Attitudes, subjective norms and perceived behavioral control as predictors of fertility intentions

Francesco C. Billari, Dimiter Philipov

Prepared for PAA 2005

Preliminary and incomplete draft – not to cite or quote

1. Introduction

In this paper we study the importance of proximate determinants of fertility intentions with the purpose to understand deeper the childbearing decision-making process. We focus on parity-specific and time-specific intentions (i.e. the intention to have a child or an additional child within the next two years) and on how these intentions depend on 1) attitudes towards childbearing; 2) perceived normative pressure by relevant others; 3) perceived behavioral control. We use data from a survey held in 2002 in Bulgaria, a country with lowest-low fertility levels. The information on intentions, attitudes, norms and perceived behavioral control is consistently collected in a parity-specific and time-specific way within a framework based in the theory of planned behavior. We fit multivariate logistic regression models to evaluate the importance of the three components of planned behavior, controlling for relevant background factors. Our findings show that attitudes and norms have an effect on childbearing intentions for first and second birth, independently on standard background socio-economic variables, while perceived behavioral control has an effect only on the transition to second birth. We finally argue for the importance of including questions related to these approaches in standard demographic surveys.

This draft is organized as follows. In Section 2 we discuss the theoretical approach that lies at the basis of our research, and its implications for research on fertility. In Section 3 we present the context of Bulgaria together with the main research hypotheses. Section 4 presents the study and the data we use. Results are shown and discussed in Section 5, while Section 6 presents some preliminary conclusions and discussion.

2. The theory of planned behavior and childbearing

The social-demographic literature emphasizes the need to use multi-factorial models to understand the complex decision-making process that leads to the choice of becoming a parent, or to bear children in general. It is tempting to explicitly evaluate comparatively "economics" and "culture" as the principal motives to childbearing. Nevertheless, we can only agree with Lesthaeghe (1998) and his idea that the so-called economic and cultural perspectives are complementary rather than mutually exclusive and that "interdisciplinary soccer games" are not necessary. A joint perspective constitutes an improvement to our knowledge on how childbearing decisions are taken.

Among the fields that closely aim at studying decision-making processes, applied social psychology usually puts behavioral intentions as the main focus of explanation.

More specifically, the aim is to explain the process that leads to the formation of a certain intention, and on the subsequent correspondence—or lack of correspondence—between intentions and behavior. The theory of "reasoned action", developed by Fishbein and Ajzen (1975) provides a particularly fruitful view of the intention-formation process. We here briefly discuss the most recent version of this theory, developed by Ajzen (1988; 1991) as the "theory of planned behavior". Schoen et al. (1999) present a discussion of the importance of the theory of planned behavior in the study of childbearing intentions, while Miller and Pasta (1994) specify the importance of timing in the study of the correspondence between intentions and behavior within the same approach. In the social-demographic literature focusing on decision-making there are some applications inspired by the Fishbein-Ajzen or Ajzen models. Liefbroer and de Jong Gierveld (1993) study the choice between cohabitation and marriage; Abrams et al. (1999) study migration decisions; (2001) studies the decision to leave the parental home.

Figure 1 depicts the basic theoretical framework outlined by Ajzen. We can individuate two "proximate determinants" of behavior: the intention to experience such behavior and the effective possibility to experience such behavior once the intention is formed ("control"). The evaluation of the relationship between intentions and behavior is clearly tied to the presence of longitudinal data on intentions recorded at a certain time 0 and behavior recorded (in case retrospectively) at a certain time 1. We will go back to the relationship between intentions and behavior later on. For the moment we focus on the determinants of the formation of intentions.

2.1 Childbearing intentions

We assume that demographic events are the result of choices, i.e. unwanted births are negligible due to the access to family planning—this of course limits the width of application of our approach to individuals and couples having access to family planning[1]. In some demographic surveys the issue of whether a birth was intended or not has been recorded retrospectively; this retrospective reporting of intentions is subject to specific problems (on the measurement and meaning of unintended pregnancy see the recent review of Santelli et al., 2003). Human memory is selective and even more so for subjective states of mind like intentions. Moreover, for the well-known mechanism of reduction of cognitive dissonance (Festinger, 1957) individuals may seek to change their perceptions of what was intended due to the fact that a child is actually there—this should generally bring to an underestimation of unintended births but could possibly act also in the other direction. For these reasons, in order to study the decision to bear children it is crucial to focus prospectively, on behavioral intentions concerning the future.

