

# **How attitudes, perceived norms and perceived control influence couples' decisions to have a child**

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## **Executive Summary**

Low and below replacement fertility is of concern in Europe and other countries faced with an ageing population. While the economic effects of the ageing population are of direct interest, policy makers are also concerned that, particularly in contexts where higher fertility is economically beneficial, many men and women appear not to reach their individual fertility goals. In these contexts, understanding of how people make concrete plans to have children is informative. While most research on fertility planning is conducted at the individual level, this paper focuses on the couple, the unit into which most children are born in Europe. We focus on the decision to have a second child, the critical decision if fertility rates are to rise to replacement or near-replacement levels, and seek to extend modelling of couples' fertility intentions by including partners' social psychological cognitions as well as directly measurable economic and demographic characteristics.

The paper builds on earlier work by REPRO partners on social psychological modelling of individuals' decision making and economic modelling of couples' decision making and seeks to combine these two perspectives. The social psychological model used in these studies is the theory of planned behavior (TPB) but it is not self-evident that the TPB, which is based on the social cognitions of individuals, is appropriate for modelling of decision making in couples.

Two inter-related research questions therefore guide the paper:

- Is it necessary to model fertility decision making at the couple level (or is it sufficient to model fertility decision making at the individual level)?
- Can the TPB inform understanding of fertility decision making by couples and, if so, in what way can it most appropriately be used?

The work described here builds a social psychological layer on Rosina and Testa's (2009) primarily economic analysis of agreement on fertility intentions among childless couples in Italy. The social psychological layer includes attitudes, perceived normative influences (subjective norms) and perceived behavioural control, the three cognitions that the TPB proposes influence the formation of intentions. Data are drawn from national household surveys in Bulgaria and Italy and we seek to explain differences between couples based on the joint intentions of the man and woman to have a second child in the near term (three years in Italy and two years in Bulgaria). While we briefly consider alternative models we concentrate on agreement in the couple's intentions. Agreement on fertility intentions is a suitable way to characterise couples' fertility decisions when the goal is to increase fertility rates because couples who disagree about childbearing are less likely to have a child than couples who agree to have a child (Thomson, 1997; Thomson & Hoem, 1998).

In Italy, where fertility is low (1.29 in 2003, the date of the survey<sup>1</sup>) and mean age at first birth is high (30.7 in 2003), the decision to have a second child, and the timing of this decision, are of critical importance if the birth rate is to increase to replacement or near replacement. We propose that both economic and social psychological factors influence the decision to have a second child and test this proposition by building social psychological models on the economic-demographic model of Rosina and Testa (2009). Of the variables Rosina and Testa found to affect agreement among childless couples and which were available for this study (education, employment status, female satisfaction with the division of household chores and religiosity), only religiosity had an effect for couples with one child: when the woman attends mass at least weekly, the couple is more likely to agree to have another child during the next three years than to agree not to have another child; when the

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<sup>1</sup> The sources of all population statistics cited in this paper is Eurostat.

couple shares religiosity (primarily, when they do not attend mass weekly), they are more likely to agree not to have a child than to agree to have a child. Because we study couples who have already had one child, we additionally take the age of the first child into account, and find that couples whose first child is aged three or younger are unlikely to intend to have another child in the near term, but that the older the mother the more likely the couple is to agree to have another child soon than to agree not to. The age of neither child nor mother contributes, however, to an explanation of why the intentions of the man and woman in some couples differ. Overall, models based only on economic and demographic variables had little explanatory power.

On the other hand, the social psychological variables provided a very good explanation of couple's agreement and distinguished couples who agreed (either to have another child or to not have another child) from those who disagreed. The (perceived) support of the mothers was particularly important for Italian couples, where it was strongly associated with men's and women's attitudes to having another child and their perceived control over aspects of their life on which having another child depends. In Italy, where there is little access to childcare, it is clear that a mother's (i.e., the children's grandmother's) support is often critical if a couple is to agree to have another child and, additionally, that perceived availability of mother's support conditions a woman's expectations about both the positive effects of having a child and her ability to balance work, finances and childbearing.

While Bulgaria has a similar low TFR (1.23 in 2003) and (at the time of the study) lack of family support to Italy, it differs in that it has a much lower mean age at first birth (24.3 in 2003). A difference is also seen in the number of couples in each country who disagree about their intention to have a second child: in the comparable cohorts used in this paper (couples

where the woman is aged between 18 and 34 years old in Bulgaria and 25 to 39 years old in Italy), only 6% of Bulgarian couples disagree whereas more than twice as many couples (15%) disagree in Italy. This different fertility pattern provides an opportunity to test whether our observations in the particular circumstances of Italy also apply in the slightly different landscape of Bulgaria.

A slightly different approach to modelling was used with the Bulgarian data. A combined economic-demographic and social psychological model was built to explain differences in couples' intentions from the women's, the men's, and the partners' joint perspectives. The Bulgarian data allowed inclusion of household income<sup>2</sup> and size of dwelling<sup>3</sup> in the economic-demographic portion of the model.

Some demographic effects, consistent with those observed by Rosina and Testa (2009) among childless Italian couples, were identified in Bulgaria. Higher religiosity, higher income and education other than secondary were associated with agreement to have another child rather than not to have another child. Higher income for the couple and tertiary education for the woman were associated with agreement to have another child rather than disagreement, and the likelihood of disagreement as distinct from agreement not to have a child was higher for more educated men and increased as the size of the family home increased. These observations raise questions about how much the differences between childless couples and couples with one child in Italy are age effects rather than solely parity effects. Both this paper and an earlier REPRO deliverable (Klobas, 2010) shed some light on this issue, but more research is needed to separate any age-related effects from parity-related effects.

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<sup>2</sup> Income data for Italy were not available at the time of completing this paper.

<sup>3</sup> Available space in the home had a strong effect on short-term fertility intentions in earlier REPRO modelling (Dommermuth, Klobas, & Lappegard, 2009).

The social psychological variables had a significant effect in Bulgaria, as they did in Italy. While attitudes, subjective norms and perceived behavioural control all distinguished in their own right between couples who agreed to have another child and those who agreed not to, different combinations of these social cognitions distinguished between agreement to have another child and disagreement and agreement not to have another child and disagreement. Women's attitudes to both the costs and benefits of having a child have the strongest effect on agreement to have another child rather than disagreement, while both men's and women's expectations that their lives will be improved by having another child, along with men's perceptions of control are associated with disagreement rather than agreement not to have another child.

The results for Italy and Bulgaria are complementary. In both countries, a limited number of demographic characteristics explained differences in couples' intentions, woman's age being the strongest of them. Religiosity is an important factor in both countries, where couples in which the woman is strongly religious are more likely to intend to have another child than intend not to have another child, and the Italian results provide the additional insight that couples in which both partners are not very religious are more likely to agree not to have a child than to have a child. In Bulgaria, where data were available to measure the effects of income and dwelling size, both these variables distinguished couples who agreed to have another child from those with differing intentions, and higher education was associated with greater agreement to have another child.

The social psychological variables had similar effects in both countries. Men's and women's attitudes (to both the positive and negative outcomes of having a child) and their sense of control over having and caring for a child added to understanding of differences in couples'

intentions in both countries. Subjective norms were also important in both countries. Because measurement of subjective norms in Italy was limited to the normative influence of mothers, it was possible to observe the importance of mothers' support there, both in terms of direct normative influence and in terms of the strong association between mothers' support and females' attitudes and perceptions of control.

To the extent that these models explain the differences between couples who agree to have another child and couples who agree not to have another child, they offer little that differs from models of individual women's and men's fertility decision make. But because they also help to explain the difference between agreement to have a child and disagreement (which, for many couples, leads to not having a child) they improve our understanding of fertility decision making.

We conclude that models of fertility decision making at the couple level can improve understanding of fertility intentions, and that the concepts included in the TPB – attitudes, subjective norms, and perceived behavioural control – add considerable additional insight into couples' agreement about intentions to have a child. It would be useful to extend this study to countries with higher fertility than Italy and Bulgaria and to examine the effects of differences in family support regimes on couples' intentions. Further research could also usefully explore the beliefs and situations which give rise to disagreement among couples, and the relationships between them, with the goal of better understanding what policy interventions might enable couples in which only one partner intends to have another child to reach agreement.

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# 1 Introduction

Low fertility levels in European countries raise questions about whether the actual preferences of individuals are realized. It may be that people want to have more children than they have but are for some reason unable to implement their desire, thus creating the so-called “fertility gap” (Chesnais, 2000). The study of decision making about childbearing is crucial to understanding the determinants of low fertility and, where required, to formulating policy to sustain desired levels of fertility.

Considerable attention has been devoted to the formulation and subsequent realization of fertility intentions, which are viewed as the proximate determinants of fertility behaviour (Miller & Pasta, 1995). Childbearing intentions are seen as individual formulations of what one would like to do given the reality in which one operates (Miller, Severy, & Pasta, 2004). In particular, short-term fertility intentions, i.e., intentions to have a child within the next two or three years, may be fruitfully used to investigate decision making and to formulate policy plans (Billari, Philipov, & Testa, 2009).

