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Abstract

We use the theory of planned behavior to investigate the role of attitudes, norms and perceived behavioural control on short-term and long-term fertility intentions, using data from Norway ($N = 1,307$). There is some evidence that, net of other background variables, positive scores on these factors makes it easier to establish concrete childbearing plans, especially among parents. Subjective norms are particularly important among both parents and childless adults, while perceptions of behavioural control have no additional effect once the actual life situation is taken into account. Attitudes are not important in decisions about the timing of becoming a parent, probably because the main issue for childless adults is not the timing, but the decision to have a child or not.

Keywords

Fertility intentions, fertility timing, theory of planned behavior, Norway

Introduction

Since the 1960s there has been a dramatic drop in birth rates across Europe, and fertility below replacement level has captured the attention of researchers, policymakers, and society at large. As period fertility has fallen below replacement level in most developed countries, demographers seek to get new insight into fertility behaviour. Fertility decision-making is a complex process and modern contraceptives make it possible for individuals and couples to prevent unintended pregnancy quite easily. There seems to be a “fertility gap” between people’s wishes and behaviour with regard to fertility. A macro level comparison of developed countries shows significant differences in the discrepancy between the intended number of children and the achieved fertility rate (Bongaarts, 2002). For some time, the ideal family size remained at a relatively high and stable level, but fertility intentions have now adjusted to the actual fertility level in some countries (Goldstein, Lutz, & Testa, 2003). This downward spiral in fertility across Europe has been referred to as a “fertility trap”, and one plausible mechanism can be found in changing norms and attitudes about fertility ideals (Lutz & Skirbekk, 2005). The argument is that “changes in attitudes likely create a feedback mechanism, influencing behaviour; and changes in behaviour likely create a feedback mechanism influencing attitudes” (Rindfuss, Choe, Bumpass, & Tsuya, 2004, p. 855). In order to understand such mechanisms, more in-depth analysis of fertility intentions are appropriate, especially with a focus on psychological factors influencing the fertility decision-making.

In this article we investigate the role of attitudes, norms and perceived behavioural control on deciding the timing of having a first or subsequent child, using Norway as an example. We focus on psychological factors that impede or encourage individuals to develop concrete childbearing plans or to postpone childbearing. The theoretical framework of the analysis is based on the application of the social-psychological theory of planned behavior as operationalised in the Generations and Gender Survey (Vikat et al., 2007). The theory of planned behavior, proposed by Ajzen (1985), provides a framework to explain the process that leads to the formation of intentions. The basic idea is that intentions to perform a specific behaviour are formed with the contribution of three sets of factors; attitudes, norms and perceived behavioural control. The relative weight of the three sets of factors depends on the type of decision to be taken and on the context in which the intention is formed (Ajzen, 1991).

The analysis in this article follows a two step analytical strategy. First, factor analyses are used to test for whether factors for attitudes, subjective norms and perceived behavioural control can be built in accordance to the theory of planned behavior for the fertility domain. The factor analysis is based on answers to 23 questions from the Norwegian Generation and Gender Survey. Second, we analyse how these factors matters, net of other background factors, in terms of differences between long-term and short-term fertility intentions in Norway. Norway represents a country with a relatively high fertility level, although under the replacement level, and a country where men and (especially) women are reported to experience the lowest cost of having children, i.e. it is often claimed that fertility has remained high due to generous benefits and policies, which, among other things, make it easier to women (and men) to combine family life and working careers. We focus on two different groups, namely individuals who are in the process of deciding to become a parent for the first time and individuals who already have children. It has been pointed out by several authors that intention to have one’s first child is qualitatively different from the decision to have subsequent children since the decision to have a first child marks a “crucial transition in

one's life course" — the decision to become a parent (Billari, Philipov, & Testa, 2009; Noack & Østby 2000; Philipov, Spéder, & Billari, 2006; Schoen, Astone, Kim, & Nathanson, 1999; Thomson, 1997).

In the literature several measures of fertility intentions are being used. One measure is intended or ideal number of children (e.g. Heiland, Prskawetz, & Sanderson, 2008; Lyngstad & Noack, 2000), which is often used in analysis of differences between intended fertility and actual fertility behaviour (e.g. Bongaarts, 2002; Noack & Østby, 2000; Quesnel-Vallée & Morgan, 2002; Schoen et al., 1999; van de Kaa, 2001). Another measure is plans for a(nother) child in the future with a degree of certainty or time-span in which the intention is planned to be fulfilled (e.g. Jaccard & Davidson, 1975; Jorgensen & Adams, 1988; Philipov et al., 2006; Schoen, Kim, Nathanson, Fields, & Aston, 1997; Vikat et al., 2007). From analyses of fertility intentions there is a general conclusion that fertility intentions are worth studying, but there are doubts about the prediction value they have on fertility behaviour. The time-frame in which decisions are made is a key issue here. In psychological literature there are several studies suggesting that when individuals consider distant future events, they focus mainly on abstract, general features or outcomes (e.g. the joys of having a child, changes in family constellation), while when considering near future events, they are more likely to focus on concrete issues (e.g. the costs, the time required to care for the child) (Trope & Liberman, 2000). This means that more concrete intention usually have greater explanatory power, or in other words, more often lead to realization of the intention. In this article we focus on intentions to have a(nother) child now as compared to within three years. Through the framework of the theory of planned behavior we are able to evaluate which conditions make it easier for an individual to establish concrete fertility intentions out of general fertility plans and which conditions are seen as a hurdle for concrete child plans.

