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How real are reproductive goals? Uncertainty and the construction of fertility preferences

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ABSTRACT

The underlying reality of fertility intentions, expectations and preferences tends to be taken for granted. This is a natural consequence of the assumption, implicit or explicit in most demographic research, that fertility behaviour is governed by rational choice. We question the reality of fertility intentions, expectations, and preferences, and propose instead that they are by and large constructed. Drawing on behavioural economics, psychology, and political science, we develop an outline theory of fertility intentions and preferences that contrasts with the classical rational choice model assumed in most work in this area.

We show that there is a relatively high frequency of uncertain responses to questions on fertility intentions and expectations and argue that the uncertainty expressed is genuine. It was largely in response to this finding that our theoretical approach was developed. The presence of uncertain answers to preference and intentions questions is acknowledged in most demographic surveys but their frequency and theoretical and empirical significance has been largely neglected.

Preferred family size may, we suggest, be a discovery rather than a goal. Demographic thinking about fertility decisions could be enriched by adopting the idea of constructed preferences from behavioural economics and psychology, together with ideas and debates in political science regarding survey response. The construction of fertility preferences and intentions can account for some hitherto unexplained anomalies in survey findings on fertility intentions and expectations. Preference construction theory provides a novel perspective on fertility intentions and preferences and on family building behaviour, and merits serious empirical investigation in this context.

KEYWORDS

Fertility intentions; fertility preferences; desired family size; ideal family size; constructed preferences; uncertainty; ambiguity; ambivalence; preference construction; rational choice.

EDITORIAL NOTE

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HOW REAL ARE REPRODUCTIVE GOALS? UNCERTAINTY AND THE CONSTRUCTION OF FERTILITY PREFERENCES

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"It is perhaps a testimony to the coerciveness of interview situations how rarely participants say *don't know,* much less try to bolt…" (Fischhoff 1991)

1. INTRODUCTION

Data on fertility preferences and intentions have been collected in demographic surveys for many decades in a wide range of contexts. They are analysed for a variety of purposes, most notably to interpret past trends, to gauge future prospects, and to develop an understanding of reproductive decision making. However, it has long been known that intentions, expectations and preferences can be quite inconsistent with eventual fertility outcomes, at both individual and aggregate levels (Morgan 2001). This is at odds with the classical rational choice model implicit in most of the literature on family formation. The rational choice model, with its assumption that people have clear preferences and goals, has increasingly been challenged in recent years not only in psychology and sociology but also in economics (Kahneman 1996, Smelser 1998, Bruni and Sugden 2007).

The aim of the present paper is to develop an outline theory of fertility intentions and preferences as an alternative to the classical rational choice model implicit in much of the demographic literature on family formation. We adapt ideas from behavioural economics and political science to argue that fertility intentions and preferences might usefully be thought of as constructed.

Our approach is primarily motivated by the finding that the frequency of uncertain answers to survey questions on intentions and expectations is relatively high, higher than is generally appreciated. In Britain in recent years around two fifths of women aged under 35 were unsure whether they would have a (further) birth. This figure changed little between 1991 and 2007 and so is not an isolated estimate (Ní Bhrolcháin, Beaujouan and Berrington 2010; Ní Bhrolcháin and Beaujouan 2011). That so many should be unsure about their prospective fertility appears at first glance surprising, since uncertainty is largely absent from both theoretical and empirical accounts of reproductive decisions: the relatively high prevalence of uncertainty in fertility intentions data has been largely overlooked in the recent literature.

Although it was recognised at least as long ago as the 1955 Growth of American Families study that women and couples may be uncertain in their fertility intentions,

uncertainty was not reported explicitly in the early American fertility surveys. It was present only implicitly in tabulations of maximum, minimum and most likely expected births, derived from answers expressed in terms of ranges. It was not until Morgan's (1981, 1982) pioneering work that the issue received serious demographic attention in its own right. Morgan established that uncertain fertility intentions were not simply a form of nonresponse but were meaningful in themselves. While many demographic surveys have since recognised the need to record respondents' level of certainty about their fertility expectations, Morgan's broader themes have been addressed by only a few demographic authors (Schaeffer and Thomson 1992, Johnson-Hanks 2005).

Our paper builds on Morgan's classic insights. We show that a relatively high prevalence of uncertainty is a robust finding, and suggest that uncertainty may be even more common than is indicated by standard questions. We then argue that uncertainty is a rational response to the developing life course, and provide evidence in support of this view. Finally, we propose a new theoretical approach to reproductive intentions and preferences. Our approach can explain the prevalence of uncertainty, the instability of measured preferences and intentions, and their inconsistency with outcomes. We discuss also more general implications for ideas about reproductive decision-making. For economy, we focus exclusively on developed country data, but our themes are relevant in a less developed country context also (Agadjanian 2005; Johnson-Hanks 2005; Withers, Tayrow and Adinata 2011).

The legacy of several decades of analysis and debate has left its mark on current ideas about reproductive intentions, and so we start with a brief historical background. Throughout, we use the terms 'fertility intentions' and 'fertility expectations' interchangeably: while the concepts differ in principle, individual survey responses to these questions are close to identical (Ryder and Westoff 1971; Morgan 2001).

1.1. HISTORICAL BACKGROUND

Fertility expectations data have been collected since the early post-war surveys of fertility in the US and in Britain. Interest in such data in the early American fertility surveys was largely practical, driven by their potential for improving population forecasts. The need arose from the then novel cohort component method of projection. Recognising that nothing was known

of the future fertility of the youngest cohorts, Whelpton proposed asking younger women themselves for the information. Hence, the Growth of American Families surveys in 1955 and 1960 were undertaken primarily to assess the reliability of fertility expectations and their utility for population projection (Freedman, Whelpton and Campbell 1959; Whelpton, Campbell and Patterson 1966; Kiser 1967). The subsequent National Fertility Surveys of 1965 and 1970 were much less focussed on projection issues, though influential in identifying the limitations of birth expectations data for the purpose (Ryder and Westoff 1971, Westoff and Ryder 1977). Even so, the potential utility of birth expectations for forecasting motivated comparable surveys elsewhere into the 1970s and is suggested to have been the basis for European support for the World Fertility Survey series (Woolf 1971; Woolf and Pegden 1976; Ryder 1986).

By the 1980s, evidence from several decades of research was consistent on several points, as follows. The agreement between fertility intentions and outcome was much better in the aggregate than for individuals. Nevertheless, when aggregated, fertility intentions did not perform well enough for use in forecasting—they appeared to reflect current fertility conditions or those of the recent past rather than future prospects (Westoff and Ryder 1977; Lee 1980,1981). Compared with other individual characteristics, intentions were strong predictors of fertility outcomes at the individual level, but their predictive power was nevertheless modest. Fertility intentions were not fixed but varied through the life course (Westoff, Mishler and Kelly 1957; Bumpass and Westoff 1970; Freedman, Freedman and Thornton 1980). Prospective and retrospective reporting of pregnancy intentions often disagreed, and these could be so inconsistent with contraceptive practice that leading scholars began to regard such data with considerable scepticism (see e.g. Ryder 1973, 1979).

This broad picture remains valid to the present[1] and it is therefore unsurprising that a study conducted in the late 1990s found that few national statistical agencies used fertility intentions in formulating assumptions for population projection (Van Hoorn and Keilman 1997). Nevertheless, intentions data continue to attract demographic attention as predictors of

[1] Thomson and Brandreth (1995), Van Hoorn and Keilman (1997), Trussell, Vaughan and Stanford (1999), Morgan (2001), Santelli, Rochat, Hatfield-Timajchy et al. (2003)

individual-level fertility outcomes.[2] Beyond their utility in this respect, data on reproductive orientation have several further established roles for research and policy purposes: in assessing how far social differentials in family size are due to varying family size desires, in reflecting couple dynamics, in characterising the reproductive life cycle, in evaluating the causes of aggregate change, in shaping and monitoring policy in relation to unintended pregnancy, particularly in the United States, in measuring "unmet need" for family planning in less developed countries, and in assessing the prospects for aggregate fertility.[3]

In sum, questions on fertility expectations originated as a practical statistical device—one solution to the problem of forecasting fertility, especially that of younger cohorts. The limited success of intentions data in predicting fertility outcomes, at both individual and aggregate levels, has given rise to scepticism. Reproductive intentions and attitudes have been subject to an array of criticisms: that they are meaningless, superficial, guarded responses, biased by social desirability effects, that they represent "irresponsible" attitudes or, are subject to measurement error, random answers, and even possibly mendacious.[4] Nevertheless, sceptics have tended to assume that true reproductive intentions exist and that the problem is that they are mis-measured or misreported in demographic surveys. Conceptually, they lack a theoretical pedigree, being rooted in no formal psychological, sociological, economic, or demographic representation of reproductive behaviour (Coombs 1974, Thomson and Brandreth 1995), though they currently feature in several social-psychological theoretical frameworks (Ajzen 1991; Miller and Pasta 1995; Heckhausen, Wrosch and Fleeson 2001). Their experimental origins, accumulated empirical performance, and persisting contested status among scholars suggest a strong case for reconsidering the underlying reality of fertility intentions.

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[2]Rindfuss, Morgan and Swicegood (1988), Monnier (1989), Schoen, Astone, Kim et al. (1999), Quesnel-Vallee and Morgan (2003), Toulemon and Testa (2005), Testa and Toulemon (2006), Liefbroer (2009), Philipov (2009), Speder and Kapitany (2009), Morgan and Rackin (2010).

[3] Ryder and Westoff (1971), Westoff and Ryder (1977), Morgan (1985), Williams and Thomson (1985), Westoff (1988), Thomson, Mcdonald and Bumpass (1990), Dixon-Mueller and Germain (1992), Brown and Eisenberg (1995), Thomson (1997), Thomson and Hoem (1998), Casterline and Sinding (2000), Bongaarts (2002), Berrington (2004), Finer and Henshaw (2006), Hayford and Morgan (2008), Hayford (2009), Liefbroer (2009), Musick, England, Edgington et al. (2009), Rosina and Testa (2009), Iacovou and Tavares (2011).

[4] Hauser (1967), Bumpass and Westoff (1970): 19, Ryder and Westoff (1971), Cartwright (1976), Westoff and Ryder (1977), Ryder (1979): 118, Ryder (1985), Demeny (1988), Thomson and Brandreth (1995), Bankole and Westoff (1998), Bachrach and Newcomer (1999), Hayford (2009), Kodzi, Casterline and Aglobitse (2010), Demographic and Health Surveys (2011): 84

2. THE PREVALENCE OF UNCERTAINTY

We look first at the frequency of uncertain fertility intentions in Britain, and in other developed countries, and consider briefly also some issues of definition and measurement.