Broadly speaking, there are two main approaches to studying decision making processes with reference to fertility intentions. On the one hand, an approach based on economic rationality essentially considers children as consumption goods that bring utility to their parents according to their preference structures (Thomson & Brandreth, 1995). On the other hand, cultural and societal context, and in particular the Second Demographic Transition, are at the core of the ideational approach which focuses on preferences rather than on economic constraints (Lesthaeghe, 1995, 1998).

In this paper we make use of the social psychological theory of planned behavior (TPB) to combine insights from the two approaches. This third way, in the spirit of the work of Billari et al. (2009), defines the approach to study of fertility decision making in the REPRO project. Earlier work in REPRO has confirmed that fertility decision making by individuals reflects – to varying degrees, depending on their context – the three antecedents of fertility intention proposed by the TPB, namely attitudes to having a child, subjective norms for having a child, and perceived control over having a child (Dommermuth, et al., 2009; Klobas, 2010). The purpose of the current paper is to extend this approach to modelling of couples' intentions to have a child.

The paper has five main sections following this introduction. Section 2 surveys theory and literature to identify the potential value and potential limitations of modelling couples' intentions and of using the TPB to do so. The results of analyses conducted with data from Italy and Bulgaria are presented in Sections 3 and 4 respectively, and comparatively summarised in Section 5. Conclusions about the value of using the TPB to study the formation of couples' intentions to have a child are considered in Section 6.

## **2 Background**

This paper presents two key departures from much recent demographic modelling of fertility decisions a) by focusing on couples' intentions and b) by using the TPB to do so. Theory and literature suggests reasons why each of these departures may have limitations as well as why they might have some advantages.

## **2.1 Fertility decision making by couples**

The economic rationality school of fertility modelling typically focuses on only one member of the couple (usually the woman) on the assumption that the very nature of being in a couple facilitates agreement (Thomson, McDonald, & Bumpass, 1990). There is, however, evidence that men and women contribute independently to fertility decisions (Corijn, Liefbroer, & De Jong Gierveld, 1996) and that there is therefore the possibility of disagreement. Moreover, when a couple disagrees on childbearing, it is more likely that the difference result in negative fertility choices than childbirth (Thomson, 1997; Thomson & Hoem, 1998).

Recent work by members of the REPRO team has looked at Italian couples' reproductive decision-making processes from an economic-rationalist perspective. Rosina and Testa (2009) examined determinants of agreement versus disagreement about childbearing within the couple. They found that married (as distinct from cohabiting but not married) couples were more likely to make short-term fertility plans and that men in cohabiting (but unmarried) couples were more likely to want to have a child than their female partners. Regardless of marital status, more highly educated women and working women were more likely to disagree with their male partner's intention, and when the woman was satisfied with the division of household chores, the couple was more likely to agree. Differences in religiosity among the partners appeared, on the other hand, to be a source of conflict: when one member of a couple reported more frequent attendance at religious services than the other, the couple was more likely to disagree. Cavalli (Cavalli, 2010; Cavalli & Rosina, 2009) hypothesised that similar effects would be found for Italian couples with one child, and found some differences. In particular, the combination of female employment and availability of childcare emerged as a critical factor. There was more disagreement among couples when the woman was unemployed (and seeking paid work) or employed and had no access to (free) childcare, and there was a

*higher* probability of agreement when the woman was tertiary educated. The woman's satisfaction with division of household tasks had no effect on agreement among couples with one child, perhaps because couples who already have a child have already negotiated roles within the household (Kruger & Levy, 2001), and differences in religiosity were not found in Cavalli's work to be a source of disagreement in intentions to have a second child in Italy.

The potential contribution of non-demographic characteristics such as the female's satisfaction with division of household chores draws attention to the social dynamics in the relationships between males and females in couples. Miller et al. (2004) specifically focused on the processes by which couples reach agreement on childbearing. Drawing on Miller and Pasta (1995), they proposed that fertility behaviour in a couple reflects the intentions of the male and the female. They modelled the influence of male and female intentions on behaviour separately, but proposed that these intentions arise from desires which are formed through a negotiation and accommodation process that involves the perception and attribution of the desires of the other member of the couple, as well as from the individual "motivational traits" of the man and woman. They further note that the modelling of fertility intentions needs to take account of the social context in which fertility decision making occurs.

## ***2.2 The theory of planned behavior and joint decision making***

The reasoned action perspective of Fishbein and Ajzen (1975, 2010) is commonly used to model the contributions of psychological characteristics, cognitions and social context to fertility decision making (Billari, et al., 2009; Jaccard & Davidson, 1975; Jorgensen & Adams, 1988; Thomson, 1997). To the extent that the intention to have a child is reasoned, childbearing follows the formation of a fertility intention and, thus, understanding of how fertility intentions are formed becomes the critical issue. While Miller et al. (2004) propose a

process mechanism, scholars who take the reasoned action perspective focus on the cognitions from which intentions are formed and, particularly when linking intention to policy, on the influence of contextual and individual factors on these cognitions (Klobas, 2010).

The TPB is, however, a model of individual cognition and behavior, not conceived to explain joint decision making or joint action. Thus, while there is a perceived need to explain fertility decisions at the couple level, and to understand how social context, individual characteristics and cognitions affect the formation of fertility intentions, it is not a given that the TPB is an appropriate framework for building a social cognitive model of fertility decision making for couples.

### **2.3 Research questions**

Two sets of research questions arise from this brief review of the literature. Firstly, is it necessary to model fertility decision making at the couple level, or is it sufficient to model fertility decision making at the individual level? The work of Thomson (1997) shows that knowing the desires of both females and males in a couple improves understanding of the intentions of each member of the couple. We extend Thomson's work in two ways: by observing a set of social cognitions within the couple, and by exploring how they might inform joint decision making.

Alongside this question, and empirically inseparable from it, is the question of whether the TPB can inform understanding of fertility decision making by couples and, if so, in what way can it most appropriately be used. Miller et al. (2004) suggest, in their reformulation of the Traits – Desires – Intentions – Behaviour model that, while males and females negotiate agreement about desires, the relevant conjunction of male and female motivations to have a

child occurs at the level of behaviour rather than at the intermediate level of intentions.

Extending the logic of their model to the TPB, one would separately model influences on the intentions of males and females, taking into account the relative influences of one member of the couple on the other individual's intentions, but not modelling joint intentions. On the other hand, if following the approach of Rosina and Testa (2009), the focus would be on the joint intention and antecedents to it.

### **3 Italy**

We begin our exploration of these research questions in Italy, a country in which fertility has declined to very low levels. At the same time, an increase in mean age at first birth has taken place and fertility postponement has become very common (Castiglioni & Dalla Zuana, 2009), with significant fertility recovery (but still to very low levels) after the age of 30 (Sobotka, 2004).

Little attention has been paid to decision making in Italian couples. Bimbi (1996) highlighted the difficulties of reconciling work and family life and suggested that gender inequality might cause postponement of childbearing by increasing the likelihood of disagreement within the couple. The recent work of Rosina and colleagues (Cavalli, 2010; Cavalli & Rosina, 2009; Rosina & Testa, 2009) tends to support this hypothesis.

#### **3.1 Approach**

We take Rosina and Testa's (2009) analyses as our starting point. Following their approach, our goal is to model couples' agreement or disagreement about the intention to have a child.

We share the assumption that agreement to have a child is more likely to lead to having a

child in the short-term than disagreement, which is more likely to lead to postponement or an eventual decision to not have a child. Furthermore, we anticipate that policy interventions aimed at increasing fertility are likely to be more effective for couples who do not agree than for couples where both partners agree that not to have another child is the best option.

Based on the question “Do you intend to have another child in the next three years?” we build a three-level dependent variable that distinguishes between couples in which both partners intend to have a child (“Agree yes”), couples in which both partners intend not to have a child (“Agree no”), and couples in which either the man or the woman, but not both, intends to have a child (“Disagree”).<sup>4</sup> We then use multinomial logistic regression to compare these three states of agreement. After replicating Rosina and Testa’s economic-demographic model for couples who already have a child, we integrate insights from the TPB by introducing attitudes, perceived behavioural control, and subjective norms as explanatory factors.

Like Cavalli (2010), we focus on couples who already have a first child rather than childless couples. Our rationale is twofold. Firstly, lifetime childlessness remains a sufficiently rare state that the critical step for most couples, and for increases fertility toward the replacement rate, is the decision to have a second or subsequent child. Furthermore, the decision to have a first child is different from the decision to have a subsequent child. The effects of the life situation and characteristics of members of a couple on the decision to have a child differ when the child is the first or second child (Cavalli & Rosina, 2010). Differences can also be expected in social psychological influences: the decision to have one’s first child is also the decision to become a parent, i.e., a specific life-course transition for which the couple has no previous personal experience, while the decision to have a second child is influenced by

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<sup>4</sup> Our dependent variable differs somewhat from that of Rosina and Testa (2009) who compared agreement with disagreement and situations in which the male wanted to have a child but the female did not and in which the female wanted to have a child but the male did not. Our data did not support such a distinction.

experiences of parenthood (Hobcraft & Kiernan, 1995). These considerations are supported by the results of earlier work in the REPRO project in which we observed that, for individuals, the decision to have a second child is more cognitively complex, and draws on more factors, than the decision to become a parent in the first place (Klobas, 2010).