The prospective approach to the study of childbearing intentions, and the actual comparison with the observed behavior, has been adopted in few studies (i.e. Quesnel-Vallée and Morgan, 2003; Williams et al., 1999; Thomson, 1997). One of the

[1] In situations where we cannot assume that childbearing is the outcome of deliberate choice, the relevant intention to be studied is contraceptive use. This has been in fact extensively studied using the theory of reasoned action and the theory of planned behaviour (references).

limitations to the study of the long-term impact of intentions on actual behavior is that childbearing intentions may change over time (Schoen et al., 1999). For this reason, the specification we shall adopt to study fertility decision-making will focus on a very specific behavior (having or not having a child) in a specific time frame (the next two years). The importance of focusing on a reference time window when collecting data on intentions regarding demographic behavior has been underlined by Miller and Pasta (1995). Other authors have argued for the need to be parity-specific (e.g. Yamaguchi and Ferguson, 1985; Monnier, 1987). In addition, the importance of evaluating the certainty of fertility intentions has also been stressed (Thomson and Brandreth, 1995).

The intention to progress to the next parity over a relatively short time horizon is in fact more close to the decisions that are being taken around the time of a survey with respect to the 'intended number of children' over an entire life span. This may explain the relative skepticism in the literature on intentions of studies focusing on the total number of children with respect to those focusing on parity-specific behavior. For instance, Williams et al. (1999) have shown using U.S. data that only 10% of the women who declared not to intend to have a child in a three-year interval actually had a child. For these reasons, we assume that parity-specific and period-specific intentions are better predictors of actual behavior and thus are more powerful when one wants to study childbearing decision-making. We also need to take into account that having a child, in most cases, is a joint decision of a man and a woman. A difference in intentions between partners may indeed lead to a lower correspondence between intentions and actual behavior (Thomson, 1997).

According to the theory of planned behavior intentions on a specific behavior are formed with the contribution of three sets of factors (Figure 1). The first set comprises *attitudes* towards the behavior—i.e. statements regarding the plausibility that the behavior would provoke a series of consequences, together with the relative evaluation of the positive or negative weight attached to these consequences. The second set comprises *subjective norms*, which are determined by normative beliefs—i.e. the perception that one individual has concerning the approval, or disapproval, of a certain behavior by relevant others. The third set comprises *perceived behavioral control*—i.e. the perception of constraints and/or opportunities that exist concerning the specific behavior. The relative weight of these three sets may depend on the type of decision to be taken (Ajzen, 1988; 1991) and—we shall add here—on the context in which the intention is formed. Let us briefly discuss these three sets in turn.

[FIGURE 1 ABOUT HERE]

2.2 Attitudes

The three sets of factors depicted in Figure 1 reflect issues that are traditionally emphasized by different research traditions and in different contexts. We here briefly mention some of the directions that have been pursued concerning research on the impact of attitudes towards childbearing, and of their heterogeneous distribution in a population, on related intentions (and subsequent behavior).

One important stream in the literature is related to the concept of "value of children". Hoffman and Hoffman have originally introduced this concept in 1973 (see Friedman

et al., 1994; Nauck, 2001). The basic idea is to approach the study of childbearing decision-making by simultaneously considering "objective" economic factors, normative factors and psychological dispositions. The value of an (additional) child is linked to the function and to the needs that the child fulfills for her/his parents. Hoffman and Hoffman list nine typologies of components that contribute to determine the value of children: 1) social identity and adulthood status; 2) the expansion of the self, the link to a larger entity, the desire of "immortality"; 3) morality, religion, altruism, group welfare, norms concerning sexual behavior, impulsive action, virtues; 4) primary group ties, affection; 5) stimulus, novelty, amusement; 6) realization, competence, creativity; 7) power, influence, efficacy; 8) social comparison, competition; 9) economic utility. Friedman et al. (1994) criticized this list because of its omni-comprehensiveness and, by analyzing childbearing decisions in contexts where the economic utility of having children is not supposed to play an important role, link the value of children to the capacity of a child to "reduce uncertainty" in her/his parent's life. Nauck (2001) emphasizes the importance of two dimensions in the determination of the value of children: the economic-utilitarian value (e.g. linked to the economic contribution of children to the well-being of the household, to their contribution in household chores, to their role in the provision of care to elderly parents), and the psychological-emotional value (e.g. linked to the reinforcement of emotional ties, and to expressive stimuli following the interaction with children).

In a series of papers, Miller and Pasta (Miller, 1994; 1995; Miller & Pasta, 1993, 1995) present a detailed theoretical model in which childbearing "motivations"—which are influenced by biologically-based dispositions that may be partially inherited as well as by early life-course experiences—affect fertility desires, intentions and behavior. They assume that motivations affect both the desire for children and the number of children desired; together with attitudes and beliefs concerning child-timing, these factors translate into actual child-timing desires and intentions. The "Childbearing Questionnaire" originally proposed by Miller measures childbearing motivation by separating "Positive Childbearing Motivation" and "Negative Childbearing Motivation". Among the positive childbearing motivation some subscales are identified (Miller, 1995, p. 476) concerning "(1) joys of pregnancy, birth and infancy; (2) traditional parenthood; (3) satisfaction of child rearing; (4) feeling needed and connected; (5) instrumental values of children", among the negative childbearing motivation the subscales identified concern "(1) discomforts of pregnancy and childbirth; (2) fears and worries of parenthood; (3) negatives of child care; (4) parental stress".