Theoretical Framework: The theory of planned behavior

The theory of planned behavior is a social-psychological model to study human action and examine decision-making processes within their macro-level context. The theory was presented by Ajzen in 1985 and is an extension of his and Fishbein's earlier theory of reasoned action (Fishbein & Ajzen, 1975). Human behaviour is modelled as reflecting decisions characterised as "intentions". In order to make a valid and reliable prediction of behaviour, three elements need to be considered. The first elements are the *target* and *action* that define the behaviour. Here we define having a child as the action and target. The third element is the *context* in which the behaviour occurs. A number of variables that are normally used in analysis of fertility, including education, income, age and parity become "external" variables to the theory of planned behavior, and offer the potential to be defined as the context. In this analysis, parity of the childbearing intention is treated as a context, and so the analyses are modelled separately for childless and parents. Other "external" variables are treated as control variables in the models. The fourth element is the *time* in which the behaviour occurs. Prediction power increases when the timing of fertility intentions is specified (Philipov et al., 2006; Vikat et al., 2007). Here we model the difference between two time-spans, namely the intention to have a child now or within three years.

A model of how the theory is used is shown in Figure 1. According to the theory of planned behavior intentions are formed with the contribution of three sets of factors. The first set comprises *attitudes* towards the behaviour, which means a person's internal evaluation that performing the behaviour will have positive or negative outcomes for them. The second set comprises *subjective norms*, determined by normative beliefs, which means the person's

perception of external social pressures for performing the behaviour, formed from their perception that significant others' would want them to perform the behaviour. The third set comprises *perceived behavioural control*, which means the person's perception that they are able to perform the behaviour. In their combination, the attitudes, the subjective norm and perceived behavioural control, contribute to formation of a behavioural *intention*. This intention is assumed to be the immediate antecedent of behaviour. It is expected that an individual will realize an intention when it is sufficiently strong and when she or he has a sufficient degree of actual control over the behaviour. However, in many situations people may lack control over the behaviour and a lack of perceived behavioural control decreases the likelihood for both the intention and the behaviour itself.

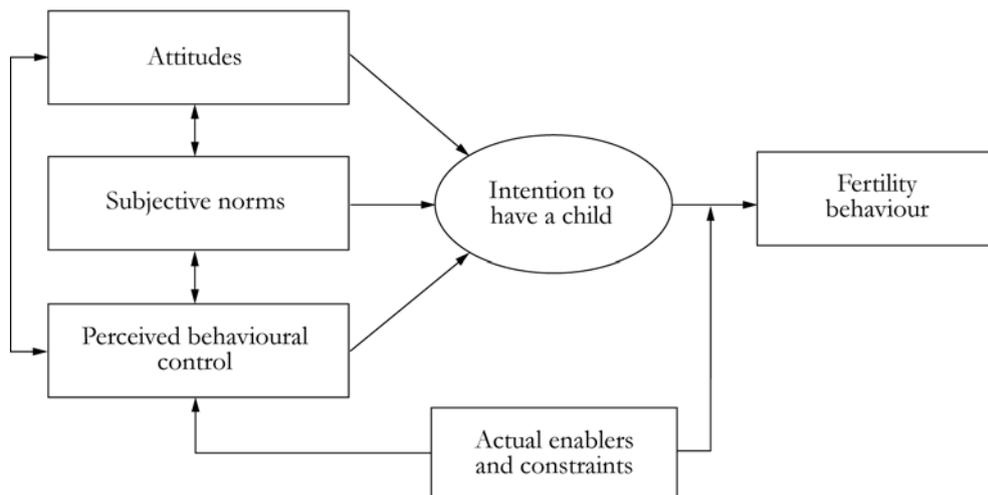


Figure 1. A model of fertility decision-making based on the theory of planned behavior

The theory of planned behavior has not, until recently, been used to study fertility intentions. An operationalisation of the theory has been developed at the Max Planck Institute for Demographic Research (Vikat et al., 2007). This operationalisation has been tested on Bulgarian survey data and the theory has been found feasible to explain reproductive decision-making (Billari et al., 2009) and to explain intentions to form unions (Billari, Philipov, & Testa, 2005). A set of questions based on this operationalisation was subsequently implemented in the Generation and Gender Survey (Vikat et al., 2007). In this article we argue that the theory of planned behavior will not only give better insights into the processes behind fertility intentions *per se*, but also into the timing of the intentions. We will now proceed with a discussion of plausible mechanisms by which the three sets of factors influence fertility decision-making.

Attitudes— or internal motivations are associated with the perceived positive and negative outcomes of having a(nother) child. Although the theory of planned behavior does not explicitly distinguish between positive and negative outcomes, Philipov et al. (2006) observed a distinction between positive and negative attitudes in the fertility domain. Generally one would expect that the more positive the expected outcomes of having a(nother) child are to an individual, the more positive their attitude towards childbearing will be, and thus the more likely that a positive decision to have a(nother) child will be taken. Previous studies that have measured attitudes that are compatible with the fertility behaviour of interest have demonstrated quite strong effects of attitudes on intentions. A study from the US suggest that American adults are strongly influenced by parents' perceptions that children create the "social capital" that arises from the social ties among families and other groups surrounding

children (Schoen et al., 1997; Schoen & Tufis, 2003). Positive attitudes to childlessness among people of childbearing age are strongly correlated with intentions to remain childless (Koropecj-Cox & Pendell, 2007). Attitudes toward abortion are associated with decisions to have, and not to have children (Miller & Pasta, 1994). Analysis from the Netherlands finds that both material and immaterial outcomes are important in predicting the timing of having children (Liefbroer, 2005). An analysis from Germany found that egalitarian attitudes inhibited the likelihood of motherhood (Moors, 2008). An analysis on attitudes toward childbearing and the transition to parenthood from the U.S. states that young women and men with positive attitudes enter parenthood (especially marital parenthood) earlier, while married couples with negative attitudes become parents later (Barber, 2001). The last study refers explicitly to Ajzen's theory and even aims to expand the model by including attitudes toward competing alternative behaviours, but there is no specific operationalisation of the theory of planned behavior (Barber, 2001). Based on the above discussion we outline the following hypotheses of the relationship between attitudes (internal motivation) and the timing of the fertility intentions for individuals who plan to have a(nother) child at some time:

- H1a: The stronger an individual's positive attitude towards the outcomes of having a(nother) child, the more likely it is that they will intend to have the child in the short term.
- H1b: The stronger an individual's negative attitudes towards the outcomes of having a(nother) child, the less likely it is that they will intend to have the child in the short term.