### **3.2 Data**

Data are drawn from the Multipurpose Household Survey on Family and Social Subjects (FFS) carried out in 2003 in Italy by the national statistics unit, ISTAT. This is the same data set as that used by Rosina and his colleagues (Cavalli, 2010; Cavalli & Rosina, 2009; Rosina & Testa, 2009). We restrict our attention to couples who already have one child and where the female partner is aged between 25 and 39. Moreover, due to the very small number of males not in paid employment group, we restrict analyses to couples in which the male is employed<sup>5</sup>.

The age range for analysis was limited to women between 25 and 39 years old because this is the age range in which women in Italy might reasonably be expected to be in a position to be making the decision to have their second child. Empirically, the sample contained very few women under 25 who had already had a child ( $n = 56$ ), and the vast majority of couples where the female is aged 40 or over agree that they should not have a(nother) child (Table 1). We would have liked to have split the file to deal with more restricted age ranges, since previous work has shown that the psychological mechanisms determining childbearing decisions tend to be very age-specific (Klobas, 2010), but there were insufficient data in our sample to support further age range restriction.

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<sup>5</sup> We considered several ways to weight cases so that these variables could be incorporated in the models, but given the very low numbers of cases in the cells of the multivariate analysis, none was reliable and effects varied markedly when only 1 or 2 cases were removed.

Table 1. Couple agreement on fertility intentions by female's age group, couples with one child (parity = 1)

<i>Agreement</i>	Agree yes	Agree no	Disagree
<i>Age</i>			
25-39	507 (53.0%)	319 (33.3%)	131 (13.7%)
40-49	22 (4.9%)	411 (91.1%)	18 (4.0%)
Total	555 (38.1%)	741 (50.9%)	161 (11.1%)

*Note.* Total observations = 1,457.

After removing couples for whom data on religiosity were missing for one or both partners, as well as couples where the male was not in paid employment and couples for whom TPB data were completely missing for at least one partner, the sample size available for this study was 588.

### **3.3 Model 1: Replication of Rosina and Testa (2009) for couples with one child**

Since we aim to test the value of integrating insights from the TPB into a more traditional approach to explaining couples' second birth intentions, we start with models that do not include TPB variables. Our first model uses variables included by Rosina and Testa in their model of couples' first birth intentions: the educational level of both male and female, male and female employment status, whether or not the female is satisfied with the division of household chores<sup>6</sup>, and male and female religiosity (measured as whether they attend mass or other religious services at least once a week or not).<sup>7</sup> In addition, since we are dealing with couples who already have a child, we add a variable that distinguishes couples who have a

<sup>6</sup> Female satisfaction with division of household chores was reduced to a dichotomous variable in our analyses, although it was a four level variable in Rosina and Testa's (2009) work. Few respondents in our sample used the second and fourth response categories, so we collapsed quite a lot and a great deal into "satisfied" and not at all and a little into "not satisfied".

<sup>7</sup> Rosina and Testa also controlled for the area of residence of the couple (North vs. South) which was not significant and is omitted here. Type of union (married or cohabiting without marriage) is also omitted from our analyses because too few unmarried couples with one child ( $n = 26$ ) were available.

young child (aged three years or less) from those with an older child. (Couples who already have a younger child may plan to delay having their second child beyond the three year time frame of the intention variable.) We also include mother's age (and age squared) to allow for the likelihood that older mothers will be less likely to delay having their second child.

Descriptive statistics for these variables are in Table 2.

Table 2. Descriptive statistics for couples with one child where woman is aged 25-39

	<i>n</i>	Agree yes		Agree no		Disagree	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Sample	558	323	57.9	152	27.2	83	14.9
Age of (first) child							
... <=3	337	222	66.3	64	19.1	49	14.6
older than 3	225	101	45.3	88	39.5	34	15.2
Type of union							
married	532	308	57.9	147	27.6	77	14.5
not married	26	15	57.7	5	19.2	6	23.1
Male education							
did not complete secondary	232	129	55.6	74	31.9	29	12.5
secondary	265	161	60.8	63	23.8	41	15.5
tertiary	61	33	54.1	15	24.6	13	21.3
Female education							
did not complete secondary	178	94	52.8	60	33.7	24	13.5
secondary	313	187	59.7	79	25.2	47	15.0
tertiary	67	42	62.7	13	19.4	12	17.9
Female employment <sup>a</sup>							
housewife	185	118	63.8	45	24.3	22	11.9
employed	338	186	55.0	99	29.3	53	15.7
other	35	19	54.3	8	22.9	8	22.9
Female satisfaction with division of household chores							
not satisfied	99	52	52.5	27	27.3	20	20.2
satisfied	459	271	59.0	125	27.2	63	13.7
Male religious attendance							
less than once a week	437	249	57.0	119	27.2	69	15.8
more than once a week	121	74	61.2	33	27.3	14	11.6
Female religious attendance							
less than once a week	362	201	55.5	105	29.0	56	15.5
more than once a week	196	122	62.2	47	24.0	27	13.8
Female's age		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
		32.7	4.0	34.1	4.0	31.9	3.6

Note. <sup>a</sup> 'Housewife' and 'other' category collapsed to 'not in paid employment' for modelling given small *n* for other.

Table 2 includes union type, even though it was omitted from inferential modelling, because the descriptive data suggests that couples cohabiting without marriage are more likely to disagree, consistent with Rosina and Testa (2009). Other characteristics, included in the models, that appear to be associated with higher probability of disagreement are tertiary educated male, female neither in paid employment nor a housewife, female not satisfied with division of household chores, and frequent male attendance at mass.

The inferential analysis (Table 3) shows that none of the characteristics in the Rosina and Testa model distinguish couples with one child who agree (either to have or not to have another child) from those who disagree (Agree yes .v. Disagree and Agree no .v. Disagree columns). Among those couples who agree, couples whose first child is under three are less likely to want to have another child in the next three years, but this effect is outweighed by the stronger effect of the mother's age (odds ratios<sup>8</sup> in Table 4). When the wife attends mass weekly, the couple is also more likely to intend to have a second child during the next three years. The final rows of Table 3 show that this model improves fit as measured by change in -2 log-likelihood (-2LL), has a modest pseudo- $R^2$  and correctly classifies 63.8% of couples into agreement category, but it is unsatisfactory because it fails to distinguish couples who disagree from those who agree.

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<sup>8</sup> For these multinomial logistic regressions, the odds ratio for any pair of agreement categories are assumed to be independent of all other categories, so we interpret each binary comparison rather than attempt to compare effect strengths across all three agreement categories.

Table 3. Model 1: Effects of woman's and man's characteristics on couple's agreement to have a child, likelihood ratio, coefficients and model quality

	-2LL	Agree yes .v. Disagree <sup>a</sup>	Agree no .v. Disagree <sup>a</sup>	Agree yes .v. Agree no <sup>a</sup>
Intercept	834.72	-11.81	6.49	-18.31*
<i>Variables</i>				
Female age	842.73*	0.84	-0.47	1.31**
Female age squared	842.70**	-0.01	0.01	-0.02**
First child older than 3	844.13*	0.40	-0.33	0.73**
Male education	837.51			
did not complete secondary		0.67	0.51	0.16
secondary		-0.37	0.17	0.25
Female education	839.13			
did not complete secondary		-0.31	0.64	-0.84
secondary		-0.13	0.34	-0.41
Female not in paid employment	837.51	0.23	-0.15	0.38
Woman satisfied with division of chores	836.75	-0.44	-0.32	0.12
Male attends mass weekly	839.00	-0.24	-0.94	-0.71
Female attends mass weekly	843.14**	-0.20	0.79	-0.99**
Model improves intercept -2LL by	78.99			
Pseudo $R^2$			.155	
% of couples classified correctly			63.1	
% of couples who disagree classified correctly			0.0	

Note. -2LL is -2 log likelihood.

<sup>a</sup>The second category is the reference category.

\*  $p < 0.05$ . \*\*  $p < 0.01$ .

Table 4. Odds ratios for significant variables in Model 1

	Agree yes .v. Agree no
Female age	3.70**
Female age squared	0.98**
First child > 3	1.29**
Female attends mass weekly	2.68**

Note. \*  $p < 0.05$ . \*\*  $p < 0.01$ . \*\*\*  $p < .001$ .

### 3.4 Model 2: Couple characteristics

Model 1 used individual characteristics of the two partners as explanatory variables.

