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Are uncertain fertility intentions a temporary or long-term outlook? Findings from a panel study

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Abstract

Objectives—Research suggests that a substantial minority of women are unsure if they want to have (more) children. This study examines whether this is a temporary or long-term outlook and which characteristics are associated with uncertainty about future childbearing intentions.

Methods—I used panel data from a national sample of 2,353 non-sterilized U.S. women aged 18-39 gathered at three points in time between 2012 and 2013. Women who indicated they were “not sure” if they wanted to have any (more) children were classified as uncertain. Random-effects and fixed-effects logistic regression were used to determine which baseline and time-varying characteristics were associated with fertility uncertainty and changes in uncertainty.

Results—While 39% of the sample reported uncertain fertility intentions on at least one survey, only 9% were uncertain at all three. Characteristics associated with uncertainty included being ages 30 and older, having one or more children, perceiving one's partner to have uncertain childbearing intentions and having a strong desire to avoid pregnancy. Characteristics associated with a decreased likelihood of uncertainty included relationship happiness and having a recent discussion about childbearing intentions with a health care provider.

Conclusions—At a given point in time, a substantial minority of women is uncertain whether they want to have more children, but it appears to be a temporary or transitional stage for most.

Introduction

There is a long-standing interest in the social sciences to understand women's and couples' plans to have (more) children. Information on fertility intentions has been used to make population projections, identify unmet need for contraception, and to understand how couples negotiate childbearing goals, among other things (Zabin, 1999). Many studies of fertility intentions are informed by a rational choice model, which assumes that women and couples have well-defined childbearing goals and act on them accordingly; for example, by having sex during the woman's fertile window when they want to get pregnant or by using contraception when they want to avoid or delay childbearing. However, research has established that a sizeable minority of women are unsure whether they want to have (more) children (Bhrolchain & Beaujouan, 2015; Foster, Biggs, Ralph, Arons, & Brindis, 2008;

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Frost & Darroch, 2008; Kavanaugh & Schwarz, 2009; Patel, Laz, & Berenson, 2015), and this has implications for efforts to understand fertility-related behaviors. For example, what types of contraception, if any, would these women and couples be expected to use, and would they use them less consistently? In recent years, health care providers, and especially those specializing in women's health, have been encouraged to assess patient's fertility intentions and respond with appropriate counseling and health information (Bellanca & Hunter, 2013). Knowledge of the extent to which women report uncertainty, and whether it is sustained, would suggest a need to develop counseling guidelines for women who express this outlook.

The frequency with which women report uncertain fertility intentions is variable across studies. One nationally representative study of British women ages 18-44 found that 30% responded "don't know" when asked if they expected to have children in the future, and comparable levels of uncertainty have also been observed in the United States and other developed countries (Bhrolchain & Beaujouan, 2015). By contrast, Frost and Darroch (2008) found that 8% of U.S. women ages 18-44 who were at risk of unintended pregnancy (e.g., not sterilized) were unsure whether they wanted to have any (more) children, comparable to the 7% of family planning clients in California (Foster et al., 2008). However, studies of women at reproductive health clinics which tend to serve younger and lower-income populations have found levels of uncertainty ranging from 38%-58% (Kavanaugh & Schwarz, 2009; Patel et al., 2015). Only a few of these studies have examined characteristics of women who are unsure if they want to have more children, and cross-national data (which included the United States) suggest that younger women and those without children are more likely to be uncertain (Bhrolchain & Beaujouan, 2015; Patel et al., 2015). Interestingly, one national U.S. study found that levels of uncertainty were approximately equal among women who were both not trying to get pregnant and those who reported ambivalent fertility intentions (insofar as they were "okay either way" about getting pregnant), 14% and 17%, respectively and lowest among those trying to get pregnant (3%) (McQuillan, Greil, & Shreffler, 2011). These patterns suggest that women wishing to avoid pregnancy can be as uncertain about their fertility intentions as women who are openly ambivalent.

Several studies using cross-sectional data suggest fertility intentions can change over a relatively short period of time. When Shreffler et al. retrospectively examined intentions across individual women's pregnancies, they found that 60% of women did not report the same intention for all pregnancies (Shreffler, Greil, Mitchell, & McQuillan, 2015). Morgan examined fertility intentions stratified by age and parity across several data sources, and his findings suggested that uncertain fertility intentions represent a transitional stage from childbearing to post-childbearing, (Morgan, 1982).

This study uses longitudinal data from a national sample of 2,353 U.S. women to assess fertility uncertainty three times over a 12-month period. At any given point in time, 22%-25% of women were unsure whether they wanted to have (more) children, but less than half of that amount were uncertain on all three surveys. I use multivariate analyses to determine which characteristics and circumstances were associated with uncertainty and with transitioning to or from an uncertain outlook.