These hypotheses are based on the assumption that when an individual has strong positive attitudes to the outcome of having a(nother) child, they will be more certain in their fertility intentions, and therefore more likely to have more concrete childbearing plans rather than just general fertility intentions. On the other hand, negative attitudes to the outcome of having a child will produce less certainty and individuals will be less likely to have concrete childbearing plans even if they have a longer term intention to have a child.

Subjective norms— or external motivations may reflect the impact of more general social norms, but also the norms of the social network to which individuals belong. Generally, one would expect societal norms to influence fertility decision-making, but only if the norms are shared by the decision-maker. For instance, parents and other family members may act as both descriptive and injunctive norms. The number of children a person has have been associated with the number of children born to parents, a descriptive norm (Axinn, Clarkberg, & Thornton, 1994). Also, social networks have been observed to have strong influence on childbearing intentions. A qualitative study has, for instance, identified that girls' childbearing intentions are influenced by their friends' experiences as mothers (Bernardi, Keim, & von der Lippe, 2007). Previous analyses that show that mothers' preferences for children's timing of childbirth and family size affect their children's preferences (Axinn et al., 1994) and behaviour (Barber, 2000) suggest that mothers have a strong injunctive influence in childbearing intentions. Based on the above discussion we outline the following hypothesis of the relationship between subjective norms (external motivation) and the timing of the fertility intentions:

- H2: The stronger an individual's sense of normative pressure to have a(nother) child, the more likely it is that they will intend to have the child in the short term.

The argument behind this hypothesis is that, if there is a perception that one's social network thinks they should have a(nother) child, this will generally function as social acceptance of having a(nother) child leading to more certainty in childbearing plans and thus a stronger likelihood of short-term intentions. However, if the norm is not shared by the decision-maker, it is likely that there is no such positive effect. This means that one could expect an interaction between the internal and external motivations, which we will test for.

Perceived behavioural control—Some circumstances and factors are thought to enable the decision to have a(nother) child, whereas other circumstances and factors are thought to hamper it. It is important to underline that here we are talking about perceptions of behavioural control and it is individuals' perceptions that they are able to overcome constraints on having a(nother) child that is important. Factors that might come into play include perceived ability to afford a(nother) child (regardless of actual ability) and the perceived impact of policy measures on ability to bring up a(nother) child. Literature that has specifically examined the influence of perceived behavioural control on the formation of fertility intentions is rare, although Liefbroer (2008) has proposed that control may be a critical factor. Based on the above discussion we outline the following hypotheses of the correlation between perceived behavioural control and the timing of the fertility intentions:

H3: The stronger an individual's perception of their ability to overcome constraints associated with having a(nother) child, the more likely it is that they will intend to the child in the short term.

The assumption behind this hypothesis is that when an individual feels capable of overcoming the constraints of having a(nother) child, they are more likely to form concrete fertility plans rather than simply hold general fertility intentions. In the analysis we include several external variables or so-called objective measures that might influence the perceived ability to overcome constraints on having a(nother) child.

Data and Method

Data

We use data based on information from the Norwegian Generations and Gender Survey, conducted in 2007. The survey provides several measures on fertility intentions. The distinction between short-term and long-term fertility intentions is based on two of these. Long-term fertility intention is constructed from a question asking whether the respondent intends to have a(nother) child within the next three years. Short-term fertility intention is constructed from a question asking whether they want to have a(nother) child now. These questions were only asked of respondents who were not pregnant at the time of the interview and who confirmed that they or their partner was able to get pregnant. The sample is restricted to respondents with at least a long-term fertility intention. Those who also say yes, they want a(nother) child now are classified as having a short-term intention to have a(nother) child. The sample used in the analysis in this article includes individuals 18-40 years old. It comprises 1,307 individuals, of whom 549 are already parents and 758 childless.

Factor analysis: Implementation of the theory of planned behavior

Three blocks of questions were used to operationalise the theory of planned behavior. The first block of question was used to capture the attitude toward the behaviour and has the

following text: “*Suppose you will have a(nother) child within the next three years. On a scale from 0 to 10, where 0 means ‘much worse’ and 10 means ‘much better’, how would this effect ...*”. The items to be evaluated were:

- the possibility to do what you want
- the contact between you and your partner
- the care and security you might get in old age
- your partner’s employment opportunities
- the contact between you and your parents
- your general quality of life
- your sexual life
- your employment opportunities
- your financial situation
- what other people think of you

The questions that are referring to a partner or to parents were only asked to respondents with a partner or at least one parent alive.