However, Rosina and colleagues reported many of their results in terms of the relative strength of a characteristic in the couple (e.g., females more educated than males) and Cavalli (2010) explicitly included joint couple characteristics in selected multinomial and probit

model tests, albeit with mixed results. This approach makes sense empirically because characteristics such as level of education and religious observance are often common to both partners in couples. We therefore present a second model that substitutes combined couple characteristics for the individual characteristics.

In Model 2, a couple education variable distinguishes couples who have equal educational attainment or where the male is more highly educated from couples in which the female is more educated; employment status is represented by a dummy variable that takes the value 1 if both partners are in paid employment and 0 when the male is the only member of the couple in paid work; and couple religiosity distinguishes between couples where partners share the same frequency of mass attendance and couples where the female is more religious (there were no couples where the male was more religious). Descriptive statistics for these new variables are in Table 5. As might be expected from Model 1, religiosity appears to make a difference.

Table 5. Couple characteristics

		Agree yes		Agree no		Disagree	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Sample	558	323	57.9	152	27.2	83	14.9
Couple education							
common or male more educated	422	240	56.9	120	28.4	62	14.7
female more educated	136	83	61.0	32	23.5	21	15.4
Couple employment							
both employed	338	186	55.0	99	29.3	53	15.7
only male employed	220	137	62.3	53	24.1	30	13.6
Couple religiosity							
common religiosity	483	275	56.9	138	28.6	70	14.5
female more religious	75	48	64.0	14	18.7	13	17.3

Table 6 shows the results of the multinomial logistic regression with couple characteristics and Table 7 contains the odds ratios for the significant variables in the model. In terms of fit and ability to classify couples correctly, this model is not superior to Model 1. It does, on the

other hand, seem more sensitive to the effect of religiosity: in this model, unlike Model 1, common religiosity emerges as a statistically significant explanation of the difference between agreement not to have a child and disagreement. Couples with common religiosity are more likely to agree not to have a child than to disagree, but as the descriptive statistics in Table 5 suggested, they are also more likely to agree not to have a child than to agree to have a child. This second result seems counter-intuitive until we recall that common religious observance includes both couples who attend religious services at least once a week and those who do not attend services at least once a week and, as Table 2 shows, the sample includes more individuals who say they do not attend services weekly than those who say that they do. Furthermore, the reference category for this variable consists of couples in which the female is more religious than the male and the results can also be interpreted as indicating that when the female is more religious, the couple is more likely to disagree, but if they agree, they are more likely to share intentions not to have another child during the next three years.

Table 6. Model 2: Effect of couple characteristics on couple’s agreement to have a second child, likelihood ratios, coefficients and model quality

	-2LL	Agree yes .v. Disagree <sup>a</sup>	Agree no .v. Disagree <sup>a</sup>	Agree yes .v. Agree no <sup>a</sup>
Intercept	601.69**	-11.58	6.97	-18.56*
<i>Variables</i>				
Female age	610.54**	0.86	-0.52	1.38**
Female age squared	611.99**	-0.01	0.01	-0.02**
First child older than 3	614.35**	0.31	-0.51	0.82***
Female is not more educated	604.24	-0.05	0.34	-0.39
Only male is employed	603.55	-0.26	0.02	-0.27
Woman satisfied with division of chores	604.25	-0.49	-0.35	-0.14
Common religious observance	609.92	-0.07	0.86*	-0.93**
Intercept	601.69**	-11.58	6.97	-18.56*
Model improves intercept -2LL by	70.75			
Pseudo $R^2$			.14	
% of couples classified correctly			62.7	
% of couples who disagree classified correctly			0.0	

Note. -2LL is -2 log likelihood.

<sup>a</sup>The second category is the reference category.

\*  $p < 0.05$ . \*\*  $p < 0.01$ . \*\*\*  $p < .001$ .

Table 7. Odds ratios for significant variables in Model 2

	Agree no .v. Disagree	Agree yes .v. Agree no
Female age		3.96**
Female age squared		0.98**
First child older than 3		2.28***
Common religious observance	2.35*	0.40**

Note. \*  $p < 0.05$ . \*\*  $p < 0.01$ . \*\*\*  $p < .001$ .

### **3.5 Model 3: Male and female attitudes, subjective norms and perceived control**

To look at the effect of attitudes, subjective norms and perceived behavioural control on fertility decision making among Italian couples we create composite variables from FFS items designed to measure the concepts in the TPB. These items are described in detail in an earlier REPRO deliverable (Klobas, 2010) and summarised here.

We begin by discussing measurement of subjective norm because it differs in this study from the others in this series. Subjective norm was measured in the FFS by asking each respondent the extent to which they believed each of three normative referents – friends, mother, and father – agreed with their decision to have another child. The number of missing values in responses to questions about all three referents was high and, unlike the other countries examined in our earlier REPRO work, the correlation between friends and parents was low. Conversely, the correlation between scores for mothers and fathers was near to 1 (where data were available for both parents). Mother was used as the sole normative referent in this study to maximise the number of cases that could be included in the analysis. We recoded values from the original 5-point response scale to two levels contrasting agreement and strong agreement that mother would be pleased if the respondent had another child with all other

responses (neither agree nor disagree, disagree and strongly disagree). Descriptive statistics are in Table 8. The perception that their mother would like them have another child is strongly associated with intention to have a child for both males and females. The data also suggest that when the woman does not feel she has her mother's support to have another child, the couple is more likely to disagree.

Table 8. Descriptive statistics for subjective norm (perceived mother's opinion), males and females

	<i>n</i>	Agree yes		Agree no		Disagree	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Sample	558	323	57.9	152	27.2	83	14.9
Male believes that mother agrees or strongly agrees	438	284	64.8	90	20.5	64	14.6
other response	120	39	32.5	62	51.7	19	15.8
Female believes that mother agrees or strongly agrees	426	281	66.0	88	20.7	57	13.4
other response	132	42	31.8	64	48.5	26	19.7

We performed a factor analysis to identify which of the TPB items in the questionnaire were suited to represent the concepts of attitudes and perceived behavioural control (details in the Appendix). Consistent with Billari et al. (2009), Dommermuth et al. (2009) and Klobas (2010), two attitudes factors and one perceived control factor were identified. Attitudes were measured on a scale from 1 (*much better*) to 5 (*much worse*) and reversed for analysis.

Attitude 1 gathers beliefs about anticipated costs or losses from having another child. These concern effects on employment, partner's employment (relevant for both males and females in this sample), financial situation and personal freedom. Attitude 2, which represents beliefs related to the positive consequences of childbearing, incorporates anticipated joy and satisfaction, certainty in life and closeness with partner and parents. FFS questions to measure perceived behavioural control asked how much the decision to have a child was affected by a number of factors usually considered barriers to childbearing. Responses ranged from 1 (*not*

at all), interpreted as strong control, to 4 (*a great deal*), interpreted as weak control, and reversed for analysis. The barriers included in our measure are own work, partner's work, financial situation, housing conditions, health, and childcare availability. The mean score of the items that loaded on each factor were used to represent each concept. The values appear in Table 9<sup>9</sup>.

Table 9. Mean and standard deviation, attitudes and perceived control, for males and females by couple agreement

	Males			Females		
	agree yes	agree no	disagree	agree yes	agree no	disagree
Attitude 1 (Costs)	2.79 <i>0.36</i>	2.64 <i>0.38</i>	2.72 <i>0.36</i>	2.78 <i>0.39</i>	2.61 <i>0.41</i>	2.72 <i>0.39</i>
Attitude 2 (Benefits)	3.74 <i>0.47</i>	3.28 <i>0.43</i>	3.58 <i>0.47</i>	3.83 <i>0.52</i>	3.31 <i>0.51</i>	3.47 <i>0.46</i>
Perceived control	2.09 <i>0.69</i>	2.20 <i>0.75</i>	2.28 <i>0.80</i>	2.10 <i>0.72</i>	2.26 <i>0.76</i>	2.10 <i>0.68</i>

*Note.* Attitudes on a 5 point scale from 1 *much worse* to 5 *much better*. Perceived control from 1, low control: [*decision*] depends a great deal to 4, high control: [*decision*] does not depend at all. Standard deviation in italics below mean.

Descriptively, both men and women expect to be worse off in terms of the costs of having another child and better off in terms of the benefits. Males and females in couples who agreed not to have another child during the next three years expected to be a little worse off on average than males and females in couples that agreed to have a child or had conflicting intentions. Similarly, both males and females in couples who agreed not to have a child were less positive about the benefits of having a child, while those in couples that agreed to have a child were more positive on average about expected benefits. While the expected benefits of couples who disagreed lay between these two positions, females who disagreed had a weaker expectation of benefits than males who disagreed. Females appear to have a slightly stronger sense of control than males, but there was less apparent difference in perceived control than in

<sup>9</sup> Not shown in the table is that all variables are approximately normally distributed.

attitudes. Interestingly, males and females in couples who agreed to have a child during the next three years reported slightly less control than the others, but this might be because the reality of dealing with another child is more immediate or salient to them.

