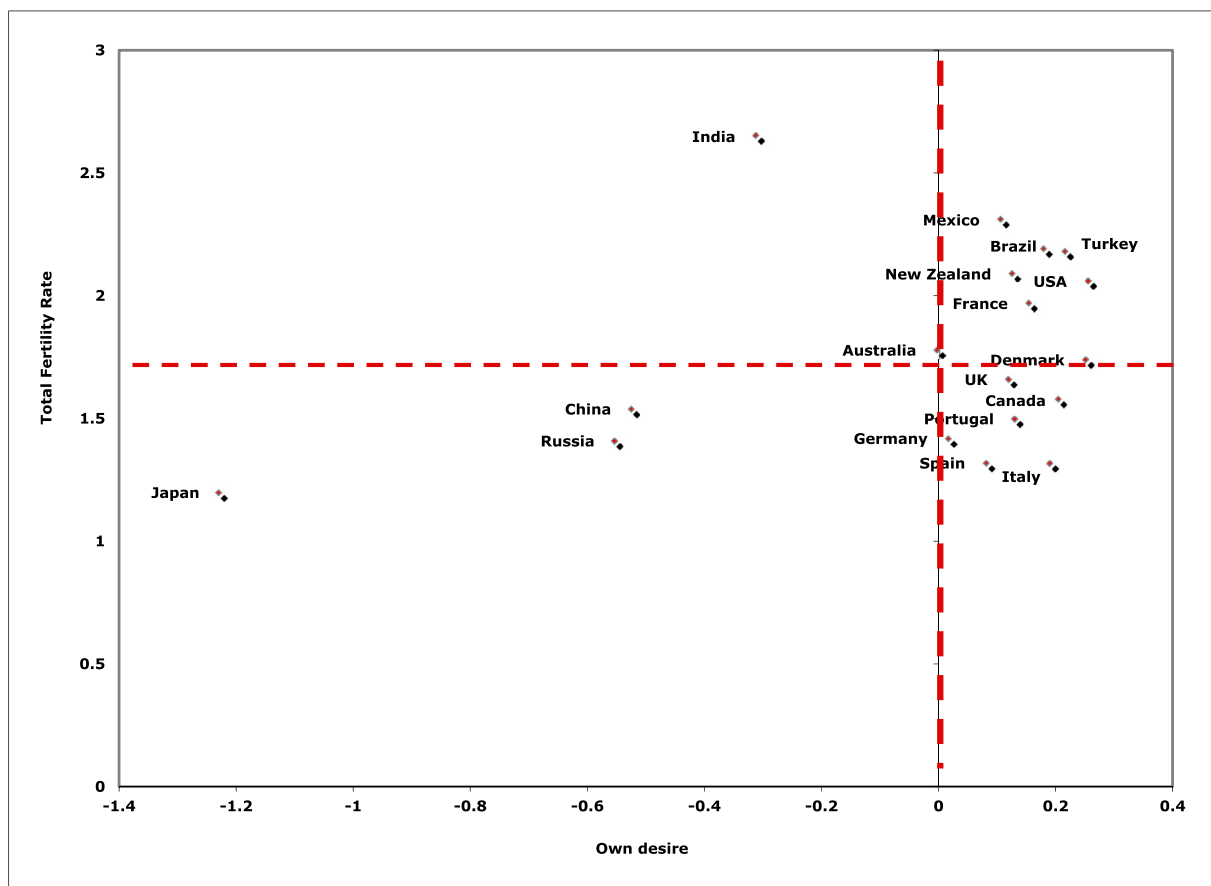

Fig. 3 Desire for a child according to national total fertility rate.

ANOVA by country showed significant differences in subjective norms from partners [$F(17, 9245) = 17.557$, $P < 0.001$], family/in-laws [$F(17, 9245) = 14.221$, $P < 0.001$] and their community [$F(17, 9245) = 35.229$, $P < 0.001$]. Similarly, ANOVA on compliance with norms showed significant country variation for partners [$F(17, 9245) = 87.945$, $P < 0.001$], family/in-laws [$F(17, 9245) = 135.369$, $P < 0.001$] and their community [$F(17, 9245) = 132.320$, $P < 0.001$]. Despite the significant main effect, post-hoc tests suggest overall homogeneity between countries on subjective norms, but higher heterogeneity on compliance with norms (see Fig. 4) with three homogenous subsets. Participants from China, Turkey, Japan and India reported greater desire to comply with partner norms, and participants from Germany, Portugal, Spain and Mexico reported the lowest desire to comply with partner norms, compared with the remaining 10 countries with moderate desire for compliance with partner norms. Participants from China, Japan and India also reported greater desire to comply with their family, in-laws and community (in this last case, together with participants from Russia and Turkey) compared with participants from the remaining homogeneous subset of countries.