To sum up, we may say that in general, the literature on the "demand" side of childbearing emphasizes the multidimensional aspect of attitudes or motivations, and that measurement should take this into account.

2.3 Subjective norms

The recent demographic literature on social interaction and fertility sees normative pressure as a key element of social influence on childbearing decisions. Normative pressure can be detected within an individual's network of relevant others, and more specifically it is the "perception of social influence" that is supposed to have an impact on reproductive behavior (Bernardi, 2003). Even if most of this literature is

focused on contraceptive and reproductive choices in developing countries (Bongaarts & Watkins, 1996; Montgomery & Casterline, 1996; Kohler, 2001), there is some evidence that normative pressure may still play a role also in low-fertility contexts. Rindfuss et al. (1988) put the normative imperative to become a parent as a central point in their analysis of the transition to first births, and they explicitly connect this to religious norms. Montgomery and Casterline (1996) list four cases where norms as a source of social influence might be important in the study of contemporary US fertility. Bernardi (2003) presents qualitative evidence on the channels through which normative pressure may drive the transition to parenthood in the lowest-low fertility context of Northern Italy.

Most of the literature on recent demographic developments has assumed that there is a diminishing impact of normative pressure on childbearing choice. The idea of "Second Demographic Transition" proposed by Lesthaeghe and Van de Kaa (see e.g. Van de Kaa, 1987) puts the manifestation of individual autonomy from sources of normative pressure as one of the focal points when studying demographic behavior; the increase in individual autonomy has started in North-Western Europe during the 1960s and is assumed to spread all over the place. Other researchers who focus on specific contexts put a different weight on the importance of social norms. The importance of social networks characterized by strong ties in shaping demographic behavior in Southern Europe is underlined by Reher (1998) and Micheli (2000). Philipov et al. (2004) discuss the impact of social capital on fertility intentions in Bulgaria and Hungary (Buehler and Philipov, 2004 give an extensive discussion for Bulgaria).

2.4. Perceived and actual behavioral control: policy-relevant constructs?

Perceived behavioral control is related to the—perceived—important of constraints on the specific type of behavior and on the—perceived—opportunities to be able to overcome these constraints. Most of the literature that focuses on childbearing decisions is in fact concerned with studying the impact of these constraints, evaluation for instance the importance of income and wealth, labor force conditions and education, housing situations and health. In the spirit of the theory of planned behavior, the perception of constraints and on the ability to overcome constraints influences the decision to perform a certain behavior, and the actual control as well. As Schoen et al. (1999, p. 791) state, "Control emcompasses both internal and external constraints. For example, fecundity exemplifies an internal constraint to fertility, and the existence of an agreeable partner represents an external constraint".

In past analyses of the determinants of childbearing intentions, perceived behavioral control has not been considered as potential factors explaining intentions besides objective measures of control (which could be considered as measures of actual behavioral control). For other types of far-reaching demographic decisions such as migration some investigation has been done (Abrams et al., 1999). The inclusion of variables that aim at explaining why stated intentions are not realized may be justified in terms of the inclusion of "actual behavioral control". Schoen et al. (1999) for instance include full-time school enrollment, educational level, employment, income in a model predicting the realization of fertility intentions.

Perceived behavioral control may carry a specific importance related to policies that affect fertility—for two main reasons. First, actual constraints that are included in models explaining fertility decision-making are sometimes seen as "endogenous", with the idea of them being potentially overcome if a certain fertility behavior is to be pursued; an example is labor force participation. Second, besides actual constraints and the opportunities to overcome them, the mere perception of such constraints may play a role in decision-making—see for instance the importance of uncertainty in shaping fertility decisions in Friedman et al. (1994). Policies aiming at removing constraints should take into account that the perceived dimension matters.

3. The context of research and some hypotheses

3.1 Bulgaria as a lowest-low fertility context

The start of the transition in 1989 was also a start of dramatic demographic changes in Bulgaria, as elsewhere in Central and Eastern Europe (Philipov and Dorbritz 2003). Figure 2 informs about the changes in fertility during the 1990s. The adjusted TFR's were estimated using the Bongaarts-Feeney (BF) formula (Bongaarts and Feeney, 1998)

[FIGURE 2 ABOUT HERE]

Total fertility in 1988 was approximately at the level that prevailed before the start of the transition. During the 1990s, total fertility fell drastically: the drop was from around 2.0 down to 1.1 in 1997. Both quantum and tempo components played a role in this drop. The tempo component is indicated visibly by the increase in the mean age at childbearing. Quantum (i.e. the adjusted total fertility) showed a sudden fall with the start of the transition, from 2.0 in 1990 to 1.6 in 1992. Until 1996 it remained at approximately this level. The drastic drop observed in 1997 and 1998 and its subsequent short-term sudden rise indicate the outburst of a hyperinflation by the end of 1996 and in 1997 that peaked at levels of nearly two thousand per cent monthly in the beginning of 1997; evidently it effected the timing of first births and much less so timing of second births.

