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Reproductive decision-making
in a macro-micro perspective

Carlo F. Dondena Centre for Research on Social Dynamics

Social psychological influences on fertility intentions:
A study of eight countries in different social, economic and policy contexts

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Abstract

This research is written within the framework of the European Commission project "Reproductive decision-making in a macro-micro perspective" (REPRO). It describes work completed within REPRO Work Package 3 on micro-level modelling of social psychological influences on reproductive decision making by individuals, specifically, the formation of intention to have a first or second child. The report introduces the macro level context within which the work was conducted and the theory of planned behavior (TPB), the social psychological model of human behaviour that guided the work, linking the TPB to other work in demography on psychological influences on the formation of intention to have a child. After identifying parity and age as the contexts across which intention to have a child differ most, structural equation modelling (SEM) was used to permit comparisons of both differences in the relevance of individual attitudinal beliefs, normative referents and control

factors in eight countries (Bulgaria, Russia, Georgia, Germany, France, Hungary, Italy and Romania), and differences in the relative influence of attitudes, perceived norms and perceived behavioural control on the intentions of females aged 25 to 34 year old to have their first or second child in these countries. A comparison of the relative influence of attitudes, norms and perceived control among childless Bulgarian females under 25 and between 25 to 34 years old demonstrates how influences on fertility decision making differ by age. Exploration of the potential of three macro level contexts (wealth, employment stability and family- and child-friendly policy) to explain differences in intention to have a second child showed that policy context provided a more satisfactory explanation overall than national wealth or employment stability, although employment stability provided an explanation of differences in material control and none of these contexts adequately explained the observed patterns of the country level differences in influences on intention to have a second child. The formation of intention to have a child appears to differ in quite complex ways across different individual and national contexts. An implication for development of policy to enable and encourage Europeans to have more children is that policies may need to be more closely targeted to the needs of individuals in quite specific individual contexts. This work has taken some initial steps toward uncovering the complexity, but more needs to be done and the report includes some considerations about directions for future research.

Keywords

fertility intentions, attitudes, perceived social norms, perceived behavioral control, theory of planned behavior, TPB, national context, policy, comparative studies, Gender and Generations Programme, GGP, Gender and Generations Survey, GGS

Table of Contents

List of Figures

List of Tables

Executive summary

This work addresses the "fertility gap" which exists between the number of children Europeans state that they would like to have (on average, about equal to the fertility replacement rate) and the number of children they actually have (below the replacement rate). We investigated, from a social psychological point of view, how individuals form intentions to have children. Our goal was to link individuals' beliefs about having children (micro level evaluations) to external (macro level) conditions prevailing in different countries. After comparing individuals' beliefs, and the effects of these beliefs on intentions to have a (first or second) child in eight countries (Bulgaria, Russia, Georgia, Germany, France, Hungary, Italy and Romani), we compared three possible macro level explanations of differences: employment (in)stability, housing costs, and family- and child-friendly policy. These macro-level explanations have been highlighted in European Commission and European Parliament documents, most recently in the European Parliament's (2008) resolution on the demographic future of Europe.

We used household survey data collected within the Generations and Gender Programme (GGP, www.unece.org/pau/ggp) to map beliefs and influences on fertility intentions according to a framework provided by the theory of planned behavior (TPB, Ajzen, 1991). Within this framework, the decision to have a (or another) child is framed as an intention, and intention to have a child as a function of

- attitude to having a child (decision makers' evaluations that having a child will have a positive or negative impact for them),
- perceived social or normative influences to have (or not to have) a child, and
- perceived control over factors associated with having a child (people's perceptions that they are able to have a child and to care for that child).

These three influences on having a child can be measured, in turn, by asking people about their beliefs about

- the impact of having a child ("behavioural beliefs"),
- the extent to which others want them to have a child ("normative beliefs"), and

- the extent to which both internal factors – such as one's own health – and external factors – such as employment – impede or assist with having and caring for a child ("control beliefs").

The Generations and Gender Survey (GGS) includes questions about such beliefs, and we were able to include responses from 58,014 individuals aged between 18 and 49 in our analyses. Sample sizes ranged from 5,477 in Germany to 12,454 in Italy.

Intention to have a child

Intention to have a(nother) child during the next three years varied by both the macro level context and the micro level context in which the decision to have a child took place. The individual's age and the number of children they already had ("parity") are particularly important contexts which accounted for more difference between individuals than the country in which they live. Country level differences in intention were strongest for childless women aged 25 and over, men with one child aged 25 to 44, and 25 to 29 year olds (both males and females) with two or more children. Intentions to have a(nother) child were highest among 25 to 29 year olds (22% of males and 23% of females in this age group said they definitely wanted to have a child during the next three years) and 30 to 34 year olds (19% of males and 15% of females). We therefore concentrated our analyses on 25 to 34 year olds in order to identify beliefs that distinguished individuals who intended to have another child from others.

Beliefs about having a child

We used structural equation modelling (SEM) to compare the beliefs underlying attitude, perceived norm and perceived control. In addition to a set of normative beliefs, we identified two sets of behavioural beliefs: beliefs about the impact of having a child on personal freedom and beliefs about the impact of having a child on personal satisfaction. We also distinguished between three sets of control factors that might affect the decision to have a child: material factors such as finances and housing, factors associated with child care and care leave, and personal control factors including health and having a suitable partner. Table ES1 lists the beliefs associated with each of these aspects of the decision to have a(nother) child.

Table ES1. Beliefs associated with the decision to have a child, classified according to the theory of planned behavior framework

Attitude (Freedom)
 If you were to have a/another child during the next three years, would it be better or worse for ...
   the possibility to do what you want
   your employment opportunities
   your financial situation

Attitude (Satisfaction)
 If you were to have a/another child during the next three years, would it be better or worse for ...
   the joy and satisfaction you get from life
   the care and security you may get in old age
   certainty in your life

Perceived norm
 ... to what extent to you agree or disagree with these statements
   Most of your friends think that you should have a/another child
   Your parents think that you should have a/another child
   Most of your relatives think that you should have a/another child

Material control
 How much would the decision on whether to have a/another child during the next three years depend on the following?
   your financial situation
   your work
   your housing conditions

Control (childcare)
 How much would the decision on whether to have a/another child during the next three years depend on the following?
   availability of childcare
   your opportunity to go on parental leave or care leave

Personal control
 How much would the decision on whether to have a/another child during the next three years depend on the following?
   your health
   your having a suitable partner
   your partner's/spouse's health

Comparing 25 to 34 year olds across countries, we observed that (on average) females in all countries except France and Italy expected to be worse off financially and in terms of their work situation. Males also expected to be somewhat worse off in terms of freedom, but only in financial terms – except for childless males in Bulgaria, Russia, Germany and Romania, who also expected that having a child would have a negative impact on their ability to do what they want. With the exception of Germany (where females and men with one child were ambivalent), respondents believed that having a child would increase satisfaction and certainty in their lives; childless respondents tended to have stronger expectations than those who already had a child. The strongest normative pressures for having a child were felt in Italy (where childless respondents felt particularly strong pressure from their parents to have a

child), while the weakest were felt in Germany (where childless males, and females with one child) believed that their friends did not want them to have a(nother) child).

The relevance of control factors varied more markedly across countries and contexts, although some patterns were observed. French respondents differed most from those in other countries, with few reporting that their decision to have a child depended on any of the control factors, although childless females felt that their decision depended "a little" on their financial situation, work and housing conditions, and females with one child also felt their decision depended "a little" on their work. Only in Hungary and Bulgaria did women with one child report that the decision to have a child depended more than a little on their work, a situation similar to that of childless women in Hungary and Germany. Housing conditions were considered relatively important by males in most countries, and important, but to a lesser extent, by females in most countries. The availability of parental or care leave was rated as of some importance only in Hungary (for all contexts) and among Bulgarian females, but did not seem an important control factor in other countries. A similar pattern was seen for access to childcare.

SEM confirmed that different beliefs were relevant ("salient") to the formation of attitude, perceived norm and perceived control among 25 to 34 year old females in different countries. Notably, dependency on work was not a salient aspect of material control for childless females in France, housing conditions were not salient for childless women in France and Russia, and opportunity for parental leave was not salient in France and Romania. The expected impact of having a child on joy and satisfaction was not as important a component of satisfaction as the expected impact on care in old age and certainty in life for childless females in France, Germany, Romania and Georgia.

Different beliefs were salient for the decision to have a second child. In contrast to its salience for childless females, financial situation was not salient for females with one child in Georgia, but it was salient in Germany. Normative beliefs were weaker in all countries, and in particular, parents were not salient referents for the decision to have a second child in France, while friends were not salient referents in Italy. With the exception of France, and to a lesser extent Romania, more control factors were salient for respondents with one child than for childless respondents. Essentially, the decision to have one's second child is cognitively more complex, involving more factors than the decision to have one's first child.

Making the decision to have a child

Intention to have one's first child was most strongly influenced by expected satisfaction in five countries, although it had no significant influence in Georgia or Italy. Perceived normative influences had a significant effect in five countries (not in Russia, France or Hungary). Perceived control had no significant effect except in Russia where material control was significant. These results are notable because they indicate that, although there are country level differences in beliefs about the impact of having a child on financial situation and work, and about the extent to which the decision to have a child depends on financial situation, work and housing conditions, these differences have no effect on the actual decision to have a child. What matters most to these 25 to 34 year old women is that having a child will bring satisfaction, a sense of certainty and a sense of security. To a lesser extent, in some – but not all – countries, the decision to become a parent is also a response to perceived norms, whether strongly felt as in Italy or weakly felt as in Germany.

It is interesting to contrast influences on the decision to have the first child among 25 to 34 year olds with the influences reported by younger women. We compared the factors that influenced the fertility decision making of women in these two age groups in Bulgaria, and found differences both in the salience of beliefs about the impact of having a child on freedom and in the relative influence of the TPB variables on intention to have a child. While perceived norms had a significant effect for both groups, beliefs about freedom were more salient among the younger women and freedom had a significant effect only for this group, and control had an effect only for the older women. For Bulgarian women between 25 and 34, earlier concerns about loss of freedom appear to be replaced by concerns about material ability to have a child and the availability of childcare and support for rearing the child.

The effects of attitudes, perceived norm and perceived control on intention to have one's second child differed from their effects on the decision to become a parent in almost all countries. The exception was Hungary, where satisfaction was the only influential factor in both situations. In all other countries, more factors entered into the decision to have a second child than the decision to have the first child, further confirmation that the decision to have a second child is cognitively more complex. At the same time, differences between countries were more marked.

Beliefs about impact on satisfaction had a significant effect on intention to have another child for women aged 25 to 34 in all countries except Georgia and Romania, while beliefs about impact on freedom had a significant effect only in Georgia, Romania and France. Satisfaction had strongest influence overall in Hungary. Perceived norms did not have a significant influence on intention to have a second child in France, Hungary and Italy, although they did have an influence for childless women in Italy. None of the measured control factors affected intention to have a second child in Georgia and Hungary, but material control had a significant effect on intention to have a second child in Bulgaria and Russia, personal control had a significant effect in Bulgaria, Germany and Romania, and control in terms of child care had a significant effect only in Italy.

Influences on intention to have a second child were most similar in Germany and Romania and there were few differences in the pattern of influences observed in Bulgaria, Hungary, France and Italy. Germany and Romania were particularly similar in the strong influence of both perceived norms and personal control while the similarity among Bulgaria, Hungary, France and Italy was mostly associated with a weak influence of perceived norms. Germany and Romania can be characterised as countries with strong normative influence on having a second child while Bulgaria, France, Hungary and Italy can be characterised as countries with weak normative influence for having a second child. The strong influence exerted in Germany is directed toward not having a second child while Italian females seem to be able to resist the strong perceived norm to have a second child in that country.

Macro level differences and policy implications

To compare the ability of different macro level contexts to explain the differences we observed at the country level, we classified each country in terms of wealth (lower or higher), employment stability (lower or higher) and level of policy support for young children and their parents (lower or higher). Among countries for which we had information about the cost of housing, the split was identical to wealth, so we did not separately analyse cost of housing. Grouping by policy context provided a good explanation of the intentions to have a second child of 25 to 34 year old females with one child, regardless of whether support was low or high. It also highlighted more differences in influences on intention than grouping by either wealth or employment stability. This suggests that explanations based on differences in policy

support provide a more complete picture of differences in the formation of intention to have a child than explanations based on wealth and employment stability and, in turn, that policy interventions are likely to make a difference for women in this age group. But, here, there is a paradox. The differences highlighted by differences in policy context are not those that respond to policy: for females aged 25 to 34 in higher policy support contexts, expectations of satisfaction have a much stronger influence on the decision to have another child than they do for women in lower policy support contexts, social influences are more important, and personal control is less important. No significant differences between these two contexts were observed in the effect of attitudes to freedom, material control or perceived need for childcare on the decision to have another child, yet these are the factors that reflect policy makers' concerns with work-life balance. It appears that women in countries with stronger policy support are freed to think more about the social and emotive issues that have the strongest influence on the decision to have another child.

This is not to suggest that we should rely only on differences in policy context to explain differences in formation of intention to have a child. Looking at influences on intention from different macro level contextual viewpoints is likely to provide different insights, for example, for 25-34 year old females with one child, employment stability context provided a better explanation of concerns about material control than policy context. None of the macro level contexts that we examined explained the similarities in formation of intention to have a second child in Germany and Romania, or in Bulgaria, France, Hungary and Italy. Is there a macro level context that prompts individuals in these countries to form intention to have their second child in much the same way, or are the similarities more readily explained in terms of individual level context?

Overall, this work has shown that the formation of intention to have a child differs in quite complex ways across different individual and national contexts. Policies may need to be more closely targeted to the needs of individuals in quite specific contexts, including age group as well as parity and employment status, if they are to effectively enable and encourage Europeans to have more children.

Introduction

As populations age and fertility levels remain low in many countries, increasing attention is being paid to policies and actions that might reduce the social and financial burdens of the ageing population. One strategy is to raise fertility rates so that a larger pool of younger, productive members of the population would be available to balance the increasing numbers of older people in retirement. National and international policy makers tend to seek explanations of low fertility and mechanisms for increasing fertility at the economic and policy level. For example, in a Green Paper, the European Commission notes (Commission of the European Communities, 2006, p. 5):

> Europeans have a fertility rate which is insufficient to replace the population. Surveys have revealed the gap which exists between the number of children Europeans would like (2.3) and the number that they actually have (1.5). This means that, if appropriate mechanisms existed to allow couples to have the number of children they want, the fertility rate could rise overall...

> The low fertility rate is the result of obstacles to private choices: late access to employment, job instability, expensive housing and lack of incentives (family benefits, parental leave, child care, equal pay).

Explanations for low fertility can also be found at the individual or micro level. The text of the European Parliament's (2008) resolution on the demographic future of Europe suggests links between the economic, social and policy environment and individual responses such as anxiety and decision making about parenthood:

> [The European Parliament] … 4. Stresses that the average birth rate in the European Union, which at 1.5 is abnormally low, is not a reflection of women's choice or of European citizens' actual aspirations for creating a family, and may therefore also be linked to the difficulty of reconciling work with family life (lack of child care infrastructures, social and economic support for families, and jobs for women), the anxiety-inducing social environment (unstable work situation, expensive housing) and a fear of the future (late access to employment for young people and job insecurity)…

> [The European Parliament] … 14. Recognises that ... it is possible to influence birth rate curves favourably through coordinated public policies, by creating a family- and child-friendly material and emotional environment; recognises that, along the lines advocated by the European Economic and Social Committee in its proposed European pact for the family, those measures should be applied over the long term and should provide the necessary framework of stability and protection for parenthood decisions.

Indeed, while policies are enacted at the macro level, they take effect at the micro level: individuals make use of policy instruments. This report, written in the context of the REPRO project, which specifically examines the macro-micro link in reproductive decision making (http://www.oeaw.ac.at/vid/repro/), focuses on how individuals make parenthood decisions. We ask "How do individuals form their intention to have a child?" and explore macro level explanations of similarities and differences in the answer to this question in different countries which sit in different economic, social and policy contexts.

The report is structured in five sections. First, we introduce the theory of planned behavior, the social psychological model of decision making that informed our research. We then describe the data and method used in this work. The results of comparative modelling of reproductive decision making are followed by a note on limitations of the work presented here and directions for future research and a conclusion which reflects on potential policy implications.

The social psychology of intention formation

Theories of how people make decisions are concerned with cognitions, how people think about the object of their decisions, the world around them, and the social and personal consequences of decisions and actions. The making of decisions in their social context is of particular interest to social psychologists who study the relationship between individual cognitions, decisions and actions. One of the most important modern theories in social psychology is the theory of planned behavior (TPB: Ajzen, 1991, 2005), a theory whose elements have been of interest, over several decades, to demographers concerned with fertility decision making. It is this theory that informs the research described here.

In the TPB framework, human behaviours are modelled as reflecting decisions, which are characterised as *intentions*. As we can see in Figure 1, intentions are formed through cognitive and emotive processes which lead to three kinds of evaluation, which are commonly described as

- *attitude* to the behaviour (people's internal evaluations that performing the behaviour will have a positive or negative outcome for them)
- *perceived norm* (perception of external social pressures for performing the behaviour),
- *perceived behavioural control* (PBC, people's perceptions that they are able to perform the behaviour).
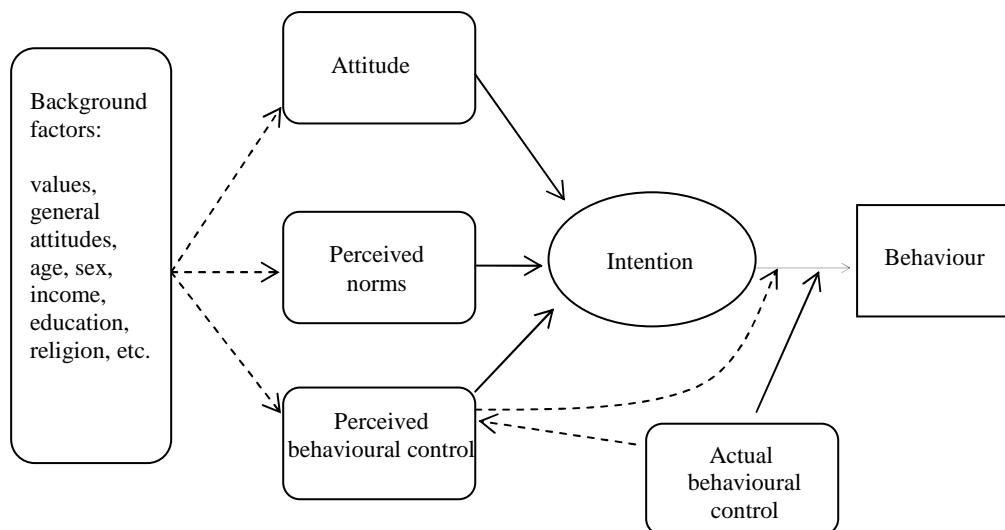
Figure 1. The theory of planned behaviour, after Ajzen (1991)

Of particular importance for our research, the TPB may also explain how macro level conditions influence the evaluation system, intention and behaviour. According to the model, intention is a *readiness* to act, which may be transformed into actual behaviours when conditions permit. PBC reflects (in part) a person's evaluation of whether those external conditions will permit them to take action.