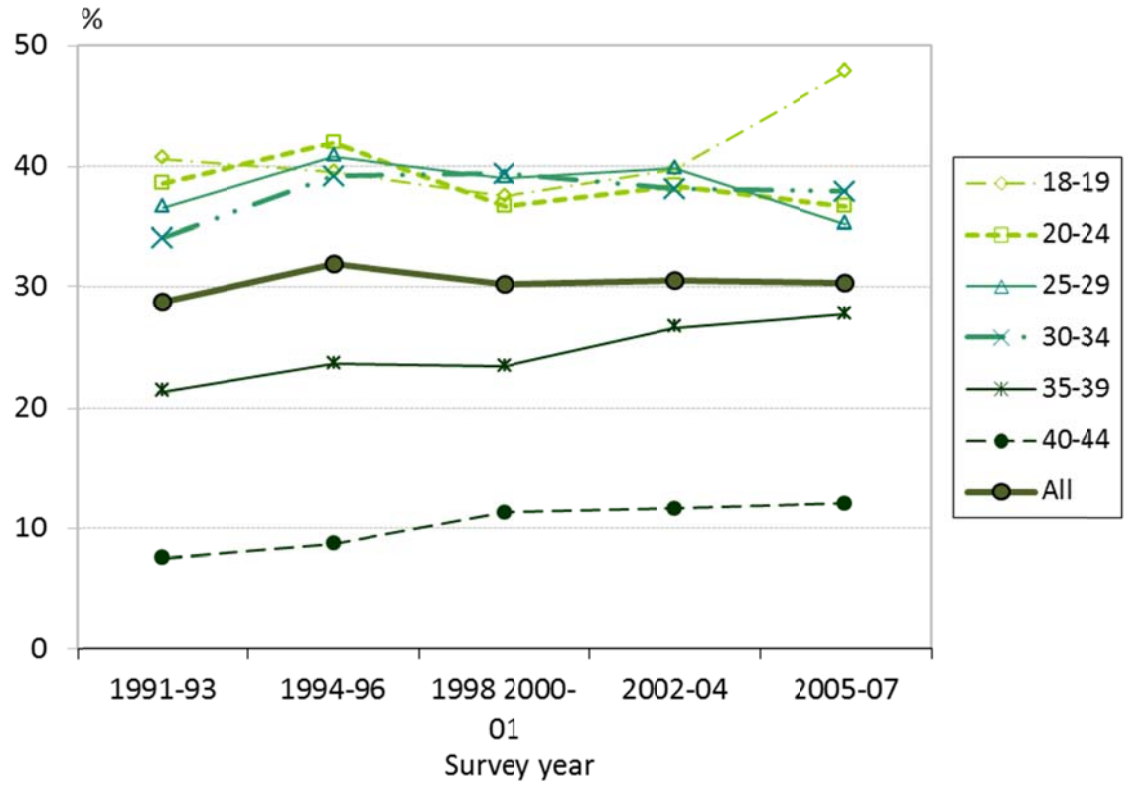

Figure 1: Proportion with uncertain fertility intentions by age and period. Women aged 18-44. GB, GHS 1991-2005/7.

Note: Women are classified as having uncertain fertility intentions if they answered "probably yes", "probably not", or "don't know" to a question on whether they thought they would have any (more) children. See note 12 for details.

Source: Centre for Population Change GHS time series data file

Figure 1 shows the proportion of women, by age and time period, giving an uncertain response ("probably yes", "probably not", "don't know" or no answer) to a question on whether they think they will have any (more) children, asked annually in the British General Household Survey, 1979-2007; a change in answer options occurred in 1991, and so data

from 1991 onwards only are shown in Figure 1.[5,6] Two features are noteworthy in this graph. First, the overall level of uncertainty is fairly substantial. Just over 30 per cent of all women aged 18-44 are unsure whether they will have (more) children, this proportion being the highest, close to 40 per cent, for women in each age group under 35. Second, we see also from Figure 1 that there was little change between 1991 and 2005/7 in the level of uncertainty, though a slight upward trend among women 35+. The high frequency of uncertainty is, thus, consistent across 17 years of repeated surveys and is not just an isolated observation.

The prevalence of uncertain fertility intentions in Britain is not unusual. Comparable levels are found in a range of other developed societies. We present elsewhere a cross-national compilation of published estimates of the frequency of uncertain responses to fertility intentions and expectations questions (Ní Bhrolcháin and Beaujouan forthcoming). Among the 33 studies surveyed, few give a frequency of uncertainty below 10 per cent, 23 record a frequency of 20 per cent or more and 18 a level of 30 per cent or more. The figure of 40 per cent found at ages up to the mid-30s in the British GHS is matched or exceeded by the overall figures of half a dozen sources, covering the US and a range of European countries. Thus, the relatively high prevalence of uncertainty given by the GHS is not exceptional or implausible in the context of comparable studies, whether past or recent.

There are, furthermore, several reasons for thinking that the frequency of uncertain fertility intentions and preferences has often been underestimated. First, in many earlier surveys, particularly those predating the recognition of the significance of uncertainty (Morgan 1981, 1982), a tentative or "don't know" response to a question on intended or expected family size was regarded as non-response (Werner 1986; Riley, Hermalin and Rosero-Bixby 1993; Van Hoorn and Keilman 1997). People were assumed to have clear

5 The General Household Survey data series used in this paper are weighted throughout by a set of weights constructed on a consistent basis for annual GHS rounds from 1979 to 2007, for use in analysis of individuals responding to the Family Information section of the questionnaire with valid revised fertility histories. Further details of the revisions to the fertility histories are given in (Ní Bhrolcháin, Beaujouan and Murphy (2011)) and of the weights in (Beaujouan, Brown and Ní Bhrolcháin (2011).

6 The birth expectations question is: "Do you think that you will have any (more) children (at all) (after the one you are expecting)?" The wording remained almost the same from 1979-2007 (with a minor change in 1995 and 1996; see Smallwood and Jefferies 2003); the words "at all" were omitted from 1998 on. From 1979-1990 precoded answer categories were "yes", "no" and "don't know". From 1991 onwards, a showcard was used, with answer options "yes", "probably yes", "probably not", and "no". Those initially answering "don't know" are probed further and recoded "probably yes" or "probably not" where possible. "Don't know" and no answer are a small group, just 1%-2% overall, and 2%-8% of those classified here as uncertain.

fertility intentions, and interviewers were instructed to elicit an unambiguous declaration of these. The result is likely to have been an upward bias in the recorded level of certainty in fertility expectations.

In addition, being asked about their fertility intentions may itself convey to respondents that they ought to have clear-cut intentions (Cartwright 1976, Chapter 3, Cartwright and Wilkins 1976: 7-8, Simons 1978). A social desirability effect may prompt people who are uncertain to give a definite response (Westoff and Ryder 1977: 346). Respondents in fertility surveys may sometimes overstate how sure they are (Wikman 2006), or report what might be described as "nonintentions", by analogy with nonattitudes in political science and basic values in psychology (Converse 1964, Fischhoff 1991).

The reported level of certainty may also be overstated as a result of a restricted set of precoded answers. Where "uncertain" or "don't know" or equivalent pre-codes are not explicitly offered as options in survey questions, "don't know" answers are less frequent (Converse 1974; Kaufmann, Morris and Spitz 1997; Krosnick 1999; Schaeffer and Presser 2003). We found evidence that fertility expectations suffer from this bias also in the annual GHS: in the years following the introduction of explicit uncertain precodes into the question on fertility expectations, the frequency of uncertain responses rose. Between 1990 and 1991, when "possibly" answers became available, uncertain answers increased from 9% to 29% (Ní Bhrolcháin and Beaujouan 2011: Figure 2).

Finally, the frequency of uncertain intentions may be underestimated for definitional reasons. The intentions question used here occurs in a wide range of demographic surveys, in this or closely similar form. It is nevertheless a rough and ready measure, chosen ad hoc, and with little or no validation. It has not been designed to measure uncertainty per se, and just as intentions are not dichotomous (Morgan 1981) so too certainty is unlikely to be a binary state. We therefore explore two further definitions by adding to the uncertain group defined above those answering "yes" to the intentions question who expect a birth in either (a) 5+ years' time or (b) 3+ years' time (fuller details are given in Ní Bhrolcháin and Beaujouan 2011).

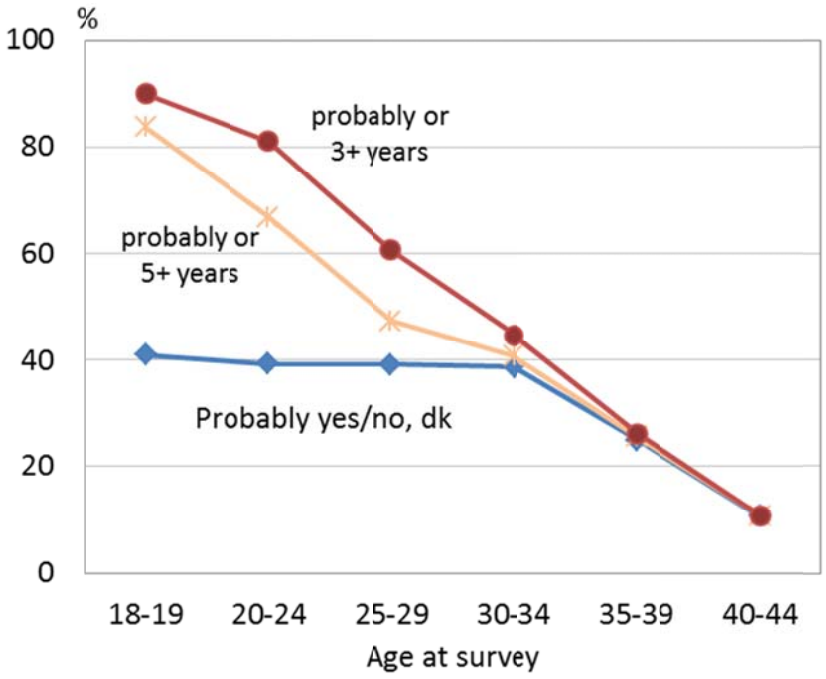

Figure 2: Proportion uncertain, according to three definitions, as to whether they will have a further birth, by age. Women aged 18-44. GB, GHS 1991-2005/7.

Source: Centre for Population Change GHS time series data file.

On these expanded definitions, the estimated prevalence of uncertainty among younger women rises dramatically (Figure 2). At ages 18-19, the frequency of uncertainty doubles from an original 41 per cent to 84 per cent when expected delays of 5+ years are included, and rises further to 90 per cent with the inclusion of those expecting a wait of 3+ years. At ages 20-24, comparable figures are 39 per cent, 67 per cent and 81 per cent, and at 25-29, 39 per cent, 47 per cent and 61 per cent, respectively. On the most inclusive definition, three in five of women under 35, and about one in five of those aged 35-44, are unsure about their future childbearing.[7] If uncertainty in intentions is as common as this, significant

[7] To count as uncertain those expecting a wait of 3+ years to their first/next birth is arbitrary and may need some justification. Medium to long time horizons must involve some uncertainty, and three years is the limit of the time horizon for expectations in a number of surveys with a follow-up component, such as the UN ECE Gender and Generations Programme. Additional evidence from the GHS supports the of 3+ years criterion as reflecting uncertainty. The distribution of the expected age at next birth given by women expecting a birth in 3+ years' time displays substantial heaping, and the longer the expected delay, the more heaped the distribution. The feature is less pronounced, though still present, among those expecting a birth in 1-2 years' time. In the GHS 1991-2005/7, Whipple indices for the distribution of age at next birth are between 115 and 140 when the time to next birth is 1 to 2 years, and for 3+ years between 157 and 231, depending on the age range chosen. The heaping observed is partly due to interviewer instructions which specify that e.g. an answer in the early 20s should be coded 22, in the mid-20s 25, and so on. However, such answers are approximate, and so reflect uncertainty on the respondent's part as much as would direct reports of 22, 25, 28, 30 and so on.

questions arise about the nature and interpretation of fertility intentions, about the levels of uncertainty measured in a wide range of fertility surveys, and about fertility decisions *per se*.[8]

In sum, the prevalence of uncertainty is fairly high in developed societies, and there are indications that its frequency may be underestimated in existing sources. Being a somewhat neglected issue, the relatively high prevalence of uncertainty suggests that it may offer a route to a better understanding of the reproductive life course, if the phenomenon can be shown to reflect something real. In the next section, we present arguments and evidence that support the reality of uncertain fertility intentions. In a later section, we go on to outline a theoretical approach to fertility preferences that can explain the level of uncertainty, the instability of intentions, and their inconsistency with fertility outcomes.

3. ARE PEOPLE REALLY UNCERTAIN ABOUT THEIR FUTURE FERTILITY?

How should we interpret the high prevalence of uncertainty documented in the previous section? In much of the previous literature the high frequency of "don't know" or ambiguous answers is downplayed in a number of ways—either *don't know* answers are overlooked and omitted from analysis entirely or uncertainty is attributed to factors such as poor measurement and lack of respondent motivation or knowledge. By contrast, we believe that unsure answers should be taken seriously--that the uncertainty expressed about future fertility is both genuine and well founded.