The second block of questions was used to capture subjective norms and contains three items that are introduced as followed: “*Although you may feel that the decision of whether or not to have a(nother) child is yours, it is likely that others have opinions about what you should do. On a scale from 0 to 10, where 0 means ‘strongly disagree’ and 10 means ‘strongly agree’, to what extent do you agree with these statements?.*” The three statements are:

- my parent(s) think(s) I should have a(nother) child within the next three years
- most of my relatives think I should have a(nother) child within the next three years
- most of my friends think I should have a(nother) child within the next three years

The last block of questions was formed to catch the factor of perceived behavioural control and it contains ten items. They were introduced with the question: “*On a scale from 0 to 10, where 0 means ‘not at all’ and 10 means ‘a great deal’, how would your decision about having a(nother) child within the next three years be affected by ...*”. The ten items are:

- your financial situation
- your housing conditions
- you have a suitable partner
- your partner’s health
- your opportunity to go on parental leave
- your work
- your health
- your partner’s employment
- the availability of childcare
- the life situation of your parents

For our analysis we reversed the scale of this last block because this made it easier to show the possible positive effect of perceived ability to overcome constraints with a positive coefficient in the regression model.

We used factor analysis to test whether these items could be grouped in accordance with model stated by the theory of planned behavior within the Norwegian context. Factor analysis is a statistical technique which enables reduction of a set of observed variables to a smaller number of latent factors. The underlying assumption of factor analysis is that there exist a number of unobserved latent variables (or factors) that account for the correlations among observed variables, such that if the latent variables are partialled out or held constant, the partial correlations among observed variables all become zero. For an introduction to factor analysis, see, e.g. Pett, Lackey, and Sullivan (2003).

The results from these analyses are presented in Table 1. During our exploratory phase of the analysis three items were found to have rather low communalities, which mean that there was little correlation with the other variables. These items were therefore taken out of the

constructed factors. Two of these items are from the block related to attitudes, i.e. “the possibility to do what you want” and “partner’s employment opportunities”. The last item is related to the concept of perceived behavioural control and concerns how the decision to have a(nother) child depends on the availability of a suitable partner.

Table 1. Factor Loadings and Factor Alpha Coefficients of items of perceived behaviour control, norms and attitudes towards the intention to have a(nother) child within the next three years

Items	Factor 1: PBC	Factor 2: subj. Norms	Factor 3: pos. attitudes	Factor 4: neg. attitudes
<i>“How would your decision to get a/another child within then next three years be affected by ...”</i>				
- partner’s work	0.72	-0.03	-0.02	0.02
- your health	0.67	0.02	0.01	-0.04
- availability of childcare	0.65	-0.01	-0.01	0.03
- your work	0.64	-0.05	0.00	-0.02
- your financial situation	0.61	0.04	-0.04	0.03
- opportunity for parental leave	0.61	-0.08	0.01	-0.03
- partner’s health	0.60	0.02	0.01	-0.07
- your housing conditions	0.58	-0.02	0.07	-0.01
- parents life situation	0.54	0.08	-0.03	0.07
<i>“Others think you should have a/another child within the next three years”</i>				
- relative	0.02	0.94	0.00	0.00
- parents	-0.04	0.83	0.02	-0.06
- friends	0.01	0.78	0.01	0.04
<i>“Suppose you will get a/another child during the next three years, how would this affect your ...”</i>				
- general life quality	-0.03	-0.02	0.68	0.03
- contact to partner	0.02	-0.07	0.67	0.13
- contact to parents	0.05	0.03	0.66	0.08
- security in old age	-0.03	0.02	0.55	0.07
- people around think of you	-0.00	0.08	0.50	0.17
- financial situation	-0.02	0.01	-0.02	0.68
- employment possibilities	-0.01	-0.00	-0.04	0.61
- sexual life	0.03	-0.03	0.13	0.55
Factor Alpha Coefficient	0.94	0.88	0.70	0.56

Loadings highlighted in bold indicate the factor on which the item was placed.

Source: Norwegian GGS 2007, own calculations.

The results of the factor analysis are in line with the theory of planned behavior and reveal four factors: one measuring perceived behavioural control, one capturing the impact of subjective norms and two measuring attitudes toward the behaviour (divided into positive and negative attitudes). The internal consistency (“reliability”) of the factors is shown through coefficient alpha which reveals a generally high average correlation among the variables in each factor; the factor for perceived behaviour control and the factor for subjective norms have a particularly high reliability with a coefficient alpha of 0.94 and 0.88 respectively. There is somewhat lower reliability in answers to the questions used in the negative attitudes factor, where the coefficient alpha is 0.56.

There is a possibility that different groups rate the items differently and thereby end up with different factor structures. For example men and women might evaluate possible fertility constraints differently due to the fact that women are still the main caregiver and parenthood has more consequences for women than men. Also, childless and parents might evaluate fertility constraints differently, as having already experienced parenthood can give a more realistic image of the outcomes of having another child. If these differences give rise to different factors which represent different patterns among the original variables, the elements of the theory of planned behavior could not be used reliably to study formation of fertility intentions. In order to exclude such a possibility we ran the factor analysis separately for men and women, and for parents and childless respondents. From these tests, we found only minor differences in the weights with which individual variables loaded on the factors, i.e. even if there is variation in how these groups evaluate the items, the pattern of correlations among the items remains the same. This means that we could use the same factors when running separate models for the two different contexts of interest, being childless or already a parent.

Logistic regression model: Theoretical background

Besides the factors derived from the theory of planned behavior, we include several other variables that were used in previous studies on fertility and fertility intentions. Controlling for such “external” variables will allow us to examine whether the theory of planned behavior can add new explanatory power in a model of fertility intentions. We distinguish between demographic variables and what might be called objective measures of control which permit us to control for the effect of *perceived* behavioral control relative to actual control.