Other external factors, including psychological factors such as personality traits and values, individual differences such as age, gender, cultural background, education, income and religion, and informational factors such as past experience, knowledge and media exposure, have all been shown to influence attitudes, perceived norm and perceived behavioural control

(Ajzen, 2005). These factors include many of the circumstances that demographers have shown to be associated with fertility intentions and behaviour, and early research indeed showed that they are likely to act as background factors. Attitudes and perceived norms have been shown to explain a significant proportion of the variance in fertility intentions and mediate the effects of such background factors as religion, religiosity and age (Jaccard & Davidson, 1975) and to predict fertility intentions better than generic psychological traits (Werner, Middlestadt-Carter, & Crawford, 1975).

Defining intention

The key to accurate prediction of behaviour is clear and precise definition of the behaviour in terms of the *target* and *action* that define the behaviour, the *context* in which the behaviour occurs and elements of the *time* within which the behaviour occurs. When we characterise an intention to perform a behaviour as a decision, the decision to be made also needs to be defined in the same terms. Ajzen (2005) calls this the "principle of compatibility". When explaining intention to have a child, we immediately face a problem in relation to the four elements of a behaviour: "having a child" is not so much an action (behaviour) as the outcome of a set of behaviours. Nonetheless, within demography, there is a long history of research directed toward explaining or predicting intention to have a child (Billari, Philipov, & Testa, 2009; Jaccard & Davidson, 1975).

As noted earlier, a number of variables normally studied in fertility research, including income, education, religion and parity, become 'external' variables in social psychological studies because they are external to the cognitive structure associated with making a specific decision (Ajzen, 2005). These variables often define the context within which a decision is made. A particularly important context for the prediction of childbearing intentions is parity, or the number of children that the decision-maker currently has (Morgan, 1982; Yamaguchi & Ferguson, 1995). Intention to have a first child is qualitatively different from the decision to have subsequent children because the decision to have a first child marks a crucial transition in one's life course, the decision to become a parent. Attitudes to having a child play a different role in the decision to have one's first as distinct from a subsequent child (Billari, et al., 2009; Philipov, Spéder, & Billari, 2006).

Time is a variable of particular importance in fertility decision making (Miller & Pasta, 1995; Schoen, Astone, Kim, Nathanson, & Fields, 1999). More powerful predictions of fertility intentions have been found when the timing of the behaviour has been specified (Philipov, et al., 2006). In measuring fertility intentions, the intention to have a child within two years (Jaccard & Davidson, 1975) or within three years (Vikat, et al., 2007) is commonly measured.

Better prediction of fertility intention has also been observed when the strength or level of certainty of an intention is measured (Morgan, 1982; Speizer, 2006; Thomson & Brandreth, 1997). The strength of fertility intentions as predictors of fertility behaviour is greater when intentions are held with greater certainty (Schoen, et al., 1999). Certainty of intention has been shown, in turn, to vary in at least two contexts, age and parity (Morgan, 1981).

Predicting intention

The principle of compatibility applies to the predictors of intention as well as to the intention itself. The attitudes, perceived norms and perceptions of control that will be the best predictors of intention are those most compatible with the behaviour of interest.

Studies of the effect of attitudes that are compatible with the fertility behaviour of interest have demonstrated quite strong effects of attitudes on intentions. Positive attitudes to childlessness among people of childbearing age are strongly correlated with intentions to remain childless (Koropeckyj-Cox & Pendell, 2007). Attitudes to having a child within two years were associated with intention to have a child in the same time period in Bulgaria (Billari, et al., 2009).

Studying normative influences on childbearing is an important stream of fertility research. The decision to have a child is often seen as the joint decision of two partners (Beckman, Aizenberg, Forsythe, & Day, 1983; Miller, Severy, & Pasta, 2004; Rosina & Testa, 2009; Thomson, 1997) and questions about perceptions of agreement on having a child have been standard in fertility surveys for some decades (Morgan, 1985), yet demographic researchers working in the social psychological tradition have not explicitly included partners among normative referents in studies based on the TPB or the related theory of reasoned action (TRA: Fishbein & Ajzen, 1975). Parents and other family members have been shown to be important normative referents. Mothers' preferences for their children's timing of childbirth

and family size affect their children's childbearing preferences (Axinn, Clarkberg, & Thornton, 1994) and behaviour (Barber, 2000). Peers (South & Baumer, 2000) and social networks (Buhler & Fratczak, 2007) have also been observed to have a strong influence on childbearing intentions. These influences may be both descriptive and injunctive. Recent qualitative research has, for example, identified that girls' childbearing intentions are influenced by their friends' experiences as mothers (Bernardi, Keim, & von der Lippe, 2007).

Despite the link it provides to the external conditions within which fertility decisions are made, relatively little is known about the role of perceived control in formation of the intention to have a child. Some clues to the potential influence of control on fertility intentions can be found in recent literature. Aassve (2003) has observed that economic resources are associated with childbearing among young American women, and research in Singapore has confirmed the importance of financial constraints on decisions to have no more children in the island state (Call, 2008), but neither of these studies has examined the cognitions associated with perceptions of behavioural control. In their study of intentions to have a child in Bulgaria, Billari et al. (2009) found that PBC had an effect on the decision to have a second child, and Dommermuth et al. (2009) in a study conducted within the REPRO framework, found that PBC explained intentions to have a child in Norway.

Method

This section outlines the data on which this study is based, and the methods used to study the antecedents to intentions to have a child in different countries in different contexts.

Data source: Gender and Generations Survey (GGS)

Data were drawn from the Generations and Gender Survey (GGS), an international panel survey concerned with demographic and social development and the factors that influence them. The survey is administered to a sample of 18-79 year-olds resident in each participating country.[1] Thus, a key feature of the data used in this study is the two-stage sampling design: the data are responses from individuals who are clustered by country.

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[1] More information is available at http://www.unece.org/pau/ggp/.

We used data from eight of the countries that participated in the first wave of the GGS administered between late 2003 and mid 2006: Bulgaria (BG, dated collected in 2004), Russia (RU, 2004), Georgia (GE, 2006), Germany (DE, 2005), France (FR, 2005), Hungary (HU, 2004-2005), Italy (IT, 2003) and Romania (RO, 2005). Although a standard questionnaire exists for the GGS (Vikat, et al., 2005), it was not followed strictly in all of these countries, and while the GGP provides rules for harmonisation, further harmonisation and cleaning of the data files were required before a set of comparable data was available for this study. We discuss relevant issues in harmonisation as necessary in this section.

The file used for this study was a modified version of the REPRO harmonised file (RHF) prepared by the Population Activities Unit of the United Nations Economic Commission for Europe (UNECE PAU)[2]. The RHF contains responses from all respondents to the fertility section (Section 6) of the GGS Wave 1 questionnaire plus additional identifying data and data on respondents' values and selected psychological characteristics. For all countries except Italy, the RHF contains data for only one member of each household. For Italy, the file contains data gathered from all eligible members of a household. To render Italy more readily compatible with other countries, we randomly selected one respondent from each household.[3] We further restricted the file by eliminating clearly invalid cases, i.e. cases in which fertility questions should not have been asked[4] and adding variables to support the present analyses.[5] Characteristics of the sample used in this study are summarised in Table 1.

Selection of context-specific subsamples for analysis

As noted earlier, the factors that influence decisions about common human behaviours differ with the context within which individuals find themselves. Contexts of particular importance to reproductive decisions are *parity* (the number of children a person already has) and *age*,

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[2] The details of the harmonisation procedure are available at http://www.oeaw.ac.at/vid/repro/harmonisation.html.
[3] The following strategy was adopted. First, we extracted the family identification number from the individual respondent ID. Next, we assigned to each observation a number generated randomly from a uniform distribution. Finally, we selected for each family only the respondent who was assigned the lowest random number.
[4] We excluded:
- Respondents physically unable to have a child;
- Male respondents with a cohabiting female partner 50 years old or older and male respondents with a non-cohabiting female partner who, on the basis of propensity matching to similar male respondents, probably have a female partner 50 or older;
- Male respondents with a partner who is not physically able to have a child.
[5] Details of additional work on the file are available from the author and will be available from the REPRO website during 2010.

Table 1. Overview of individuals in the sample[a]

	All	BG	RU	GE	DE	FR	HU	IT	RO
n	58,014	8,658	5,900	5,666	5,477	5,964	7,959	12,454	5,936
Sex									
Male	52.4	46.8	45.6	53.1	51.4	49.9	52.0	58.5	58.2
Female	47.6	53.2	54.4	46.9	48.6	50.1	48.0	41.5	41.8
Age									
n for Age	57,435	8,611	5,846	5,612	5,431	5,908	7,867	12,304	5,856
under 25	16.6	21.1	21.5	22.7	17.9	17.3	14.2	10.0	14.0
25-29	14.5	16.0	16.3	15.3	12.4	12.5	19.6	11.2	13.6
30-34	15.7	18.2	15.5	14.9	12.8	15.2	16.0	15.4	16.8
35-39	16.6	16.1	14.5	15.1	16.9	17.3	13.6	17.8	21.7
40-44	15.0	16.1	16.3	14.3	16.8	14.4	12.5	16.2	12.8
45-49	12.1	7.9	11.6	11.2	11.6	12.1	15.5	13.2	13.0
50 and over[b]	9.5	4.7	4.3	6.6	11.5	11.2	8.5	16.2	8.2
Education									
n for Education	57,020	8,651	4,914	5,666	5,476	5,964	7,959	12,454	5,936
No secondary	28.7	22.8	65.6	8.8	18.8	21.1	15.0	45.5	25.5
Secondary	53.3	56.7	34.1	61.5	57.4	46.2	67.0	43.2	62.6
Tertiary	18.0	20.5	0.3	29.7	23.7	32.7	18.0	11.3	11.9
Partnership status									
n for Partnership status	57,965	8,658	5,900	5,666	5,477	5,915	7,959	12,454	5,936
Single	31.8	31.7	24.1	39.7	34.5	33.2	31.2	32.9	26.2
Non-Cohabiting partner	9.8	7.7	15.4	2.1	13.3	14.5	6.8	11.7	6.3
Cohabiting partner	9.2	9.2	11.4	12.8	9.9	16.9	11.9	2.8	5.0
Married	49.3	51.4	49.1	45.4	42.3	35.4	50.0	52.6	62.6
Parity									
0 (childless)	40.6	37.0	32.8	38.4	46.1	43.3	38.9	48.0	34.7
1 child	25.6	28.8	39.2	18.8	23.2	18.9	23.3	22.5	32.3
2 or more children	33.8	34.2	27.9	42.7	30.7	37.8	37.8	29.5	33.0

Note. a. Proportion in each group. b. Category valid only for males with partners (probably) younger than 50.

which reflects both the physical limitations on having a child for older women and men with older partners and, for younger individuals, social and life-style decisions about the age at which one wants to have their first child. *Partnership status* is also an important aspect of the fertility decision-making context: for people who do not currently have a partner, the decision to have a child is likely to be more hypothetical than for those who are married or cohabiting. Although gender is not a context per se, the decision to have a child has different contextual effects for females, who need to take time off from work and other activities to have a child, and for whom the subsequent work-life balance is believed to be more difficult to achieve. This effect is believed to be stronger for more highly educated women, many of whom need

to seek a balance between career and family. *Gender* and level of *education* are therefore also relevant elements of the context within which reproductive decisions are made.

An operational consequence of differences in context is that decision making in each relevant context should be modelled separately in order to most accurately identify the relative influence of different factors. To identify contexts for which different models would be informative, the variance in intention to have a(nother) child which could be attributed to each of the personal contexts identified above was estimated using the SPSS maximum likelihood (ML) variance components procedure.[6] Variables representing personal context (parity, age, partnership status, education[7]) were entered as random factors while country was entered as a fixed factor. It was not possible to reach an admissible solution when gender was included among the contextual variables, so separate analyses were run for males and females. Interaction among all random factors was permitted. Table 2 presents the proportion of variance attributable to each context after allowing for interaction among contexts.[8] The variance associated with parity and age was large relative to that associated with partnership status and education. Each possible combination of gender, age group and parity was therefore considered a separate context for this study.

Table 2. Variance attributable to each context[a]

	Males		Females	
	Variance proportion	ICC	Variance proportion	ICC
Parity	.05	.13	.07	.18
Age (group)	.05	.13	.06	.17
Partner status	.01	.03	.01	.03
Education	.01	.02	.01	.02
Error	.32		.30	

Note. Dependent variable is intention to have a child during the next three years. ICC = intraclass correlation coefficient.
a. After allowing for variance explained by country differences and interactions among contexts.

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[6] Our response variable, intention to have a(nother) child, was a three level ordinal variable ranging from *definitely yes* to *definitely no*, as defined in the next section. While the variance factors procedure is designed for metric response variables, this variable had low skew and kurtosis, suggesting that ML results were likely to be sufficiently robust for our purpose. The ML procedure is also suitable for unbalanced designs (i.e., where there is an unequal number of cases in cells representing combinations of context, as in this case.)

[7] The levels of each variable are those included in the descriptive summary of respondents in Table 1.

[8] Table 2 also includes the intraclass correlation coefficient (ICC) for each variance component, calculated as the ratio of the variance attributable to the random variable to the same of its variance and the error variance.

Measurement

The GGS includes items that enable measurement of intentions to have a(nother) child, attitude to having a(nother) child during the next three years, perceived norm for having a(nother) child during the next three years and, with some limitations, perceived control over factors that might influence ability to have a(nother) child during the next three years and to raise that child. The items are presented, along with details of their availability, in Table 3. All items were available for six of the countries in this study, one attitude item was not available for Hungary, and five items were unavailable for Italy. Not all items were likely to be salient for all respondents in all contexts. In particular, while both males and females were asked questions about their own and their partner's employment, only questions about partner's employment opportunities were expected to be salient for males, while only questions about one's own employment were salient for females. For some respondents without a partner, questions about one's partner might be too hypothetical to answer accurately. Similarly, questions about one's parents are only relevant for those respondents who have and who know their parents.

The dataset presented several challenges for comparative analysis. The data had not been gathered in the same way in all countries, and different decisions had been made in different countries about weighting of cases, branching within the questionnaire and within the fertility section, the acceptability of non-response, and the coding of missing values. Details of the weighting schemes used were not available[9] although clearly interpretable sample weights were available for three countries.[10] Comparison of weighted and unweighted within country results for these countries showed no substantial differences in descriptive statistics and the results of factor analysis for selected subsamples so it was decided to proceed without weights.[11]

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[9] GGS allows countries to use different sample designs (Simard & Franklin, 2005).

[10] RU, DE, HU and IT provided probability of selection from the population, although only five values were used in RU. The basis of calculation of weights for FR ($M = 4935$, $SD = 1612$) could not be determined. No weights were available for BG, GE, RO.

[11] Results of these and other analyses described but not reported in full in this paper are available from the author.

Table 3. Detail of items for TPB variables, with country availability and relevance by context

Variable	Item no.	Details	Short name	Available for Country								Relevant for Sex		R with partner		R with parents	
				BG	RU	GE	DE	FR	HU	IT	RO	M	F	Y	N	Y	N
Intention (a)		Do you intend to have a/another child during the next three years?		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Attitude (b)		If you were to have a/another child during the next three years, would it be better or worse for															
	a627a	the possibility to do what you want	freedom	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	a627b	your employment opportunities	work	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓
	a627c	your financial situation	finances	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	a627d	your sexual life	sexual life	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	a627e	what people around you think of you	image	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	a627f	the joy and satisfaction you get from life	joy and satisfaction	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	a627g	the closeness between you and your partner/spouse	closeness with partner	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	?	✓	✓
	a627h	your partner/spouse's employment opportunities	partner's employment	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	?	✓	✓
	a627i	the care and security you may get in old age	care in old age	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓
	a627j	certainty in your life	certainty	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓
	a627k	closeness between you and your parents	closeness with parents	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗
Perceived norm (c)		... what other people might think about you having a/another child during the next three years... to what extent to you agree or disagree with these statements															
	a629a	Most of your friends think that you should have a/another child	friends	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	a629b	Your parents think that you should have a/another child	parents	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗
	a629c	Most of your relatives think that you should have a/another child	relatives	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓
Perceived control (d)		How much would the decision on whether to have a/another child during the next three years depend on the following?															
	a628a	your financial situation	financial situation	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	a628b	your work	work	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓
	a628c	your housing conditions	housing conditions	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	a628d	your health	health	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	a628e	you having a suitable partner	suitable partner	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓
	a628f	your partner/spouse's work	partner's work	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✗	✓	✓
	a628g	your partner/spouse's health	partner's health	✓	✓	✓	✓	✓	✓	✗	✓	✓	✗	✓	✗	✓	✓
	a628h	availability of childcare	childcare	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	a628i	your opportunity to go on parental leave or care leave	care leave	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓

Note. R = respondent.

a. 1 *definitely yes*, 2 *probably yes*, 3 *probably no*, 4 *definitely no* except HU: 1 *yes,* 2 *no*. b. 1 *much better*, 2 *better*, 3 *neither better nor worse*, 4 *worse*, 5 *much worse*. c. 1 *strongly agree,* 2 *agree*, 3 *neither agree nor disagree*, 4 *disagree*, 5 *strongly disagree*. d. 1 *not at all*, 2 *a little*, 3 *quite a lot*, 4 *a great deal*. For all items, the GGS questionnaire also provided a *not applicable* option.

Different decisions made at the country level about eligibility to answer fertility questions were more difficult to resolve. Although the total GGS Wave 1 sample for most countries was around 10,000, the proportion of valid respondents to the fertility section was more varied, as was the proportion of missing values for the TPB items, as detailed in Table 4. For example, information about intention to have a(nother) child was available for only just over 70% of respondents to fertility questions in Germany but 98% of respondents in Romania, and the percentage of complete cases for the full set of variables listed in Table 4 ranged from less than one third in France and Italy to 75% in Georgia. The reason for each missing value was available only for France where the vast majority of values were coded *do not know* rather than *not applicable*, even for variables that refer to parents and partners where a higher proportion of *not applicable* might have been expected. These sampling differences could not be adjusted for by any statistical technique. Remedies adopted and their possible effects on the results are discussed with individual analyses below.

Intention

Fertility intentions are measured in several ways in the GGS. Different items ask about the desire to have a(nother) child "now" (item a611), intention to have a(nother) child "during the next three years" (a622) and intention to have "any (more) children at all" (a624). Pregnant women and respondents with pregnant partners are not asked these questions, while all respondents who are able to have children and who have ever had sexual intercourse are asked "how many children in total you intend to have" (a626, or a630 if pregnant) and whether they intend to adopt or foster a child during the next three years (a623, or a631 if pregnant). Items to measure attitude, perceived norm and perceived control were all designed to be compatible with item a622, intention to have a(nother) child during the next three years, which we therefore used to measure intention in this study.