The GHS question elicits expectations regarding a future/the next birth. This style of question is regarded as more reliable than questions on the number of intended or expected births (Casterline and El-Zeini 2007). The question is simple and realistic. Women are asked only whether they expect to have a (further) birth ever, rather than to express an imaginary ideal, as in some demographic surveys. An uncertain response to this type of question appears unlikely to be due to lack of knowledge or understanding. We propose that the uncertainty expressed in answers to questions on intentions regarding a future/the next birth, and reflected also in questions on expected age, is both real and reasonable. We suggest that it is not primarily the result of mis-measurement, though some role for the latter cannot be

[8] Substantial uncertainty about the timing of first birth is reported by Rindfuss et al (1988: 195-6), with 29% of childless women and 43% of childless men in their early to mid-twenties answering "don't know" to a question on when they expected to have their first child.

ruled out. In the present section we draw on demographic and other evidence to argue this case.

3.1. UNCERTAINTY IN THE CONTEXT OF PREFERENCES

Consider the conditions under which people could be reasonably sure about their future fertility. Imagine a society in which some form of sexual union is universal, that sexual unions begin at puberty and continue uninterrupted to menopause, that everybody has the same level of fecundity, that no steps are taken to control fertility and that childbearing is not in competition with other activities. In such a society the vast majority of people could be fairly sure of their reproductive futures. Individuals in real-life developed societies experience conditions far from this hypothetical scenario, and have multiple grounds for being uncertain about their future fertility. Except for post-menopausal women and people who know themselves to be sterile, most people in modern developed societies cannot be sure of how their future reproductive lives will play out.

We elaborate below on the principal reasons why a person may (and should) be unsure of their reproductive expectations in a modern developed society. These are considered under three scenarios: where a person's reproductive preferences are unclear, where they are clear and positive, or clear and negative. We discuss fertility preferences and intentions in general, and do not distinguish at this stage between preferences/intentions for having a family *per se*, or for specific family sizes, or specific timing, since little is known about the origin and inter-relation of these separate aspects.

3.1.1. INDIFFERENCE, WEAK OR UNCLEAR PREFERENCES

People may be unsure of what they want by way of family size, or timing. They may never have thought about the issue and have no preference at all. They may alternatively have thought about it and have weak preferences, or are ambivalent, or just do not know what they want (Schaeffer and Thomson 1992). This does not mean that they do not care at all either about having a family or about family size. Rather, the prospect may have little salience. This could occur if they are at too early a life stage to have formed specific views and preferences about childbearing, or too occupied with other activities to have considered the matter in detail. They may be without a partner and the prospect of childbearing may therefore be an

abstract one. For all these reasons, fertility preferences may be ill-defined and this seems particularly likely at younger ages.

Where people are either ambivalent about fertility, or unclear in what they want, or have weak preferences, or no preferences at all, it would be unsurprising if they have no clear intentions or expectations in relation to fertility. A lack of clear preferences may thus explain what we saw earlier in Figure 2 at younger ages: that on our extended definition, the vast majority of young women are uncertain about their fertility intentions. We saw that it is not until the early 30s that a majority respond with certainty to the question on birth expectations.

3.1.2. CLEAR POSITIVE PREFERENCES

In contrast to the previous scenario, let us consider people who have clear, unambiguous preferences for (further) childbearing. Does this imply that their fertility intentions will necessarily be clear, unambiguous, unconditional? We believe not. Even where desires and goals are clear, limitations of fecundity, of control, and of knowledge preclude complete certainty about realizing these, and so limit intentions and expectations.

Those with a clear desire to have (more) children cannot be certain about their future fecundity, particularly if they have never been exposed to the risk of pregnancy. We would therefore expect uncertainty to be age related and this is indeed the case. Among women aged under 30 the percent sterile and unable to have a live birth is low (below10 percent), based on estimates from a number of sources. However, at age 30 the estimates range from 7 per cent to 12 per cent, and at 35 from 13 per cent to 22 per cent (Leridon 2008: Table 3). Beyond fecundity is the issue of finding a partner with whom to have children. People who already have a partner cannot be sure that the union will remain intact. People who are not in a union cannot be sure of finding a partner, or the right partner, with whom to have a child or children (Zabin, Huggins, Emerson et al. 2000, Testa 2007). Thus, even where people have a clear preference for childbearing, they cannot be sure that they will achieve this in the future, and so cannot reasonably intend or expect to do so.

Data from the GHS of 2000-2007 give statistical substance to these points. Figure 3 shows the proportion of women having a birth within 10 years of initial observation, by initial age and parity, among respondents to the General Household Surveys of 2000-2005/7.

Among women childless at any age, the probability of having a birth within 10 years is never greater than about three in five. Among those with one child already, the probability of a further birth within 10 years is below 0.8 at all ages, and is just 0.5 in the early 30s. Among those with 2+ children, the probabilities are substantially lower, at all but the youngest ages. While many more younger women have a (further) birth by the time they reach age 45, the 10-year figure represents the immediate and medium term future, and over that time horizon there appears to be no sure thing, no rational basis for a definite intention or expectation.

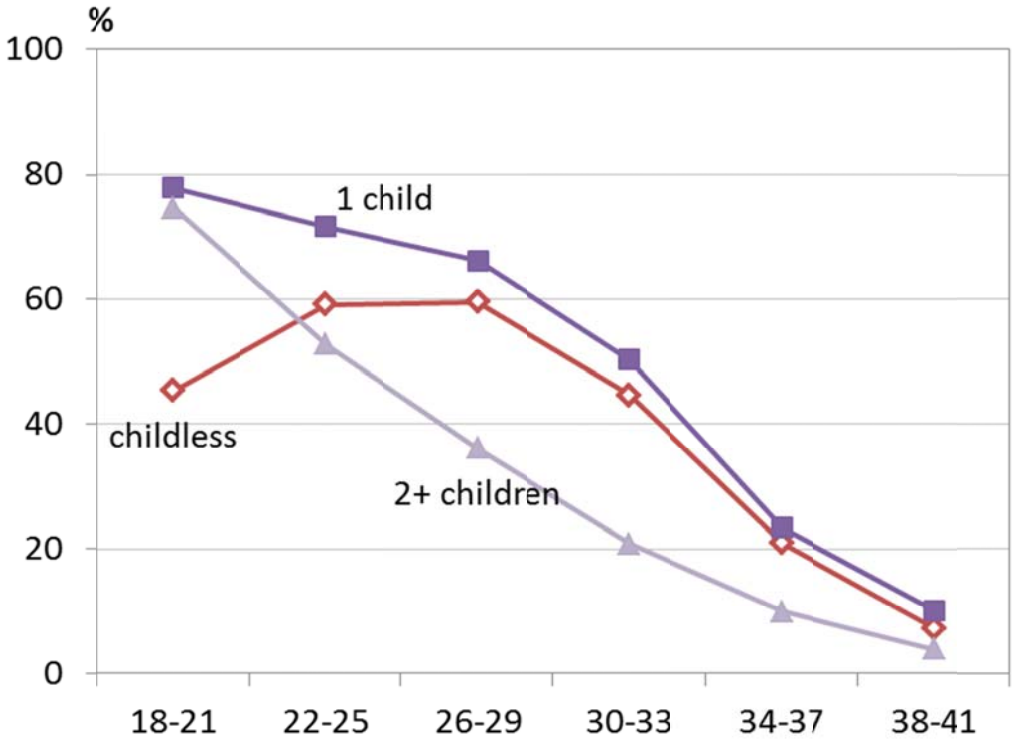

Figure 3:Proportion having a birth within 10 years, by initial age and parity. Women aged 18-44. GB, GHS 2000-2005/7.

Note: Women interviewed at 2000-2005/7 surveys are classified by their age and parity 10 years before survey. The diagram shows the proportion of those who had at least one (further) birth before survey by initial age and state.

Source: Centre for Population Change GHS time series data file.

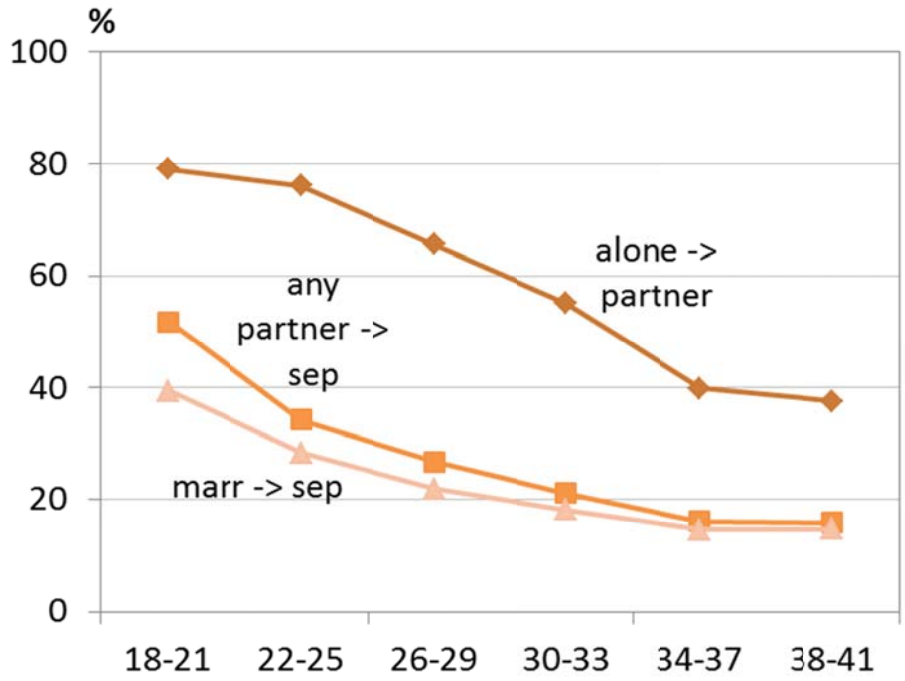

Figure 4: Proportion of women experiencing a change in their partnership status within 10 years, by initial age and state. Women aged 18-44. GB, GHS 2000-2005/7.

Note: Women interviewed at 2000-2005/7 surveys are classified by their age and partnership status 10 years before survey. The diagram shows the proportion of those who experience a change in partnership status before survey by initial age and state.

Source: Centre for Population Change GHS time series data file.

Similar statistical uncertainty surrounds partnership. Figure 4 shows the proportion of women experiencing a change of partnership status within 10 years, by initial age and state. Of 18-21 year olds who are living alone 79 per cent will form at least one partnership within the next 10 years—again, no sure thing. The partnership prospects of those who are living alone at older ages are well below this. For example, just 40 per cent of women living alone at 34-37 formed a union within 10 years. Partnership is also something of an unknown among those who are already in a union. The chance that an existing union will terminate within 10 years is not negligible and is particularly high at the youngest ages. Over half of all unions current at ages 18-21 will break up within 10 years, over a quarter of those current at ages 26-29, and one in six of those in a union in their mid-30s, again from the GHS survey histories.

Beyond these documentable risks, people cannot be sure that their future circumstances will be suitable for childbearing—there is no guarantee that the time will ever be "right" (Testa 2007). People cannot be sure about their own future preferences: sizeable

instability of preferences and intentions across the life course has been documented by several decades of research. In addition, the future preferences of any current or future partner are also unknown. Evidence that this matters is of two kinds. First, the preferences of the partners in a union can differ appreciably and are independently associated with fertility outcomes.[9] Second, fertility expectations predict subsequent outcomes less well among women who were not in a union at initial contact.[10] In addition, women without a partner more often express uncertain fertility intentions (O'Connell and Rogers 1983, Ní Bhrolcháin and Beaujouan 2011). The very early fertility surveys asked fertility intentions questions only of married women, but in recent decades these questions are put to all women, whether in a union or not. Ryder (1984) was of the view that the fertility intentions of unmarried women (and we can probably extend the point to the unpartnered) were particularly unlikely to be trustworthy, precisely because fertility prospects are, in the main, subject to additional uncertainty for women not in a union.