Model 3 adds the TPB variables to the couple variables from Model 2. The regression results are in Table 10 while Table 11 contains the odds ratios for the significant variables. The effect of adding the TPB variables is quite marked. Model fit is much better but, while the overall percentage of couples correctly classified by the model is slightly higher than for Models 1 and 2, Model 3 is still poor when it comes to distinguishing couples who disagree from those who agree. There remains an echo of the effects of the couple characteristics observed in Models 1 and 2, but their effects are smaller. Instead, male and female attitudes to the benefits of having another child, and to a lesser extent, the female's perception that her mother supports her decision, dominate the model. The nature of these effects is interesting. The stronger the female's belief that having a child will improve her life, the more likely the couple is to agree than to disagree about having another child, while the weaker the male's belief that having a child will improve his life, the more likely the couple is to agree not to have a child than to disagree. The positive expectations of both males and females contribute to agreement to have another child relative to agreement to not have another child and, as the descriptive analysis suggested, when the female does not have or perceive she has her mother's support, the couple is more likely to agree not to have another child than to have another child.

Table 10. Model 3: Effects of couple characteristics and attitudes, subjective norms and perceived control on couple agreement, coefficients, log-likelihood and model quality

	-2LL	Agree yes .v. Disagree <sup>a</sup>	Agree no .v. Disagree <sup>a</sup>	Agree yes .v. Agree no <sup>a</sup>
Intercept	846.30	-8.45	-1.434	-7.01
<i>Couple characteristics</i>				
Female age	852.06 <sup>†</sup>	0.92	-0.32	1.24*
Female age squared	852.89*	-0.02	0.01	-0.02*
First child older than 3	852.81*	0.23	-0.45	0.69*
Female is not more educated	847.18	0.05	0.29	-0.24
Only male is employed	847.62	-0.25	-0.002	-0.25
Woman satisfied with division of chores	850.12	-0.65*	-0.41	-0.24
Common religious observance	851.09 <sup>†</sup>	-0.08	0.72	-0.80*
<i>Cognitive variables</i>				
Males				
Attitude 1 (costs)	848.93	0.46	-0.20	0.66
Attitude 2 (benefits)	865.54***	-0.22	-1.54***	1.33***
Subjective norm (mother)	849.53	-0.17	0.42	-0.58 <sup>†</sup>
Perceived control	847.21	-0.13	-0.28	0.15
Females				
Attitude 1 (costs)	848.50	-0.40	-0.74	0.34
Attitude 2 (benefits)	869.51***	1.40***	0.44	0.97**
Subjective norm (mother)	852.82*	-0.66 <sup>†</sup>	0.09	-0.75*
Perceived control	848.88	-0.36	-0.05	-0.31
Model improves intercept -2LL by	218.53			
Pseudo $R^2$			.38	
% of couples classified correctly			69.5	
% of couples who disagree classified correctly			2.4	

Note. -2LL is -2 log likelihood.

<sup>a</sup>The second category is the reference category.

<sup>†</sup>  $p < .01$ . \*  $p < 0.05$ . \*\*  $p < 0.01$ . \*\*\*  $p < .001$ .

Table 11. Odds ratios for significant effects in Model 3<sup>10</sup>

	Agree yes .v. Disagree	Agree no .v. Disagree	Agree yes .v. Agree no
Female age			3.44*
Female age squared			0.98*
First child > 3			1.98*
Common religiosity			0.45*
Male Attitude 2 (benefits)		0.21***	3.70***
Female Attitude 2 (benefits)	4.00***		2.63**
Female Subjective norm (mother)			0.47*

Note. \*  $p < 0.05$ . \*\*  $p < 0.01$ . \*\*\*  $p < .001$ .

<sup>10</sup> We ignore female satisfaction with household chores which is not significant at the model level.

### 3.6 Model 4: Shared cognitions model

Although both male and female attitudes operate differently in Model 3, the likelihood that couples share attitudes and perceptions of control has empirical as well as theoretical consequences for modelling because high correlations between variables in regression models can result in unstable coefficients. The correlations between male and female cognitions in Table 12 show that this risk exists here. We therefore tested for the possible effect of interaction between male and female attitudes and PBC. We suggest that the interactions can be interpreted as representing the extent to which males and females within a couple share common attitudes and common perceptions of control.

Table 12. Correlations between female and male attitudes and female and male perceived behavioural control (PBC)

	Male Attitude 1 (costs)	Male Attitude 2 (benefits)	Male PBC
Female Attitude 1 (costs)	.60		
Female Attitude 2 (benefits)		.62	
Female PBC			.73

*Note.* Pearson correlations, all significant at  $p < .001$ .

Interaction variables for attitudes and perceived behavioural control were constructed by multiplying the corresponding variables for males and females. A dummy interaction variable was also created for subjective norms to test the effect on agreement when both partners feel they have the support of their mothers. The model summary and coefficients appear in Table 13.

Table 13. Model 4: Effects of couple characteristics and male, female and common cognitions on agreement to have a second child, coefficients, log-likelihood and model quality

	-2LL	Agree yes .v. Disagree <sup>a</sup>	Agree no .v. Disagree <sup>a</sup>	Agree yes .v. Agree no <sup>a</sup>
Intercept	830.02	-8.49	-1.39	-7.10
<i>Couple characteristics</i>				
Female age	835.97 <sup>†</sup>	0.98	-0.26	1.24*
Female age squared	836.80*	-0.02	0.01	-0.02*
First child older than 3	835.70 <sup>†</sup>	0.36	-0.28	0.64*
Female is not more educated	830.93	0.06	0.30	-0.24
Only male is employed	831.57	-0.30	-0.05	-0.25
Woman satisfied with division of chores	834.00	-0.68*	-0.46	-0.22
Common religious observance	833.79	-0.13	0.61	-0.73 <sup>†</sup>
<i>Cognitive variables</i>				
Males				
Attitude 1 (costs)	834.77 <sup>†</sup>	-9.78*	-14.26	4.48
Attitude 2 (benefits)	831.44	0.92 <sup>†</sup>	4.13	-3.00
Subjective norm (mother)	835.44 <sup>†</sup>	0.42	1.24*	-0.82
Perceived control	836.20*	-2.86	-6.62*	3.76
Females				
Attitude 1 (costs)	834.05	-8.86	-13.54	4.69
Attitude 2 (benefits)	830.92	0.92	2.37	-3.22
Subjective norm (mother)	836.43*	0.27	1.33*	-1.06*
Perceived control	835.54 <sup>†</sup>	-2.97	-6.12*	3.15
Common				
Attitude 1 (costs)	834.49	18.33*	28.52	-10.19
Attitude 2 (benefits)	830.61	-1.52	-5.40	3.88
Subject norm (mothers)	835.19	-1.21	-1.71*	0.49
Perceived control	835.66 <sup>†</sup>	5.39 <sup>†</sup>	12.42*	-7.04
Model improves intercept -2LL by	234.81			
Pseudo $R^2$			.403	
% of couples classified correctly			69.5	
% of couples who disagree classified correctly			10.8	

Note. -2LL is -2 log likelihood.

<sup>a</sup>The second category is the reference category.

<sup>†</sup>  $p < .01$ . \*  $p < 0.05$ . \*\*  $p < 0.01$ . \*\*\*  $p < .001$ .

The effect of adding the interaction variables seems quite dramatic. Model quality is high and ability to correctly identify couples who disagree is improved, but the effect of attitudes based on the benefits of having a child seen in Model 3 disappears completely, and instead male's perceived control and the female's perception that she has her mother's support are the only TPB variables significant at .05. The only other variable that has a significant effect at .05 is

female's age. This result can be explained by the relationship between the TPB variables (Ajzen, 1991; 2005). As Table 14 shows, there is considerable interaction between subjective norm and the other TPB variables in the model, and values of all of the TPB variables that were significant in Model 3 differ depending on whether mother's support is perceived as positive or not.

Table 14. Interactions between attitudes and perceived control and subjective norm (mothers), after controlling for female's age

	Perceived support from mothers				<i>p</i>
	Positive <sup>a</sup>		Not positive <sup>a</sup>		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
<b>Males</b>					
Observations	438		120		
Attitude 1 (costs)	2.75	0.39	2.69	0.34	.11
Attitude 2 (benefits)	3.68	0.50	3.27	0.37	<b>&lt;.001</b>
Perceived control	2.13	0.72	2.21	0.75	.28
<b>Females</b>					
Observations	426		132		
Attitude 1 (costs)	2.76	0.41	2.64	0.36	<b>.003</b>
Attitude 2 (benefits)	3.72	0.55	3.35	0.49	<b>&lt;.001</b>
Perceived control	2.14	0.74	2.30	0.69	<b>.02</b>
<b>Couples</b>					
Observations	386		172		
Attitude 1 (costs)	2.76	0.37	2.69	0.31	<b>.04</b>
Attitude 2 (benefits)	3.72	0.48	3.4	0.41	<b>&lt;.001</b>
Perceived control	2.12	0.69	2.21	0.66	.12

*Note.* Results from *t*-tests of mean differences, adjusted for differences in variation where necessary. Differences significant at  $p < .05$  are highlighted.