Trends in first-order total fertility (TFR(1)) inform about changes in voluntary childbearing. The adjusted TFR(1) is close to around 0.9, except for the years of the hyperinflation. A value of 0.9 can be interpreted as indicating a very low level of voluntary childlessness.[2] Trends in second-order total fertility indicate a gradual fall after during the 90s. Births of order higher than 2 are rare, as can be seen by the difference between the total fertility and the sum of the first- and second-order total fertility.

Births in Bulgaria appear early in life, and they are also stopped early in life. By age 30, some 85 to 90% of the completed fertility is already realised, and by age 35 this share is nearly 100%. The mean age at first birth increased drastically from around 22

[2] Its rise to a meaningless level above 1.0 in 2000 is due to the inaccuracy of the BF formula when the mean age at birth of a first child changes drastically; the latter increased from 23.0 in 1999 to 23.5 in the year 2000. A more precise estimation of the tempo effect, due to Kohler and Ortega (2002) would yield meaningful values though the trends they would describe are expected to be the same.

to 24; analogous increase was observed for the second births. Towards 2002 (the year of the survey used in our analyses) the trends marked above did not change significantly.

3.2. Research hypotheses

In this paper we put intentions as the key explanatory variables in order to focus in a way that is highly specific on fertility decision-making. Some of these intentions will be realized, and the literature reviewed in Section 2 has shown that when measured specifically and with reference to a specific time frame, intentions are good predictors of behavior. Here, we are more interested in the social mechanism that creates intentions, rather than on studying intentions as intermediate variables between background factors and actual behavior

Our main hypothesis is that attitudes, subjective norms and control matter, net of background factors, for the decision to have children.

Our second hypothesis is that the impact of attitudes, subjective norms and control may be gender-specific and parity-specific. For what concerns gender specificity, we hypothesize that women's are more influenced by normative pressure than men. This hypothesis is justified by the context we analyze, where women's autonomy is likely to be lower than men's. For what concerns parity specificity, we assume that intentions concerning transition to parenthood have different determinants with respect to intentions concerning second births. More specifically, we assume that the relative importance of attitudes with respect to norms is greater for second births. We also hypothesize that perceived behavioral control matters more for second births, as young and childless adults may care 'less' about the role of control with respect to people who are already parents.

4. Data collection and variable construction

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 this country. 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. The age of 35 is convenient given the young mean ages where the events of interest are considered (see Figure 2).

The survey, organized jointly by the Max-Planck Institute for Demographic Research and the Bulgarian Academy of Sciences, aimed at the testing of several fertility theories that looked relevant to the explanation of fertility changes in a country in transition. Among these theories is the theory of planned behavior. The Appendix acquaints with the fundamental survey questions designed for the application of this theory, namely for the study of perceived norms, attitudes, and perceived behavioral control. All these questions, and therefore the measurement of norms, attitudes, and

control, refer to a period of two years. This period was selected on the basis of the theoretical consideration that control can be defined only in a period of time.

Subjective norms. In our case subjective norms are studied by asking the respondent about how important can be the opinions of influential others on his/her personal decision making. We exclude from the list of influential people the spouse, because spouse's opinion on having children evidently interacts with that of the respondent in a way different from that of influence of norms. Thus the number of influential others reduced in most cases to 4; in some cases this list was even shorter, thus reflecting a very narrow social network. Norms were used in the analyses presented by one variable. It was created by summing the responses for all listed influential others (except the spouse).

Attitudes. Attitudes were represented by two variables. They were created using factor analysis. It can be seen from the question on the attitudes (question 801 from the appendix) that some of the attitudes relate positively to childbearing while others relate negatively. Factor analysis was carried out separately for each one of the four situations we study: intentions of males for a first or second child, and intentions of females for a first or a second child. In all four cases the principal components were two, evidently relating to the positive and negative items in the questions for the attitudes. In the case of females, intentions to have a first child, figure 3 illustrates all the 12 eigenvalues; 2 of them outweigh in value the remaining and hence the choice of two principal factors whose loadings are given in table 3. It can be seen from the table that the factor loadings are considerably larger for the positive attitudes where the "positive" factor is considered, and considerably larger for the negative ones in the second factor, named "negative".

[TABLE 1 AND FIGURE 3 ABOUT HERE]

We note that factor analysis could have been done separately for the positive and for the negative attitudes. We preferred to factor them all together, leaving to the factoring model to reflect interactions that could exist between some positive and negative attitudes.

Thus the attitudes are presented in the analyses with two variables.