Some operational limitations were encountered in measuring intention to have a child for this comparative study. While the GGS specified a four level response scale for intention to have a child during the next three years (*definitely yes*, *probably yes*, *probably no*, *definitely no*), this scale was not used in all countries. Hungarian respondents were asked if they wanted a(nother) child, and if so when. In harmonisation, these data were collapsed to a three level response scale: *yes* (capturing respondents who answered yes and provided a time frame of three years or less), *probably not* (respondents who provided a time frame of more than three

Table 4. Study sample as proportion of GGS Wave 1 sample, and overview of missing responses to key TPB items

	BG	RU	GE	DE	FR	HU	IT	RO	Total
n in GGS	12,858	11,261	10,000	10,017	10,079	13,540	31,874	11,986	111,615
Valid *n* (a)	8,658	5,900	5,666	5,477	5,964	7,959	12,454	5,936	58,014
of GGS Wave 1 sample	67.3	52.4	56.7	54.7	59.2	58.8	39.1	49.5	52.0
Responses to TPB items as proportion of valid *n* for REPRO									
a622 Intention to have a(nother) child	.95	.95	.93	.71	.84	.80	.80	.98	.86
a627_a freedom	.89	.93	.91	.76	.77	.64	.40	.95	.74
a627_b work	.83	.86	.91	.76	.75	.64	.40	.88	.72
a627_c finances	.89	.93	.91	.77	.77	.65	.40	.95	.74
a627_d sex life	.87	.90	.91	.67	.74	.61	.40	.93	.71
a627_e image	.87	.91	.91	.70	.67	.63	.40	.92	.71
a627_f joy and satisfaction	.89	.92	.91	.74	.77	.63	.40	.95	.73
a627_g closeness with partner	.79	.86	.84	.56	.55	.61	.40	.85	.65
a627_h partner's work	.74	.82	.84	.58	.53	.61	.40	.79	.63
a627_i care in old age	.88	.91	.91	.71	.68	.61	(b)	.94	.63
a627_j certainty	.89	.92	.91	.73	.74	(b)	.40	.94	.64
a627_k closeness with parents	.83	.82	.82	.73	.69	.63	.40	.81	.68
a628_a finances	.87	.92	.92	.77	.59	.66	.40	.94	.72
a628_b work	.81	.85	.92	.77	.57	.55	.40	.87	.68
a628_c housing	.87	.92	.92	.77	.59	.66	.40	.94	.72
a628_d health	.87	.92	.92	.91	.59	.66	.40	.94	.73
a628_e having a partner	.79	.88	.92	.75	.56	.65	(b)	.86	.60
a628_f partner's work	.77	.80	.92	.64	.58	.55	.40	.78	.65
a628_g partner's health	.81	.83	.92	.64	.59	.59	(b)	.85	.58
a628_h childcare	.87	.91	.92	.76	.59	.66	.40	.92	.71
a628_i parental leave	.78	.81	.92	.73	.56	.65	(b)	.80	.59
a629_a friends	.86	.88	.92	.71	.55	.62	.36	.93	.69
a629_b parents	.82	.80	.82	.71	.53	.61	.35	.83	.65
a629_c other relatives	.86	.88	.92	.71	.56	.63	(b)	.93	.61
Complete cases for valid *n*									
for all available items	4,019	2,847	4,230	2,030	1,868	2,801	3,992	3,167	24,954
as % of valid *n*	46.4	48.3	74.7	37.1	31.3	35.2	32.1	53.4	43.0

Note. a. Sample in REPRO harmonised file as modified for this study by removing invalid cases - see footnote 4 for details. b. Item not available in this country.

but not more than four years) and *no* (respondents who did not want a(nother) child at all or whose time frame was greater than four years). In France, relatively few responses were coded *probably yes* or *probably no*, but a high proportion of responses were coded as *uncertain*. In order to retain as many countries as possible for comparative analysis, it was decided to re-code intentions to three levels: 1 *yes* – all respondents who answered *definitely yes* to the original GGS item, plus those in Hungary intended to have a child during the next three years, 2 *uncertain* – all respondents who responded *probably yes*, *probably no*, *uncertain*, or that they wanted to have a child within four years, and 3 *no* – all other

respondents. The correlation between the three and four level intention variables was .96, indicating that little information was lost.

Intention was modelled as a latent variable with a single reflective indicator, the three level indicator of intention to have a child during the next three years. In order to identify the latent variable, the reliability[12] of this indicator was initially set to .2 in all contexts, but permitted to vary during model iterations.

Attitude

An attitude is a disposition – positive or negative, favourable or unfavourable – toward an object. The object may be a physical object, an idea, a behaviour as in the TPB, or an outcome or event as in the case of having a child. The disposition toward having a child measured in the fertility section of the GGS is the extent to which individuals expect their personal situation will be better or worse if they have a(nother) child. Eleven items (listed in Table 3) measured from 1 (*much better*) to 5 (*much worse)* are used to estimate the anticipated effect of having a(nother) child on such outcomes as "the possibility to do what you want". In terms of the TPB, these items can be characterised as beliefs about the outcomes of having a child, or *behavioural beliefs*. The principle of compatibility is respected in the introduction to the items, "If you were to have a/another child during the next three years, would it be better or worse for ...", but the outcomes addressed in the items are not themselves time bounded. So, while the impact of having a child on the possibility to do what you want might be felt immediately, the impact of having a child on "the care and security you may get in old age" requires anticipation of a period far in advance of the next three years. In previous studies that used the TPB and GGS data to explain childbearing intentions, the behavioural belief items formed two factors, one characterised as representing beliefs about the costs or personal losses associated with having a child and the other reflecting beliefs about the benefits (Billari, et al., 2009; Dommermuth, et al., 2009).

Perceived norm

Perceived norm is an individual's perception of the social pressure "to perform (or not perform)" a given behaviour (Fishbein & Ajzen, 2010, p. 130). In the GGS, such normative

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[12] Reliability in this sense can be understood as communality in common factor analysis.

beliefs are measured by three items that ask the respondent to rate the extent to which they agree that different groups of people think they should have a(nother) child. All items are measured on a 5 point scale ranging from 1 (*strongly agree)* to 5 (*strongly disagree).* The three referent groups are friends, parents and relatives. Spouse or partner is not mentioned specifically, and the GGS does not provide a variable that specifically asks about perceived pressure from a spouse or partner for having a child during the next three years.[13] There is a possibility that some respondents may have interpreted the reference to relatives as including their parents or their partner or both.

Different referents were used in Italy. No reference was made to relatives, and two questions were asked about parents: one for mother and one for father. The score for parents in the RHF is the mean for mother and father, or the value for mother or father if a response was provided only for one parent.

In all countries except Italy, the bivariate correlations between the three items were high, and in almost all cases above .80. In Italy, the two available scores were correlated .66. The similarity among these items is consistent with Fishbein and Ajzen's (2010) observation that perceived norm measured with reference to people who occupy a similar role may be very similar.

Perceived control

Perceived behavioural control is a person's evaluation of their ability to enact a behaviour. In terms of factors associated with having a child, perceived control might be characterised as an individual's evaluation that it is possible to find a balance between family and work life, that it will be possible to provide space in the family home or move to a home that has enough space for a child, that the individual is able to support a child financially, that they can cope with the demands of a child, and so on. The GGS does not include items that address these beliefs directly. Nine items in the fertility section of the questionnaire (a628_a to a628_i, as outlined in Table 3) ask to what extent the respondent's decision to have another child during the next three years "depends on" factors such as their financial situation, work, housing

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[13] The GGS does include questions about recent disagreement on having a child and whether the partner or spouse would like to have a child now. A number of tests were conducted to examine the potential for including one of these variables in a measure of perceived norm for this study, but none of the available variables had sufficient common variance with the three compatible items.

conditions, health, having a suitable partner and availability of child care. These items are measured on a four point scale: 1 (*not at all*), 2 (*a little)*, 3 (*quite a lot*), 4 (*a great deal*). The factors are all external to the individual[14], i.e., they are not skills or other personal capabilities (such as child raising skills), but factors influenced by external events – such as meeting the right person, staying in good health, or the economic situation – or other people or bodies – including employers and governments. Thus, the GGS provides a set of control factors suitable for understanding perceived control of fertility decisions which may be influenced by external events, actions and policies, but the evaluation of whether having a(nother) child *depends on* each of these factors is not itself a measure of perceived control. For example, when respondents say that having a child does not depend at all on their financial situation, this might be because they have strong control, i.e., that the ability to manage financially is an important element of their decision to have a child and they are confident they are able to manage the costs of having a child, or because financial control is not salient to their decision because they have either made up their mind and financial situation is no longer (if it ever was) a relevant factor in making the decision; on the other hand, even if the decision to have a child depends a great deal on financial situation, we know that financial situation is an important or salient factor, but have no information about whether the respondent feels that they are able to manage the costs of having a child (strong perceived control) or that they are unable to manage the relevant costs (weak perceived control).

The GGS provides five items from the health and well-being section of the questionnaire (items a719_a to a719_d) which ask "How much control do you feel you will have over the following areas of your life in the next three years?" These items, which refer to four of the control factors raised in the fertility section (financial situation, work, housing conditions, and health) and "your family life", are measured on the same four point scale as the control factors. Billari et al. (2009) combined the four fertility control factor and level of control items to obtain a representation of perceived control during the next three years. This approach combines a general sense of control with the importance of the control factor, but it still does not capture the concept of perceived control for having a(nother) child; for example, even if people feel they have little control over their financial situation, they may be confident that they can cope with the costs of having a(nother) child. Nonetheless, perceived control as

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[14] Admittedly, some actions taken by an individual might improve their control (e.g., eating a healthy diet could improve health), but even in the presence of such actions, the primary locus of control associated with these items is external to the individual.

measured in this way predicted Bulgarians' intentions to have a second child – but not their intentions to have their first child (Billari, et al., 2009). Taking a different approach, Dommermuth et al. (2009) used the larger set of control factor items without combining them with general level of control. Control was observed to have an effect on intentions, but the effect was no longer observable once self-reports of actual financial situation and housing conditions were taken into account, suggesting that, despite the conceptual shortcomings of this approach, the control factors used alone validly capture at least some of a person's sense of control. We thus decided to use only the items from the fertility section of the questionnaire, without the general perceived control items. Although this provided a larger set of control factors from which to draw, its imperfect representation of perceived control also limited our ability to identify effects of perceived behavioural control on intention to have a child.

Measurement models

Measurement models for attitude, perceived norm and perceived control were developed in the two step process recommended for complex data sets that will be subject to structural equation modelling (Garvin, 1998-2009). In the first step, common factor analysis was used to confirm that it would be possible to reproduce the four factor structure identified by Billari et al. (2009) for Bulgaria and Dommermuth et al. (2009) for Norway in all of the countries in the REPRO data set and in each of the contexts of interest. All models were principal axis factoring (PAF) with oblique rotation (oblimin with delta = 0). In order to maximise the amount of information included in the analysis, pairwise deletion was used to estimate the correlation matrix from which solutions were drawn.

We first permitted all factors with eigenvalue greater than 1.0 to emerge and observed the patterns of loadings of each item in each context. In several contexts, it was necessary to remove one perceived norm item because of collinearity before a solution could be reached. At least the four factors identified in earlier studies using GGS data were identified in all contexts, but in all countries except Bulgaria and Italy at least five factors were needed to produce a satisfactory solution. The five factor solution consistently distinguished between two aspects of perceived control. Six or seven factor solutions were also identified in some contexts; while some of these solutions weakly re-allocated variables to the four or five

strongest factors in the solution, in others, a third perceived control factor emerged. The initial PAF solutions for childless 25 to 34 year old females are provided as an example in Table 5.

Two attitude factors were identified in all contexts. The first of these corresponded to the costs factor identified in earlier research, but was named here Freedom to remove the sense of directionality in the word *cost*. The second attitude factor, similar to the benefits factor identified in earlier research, was labelled Satisfaction; items that loaded consistently on this factor represented joy and satisfaction in life, certainty in life (item not available for Hungary), closeness with partner and closeness with parents. Items developed to measure perceived norm loaded strongly together in all countries. While only one PBC factor was identified in Bulgaria and Italy, at least two factors were clearly identified in all other countries. The first of these factors, which consistently reflected financial situation, work and housing conditions (three of the four items used in Billari et al.'s, 2009, single PBC construct) was labelled Material Control. The second control factor was labelled Personal Control; it included items about one's own and one's partner's health and the need to have a suitable partner. Two items, designed to measure perceived control associated with availability of childcare and parental or care leave, loaded weakly with Material Control in some contexts, alone in others, or (rarely) with Personal Control. Because of the policy relevance of child support, we retained a separate Control (Childcare) item and evaluated it in subsequent modelling.

The second step in preparing measurement models was conducted using confirmatory factor analysis (CFA), as implemented in the AMOS structural equation modelling (SEM) software (Arbuckle, 2008). Separate measurement models were prepared for each country within each context for which subsequent structural modelling was conducted. Initially, all items were modelled for all countries according to the six factors and factor loadings that emerged from the initial common factor analysis: Attitude (Freedom), Attitude (Satisfaction), Perceived Norm, Material Control, Control (Childcare), and Perceived Control. This measurement model is shown in Figure 2, which illustrates common characteristics of a CFA model for SEM. Each of the variables derived from the PFA is characterised as a latent variable (ellipse) which represents a concept which is assumed to exist in the population. A set of observed variables (boxes) is defined as *reflecting* each concept, as can be seen by the arrows which lead from each latent variable to each set of directly connected observed variables. The extent to which each observed variable reflects the concept represented by the latent variable is a

Table 5a. Classical factor analysis, comparison of initial solution for all items, childless females aged 25-34, all R and BG, RU, GE, DE

	All R					Bulgaria				Russia					Georgia						Germany					
Factor	1	2	3	4	5	1	2	3	4	1	2	3	4	5	1	2	3	4	5	6	1	2	3	4	5	6
a627_a possibility do what you want				-.756					.715				-.699					.815			.606					
a627_b employment opportunities				-.695					.673				-.684					.752			.556					
a627_c financial situation				-.596					.692				-.660					.608			.503					
a627_d sexual life																					.505					
a627_e image	.469					.542				.425									.483					.434		
a627_f joy and satisfaction	.637					.734				.683							.445									
a627_g closeness with partner	.612					.718				.512																
a627_i care in old age	.718					.732				.633								.843						.759		
a627_j certainty	.804					.835				.744								.909						.831		
a627_k closeness with parents	.590					.676				.565								.410								
a628_a depends on: financial situation					-.756		.539						-.679				.753									-.704
a628_b depends on: work					-.674		.649						-.693				.767									-.722
a628_c depends on: housing					-.584		.651						-.623				.687									-.549
a628_d depends on: health		.666					.764				.563							.645				.822				
a628_e depends on: having a suitable partner		.663					.650				.534							.685				.451				
a628_g depends on: partner's/spouse's health		.945					.774				.911							.906				.689				
a628_h depends on: childcare		.518					.766						-.414			.425								-.724		
a628_i depends on: care leave		.463					.674						-.401			.448								-.669		
a629_a most friends think r should have a/another child			-.797					-.799				-.780				.933							.715			
a629_b parents think r should have a/another child			-.810					-.874				-.810				.912							.773			
a629_c most relatives think r should have a/another child			-.968					-.979				-.988				.888							.914			

Note. This solution includes only respondents with no more than four missing values. Sample size for each country can be seen in Table 16.

Table 5b. Comparison of principal axis factor solution for all items, childless females aged 25-34, FR, HU, IT, RO

| | France | | | | | | | Hungary | | | | | | | Italy | | | | Romania | | | | |
Item	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	1	2	3	4	5
a627_a possibility do what you want				-.530				.400									-.572					-.832	
a627_b employment opportunities				(a)				.803									-.669					-.752	
a627_c financial situation				-.796				.489									-.566						-.438
a627_d sexual life			.501														-.549						
a627_e image																							
a627_f joy and satisfaction			.589										.707			.651				.628			
a627_g closeness with partner			.572										.574			.685				.577			
a627_i care in old age			.464			-.419										(a)				.787			
a627_j certainty			.699								(a)					.730				.818			
a627_k closeness with parents			.478									.868				.602				.555			
a628_a depends on: financial situation					.610									-.813	.777								-.797
a628_b depends on: work					.825										.667								-.515
a628_c depends on: housing						-.528								-.427	.625								-.542
a628_d depends on: health		.669						.650							.605					.674			
a628_e depends on: having a suitable partner		.559						.584								(a)				.662			
a628_g depends on: partner's/spouse's health		.964						.817								(a)				.840			
a628_h depends on: childcare											-.839				.547					.488			
a628_i depends on: care leave							-.741				-.635					(a)							
a629_a most friends think r should have a/another child	.841							.712										.737	-.908				
a629_b parents think r should have a/another child	.544							.747										.548	-.807				
a629_c most relatives think r should have a/another child	.920							.968										(a)	-.957				

Note. This solution includes only respondents with no more than four missing values, except in Italy where no more than three missing values were permitted. Sample size for each country can be seen in Table 16.
a. Variable not available.

weight or regression coefficient on each arrow (not shown). There is measurement error associated with using each observed variable as a reflection of each concept (circles labelled e1 to e23), so the variance in each observed variable is partitioned into that which reflects the concept and error variance (1 – the squared standardised regression coefficient). In our model, all but one of the latent variables were permitted to covary, in accordance with the TPB; the exception is Control (Childcare) which, for parsimony, was set to covary only with the other two control variables.
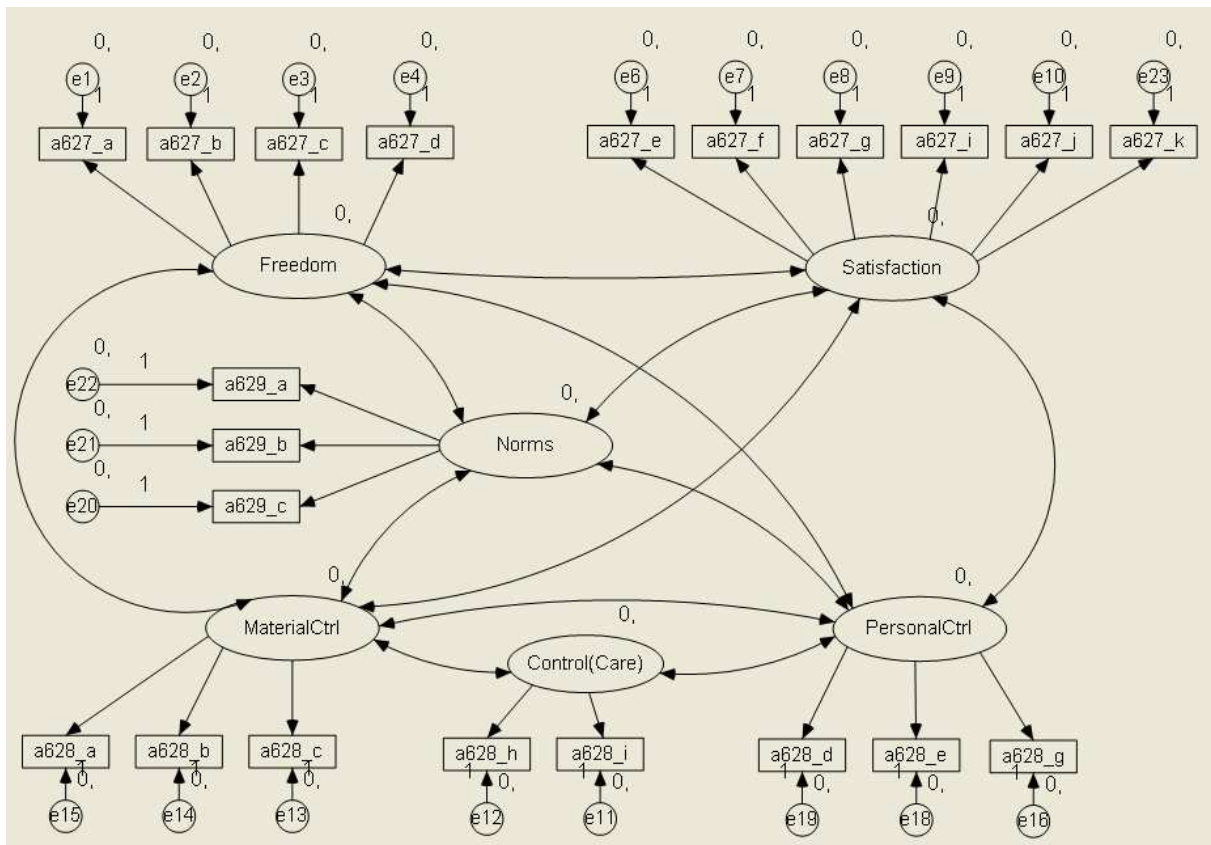
Figure 2. Common SEM measurement model for females aged 25 to 34

While this model preserves the three dimensions of the TPB, it differs from the TPB in separately modelling two variables, instead of one, to represent attitudes and three variables, instead of one, to represent PBC. With SEM, it is possible to model second order factors, which in this case would represent Attitude as a single latent variable reflected by Freedom and Satisfaction, and PBC as a single latent variable reflected by Material Control, Control (Childcare), and Personal Control. It was also possible to represent the data in this way and the qualities of the measurement models did not differ substantially from those of the model used in this study. We chose, however, to work with the six factor model because, when the

attitude variables and the control variables were collapsed, the differential effects of the underlying first order factors on intentions were hidden.[15]

After dealing with missing values[16], measurement models were estimated twice for two contexts: childless females aged 25 to 34 and females in the same age group with one child. The first time they were measured using Bayesian SEM, the method recommended by Arbuckle (2008) for modelling of categorical variables. They were then measured using the standard non-Bayesian method and the results compared. The results were very similar, except in the case of a small number of variables with high kurtosis, which as explained below, were removed from the final measurement models because they had weak loadings in all, or almost all, contexts. We therefore used the non-Bayesian method, considered robust when kurtosis is not high, for subsequent modelling. This enabled us to obtain a more complete set of indicators of measurement model quality.