Significant interactions of gender with country were found regarding subjective norms from partner [$F(17, 9569) = 2.436$, $P < 0.01$] and family/in-laws [$F(17, 9564) = 1.807$, $P < 0.05$], and regarding compliance with norms from partner [$F(17, 9411) = 3.760$, $P < 0.001$], family/in-laws [$F(17, 9473) = 2.647$, $P < 0.001$] and their community [$F(17, 9485) = 2.493$, $P < 0.01$]. In general, men reported higher scores than women on all these dimensions. However, men from China perceived less normative pressure from their partner and family/in-laws than women from China. Also, in the remaining variables analysed, men and women from a number of countries reported similar scores, specifically – norms from partner: France, Germany, Japan and Russia; norms from family/in-laws: India, Japan and UK; desire to comply with partner: New Zealand; desire to comply with

family/in-laws: China and India; and desire to comply with their community: China and New Zealand.

Discussion

A full understanding of the significant changes in fertility behaviour being observed worldwide has been limited due to the lack of cross-country research. Our results demonstrate that some decisional factors could have a universal association with starting families (e.g. desire for a child, need to satisfy economic preconditions), whilst the influence of other factors (e.g. need for parenthood, personal and relational readiness) is dependent on contextual factors such as gender and country. The findings support the need for contemporary, prospective and international research on reproductive decision-making, and provide critical variables to be investigated in such work. The results also emphasize the need for policies aimed at influencing fertility patterns to take into account subjective experiences of preconditions for readiness to conceive, as well as contextual factors.

Results indicate that despite evidence of falling fertility trends and an increase in the number of voluntarily childless people (Miettinen et al., 2015), the desire for children remains strong in most countries investigated (Martinez et al., 2012). People of widely different cultural backgrounds (e.g. South Americans, South Asians, Northern Europeans) all expressed markedly similar levels of desire for a child despite diverse national total fertility rates and, undoubtedly, diverse life situations. Such consistency cannot simply be accounted for by a volunteer bias associated with the desire to complete a fertility survey. Indeed, this finding contrasts with the significant and considerable regional variations observed in the need for parenthood. Need for parenthood was greatest in Russia, France, India and Brazil, and lowest in Japan. The juxtaposition of high desire for a child and low need may mean the motivational impetus to have children is weakened, at least in some countries,
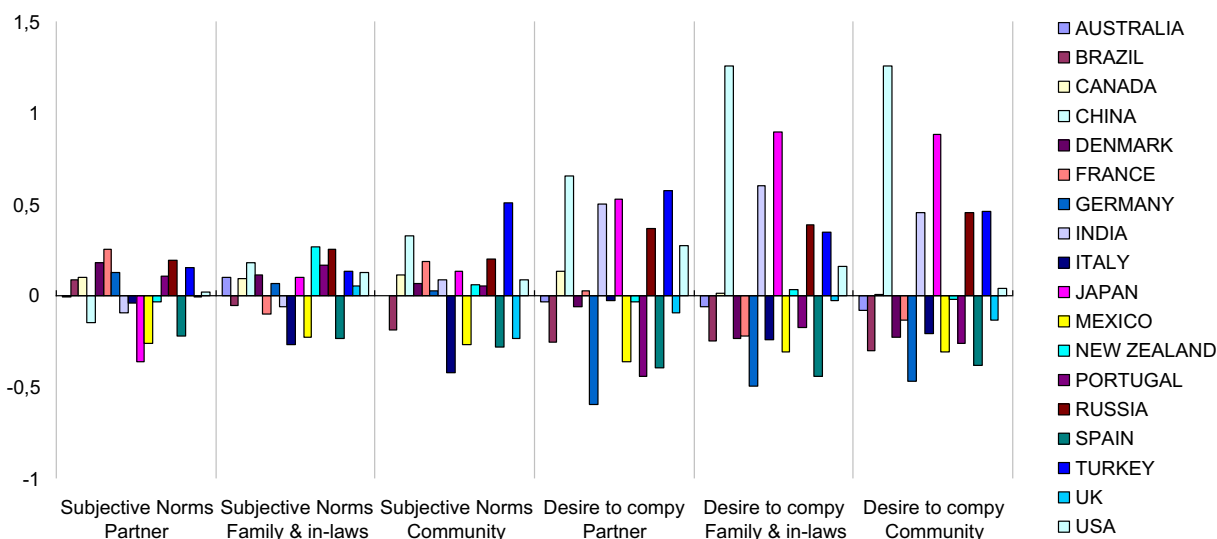

Fig. 4 Standard scores for subjective norms and desire to comply according to country.

perhaps due to the possibility of generating life satisfaction from other sources (e.g. participation in the labour market) that makes having children desirable but not necessarily essential. The lack of alternatives to childbearing has been the traditional explanation for why having children is more important to women than men (Berg and Wilson, 1991). However, in the study sample, men and women reported similar need for parenthood, and were equally likely to have children, suggesting a levelling-out of fertility aspirations. Future prospective research needs to examine factors underlying causes of high desire/low need, and whether this motivational context explains the reduced fertility rates in some countries because causation cannot be determined in cross-sectional work.