The group of demographic variables includes partnership status, time since last birth, number of children still wanted, age, sex and education. The variable partnership status has three values: living with a partner, has a partner without living together, no partner. Previous studies have pointed out the importance of including partnership status when analyzing fertility and fertility intentions, and some only include couples in their analysis (e.g. Thomson, 1997; Schoen et al., 1999; Voas, 2002). It has been argued that without a partner, fertility intentions are rather difficult to achieve. Decisions to have a(nother) child are often seen as the joint decisions of two partners (Rosina & Testa, 2007) and better predictions of fertility behaviour have been found when data about fertility intentions were obtained from both members of the couple than from one member alone (Becker, 1996). Also disagreement between partners has been associated with lower than predicted fertility behaviour (Thomson, 1997). In this analysis we also include those without a partner. Generally, it is more likely that individuals without a partner have weaker fertility intentions than those with a partner, but here we only include individuals who say they want a child at least within the next three years. We have chosen not to distinguish between married or non-married couples as we believe that the main issue here is whether respondents have a partner or not. Also, in the Norwegian context, cohabitations and marriages are quite similar, with a large proportion of non-marital childbearing.

In the models of parents’ fertility intentions we include a variable of time since last birth or the age of the youngest child in the household with three values; 0 years, 1-3 years and 4 or more years. If there has been only a short time since last birth (less than one year) there will probably be little plan to have another child right now, but for the other parents it is likely that short-term intention is associated with time since last birth, as most parents want to have their children within a certain time-frame, here assumed to be 1-3 years. Intended number of children, after controlling for children already born, is separated into three groups: intend to

have one (more) child, intend to have two (more) children and intend to have at least three (more) children. It is likely that individuals with preferences for larger family size have more concrete childbearing plans than others, as the time issue is more pressing in order to achieve the intended number of children.

Age has been divided into four groups; 18-24, 25-29, 30-34, and 35-44 years. From previous analyses, the number of intended children has been found to vary with age (Heiland et al., 2008). One may assume that individuals will, at higher ages, have less time to fulfill their intentions and therefore be more concrete in their fertility plans than younger age groups. For instance, it has been found that certainty of intentions increases by age (Morgan, 1981). We also include gender in the models. The consequences of a childbearing intention are initially stronger for women. Women have to be pregnant and bear the risk of a pregnancy and it has been pointed out that role conflicts between family, work and leisure might be stronger for women than for men (Barber, 2001). Thus, it might be easier for men to formulate a concrete fertility intention than for women. Other studies indicate, however, that women have a higher general desire for childbearing than men (Lyngstad & Noack, 2005).

We distinguish between three levels of highest achieved education, low includes compulsory education, medium reaches up to upper secondary school and high captures degrees from university colleges and universities. Young adults with higher education have their first child later in the life course, e.g. (Lappegård & Rønsen, 2005). This effect might also appear for the timing of fertility intentions, in the sense that those with higher education have weaker short-term birth intentions. On the other hand, it might be that timing of fertility intentions is a more salient issue among more highly educated individuals leading to more concrete childbearing plans.

The objective measures used to control for the effect of perceived behavioural control include the variables income, employment status, dwelling size and health status. Perceived behavioural control, as measured in the Generations and Gender Survey, captures the extent to which the decision to have a(nother) child depends on, among other things, the respondent's economic situation, their work, their housing situation and their health. If the factor for perceived behavioral control still has explanatory power, when controlling for objective measures of these items, the factor captures more than the objective situation of the respondent in these fields (Billari et al., 2005). Income is included to control for the economic situation and is measured as income after tax grouped into four quartiles. If income is a constraint on fertility decision-making it is likely that high income is positively associated with concrete childbearing plans. Employment status is included to control for the work situation and is divided into three groups: working in a permanent position or self-employed, working in a temporary position and not working (primarily individuals in education or unemployed, but also homemakers, mainly women). An uncertain work situation might be considered a hurdle for fertility plans and one may expect those without permanent work to have less concrete fertility plans. Dwelling size is included to control for housing situation and the variable captures number of rooms by household numbers. We distinguish between no additional free rooms, one additional free room and several free rooms. It is likely that available room for bringing a(nother) child into the household is positively associated with having concrete childbearing plans. Health status is based on two questions; whether the respondent defines their own health as bad and whether they report having a long-lasting illness or disability. We distinguish between bad health status, which means those saying yes to the above questions and all others. Generally, one may expect bad health status to be associated with lower fertility intentions. However, since all individuals included in this

analysis intend to have a(nother) child we believe that bad health might be associated with more certainty and therefore more concrete childbearing plans.

Results and discussion

We now proceed with analysis of how the factors outlined from the theory of planned behavior influence the timing of fertility intentions for parents and childless individuals. The mean scores on each factor for individuals with long- and short-term fertility intentions are presented in Table 2. Descriptive statistics – group membership frequencies – for the external variables included in the models are presented in the Appendix.

Table 2. Mean scores for the theory of planned behavior factors for parents and childless by long and short term fertility intentions

	Parents		Childless	
	Long-term intention	Short-term intention	Long-term intention	Short-term intention
Perceived behavioural control	6.0	6.5	5.4	6.0
Subjective norms	4.2	5.1	4.5	6.0
Positive attitudes	6.4	6.7	7.1	7.4
Negative attitudes	4.9	4.9	4.8	4.9

Source: Norwegian GGS 2007, own calculations, weighted results

The results from the logistic regression models are presented in Table 3 (next page). We present three models for each of the two contexts; the first including only the factors based on the theory of planned behavior, the second including the demographic background variables and the third, controlling in addition for the “objective” measures of behavioural control. The results are presented as odds ratios and the factors for the theory of planned behavior are standardized with mean equal to zero and standard deviation equal to one in the regression analysis.