Methods and materials

Data for this analysis comes from the Continuity and Change in Contraceptive Use (CCCU) study. The CCCU was administered three times between November 2012 and December 2013 to a national sample of women ages 18–39. The Guttmacher Institute subcontracted with GfK, an online recruitment company, to administer the survey using their KnowledgePanel, which is composed of approximately 50,000 individuals and is intended to be representative of the U.S. population.

In order to best capture the experiences of women at risk of pregnancy, the baseline survey was restricted to women who had ever had vaginal sex with a man, were not currently pregnant, had not had a tubal ligation and who did not currently have a male sexual partner who had had a vasectomy. Over a three-week period in November and December of 2012, 11,365 women were invited to participate. Of those, 6,658 answered the four screening items, yielding a response rate of 59%; 4,647 of those were eligible to participate, and 4,634 completed the full survey. Subsequent surveys were conducted six and 12 months later, with response rates of 69% and 75%, respectively; 2,398 women (52% of the original sample) completed all three surveys.

The 2011–2013 National Survey of Family Growth (NSFG) is a nationally representative survey of women aged 15–44. Relative to the comparable NSFG population (e.g., women aged 18–39, sexually experienced, not sterilized and not currently pregnant), the baseline sample of the CCCU was slightly older (28.3 compared to 27.3 in the NSFG), substantially more educated (41% had college degrees compared to 27% in the NSFG), and also more likely to be married or cohabiting (67% compared to 50% in the NSFG) (data not shown). Thus, while the sample is national, it cannot be considered to be nationally representative.

The dependent variable is based on an item asked on all three surveys: “Which of the following best describes your current plans regarding having a(nother) baby?” Response categories included: “I am trying to get pregnant now,” “I am not trying to get pregnant now but expect to try in the future,” “I don’t want to have any (more) children,” and “I’m not sure if I want to have a(nother) baby.” Women who indicated the last response were considered to be uncertain. At the follow up surveys, women were provided with the option of indicating “I am currently pregnant;” these respondents were excluded from relevant analyses.

The analyses include basic demographic characteristics of age, highest educational degree, race and ethnicity and number of prior births (as measured at baseline). Many women make decisions about childbearing and fertility in the context of their romantic relationships (Dudgeon & Inhorn, 2004; Kraft et al., 2010; Kusunoki & Upchurch, 2011; Sassler & Miller, 2014), and I include several measures intended to capture these dynamics. The measure of relationship status is time-varying and distinguishes between women who were married, cohabiting, in a dating relationship or single at the time of the survey. At each survey all women who were not single were asked how happy they were in their relationship and how committed they were to the relationship. Both items were answered according to a six-point scale (1–6), and women who answered “5” or “6” were considered to be committed and happy, respectively, and compared to women giving all other responses. I also included

an item asked at each survey assessing respondents' perceptions of whether their partners wanted to have (more) children with them.

Three measures of pregnancy experiences and attitudes (apart from number of births) were examined. The baseline survey assessed whether women had ever had an unintended pregnancy (including miscarriages and abortions), and this was included as this experience could influence women's certainty about having another child. Pregnancy attitudes are likely to be related to fertility intentions as both are tapping into different dimensions of pregnancy desires (Bachrach & Newcomer, 1999). At each survey women were asked how important it was to avoid pregnancy and how happy they would be if they found out they were pregnant. Both items were answered according to a six-point scale (1-6), and respondents who answered "5" or "6" were considered to be motivated to avoid pregnancy or happy about a potential pregnancy. Women who were pregnant at either follow up survey were not asked these two items and were excluded from relevant analyses.

Finally, two time-varying health-care related measures were included. Having a gap in health insurance coverage over the last six months could represent reduced access to health care as well as social instability, both of which could be associated with uncertainty about having children. Additionally, discussions with health care providers about childbearing might reflect women's concerns about fertility and/or influence their future fertility expectations. Respondents who had made a visit for women's health care during the last six months were asked if, during that visit, a health care provider had spent time talking to them about future plans for having children. I constructed a three-category measure assessing whether respondents had made no visit for women's health care during the last six months, they had made a visit but not discussed fertility intentions or they had made a visit and discussed them.