3.1.3. CLEAR NEGATIVE PREFERENCES

Finally, if we consider people who have clear and unambiguous preferences not to have (further) children, comparable difficulties of knowledge and control arise. Those who want no (more) children cannot, without abstinence, sterility, or sterilization, be sure that they will avoid future pregnancy. A recent estimate puts the proportion of all pregnancies in developed countries that are unintended at 47 per cent (Singh, Sedgh and Hussain 2010). Nor can people know for certain how either they or a current or future partner would react in the event of pregnancy. From longitudinal studies, the proportion of women initially stating an intention not to have a birth who have had a birth on follow up ranges between 7 per cent and 25 per cent, in studies with varying lengths of follow up.

To sum up, in all scenarios from weak or absent fertility preferences to strong and unambiguous childbearing preferences, there are sound reasons for being uncertain in intentions and expectations. Uncertainty in relation to fertility intentions is a perfectly reasonable, indeed rational, response to the imperfect information people have about their reproductive prospects.

[9] Thomson, Mcdonald and Bumpass (1990), Thomson (1997), Berrington (2004), Jansen and Liefbroer (2006), Liefbroer (2009), Rosina and Testa (2009)

[10] Schoen, Astone, Kim et al. (1999), Quesnel-Vallee and Morgan (2003), Berrington (2004), Toulemon and Testa (2005), Testa (2007), Morgan and Rackin (2010)

3.2. FURTHER EVIDENCE THAT UNCERTAINTY IS GENUINE

Two further types of evidence suggest that it is reasonable on statistical grounds to be uncertain about future childbearing intentions: inconsistency between stated intentions and completed fertility, and variance in the age at first birth.

Evidence that fertility expectations lack predictive validity at both individual and aggregate levels has accumulated over several decades. Several longitudinal studies since the late 1960s have examined the consistency of initial intentions/expectations with subsequent outcomes. In most of these, between 40 per cent and 70 per cent of those stating an intention to have a (further) birth at initial interview had not carried out their intention by the time of follow up (ranging from 2 to 18 years later).[11] These studies also show much greater consistency between intention and outcome among those not intending a (further) birth. There is thus a substantial mis-match between initial positive intentions and both shorter and longer term outcomes, and lesser but still non-negligible levels of inconsistency among those with negative intentions. These statistics in themselves underline it is reasonable to be uncertain in relation to fertility expectations. Adding weight to this point, the uncertain expectations of those initially declaring themselves unsure are borne out in subsequent years: they are less likely to carry out the intention, whether positive or negative, than are those who initially declared themselves certain.

The second statistical basis for uncertainty among childless women in relation to childbearing is the wide dispersion in the age at first birth. In Britain in 2009, the 25th percentile of the age specific first birth schedule was 23.7 and the 75th, 35.1, giving an interquartile range of 11.4 years. While individual women cannot be aware of these demographic quantities, it seems likely that the substantial variability in the age at first birth is a known feature of women's lives.

[11] Sources on the subject include the following: (Bumpass and Westoff (1969), Cartwright and Wilkins (1976), Westoff and Ryder (1977), Freedman, Freedman and Thornton (1980), Noack and Ostby (1985), Rindfuss, Morgan and Swicegood (1988), Monnier (1989), Schoen, Astone, Kim et al. (1999), Noack and Ostby (2002), Quesnel-Vallee and Morgan (2003), Berrington (2004), Toulemon and Testa (2005), Testa and Toulemon (2006), Liefbroer (2009), Philipov (2009), Speder and Kapitany (2009), Morgan and Rackin (2010)

In all, there are strong empirical grounds for the proposition that uncertainty about future fertility is a rational position for many people, much if not most of the time. That the frequency of reported uncertainty is high when uncertain answer options are available suggests that survey respondents are either explicitly or implicitly aware of this. Finally, the advent of near-perfect contraception has not altered the predictive power of fertility intentions and expectations data, indicating that there is a great deal more involved here than simple failure to control conception.

3.3. AMBIGUITY IN PREGNANCY INTENTIONS

A final body of evidence of pervasive ambiguity and lack of certainty underlying reproductive decisions is found in the field of family planning. In that literature, conventional concepts and measures of intended, wanted, and planned pregnancies have been challenged and debated in the last decade or so.[12] Concern has arisen in particular from extensive evidence of inconsistency between reports of intention, desires, contraceptive use, and affective reaction to pregnancy. One pivotal study based on the 1995 National Survey of Family Growth found that 31 per cent of women reporting a contraceptive failure said the pregnancy was intended; of those with an unintended pregnancy, 25 per cent declared themselves *happy* or *very happy* to be pregnant (Trussell, Vaughan and Stanford 1999). Comparable discrepancies between stated intention, contraceptive use, and reaction to pregnancy in studies over a period spanning several decades[13] has led investigators to seek more complex, multidimensional indicators of pregnancy intentions (Santelli, Rochat, Hatfield-Timajchy et al. 2003, Santelli, Lindberg, Orr et al. 2009).

Qualitative studies addressing these issues suggest that women do not always think of themselves, and cannot always be readily classified, as trying/not trying, or intending/not intending, to become pregnant, and that the idea of planning a pregnancy either is not understood or has negative connotations for some women (Barrett and Wellings 2002; Gerber, Pennylegion and Spice 2002; Kendall, Afable-Munsuz, Speizer et al. 2005). An unplanned pregnancy may furthermore be seen as advantageous, in removing the difficulty of deciding whether and when to have a child (Luker 1999, Lifflander, Gaydos and Rowland

[12] Petersen and Moos (1997), Bachrach and Newcomer (1999), Luker (1999), Zabin (1999), Barrett and Wellings (2000, 2002), Santelli, Rochat, Hatfield-Timajchy et al. (2003), Esacove (2008)

[13] Cartwright (1970, 1976), Ryder (1976, 1979), Cartwright (1988), Moos, Petersen, Meadows et al. (1997), Sable and Libbus (2000), Petersen, Gazmararian, Clark et al. (2001), Higgins, Hirsch and Trussell (2008)

Hogue 2007). Ambiguity in pregnancy intentions has also been reported in larger scale studies. In McQuillan et al's (2010) telephone survey, 23 per cent of women classified themselves as neither trying to become pregnant nor trying to avoid it, but were "okay either way." Prospective studies reveal, in addition, that reports of the intendedness of a birth can change during the course of a pregnancy (Joyce, Kaestner and Korenman 2000, Poole, Flowers, Goldenberg et al. 2000). The picture emerging from this highly applied and focused body of work is that intentionality is more complex and fluid, and ambivalence more prevalent, than has been allowed for, conceptually and methodologically, in mainstream fertility surveys.[14]

To sum up, using a range of empirical evidence, we have argued in this section that the uncertainty in fertility intentions expressed in fertility surveys is genuine, rather than that uncertain responses reflect measurement error. We have also shown that uncertainty is a rational response to individuals' fertility prospects, in a statistical sense. Finally, strong corroboration of these ideas is found in several decades of studies in the family planning literature that demonstrate much ambivalence and ambiguity in attitudes to pregnancy.

4. A NEW THEORY OF FERTILITY PREFERENCES AND INTENTIONS

The empirical findings presented here cannot be accommodated within existing theoretical frameworks. Our findings are inconsistent with the rational choice account that is implicit or explicit in theories of fertility decision making. In a means-end framework, preferences and intentions are clear-cut, and there is little or no role for uncertainty and ambiguity of desire and intent.[15] We propose therefore a new theoretical approach to reproductive intentions and preferences, adapting insights from recent research in psychology and economics. Our aim is to present a realistic account of reproductive preference and choice that can accommodate the high prevalence of uncertainty to which we have drawn attention. The ideas share perspectives in common with developing ideas in the field, particularly those of Johnson-Hanks (2005), Johnson-Hanks, Bachrach, Morgan et al. (2011), Morgan and Bachrach (2011) and Bachrach and Morgan (2013).

14 Kaufmann, Morris and Spitz (1997), Klerman (2000), Stanford, Hobbs, Jameson et al. (2000), Santelli, Rochat, Hatfield-Timajchy et al. (2003), Barrett, Smith and Wellings (2004), Finer and Henshaw (2006), Santelli, Lindberg, Orr et al. (2009)

15 The pervasive survey practice of treating "don't know" answers to intentions and preferences questions as non-response, and attempting to recode them, is a concrete expression of the assumption that intentions and preferences are clearly held.

4.1. AN OUTLINE OF PREFERENCE CONSTRUCTION THEORY

We suggest that fertility preferences and intentions are generated by a constructive process.[16] Preference construction as a concept has developed at the intersection of psychology, economics, and behavioural decision theory. It is a response to recurring evidence that in many situations people's preferences are changeable, context-dependent, and subject to framing effects (for an overview, see Lichtenstein and Slovic 2006). In particular, extensive experimental evidence of the reversal of preferences has challenged basic assumptions about preferences in the classical rational choice model (Tversky and Thaler 1990; Kahneman 1994; Lichtenstein and Slovic 2006). Though a dynamic and evolving area of research in economics, psychology, and decision theory, the ideas appear as yet to have made little headway in sociology and demography.

If we view preferences as constructed, the high prevalence of uncertainty is no longer anomalous, but inherent to fertility preference and choice. The basic premise of the approach is that people do not always have clear preferences. Desires may be well-defined when it comes to simple choices that are frequently encountered, in familiar contexts, or in relation to somewhat more complex choices where social and cultural conditions have long been stable. Many choices are not of this type. They may have been encountered either rarely or never before, and may be one-off decisions. In these circumstances, people will often lack a clear preference—they may not know what to want or how to choose. When called on either to state a preference, or to act on one, they look for clues and make inferences as to what they would like, and thus how to act, or what preference to declare. In other words, rather than reading off their preference from a stored memory, they *construct* a preference from available information (Lichtenstein and Slovic 2006). In traditional thinking the reporting of a preference is like a form of archaeology but in the constructive account it is more akin to architecture (Payne, Bettman and Schkade 1999). The constructive view holds that a person identifying their own preference, or reporting a preference in a survey, is assembling a preference when requested, rather than retrieving and declaring a pre-existing one. An often

[16] Preferences and intentions are considered jointly here. While conceptually distinct, the two are closely linked in practice, as desired family size seems to carry little information beyond that present in intended family size. Using the National Fertility Survey follow-up data, Ryder (1981) shows that change in intended parity is a significant predictor of change in desired parity 1970-1975, but that the reverse is not the case. In that sense he considers intended family size "causally prior" to desired family size.

quoted analogy illustrates the distinction between old and new perspectives on preferences and values via three baseball umpires:

"I call them as I see them," said the first. "I call them as they are," claimed the second. The third disagreed, "They ain't nothing till I call them." Analogously, we can describe three different views regarding the nature of values. First, values exist—like body temperature—and people perceive and report them as best they can, possibly with bias (I call them as I see them). Second, people know their values and preferences directly—as they know the multiplication table (I call them as they are). Third, values or preferences are commonly constructed in the process of elicitation (they ain't nothing till I call them).

Tversky and Thaler (1990: 210)

4.2. FERTILITY INTENTIONS AND PREFERENCES AS CONSTRUCTED

In the constructive interpretation, preferences are assembled in different ways for different types of choice (Bettman, Luce and Payne 1998). In family formation there are, we suggest, two distinct expressions of preferences—those operating in family building itself, and those reflected in responses to survey questions. We term these *effective preferences* and *stated preferences*, respectively[17] and suggest that they result from different constructive processes. Our account of effective preferences is rooted in the psychology and economics literature. We look to political science for insights on stated preferences.