The factors based on the theory of planned behavior

Here we discuss the result from the factors based on the theory of planned behavior, starting with the estimates among parents. In Model I these factors are the only variables included to estimate the likelihood of having short-term fertility intentions. The results show that, with the exception of negative attitudes, all factors have a significant effect on the likelihood of having concrete childbearing plans compared with more long-term intentions. Two factors, perceived behavioural control and subjective norms, have highly significant effects that are almost equally strong, with odds ratios of approximately 1.32 and 1.36 respectively. Positive attitudes also have a clear and significant effect of 1.27. When controlling for demographic variables in Model II, the three factors remain significant, but the effect of perceived behavioural control and positive attitudes becomes weaker, while the effect of subjective norms, on the other hand, becomes stronger. Lastly, when also including the objective measures for the perceived behavioural control in Model III, the effect of subjective norms remains much the same (1.50) as in Model II and the effect of positive attitudes (1.29) is again similar to that of Model I, while the effect of perceived behavioural control is no longer significant.

Table 3. Logistic regression models; odds ratio for concrete fertility intentions

	PARENTS			CHILDLESS		
	Model I	Model II	Model III	Model I	Model II	Model III
Factors for theory of planned behavior						
Perceived behavioural control	1.32**	1.22*	1.18	1.29**	1.12	1.08
Subjective norms	1.36**	1.49**	1.50**	1.55**	1.36**	1.34**
Positive attitudes	1.27*	1.23	1.29*	1.14	1.14	1.15
Negative attitudes	0.99	0.90	0.93	1.06	1.09	1.09
Partner status						
No partner		1	1		1	1
Living together with a partner		1.21	1.37		1.33	1.43
Non-residential partner		0.57	0.58		0.55*	0.56*
Time since last birth						
Youngest child 0 years		1	1			
Youngest child 1 to 3 years		2.53**	2.63**			
Youngest child 4 or more years		6.27**	6.17**			
Intended child number						
One more child		1	1		1	1
Two more children		0.85	0.89		0.58	0.58
At least three more children		3.58*	4.52**		0.91	0.90
Respondents age						
18-24 years		1	1		1	1
25-29 years		1.34	1.43		1.69*	1.64*
30-34 years		2.04	2.13		4.10**	3.83**
35-40 years		3.32**	3.46**		10.10**	9.20**
Sex						
Men		1	1		1	1
Women		1.08	1.07		1.46*	1.44*
Respondents highest education						
Low		1.52	1.73		0.97	0.98
Medium		1	1		1	1
High		0.69	0.63*		0.50**	0.57**
Respondents income after tax						
Lowest quartile			1			1
Second quartile			1.25			1.18
Third quartile			0.94			1.06
Highest quartile			0.97			0.95
Respondents employment status						
Permanent contract or self-employed			1			1
Temporary contract			1.23			0.91
Not working			0.62			0.66
Dwelling size						
No free room			1			1
One free room			1.30			1.15
Several free rooms			2.10**			1.64*
Respondents health status						
No serious illness or bad health			1			1
Serious illness or bad health			1.06			2.12**
Number of observations used	549	549	549	758	758	758
R-Square	0.05	0.18	0.20	0.07	0.17	0.18

Source: Norwegian GGS 2007, own calculations

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

These results are thereby only partly in line with our hypotheses. First, our hypotheses about the influences of positive and negative attitudes on the timing of fertility intentions were only supported for positive attitudes. Among parents, the findings confirmed our hypothesis (H1a) that the stronger an individual's positive attitudes towards the consequences of having another child, the more likely it is that they will intend to have the child in short-term, while our hypothesis (H1b) that the stronger an individual's negative attitudes towards the outcome of having another child, the less likely it is that they will intend to have the child in the short term was not confirmed. It is possible that the items used to measure negative attitudes – including the expected consequences of a possible birth on employment opportunities, financial situation and sexual life – may not have captured the negative consequences most likely to influence the decision to have another child among parents. In addition, it is also possible that negative attitudes have an effect on the formulation or non-formulation of a general fertility intention rather than on the timing of concrete fertility plans. The Bulgarian study found that negative attitudes, described as cost factors, have a negative effect on fertility intention when comparing whether young men and women intend to have a(nother) child within the next 2 years or not (Billari et al., 2009). Once individuals who already have a child decide to have another child, it might be possible that negative consequences will not influence their decision about when to have another child. Second, our hypothesis (H2) that subjective norms, measuring how much the parent thinks that significant others (parents, relatives and friends) think they should have another child, has a positive effect on short-term fertility intentions was confirmed. Compared to the other factors, this factor has the strongest effect. This indicates that acceptance of having another child is highly important for timing of fertility decisions and if significant others do not share the view that a parent should have another child (or at least that the parent has the impression that this is so) this can lead to a delay in the formation of a concrete intention and, by extension, most likely to a delay in an actual birth. In the theoretical section we argued that if the norm was not shared by the decision-maker it was likely that there was no such positive effect, indicating an interaction between the internal and external motivations. When including an interaction term between positive attitudes and subjective norms we do not observe any significant effects (numbers not reported). Last, our hypothesis (H3) that the stronger an individual's perception of their ability to overcome constraints associated with having another child, the more likely it is that they will intend to the child in the short term, was not confirmed: when controlling for the actual life situation of parents through objective measures of income, housing situation, work and health status, the decision to have another child is no longer influenced by the subjective rating of these different life aspects.

Now we turn to the estimates for those that have not yet become parents. We ran the same models as for parents, only without the variable measuring time since last birth which obviously could not be included. The estimated results are quite different from those we have seen among parents. Already in Model I, where only the four factors based on the theory of planned behavior are included in the model, only the factors for the perceived behavioural control and subjective norms have a significant positive effect on the likelihood of having short-term fertility intentions. Negative and positive attitudes show no significant effects. When demographic factors and educational level are controlled for in Model II, the significant effect of the perceived behavioural control factor also disappears, and in Model III, where we control for objective measures of perceived behavioural control, only subjective norms is significant with an odds ratio of 1.34.