The analysis is limited to the 2,353 women who answered the fertility intentions item on all three surveys, providing a maximum of 7,059 observations. I first examined the distribution of baseline and time-varying independent variables. I next examined the extent to which fertility uncertainty (and other fertility intentions) changed over the 12-month time period, as well as the "trajectories" of change over time. I estimated two types of multivariate models where uncertainty about future childbearing was the outcome. I used random-effects logistic regression models to assess the subject-specific effects of the variables on uncertainty. The coefficients in these models are interpreted to show what happens to an individual woman when an independent variable increases or decreases in value while controlling for the fact that the dataset contained repeated measures from the same subjects (Allison, 2012). I also estimated a fixed-effects model using data only from women who transitioned to (or from) being unsure about their future childbearing goal over the 12-month period. This model examined the effects of *changes* in the independent variables on *changes* in fertility uncertainty. Fixed-effects models account for unobserved heterogeneity because they control for all stable characteristics of individuals (e.g., age, race and ethnicity) (Allison, 2012).

Because women who were trying to get pregnant during any survey could be seen as distinctly different in their outlooks from other women, I also examined logistic regression

models that excluded these individuals. More detailed information about the sample, item wording, variable construction and the analytic strategy is available in Appendix A.

Findings

Sample characteristics

The characteristics of the sample have been described elsewhere (Jones, Lindberg, & Higgins, 2014; Jones, Tapales, Lindberg, & Frost, 2015), and I focus on those time-varying characteristics most relevant to the current study. Most respondents who were in a marital, cohabiting or dating relationship were happy and committed to these relationships, though there was some variability (Table 1). For example, while 87% of respondents indicated they were committed to the relationship on at least one survey period, a smaller proportion, 68%, were committed during all three surveys; this latter pattern is due, in part, to the fact that some women moved into and out of relationships over the 12-month period. At baseline, 56% of the sample perceived that their partners wanted to have children with them, but this declined to 46% by the last survey period. Some of this decline was likely due to the fact that some women became pregnant over the course of the surveys (discussed in more detail in subsequent sections). At each survey, 10% of women in romantic relationships were unsure whether their partners wanted to have (more) children with them, though nearly twice as many, 22%, reported this outlook during at least one survey. A majority of respondents, 60%-63%, indicated it was important to avoid pregnancy during each survey, but only 46% indicated this during all three. Twenty-nine percent had experienced at least one gap in health insurance in the last six months, and 12% reported gaps at all three surveys. Finally, slightly more than one-quarter of the sample had recently discussed plans to have children with a health care provider at each survey, and 51% had done so at least once during the study period.

Stability and change in fertility uncertainty

At baseline, 26% of respondents indicated that they were unsure if they wanted (more) children, and this decreased significantly over the twelve-month period to 22% (Table 2). More than one-third of the sample, 39%, indicated this outlook during at least one survey, but only 9% consistently indicated they were unsure if they wanted to have (more) children at all three surveys. Change in outlooks also applied to the other fertility intentions. The proportion of women who expected to have children in the future decreased from 49% to 41%, and the proportion who wanted no more children increased from 17% to 23%. There was a substantial amount of change among individuals according to these fertility expectations; on at least one survey, 29% of the sample reported that they did not want to have any (more) children, but less than half as many (12%) consistently reported this outlook. That 10% of women were pregnant over the course of the year likely contributes to the significant decrease in the proportion who expected to get pregnant in the future and the increase in the proportion who wanted no more children.

Some 55% of women who were unsure if they wanted to have more children at baseline were still uncertain six months later (Table 3). Respondents who were uncertain at baseline were equally likely to transition to wanting to have children in the future (19%) or wanting

no (more) children (23%) ($p=.170$, significance not shown). The similar proportions and patterns exhibited at 12 months masks movement among individual women. Only 35% of women who were uncertain at baseline were consistently unsure at all three surveys. A substantial minority of respondents who were uncertain at baseline, 22%, reported a different intention at each subsequent survey.

Several patterns in the other fertility intentions are worth noting. Slightly more than three-quarters of women who wanted to delay childbearing still expected to do so six months later, but 6% had transitioned to trying to become pregnant and a similar proportion were pregnant. Some 9% were uncertain. Among women who did not want to have any (more) children at baseline, 80% indicated this same desire six and twelve months later. However, these were not the same respondents during each time period, and a slightly smaller proportion, 71%, indicated this outlook at all three surveys. Some 15% of women who did not want to have (more) children at baseline transitioned to being uncertain six months later.

The majority of women who were trying to get pregnant at baseline were still trying six months later (56%), and 23% had become pregnant. One in five transitioned to some other intention, most commonly indicating that they wanted to have children in the future (13%). Some 6% of women trying to get pregnant at baseline were uncertain six months later, and this increased to 16% by the third survey.