Proponents of preference construction do not see all preferences as constructed. In simple, repeated and familiar choices, such as supporting one football team rather than another, preferences are stored in memory. By contrast, when situations are unfamiliar, or when trade-offs are necessary between elements of a choice situation, or when a person is asked to express a preference numerically, a constructive process is hypothesised as operating (Fischhoff 2006, Lichtenstein and Slovic 2006). Childbearing in developed societies fits these conditions well. Building a family of their own is a novel experience for most people, and is usually encountered only once. Trade-offs are certainly present, there being multiple competing claims on a woman's or couple's time and resources besides bearing and rearing children. Finally, preferences are elicited in numerical terms in survey questions on the number of children desired/intended, or the expected timing of a birth.

[17] The term "stated preferences" is also used in applied economics (see e.g. Carlsson 2010).

Reproductive orientation has several other features characteristic of constructive preferences. We saw earlier that many women's intentions are unclear, and so we have explicit evidence that preferences are not always well-articulated. Key evidence for the constructive nature of preferences is that preferences are both labile and differ systematically depending on the method by which they are elicited. Both of these features are characteristic of fertility preferences and intentions. Several decades of research has shown that they are unstable,[18] and can be quite inconsistent with fertility outcomes (note 19 above), and both features continue to be found in recent sources.

The explanations offered in the demographic literature for labile preferences and disparities between birth expectations and ultimate fertility include unrealistic preferences, constraint, change in circumstances, change of mind, thoughtless responses, measurement error, and the like. The constructive interpretation provides an alternative explanation of both instability and inconsistency. Fertility preferences are unstable, on the constructive hypothesis, because they are ill-defined, especially at young ages, and also because they are context-dependent. They are inconsistent with outcomes both for this reason and because actual childbearing and survey reports of preferences/intentions are quite different modes of expressing preferences.

If childbearing preferences are entirely constructed, it follows that there is no "true" underlying preference in relation to family size—at any rate before preferences converge on a stable state. In the most extreme form of this idea, survey questions on intentions/preferences are attempting to measure something that either does not exist or has only a shadowy existence: people making choices about childbearing, or declaring a preference in this respect, have to work out what they want, rather than simply consulting some mental master-list of known desires (see also Greil and Mcquillan 2010: 140). Less extreme versions of the idea can, of course, also be considered: for example, preferences may be inherent to some extent, and may vary in degree of construction both between individuals and across the life course (Simonson 2008).

[18] Freedman, Coombs and Bumpass (1965), Bumpass and Westoff (1970), Cartwright and Wilkins (1976), Freedman, Freedman and Thornton (1980), Berrington (2004), Heiland, Prskawetz and Sanderson (2008), Liefbroer (2009), Iacovou and Tavares (2011)

If, as we suggest, fertility preferences are constructed, how does this occur, and what influences the process? In the sections that follow, we sketch some outline ideas, based on our findings to date. We conclude with some thoughts on how the subject can be pursued empirically.

We saw above that almost all of the youngest women are uncertain about prospective childbearing but that older women are surer of their expectations (Figure 2). We show elsewhere that uncertainty varies largely with age and demographic life stage—partnership status, parity, time since previous birth—and relatively little with socio-economic factors or calendar time; net of other factors, women not in a union are more uncertain than others, as are those of lower parity, and those who have had a birth more recently (Ní Bhrolcháin and Beaujouan 2011). Similar associations are reported in other studies. O'Connell and Rogers (1983) found that single women were more uncertain about birth expectations than were married women. Declines in uncertainty with age or parity, or with both, are evident in the studies of Morgan (1982), Monnier (1989), Wu and Wang (1998), Berrington (2004) and Sobotka (2009).

These results are what we would expect from a constructive process in which young people do not have well-defined childbearing preferences, but that preferences develop over time. Young adults' effective preferences—those influencing actual childbearing—are, we hypothesise, generated by encounters with choices and contingencies, and by learning from experience and observation, under the real conditions in which their lives play out. From repeated exposure to reproductive choices, preferences and intentions ultimately stabilize. Empirical evidence shows that fertility intentions are less volatile at older ages, as would be expected on the constructive account.[19]

Our hypothesis differs from the proposition that people start off in young adulthood with well-articulated preferences and simply change their minds over time (Iacovou and Tavares 2011). Our view differs also from the idea that underlying preferences and intentions exist, are badly measured by conventional questions but better identified by more complex measuring instruments such as the Coombs scale (Coombs 1978, Coombs and Freedman 1979). We suggest instead that at young ages preferences are vague and unclear, but become

[19] Berrington (2004), Heiland, Prskawetz and Sanderson (2008), Iacovou and Tavares (2011); see also Kahneman (1996) on how we would expect an agent whose preferences are constructed to act.

more concrete with age, being generated through life-course experience. The changeability of the preferences and intentions of the young is well documented as is their frequent inconsistency with subsequent behaviour. This is often interpreted as reflecting a lack of realism in the fertility expectations of young people. In our view, the lack of realism pertains to the survey practice of asking questions on fertility preferences and expectations of people who are at an age when their desires and expectations are vague or unformed. Preferences and intentions are unstable, we suggest, because they are constructed, and this also explains their often weak correspondence with subsequent outcomes.

Our hypothesis is similar to the shaping hypothesis of Loomes et al (2003) in relation to economic choices. In Loomes et al's hypothesis, the primary influences are market prices, but in the fertility case the influences would, of course, be different. The shaping hypothesis is distinct from Plott's (1996) discovered preference hypothesis, in which people learn by trial and error what their true preferences are. In Plott's account, the preferences 'discovered' are pre-existing and inherent, rather than constructed and influenced by experience. Under the shaping hypothesis and in a radical version of our proposal, there are no true, underlying fertility preferences at the earliest ages. Preferences are, rather, literally generated by experience as time goes by. At later ages, therefore, people's preferences in relation to fertility depend importantly on their experience before the point of choice or survey observation.

Nevertheless, the term "discovery" expresses our meaning well. People arrive, through a sequence of stages, at a family size that they "discover" to be right for them, their preferences having been shaped and developed by experience. Thus, fertility preferences could be said to be discovered but in a sense different from Plott's. In essence, through the life course people happen on a family size that is satisfactory and that becomes their preference, rather than that they uncover a latent preference that has always been there. These ideas are similar to those of Simons (1974) who suggested that the findings on intentions and fertility outcomes could be interpreted as indicating that "individuals discover, by reaching it, the family size at which they wish to cease childbearing." Our approach has much in common also with Morgan's schematic model (Morgan 1982: 332), with Johnson-Hanks (2005) and with the theory of conjunctural action (Johnson-Hanks, Bachrach, Morgan et al. 2011, Morgan and Bachrach 2011) as well as with the cognitive-social model of Bachrach and Morgan (2013).

Our proposal can be encapsulated by saying that preferred family size is a discovery rather than a goal. But that does not imply that family formation always results in a perfect match between preferences and outcome. People may discover, too late, that they would have preferred either fewer or more children than they eventually have. Such disparities can arise because of lack of information. A particularly interesting type of information deficit is that people may not know, or may be mistaken about, what will make them happy in the future—variously referred to in the psychological literature as miswanting or failure of affective forecasting or of hedonic prediction (Kahneman 1994; Gilbert and Wilson 2000; Wilson and Gilbert 2005). In the case of childbearing, a person may find that a disparity between preference and actuality cannot be corrected, either because there is no culturally acceptable solution to the problem of having had too many children, or that age, fecundity or other constraints limit the achievement of a preferred fertility outcome. Dissatisfaction of this type need not result from failure to reach a clearly held goal, but from the realisation that the outcome of a series of decisions, taken one at a time, is, in the event, less preferred than a hypothetical alternative.[20]

4.3. RESPONSES TO SURVEY QUESTIONS

One criterion by which preferences are judged to be constructed is that the responses of the same individual will differ systematically according to how they are elicited or expressed (Slovic 1995). Thus, how people report preferences in response to survey questions—stated preferences—may differ from how they identify their preferences when acting to have or not have a (further) child—effective preferences—because the constructive process differs in each case. Effective preferences will no doubt influence stated preferences, but the latter may reflect other factors also. It has long been known in the demographic literature that the desired family size reported by individuals can shift, either up or down, in response to the occurrence or not of a birth. Preferences to some extent *follow* fertility performance, as distinct from determining it. Furthermore, people appear to reinterpret their past preferences to fit their accumulated behaviour. In a sample of engaged couples first contacted in the early 1930s and followed up in 1953-54, Westoff et al (1957) found that actual family size in 1953-54 was more strongly correlated with their recall in 1953-54 of what they wanted 20 years earlier than with the preferences they had actually declared two decades before. That is, they

[20] On post-decision surprise, see (Goitein,1984), Harrison and March (1984)

misremembered their previous preferences as more consistent with their current circumstances than was actually the case: they were rewriting the history of their preferences to correspond with their achieved family size.

For insight into how stated preferences may be constructed, we look to the political science literature. Evidence that individuals' political attitudes are unstable over time has long been debated in political science. That literature has much to offer in re-interpreting the extensive evidence of changeability of reproductive attitudes and expectations. Contrasting positions in the debate on political attitudes are those of Converse (1964) and Achen (1975). Converse's view is that while some respondents have and report genuine opinions, large numbers do not have distinctive views on many subjects, but give polite more or less random answers to survey interview questions. Achen, on the other hand, contends that short-term opinion change is only apparent and is largely due to measurement error. Between these extremes is the position of Zaller and Feldman (1992) who argue that people do not have clear-cut views about every topic but are ambivalent about a range of political issues. In answering survey questions, respondents are, in this perspective, expressing neither meaningless "nonattitudes" nor unambiguous true attitudes. Rather, people will often have multiple considerations in mind on any specific topic, not all consistent with each other. Survey responses will be influenced by multiple factors, including the ideas and considerations uppermost in a respondent's mind when answering a question (Zaller and Feldman 1992: 580). In this scheme, there need not and may not be an underlying "true" attitude, unlike the Converse and Achen views. Responses inconsistent at two time-points could reflect exactly the same set of underlying considerations, but that some are more salient on the first occasion than on the second.

Zaller and Feldman's approach seems a potentially useful account of how fertility intentions are constructed in an interview situation. Both the high prevalence of uncertainty in fertility intentions, and its sensitivity to answer options available, fit well within this perspective. Stated preferences and intentions may be influenced by a variety of factors, both distant and recent in time. For example, young people with little or no experience might adopt a kind of Bayesian perspective (Elgamal and Grether 1995), stating as a preference what is essentially a prediction of their likely behaviour, based on the best evidence available to them at the time. Two candidate sources of information, that might function as anchors (Payne, Bettman and Johnson 1992, Wilson, Lindsey and Schooler 2000), are the size of their

own family of origin and the family sizes of which they are most aware, e.g. the distribution of contemporary family sizes or the modal family size in their social group or in society at large. Régnier-Loilier (2006) found that the sibship size of their family of origin was positively associated with desired family size among childless people aged under 30, but was not so associated among those who were already parents. Heiland et al (2008) also report a stronger association between family background and fertility preferences at younger than at older ages. There is evidence also that intended family size is less dispersed at younger than at older ages (Liefbroer 2009, Ní Bhrolcháin and Beaujouan 2011). Answers to fertility intentions or preference questions are sometimes thought of as partly normative. If this is so, the explanation could be that respondents look to the modal experience of others as the most reasonable prediction of their own future behaviour, rather than that they aspire to do as others do (Hayford 2009). A further possibility is that fertility intentions, both effective and stated, may be influenced by the effect known in psychology as "mere exposure" (Zajonc 2001): repeated exposure to a particular stimulus, such as the size of the family of origin or of families in a person's social milieu, could induce a preference. Stated intentions and preferences may also be influenced by current or recent considerations that are much more transient.