The need to ensure sound economic conditions was shown to be important for men and women, and to be largely invariant across countries. These results are consistent with those of studies in single countries (e.g. Miettinen and Paajanen, 2005), and support existing fertility improvement policies that focus on tax incentives/child benefit packages. In psychobiological research, evolutionary theorists propose that under harsh conditions where there is a lack of security in availability of resources (e.g. food, comfort) to nurture and care for offspring, '…reproduction is suppressed until predictably better times…' (Wasser and Barash, 1983: 518). This association has also been shown in humans (Boivin et al., 2006). However, economic packages have a relatively minor impact on childbearing (McNown and Ridao-Cano, 2004). Given the universality of economic preconditions, despite variations in wealth, it could be that it is not just the actual wealth that is important but also the subjective sense of economic security that needs to be targeted, for example by helping people determine 'how much wealth is enough' for childbearing. Application of the theory of planned behaviour to fertility suggests that perceived and actual control factors (e.g. perceived versus actual wealth) have different effects on starting a family, and policies to influence fertility may need to address both to be effective (Klobas, 2010).

The majority of country differences were in the factor 'physical health and child cost'. This factor is difficult to interpret because its items brought together the influence of personal/partner's health as well as economic costs of children. This loading pattern could suggest that people are pre-occupied with the health consequences of childbearing or with its healthcare costs. The respondents rating this dimension as most influential were people from Denmark, who rank highly on per-capita healthcare funding (Organisation for Economic Co-operation and Development, 2015) and therefore might be more likely to consider health issues in fertility decision-making. However, people from India and China also rated it highly despite lower healthcare funding, but where mortality rates are considerably higher (540 per 100,000) compared with Denmark (World Health Organization, 2017). Thus, both aspects of this dimension may be relevant. Together, the results suggest that tackling the psychology behind economic security might provide useful insights on how to help people meet their preconditions but, equally, attention should also be devoted to the actual health issues and costs of having children.

There is much research on the importance of having children in relation to the social status of parents. There is also voluminous research showing that, in less well-developed countries, the stigma of childlessness is particularly great (Ombelet et al., 2008) because children are valued not only for personal fulfilment (e.g. affiliation, affection) but also for their social and economic instrumental value (e.g. economic utility) that adds to the well-being of the family (e.g. Nauck, 2014). The present results would seem to support this proposal. Respondents from India reported the strongest need for parenthood, greater willingness to comply with the desires of others, and rated the influence of the social status of parents on fertility decision-making considerably higher than did people from other countries. In contrast to strong reactivity to social pressures in India, people from South Europe (Italy, Spain) were least likely to rate social status as influential, reported less social pressure from significant others, and were also less willing to comply with the social pressures that did exist. Fertility rates in Italy and Spain are among the lowest in Europe (Meittinen et al., 2015). The influence of norms is critical in implementing many different types of behaviour (Connor and Norman, 1996), and lack of social motivational forces in these countries may partly explain low fertility rates. Indeed, a recent body of research on the theory of planned behaviour and childbearing suggests that such factors could be critical (Ajzen and Klobas, 2013; Kuhnt and Trappe, 2016). In light of these effects, one might consider campaigning against the social stigma of childlessness in some communities, but promote the desirability of parenting in others.

These results support past work showing diversity in the influence of personal and relational readiness to fertility decision-making. Some studies suggest that personal readiness is a question of maturity and ability to parent (Lampic et al., 2006), whereas other studies point to it being associated with having fulfilled other life goals (Mills et al., 2011). Relational readiness is more often described as a matter of relationship stability and security, and in this there is a shared feature with economic preconditions. The items in this study included readiness and stability, as well as the desirability of children as a source of personal fulfilment. Interestingly, both personal and relational readiness loaded on the same factor, suggesting a strong, shared influence of partners in fertility decision-making. Although research often portrays decision-making about childbearing as being led by women (Stein et al., 2014), the results of this study show that both men and women in all countries reported some consistency between their own and their partner's wish for a child ($r > 0.40$). Moreover, men were keen to comply with the social norms of significant others to have a child. Therefore, the current results argue against men being passive participants in the child project. Nevertheless, it was in the influence of personal and relational readiness that most country variation was observed. People from Brazil, Mexico, Italy and Spain rated this dimension as less important than people from other nations. Although these countries have commonalities (e.g. religion), they also differ considerably in other factors (country's wealth); therefore, a more in-depth analysis of country make-up will be needed to understand this trend fully. However, one possibility is the nature of relationships with extended family. Research shows that people are more willing to have children when they have partner support (Tough et al., 2007), and the need for this may be lessened

in communities where there are more interactions with extended family (this trend was also observed in India). Although there were country variations, all countries reported that personal and relational readiness was a key factor in determining when to have children.