Characteristics associated with uncertain fertility intentions

I first examined a simple model that was limited to basic demographic characteristics, including a time-varying measure of relationship status (Table 4). Compared to a woman who was 18-24 years old, a woman in her 30s had more than three times the odds of being unsure if she wanted to have more children. Education and race and ethnicity were not associated with uncertainty, but a woman who had one or more children was more than twice as likely to be uncertain than one who had no children. Compared to a woman who was married, one who was cohabiting, dating or not in a relationship was more likely to be unsure if she wanted to have (more) children. All associations were maintained when women who were trying to get pregnant were excluded from the model.

The full random effects model includes the demographic characteristics as well as measures of relationship dynamics, pregnancy experiences and attitudes and access to health care. It excludes the 6% of the sample that was single during all three surveys (Table 1) since they were not asked the three items pertaining to relationship dynamics.

Compared to a respondent who did not indicate she was happy with her current relationship, one who was happy was significantly less likely to be unsure if she wanted to have more children. The odds of being uncertain were five times higher for a woman who was unsure if her partner wanted to have (more) children with her compared to one who perceived that her partner wanted to. Notably, once these relationship dynamics were taken into account, the associations between relationship status and uncertainty were no longer significant.

The variables assessing pregnancy experiences and attitudes reveal that a woman who indicated it was important to avoid pregnancy was significantly more likely to report that she

was unsure if she wanted to have (more) children than one who was neutral or did not think it was important to avoid pregnancy. By contrast, a woman who indicated she would be happy if she found out she was pregnant was significantly less likely to be uncertain than one who was neutral or would be unhappy.

Compared to a woman who had not made a visit for women's health care in the last six months, one who had done so was significantly less likely to be uncertain if she had discussed her future plans to have children during the visit. It is worth noting that making a health care visit for women's health care in the absence of discussing pregnancy intentions was not associated with uncertainty. Almost all the associations were maintained when women who were trying to get pregnant were excluded, the exception being that women with three or more children no longer differed from those with no children.

A total of 544 women (who were in a relationship during at least one survey) reported a change in uncertainty over the 12-month period, and I used fixed-effects logistic regression to understand which characteristics were associated with these transitions (Table 5). All associations in the random-effects models were maintained. A woman who transitioned to being happy with her relationship with her partner was less likely to report uncertain fertility intentions at subsequent surveys. A woman who transitioned to being unsure whether her partner wanted to have more children with her had more than three times the odds of transitioning to being unsure herself. Associations with uncertainty and both pregnancy attitudes were also maintained. A woman who talked to a health care provider about her pregnancy intentions in between surveys was significantly less likely to be unsure about her pregnancy intentions. As in the random-effects model, all the associations were maintained when women who were trying to get pregnant were excluded.

Discussion

In response to the question that is the title of this paper, I found that being uncertain about future fertility intentions was a transitional stage for most of the women in this study. While more than one-third of respondents were uncertain whether they wanted to have children at least once over the 12-month period, only 9% were consistently uncertain. Women who were uncertain at baseline were equally likely to transition to wanting children in the future or wanting no (more) children six months later. Thus, while uncertainty is a transitional stage, it was not predictive of a particular trajectory.

Compared to young adult women, older women in this study were more likely to have uncertain fertility intentions as were women with one or more children compared to those with no children. These findings run counter to some prior studies (Patel et al., 2015; Bhrolchain & Beaujouan, 2015), and the fact that women who had been sterilized were excluded from the current study may account for some of these discrepancies. That is, prior studies included women who had been sterilized, and sterilized women also tend to be older and have more children. The average age of first birth in the United States is 27 (Finer & Philbin, 2014). It is likely that many young adult women and those with no children expected to have children in the future. One potential interpretation of the findings of this study is that, among women who are presumably fertile, those who are in their thirties or

already have children were more likely to be unsure whether they wanted to have (more) children relative to those in the early stages of their reproductive lives.

Relationship dynamics play an important role in fertility uncertainty. Most strikingly, women who were unsure whether their partner wanted to have (more) children with them were substantially more likely to be uncertain themselves. Most women make childbearing decisions within the context of their current romantic relationships (Dudgeon & Inhorn, 2004; Kraft et al., 2010), and this finding reiterates that partners' feelings and intentions inform and influence women's own fertility intentions.

It is also not surprising that pregnancy attitudes were consistently associated with fertility intentions as each can be regarded as affective (e.g., happiness) and cognitive (e.g. intentions) manifestations of latent pregnancy desires (Bachrach & Newcomer, 1999). Women who indicated that they would be happy if they found out they were pregnant were less likely to have uncertain fertility intentions. This association was robust and was maintained in both multivariable models and when women who were trying to get pregnant were excluded. These patterns reaffirm that having a happy reaction to finding out that one is pregnant is not limited to women who are actively trying to get pregnant. It is possible women who would be happy if they found out they were pregnant expect to have children in the (potentially near) future, and this, in turn, reduces fertility uncertainty.