5. DISCUSSION

We have been prompted to raise questions about the underlying reality of reproductive goals by the high prevalence of uncertain fertility intentions both in the UK and in other developed societies, in recent decades. Broadly defined, uncertainty is near universal at the youngest ages, in our GHS sample, but less common in older age groups. The level of uncertainty appears to have been underestimated by survey questions hitherto. Uncertainty is not, we propose, mainly due to faulty measurement or poorly motivated respondents. Rather, a lack of certainty is an inherent feature of fertility preferences and intentions. It is, furthermore, rational to be unsure about prospective childbearing. Support for these ideas comes from a range of family planning studies showing considerable ambiguity surrounding pregnancy intentions. In all, uncertainty in reproductive orientation appears to be both real and widespread in developed societies.

This array of findings, combined with long standing evidence on the instability and limited predictive validity of reproductive intentions and preferences, has led us to a new

hypothesis. Drawing on psychology and economics, we propose that fertility preferences can be seen as constructed—that is, generated at the point at which they are elicited or expressed, rather than residing fully-formed in memory. The hypothesis suggests that insofar as people have a family size goal, it is recognised when reached, rather than a pre-existing target. Women and couples are, in other words, primarily goal-achieving rather than goal-directed (Mcfarland 1989). An extreme version of the idea says that ultimate reproductive goals either do not exist or have only a weak reality, at any rate in very early adulthood, though preferences along the way may be sharper and clearer.

Our constructive approach to fertility intentions and preferences is currently a hypothesis. Modifications might well be in order. For example, people may differ in the certainty and clarity of fertility preferences. Some young adults may be unclear about whether they want to have children, while others may have a well-articulated preference either for some children sometime, or never to have children, ever. Also, insofar as fertility preferences are constructed, they may not be wholly so—some preferences may be inherent and stable from an early age. Debate currently surrounds the issue in the literature on preference construction (see Simonson 2008 and associated commentary). Finally, fertility preferences encompass at least three distinct questions: desire for a pregnancy/child now, desire for a (further) child ever, and desired number of children. A person could, for example, definitely wish not to have a child in the very short term, be fairly certain that they would like a child sometime, and be quite unsure about their preferred ultimate family size. Certainty and the degree of construction may well vary between these distinct preferences.

5.1. TESTING THE HYPOTHESIS

The construction hypothesis is an alternative to the account which says that survey respondents have true underlying preferences but these vary over time and differ from ultimate outcomes due to e.g. measurement error, constraint, and changes of mind. To specify fully how to test this hypothesis is well beyond the scope of the present paper. Our aim is rather to present the ideas as an alternative perspective that can help to make sense of a disparate set of often puzzling and unsatisfactory findings regarding fertility preferences and intentions. Investigating the ideas empirically is likely to be challenging. While ample evidence exists of genuine uncertainty in childbearing preferences and intentions, demonstrating empirically that these are constructed is a demanding task. In the psychology

and economics literature, evidence of preference construction has, thus far, been based largely on experiment. Non-experimental methods for identifying preference construction in natural settings have not been described hitherto, nor has survey data been deployed for the purpose.

Of the two types of preference distinguished earlier—those reported in surveys (stated preferences) and those that govern family formation itself (effective preferences)—stated preferences can be the subject of experimental investigation via e.g. studies of priming, variation in question style and order, and contextual effects.[21] Effective preferences, however, are not amenable to experiment. As we have conceptualised them thus far, they are unobserved, and possibly unobservable. They could be thought of as a latent variable, whose existence and properties are probably best evaluated by developing and testing formal models. Several research areas in other disciplines could be drawn on for leads in this respect. Methods used in political science to evaluate the Converse thesis could be adapted to develop and interpret models of stability/instability in fertility preferences (see e.g. Brody 1986, Hill and Kriesi 2001). Economic models of the subjective probabilities of significant personal events such as survival are a further potential resource (Manski 2004, Hudomiet and Willis 2012). Finally, less formal empirical approaches could serve to document the essential hypothesis, particularly the process by which preferences are constructed, which has received less attention than has evidence of construction itself (Simonson 2008). Small-scale qualitative investigation (Schaeffer and Thomson 1992) and ethnographic work (Johnson-Hanks 2005) can be highly informative as to process. Johnson-Hanks suggests that the reproductive attitudes of educated young women in Cameroon are characterised by what she terms "judicious opportunism", young women having a strong sense of contingency in their future life course. Two lines of inquiry are suggested by these findings. First, follow up studies could investigate how such scepticism is transformed as the life course progresses. Second, the ethnographic approach might be usefully extended to developed country contexts, to reach for meaning and mechanism behind the standard responses to large scale survey questions.

[21] See e.g. Feldman and Lynch (1988), Zaller and Feldman (1992), Wikman (2006, 2007), and Sturgis and Smith (2010).

5.2. CONCLUDING COMMENTS

If reproductive preferences are constructed to any significant extent, several unexplained aspects of fertility expectations become more explicable: why they are so unstable, why sizeable discrepancies are found between intention and outcome, and why stated fertility preferences and intentions, in the aggregate, reflect current rather than prospective fertility conditions (Westoff and Ryder 1977, Lee 1980). The relevance of the ideas extends, however, beyond these points. The hypothesis potentially opens a route to uncovering hitherto poorly understood aspects of the process of family formation itself. The constructive approach fits well with the reality of family building as a sequence of decisions (Namboodiri 1972, 1983, Udry 1983) and chimes well also with suggestions in the earlier literature that couples have no need of a long-run view: all they need is to decide whether they want to have or avoid a pregnancy in the very short term (Ryder 1973: 502, 1976: 289). Nevertheless, each of these authors held that preferences are revised over time, rather than, as here, generated over time, in the light of experience. Pursuit of the constructive preferences approach could ultimately answer the question as to what kind of target people and couples have in relation to childbearing: a fixed target, a moving one, or, perhaps, no target at all.

While we have drawn mainly on ideas from psychology, economics and political science, our approach also reflects recent themes in sociology. In the theoretical arena, Smelser's (1998) focus on ambivalence and the difficulties it poses for rational choice models and Sewell's (1992) theory of structure, positing the interdependence of structure and human agency, reinforce our focus on the constructive nature of preferences. Empirical sociological work on foresight and planning in early adulthood gives a broader life-course context for the ideas (Anderson, Bechhofer, Jamieson et al. 2002, Anderson, Bechhofer, Mccrone et al. 2005). The constructive approach allows of determinants of individual preferences at multiple levels (Smith 1989, Hechter and Kanazawa 1997; Testa and Grilli 2006) The constructive view can accommodate a range of influences on both stated and effective preferences and intentions--from institutional, structural, historical, cultural and economic forces, and cohort and period effects, through to social network and idiosyncratic personal factors. Thus, as well as accounting for the many empirical anomalies surrounding fertility preferences and intentions, the constructive process provides a mechanism linking the aggregate with the individual level. The constructive approach to fertility intentions and preferences has much potential explanatory power and merits serious empirical investigation.

REFERENCES

Achen, C. (1975). Mass political attitudes and the survey response. *American Political Science Review,* 69, 1218-1231.

Agadjanian, V. (2005). Fraught with ambivalence: Reproductive intentions and contraceptive choices in a sub-Saharan fertility transition. *Population Research and Policy Review*, 24 (6), 617-645.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes,* 50 (2), 179-211.

Anderson, M., Bechhofer, F., Jamieson, L., Mccrone, D., Li, Y. and Stewart, R. (2002). Confidence amid uncertainty: Ambitions and plans in a sample of young adults. *Sociological Research Online,* 6 (4).

Anderson, M., Bechhofer, F., Mccrone, D., Jamieson, L., Li, Y. and Stewart, R. (2005). Timespans and plans among young adults. *Sociology,* 39 (1), 139-155.

Bachrach, C.A. and Morgan, S.P. (2013). A cognitive–social model of fertility intentions. *Population and Development Review*, 39 (3), 459-485.

Bachrach, C.A. and Newcomer, S. (1999). Intended pregnancies and unintended pregnancies: Distinct categories or opposite ends of a continuum? *Family Planning Perspectives*, 31 (5), 251-252.

Bankole, A. and Westoff, C.F. (1998). The consistency and validity of reproductive attitudes: Evidence from Morocco. *Journal of Biosocial Science*, 30 (4), 439-455.

Barrett, G., Smith, S.C. and Wellings, K. (2004). Conceptualisation, development, and evaluation of a measure of unplanned pregnancy. *Journal of Epidemiology and Community Health*, 58 (5), 426-433.

Barrett, G. and Wellings, K. (2000). Understanding pregnancy intentions: A problem in evidence everywhere. *Family Planning Perspectives,* 32 (4), 194.

Barrett, G. and Wellings, K. (2002). What is a 'planned' pregnancy? Empirical data from a British study. *Social Science and Medicine,* 55 (4), 545-557.

Beaujouan, Éva, Brown, J.J. and Ní Bhrolcháin, M. (2011) Reweighting the General Household Survey, 1979-2007. *Population Trends*, 145:119-45.

Berrington, A. (2004). Perpetual postponers? Women's, men's and couple's fertility intentions and subsequent fertility behaviour. *Population Trends*, 117, 9-19.

Bettman, J.R., Luce, M.F. and Payne, J.W. (1998). Constructive consumer choice processes. *Journal of Consumer Research,* 25 (3), 187-217.

Bongaarts, J. (2002). The end of the fertility transition in the developed world. *Population and Development Review* 28 (3), 419-443.

Brody, C.J. (1986). Things are rarely black-and-white: admitting gray into the converse model of attitude stability. *American Journal of Sociology,* 92 (3), 657-677.

Brown, S.S. and Eisenberg, L., Eds. (1995). "The Best Intentions: Unintended pregnancy and the well-being of children and families." Washington, D.C., National Academies Press.

Bruni, L. and Sugden, R. (2007). The road not taken: How psychology was removed from economics, and how it might be brought back. *Economic Journal,* 117 (516), 146-173.

Bumpass, L. and Westoff, C.F. (1969). The prediction of completed fertility. *Demography*, 6 (4), 445-454.

Bumpass, L. and Westoff, C.F. (1970). "The Later Years of Childbearing." Princeton: Princeton University Press.

Carlsson, F. (2010). Design of stated preference surveys: Is there more to learn from behavioral economics? *Environmental & Resource Economics*, 46 (2), 167-177.

Cartwright, A. (1970). "Parents and Family Planning Services." London: Routledge Kegan Paul.

Cartwright, A. (1976). "How Many Children?" London: Routledge & Kegan Paul.

Cartwright, A. (1988). Unintended pregnancies that lead to babies. *Social Science and Medicine,* 27(3), 249-254.

Cartwright, A. and Wilkins, W. (1976). Changes in family building plans: A follow up study to 'How many children?' *Studies on Medical and Population Subjects*, OPCS No.33.

Casterline, J.B. and El-Zeini, L.O. (2007). The estimation of unwanted fertility. *Demography*, 44 (4), 729-745.

Casterline, J.B. and Sinding, S.W. (2000). Unmet need for family planning in developing countries and implications for population policy. *Population and Development Review*, 26 (4), 691-723.

Converse, P.E. (1964). "The nature of belief systems in mass publics." In: Apter, D. (ed.) *Ideology and Discontent.* New York: Free Press, 206-261.

Converse, P.E. (1974). Nonattitudes and American public opinion: Comment: The status of nonattitudes. *American Political Science Review*, 68 (2), 650-660.

Coombs, L.C. (1974). Measurement of family-size preferences and subsequent fertility. *Demography,* 11 (4), 587-611.

Coombs, L.C. (1978). How many children do couples really want. *Family Planning Perspectives,* 10 (5), 303-308.

Coombs, L.C. and Freedman, R. (1979). Some roots of preference - roles, activities and familial values. *Demography,* 16 (3), 359-376.

Demeny, P. (1988). Social science and population policy. *Population and Development Review,* 14 (3), 451-479.

Demographic and Health Surveys (2011). "Guidelines for the MEASURE DHS Phase III Main Survey Report." Calverton, Maryland, USA: ICF International Inc.

Dixon-Mueller, R. and Germain, A. (1992). Stalking the elusive 'unmet need' for family planning. *Studies in Family Planning,* 23 (5), 330-335.