Measurement model quality in SEM is normally judged by a set of rules of thumb (summarised by Hair, Black, Babin, Anderson, & Tatham, 2006). For factor loadings, the value of the standardised regression coefficient is expected to be above .5, although values above .7 (thus with error variance of .5 or less) are preferred to ensure discriminant validity. In all cases, the loadings must be statistically significant (we used $p < .05$ for all tests unless

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[15] An alternative approach, focusing on preserving the valence or direction of attitude to having a child, would have been to create a single attitude variable whose direction went from positive to negative, rather than the two uni-directional (costs and benefits) variables used here. Using IRT, we were able to define a single attitude to having a child variable from the GGS items. This variable drew on ten of the eleven items in the GGS and distinguished clearly between respondents in different countries and across different contexts. While a single attitude variable has the advantages of being consistent with theory, drawing on almost all items, and providing a strong distinction between countries and contexts, it has the disadvantage that the relative importance of the individual attitudinal beliefs, country by country and context by context, is not as readily conveyed as in SEM.

[16] As Table 3 shows, there were many missing values (MVs) in the data set. Up to nine items may have been missed by an individual respondent because they referred to circumstances that were not relevant to the individual: work, partner or parents. Crosstabulation of available data for employment status and partnership status indicated, however, that there was no significant difference between the proportion of missing responses for respondents with and without work and with and without partner (this check was not possible for items referring to parents because information about living parents was available only when a parent was a member of the household). With the goal of preserving as many items and cases as possible, particularly for FR where the proportion respondents who responded to all items was low, we prepared several imputation files (using AMOS Bayesian imputation, http://amosdevelopment.com). Cases were excluded from each imputation on the basis of the proportion of MV among items to measure each of the three dimensions of the TPB and total number of MVs across the whole set of TPB items. Cases that had completely missing responses for any TPB dimension were automatically omitted. There was insufficient variation when cases with more than 20% MV were included. The final analysis file therefore included all cases with no more than 20% MV (four items) across the whole file, with the exception of IT where a smaller subset of items was available and no more than three missing responses were permitted. In all contexts for which structural modelling was subsequently conducted, the resulting sample size remained above the minimum 100 considered necessary for stable estimation (Garvin, 1998-2009), but in several cases below the minimum 200 recommended in the absence of a strong measurement model.

otherwise noted). Two composite measures of factor reliably are commonly used: overall *variance extracted* from each latent variable, measured as

$$\Sigma\beta_i^2/k$$

where β_i is the standardised loading (or standardised regression coefficient) of each item that reflects the latent variable and k is the number of items reflecting the variable,

and *construct reliability*, measured as

$$(\Sigma\beta_i)^2/((\Sigma\beta_i)^2 + (\Sigma\delta_i)^2)$$

where δ_i is the item error variance.

It is also common to report Cronbach's alpha. Rules of thumb for these measures are: variance extracted should be .5 or above, and construct reliability and Cronbach's alpha should be above .6 (and preferably above .7). As an additional test of discriminant validity, we compared the variance explained for each latent variable with its covariance with all other latent variables; if the variance explained is lower than any covariance, discriminant validity is poor (Fornell & Larker, 1981).

A number of goodness of fit (GOF) measures is also available, and it is common to report several of them. Here, based on the summary of the state of the art provided by Hair et al. (2006) we report: chi-square[17]; the ratio of chi-square to degrees of freedom; CFI (the Comparative Fit Index) which compares the fit of the fitted model against that of the null model and is relatively insensitive to model complexity; the root mean square error of approximation (RMSEA); and the upper bound of the 90% confidence interval of RMSEA. Rules of thumb for these indicators for models with between 12 and 30 observed variables (as in this case) are:

- for N < 250: chi-square/DF < 2 is an indicator of good fit, CFI ≥ .95, RMSEA < .08.
- for N > 250: chi-square/df < 4; CFI ≥ .92, RMSEA < .07.

We decided to use a common measurement model for all countries to the extent that observed variables were modelled in all countries as reflecting the same latent variable. We did, however, allow the regression weights for each observed variable to vary across countries. This approach provided some confidence that each concept included in the model had a similar meaning in all contexts, but permitted comparison of the relative importance of items

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[17] Chi-square, while traditionally reported, is not considered a satisfactory indicator both because it does not take model complexity into account and because it is likely to be significant in samples of 200 or more, the size we dealt with in almost all contexts included in this study.

across contexts. This allowed us to preserve all the latent variables shown in Figure 2, but carried with it the cost that, in some contexts (as detailed with the results), only a single indicator was available for one or two latent variables.

We also examined the modification indexes for each model. None of the regression coefficients had modification indexes above 10.00, and we concluded that there was no empirical justification to review the decision to separate attitudes and PBC into two and three constructs respectively.

To determine the final measurement model, some modifications to the model shown in Figure 2 were necessary in each context. A number of items that had been developed to measure attitudinal beliefs loaded weakly ($\beta < .5$) in all, or almost all, contexts. These were also items which had loaded weakly or inconsistently across different factors in the preliminary PAF. They were omitted from the comparative measurement models.

Macro level contexts

In the introduction to this paper, we drew attention to several macro level explanations of the (micro level) fertility gap: the difficulty of reconciling work and family life, employment stability, housing affordability, and implied in calls for family- and child-friendly policy, lack of such policy. In order to explore the extent to which differences in these macro level contexts might explain differences in fertility decision making in different countries, we classified countries into different groups according to their macro level context.

Countries were assigned to macro context groups on the basis of values or scores on the set of indicators shown in Table 6. In addition to employment stability, housing affordability and policy support, countries were assigned to contexts by wealth (as measured by PPP GDP) and the extent to which social and cultural values are postmaterialist, i.e. more focused on self-actualisation than on satisfaction of material requirements such as sufficient income and housing to survive (Inglehart, 1977). In all cases, the division was dichotomous. Countries were classified as either *lower* or *higher* using the criteria that appear in Table 7. Classification by wealth, postmaterialism and housing affordability led to the same classification in the countries for which data were available, so we proceeded with the more

generic context of wealth rather than either housing affordability or postmaterialism. We therefore used the following three contexts in analysis:

(a) wealth,

(b) employment stability,

(c) family- and child-friendly policy support.

Analytical techniques

Uncovering country level differences in attitudes, norms and control

To identify differences in attitudes, perceived norms and perceived control, we first inspected the distributions of each observed item in selected contexts. Regression weights from the SEM measurement models allowed comparison of the relative importance of each attitudinal belief, normative referent and control factor in each country.

Modelling of social psychological influences on fertility decisions

Differences in social psychological influences on intention to have a(nother) child were identified using structural modelling. The standard AMOS SEM procedure was used. The base structural model used for comparative analyses is shown in Figure 3. Each of the variables in the model is a latent variable measured using a subset of the observed items shown in Figure 2. The dependent variable is Intention, measured as discussed earlier. All other constructs are modelled as exogenous, independent variables which explain Intention. The two attitude constructs (Freedom and Satisfaction) appear in the top left of the figure, the single perceived norm construct (Norms) is centre left, and the three PBC constructs (Material Control, Control (Childcare) and Personal Control) are lower left. The error term leading to Intention permits estimation of error variance (and thus the variance in intention to have a(nother) child explained by the exogenous variables).

Table 6. Data used to classify countries by macro level context

Context	Indicator	Scale	Level	Country BG	RU	GE	DE	FR	HU	IT	RO
Economy	Wealth	Per Capita PPP GDP (a)		$10,972	$13,432	$4,176	$33,022	$33,077	$21,040	$32,319	$11,079
Society	Housing affordability	% households reporting heavy financial burden due to housing costs (b)	Population	59	n.a	n.a	21	26	32	56	40
			Households below 60% of median income	76	n.a	n.a	32	45	51	72	51
	Employment stability	Unemployment rate (c)		8.9	6.1	13.3	8.6	8.0	7.4	6.1	6.4
	Postmaterialism	Inglehart's index (d)	Materialist	55.8	55.3	40.8	21.3	25.4	50.5	18.1	47.9
			Mixed	41.9	42.8	53.8	60.9	57.0	47.1	62.5	47.0
			Postmaterialist	2.4	1.9	5.4	17.7	17.6	2.4	19.3	5.1
Policy	Availability of family and child friendly policies	Public spending on family benefits in cash, services and tax measures, % GDP (2005) (e)		1.1	n.a	n.a	3	3.8	3.1	1.3	1.4

Note. n.a. = not available.
a. IMF World Economic Outlook Database (October 2007), http://www.imf.org/external/ns/cs.aspx?id=28. b. EU SILC 2007. c. World Development Indicators, 2007 except Bulgaria (2006), http://econ.worldbank.org/. c. World Value Survey for: Bulgaria (2006), France (2006), Georgia (2008), Germany (2006), Italy (2005), Romania (2005), Russian Federation (2006) Hungary (1999), http://www.worldvaluessurvey.org/. e. Unpublished preliminary analysis conducted within REPRO WP2, 2009.

Table 7. Allocation of countries to macro level contexts

Macro level context	Indicator	Country Bulgaria	Russia	Georgia	Germany	France	Hungary	Italy	Romania
Economy	Wealth (GDP)						(e)		
Society	Housing affordability (a)		(e)	(e)					
	Employment stability (b)								
	Postmaterialism (c)								
Policy	Family and child policy support (d)		(e)	(e)					

Note. Red diagonal = lower; blue star = higher; white = excluded.
a. Lower where more than 50% of households with income below 60% of the median reported burdensome housing costs. b. Higher where unemployment rate was below 7%. c. Countries whose percentage postmaterialist score was above 15% were classified higher. d. Higher where percentage of public spending on family benefits was 3% or above. e. Excluded from classification either because data not available, or because not clearly classifiable as lower or higher.
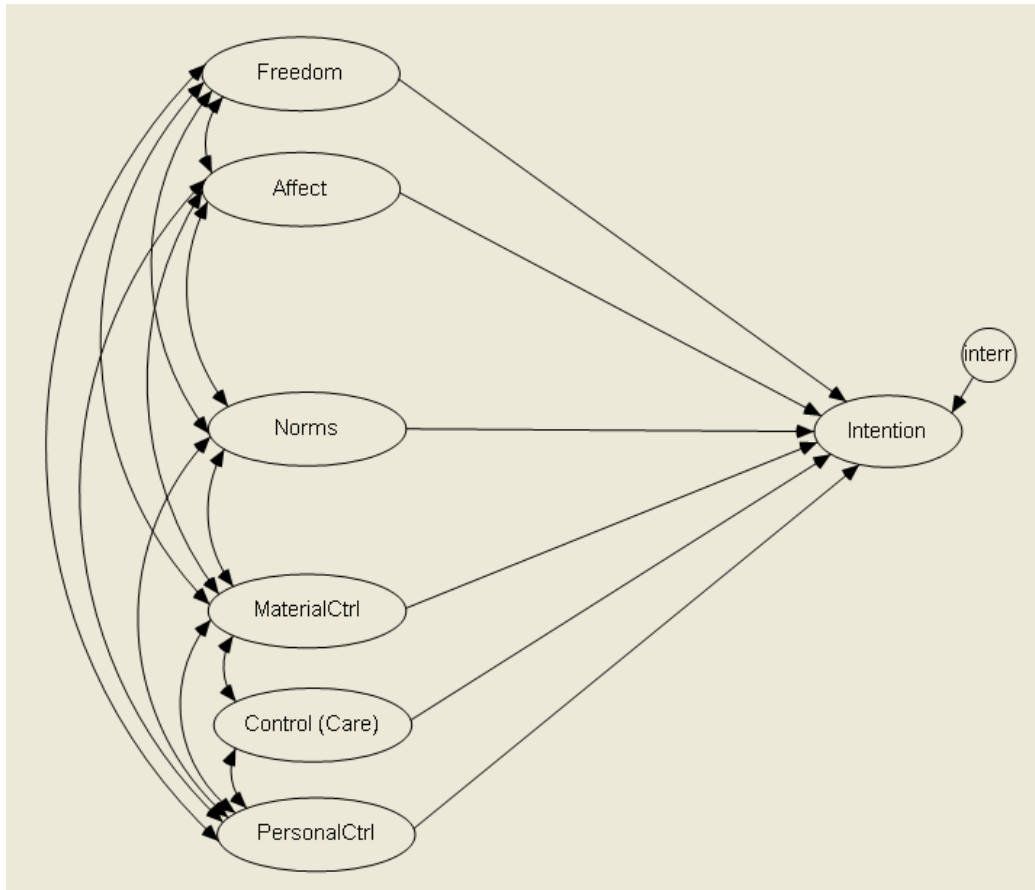
Figure 3. Structural model of social psychological influences on intention to have a child

In some countries or contexts, it was necessary to remove one or more correlations in order to achieve a solution.[18] In rare cases, it was necessary to remove a latent variable which had a poor measurement model. These cases are described with the results where they arise.

The quality of a structural equation model is evaluated in terms of the quality of its measurement model, the statistical significance of the structural coefficients (the coefficients that measure the strength of the specified relationships between factors), and GOF. For structural models, we used the same indicators of GOF as described earlier for evaluation of the fit of the measurement models.

AMOS critical ratios of the difference between pairs of parameters were used to compare the relative influence of each latent variable on intention in each pair of countries; values above 1.96 are considered statistically significant (Arbuckle, 2008). From this analysis, we were

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[18] This requirement particularly arises if the correlation is 0, resulting in a covariance of 0 which prevents a solution being reached.

able to identify groups of countries where the influences of attitudes, perceived norms and perceived control were similar, as well as to distinguish between countries on the basis of differences in the relative influence of each factor.

Exploration of macro level explanations

In the final set of analyses, we explored possible macro level explanations of differences in intentions to have a child. Structural models were used to compare the relative influence of each latent variable on intention across different levels of the three macro level contexts defined above. We describe this analysis as exploratory because countries are aggregated into macro level, but it would be preferable to conduct a three-level analysis in which countries constitute a level between individual respondents and macro level condition.

If the structural model built in one or other of these contexts is better able to explain differences in influences on intention to have a child, we can – at least tentatively – conclude that that context provides a better explanation of differences in social psychological influences on fertility intentions than one or more of the others. The variance explained in each context, along with the standard indices of measurement and structural model quality and GOF all contributed to comparing the potential macro level explanations.

Results

Intentions

Intentions to have a(nother) child are summarised for males and females by country and by parity within country in Table 8. A number of characteristics of the sample can be read from this table. The percentage of males and females varies quite markedly from one country to another, as does the distribution of respondents by parity. These differences are not strictly related to population proportions. All results reported here should be considered with this limitation in mind.

Table 8. Intention to have a(nother) child by country and parity, males and females

		Males							Females						
	Total	Yes		Uncertain		No			Total	Yes		Uncertain		No	
Parity		*n*	%	*n*	%	*n*	%			*n*	%	*n*	%	*n*	%
								Bulgaria							
All	3,804	258	6.8	1526	40.1	2020	53.1		4,406	279	6.3	1460	33.1	2667	60.5
0 childless	1,727	185	10.7	986	57.1	556	32.2		1,261	167	13.2	732	58.0	362	28.7
1 one child	9,57	69	7.2	390	40.8	498	52.0		1,388	108	7.8	503	36.2	777	56.0
2 >one child	1,120	4	0.4	150	13.4	966	86.3		1,757	4	0.2	225	12.8	1528	87.0
								Russia							
All	2,534	206	8.1	1026	40.5	1302	51.4		3,069	224	7.3	1126	36.7	1719	56.0
0 childless	1,055	129	12.2	516	48.9	410	38.9		754	127	16.8	400	53.1	227	30.1
1 one child	820	64	7.8	331	40.4	425	51.8		1,367	88	6.4	546	39.9	733	53.6
2 > one child	659	13	2.0	179	27.2	467	70.9		948	9	0.9	180	19.0	759	80.1
								Georgia							
All	2,732	346	12.7	1174	43.0	1212	44.4		2,544	258	10.1	975	38.3	1311	51.5
0 childless	1,181	188	15.9	719	60.9	274	23.2		876	112	12.8	537	61.3	227	25.9
1 one child	446	116	26.0	179	40.1	151	33.9		470	107	22.8	171	36.4	192	40.9
2 > one child	1,105	42	3.8	276	25.0	787	71.2		1,198	39	3.3	267	22.3	892	74.5
								Germany							
All	1,647	113	6.9	433	26.3	1101	66.8		2,253	190	8.4	512	22.7	1551	68.8
0 childless	817	70	8.6	296	36.2	451	55.2		742	98	13.2	266	35.8	378	50.9
1 one child	353	37	10.5	84	23.8	232	65.7		612	74	12.1	140	22.9	398	65.0
2 > one child	477	6	1.3	53	11.1	418	87.6		899	18	2.0	106	11.8	775	86.2
								France							
All	2,245	278	12.4	571	25.4	1396	62.2		2,752	380	13.8	639	23.2	1733	63.0
0 childless	991	152	15.3	407	41.1	432	43.6		1,091	213	19.5	415	38.0	463	42.4
1 one child	361	73	20.2	77	21.3	211	58.4		540	106	19.6	115	21.3	319	59.1
2 > one child	893	53	5.9	87	9.7	753	84.3		1,121	61	5.4	109	9.7	951	84.8
								Hungary							
All	3,451	780	22.6	959	27.8	1712	49.6		3,178	787	24.8	687	21.6	1704	53.6
0 childless	1,669	472	28.3	737	44.2	460	27.6		1,099	472	42.9	467	42.5	160	14.6
1 one child	611	193	31.6	125	20.5	293	48.0		755	221	29.3	148	19.6	386	51.1
2 > one child	1,171	115	9.8	97	8.3	959	81.9		1,324	94	7.1	72	5.4	1158	87.5
								Italy							
All	4,965	366	7.4	2512	50.6	2087	42.0		4,990	365	7.3	2206	44.2	2419	48.5
0 childless	2,884	248	8.6	1672	58.0	964	33.4		2,191	230	10.5	1211	55.3	750	34.2
1 one child	818	92	11.2	431	52.7	295	36.1		1,170	112	9.6	540	46.2	518	44.3
2 > one child	1,263	26	2.1	409	32.4	828	65.6		1,629	23	1.4	455	27.9	1151	70.7
								Romania							
All	3,364	277	8.2	989	29.4	2098	62.4		2,435	208	8.5	635	26.1	1592	65.4
0 childless	1,372	171	12.5	601	43.8	600	43.7		631	124	19.7	286	45.3	221	35.0
1 one child	993	94	9.5	283	28.5	616	62.0		874	81	9.3	249	28.5	544	62.2
2 > one child	999	12	1.2	105	10.5	882	88.3		930	3	0.3	100	10.8	827	88.9

Note. % is row percentage for each gender.