Despite the authors' best efforts to recruit men, the ratio of women to men was approximately 5:1. This asymmetry has been documented in reviews of research on fertility, where <1% of studies included a male perspective (Poston and Chang, 2005). The male view of fertility and having children is often not represented, or is only represented through the voices of their female partners. The value of putting effort into collecting male data despite the difficulties can be illustrated with one finding that emerged from this study, namely that, for men, having children may have more to do with the needs of others than their own needs. Compared with women, men were exposed to significantly more social pressure to have children (partners, in-laws, community), but despite lower desire for a child and less readiness to conceive (economic, personal and relational readiness), men were significantly more willing to comply with this social pressure. This message seems consistent with the view that men report more childbearing ambivalence than women (Sennott and Yeatman, 2018), but inconsistent with the view that '...men could have year-long negotiations to resist their partner's desire to have a child...' (Jensen, 2016: 203) or women's perception that delayed parenthood is due to their partner's ambivalence (Koert et al., 2018). The present study adds valuable male data to the existing international literature, but continuing efforts to involve men in childbearing research is imperative to better understand the nuances of fertility decision-making.

Strengths

The aims of this research were largely achieved because the design enabled the collection of extensive data on reproductive decision-making (104-item survey) from a large sample of men and women, speaking eight languages, living in 79 countries. Importantly, all these men and women were currently trying to conceive, allowing investigation in a population in the midst of decision-making about fertility issues. This is the most extensive cross-country dataset of fertility decision-making covering demographic, psychosocial and decisional variables in men and women. Items and subscales demonstrated satisfactory reliability. Low missing data and high consistency between the present results and those of others suggest high-quality data.

Limitations

Limitations include the validity of questionnaire responses and sample representativeness. Internet surveys are an important method of targeting difficult-to-reach samples such as people currently trying to conceive (Bowling, 2005). Research has demonstrated that internet surveys yield high-quality data that are consistent with data generated via traditional means (e.g. postal surveys; Lieberman, 2008). The study results support this claim and the validity of the data via results that are consistent with well-established findings, such as greater desire and need for parenthood among women. However,

samples recruited over the internet may not necessarily be representative of the general population. For example, they tend to be more highly educated, a bias present in the current results. Approximately 50% of the sample were educated to university level, especially in those countries where use of the internet may still be more common among the more educated (India, Mexico). Educational differences are pervasive in most research, even when recruitment is through conventional methods (Shelton et al., 2009). The higher educational level in the study sample also meant that only approximately 6–9% of people reported significant financial hardship, which clearly indicated a lower representation from poorer socio-economic classes. Although the male sample was large ($n = 1690$), the imbalance and its effect on the analytic approach (e.g. collapsing into countries) must be acknowledged. In the study sample, 20% of women and 12% of men had conceived previously with fertility treatment; this percentage is much higher than in the general population at the time of the survey (2–3%; Nyboe-Andersen et al., 2006). This means that the IFDMS sample may have a higher than average interest in fertility issues. The study results must therefore be generalized mainly to well-educated people (particularly women) in the early years of trying to conceive, with an interest in fertility issues. Finally, the authors undertook a secondary analysis of data collected in 2009–2010 that could affect the relevance of the data presented. However, the findings map on to later reviews (e.g. Mills et al., 2011; reasons for postponement), and the IFDMS adds to this body of work by providing an international and gender perspective that has been applied to fertility knowledge (Bunting et al., 2013), willingness to optimize fertility health (Fulford et al., 2013), and perceived causal explanations to infertility (Koert et al., 2018). However, it is acknowledged that some more topical issues were not covered because data were not collected. For example, one of the inclusion criteria was being in a couple, and data on sexual orientation were not collected. This means that the data cannot be used to learn more about the growing number of people opting to become 'solo' parents (Golombok et al., 2016) or the fertility decision-making of same-sex couples (Gates, 2013). Finally, because the question set was based on specific theories (e.g. theory of planned behaviour, common sense theory of illness perception), this framing would have limited the information that people could present in regard to their fertility decision-making. The use of other theories, based on other assumptions, could yield different insights.

Conclusion

The results demonstrate that fertility decision-making is influenced by many contextual factors, some of which appear to have a universal association with childbearing and others have an influence on some people, living in some countries, to a greater or lesser extent depending on gender. What is clear from the results is that understanding of the decision-making behind fertility trends worldwide must take into account both the person and the context to generate a realistic profile of the factors that influence contemporary fertility behaviour. Only these data can help relevant stakeholders to design and implement policies that will meet the needs of people trying to conceive.

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