Elgamal, M.A. and Grether, D.M. (1995). Are people Bayesian? Uncovering behavioral strategies. *Journal of the American Statistical Association*, 90 (432), 1137-1145.

Esacove, A. (2008). Making sense of sex: Rethinking intentionality. *Culture Health & Sexuality*, 10 (4), 377-390.

Feldman, J.M. and Lynch, J.G. (1988). Self-generated validity and other effects of measurement on belief, attitude, intention, and behavior. *Journal of Applied Psychology*, 73 (3), 421-435.

Finer, L.B. and Henshaw, S.K. (2006). Disparities in rates of unintended pregnancy in the United States, 1994 and 2001. *Perspectives on Sexual and Reproductive Health*, 38 (2), 90-96.

Fischhoff, B. (1991). Value elicitation - is there anything in there? *American Psychologist*, 46 (8), 835-847.

Fischhoff, B. (2006). "Constructing preferences from labile values." In: Lichtenstein, S. and Slovic, P. (eds.) *The Construction of Preference*. Cambridge: Cambridge University Press, 653-667.

Freedman, R., Coombs, L.C. and Bumpass, L. (1965). Stability and change in expectations about family size: A longitudinal study. *Demography*, 2, 250-275.

Freedman, R., Freedman, D.S. and Thornton, A.D. (1980). Changes in fertility expectations and preferences between 1962 and 1977 - their relation to final parity. *Demography,* 17 (4), 365-378.

Freedman, R., Whelpton, P.K. and Campbell, A. (1959). "Family Planning, Sterility and Population Growth." New York: McGraw Hill.

Gerber, A., Pennylegion, M. and Spice, C. (2002). "'If it happens, it happens'. A qualitative assessment of unintended pregnancy in South King County." Seattle: Public Health-Seattle & King County.

Gilbert, D.T. and Wilson, T.D. (2000). "Miswanting: Some problems in the forecasting of future affective states." In: Forgas, J. P. (ed.) *Feeling and Thinking. The role of affect in social cognition.* Cambridge: Cambridge University Press, 178-197.

Goitein, B. (1984). The danger of disappearing postdecision surprise: Comment on Harrison and March, "decision making and postdecision surprises". *Administrative Science Quarterly,* 29 (3), 410-413.

Greil, A.L. and Mcquillan, J. (2010). "Trying" times: Medicalization, intent, and ambiguity in the definition of infertility. *Medical Anthropology Quarterly,* 24 (2), 137-156.

Harrison, J.R. and March, J.G. (1984). Decision making and postdecision surprises. *Administrative Science Quarterly,* 29, 26-42.

Hauser, P.M. (1967). Review: 'Family Planning and Population Programs': A book review article. *Demography*, 4 (1), 397-414.

Hayford, S.R. (2009). The evolution of fertility expectations over the life course. *Demography*, 46 (4), 765-783.

Hayford, S.R. and Morgan, S.P. (2008). Religiosity and fertility in the United States: The role of fertility intentions. *Social Forces*, 86 (3), 1163-1188.

Hechter, M. and Kanazawa, S. (1997). Sociological rational choice theory. *Annual Review of Sociology*, 23, 191-214.

Heckhausen, J., Wrosch, C. and Fleeson, W. (2001). Developmental regulation before and after a developmental deadline: The sample case of "biological clock" for childbearing. *Psychology and Aging*, 16 (3), 400-413.

Heiland, F., Prskawetz, A. and Sanderson, W.C. (2008). Are individuals' desired family sizes stable? Evidence from west German panel data. *European Journal of Population-Revue Europeenne de Demographie*, 24 (2), 129-156.

Higgins, J.A., Hirsch, J.S. and Trussell, J. (2008). Pleasure, prophylaxis and procreation: A qualitative analysis of intermittent contraceptive use and unintended pregnancy. *Perspectives on Sexual and Reproductive Health*, 40 (3), 130-137.

Hill, J.L. and Kriesi, H. (2001). An extension and test of Converse's "black-and-white" model of response stability. *American Political Science Review*, 95 (2), 397-413.

Hudomiet, P. and Willis, R.J. (2012). "Estimating second order probability beliefs from subjective survival data." Cambridge, Mass.: National Bureau of Economic Research.

Iacovou, M. and Tavares, L. (2011). Yearning, learning and conceding: Reasons men and women change their childbearing intentions. *Population and Development Review*, 37 (1), 87-123.

Jansen, M. and Liefbroer, A.C. (2006). Couples' attitudes, childbirth, and the division of labor. *Journal of Family Issues*, 27 (11), 1487-1511.

Johnson-Hanks, J. (2005). When the future decides - uncertainty and intentional action in contemporary Cameroon. *Current Anthropology*, 46 (3), 363-385.

Johnson-Hanks, J., Bachrach, C., Morgan, S.P. and Kohler, H.P. (2011). "Understanding family change and variation: Toward a theory of conjunctural action." New York: Springer.

Joyce, T., Kaestner, R. and Korenman, S. (2000). The stability of pregnancy intentions and pregnancy-related maternal behaviors. *Maternal and Child Health Journal*, 4 (3), 171-178.

Kahneman, D. (1994). New challenges to the rationality assumption. *Journal of Institutional and Theoretical Economics*, 150, 18-36.

Kahneman, D. (1996). "Comment." In: Arrow, K., Colombatto, E., Perlaman, M. and Schmidt, C. (eds.) *The Rational Foundations of Economic Behavior*. London and New York: Macmillan/St Martin's Press, 225-250.

Kahneman, D. (1996). "New challenges to the rationality assumption." In: Arrow, K., Colombano, E., Perlman, M. and Schmidt, C. (ed.). T*he Rational Foundations of Economic Behaviour*, London: Macmillan, 203-224.

Kaufmann, R., Morris, L. and Spitz, A.M. (1997). Comparison of two question sequences for assessing pregnancy intentions. *American Journal of Epidemiology*, 145 (9), 810-816.

Kendall, C., Afable-Munsuz, A., Speizer, I., Averya, A., Schmidt, N. and Santelli, J. (2005). Understanding pregnancy in a population of inner-city women in New Orleans—results of qualitative research. *Social Science and Medicine*, 60, 297-311.

Kiser, C.V. (1967). Review: The Growth of American Families studies: An assessment of significance. *Demography,* 4 (1), 388-396.

Klerman, L.V. (2000). The intendedness of pregnancy: A concept in transition. Maternal and Child Health Journal 4(3): 155-162.

Kodzi, I.A., Casterline, J.B. and Aglobitse, P. (2010). The time dynamics of individual fertility preferences among rural Ghanaian women. *Studies in Family Planning,* 41 (1), 45-54.

Krosnick, J.A. (1999). Survey research. *Annual Review of Psychology,* 50, 537-567.

Lee, R.D. (1980). Aiming at a moving target: Period fertility and changing reproductive goals. *Population Studies*, 30 (2), 205-226.

Lee, R.D. (1981). "A model for forecasting fertility from birth-expectations data." In: Hendershot, G.E. and Placek, P.J. (eds.) *Predicting Fertility. Demographic studies of birth expectations.* Lexington, Mass.: Lexington Books, 75-99.

Leridon, H. (2008). A new estimate of permanent sterility by age: Sterility defined as the inability to conceive. *Population Studies*, 62 (1), 15-24.

Lichtenstein, S. and Slovic, P. (2006). "The construction of preference: An overview." In: Lichtenstein, S. and Slovic, P. (eds.) *The Construction of Preference*, Cambridge: Cambridge University Press, 1-40.

Liefbroer, A.C. (2009). Changes in family size intentions across young adulthood: A life-course perspective. *European Journal of Population-Revue Europeenne de Demographie*, 25 (4), 363-386.

Lifflander, A., Gaydos, L.M.D. and Rowland Hogue, C.J. (2007). Circumstances of pregnancy: Low income women in Georgia describe the difference between planned and unplanned pregnancies. *Maternal and Child Health Journal*, 11, 81-89.

Loomes, G., Starmer, C. and Sugden, R. (2003). Do anomalies disappear in repeated markets? *Economic Journal,* 113 (486), C153-C166.

Luker, K.C. (1999). A reminder that human behavior frequently refuses to conform to models created by researchers. *Family Planning Perspectives,* 31 (5), 248-249.

Manski, C.F. (2004). Measuring expectations. *Econometrica,* 72 (5), 1329-1376.

Mcfarland, D. (1989). "Goals, no-goals and own goals." In: Montefiore, A. and Noble, D. (eds.) Goals, *No-Goals and Own Goals.* London: Unwin Hyman: 39-57.

Mcquillan, J., Greil, A.L. and Shreffler, K.M. (2010). Pregnancy intentions among women who do not try: Focusing on women who are okay either way. *Maternal and Child Health Journal*. 15 (2), 178-187.

Miller, W.B. and Pasta, D.J. (1995). Behavioral intentions - which ones predict fertility behavior in married-couples. *Journal of Applied Social Psychology,* 25 (6), 530-555.

Monnier, A. (1989). Fertility intentions and actual behaviour. A longitudinal study: 1974, 1979. Population 44(1): 237-259.

Moos, M.K., Petersen, R., Meadows, K., Melvin, C.L. and Spitz, A.M. (1997). Pregnant women's perspectives on intendedness of pregnancy. Women's Health Issues 7(6): 385-392.

Morgan, S.P. (1981). Intention and uncertainty at later stages of childbearing: The United States 1965 and 1970. *Demography,* 18 (3), 267-285.

Morgan, S.P. (1982). Parity-specific fertility intentions and uncertainty - the United States, 1970 to 1976. *Demography,* 19 (3), 315-334.

Morgan, S.P. (1985). Individual and couple intentions for more children - a research note. *Demography,* 22 (1), 125-132.

Morgan, S.P. (2001). "Should fertility intentions inform fertility forecasts? The Direction of Fertility in the United States." Alexandria, Virginia, US Census Bureau.

Morgan, S.P. and Bachrach, C.A. (2011). Is the theory of planned behavior an appropriate model for human fertility? *Vienna Yearbook of Population Research,* 9, 11-18.

Morgan, S.P. and Rackin, H. (2010). The correspondence between fertility intentions and behavior in the United States. *Population and Development Review,* 36 (1), 91-118.

Musick, K., England, P., Edgington, S. and Kangas, N. (2009). Education differences in intended and unintended fertility. *Social Forces*, 88 (2), 543-572.

Namboodiri, N.K. (1972). Some observations on economic framework for fertility analysis. *Population Studies-A Journal of Demography*, 26 (2), 185-206.

Namboodiri, N.K. (1983). "Sequential decision making and the life course." In: Bulatao, R. and Lee, R.D. (eds.) *Determinants of Fertility in Developing Countries*. London: Academic Press, 444-472.

Ní Bhrolcháin, M., and Beaujouan, É. (2011). "Uncertainty in fertility Intentions in Britain, 1979-2007." *Vienna Yearbook of Population Research,* 9, 101-34.

Ní Bhrolcháin, Máire, and Beaujouan, É. *forthcoming*. "The prevalence of uncertain fertility intentions in developed societies."

Ní Bhrolcháin, M., Beaujouan, É. and Berrington, A. (2010). "Stability and change in fertility intentions in Britain, 1991-2007." *Population Trends,* 141, 1-23.

Ní Bhrolcháin, M., Beaujouan, É. and Murphy, M. (2011). "Sources of error in reported childlessness in a continuous British household survey." *Population Studies,* 65, 305-18.

Noack, T. and Ostby, L. (1985). Fertility expectations: A short cut or dead-end in predicting fertility? *Scandinavian Population Studies*, 7, 48-59.

Noack, T. and Ostby, L. (2002). Free to choose - but unable to stick to it? Norwegian fertility expectations and subsequent behaviour in the following 20 years. *Dynamics of Fertility and Partnership in Europe: Insights and Lessons from Comparative Research*, 2, 103-116.

O'Connell, M. and Rogers, C.C. (1983). Assessing cohort birth expectations data from the Current Population Survey, 1971-1981. *Demography,* 20 (3), 369-384.