Intentions varied by age group within parity for each country, but the overall pattern was the same: intention to have a child within the next three years was very low for individuals aged 40 and over, and low for individuals aged under 24 and over 35 (particularly for males under 24 and females over 35). This pattern is highlighted in Table 9, which summarises intention by age group across all countries and parities: the percentage of males who intended to have a(nother) child in the next three years was above 10% only among those aged between 25 and 39 (it was just 10.9% among those aged 35 to 39), and the percentage of females who intended to have a(nother) child in the next three years was above 10% only among those aged up to 35.

Table 9. Intention to have a(nother) child, by age group

	Males							Females						
	Total	Yes		Uncertain		No		Total	Yes		Uncertain		No	
Age group		*n*	%	*n*	%	*n*	%		*n*	%	*n*	%	*n*	%
under 25	4,264	336	7.9	2,047	48.0	1,881	44.1	4,595	612	13.3	2,272	49.4	1,711	37.2
25-29	3,563	773	21.7	1,998	56.1	792	22.2	4,169	937	22.5	2,034	48.8	1,198	28.7
30-34	3,869	732	18.9	1,884	48.7	1,253	32.4	4,624	712	15.4	1,789	38.7	2,123	45.9
35-39	4,186	458	10.9	1,594	38.1	2,134	51.0	4,917	315	6.4	1,307	26.6	3,295	67.0
40-44	3,806	202	5.3	959	25.2	2,645	69.5	4,507	103	2.3	623	13.8	3,781	83.9
45-50	3,252	104	3.2	535	16.5	2,613	80.4	2,815	12	0.4	215	7.6	2,588	91.9
50 and over	1,430	14	1.0	109	7.6	1,307	91.4	0	0	0.0	0	0.0	0	0.0
Total	24,370	2,619	10.7	9,126	37.4	12,625	51.8	25,627	2,691	10.5	8,240	32.2	14,696	57.3

Note. % is row percentage for each gender.

To confirm that there were country-level differences in intention, we estimated intraclass correlations for the effect of country (level 2) on the intentions of individuals (level 1) in different contexts. ICCs of 0.05 and above are reported in Table 10. There was no evidence of a strong country level effect for under 25 year olds in any context and no strong difference for respondents with two or more children, except among 25 to 29 year olds. On the other hand, country level differences were identified for childless females aged 25-49, childless males 40-49, females aged 35-44 with one child, and males aged 25-44 with one child. In subsequent analyses, we therefore concentrated on 25 to 34 year olds, respondents in an age group which has relatively high variation in intention to have a(nother) child and for which country level differences are likely to be observed. The childbearing intentions of individuals in these groups are summarised by country in Table 11.

Table 10. Intra-class correlation ICC for country level (level 2) on individuals (level 1) in different contexts

Group	*N*	ICC
Parity 0 (childless)		
Females, 25-29	1901	.07
Females, 30-34	1118	.09
Females, 35-39	765	.05
Females, 40-45	635	.07
Females, 45-49	515	.08
Males, 40-44	916	.07
Males, 45-49	718	.08
Parity 1 (one child)		
Females, 35-39	1364	.08
Females, 40-44	1375	.05
Males, 25-29	671	.06
Males, 30-34	1054	.07
Males, 35-39	1028	.08
Males, 40-44	895	.06
Parity 2 (two or more children)		
Females, 25-29	948	.06
Males, 25-29	356	.06

Note: ICC is reported here only for contexts where it is .05 or above.

Differences in attitude, perceived norm and perceived control

An initial idea of the variation across countries can be obtained from the descriptive statistics reported in Table 12 to Table 15. These tables summarise the number of responses and the median response to each item for 25 to 34 year olds in each country: Table 12 for childless males, Table 13 for males with one child, Table 14 for childless females, and Table 15 for females with one child.[19] Glancing across the tables, we can see that responses vary item by item, country by country and across the contexts defined by gender and parity.

With few exceptions, males aged 25 to 34 believed that they would be worse off financially and that having a child would have a negative effect on their partner's employment opportunities. Childless males in Bulgaria, Russia, Germany and Romania also tended to expect that having a child would limit their ability to do what they want. Both groups of males were neutral about the effect of having a child on their own employment opportunities and their sexual life, and those with one child were neutral in all countries about the effect on their relationship with their parents. With the exception of males with one child in Germany, males

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[19] A more detailed summary, with graphical representations, was presented to the REPRO Consortium Meeting in May 2009 and is available from the author.

Table 11. Intention to have a(nother) child, 25 to 34 year old males and females, by country and parity

Parity	Males Total	Yes n	Yes %	Uncertain n	Uncertain %	No n	No %	Females Total	Yes n	Yes %	Uncertain n	Uncertain %	No n	No %
								Bulgaria						
Total[a]	916	137	15.0	623	68.0	156	17.0	1,004	167	16.6	563	56.1	274	27.3
0 childless	594	94	15.8	408	68.7	92	15.5	386	91	23.6	251	65.0	44	11.4
1 one child	322	43	13.4	215	66.8	64	19.9	618	76	12.3	312	50.5	230	37.2
								Russia						
Total[a]	598	108	18.1	369	61.7	121	20.2	704	113	16.1	410	58.2	181	25.7
0 childless	289	65	22.5	172	59.5	52	18.0	164	52	31.7	94	57.3	18	11.0
1 one child	309	43	13.9	197	63.8	69	22.3	540	61	11.3	316	58.5	163	30.2
								Georgia						
Total[a]	526	155	29.5	325	61.8	46	8.7	427	93	21.8	267	62.5	67	15.7
0 childless	378	96	25.4	249	65.9	33	8.7	247	43	17.4	175	70.9	29	11.7
1 one child	148	59	39.9	76	51.4	13	8.8	180	50	27.8	92	51.1	38	21.1
								Germany						
Total[a]	325	55	16.9	153	47.1	117	36.0	430	106	24.7	192	44.7	132	30.7
0 childless	242	37	15.3	118	48.8	87	36.0	227	50	22.0	117	51.5	60	26.4
1 one child	83	18	21.7	35	42.2	30	36.1	203	56	27.6	75	36.9	72	35.5
								France						
Total[a]	454	137	30.2	229	50.4	88	19.4	501	191	38.1	234	46.7	76	15.2
0 childless	349	94	26.9	183	52.4	72	20.6	330	120	36.4	169	51.2	41	12.4
1 one child	105	43	41.0	46	43.8	16	15.2	171	71	41.5	65	38.0	35	20.5
								Hungary						
Total[a]	1,073	463	43.2	428	39.9	182	17.0	941	471	50.1	301	32.0	169	18.0
0 childless	809	333	41.2	357	44.1	119	14.7	550	312	56.7	200	36.4	38	6.9
1 one child	264	130	49.2	71	26.9	63	23.9	391	159	40.7	101	25.8	131	33.5
								Italy						
Total[a]	1,443	194	13.4	944	65.4	305	21.1	1,267	227	17.9	866	68.4	174	13.7
0 childless	1,231	150	12.2	801	65.1	280	22.7	889	150	16.9	615	69.2	124	13.9
1 one child	212	44	20.8	143	67.5	25	11.8	378	77	20.4	251	66.4	50	13.2
								Romania						
Total[a]	708	162	22.9	407	57.5	139	19.6	560	134	23.9	283	50.5	143	25.5
0 childless	426	104	24.4	258	60.6	64	15.0	226	75	33.2	125	55.3	26	11.5
1 one child	282	58	20.6	149	52.8	75	26.6	334	59	17.7	158	47.3	117	35.0
								All countries						
Total[a]	6,043	1411	23.3	3478	57.6	1154	19.1	5,834	1502	25.7	3116	53.4	1216	20.8
0 childless	4,318	973	22.5	2546	59.0	799	18.5	3,019	893	29.6	1746	57.8	380	12.6
1 one child	1,725	438	25.4	932	54.0	355	20.6	2,815	609	21.6	1370	48.7	836	29.7

Note. % is row percentage for each gender.

a. Total of 25-34 year olds with parity 0 or 1.

Table 12. Median response to attitude, perceived norm and control factor items, childless males aged 25-34

	Bulgaria		Russia		Georgia		Germany		France		Hungary		Italy		Romania	
	n	median	*n*	median	*n*	median	*n*	median	*n*	median	*n*	median	*n*	median	*n*	median
Attitude																
a627_a Do what I want	581	4	282	4	371	3	269	4	357	3	350	3	229	3	419	4
a627_b employment opportunities	553	3	277	3	371	3	276	3	355	3	356	3	230	3	410	3
a627_c financial situation	578	4	281	4	371	3	277	4	361	4	359	4	230	4	421	4
a627_d sexual life	576	3	278	3	371	3	233	3	353	3	335	3	229	3	416	3
a627_e what people around you think of you	575	2	280	2	371	2	246	3	334	3	350	3	230	3	398	2
a627_f joy and satisfaction	580	2	281	2	371	2	259	2	365	2	354	2	230	2	416	2
a627_g closeness between you and your partner	469	2	259	2	327	2	182	3	200	2	343	2	230	2	363	2
a627_h partner's employment opportunities	449	4	246	4	317	3	193	4	196	3	343	4	230	3	353	4
a627_i care and security in old age	574	2	275	2	371	2	240	3	319	3	334	2		(a)	413	2
a627_j certainty in your life	580	2	281	2	371	2	256	3	359	2		(a)	229	2	415	2
a627_k closeness between you and your parents	565	2	268	2	359	2	264	3	337	3	350	2	229	3	392	2
Perceived norm																
a629_a friends	558	3	269	3	372	2	241	4	183	3	335	3	220	2	406	3
a629_b parents	559	2	265	2	360	2	254	3	189	3	343	3	221	1	403	2
a629_c other relatives	554	2	270	3	372	2	233	3	185	3	341	3		(a)	409	3
Control factors																
a628_a financial situation	583	3	284	3	372	3	274	2	200	2	358	2	230	2	420	3
a628_b work	560	3	272	2	372	3	268	2	199	2	340	2	229	2	411	3
a628_c housing conditions	582	2	283	3	372	2	275	2	201	2	358	3	230	2	418	3
a628_d health	580	2	282	1	372	1	370	1	200	1	359	1	230	2	415	2
a628_e suitable partner	555	4	272	2	372	3	269	2	193	1	354	4		(a)	365	3
a628_f partner's work	488	2	227	2	372	1	260	2	200	2	340	2	227	2	346	3
a628_g partner's health	501	3	230	2	372	2	259	2	202	1	348	2.5		(a)	355	3
a628_h availability of childcare	575	3	274	2	372	2	267	2	199	1	355	1	230	2	406	3
a628_i parental care/leave	437	2	208	1	372	1	253	2	194	1	356	2		(a)	350	3

Note. a. Question not asked in this country.

Table 13. Median response to attitude, perceived norm and control factor items, males aged 25-34 with one child

	Bulgaria		Russia		Georgia		Germany		France		Hungary		Italy		Romania	
	n	median	*n*	median	*n*	median	*n*	median	*n*	median	*n*	median	*n*	median	*n*	median
Attitude																
a627_a Do what I want	317	3	313	3	145	3	90	3	103	3	244	3	196	3	279	3
a627_b employment opportunities	291	3	306	3	145	3	91	3	103	3	241	3	196	3	274	3
a627_c financial situation	316	4	312	4	145	4	91	4	102	3	244	4	196	3	279	4
a627_d sexual life	315	3	307	3	145	3	84	3	102	3	228	3	196	3	279	3
a627_e what people around you think of you	314	3	308	3	145	3	85	3	90	3	236	3	196	3	273	3
a627_f joy and satisfaction	318	2	313	2	145	2	90	3	103	2	243	2	196	2	280	2
a627_g closeness between you and your partner	315	2	308	3	145	2	88	3	98	3	238	3	195	2	277	3
a627_h partner's employment opportunities	303	4	286	4	144	3	88	4	94	3	233	4	196	3	249	4
a627_i care and security in old age	313	2	308	2	145	2	86	3	92	3	223	2		(a)	277	2
a627_j certainty in your life	317	2	310	2	145	2	86	3	102	2		(a)	196	3	276	3
a627_k closeness between you and your parents	306	3	301	3	138	3	89	3	102	3	236	3	194	3	261	3
Perceived norm																
a629_a friends	304	3	292	3	146	2	83	3	97	3	226	3	181	2	273	3
a629_b parents	303	2	295	3	139	2	83	3	95	3	231	3	189	2	267	3
a629_c other relatives	300	3	296	3	146	2	77	3	96	3	235	3		(a)	276	3
Control factors																
a628_a financial situation	316	3	313	3	146	3	91	2	99	1	248	2	196	3	278	3
a628_b work	306	3	305	2	146	2	91	2	99	1	236	1	196	2	276	3
a628_c housing conditions	314	2	311	3	146	2	91	1	99	1	250	2	196	2	275	3
a628_d health	315	2	313	1	146	1	100	1	98	1	248	1	196	2	273	2
a628_e suitable partner	273	2	292	1	146	1	88	1	94	1	248	2		(a)	271	3
a628_f partner's work	300	2	280	1	146	1	86	2	96	1	225	2	194	2	236	3
a628_g partner's health	311	3	308	1	146	1	89	1	98	1	249	2		(a)	272	3
a628_h availability of childcare	316	3	311	2	146	2	90	1	99	1	249	1	194	2	274	3
a628_i parental care/leave	249	2	247	1	146	1	90	1	96	1	248	2		(a)	242	3

Note. a. Question not asked in this country.

Table 14. Median response to attitude, perceived norm and control factor items, childless females aged 25-34

	Bulgaria		Russia		Georgia		Germany		France		Hungary		Italy		Romania	
	n	median	*n*	median	*n*	median	*n*	median	*n*	median	*n*	median	*n*	median	*n*	median
Attitude																
a627_a do what I want	378	4	163	4	248	3	265	4	354	3	528	3	219	3	224	4
a627_b employment opportunities	363	4	158	4	248	3	267	4	349	3	532	4	219	3	216	4
a627_c financial situation	377	4	165	4	248	3	268	4	348	3	539	4	219	3	225	3
a627_d sexual life	372	3	153	3	248	3	213	3	342	3	458	3	218	3	221	3
a627_e what people around you think of you	370	2	164	3	248	2	231	3	320	3	521	3	218	3	216	3
a627_f joy and satisfaction	379	2	164	2	248	2	244	2	352	2	534	2	219	2	226	2
a627_g closeness between you and your partner	306	2	148	2	213	2	146	3	215	3	476	2	219	2	200	2
a627_i care and security in old age	373	2	163	2	248	2	238	3	306	3	497	2	(a)		225	2
a627_j certainty in your life	380	2	165	2	248	2	248	3	346	2	(a)		219	2	224	2
a627_k closeness between you and your parents	369	2	155	2	240	2	261	3	339	3	529	3	219	2	218	2
Perceived norm																
a629_a friends	367	3	160	2	248	2	247	3	207	3	502	3	207	2	219	3
a629_b parents	365	2	152	2	240	2	259	3	207	2	510	2	212	1	217	2
a629_c other relatives	361	2	159	2	248	2	249	3	206	3	518	2	(a)		219	3
Control factors																
a628_a financial situation	376	3	166	2	248	1	271	2	220	2	541	2	219	2	224	3
a628_b work	356	2	155	2	248	1	272	3	219	2	489	2	219	2	219	3
a628_c housing conditions	374	2	166	2	248	1	273	2	222	2	542	2	219	2	224	3
a628_d health	375	2	166	2	248	1	264	1	215	1	535	1	219	2	220	2
a628_e suitable partner	357	3	160	2	248	4	259	3	214	1	533	4	(a)		206	3
a628_g partner's health	336	3	150	2	248	2	163	1	220	1	422	2	(a)		198	3
a628_h availability of childcare	376	3	162	2	248	2	261	2	221	1	534	1	218	2	220	3
a628_i parental care/leave	367	3	161	1	248	1	256	2	209	1	527	2	(a)		216	3

Note. a. Question not asked in this country.

Table 15. Median response to attitude, perceived norm and control factor items, females aged 25-34 with one child

	Bulgaria		Russia		Georgia		Germany		France		Hungary		Italy		Romania	
	n	median	*n*	median	*n*	median	*n*	median	*n*	median	*n*	median	*n*	median	*n*	median
Attitude																
a627_a do what I want	614	4	545	4	180	3	231	4	177	3	372	3	316	3	328	4
a627_b employment opportunities	590	4	508	4	180	4	230	4	173	3	378	4	316	3	307	4
a627_c financial situation	612	4	547	4	180	4	229	4	176	3	380	4	316	3	330	4
a627_d sexual life	597	3	533	3	180	3	203	3	171	3	362	3	315	3	323	3
a627_e what people around you think of you	595	3	534	3	180	3	209	3	155	3	362	3	314	3	305	3
a627_f joy and satisfaction	608	2	544	2	180	2	219	3	178	2	369	2	315	2	327	2
a627_g closeness between you and your partner	566	2	515	3	176	2	177	3	143	3	356	3	316	2	320	3
a627_i care and security in old age	594	2	536	2	180	2	209	3	156	3	345	3	(a)		329	2
a627_j certainty in your life	606	3	542	2	180	2	219	3	174	2	(a)		316	3	326	2
a627_k closeness between you and your parents	597	3	520	3	179	3	215	3	165	3	366	3	315	3	319	3
Perceived norm																
a629_a friends	593	3	522	3	180	2	199	4	140	3	360	3	284	2	323	3
a629_b parents	591	3	509	3	179	2	203	3	137	3	360	3	296	2	320	3
a629_c other relatives	586	3	524	3	180	2	201	4	135	3	363	3	(a)		324	3
Control factors																
a628_a financial situation	610	3	548	3	180	3	223	2	145	1	384	2	315	3	329	3
a628_b work	579	3	503	2	180	2	225	2	140	2	304	2	314	2	302	3
a628_c housing conditions	609	2	546	3	180	2	227	2	146	1	380	2	315	2	323	3
a628_d health	605	2	540	2	180	1	223	1	145	1	381	1	315	2	324	2
a628_e suitable partner	530	2	522	1	180	1	223	1	134	1	379	3	(a)		319	3
a628_g partner's health	584	2	497	1	180	1	181	1	146	1	345	1	(a)		313	3
a628_h availability of childcare	610	3	540	2	180	2	225	2	143	1	380	1	314	2	325	3
a628_i parental care/leave	603	3	529	1	180	1	222	2	140	1	378	1	(a)		290	3

Note. a. Question not asked in this country.

tended to be positive about the impact of having a child on satisfaction, and childless males were a little more positive about the outcomes than those who already had one child.