<sup>a</sup>For couples, the comparison is between both male and female perceive positive support and one or neither perceive(s) positive support.

There were insufficient data to test a logistic regression model that included interaction variables, but the tests of mean differences in Table 14 underline the importance of mothers' support for having a child in Italy. Women who believe they have their mother's support also rate the costs of having a child as lower and perceive that they have more control over the factors upon which having a child depend. The importance of mother's support, and its interaction with perceived control may be particularly important in Italy where access to

childcare is poor, an interpretation consistent with the conclusions drawn by Cavalli (2010) from demographic modelling of influences on agreement among Italian couples. A mother's support is, however, more than material support such as support with childcare. When women, men and couples feel they have support from their mothers, they also believe more strongly that having another child will improve their life.

### **3.7 *Alternative approaches to modelling fertility intentions in couples***

The analyses reported above adopt Rosina and Testa's (2009) approach to modelling fertility intentions, but other approaches are possible, as are other approaches to incorporating social psychological variables in a model of fertility intentions. In this section, we first consider an alternative approach to modelling social cognitions, then discuss alternative ways to conceptualise couples' intentions.

#### **3.7.1 *Drilling down to specific beliefs***

A weakness of the approach to modelling social cognitions as composite variables as done here is that many issues of interest to demographers and policy makers confronted with the task of making policies to support childbearing are folded up into the more general measures of attitudes and perceived control. An alternative approach to examining beliefs about these individual issues and their effects on couples' agreement was examined for the REPRO project. Structural equation modelling (SEM) allows the contribution of each belief to the higher order concept to be measure. This approach was used in the REPRO country comparisons (Klobas, 2010), but the Italian couples data did not support its use here.

It would also be possible to select individual beliefs and examine their effect on couples' intentions. This approach is really only feasible when a limited number of beliefs is included in the analyses, and would only produce reliable results if hypotheses were available to guide selection of beliefs.<sup>11</sup> In this case, our purpose was to test the feasibility of including social psychological concepts in general, so testing the effects of individual variables was less appropriate than testing the effects of the concepts in general.

### **3.7.2 Alternative approaches to defining couples' intentions**

A number of other approaches might be taken to defining couples' intentions. We consider two here: an alternative definition of a couple's joint intention to have a child, and separate modelling of female (male) intentions, taking the woman's (man's) perceptions of her (his) partner's views about having a child into account.

A different definition of joint couple intention might weight the more strongly held intention (e.g., *certainly* intend to have a child rather than *probably* intend to have a child) of a member of the couple more strongly than the more weakly held intention. Another approach, used here in initial analysis of the data from Bulgaria, might score couples' joint intentions as the intention least likely to result in a birth, so that where one member of a couple certainly intends not to have a child and the other probably intends to have a child, the couple's joint intention is scored as an intention not to have a child, on the assumption that – at least for the decision to have a second child – the least positive intention is likely to prevail.

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<sup>11</sup> Both the techniques used and the size of the data set place limitations on the number of variables that can reliably be included, particularly in the case of the TPB variables available from FFS, which are correlated with one another.

Given that the TPB is a model of individual decision making, the influences on females' intentions could be modelled separately, taking the woman's perceptions of her partner's views on having a child into account. A similar, but separate model, could also be built for males. Such an approach would be consistent with earlier demographic models of decision making in couples, for example, it would allow for separate male and female formulation of intentions based on cognitions formed through negotiation between the partners, as proposed by Miller et al. (2004). Such a model would require one or more appropriate indicators of one partner's perceptions of the other's views. Within the TPB framework, the simplest (but not the only) way to model one partner's perceptions of the other's views would be to include the partner as a normative reference and ask the respondent about the extent to which they felt their partner wanted them (i.e., the partner) to have another child. Such a variable was not available for this study. The nearest substitute is the partner's stated intention. Following Thomson (1997), but adopting the variables used in our models and the insights obtained from this work, we studied the effect of incorporating partner's intention in separate models of female intention to have a second child and male intention to have a second child. In Italy, the base model provided a satisfactory explanation of intention to have a child (pseudo  $R^2 = .20$  for both females and males). Addition of partner intention markedly improved model fit (pseudo- $R^2$  more than doubles to .44 for females and .43 for males) but it is unclear what value is gained from this approach other than confirmation that women generally take their male partner's intentions into account when making the decision to have a child and men generally take their female partner's intentions into account, as already noted by Thomson (1997) and others. More information could potentially be gained by producing separate male and female models, but taking joint intention as the dependent variable, an approach that is incorporated in modelling of couples' intentions to have a second child in Bulgaria and described in the next section.

## 4 Bulgaria

This section introduces analyses of couples' fertility intentions in Bulgaria. The data used here have been extensively analysed for single persons' intentions and findings have been presented in several publications. Particularly important for the present analysis is the paper by Billari et al. (2009) who applied the TPB, as well as REPRO's deliverable D4.10 "A comparative analysis of fertility behaviour: Bulgaria and Hungary".

The research reported here is a continuation of the one reported by Billari et al. and of deliverable 4.10, so we describe only in brief the data and construction of variables, and present limited descriptive analysis. Inferences, results, tables and models reported here have not been discussed in the other papers.

### 4.1 Data and methods

We use data from a survey in Bulgaria, carried out in 2002 with the purpose of studying family formation and childbearing. The sample size included 10,003 men and women aged 18-34 completed years, in couples and singles, plus a small number of spouses beyond the upper age limit. The sample was representative by age, marital status, and region. The draw was based on the population census carried out in the preceding year, as well as the civil registration system existing in Bulgaria. The upper limit of the age span was selected such that the major events referring to family formation should have taken place by that age. We note that Bulgaria is among the European countries with very low mean age at the birth of the first child; in 2003 it was 24.3 years for females. This data set offered the opportunity to test the effect of several demographic variables not available for Italy, as well as to confirm the value of using the TPB for modelling couples' intentions using slightly different approaches to definition and modelling.

The following basic question was used to measure intention: "*Do you intend to have a (another) child during the next two years?*" (for pregnant women the question is continued: "...*besides the one you are expecting?*"). The question is formulated separately for respondents without children and for respondents who have at least one child. The answer is selected from four responses: "*Definitely not; probably not; probably yes; definitely yes*".

Attitudes were measured asking the following question: "*If you would have a child during the next two years, irrespective of whether you really wish to have a child or not, to what extent do you agree that this would...*" with a sequence of 12 different consequences for a childbirth being added. They were divided into negative (for example "...*increase your economic difficulties*"), and positive (for example "... *increase joy and satisfaction in your life*"). These 12 questions were factored to give the two main factors identified for Italy and in previous REPRO work: one for the attitudes to positive outcomes, and one for the negative attitudes.

Subjective norms were measured with a system of questions designed to collect information about most-important others. The opinion of the five most important others for the respondent having a/another child formed the basis for the construction of one composite variable.

Perceived control was measured using two batteries. The first one is based on the question "*How much would your decision on whether to have or not to have a child during the next two years depend on the following conditions?*", with four answers being available. The second one is the question "*How much control do you feel you will have over the following circumstances in your life in the next two years?*" with four answers that match those in the

previous question. For example one of the four answers in the former question is “*Your economic status*”, and its match in the second question is “*Your income*”.

We use a series of other variables whose construction is described in the papers cited above.

The variables are self-explanatory and do not need specific discussion. They include:

- age, in age groups of 3 years;
- union status: married or cohabiting; singles are skipped as the interest here is on couples only
- number of siblings: 0, 1, or 2
- household income: presented per household member in quartiles
- dwelling: square meters per person
- religiosity: dichotomous, religious or not
- education: lower than secondary, secondary, higher than secondary
- employment: working or not working

## **4.2 Descriptive examination of Bulgarian couples’ intentions**

Table 15 and Table 16 below provide information about the matching of intentions of partners in a couple. The section of each table below the main diagonal is empty because it is symmetrical to the part of the table above the diagonal.

Altogether 242 couples had no child and their intentions refer to having a child during the next two years (Table 15). In 87 or 36% of these 242 couples both partners had a certain

intention to have a child. It is interesting to note the congruence of partners' intentions: in only around 10% of all couples the partners have different intentions.

Noteworthy is the decline in the proportion of couples with the decline of the strength of the intention to have a child. This observation is explained with the prevalence of entry into parenthood in Bulgaria which is usually performed shortly after entry into a marriage (although our couples include both marriages and non-marital unions)

Table 15. Fertility intentions to have a first child, in percent (number of couples  $n=242$ )

<i>Intention of one partner :</i>	<i>Intention of the other partner</i>			
	Certainly yes	Probably yes	Probably not	Certainly not
Certainly yes	36.0	2.9	0.6	0.8
Probably yes		28.9	2.7	0.6
Probably not			13.0	2.5
Certainly not				11.0

Observations differ significantly for intentions to have a second child (table 4.2). Out of the 954 couples, in only 5.7 percent do the partners have equal intentions to certainly have a child during the next two years. Less than 30% of the couples show an intention to have a second child soon, and the remaining 70% are inclined not to have a child in the near future.