Perceived behavioral control. Perceived behavioral control is studied by combining the answers to questions 802 and 926 (Appendix). Evidently each one of the four items from the first question is about the same as the corresponding item in the second question. The difference is that the first question asks about how much the decision to have (another) child would depend on each of the listed circumstances, while in the second question the respondent is asked to answer how much he/she is able to control the same circumstances. The control is expected to be most efficient when the person perceives an item as a significant one and is able to actually control it. The worst situation for the intentions is when the person considers an item as an important one but perceives it as being out of his/her control. We create first a variable for each item separately. This variable can take three values: +1 for the case of full control (both q802 and q926 are equal to 3 or 4), -1 for the case of the worst situation (q802 is equal to 3 or 4, while q926 is equal to 1,2, or 3), and 0 for the other cases. The variable used in the analyses is equal to the sum of the four item-specific variables.

Intentions. There are several questions on intentions. We make use of the following one: "*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 among 4 items: "Definitely yes; probably yes; probably not; definitely not".

The questions on norms, attitudes, and perceived control as well as the variables created on their basis operationalize fully and succinctly the theory of reasoned action. The operationalization has two major novelties. First, perceived norms reflect the normative pressure exercised by influential others on the formulation of the respondent's intention to have a child. Second, the theory is operationalized in a simple way that relies on a small number of effective questions. We should note that the list of names that the respondent was required to fill was necessary for a broader study of social networks and social capital; the questions on norms can be reformulated without the requirement for keeping a list of names.

5. Results

We used four logistic models, specified by sex and by number of children of the respondent: none or one. The dependent variable is the intention to have a child during the next two years. We grouped the categories "certainly yes" and "possibly yes" into one, as well as the categories "certainly not" and "possibly not". [3]

The variables for the norms, attitudes, and control are considered as continuous because as a result of their construction they have many discrete states. They were standardized with mean equal to zero and standard deviation equal to 1. Thus their coefficients (odds ratios) can be compared in magnitude.

We included several control variables. Age is categorized in 5 age groups, the first four being 3 years wide and the fifth one is open-ended (i.e. 30-34 completed years of age). Three other variables have a particular importance because they reflect the objective situation of the respondent in correspondence with the items measuring subjectively the perceived control. Thus the variable for household income per household member reflects an objective measure of the first item of actual (q926) and perceived (q802) control; the variable for the employment status of the respondent during the last three months preceding the survey, corresponds to the second item, and the variable on dwelling (number of square meters per member of the household) is an objective measure of the perceived effect of housing conditions. The questionnaire did not include objective measures of the health status.

Educational level of the respondent is a proxy both for human capital and for the individual's system of values. It can be expected that persons with higher education

[3] Thus we lose some information. It is questionable though whether the four categories are really ordinal; the difference between "probably yes" and "probably not" can have a theoretical background that is not the same as for the difference between the other two pairs of items. When running logits for each consecutive pair of items we indeed receive different statistical significance for the coefficients of our main variables. The topic needs further research that is out of the scope of the present paper.

will be less influenced by norms, will have more contemporary attitudes to childbearing, and can measure more adequately their behavioral control. Mother's education is a proxy for the environment in which the person has been socialized.

Finally we note that the stratification character in the sampling design was reflected in the models. The stratification was done on the basis of 28 regions and voting sections within each region. In the construction of a cluster variable we modified this stratification to introduce the division between rural and urban areas that are expected to differ significantly We used as a cluster variable one that reflects 28 regions in Bulgaria as well as rural or urban settlements within each one of them. Thus 56 clusters altogether are considered.

Table 2 presents the odd ratios in the four models.

[TABLE 2 ABOUT HERE]

In accordance with our hypothesis, attitudes, subjective norms and perceived behavioral control are significant determinants of fertility intentions, also when controlling for 'objective' variables. The only exception is perceived behavioral control, which has no significant effect for both genders on the transition to first birth. As predicted by our second hypothesis, normative pressure has a greater impact for women than for men. Nevertheless, the impact of subjective norms remains for the transition to second birth.

References (incomplete)

Abrams D., Hinkle S., Tomlins M. (1999), "Leaving Hong Kong? The Roles of Attitude, Subjective Norm, Perceived Control, Social Identity and Relative Deprivation", *International Journal of Intercultural Relations*: 23, 319-338

Ajzen I. (1988), Attitudes, Personality and Behavior, Open University Press, Milton Keynes.

Ajzen I. (1991), "The Theory of Planned Behavior", Organizational Behavior and Human Decision Processes, 50: 179-211.

Baanders A.N. (1998), Leavers, Planners and Dwellers. The decision to leave the parental home, Wageningen Agricultural University, Wageningen.

Bernardi L. (2003), "Channels of Social Influence on Reproduction", Population Research and Policy Review, 22: 527-555.

Bongaarts, J. and Feeney, G. 1998. On the Quantum and Tempo of Fertility. *Population and Development Review* 24:271-292.