This means that among childless individuals, the estimated results are also only partly in line with our hypotheses. First, our hypothesis (H1a and H1b) that the strength of positive and

negative attitudes influence the timing of fertility intentions among childless individuals was not confirmed. It is important to underline that the attitude factor in the theory of planned behavior as adopted here does not measure an attitude towards children or birth, but evaluates whether individuals think having a child will have positive or negative consequences on different life spheres. One explanation for attitudes having no effect among childless individuals is that, without the experience of already having a child, it might be more difficult to truly estimate the consequences having a child on different life spheres. However, since the decision on wanting to transfer into parenthood within the next three years has already been taken by the individuals in this study, it might be more accurate to say that possible consequences in other life spheres do not affect their decision of whether they want a child right now rather than later. Second, our hypothesis (H2) that subjective norms from significant others have a positive effect on childless wanting a child now is confirmed, and is the only factor from the theory of planned behavior that seems to influence the timing of the fertility decision-making among childless. This indicates that, also among those without children, acceptance by significant others makes it easier to concretize childbearing intentions. We also tested here (coefficients not reported) for a possible interaction effect between subjective norms and positive attitudes since it is likely that if the norm is not shared by the decision-maker it is likely that there is no such positive effect, without finding any significant effect. One reason for this might be that all here have fertility intentions and the norm is therefore per definition shared by the decision-maker. Last, our hypothesis (H3) that stronger perceptions of ability to overcome constraints on having a child increase the likelihood of short-term fertility intentions were not confirmed. These findings show that among childless individuals, the only socio-psychological factor that influences the timing of having their first child is subjective norms or the perceived norms of the social network to which the individual belongs to. This indicates that positive holdings from the network make it easier to pursue fertility intentions and have children in the end.

The strong effect of increasing age, in particular, among the control variables included in Model II on short-term intentions prompted us to further examine the relative roles of perceived behavioural control and age on fertility intentions for childless individuals (these regression coefficients are not reported here but are available from the authors on request). If we exclude age but continue to control for all the other variables from Model II, perceived behavioural control remains highly significant, but when adding the objective measures in Model III, the influence of perceived behavioural control is no longer significant. This means that without age we see the same pattern as among parents. When age is included (whether as the only demographic control variable or one of several) the effect of perceived behavioural control disappears completely. This shows the strong effect age has on the timing of fertility intentions for individuals who do not already have a child. Earlier research has shown that the level of certainty of fertility intention increases with age (Morgan, 1981), but it might also be that level of perceived behavioural control increases with age. In order to test for such possibilities we ran separate models for younger and older respondents, and obtained the same results. In both cases, advancing age renders constraints on having a child (i.e. perceived behavioural control) irrelevant.

Other control measures

In the following we will briefly discuss the estimated results from the control measures included in the model, starting with the estimates among parents. Living with a partner has no effect among parents on the likelihood of having short-term fertility intentions. Generally one would expect a strong effect of living with a partner on having concrete childbearing plans. In

our sample almost all parents are in fact living with a partner (90%) and parents (all with fertility intentions) who do not have a partner or do not live together, might be a very selected group. Not surprisingly, time since last birth and intended number of additional children has a positive effect; the longer the time-span and the higher the number of intended children the more concrete are the childbearing plans. There are little differences by age and gender among parents. The only positive (and strong) effect by age is found among the oldest age group (34-40 years), as they might feel that they have not so much time left to fulfil their additional child wishes. For the younger parents (almost 80% in our sample) these results indicate that once the goal of parenthood is reached, factors other than age have a stronger influence on decision-making about the timing of when to have the next child. Once women and men have become parents there are no longer differences in their future child plans. Parents' fertility intentions vary by educational attainment where high educational attainment is associated with less concrete childbearing plans, which is in line with findings from earlier research that highly educated people delay childbearing. Looking at the objective measures of behavioural control included in the model we find no significant effect of income or employment status. In general, fertility patterns are often associated with differences in these factors, but in terms of planning whether to have a(nother) child now or within the next three years they do not seem to give rise to any differences. Housing situation, on the other hand, seems to have an influence, but only if there are several free rooms available, in which case there is a positive effect on having concrete childbearing plans. The last factor, health status, has no significant effect among parents.

Now we turn to the estimates for those that have not yet become parents. Childless individuals with a non-residential partner have a lower likelihood of wanting a child now than those without a partner. Those with a non-resident partner might be following a life-course plan where, for instance, having a child is part of the plan but not until they are living with their partner. Indeed, those without any partner, but still with fertility intentions, might be more certain of their plans than others. The intended number of children makes no difference in timing of intention to have a child. This indicates that the transition to parenthood itself is the important transition among childless, not how many children they plan to have all in all. There are more differences by age and gender among childless individuals than among parents. As discussed above, age has a very strong effect among childless individuals on the timing of their fertility intentions. Also, women have generally stronger childbearing intentions than men. In the same ways as among parents here there are also differences by educational attainment where those with the highest education have the lowest likelihood of having short-term fertility intentions. Interestingly, analysis of fertility patterns among men and women show the opposite effect of educational attainment on childlessness, i.e. among men those with low education remain more often childless, while on the other hand, among women those with high education remain more often childless (e.g. Kravdal & Rinfuss, 2008; Lappegård, Rønsen, & Skrede, 2008). This pattern might be the same for fertility intentions and in order to test for such a possible effect, we ran the model with an interaction term between education and gender (not reported), where we found no significant effect. Our findings therefore suggest that factors that have an influence on general birth rates do not always have a significant effect on the concrete timing of the birth and fertility intentions. In the same way as among parents, we do not find any significant effect of income or employment status. Housing situation, on the other hand, seems to have significant effects and an influence in the same way as among parents, i.e. several free available rooms has a positive effect on having concrete childbearing plans. Finally, health status has a significant effect among childless individuals, i.e. those with bad health status are more likely to intend to have a child right now than those without health problems. At first glance, this might come as a

surprise, but as all individuals included here intend to have a child some time within the next three years, this suggests that those with health problems might be afraid that their health will be even worse in the future and therefore want to fulfil their intention to become a parent as soon as possible.