There was little difference in the attitudes of childless females (Table 14) and females with one child (Table 15). In all countries except France and Italy, both groups were more inclined to answer (with one or two exceptions) that they would be worse off in terms of being able to do what they want, their employment opportunities, and their financial situation. Women in France and Italy were neutral on these factors, as were childless women in Georgia. Both childless females and females with one child expected to better off in terms of satisfaction, with the exception of women in Germany who were neutral about this. Where there were differences in satisfaction, childless women tended to be more optimistic.

In most countries, the perceived norm for having a child was, for all four groups, either neutral or in favour. The exception was Germany, where childless males and females who already had one child perceived that their friends did not want them to have a(nother) child and females with one child also believed that relatives other than parents did not want them to have another child. Overall, the strongest perceived normative pressures for having a child were felt in Italy (where childless respondents felt particularly strong pressure from their parents to have a child) followed by Georgia, then Bulgaria, while the weakest were felt in Germany. Perceived social influences for having a first child were neutral in France and Hungary, except for the perceived positive influence of parents and relatives in Hungary and of parents in France. In Russia and Romania, perceived influence on having a second child was neutral, although some pressure for having one's first child was reported among parents and relatives in Romania and from parents in Russia.

The relevance of control factors varied more markedly across countries and contexts, although some patterns can be observed. Only in the case of females reporting on their own work situation did French respondents with one child report any influence of the control factors on their decision to have a child. Childless respondents in France were a little more inclined to say that having a child depended on their financial situation, work and housing conditions, and among men, on their partner's work, but in all cases the median was still 2 (depends *a little)*. Only in Hungary and Bulgaria did women with one child report that the decision to have a child depended more than a little on their work, a situation similar to that of childless women in Hungary and Germany. The availability of parental or care leave was rated as of

some importance only in Hungary (for all contexts) and among Bulgarian females, but did not seem an important control factor in other countries. A similar pattern can be seen for access to childcare, although the median was higher in more countries. In Hungary and Italy, both childless males and childless females reported that having a child would depend to some extent on their having a suitable partner, otherwise responses varied, and having a suitable partner was not at all important for respondents who already had one child in four of the seven countries where this question was asked. Housing conditions were considered relatively important by males in most countries, and important, but to a lesser extent, by females in most countries.

Fertility decision making by childless females, by country

We compared attitudes, norms and control, and their relative influence on intention to have a(nother) child across countries for 25 to 34 year old females. Having observed that our results differ in some ways from those obtained by Billari et al. (2009) working with similar data from 18 to 34 year old Bulgarians, we then compared childless females aged 18 to 24 with those aged 25 to 34.

Measurement models: Differences in relevance of behavioural, normative and control beliefs

To produce satisfactory measurement models, variables with reliability below .5 in all countries were removed from the analysis. Variables with reliability of .5 or more in at least two countries were retained because the differences in loadings of these variables provide an indication of country level differences in the formation of attitude, perceived norm and perceived control. The resulting measurement models for each country are presented in Table 16. Fit was satisfactory in all countries although the upper bound of RMSEA at .08 was higher than the criterion for good fit in GE, IT and RO.

For no country was the measurement model entirely satisfactory. It was particularly poor for France, Hungary and Italy where only Perceived norms (and, in Hungary, Control (Childcare)) met all criteria for good measurement. The reasons for poor measurement of different latent variables varied from country to country, suggesting that different issues are important for childless individuals in each country as they make the decision to have their first

Table 16. Measurement models, childless females aged 25-34, by country

	BG β	BG R²	RU β	RU R²	GE β	GE R²	DE β	DE R²	FR β	FR R²	HU β	HU R²	IT β	IT R²	RO β	RO R²
n	369		157		247		192		199		513		218		219	
Attitude (Freedom)																
a627_a Do what I want	.64	.41	.71	.50	.77	.60	.67	.44	.60	.36	.48	.23	.57	.32	.76	.57
a627_b employment opportunities	.57	.32	.75	.56	.86	.74	.68	.46	.61	.37	.61	.37	.67	.44	.81	.66
a627_c financial situation	.69	.47	.72	.51	.75	.57	.55	.30	.65	.43	.70	.49	.64	.41	.52	.27
Cronbach's alpha	.66		.76		.83		.66		.65		.60		.66		.72	
Construct reliability	.67		.77		.84		.67		.65		.63		.66		.75	
Variance extracted	.40		.52		.63		.40		.39		.36		.39		.50	
Attitude (Satisfaction)																
a627_f joy and satisfaction	.71	.50	.68	.46	.53	.28	.58	.33	.59	.35	.84	.71	.70	.49	.56	.32
a627_i care in old age	.65	.42	.60	.36	.88	.78	.72	.51	.12	.01	.30	.09	na		.86	.74
a627_j certainty in your life	.86	.74	.85	.72	.88	.78	.74	.54	.90	.81	na		.66	.44	.83	.69
Cronbach's alpha	.78		.74		.78		.69		.49		.40		.63		.79	
Construct reliability	.79		.76		.82		.72		.59		.52		.64		.80	
Variance extracted	.55		.51		.61		.46		.39		.40		.47		.58	
Norms																
a629_a friends	.83	.68	.85	.73	.93	.86	.75	.56	.76	.58	.82	.67	.73	.54	.81	.66
a629_b parents	.83	.69	.89	.80	.94	.87	.81	.65	.82	.68	.88	.77	.78	.60	.84	.70
a629_c relatives	.92	.84	.92	.85	.96	.92	.90	.82	.91	.83	.89	.79	na		.94	.88
Cronbach's alpha	.89		.92		.96		.86		.87		.89		.72		.90	
Construct reliability	.89		.92		.96		.86		.87		.90		.61		.90	
Variance extracted	.74		.79		.88		.68		.70		.74		.57		.75	
Material control																
a628_a financial situation	.83	.69	.79	.62	.88	.78	.78	.61	.69	.47	.79	.63	.73	.53	.82	.68
a628_b work	.77	.59	.78	.60	.89	.80	.74	.55	.43	.19	.60	.36	.71	.50	.72	.52
a628_c housing conditions	.74	.54	.57	.33	.89	.78	.61	.37	.50	.25	.65	.43	.65	.43	.68	.46
Cronbach's alpha	.83		.76		.92		.75		.54		.72		.74		.78	
Construct reliability	.82		.76		.92		.75		.56		.73		.74		.79	
Variance extracted	.61		.52		.79		.51		.30		.47		.48		.55	
Personal control																
a628_d health	.75	.57	.58	.34	.40	.16	.70	.50	.64	.41	.66	.44	.88	.77	.74	.54
a628_e having a suitable partner	.44	.20	.71	.50	.48	.23	.56	.31	.48	.23	.61	.37	na		.65	.42
a628_g partner's/spouse's health	.76	.58	.74	.55	.85	.71	.75	.56	.91	.83	.77	.59	na		.82	.67
Cronbach's alpha	.67		.71		.53		.69		.68		.72		na		.77	
Construct reliability	.70		.72		.61		.71		.73		.72		.88		.78	
Variance extracted	.45		.46		.37		.45		.49		.47		.77		.54	

Table 16 continued

		BG		RU		GE		DE		FR		HU		IT		RO	
		β	R^2	β	R^2	β	R^2	β	R^2	β	R^2	β	R^2	β	R^2	β	R^2
Control (Childcare)																	
a628_h availability of childcare		.85	.73	.91	.83	.87	.76	.74	.55	.77	.59	.68	.46	.64	.41	.85	.72
a628_i opportunity parental leave		.72	.52	.81	.65	.68	.47	.66	.44	.48	.23	.78	.61	na		.58	.34
Cronbach's alpha		.76		.85		.74		.66		.52		.68		na		.66	
Construct reliability		.77		.85		.76		.66		.57		.69		.64		.68	
Variance extracted		.63		.74		.61		.49		.41		.53		.41		.53	
Covariances																	
Freedom	Satisfaction	.08 ***		.12 **		.04 ns		.12 ***		.07 *		.07 ***		.02 ns		.02 ns	
Freedom	Norms	.10 ***		.14 **		(a)		.06 ns		.14 ***		.14 ***		.07 **		.15 ***	
Freedom	Material control	.11 .00		.11 .09		.16 **		.25 ***		.11 ns		.09 **		.05 *		.13 **	
Freedom	Personal control	.00 ns		.01 ns		(a)		(a)		(a)		.04 *		(a)		.06 ns	
Satisfaction	Norms	.18 ***		.21 ***		.11 ***		.29 ***		.17 *		.33 ***		.19 ***		.09 **	
Satisfaction	Material control	.05 *		.05 ns		.02 ns		.05 ns		.23 **		.14 ***		.08 *		.05 *	
Satisfaction	Personal control	.00 ns		(a)		(a)		.04 ns		.02 ns		(a)		.01 ns		(a)	
Norms	Material control	.12 **		.16 *		.01 ns		.07 ns		(a)		.23 ***		.08 *		.13 *	
Norms	Personal control	.04 ns		.04 ns		(a)		(a)		.02 ns		.11 ns		.01 ns		.02 ns	
Material control	Personal control	.41 ***		.31 ***		.37 ***		.27 ***		.17 ***		.29 ***		.47 ***		.49 ***	
Control (care)	Material control	.44 ***		.35 ***		.51 ***		.48 ***		.35 ***		.25 ***		.39 ***		.43 ***	
Control (care)	Personal control	.46 ***		.39 ***		.59 ***		.28 ***		.29 ***		.23 ***		.41 ***		.45 ***	
Fit indexes																	
Chi-square CMIN)		246.87		154.57		239.71		189.07		148.34		226.27		81.44		198.81	
df		107		108		111		109		109		93		45		108	
Chi-square/df		2.31		1.43		2.16		1.74		1.36		2.43		1.81		1.84	
CFI		.94		.96		.95		.92		.95		.94		.94		.94	
RMSEA		.06		.05		.07		.06		.04		.05		.06		.06	
RMSEA 90% CI lower bound		.05		.03		.06		.05		.02		.04		.04		.05	
RMSEA 90% CI upper bound		.07		.07		.08		.08		.06		.06		.08		.08	

Note. na = not available.

[a] It was not possible to reach an admissible solution when this relationship was included in the model.

* $p < .05$. ** p < .01. *** $p < .001$. ns = not significant.

child. For example, "ability to do what you want" had a low loading on Freedom in Hungary and Russia and care in old age had a particularly low loading in France and Hungary. In France, dependency on employment had a low loading on Material Control, suggesting that in France employment is not a salient control factor in the decision to have one's first child.

There was variation across countries in the relative importance of joy and satisfaction, as indicated by its loading on Satisfaction which was low (below .6) in Georgia, Germany, France and Romania. Housing conditions did not seem salient control factors in Russia and France, based on their low loading on Material Control; having a suitable partner was a weak reflection of Personal Control in all countries except Hungary and Russia; and opportunity for parental leave was a weak reflection of Control (Childcare) in France and Romania.

Separation of control into three factors as they were measured here was not entirely satisfactory. In most countries where measurement of one or more control factors was weak, the covariance between that factor and another control factor was higher than the variance explained in the weak factor. Modification indexes did not indicate that an item with a low loading on one factor (thus contributing to its low variance explained) would have a higher loading on another factor, so there was no empirical evidence that observed variables had been incorrectly assigned to latent variables. Indeed, in each case, removal of the low loading item would remove the apparent lack of discrimination among the control variables. Thus, we decided to retain the three control variables in structural modelling.

Structural models: Differences in the effect of attitude, perceived norm and perceived control on intention to have a child

A comparative structural model for the influence of attitudes, perceived norms and perceived control appears in Table 17. Fit indexes for this model are provided in Table 18; they show that overall fit for comparison of the relative influences on fertility intentions is good. The model explained a satisfactory proportion of variance in all countries, although less in Hungary and Italy (.42 and .44, respectively) than in the other countries. Satisfaction had a significant influence on intention to have the first child in all countries except Georgia. Perceived norm had a significant influence on the decision to have a first child in five countries, but not in Russia, France or Hungary. Control had no significant effect except in Russia where Material Control was significant.

41

Table 17. Structural models, childless females aged 25-34, by country

	BG		RU		GE		DE		FR		HU		IT		RO	
	β	*b*	β	*b*	β	*b*	β	*b*	β	*b*	β	*b*	β	*b*	β	*b*
n	369		157		247		192		199		513		218		219	
Coefficients																
Attitude (Freedom)	.01	.01 ns	-.11	-.07 ns	.18	.07 ns	.19	.18 ns	-.01	-.01 ns	.18	.22 ns	.14	.13 ns	.16	.13 ns
Attitude (Satisfaction)	.24	.18 *	.52	.40 ***	.13	.11 ns	.32	.33 *	.63	.42 ***	.54	.38 **	.23	.15 ns	.29	.31 **
Norms	.50	.19 ***	.17	.07 ns	.78	.27 ***	.41	.16 ***	-.02	-.01 ns	.05	.01 ns	.47	.25 *	.49	.22 ***
Material control	.23	.10 ns	.44	.21 *	.02	.01 ns	.16	.11 ns	.46	.31 ns	-.04	-.02 ns	-.16	-.07 ns	.19	.10 ns
Personal control	-.17	-.08 ns	.08	.04 ns	.23	.07 ns	-.21	-.15 ns	.03	.02 ns	.03	.01 ns	.05	.02 ns	-.16	-.07 ns
Control (Childcare)	.26	.11 ns	-.11	-.05 ns	-.09	-.03 ns	-.05	-.04 ns	-.32	-.17 ns	.08	.05 ns	.24	.11 ns	.22	.11 ns
Correlations																
Freedom — Satisfaction	.30		.36		.14		.48		.29		.37		.11		.10	
Freedom — Material control	.23		.17		.23		.34		.14		.19		.23		.26	
Freedom — Norms	.23		.27		(a)		.14		.40		.51		.24		.36	
Satisfaction — Norms	.40		.40		.35		.45		.29		.40		.63		.24	
Satisfaction — Material control	.12		.12		.06		.13		.17		.29		.21		.16	
Norms — Material control	.15		.19		.02		.06		.28		.20		.18		.17	
Material control — Personal control	.63		.51		.35		.47		.42		.40		.71		.67	
Material control — Control (care)	.60		.48		.55		.82		.76		.48		.70		.60	
Control (care) — Personal control	.69		.61		.57		.53		.56		.40		.62		.55	
Variance explained	.56		.59		.85		.59		.56		.42		.44		.62	

Note. a. Model could not be estimated when this relationship was included.

* $p < .05$. ** $p < .01$. *** $p < .001$. ns = not significant.

Table 18. Fit indexes for country comparison, childless females aged 25 to 34

Index	Value
Chi-square CMIN)	1620.33
df	872
Chi-square/df	1.86
CFI	.94
RMSEA	.02
RMSEA 90% CI lower bound	.02
RMSEA 90% CI upper bound	.02

The results for Georgia may not be comparable with those for the other countries. In Georgia, Perceived Norm alone explained a very high percentage of the variance in intention, but there was very little variance in both variables and the possible effect of factors other than perceived norm may be masked by this.

Comparison by age group, Bulgaria

Is there a difference in the cognitive structure underlying fertility intentions among childless women at different ages? Table 19 and Table 20 compare, respectively, the salience of indicator variables (measurement models) and the effect of attitudes, perceived norms and perceived control on fertility intentions for Bulgarian females aged under 25 and between 25 and 34.

From Table 19 we see that the measurement models were mostly satisfactory for both age groups, but measurement of Freedom was weak for 25 to 34 year olds.

Table 20 shows that the influences on intention differed for the two age groups. While perceived norms had the strongest effect for both groups, freedom had a significant influence only for the younger women, and control had an effect only for the older women. For women between 25 and 34, earlier concerns about loss of freedom appear to be replaced by concerns about material ability to have a child and the availability of childcare and support for rearing the child.

Table 19. Measurement model comparison for childless females aged under 25 and 25 to 34 years, Bulgaria

Factor, index of measurement quality		under 25		25-34	
Indicator variable		β	R^2	β	R^2
	n	630		369	
Attitude (Freedom)					
a627_a do what I want		.76	.58	.64	.41
a627_b employment opportunities		.75	.56	.57	.32
a627_c financial situation		.76	.57	.68	.47
Cronbach's alpha		.80		.66	
Construct reliability		.80		.66	
Variance extracted		.57		.40	
Attitude (Satisfaction)					
a627_f joy and satisfaction		.72	.52	.71	.50
a627_j certainty in your life		.64	.41	.65	.42
a627_k closeness between you and your parents		.91	.83	.86	.73
Cronbach's alpha		.79		.78	
Construct reliability		.81		.79	
Variance extracted		.59		.55	
Norms					
a629_a friends		.86	.74	.83	.68
a629_b parents		.95	.91	.83	.69
a629_c relatives		.95	.91	.92	.84
Cronbach's alpha		.94		.89	
Construct reliability		.95		.89	
Variance extracted		.85		.73	
Material control					
a628_a financial situation		.79	.62	.83	.69
a628_b work		.75	.56	.77	.59
a628_c housing conditions		.81	.65	.74	.55
Cronbach's alpha		.83		.83	
Construct reliability		.82		.82	
Variance extracted		.61		.61	
Personal control					
a628_d health		.81	.65	.81	.65
a628_g partner's/spouse's health		.69	.48	.73	0.53
Cronbach's alpha		.73		.67	
Construct reliability		.54		.56	
Variance extracted		.56		.59	
Control (Childcare)					
a628_h availability of childcare		.87	.75	.84	.71
a628_i opportunity parental/care leave		.76	.58	.73	.53
Cronbach's alpha		.80		.76	
Construct reliability		.80		.77	
Variance extracted		.67		.62	
Fit indexes					
Chi-square CMIN)		268.60		207.60	
df		94		95	
Chi-square/df		2.86		2.19	
CFI		.97		.95	
RMSEA		.05		.06	
RMSEA 90% CI lower bound		.05		.05	
RMSEA 90% CI upper bound		.06		.07	

Note. Variance extracted < covariance for all pairs of constructs.