Festinger L. (1957), A theory of cognitive dissonance, Stanford University Press, Stanford, Ca.

Fishbein M., Ajzen I. (1975), Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research, Addison-Wesley, Reading, Mass.

Friedman D., Hechter M., Kanazawa S. (1994), "A theory of the value of children", Demography, 31, 375-401.

Kohler and Ortega (2002)

Liefbroer A.C., De Jong Gierveld J. (1993), "The Impact of Rational Considerations and Perceived Opinions on Young Adults' Union Formation Intentions", Journal of Family Issues, 14, 213-235.

Miller W.B. (1995), "Childbearing Motivation and its Measurement", Journal of Biosocial Science, 27: 473-487.

Miller W.B., Pasta D.J. (1994), "The Psychology of Child Timing: A Measurement Instrument and a Model", Journal of Applied Social Psychology: 24, 218-250.

Miller W.B., Pasta D.J. (1995) "Behavioural Intentions: Which Ones Predict Fertility Behaviour in Married Couples?", Journal of Applied Social Psychology: 25, 530-555.

Monnier A. (1987), "Projections de fécondité et fécondité effective. Une enquête longitudinale : 1974, 1976, 1979", Population : 6, 819-842.

Nauck B. (2001), "Der Wert von Kindern für ihre Eltern. „Value of Children" als spezielle Handlungstheorie des generativen Verhaltens und von Generationenbeziehungen in interkurturellen Vergleich", Kölner Zeitschrift für Soziologie und Sozialpsychologie, 53, 407-435.

Philipov D. and Dorbritz, J. 2003. *Demographic consequences of economic transition in countries of central and eastern Europe*. Council of Europe Publishing.

Quesnel-Vallée A., Morgan S.P. (2003), "Missing the Target? Correspondence of Fertility Intentions and Behavior in the U.S.", Population Research and Policy Review, 22: 497-525.

Rindfuss R.R., Morgan S.P., Swicegood C.G. (1988), First births in America, University of California Press, Berkeley, CA

Santelli J., Rochat R., Hatfield-Timajchy K., Colley Gilbert B., Curtis K., Cabral R., Hirsch J.S., Schieve L. and other members of the Unintended Pregnancy Working Group (2003), "The Measurement and Meaning of Unintended Pregnancy", Perspectives on Sexual and Reproductive Health: 35, 94-101.

Schoen R., Astone N.M., Kim Y.J., Nathanson C.A., Fields, J.M. (1999), "Do fertility intentions affect fertility behavior?", Journal of Marriage and the Family, 61:790-799.

Thomson E. (1997), "Couple Childbearing Desires, Intentions and Births", Demography: 34, 343-354.

Thomson E., Brandreth Y. (1997), "Measuring fertility demand", Demography: 32, 81-96.

van de Kaa D.J. (1987). Europe's Second Demographic Transition. Population Bulletin Vol. 42, No 1. Washington, DC: Population Reference Bureau.
Williams L., Abma J., Piccinino L.J. (1999), "The Correspondence Between Intention To Avoid Childbearing and Subsequent Fertility: A Prospective Analysis", Family Planning Perspectives: 31, 220-227.
Yamaguchi K., Ferguson L.R. (1985), "The stopping and spacing of childbirths and their birth-history predictors: rational-choice theory and event-history analysis", American Sociological Review: 60, 272-298.

Figures and tables

Figure 1: *A sketch of the Theory of Planned Behavior (Ajzen, 1988).*

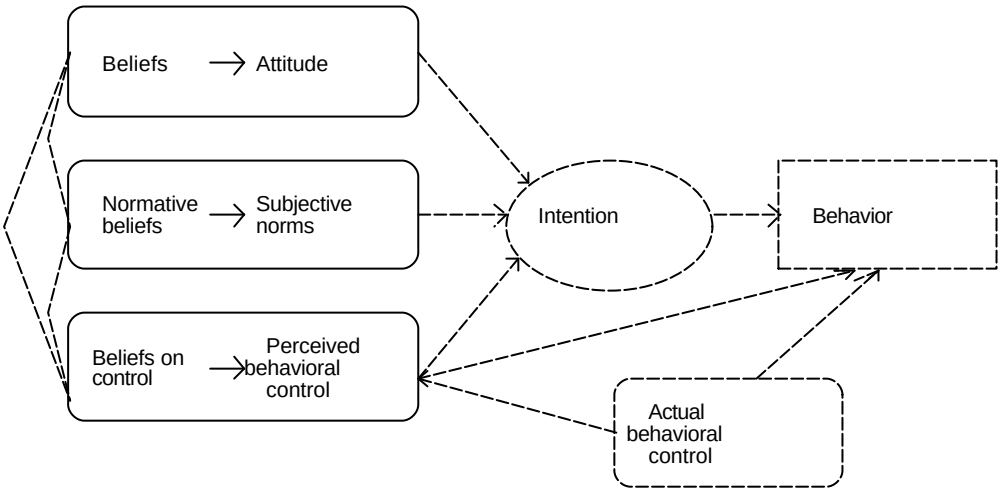

Figure 2: Observed and adjusted total fertility for all births, for first-, and second-order births, and the corresponding mean ages, Bulgaria, 1988-2002.
(The dotted lines plot mean ages on the right axis; the continuous lines plot total fertility on the left axis; with the thick lines representing adjusted total fertility and the thin lines observed total fertility)