Payne, J.W., Bettman, J.R. and Johnson, E.J. (1992). Behavioral decision research - a constructive processing perspective. *Annual Review of Psychology*, 43, 87-131.

Payne, J.W., Bettman, J.R. and Schkade, D.A. (1999). Measuring constructed preferences: Towards a building code. *Journal of Risk and Uncertainty*, 19 (1-3), 243-270.

Petersen, R., Gazmararian, J.A., Clark, K.A. and Green, D.C. (2001). How contraceptive use patterns differ by pregnancy intention: Implications for counseling. *Women's Health Issues*, 11 (5), 427- 435.

Petersen, R. and Moos, M.K. (1997). Defining and measuring unintended pregnancy: Issues and concerns. *Women's Health Issues*, 7 (4), 234- 240.

Philipov, D. (2009). The effect of competing intentions and behaviour on short-term childbearing intentions and subsequent childbearing. *European Journal of Population-Revue Europeenne de Demographie*, 25 (4), 525-548.

Plott, C.R. (1996). "Rational individual behaviour in markets and social choice processes: The discovered preference hypothesis." In: Arrow, K.J., Colombatto, E., Perlman, M. and Schmidt, C. (eds.) *The Rational Foundations of Economic Behaviour,* London: Macmillan, 225-250.

Poole, V.L., Flowers, J.S., Goldenberg, R.L., Cliver, S.P. and Mcneal, S. (2000). Changes in intendedness during pregnancy in a high-risk multiparous population. *Maternal and Child Health Journal,* 4 (3), 179-182.

Quesnel-Vallee, A. and Morgan, S.P. (2003). Missing the target? Correspondence of fertility intentions and behavior in the US. *Population Research and Policy Review,* 22 (5-6), 497-525.

Régnier-Loilier, A. (2006). Influence of own sibship size on number of children desired at various times of life. The case of France. *Population*, 61 (3), 193-223.

Riley, A.P., Hermalin, A.I. and Rosero-Bixby, L. (1993). A new look at the determinants of nonnumeric response to desired family-size - the case of Costa Rica. *Demography*, 30 (2), 159-174.

Rindfuss, R.R., Morgan, S.P. and Swicegood, G. (1988). "First Births in America." London: University of California Press.

Rosina, A. and Testa, M.R. (2009). Couples' first child intentions and disagreement: An analysis of the Italian case. *European Journal of Population-Revue Europeenne de Demographie*, 25 (4), 487-502.

Ryder, N.B. (1973). A critique of the National Fertility Study. *Demography*, 10 (4), 495-506.

Ryder, N.B. (1976). The specification of fertility planning status. *Family Planning Perspectives*, 8 (6), 283-289.

Ryder, N.B. (1979). Consistency of reporting fertility planning status. *Studies in Family Planning,* 10 (4), 115-128.

Ryder, N.B. (1981). "Changes in parity orientation from 1970 to 1975." In: Hendershot, G.E. and Placek, P.J. (eds.) *Predicting Fertility. Demographic studies of birth expectations.* Lexington, Mass.: Lexington Books, 101-127.

Ryder, N.B. (1984). "Expectations and progressive analysis in fertility prediction." In: United Nations (eds.) *Population projections: Methodology of the United Nations.* New York: United Nations, 33-38.

Ryder, N.B. (1985). The structure of pregnancy intervals by planning status. *Population Studies,* 39 (2), 193-211.

Ryder, N.B. (1986). Review of John Cleland and John Hobcraft (eds) 'Reproductive Change in Developing Countries'. *Population and Development Review*, 12 (2), 341-359.

Ryder, N.B. and Westoff, C.F. (1971). "Reproduction in the United States 1965." Princeton: Princeton University Press.

Sable, M.R. and Libbus, M.K. (2000). Pregnancy intention and pregnancy happiness: Are they different? *Maternal and Child Health Journal,* 191-196.

Santelli, J.S., Lindberg, L.D., Orr, M.G., Finer, L.B. and Speizer, I. (2009). Toward a multidimensional measure of pregnancy intentions: Evidence from the United States. *Studies in Family Planning,* 40 (2), 87-100.

Santelli, J.S., Rochat, R., Hatfield-Timajchy, K., Gilbert, B.C., Curtis, K., Cabral, R., Hirsch, J.S., Schieve, L. and Unintended Pregnancy Working Group (2003). The measurement and meaning of unintended pregnancy. *Perspectives on Sexual and Reproductive Health*, 35 (2), 94-101.

Schaeffer, N.C. and Presser, S. (2003). The science of asking questions. *Annual Review of Sociology*, 29 (1), 65-88.

Schaeffer, N.C. and Thomson, E. (1992). The discovery of grounded uncertainty: Developing standardized questions about strength of fertility motivation. *Sociological Methodology*, 22, 37- 82.

Schoen, R., Astone, N.M., Kim, Y.J., Nathanson, C.A. and Fields, J.M. (1999). Do fertility intentions affect fertility behavior? *Journal of Marriage and the Family*, 61 (3), 790-799.

Sewell, W.H. (1992). A theory of structure: Duality, agency, and transformation. *American Journal of Sociology,* 98, 1-29.

Simons, J. (1974). Review of L. Bumpass and C. Westoff "The Later Years of Childbearing". *Population Studies*, 28, 348-350.

Simons, J. (1978). "Illusions about attitudes." In: Council of Europe (ed.). *Population Decline in Europe. Implications of a declining or stationary population*. London: Edward Arnold, 197-214.

Simonson, I. (2008). Will I like a "medium" pillow? Another look at constructed and inherent preferences. *Journal of Consumer Psychology*, 18 (3), 155-169.

Singh, S., Sedgh, G. and Hussain, R. (2010). Unintended pregnancy: Worldwide levels, trends, and outcomes. *Studies in Family Planning*, 41 (4), 241-250.

Slovic, P. (1995). The construction of preference. *American Psychologist,* 50 (5), 364-371.

Smallwood, S. and Jefferies, J. (2003). Family building intentions in England and Wales: Trends, outcomes and interpretations. *Population Trends,* 112, 15-28.

Smelser, N.J. (1998). The rational and the ambivalent in the social sciences: 1997 presidential address. *American Sociological Review*, 63 (1), 1-16.

Smith, H.L. (1989). Integrating theory and research on the institutional determinants of fertility. *Demography*, 26, 171-184.

Sobotka, T. (2009). Sub-replacement fertility intentions in Austria. *European Journal of Population-Revue Europeenne de Demographie*, 25 (4), 387-412.

Speder, Z. and Kapitany, B. (2009). How are time-dependent childbearing intentions realized? Realization, postponement, abandonment, bringing forward. *European Journal of Population-Revue Europeenne de Demographie*, 25 (4), 503-523.

Stanford, J.B., Hobbs, R., Jameson, P., Dewitt, M.J. and Fischer, R.C. (2000). Defining dimensions of pregnancy intendedness. *Maternal and Child Health Journal,* 4 (3), 183-189.

Sturgis, P. and Smith, P. (2010). Fictitious issues revisited: Political interest, knowledge and the generation of nonattitudes. *Political Studies,* 58 (1), 66-84.

Testa, M.R. (2007). Childbearing preferences and family issues in Europe: Evidence from the Eurobarometer 2006. *Vienna Yearbook of Population Research,* 2007, 357-379.

Testa, M.R. and Grilli, L. (2006). The influence of childbearing regional contexts on ideal family size in Europe: A multilevel analysis. *Population,* 61 (1-2), 107-137.

Testa, M.R. and Toulemon, L. (2006). Family formation in France: Individual preferences and subsequent outcomes. *Vienna Yearbook of Population Research,* 2006, 41-75.

Thomson, E. (1997). Couple childbearing desires, intentions, and births. *Demography,* 34 (3), 343-354.

Thomson, E. and Brandreth, Y. (1995). Measuring fertility demand. *Demography,* 32 (1), 81-96.

Thomson, E. and Hoem, J.M. (1998). Couple childbearing plans and births in Sweden. *Demography*, 35 (3), 315-322.

Thomson, E., Mcdonald, E. and Bumpass, L.L. (1990). Fertility desires and fertility - hers, his, and theirs. *Demography*, 27 (4), 579-588.

Toulemon, L. and Testa, M.R. (2005) Fertility intentions and actual fertility: A complex relationship. *Population and Societies*, 415.

Trussell, J., Vaughan, B. and Stanford, J. (1999). Are all contraceptive failures unintended pregnancies? Evidence from the 1995 National Survey of Family Growth. *Family Planning Perspectives*, 31 (5), 246-247, 260.

Tversky, A. and Thaler, R.H. (1990). Anomalies: Preference reversals. *Journal of Economic Perspectives*, 4 (2), 201-211.

Udry, J.R. (1983). Do couples make fertility plans one birth at a time. *Demography,* 20 (2), 117-128.

Van Hoorn, W. and Keilman, N. (1997). Birth expectations and their use in fertility forecasting. *Eurostat Working Paper E4/1997-4*, Eurostat.

Werner, B. (1986). Family building intentions of different generations of women: Results from the General Household Survey 1979-83. *Population Trends*, 44, 17-23.

Westoff, C.F. (1988). The potential demand for family planning: A new measure of unmet need and estimates for five Latin American countries. *International Family Planning Perspectives*, 14 (2), 45-53.

Westoff, C.F., Mishler, E.G. and Kelly, E.L. (1957). Preferences in size of family and eventual fertility twenty years after. *The American Journal of Sociology,* 62 (5), 491-497.

Westoff, C.F. and Ryder, N.B. (1977). "The Contraceptive Revolution." Princeton: Princetion University Press.

Westoff, C.F. and Ryder, N.B. (1977). The predictive validity of reproductive intentions. *Demography*, 14 (4), 431-453.

Whelpton, P.K., Campbell, A. and Patterson, J. (1966). "Fertility and Family Planning in the United States." Princeton University Press.

Wikman, A. (2006). Reliability, validity and true values in surveys. *Social Indicators Research*, 78 (1), 85-110.

Wikman, A. (2007). Context effects as an illustration of response uncertainty - a cautionary tale. *Social Indicators Research,* 84 (1), 27-38.

Williams, R.A. and Thomson, E. (1985). Can spouses be trusted - a look at husband wife proxy reports. *Demography*, 22 (1), 115-123.

Wilson, T.D. and Gilbert, D.T. (2005). Affective forecasting - knowing what to want. *Current Directions in Psychological Science,* 14 (3), 131-134.

Wilson, T.D., Lindsey, S. and Schooler, T.Y. (2000). A model of dual attitudes. *Psychological Review,* 107 (1), 101-126.

Withers, M.H., Tavrow, P. and Adinata, N.A. (2011). "Do ambivalent women have an unmet need for family planning? A longitudinal study from Bali, Indonesia." Women's Health Issues In Press, Corrected Proof.

Woolf, M. (1971). "Family intentions." London: Office of Population Censuses and Surveys, Social Survey Division.

Woolf, M. and Pegden, S. (1976). "Families five years on." London: HMSO.

Wu, Z. and Wang, H. (1998). Third birth intentions and uncertainty in Canada. *Social Biology*, 45 (1-2), 96-112.

Zabin, L.S. (1999). Ambivalent feelings about parenthood may lead to inconsistent contraceptive use - and pregnancy. *Family Planning Perspectives*, 31 (5), 250-251.

Zabin, L.S., Huggins, G.R., Emerson, M.R. and Cullins, V.E. (2000). Partner effects on a woman's intention to conceive: 'Not with this partner'. *Family Planning Perspectives*, 32 (1), 39-45.

Zajonc, R.B. (2001). Mere exposure: A gateway to the subliminal. *Current Directions in Psychological Science*, 10 (6), 224-228.

Zaller, J. and Feldman, S. (1992). A simple theory of the survey response - answering questions versus revealing preferences. *American Journal of Political Science*, 36 (3), 579-616.

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