Table 20. Structural model comparison for childless females aged under 25 and 25 to 34 years, Bulgaria

		under 25		25-34		
		β	b	β	b	CR
	n	630		369		
Variables						
Attitude (Freedom)		.33	0.20 ***	.00	0.00 ns	-2.33 *
Attitude (Satisfaction)		.20	0.12 **	.25	0.18 *	0.78 ns
Norms		.50	0.17 ***	.50	0.19 ***	0.50 ns
Material Control		-.08	-0.04 ns	.29	0.12 *	2.06 *
Personal Control		.16	0.09 ns	-.27	-0.13 ns	-2.25 *
Control (Childcare)		.03	0.01 ns	.29	0.12 *	1.43 ns
Correlations						
Freedom	Satisfaction	.37		.27		
Freedom	Norms	.34		.22		
Freedom	Material Control	.15		.20		
Satisfaction	Norms	.37		.39		
Norms	Material Control	.09		.11		
Norms	Personal Control	.00		.05		
Material Control	Personal Control	.64		.64		
Material Control	Control (Care)	.57		.61		
Control (Care)	Personal Control	.65		.66		
Variance explained			0.63			
Fit indexes						
Chi-square			515.32			
df			210.0			
Chi-square/df			2.45			
CFI			.96			
RMSEA			.04			
RMSEA 90% CI lower bound			.03			
RMSEA 90% CI upper bound			.04			

Note. CR = AMOS critical ratio of the difference, mapped to the Z distribution for estimation of *p*; ns = not significant.
* *p* < .05. ** *p* < .01. *** *p* < .001.

Fertility decision making by females with one child

Measurement models: Differences in relevance of behavioural, normative, and control beliefs

The best common measurement model for females aged 25 to 34 with one child appears in Table 21. Fit was weak in Germany, Italy and Romania. Measurement model quality was similar to that for childless females, although with improvement in measurement of Freedom in Bulgaria and of control in most countries.

Table 21. Measurement models, females aged 25-34 with one child, by country

	BG		RU		GE		DE		FR		HU		IT		RO	
	β	R^2	β	R^2	β	R^2	β	R^2	β	R^2	β	R^2	β	R^2	β	R^2
n	570		513		180		179		131		362		295		316	
Attitudes (Freedom)																
a627_a Do what I want	.75	.57	.76	.57	.79	.62	.54	.29	.78	.61	.42	.18	.53	.29	.81	.65
a627_b employment opportunities	.67	.44	.66	.43	.83	.69	.73	.53	.51	.26	.67	.45	.74	.55	.72	.52
a627_c financial situation	.76	.57	.78	.60	.59	.35	.74	.55	.52	.27	.75	.57	.62	.39	.57	.32
Cronbach's alpha	.77		.77		.77		.71		.62		.64		.71		.66	
Construct reliability	.77		.77		.79		.71		.64		.65		.67		.74	
Variance extracted	.53		.54		.55		.46		.38		.40		.41		.50	
Attitudes (Satisfaction)																
a627_f joy and satisfaction	.77	.59	.74	.55	.61	.38	.48	.23	.47	.22	.72	.52	.72	.51	.66	.44
a627_i care in old age	.69	.48	.57	.32	.86	.73	.71	.50	.21	.04	.40	.16	na		.78	.60
a627_j certainty in your life	.83	.68	.79	.62	.94	.88	.80	.63	.93	.87	na		.66	.44	.81	.65
Cronbach's alpha	.80		.74		.83		.65		.56		.45		.64		.79	
Construct reliability	.81		.75		.85		.71		.58		.49		.56		.79	
Variance extracted	.58		.50		.66		.46		.38		.34		.47		.56	
Norms																
a629_a friends	.83	.68	.83	.68	.93	.86	.70	.49	.74	.54	.70	.49	.54	.30	.88	.78
a629_b parents	.90	.80	.85	.71	.93	.86	.82	.67	.57	.32	.76	.58	.81	.65	.83	.69
a629_c relatives	.95	.90	.96	.92	.92	.84	.91	.82	.95	.89	.95	.90	na		.95	.89
Cronbach's alpha	.84		.92		.91		.95		.84		.78		.61		.91	
Construct reliability	.92		.91		.95		.85		.80		.85		.47		.92	
Variance extracted	.80		.77		.86		.66		.59		.66		.32		.79	
Material control																
a628_a financial situation	.69	.48	.77	.60	.78	.60	.72	.52	.72	.52	.74	.54	.77	.60	.80	.63
a628_b work	.81	.66	.71	.50	.70	.50	.77	.59	.68	.47	.59	.35	.67	.45	.70	.49
a628_c housing conditions	.70	.49	.58	.34	.79	.62	.55	.30	.39	.15	.56	.31	.59	.35	.60	.36
Cronbach's alpha	.73		.78		.74		.81		.62		.65		.73		.74	
Construct reliability	.78		.73		.80		.72		.63		.66		.72		.74	
Variance extracted	.54		.48		.57		.47		.38		.40		.47		.49	
Personal control																
a628_d health	.80	.64	.61	.37	.62	.38	.64	.41	.46	.21	.62	.38	.82	.67	.80	.64
a628_e having a suitable partner	.67	.44	.63	.40	.74	.54	.52	.27	.42	.18	.64	.41	na		.56	.49
a628_g partner's/spouse's health	.86	.74	.81	.65	.92	.85	.95	.90	[a]		.82	.68	na		.86	.63
Cronbach's alpha	.81		.71		.79		.71		.45		.73		na		.77	
Construct reliability	.82		.73		.81		.76		.33		.74		.82		.74	
Variance extracted	.61		.47		.59		.53		.19		.49		.67		.49	

Table 21 continued

		BG		RU		GE		DE		FR		HU		IT		RO	
		β	R^2	β	R^2	β	R^2	β	R^2	β	R^2	β	R^2	β	R^2	β	R^2
Control (Childcare)																	
a628_h availability of childcare		.93	.86	.77	.59	.82	.67	.89	.80	.74	.55	.72	.52	.75	.57	.70	.49
a628_i opportunity parental leave		.78	.61	.70	.49	.63	.39	.68	.47	.59	.35	.78	.61	na		.53	.28
Cronbach's alpha		.84		.70		.67		.76		.61		.72		na		.54	
Construct reliability		.85		.70		.69		.77		.62		.72		.75		.55	
Variance extracted		.74		.54		.53		.63		.45		.56		.57		.39	
Covariances																	
Freedom	Satisfaction	.18 ***		.18 ***		.03 ns		.07 **		.07 ns		.06 ***		.03 ns		.11 ***	
Freedom	Norms	.22 ***		.22 ***		.14 **		.19 ***		.13 ns		.09 **		.02 ns		.15 ***	
Freedom	Material control	.11 ***		.20 ***		.13 **		.15 ***		.19 **		.14 ***		.08 ***		.21 ***	
Freedom	Personal control	.00 ns		.01 ns		.03 ns		na		na		.04 *		na		.02 ns	
Satisfaction	Norms	.32 ***		.21 ***		.13 ***		.17 **		.03 ns		.29 ***		.18 ***		.20 ***	
Satisfaction	Material control	.06 **		.08 **		b		.04 ns		na		.12 ***		na		.10 ***	
Norms	Material control	.06 ns		.16 ***		b		.19 *		.08 ns		.19 **		na		.15 **	
Norms	Personal control	.02 ns		.09 *		.15 *		na		na		na		na		.04 ns	
Material control	Personal control	.45 ***		.25 ***		.40 ***		.18 **		.06 ns		.22 ***		.48 ***		.40 ***	
Control (care)	Material control	.46 ***		.35 ***		.51 ***		.35 ***		.25 ***		.20 ***		.39 ***		.36 ***	
Control (care)	Personal control	.73 ***		.34 ***		.51 ***		.37 ***		.10 *		.29 ***		.38 ***		.50 ***	
Fit indexes																	
Chi-square CMIN)		239.94		296.00		169.76		214.36		118.67		164.68		117.79		300.47	
df		108		108		110		110		96		94		49		107	
Chi-square/df		2.22		2.74		1.54		1.95		1.24		1.75		2.40		2.81	
CFI		.97		.94		.96		.90		.93		.95		.91		.91	
RMSEA		.05		.06		.06		.07		.04		.05		.07		.08	
RMSEA 90% CI lower bound		.04		.05		.04		.06		.00		.03		.05		.07	
RMSEA 90% CI upper bound		.05		.07		.07		.09		.07		.06		.09		.09	

Note. na = not available.

[a]It was not possible to reach an admissible solution for France when this variable was included in the model. [b]It was not possible to reach an admissible solution for Georgia when this relationship was included in the model.

* *p* < .05. ** p < .01. *** *p* < .001. ns = not significant.

There were some notable differences in loadings for Freedom within countries: in contrast to their loadings for childless females, financial situation had a low loading in Georgia, ability to do what I want had a low loading and financial situation had a satisfactory loading in Germany, and the structure of loadings was quite different in France where only ability to do what I want had a loading above .6.

The measurement model for Perceived Norms was satisfactory in all countries except Italy, but reliabilities and variance extracted were lower in all cases. Notably, parents had a low loading in France and friends were not salient referents for the decision to have a second child in Italy.

Measurement of Personal Control was stronger for females with one child in all countries except Romania where having a suitable partner had a low loading and France where the measurement model was completely unsatisfactory. Measurement of Control (Childcare) was much stronger in almost all countries, mostly due to a stronger loading for opportunity for parental leave, suggesting that this control factor is more important for females who already have one child. The exception was again Romania, where the measurement model was not satisfactory. Stronger measurement of Personal Control meant that the potential problems with discriminant validity encountered in the models for childless females were seen only in Bulgaria and Romania for females with one child.

Structural models: Differences in the influence of attitude, perceived norm and perceived control on intention to have a child

A comparative structural model for the relative influence in different countries of attitudes, perceived norms and perceived control, as measured in the measurement models shown in Table 21, appear in Table 22. Variance explained is above .5 in all countries[20]. Fit indexes for this model (Table 23) show that overall fit is good.

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[20] The high variance explained in France (.78) may be due to low variance in the small sample with imputed values.

Table 22. Structural models, females aged 25-34 with one child, by country

		BG β	BG b	RU β	RU b	GE β	GE b	DE β	DE b	FR β	FR b	HU β	HU b	IT β	IT b	RO β	RO b
n		570		513		180		179		131		362		295		316	
Coefficients																	
Attitude (Freedom)		.05	0.04 ns	.05	0.03 ns	.22	0.18 *	.01	0.02 ns	.45	0.40 **	.13	0.38 ns	.05	0.05 ns	.40	0.37 ***
Attitude (Satisfaction)		.44	0.32 ***	.42	0.30 ***	.13	0.15 ns	.27	0.47 *	.48	0.49 ***	.64	0.78 ***	.67	0.43 ***	.07	0.08 ns
Norms		.31	0.14 ***	.43	0.16 ***	.57	0.34 ***	.56	0.27 ***	.19	0.09 ns	.12	0.06 ns	.03	0.02 ns	.47	0.25 ***
Material control		.31	0.21 **	.24	0.12 *	-.07	-0.04 ns	.05	0.04 ns	-.15	-0.13 ns	-.13	-0.12 ns	-.24	-0.12 ns	.16	0.11 ns
Personal control		-.22	-0.11 *	.09	0.05 ns	.08	0.05 ns	-.19	-0.13 *		(a)	.10	0.07 ns	-.36	-0.15 ns	-.28	-0.15 *
Control (Childcare)		-.06	-0.03 ns	-.17	-0.09 ns	-.13	-0.08 ns	.28	0.24 ns	.34	0.32 ns	.08	0.08 ns	.61	0.28 *	.17	0.12 ns
Correlations																	
Freedom	Satisfaction	.44		.47		.10		.40		.17		.27		.16		.30	
Freedom	Norms	.33		.27		.24		.30		.13		.15		.10		.21	
Freedom	Material control	.21		.32		.23		.44		.38		.63		.28		.40	
Satisfaction	Norms	.46		.34		.31		.37		.08		.34		.51		.41	
Material control	Personal control	.67		.44		.47		.25		na		.18		.68		.54	
Material control	Control (care)	.63		.62		.64		.53		.56		.33		.69		.68	
Control (care)	Personal control	.73		.62		.56		.39		na		.38		.58		.73	
Variance explained		.50		.57		.52		.61		.78		.57		.66		.66	

Note. a. It was not possible to reach an admissable solution for France when Perceived Control was included in the model.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 23. Fit indexes for country comparison, females aged 25 to 34 with one child

Index	Value
Chi-square CMIN)	1839.45
df	858
Chi-square/df	2.14
CFI	.94
RMSEA	.021
RMSEA 90% CI lower bound	.020
RMSEA 90% CI upper bound	.023

Echoing Billari et al.'s (2009) observations in Bulgaria, the effects of attitudes, perceived norms and perceived control on intention to have one's second child differed from those for the decision to have a first child in almost all countries. The exception was Hungary, where Satisfaction was the only influential factor for both parities. In all other countries, more factors entered into the decision to have a second child than the first, indicating that the decision to have a second child is cognitively more complex than the decision to have one's first child. At the same time, differences between countries were more marked.

Beliefs about satisfaction had a significant effect on intention to have another child for women aged 25 to 34 in all countries except Georgia and Romania, while beliefs about the effect of having a second child on Freedom had a significant effect only in Georgia, Romania and France. Perceived norms did not have a significant influence on intention to have a second child in France, Hungary and Italy, although they did have an influence for childless women in Italy. None of the measured control factors affected intention to have a second child in Georgia and Hungary, a situation likely also to apply in France[21]. Material control had a significant effect on intention to have a second child in Bulgaria and Russia, personal control had a significant effect in Bulgaria, Germany and Romania, and control in terms of child care had a significant effect only in Italy. The coefficient for Control (Childcare) was similar in Germany and France to the coefficient in Italy, but both countries had smaller samples and greater variation (this can be seen from the lower standardised coefficients in those countries); child care may have a significant effect in these countries if the source of the variation (possibly, employment situation) is removed.

Statistically significant differences between countries in the influence of the six exogenous factors on intention are highlighted in Table 24. There were no significant differences

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[21] The effect of Personal Control could not be estimated for France, but given that the measurement model is weak, it would appear that the concept of Personal Control may not be relevant in this country.

Table 24. Statistically significant country differences in influence of attitudes, perceived norms and perceived control on intention to have another child, females aged 25 to 34

	BG	RU	GE	DE	FR	HU	IT	RO
BG					A:Free = -2.3			A:Free = -2.6
	--					A:Sat = -2.1		A:Sat = 2.3
			PN = -3.2	PN = -2.5				PN = -2.3
		PC = -2.2	MC = 2.2			PC = -2.6		
RU					A:Free = -2.3			
		--				A:Sat = -2.2		A:Sat = 2.0
			PN = -3.0			PN = 2.2		PN = -2.0
	PC = 2.2			PC = 2.2			PC = 2.1	PC = 2.3
GE								
			--			A:Sat = -2.7		
	PN = 3.2	PN = 3.0			PN = 3.5	PN = 4.2	PN = 3.4	
	MC = -2.2			PC = 2.0			MC = -2.0	PC = 2.1
DE								
				--				
	PN = 2.5				PN = 2.9	PN = 3.6	PN = 2.8	
		PC = -2.2	PC = -2.0			PC = -2.6		
FR	A:Free = 2.3	A:Free = 2.3						
					--			A:Sat = 2.3
			PN = -3.5	PN = -2.9				PN = -2.8
HU								
	A:Sat = 2.1	A:Sat = 2.2	A:Sat = 2.7			--		A:Sat = 3.1
		PN = -2.2	PN = -4.2	PN = -3.6				PN = -3.5
	PC = 2.6			PC = 2.6			PC = 2.3	PC = 2.6
IT								
							--	A:Sat = 2.5
			PN = -3.4	PN = -2.8				PN = -2.7
		PC = -2.1	MC = 2.0			PC = -2.3		
RO	A:Free = 2.6							
	A:Sat = -2.3	A:Sat = -2.0			A:Sat = -2.3	A:Sat = -3.1	A:Sat = -2.5	--
	PN = 2.3	PN = 2.0			PN = 2.8	PN = 3.5	PN = 2.7	
		PC = -2.3	PC = -2.1			PC = -2.6		

Note. Reported values are the AMOS Critical Ratio for differences between unstandardised coefficients. A:Free = Attitude (Freedom); A:Sat = Attitude (Satisfaction); PN = Perceived Norm; MC = Material Control; PC = Personal Control. A negative coefficient for PC indicates a stronger effect while, for all other variables, a negative coefficient indicates a weaker effect. Matrix is mirrored for ease of comparison by row.

between Germany and Romania, Italy and Bulgaria, Italy and France, or France and Hungary. With the exception of France which differed from other countries only in the influence of attitudes and perceived norms, all countries differed from at least one other country in some aspect of each component of the TPB. Most differences (14 points of difference with other countries) were observed for Romania while relatively few differences (6) were observed for Germany and France.

No particular pattern of similarities and differences in the influences of attitudes on intention to have a second child emerges from inspection of the table. There were relatively few differences in the influence of Freedom, although it was stronger in France than in Bulgaria and Hungary and weaker in Bulgaria than in France and Romania. Satisfaction had strongest influence overall in Hungary, and the difference was significantly different from that in Bulgaria, Russia, Georgia and Romania. The influence of Satisfaction was very weak in Romania, where it was significantly lower than in Bulgaria, Russia, France, Hungary and Italy.

Two sets of countries – Germany and Romania and Bulgaria, France, Hungary and Italy – can be distinguished in terms of the relative influence of perceived norms. In Germany and Romania (two countries between which no differences in influence were found), perceived norms had a stronger influence than in Bulgaria, France, Hungary and Italy (between which there are very few differences). Germany and Romania can be characterised as countries with strong normative influence on having a second child while Bulgaria, France, Hungary and Italy can be characterised as countries with weak normative influence for having a second child. The descriptive statistics in Table 15 show that the strong influence exerted in Germany is directed toward not having a second child while Italian females seem to be able to resist the strong perceived norm to have a second child in that country.

The only significant difference in the influence of material control was that it was stronger in Bulgaria than in Georgia and Italy and weaker in Georgia than in Italy. No statistically significant differences in the influence of child care were observed, although this may be due to high variation in the countries (Germany, France and Italy) where the coefficient for Control (Childcare) was highest. The influence of perceived control was weakest in Russia and Hungary; in both countries, it was significantly weaker than in Bulgaria, Germany, Italy and Romania. On the other hand, the influence of perceived control was relatively strong in

Germany and Romania where it was significantly stronger than in Russia, Hungary and Georgia. Germany and Romania thus differ from several countries not only in having more influential norms, but also in the stronger influence of personal control.

Overall, Germany and Romania formed the set of countries which was most different from the others. Bulgaria, France, Hungary and Italy appear to form a weaker set which differed primarily in terms of the relatively weak effect of norms. None of the macro level contexts defined in Table 7 explains either of these sets.

Exploration of macro level differences

Does division of respondents into any one of the macro level contexts provide a better explanation of differences than any other? We first look at the measurement models (Table 25 for childless females and Table 26 for those with one child).[22]

GOF was good for all contexts except lower wealth and lower employment stability for childless females, while it was good only for the higher wealth and higher policy support macro contexts for females with one child. In the other contexts, it was satisfactory on two of the three fit indexes. While construct reliability was satisfactory for all latent variables in all contexts, variance extracted was not always satisfactory. It was low for Freedom in all contexts except lower wealth (for both parities). It was low for Satisfaction in all higher level contexts for both parities, and particularly low for females with one child in higher wealth and higher policy support contexts. The very low standardised regression coefficient for care and security in old age in the higher wealth and higher policy support contexts suggest that is not a salient attitudinal belief in those contexts. Similarly, Material Control and Control (Childcare) had low construct reliabilities for childless women in the higher wealth and higher policy contexts, and Personal Control had low construct validity in all lower level contexts among childless women. The pattern was different for women with one child, where Material Control had low construct validity in all contexts except lower wealth and lower policy support. Relatively high covariance between Personal Control and Control (Childcare) for childless women in lower wealth contexts and for females with one child in contexts other than higher wealth and higher policy support suggests that personal control and childcare are not cognitively distinct constructs in all macro level contexts.