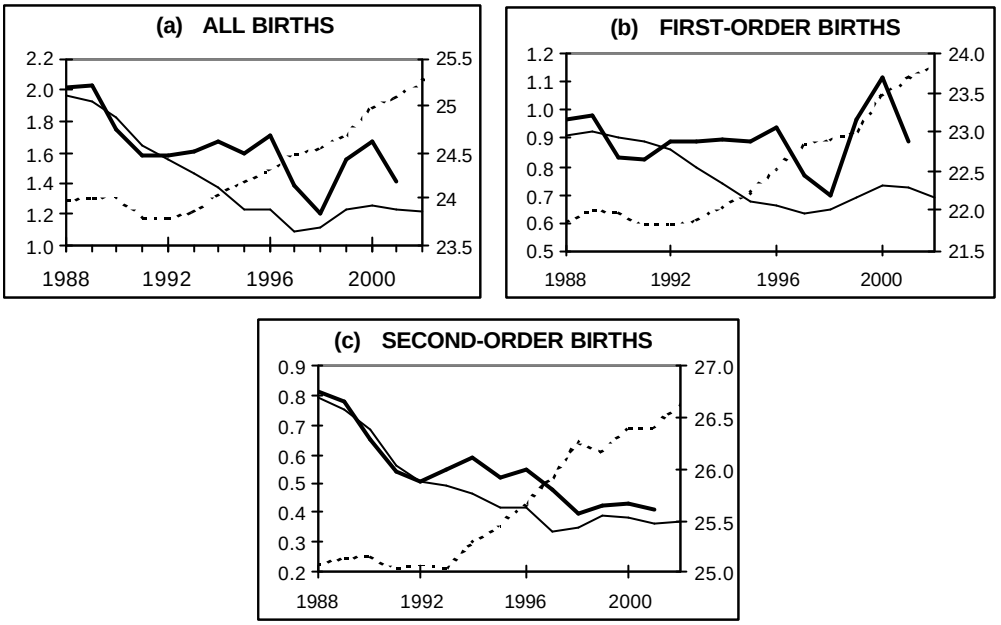

Figure 3: Eigenvalues of factor analysis for 12 items, females, intentions for a 1st child

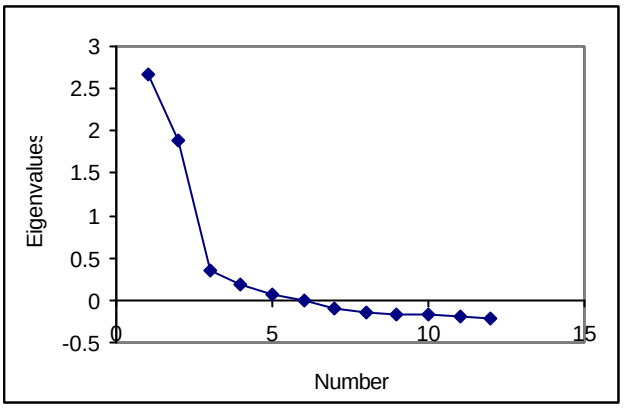

Table 1: Loadings for the two selected principal factors, females, intentions for a 1st child

	factors	
	positive	negative
q801a	-0.04	0.50
q801b	-0.11	0.46
q801c	0.39	-0.08
q801d	-0.14	0.33
q801e	-0.01	0.62
q801f	0.41	0.02
q801g	0.04	0.70
q801h	0.02	0.66
q801i	0.54	-0.15
q801j	0.75	0.01
q801k	0.73	0.01
q801l	0.52	0.08

Note: meanings of variables are given in the Appendix.