Congruence of intentions is prevalent in this case as well, although not as marked as in the case of intending a first child.

Table 16. Fertility intentions to have a second child, in percent (number of couples  $n= 954$ )

<i>Intention of one partner :</i>	<i>Intention of the other partner</i>			
	Certainly yes	Probably yes	Probably not	Certainly not
Certainly yes	5.7	5.1	1.6	1.0
Probably yes		18.3	9.1	4.4
Probably not			21.2	12.4
Certainly not				21.2

Table 16 shows considerably less variance over couples with respect to the childbearing intentions. Actually first births are predictable by entry into marriage. We examine in more detail intentions for having a second child.

### **4.3 Couples' intentions model**

We first apply an ordinary logit regression where couples' intentions are ordered from negative to positive, and a value is defined by taking the lower intention of the two partners. For example, when one partner's intention is "*certainly not*", and the other partner's intention is different, then the variable is defined as "*certainly not*". We also use methods similar to those used by Rosina and Testa (2009): a series of binary logit models. Table 17 displays the results. Columns 2 and 3 give the coefficients and *p*-values from the women's perspective and columns 4 and 5 inform about the men's perspective (for one and the same dependent variable of couple's intentions).

For the TPB variables the results by and large coincide with those received for a person without reference to couples (which includes also single persons), reported by Billari et al. (2009), table 2. This result is due to the fairly high level of congruence of partners' intentions. The only difference is that the application of an ordinary logistic regression here relies on proportional odds while in Billari et al. a non-proportional approach was applied; this explains the difference in the statistical significance of perceived control for men: an application of non-proportional odds in our case also gives significant coefficients similar to those in Billari et al. (table 2).

Table 17. Ordinary logistic regression with couples' intentions as dependent variable,

	Women's perspective		Men's perspective	
	Coefficient	<i>p</i>	Coefficient.	<i>p</i>
Age				
18-20	<b>-0.61</b>	0.01	0.52	0.31
21-23	0.05	0.79	0.06	0.80
24-26 (base)	-		-	
27-290	-0.21	0.17	0.28	0.10
30-32	-0.22	0.18	0.21	0.23
33+	<b>-0.90</b>	0	-0.07	0.69
Number of siblings				
0 (base)	-		-	
1	0.04	0.79	-0.07	0.65
2	0.13	0.49	0.11	0.56
Employment				
Do not work (base)	-		-	
Work	0.12	0.30	0.17	0.28
Religious				
Yes (base)	-		-	
No	-0.13	0.24	0.02	0.85
Household income				
Lowest quartile (base)	-		-	
Quartile 2	0.18	0.22	0.16	0.30
Quartile 3	<b>0.32</b>	0.04	0.15	0.36
Highest quartile 4	<b>0.60</b>	< .001	<b>0.48</b>	0.005
Dwelling, sq.m. per person (incr.)	0.16	0.37	0.11	0.57
Education				
Below sec.	0.21	0.22	0.17	0.30
Secondary (base)	-		-	
Above sec.	<b>0.51</b>	< .001	<b>0.35</b>	0.02
TPB variables				
Positive attitudes	<b>0.35</b>	< .001	<b>0.18</b>	0.002
Negative attitudes	<b>-0.28</b>	< .001	<b>-0.16</b>	0.01
Subjective norms	<b>0.18</b>	.001	<b>0.19</b>	0.001
Perceived control	<b>0.12</b>	0.03	0.06	0.24

Note. Coefficients in bold have  $p < 0.05$ .

In this model we applied control variables, unlike by Billari et al. (2009). We find that men and women with higher education are more likely to have positive intentions to have a child in two years than persons with lower levels of education. Analogously persons with higher

household income per household member are more likely to have positive childbearing intentions.

#### **4.4 Couple's agreement model**

Table 18 presents results from three binary logistic regressions. They are based on defining a couple's positive intentions as those where both partners have positive intentions to have a child in two years, whether certainly or probably; couple's negative intentions as those where both partners certainly or probably do not want to have a child during the next two years, and couple's different intentions, where one partner wants and the other does not want a child. Model 1 contrasts couple's positive vs. couple's negative intentions to have a second child and similarly Models 2 and 3 are defined as can be seen in the table. In each model we consider three perspectives: couple's, women's, and men's. A comparison of the couple's perspective with the gender perspective gives indirect information about the dominance of gender-specific personal attributes. This model construction introduces a selection because each model uses two out of the three available groups of couples. Experiments with modelling this selection showed no particular effect of the selection.

Table 18. Binary logistic regressions with couples' intentions to have a second child

Dependent variable	Model 1			Model 2			Model 3		
	Couple's positive vs. couple's negative intentions			Couple's positive vs. couple's different intentions			Couple's different vs. couple's negative intentions		
	Couple	Women	Men	Couple	Women	Men	Couple	Women	Men
Age									
18-20	-0.44	<b>-0.83</b>	0.91	-0.11	-0.57	1.36	-0.27	-0.30	-0.37
21-23	-0.01	-0.15	0.12	0.20	0.08	0.51	-0.08	-0.12	-0.23
24-26 (base)	-	-	-	-	-	-	-	-	-
27-29	0.08	-0.37	<b>0.64</b>	0.17	0.08	0.37	-0.04	-0.33	0.31
30-32	0.02	-0.30	<b>0.44</b>	<b>0.46</b>	0.41	<b>0.63</b>	<b>-0.43</b>	<b>-0.61</b>	-0.22
33+	<b>-0.38</b>	<b>-0.83</b>	0.08	0.30	0.02	<b>0.54</b>	<b>-0.68</b>	<b>-1.00</b>	-0.41
Number of siblings									
0 (base)	-	-	-	-	-	-	-	-	-
1	0.07	0.14	-0.04	-0.01	0.37	-0.32	0.07	-0.11	0.21
2	0.28	0.37	0.14	-0.05	0.32	-0.40	0.25	-0.02	0.50
Employment									
Do not work (base)	-	-	-	-	-	-	-	-	-
Work	-0.08	0.03	-0.11	-0.05	0.05	-0.20	0.03	0.01	0.26
Religious									
Yes (base)	-	-	-	-	-	-	-	-	-
No	<b>-0.27</b>	-0.26	-0.25	-0.07	-0.03	-0.08	-0.17	-0.17	-0.16
Household income									
Lowest quartile (base)	-	-	-	-	-	-	-	-	-
Quartile 2	0.24	0.25	0.22	0.14	0.25	0.05	0.07	-0.02	0.08
Quartile 3	0.26	<b>0.43</b>	0.09	0.08	0.13	0.10	0.15	0.25	-0.07
Highest quartile 4	<b>0.53</b>	<b>0.65</b>	0.44	<b>0.38</b>	<b>0.60</b>	0.27	0.16	0.09	0.13
Dwelling, sq.m. per person (incr.)	0.19	0.28	0.09	-0.16	-0.30	-0.10	<b>0.33</b>	<b>0.47</b>	0.15
Education									
Below sec.	<b>0.28</b>	0.20	0.39	0.25	<b>0.60</b>	-0.07	0.11	-0.17	<b>0.43</b>
Secondary (base)	-	-	-	-	-	-	-	-	-
Above sec.	<b>0.49</b>	<b>0.60</b>	0.34	<b>0.50</b>	<b>0.59</b>	0.30	0.00	0.00	-0.02
TPB variables									
Positive attitudes	<b>0.34</b>	<b>0.44</b>	<b>0.25</b>	<b>0.14</b>	<b>0.18</b>	0.13	<b>0.19</b>	<b>0.22</b>	<b>0.13</b>
Negative attitudes	<b>-0.24</b>	<b>-0.31</b>	<b>-0.18</b>	<b>-0.11</b>	<b>-0.18</b>	-0.02	<b>-0.14</b>	-0.12	-0.18
Subjective norms	<b>0.22</b>	<b>0.20</b>	<b>0.23</b>	<b>0.20</b>	0.15	<b>0.23</b>	0.04	0.05	0.02
Perceived control	<b>0.24</b>	<b>0.25</b>	<b>0.25</b>	0.10	<b>0.20</b>	0.03	<b>0.16</b>	0.10	<b>0.23</b>

Note. Coefficients in bold have a p-value <0.05

Consider first Model 1. From a couple's perspective age above 33 is a factor that inhibits desires for having a child. This factor is dominated by women. Men's statistically significant preferences to have a child between ages 27 and 33 are dominated by women's lack of similar preferences and so a couple's intention is not statistically different in this age interval.

Religiosity is of importance for a couple, although it is not statistically significant for men and women. A higher household income leads to a positive intention to have a child. Gender differences are small. People with lower or with higher educational degree than secondary are more likely to have a positive than negative intention to have a child. The same holds for women with higher education, while for the men education is not of statistical significance.