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[22] Cronbach's alpha has been omitted from these tables. It is similar to construct reliability in all cases.

Table 25. Measurement model, macro level comparisons for childless 25 to 34 year old females

	Wealth				Employment				Policy			
	Lower		Higher		Lower		Higher		Lower		Higher	
	β	R^2	β	R^2	β	R^2	β	R^2	β	R^2	β	R^2
n	992		609		1,520		594		806		904	
Attitude (Freedom)												
a627_a do what I want	.73	.53	.63	.40	.65	.43	.68	.46	.64	.41	.58	.34
a627_b employment opportunities	.76	.58	.67	.45	.68	.47	.76	.58	.68	.46	.63	.39
a627_c financial situation	.68	.47	.64	.41	.71	.50	.60	.36	.63	.39	.67	.45
Construct reliability	.77		.69		.72		.72		.68		.66	
Variance extracted	.52		.42		.47		.47		.42		.40	
Attitude (Satisfaction)												
a627_f joy and satisfaction	.63	.40	.72	.52	.64	.41	.59	.35	.62	.39	.74	.54
a627_i care and security in old age	.74	.55	.36	.13	.57	.32	.77	.59	.76	.58	.38	.15
a627_j certainty in your life	.85	.72	.76	.58	.89	.80	.80	.63	.78	.61	.77	.60
Construct reliability	.79		.66		.75		.76		.77		.68	
Variance extracted	.55		.41		.51		.52		.53		.43	
Norms												
a629_a friends	.85	.71	.81	.66	.81	.66	.83	.69	.84	.70	.80	.64
a629_b parents	.86	.74	.84	.70	.85	.73	.86	.74	.84	.71	.85	.72
a629_c relatives	.93	.86	.88	.78	.91	.83	.92	.85	.91	.83	.90	.81
Construct reliability	.91		.88		.89		.90		.90		.89	
Variance extracted	.77		.71		.74		.76		.75		.72	
Material Control												
a628_a financial situation	.86	.73	.75	.56	.83	.69	.74	.54	.73	.54	.80	.64
a628_b work	.81	.66	.64	.41	.68	.46	.64	.41	.71	.50	.57	.32
a628_c housing conditions	.74	.55	.55	.30	.68	.46	.79	.62	.81	.65	.59	.34
Construct reliability	.84		.69		.77		.77		.79		.69	
Variance extracted	.65		.43		.53		.53		.56		.43	
Control (Childcare)												
a628_h availability of childcare	.87	.75	.70	.50	.74	.55	.88	.77	.81	.66	.63	.40
a628_i care leave	.74	.54	.65	.42	.75	.56	.71	.51	.70	.48	.75	.56
Construct reliability	.78		.63		.71		.78		.73		.64	
Variance extracted	.65		.46		.55		.64		.57		.48	
Personal Control												
a628_d health	.68	.46	.74	.55	.65	.42	.71	.50	.75	.56	.68	.46
a628_e having a suitable partner	.53	.28	.59	.35	.58	.34	.69	.48	.53	.28	.63	.40
a628_g partner's/spouse's health	.76	.58	.82	.66	.81	.66	.81	.66	.79	.63	.80	.64
Construct reliability	.70		.76		.73		.78		.74		.75	
Variance extracted	.44		.52		.47		.55		.49		.50	
Covariances												
Freedom Satisfaction	.07		.15		.09		.04 *		.04		.13	
Freedom Norms	.14		.19		.16		.11		.12		.15	
Freedom Material Control	.12		.11		.15		.12		.10		.17	
Satisfaction Norms	.15		.35		.26		.13		.13		.36	
Satisfaction Material Control	.05		.10		.08		.05		.05		.13	
Norms Material Control	.10		.18		.18		.16		.12		.21	
Material Control Control (Care)	.44		.33		.37		.47		.44		.30	
Material Control Personal Control	.51		.43		.41		.45		.44		.29	
Control (Care) Personal Control	.57		.33		.44		.51 *		.45		.24	
Fit indexes												
Chi-square CMIN)	477.50		294.75		567.49		287.79		413.50		414.21	
df	110.00		109.00		109.00		109.00		107.00		109.00	
Chi-square/df	4.34		2.70		5.21		2.64		3.86		3.80	
CFI	.95		.93		.95		.95		.93		.93	
RMSEA	.06		.05		.05		.05		.06		.06	
RMSEA 90% CI lower bound	.05		.05		.05		.05		.05		.05	
RMSEA 90% CI upper bound	.06		.06		.06		.06		.07		.06	

Note. Non-significant and non-admissible covariances are omitted from this table.
All covariances are significant at *p* < .001 except * *p* < .05.

Table 26. Measurement model, macro level comparisons for 25 to 34 year old females with one child

		Wealth				Employment				Policy			
		Lower		Higher		Lower		Higher		Lower		Higher	
		β	R^2	β	R^2	β	R^2	β	R^2	β	R^2	β	R^2
	n	1,579		605		1,422		1,124		1,181		672	
Attitude (Freedom)													
a627_a do what I want		.77	.59	.57	.32	.65	.43	.71	.50	.73	.53	.52	.27
a627_b employment opportunities		.69	.47	.73	.53	.69	.48	.67	.45	.68	.47	.68	.47
a627_c financial situation		.71	.50	.67	.45	.74	.55	.71	.51	.69	.48	.73	.54
Construct reliability		.76		.70		.74		.74		.74		.69	
Variance extracted		.52		.43		.48		.49		.49		.43	
Attitude (Satisfaction)													
a627_f joy and satisfaction		.72	.52	.81	.65	.66	.44	.73	.53	.74	.55	.75	.56
a627_i care and security in old age		.69	.48	.29	.08	.61	.38	.66	.43	.73	.53	.32	.10
a627_j certainty in your life		.83	.69	.60	.36	.85	.72	.69	.48	.73	.54	.62	.39
Construct reliability		.79		.60		.75		.73		.78		.60	
Variance extracted		.56		.36		.51		.48		.54		.35	
Norms													
a629_a friends		.85	.72	.75	.57	.77	.59	.84	.71	.83	.69	.72	.51
a629_b parents		.87	.76	.76	.58	.81	.66	.84	.71	.87	.76	.74	.55
a629_c relatives		.95	.90	.85	.72	.94	.87	.95	.90	.94	.89	.93	.87
Construct reliability		.92		.83		.88		.91		.91		.84	
Variance extracted		.79		.62		.71		.77		.78		.65	
Material Control													
a628_a financial situation		.74	.55	.79	.62	.74	.54	.79	.62	.73	.54	.76	.57
a628_b work		.76	.58	.71	.51	.71	.50	.70	.49	.75	.56	.66	.44
a628_c housing conditions		.64	.40	.53	.28	.63	.40	.58	.34	.66	.44	.52	.27
Construct reliability		.76		.72		.74		.73		.76		.69	
Variance extracted		.51		.47		.48		.48		.51		.43	
Control (Childcare)													
a628_h availability of childcare		.84	.70	.83	.69	.84	.71	.76	.58	.84	.71	.73	.54
a628_i opportunity parental/care leave		.74	.54	.68	.46	.76	.57	.70	.49	.72	.51	.75	.57
Construct reliability		.76		.73		.78		.70		.76		.71	
Variance extracted		.62		.57		.64		.53		.61		.55	
Personal Control													
a628_d health		.75	.56	.76	.58	.71	.51	.73	.53	.79	.63	.62	.38
a628_e having a suitable partner		.67	.45	.57	.33	.64	.41	.67	.45	.64	.40	.62	.38
a628_g partner's/spouse's health		.87	.76	.89	.79	.88	.78	.86	.74	.86	.73	.89	.79
Construct reliability		.81		.79		.79		.80		.81		.76	
Variance extracted		.59		.57		.57		.57		.59		.52	
Covariances													
Freedom	Satisfaction	.15		.11		.11		.14		.15		.10	
Freedom	Norms	.21		.16		.17		.19		.20		.15	
Freedom	Material Control	.16		.14		.16		.19		.13		.19	
Satisfaction	Norms	.25		.39		.27		.26		.30		.32	
Satisfaction	Material Control	.06		.06 *		.05		.09		.06		.14	
Norms	Material Control	.11		.06 *		.10		.16		.07		.21	
Material Control	Control (Care)	.42		.42		.42		.38		.43		.25	
Material Control	Personal Control	.39		.37		.38		.37		.46		.23	
Control (Care)	Personal Control	.64		.39		.58		.53		.60		.31	
Fit indexes													
Chi-square CMIN)		531.41		295.07		475.00		551.21		508.33		280.20	
df		107		110		108		109		108		109	
Chi-square/df		4.97		2.68		4.40		5.06		4.71		2.57	
CFI		.96		.92		.96		.93		.95		.94	
RMSEA		.05		.05		.05		.06		.06		.05	
RMSEA 90% CI lower bound		0.05		.05		.04		.06		.05		.04	
RMSEA 90% CI upper bound		0.05		.06		.05		.07		.06		.06	

Note. Non-significant and non-admissible covariances are omitted from this table.
All covariances are significant at $p < .001$ except * $p < .05$.

Turning to the structural models (Table 27 and Table 28), the models that distinguish by wealth and policy had good GOF on all measures, while the employment model met the fit criteria on two of the three indexes, for both parities. For females with one child, variance explained was high (.58 to .60) for all contexts except lower employment and lower wealth, where it was a little lower (.45 and .51, respectively). A similar pattern was observed for childless females, although in most cases the variance explained was lower. Only for the policy split was the variance explained for both groups in both parities roughly equal. For both parities, all contextual splits identified significant differences in the effect of perceived norms on intentions. Grouping by wealth and policy context also highlighted differences in the effect of satisfaction on intentions for childless women, while grouping by employment and policy context highlighted this difference among women with one child. Grouping by employment stability highlighted a difference in the effect of material control (which includes employment as a control factor) on intention among childless women, but not those with one child. Grouping by policy context highlighted a difference in the effect of personal control for women with one child but not for childless women.

While none of these contextual splits produced a completely satisfactory model for 25 to 34 year old females with one child, grouping by policy context highlighted more differences than grouping by the other macro level contexts while at the same time explaining an equally high proportion of variance for each group. This suggests that explanations based on differences in policy support provide a more complete picture of differences in the formation of intention to have a child than explanations based on wealth and employment stability, and in turn that policy interventions are likely to make a difference for women in this age group. But, here, there is a paradox. The differences highlighted by differences in policy context are not those that respond to policy: for females aged 25 to 34 in the higher policy support context, expectations of satisfaction have a much stronger influence on the decision to have another child than for women in the lower policy support context, social influences are more important for them, and personal control is less important. No significant differences between these two contexts were observed in the effect of attitudes to freedom, material control or perceived need for childcare on the decision to have another child, yet these are the factors that reflect policy makers' concerns with work-life balance. It appears that women in countries with stronger policy support are freed to think more about the social and emotive issues that have the strongest influence on the decision to have another child.

Table 27. Structural model, macro level comparisons for childless 25 to 34 year old females

		Wealth					Employment					Policy					
		Lower		Higher		Comparison[a]	Lower		Higher		Comparison[a]	Lower		Higher		Comparison[a]
		β	b	β	b		β	b	β	b		β	b	β	b	
	n	992		609			1,520		594			806		904		
Coefficients																
Attitude (Freedom)		.05	0.03 ns	.14	0.13 ns	-1.16 ns	.07	0.06 ns	.08	0.06 ns	0.02 ns	.11	0.09 ns	.10	0.10 ns	0.14 ns
Attitude (Satisfaction)		.25	0.20 ***	.52	0.37 ***	-2.14 *	.42	0.37 ***	.29	0.26 ***	-1.37 ns	.24	0.21 ***	.64	0.50 ***	3.46 ***
Norms		.51	0.20 ***	.27	0.10 ***	3.34 ***	.21	0.08 ***	.42	0.17 ***	2.96 **	.52	0.21 ***	.12	0.04 *	-5.70 ***
Material control		.08	0.04 ns	-.02	-0.01 ns	0.36 ns	-.07	-0.04 ns	.26	0.13 *	2.33 *	.07	0.03 ns	-.01	0.00 ns	-0.50 ns
Control (Childcare)		.07	0.03 ns	.16	0.11 ns	-0.53 ns	.26	0.14 ***	.10	0.05 ns	-1.62 ns	.29	0.13 **	.09	0.07 ns	-0.82 ns
Personal control		.04	0.02 ns	-.10	-0.06 ns	1.14 ns	-.02	-0.01 ns	-.13	-0.06 ns	-0.84 ns	-.11	-0.05 ns	-.12	-0.06 *	-0.24 ns
Correlations																
Freedom	Satisfaction	.24		.46			.34		.17			.20		.46		
Freedom	Norms	.23		.28			.23		.23			.28		.23		
Freedom	Material control	.20		.27			.30		.30			.25		.45		
Satisfaction	Norms	.36		.45			.43		.33			.32		.42		
Satisfaction	Material control	.13		.21			.20		.15			.15		.27		
Norms	Material control	.12		.18			.17		.21			.15		.19		
Material control	Personal control	.53		.51			.49		.50			.66		.29		
Material control	Control (care)	.58		.81			.58		.61			.63		.58		
Control (care)	Personal control	.69		.64			.58		.62			.63		.45		
Fit indexes																
Chi-square					851.75					975.26					886.87	
df					242					240					239	
Chi-square/df					3.52					4.06					3.71	
CFI					.94					.94					.93	
RMSEA					.04					.04					.04	
RMSEA 90% CI lower bound					.04					.04					.04	
RMSEA 90% CI upper bound					.04					.04					.04	
Variance explained		.47		.59			.36		.50			.56		.56		

Note. a. Critical ratio for difference between higher and lower levels, *p* based on the *Z* distribution.
* p < .05. ** p < .01. *** p < .001.

Table 28. Structural model, macro level comparisons for 25 to 34 year old females with one child

		Wealth					Employment					Policy				
		Lower		Higher		Comparison[a]	Lower		Higher		Comparison[a]	Lower		Higher		Comparison[a]
		β	b	β	b		β	b	β	b		β	b	β	b	
	n	1,579		605			1,422		1,124			1,181		672		
Coefficients																
Attitude (Freedom)		.18	0.14 ***	.12	0.15 ns	0.09 ns	.16	0.20 ***	.18	0.15 **	-0.59 ns	.14	0.13 *	.13	0.24 ns	0.67 ns
Attitude (Satisfaction)		.30	0.25 ***	.46	0.36 ***	1.52 ns	.40	0.43 ***	.32	0.25 ***	-2.80 **	.35	0.27 ***	.55	0.63 ***	3.42 ***
Norms		.39	0.18 ***	.23	0.11 ***	-2.14 *	.22	0.11 ***	.38	0.17 ***	2.05 *	.34	0.16 ***	.19	0.10 ***	-2.03 *
Material control		.15	0.10 **	.35	0.23 ***	1.70 ns	.16	0.12 **	.17	0.10 *	-0.35 ns	.31	0.21 ***	.12	0.11 ns	-1.11 ns
Control (Childcare)		-.04	-0.02 ns	-.03	-0.02 ns	0.03 ns	.00	0.00 ns	.02	0.01 ns	0.19 ns	-.01	-0.01 ns	-.09	-0.08 ns	-1.13 ns
Personal control		-.05	-0.03 ns	-.17	-0.10 *	-1.37 ns	-.05	-0.03 ns	-.11	-0.05 ns	-0.51 ns	-.27	-0.14 ***	.00	0.00 ns	2.88 **
Correlations																
Freedom	Satisfaction	.44		.38			.41		.47			.47		.44		
Freedom	Norms	.32		.31			.26		.33			.35		.28		
Freedom	Material control	.34		.39			.40		.45			.33		.61		
Satisfaction	Norms	.42		.50			.42		.44			.48		.38		
Satisfaction	Material control	.15		.11			.14		.21			.15		.29		
Norms	Material control	.13		.06			.10		.19			.10		.19		
Material control	Personal control	.53		.51			.49		.50			.66		.29		
Material control	Control (care)	.60		.61			.55		.60			.63		.40		
Control (care)	Personal control	.72		.54			.60		.72			.69		.40		
Fit indexes																
Chi-square						911.63					1161.12					864.67
df						239					239					239
Chi-square/df						3.81					4.86					3.62
CFI						.96					.94					.95
RMSEA						.04					.04					.04
RMSEA 90% CI lower bound						.03					.04					.04
RMSEA 90% CI upper bound						.04					.04					.04
Variance explained		.51		.60			.45		.58			.58		.60		

Note. a. Critical ratio for difference between higher and lower levels, *p* based on the *Z* distribution.

* p < .05. ** p < .01. *** p < .001.

This is not to suggest that we should rely only on differences in policy context to explain differences in formation of intention to have a child. Looking at influences on intention from different macro level contextual viewpoints is likely to provide different insights, for example, for 25-34 year old females with one child, employment stability context provides a better explanation than policy context of concerns about material control. None of the macro level contexts that we have examined here explained the similarities in formation of intention to have a second child in Germany and Romania, or in Bulgaria, France, Hungary and Italy. Is there a macro level context that prompts individuals in these countries to form intention to have their second child in much the same way, or are the similarities more readily explained in terms of individual level context?

Limitations and directions for further research

The work described here can be tested and extended in several ways. If possible, further tests of the potential effect on the results of differences in sampling and survey administration should be done. We have relied primarily on modelling of females with one child aged between 25 and 34; modelling would usefully be extended to other contexts. The measurement models are not strong in all countries, suggesting that the GGS items may not reflect the most salient behavioural, normative, and control beliefs in each country. All latent variables measured with one or two items, and those whose construct reliability is below .7 or variance extracted is below .5 represent opportunities to improve measurement, potentially by identifying more salient items for the context of the respondent. Greater variety in measurement of perceived norms should capture the concept more fully and provide more variation. More accurate representation of PBC would strengthen tests of the influence of perceived control and, by implication, actual control on intention to have a child. It would be useful to confirm the results of structural comparisons using latent variables estimated with IRT which should provide more reliable, and potentially more comparable, measurement scales.

Although the TPB models attitudes, perceived norms and PBC as fully mediating external variables, it would be useful to extend the models presented here to include background variables, particularly those that have been identified as having an influence on intention in other demographic research, in order both to test the effect of those variables on intention to have a child relative to the components of the TPB, and to test if they have any effect over

and above the effects of the TPB components. Candidate variables include education, partnership status, general attitudes and opinions about issues such as the role of women, personal values and psychological attributes. The availability of data from more countries would enable measurement of country level effects and more robust modelling and estimation of macro context effects.

Conclusion

This work has shown that the formation of intention to have a child appears to differ in quite complex ways across different individual and national contexts. Policies may need to be more closely targeted to the needs of individuals in quite specific contexts, including age group as well as parity and employment status, if they are to effectively enable and encourage Europeans to have more children.

Acknowledgements

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