Table 2: Odds ratios and p-values for 4 logit models

	Females				Males			
	1st child		2nd child		1st child		2nd child	
	Odds	P>z	Odds	P>z	Odds	P>z	Odds	P>z
Norms	**1.40**	0.001	**1.37**	0	**1.12**	0.038	**1.19**	0.001
Attitudes:								
Positive	**1.39**	0	**1.66**	0	**1.31**	0	**1.31**	0
Negative	**0.82**	0	**0.71**	0	**0.84**	0.002	**0.77**	0
Control	1.04	0.393	**1.29**	0	1.07	0.188	**1.22**	0.003
Age:								
18-20	**0.48**	0	0.74	0.317	**0.43**	0	1.04	0.936
21-23	0.77	0.074	0.77	0.252	**0.68**	0.006	1.09	0.74
24-26 (base)	1	-	1	-	1	-	1	-
27-29	**1.90**	0	0.79	0.133	**1.76**	0.001	1.40	0.191
30 and higher	0.78	0.212	**0.66**	0.019	**1.52**	0.018	0.99	0.971
Education								
Below secondary	**1.55**	0.138	**1.50**	0.037	1.22	0.253	**2.05**	0
Secondary (base)	1		1		1		1	
Higher	1.25	0.1	1.13	0.399	1.32	0.087	1.44	0.106
Household income per person:								
Lowest quartile (base)	1	-	1	-	1	-	1	-
2nd quartile	0.90	0.706	1.10	0.629	0.82	0.34	1.16	0.433
3rd quartile	0.81	0.293	1.02	0.935	**0.53**	0.002	0.94	0.793
Highest quartile	0.83	0.506	1.27	0.284	0.61	0.07	1.27	0.295
Dwelling, sq m per person	1.15	0.176	0.96	0.776	1.04	0.6	0.94	0.74
Employment:								
unempl. last 3 months (base)	1	-	1	-	1	-	1	-
employed last 3 months	**1.42**	0	**1.29**	0.055	**1.44**	0.002	1.04	0.808
Mother's education:								
Below secondary (base)	1	-	1	-	1	-	1	-
Secondary	**0.67**	0.006	1.22	0.332	**0.73**	0.031	1.27	0.096
Higher	**0.48**	0.001	**1.71**	0.029	**0.58**	0.005	1.32	0.177
N	1590		1553		2203		1319	

Notes:
(i) bold font denotes statistical significance at the level p>0.05;
(ii) The variables for norms, attitudes, and control are standardized with mean equal to zero and standard deviation equal to 1.

APPENDIX: Actual questions used in the survey

SUBJECTIVE NORMS

The questions for the study of norms were included in a section 3, entitled "*Embeddedness in supportive relationships*". The respondent was asked a number of questions regarding diverse support given to or received by other persons. He/she was also asked to fill a list of their names.

Interviewer reads:
By asking you the following questions, I would like to talk about the persons who matter in your daily life (relatives, friends, persons you know). Please enter their names in this list, ordering them with numbers like 1, 2, 3, etc. When asked, you will tell me only the number. I am not interested in their names. Do not enter one and the same person more than once.

....

331. Now, please tell me the numbers of up to five persons on your list whose opinion you value most highly when you make decisions about your private life.

Number ? ? ? ? ? ? ? ? ? ?

333. Imagine that during the next two years you will have a child, irrespective of whether you really have such an intention or not. How much would this person approve or disapprove having this child?

The person will approve very much	1
The person will approve	2
The person will approve somewhat.....	3
The person will disapprove somewhat	4
The person will disapprove	5
The person will disapprove very much	6

(Note for clarification: this question is asked separately for each person whose number is filled in question 331.)

339. What is your relationship with this person?

Note: The answers are selected from a list of 23 possible relationships, including spouse, daughter, son, mother, father, mother of spouse, father of spouse, neighbor, friend, etc.

ATTITUDES

801. ***(****Interviewer, neither of the possible answers should be assessed as positive or negative.)*

	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:	Comp. disag ree	Rather disag ree	Neither agree nor disagree	Rather agree	Comp. agree
A	increase your economic difficulties	1	2	3	4	5
B	decrease your chances in your working career and/or higher education	1	2	3	4	5
C	increase your security that at old age there is someone to care about you	1	2	3	4	5
D	increase uncertainty in your life	1	2	3	4	5
E	***This response is for females only!*** increase the physical burden for you because of the pregnancy, the care for the baby, or breastfeeding	1	2	3	4	5
F	increase joy and satisfaction in your life	1	2	3	4	5
G	increase worries and preoccupations in the course of your daily life	1	2	3	4	5
H	decrease time for your personal interests, for contacts with friends	1	2	3	4	5
I	increase certainty in your life	1	2	3	4	5
J	increase the closeness between you and your partner	1	2	3	4	5
K	increase the closeness between you and your parents and relatives	1	2	3	4	5
L	mean that a part of you is continued into the future	1	2	3	4	5

PERCEIVED BEHAVIORAL CONTROL

802. 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?

		Not at all	Rather not	Indiff- erent	Some- what	Strongly
A	Your economic status	1	2	3	4	5
B	Your working or educational situation	1	2	3	4	5
C	Your housing conditions	1	2	3	4	5
D	Your health	1	2	3	4	5

.....

926. How much control do you feel you will have over the following circumstances in your life in the next two years?

		None at all	Little	Some	Much	A great deal
A	Your income	1	2	3	4	5
B	Your working or educational status	1	2	3	4	5
C	Your housing conditions	1	2	3	4	5
D	Your health status	1	2	3	4	5