The TPB variables all show high level of significance, for the couple and for each one of the partners. For Model 2 and Model 3 we discuss only the TPB variables. Apparently their statistical significance is not as underlined as in Model 1. In Model 2 they are statistically significant for the couple, except for perceived control. The statistical significance of positive and negative attitudes is dominated by the women's attitudes; men's are (statistically) not of significance, i.e., women's positive and negative attitudes towards having a child dominate a couple's stand towards positive intentions relative to a couple's different intentions. Subjective norms are dominated by men though, and women's significance for perceived control is offset by men's insignificance. In Model 3 the TPB variables are significant for a couple, except for the subjective norms. The only gender dominance is revealed in men's perceived control.

#### **4.5 Overview**

Bulgarian couples have a fairly high level of congruence in their intentions to have a child.

Less than 6% of childless couples have different intentions for having a child during the next

two years, when certainty and probability of intentions are considered, and less than 5% differ when differences between “yes” and “no” are considered. Two-thirds of all couples who have one child have equal intentions, and this proportion drops to one sixth when differences between “yes” and “no” are considered (disregarding certainty).

The TPB variables show an explicit effect in the formation of couple’s intentions to have a child during the next two years. It is pronounced in the positive and negative attitudes, in the subjective norms, and in the perceived behavioural control, particularly when positive and negative intentions are contrasted. When couple’s different intentions are considered, the TPB variables, particularly attitudes, preserve their significance.

## **5 Summary**

The work described in this paper builds a social psychological layer on Rosina and Testa’s (2009) economic analysis of couples’ agreement on fertility intentions. The results from Italy and Bulgaria are complementary and support this approach.

In Italy, where fertility is low and mean age at first birth is high, the decision to have a second child, and the timing of this decision, are of critical importance if the birth rate is to increase to replacement or near replacement. Of the variables Rosina and Testa found to affect agreement among childless couples and which were available for this study, only religiosity had an effect for couples with one child: when the woman attends mass at least weekly, the couple is more likely to agree to have another child than to agree not to have another child during the next three years while, when the couple shares religiosity (primarily, when they do not attend mass weekly), they are more likely to agree not to have a child than to agree to

have a child. In addition, couples whose first child was aged three or younger were unlikely to intend to have another child in the near term, but the older the mother the more likely they were to agree to have another child soon than to agree not to have another child. The age of neither child nor mother contributed to disagreement, and indeed, models based only on economic and demographic variables did not fit the data particularly well and were unable to explain differences between agreement and disagreement.

On the other hand, the social psychological variables both provided a very good explanation of couple agreement and distinguished couples who agreed (either to have another child or to not have another child) from those who disagreed. The (perceived) support of the mothers was particularly important for Italian couples, where it was strongly associated both with men's and women's attitudes to having another child and their perceived control over aspects of their life on which having another child depends. The difference between agreement to have a child and agreement not to have a child was affected by similar factors to those that affect the fertility intentions of individuals. The additional insight gained here is that the difference between agreement to have another child and disagreement is strongly influenced by women's combined perceptions that they had their mother's support and their life would be improved by having another child and that they had their mother's support and would be able to control those aspects of their life on which having another child depends. In Italy, where there is little access to childcare, it is clear that a mother's (i.e., the children's grandmother's) support is often critical if a couple is to agree to have another child and, additionally, that perceived availability of mother's support conditions a woman's expectations about both the positive effects of having a child and her ability to balance work, finances and childbearing.

While Bulgaria has a similar low TFR and (at the time of the study) lack of family support to Italy, it differs in that it has a low mean age at first birth (24.3 in 2003). A difference is also seen in the number of couples in each country who disagree about their intention to have a second child: in the comparable cohorts in the samples used in this paper (couples where the woman is aged between 18 and 34 years old in Bulgaria and 25 to 39 years old in Italy<sup>12</sup>), only 6% of Bulgarian couples disagree whereas more than twice as many couples (15%) disagree in Italy. This different fertility pattern provided an opportunity to test whether our observations in the particular circumstances of Italy also applied in the different landscape of Bulgaria. The Bulgarian data also allowed inclusion of household income and size of dwelling (a variable that had a strong effect on short-term fertility intentions in earlier REPRO modelling: Dommermuth, et al., 2009) in the economic-demographic portion of the model.

Some demographic effects, consistent with the effects observed by Rosina and Testa (2009) among childless Italian couples, were identified in Bulgaria. Higher religiosity, higher income and education other than secondary were associated with agreement to have another child rather than not to have another child. Higher income for the couple and tertiary education for the women were associated with agreement to have another child rather than disagreement, and the likelihood of disagreement as distinct from agreement not to have a child increased as the size of the family home increased. These observations raise questions about how much the differences between childless couples and couples with one child in Italy are age effects rather than solely parity effects. Both this paper and an earlier REPRO deliverable (Klobas, 2010) shed some light on this issue, but more research is needed to separate any age-related effects from parity-related effects.

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<sup>12</sup> The difference reflects the more than five year difference in mean age at first birth in each country to permit more realistic comparison of couples at a similar stage in their reproductive life course.

The social psychological variables also had a significant effect in Bulgaria. While attitudes, subjective norms and perceived behavioural control all distinguished in their own right between couples who agreed to have another child and those who agreed not to, different combinations of these social cognitions distinguished between agreement to have another child and disagreement and agreement not to have another child and disagreement. Women's attitudes to both the costs and benefits of having a child have the strongest effect on agreement to have another child rather than disagreement, while both men's and women's expectations that their lives will be improved by having another child, along with men's perceptions of control are associated with disagreement rather than agreement not to have another child.

## **6 Conclusion**

To the extent that these models explain the differences between couples who agree to have another child and couples who agree not to have another child, they offer little that differs from models of individual women's and men's fertility decision make. But because they also help to explain the difference between agreement to have a child and disagreement (which, for many couples, leads to not having a child) they improve our understanding of fertility decision making. Thus, models of fertility decision making at the couple level can improve understanding of fertility intentions, and the concepts included in the TPB – attitudes, subjective norms, and perceived behavioural control – add considerable additional insight into couples' agreement about intentions to have a child.

It would be useful to extend this study to countries with higher fertility than Italy and Bulgaria and to examine the effects of differences in family support regimes on couples' intentions.

Further research could also usefully explore the beliefs and situations which give rise to disagreement among couples, and the relationships between them, with the goal of better understanding what policy interventions might enable couples in which only one partner intends to have another child to reach agreement.

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## Appendix: Factor Analysis

Table 19. Principle components analysis for attitudes and PBC items, males

	<i>PBC</i>	<i>Atts2</i>	<i>Atts1</i>
Factor loadings			
decision to have another child depends on: work	.81		
decision to have another child depends on: financial situation	.79		
decision to have another child depends on: housing conditions	.73		
decision to have another child depends on: health	.70		
decision to have another child depends on: partner's/spouse's work	.68		
decision to have another child depends on: availability of childcare	.60		
expected effect of another child on joy and satisfaction you get from life		.77	
expected effect of another child on closeness between you and your partner/spouse		.75	
expected effect of another child on certainty in your life		.72	
expected effect of another child on closeness between you and your parents		.60	
expected effect of another child on financial situation			.65
expected effect of another child on partner's/spouse's employment opportunities			.64
expected effect of another child on possibility do what you want			.64
expected effect of another child on employment opportunities			.60
expected effect of another child on sexual life			.60
Eigenvalue	3.49	2.28	1.69
Variance explained	21.58	14.12	14.06
Cronbach's alpha	.82	.69	.64

Note. PBC = Perceived behavioural control. Atts2 = Attitudes 2 (costs). Atts1 = Attitudes 1 (benefits).

Table 20. Principle components analysis for attitudes and PBC items, females

	<i>PBC</i>	<i>Atts2</i>	<i>Atts1</i>
<b>Factor loadings</b>			
decision to have another child depends on: partner's/spouse's work	.78		
decision to have another child depends on: financial situation	.77		
decision to have another child depends on: work	.72		
decision to have another child depends on: housing conditions	.71		
decision to have another child depends on: housing conditions	.62		
decision to have another child depends on: availability of childcare	.62		
expected effect of another child on closeness between you and your partner/spouse		.78	
expected effect of another child on joy and satisfaction you get from life		.77	
expected effect of another child on certainty in your life		.75	
expected effect of another child on closeness between you and your parents		.66	
expected effect of another child on possibility do what you want			.72
expected effect of another child on employment opportunities			.69
expected effect of another child on financial situation			.66
expected effect of another child on sexual life			.66
expected effect of another child on partner's/spouse's employment opportunities			.51
Eigenvalue	3.55	2.44	1.61
Variance explained	20.62	15.02	14.98
Cronbach's alpha	.80	.74	.68

*Note.* PBC = Perceived behavioural control. Atts2 = Attitudes 2 (costs). Atts1 = Attitudes 1 (benefits).