Concluding remark

Our analysis of the role of attitudes, norms and perceived behavioural control on deciding the timing of having a first or subsequent child demonstrates new insight into the influence of social-psychological factors on individuals' fertility intentions and their net effects when including "external" factors into the analysis. We used the framework of the theory of planned behavior which is a social-psychological model that enabled us to study the fertility decision-making process within its macro-level context. Including only individuals who intend to have a child in the analyses made it possible for us to investigate the time-frame and differences between more general or longer-term fertility intentions and concrete plans, i.e., short-term intentions. The analyses were also made separately for parents and those that have not yet become parents. The decision to become a parent is a crucial transition in one's life course and separate analyses of the two groups have made it possible to examine how social-psychological factors influence decisions about the timing of having a(nother) child.

Not all of the social-psychological factors influence the timing of the decision, and social-psychological factors seem to be less important in the decision to become a parent for the first time than the decision to have a subsequent child. Among parents, we find significant differences for the factors positive attitudes and subjective norms. This means that a stronger positive view of the consequences or the benefits of having another child more often leads to concrete plans. The same goes for how much significant others think they should have another child, which has a stronger effect than the positive attitudes. Subjective norms are the only social-psychological factor that explains differences in the timing of fertility decisions among those who have not yet become parents. When it comes to the negative views or the disadvantages of having a(nother) child there are no differences, even when social-psychological factors are the only factors included in the analysis. The factor that reveals an individual's perception of their ability to overcome constraints on having a(nother) child becomes insignificant when including objective measures of control. It is possible, however, that these two factors might have been more influential if we had measured the differences between whether an individual intended to have a child or not in general rather than differences in the timing of this intention. In a study for Bulgaria where the intention to have a(nother) child itself was the dependent variable, negative attitudes or cost factors have a significant negative effect for both parents and childless men and women (Billari et al., 2009). Since we are only looking at those who already want a child, it is possible negative consequences will not influence their decision about the time-frame of their intention.

Beside this focus on the role of social-psychological factors on fertility intentions, this article contributes to the general research on fertility and fertility intentions. Earlier research has shown that the transition from intention to fertility outcomes is shaped by certain background factors. The presented results demonstrate that this is already the case for different levels on the intention side and it was possible to distinguish those who had concrete intentions and those who wanted a child now. In addition the results underline that when analysing fertility and fertility intentions, it is useful to separate between parents and childless individuals. There are differences between the decision process to become a parent for the first time and to have

another child and hence the same background variables can have quite different effects on these two processes.

We started out in this article arguing that more in-depth analysis of fertility intentions especially focusing on psychological factors influencing fertility decision-making could improve knowledge of the causes of the “fertility-gap” between people’s wishes and behaviour. Demographic variables and objective measures of behavioural control are important factors in explaining different fertility intentions. In this article we have been able to demonstrate that social-psychological factors have an additional influential effect on fertility intentions. The main conclusion is that there are significant differences in the processes behind formation of general fertility intentions and concrete childbearing plans, and the theory of planned behaviour adds new insights into these processes.

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Appendix

Long- and short-term fertility intentions for parents and childless, percent

	Parents			Childless		
	Long-term	Short-term	Total	Long-term	Short-term	Total
Partner status			100			100
Not living together with a partner	35	65	6	53	47	27
Living together with a partner	49	51	90	46	54	48
Non-residential partner	49	51	4	68	32	25
Time since last birth			100			
Youngest child 0 years	69	21	27			
Youngest child 1 to 3 years	46	54	49			
Youngest child 4 or more years	28	72	24			
Intended child number			100			100
One more child	48	52	70	30	70	4
Two more children	53	47	26	55	45	62
At least three more children	17	83	4	53	47	34
Respondents age			100			100
18-24 years	60	40	8	68	32	28
25-29 years	55	45	31	59	41	37
30-34 years	49	51	39	39	61	24
35-40 years	34	66	22	26	74	11
Sex			100			100
Women	49	51	47	54	46	48
Men	47	52	53	53	47	52
Respondents highest education			100			100
Low	36	64	22	57	43	27
Medium	47	53	39	49	50	35
High	57	43	39	54	46	38
Respondents income after tax			100			100
Lowest quartile	48	52	25	65	34	27
Second quartile	46	54	25	54	46	26
Third quartile	47	53	26	45	53	24
Highest quartile	51	49	24	44	45	23
Respondents employment status			100			10
Permanent contract or self-employed	48	52	76	49	51	73
Temporary contract	48	52	13	59	41	16
Not working	48	52	11	75	25	11
Dwelling size			100			100
No free room	56	44	35	61	39	24
One free room	48	52	28	54	46	35
Several free rooms	40	60	36	49	51	41
Respondents health status			100			100
No serious illness or bad health	49	51	88	55	45	88
Serious illness or bad health	45	55	12	40	60	12
Total	48	52	100 (N=549)	53	47	100 (N=758)

Source: Norwegian GGS 2007, own calculations.
Weighted results.