It may at first seem counterintuitive that women who indicated it was important to avoid pregnancy at the current time were more likely to be unsure if they wanted to have more children, especially given that 60%-63% of women reported pregnancy avoidance at each survey. This association was also robust. This association corresponds with one other study which found that women who were not trying to get pregnant (and presumably wanted to avoid pregnancy) were as likely to express uncertain fertility intentions as were women who were ambivalent about getting pregnant (McQuillan et al., 2011). One potential explanation for these patterns is that some women may recognize that now is not a good time to get pregnant, and thus want to avoid it. But they may not know when would be a good time, or if there ever will be a good time, to get pregnant, and this outlook may manifest itself as uncertainty. This finding adds to recent research focusing on multidimensional measures of pregnancy ambivalence that take both pregnancy happiness and avoidance attitudes into account (Higgins, Popkin, & Santelli, 2012; Miller, Barber, & Gatny, 2013; Moreau, Hall, Trussell, & Barber, 2013; Yoo, Guzzo, & Hayford, 2014). Future studies using these data will pursue a similar strategy of multidimensional measures, providing further insights.

Women were less likely to be unsure if they wanted to have (more) children if they had discussed their childbearing intentions with a health care provider in the last six months. This association was also robust. It makes sense that discussing fertility intentions with someone who brings a professional perspective to the issue would result in a more concrete outlook. This finding provides support for initiatives such as One Key Question (Committee on Health Care for Underserved Women, 2016; Bellanca & Hunter, 2013) which encourage health care providers to initiate conversations about fertility intentions with all patients at every visit. Of course, this study did not determine whether these conversations were initiated by the health care professional or the respondent. Women who were unsure whether

they wanted to have (more) children may have been motivated to initiate these visits explicitly for the purpose of discussing these issues, for example, if they had health-related concerns about pregnancy or questions about their ability to get pregnant. Regardless of how these discussions are initiated, it is reassuring that about half of the sample reported that they had had such conversations over the course of the study.

This study has several shortcomings. Due, in part, to attrition, the data cannot be considered to be nationally representative. In particular, the women in the sample were more educated and in more stable relationships than women nationally. At the same time, this study obtained information from a national sample of 2,353 women at three points in time, and these patterns are likely applicable to many U.S. women. Recent interest in the topic of pregnancy and fertility uncertainty provided the motivation to focus on this outcome, but the comparison group was comprised of women who wanted to have children in the future as well as those who did not want to have any more children; this may be one reason some of the findings from the multivariate analyses were not intuitive. However, generating a multinomial logistic regression model using panel would have been inappropriate as the “changing” nature of the outcome and some of the independent variables would have made the associations even more difficult to interpret.

Implications for Policy and Practice

In sum, uncertainty about future fertility intentions is reported by a sizeable minority of adult women but appears to be a short-term outlook for most. This study only covered a 12-month time period, and it is likely that an even larger proportion of women, and perhaps even a majority, experience uncertainty about childbearing at some point over the reproductive life course. Health care providers should recognize that uncertainty about childbearing is not uncommon and that fertility intentions may change over a short period of time, including among those who initially indicated they wanted no (more) children. Clinical guidelines should be developed to help providers and patients determine the best course of action for periods of uncertainty. Finally, providers should recognize that discussing childbearing intentions with patients may help resolve uncertainty.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

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Appendix A

Data for this analysis comes from the Continuity and Change in Contraceptive Use (CCCU) study. The CCCU was administered four times between November 2012 and May 2014 to a

national sample of women ages 18–39 at baseline. Online administration was chosen because it is the most efficient way to collect information from large national samples (Kempf & Remington, 2007). The Guttmacher Institute subcontracted with GfK, an online recruitment company, to administer the survey using their KnowledgePanel, which is composed of approximately 50,000 individuals and is intended to be representative of the U.S. population. GfK uses address-based sampling to recruit panel members; if a household invited to participate lacks a computer or Internet access, GfK provides them free of charge. GfK obtains informed consent from all individuals, and expedited approval was obtained from the Institutional Review Board of the Guttmacher Institute.

The primary outcome of interest for the larger CCCU study was consistent contraceptive use among women at risk of unintended pregnancy, with the goal of obtaining a minimum of four episodes of use over an 18-month period (Jones et al., 2015). The current study only uses the first three waves of data because this allowed for a larger sample size while providing enough episodes for meaningful analyses. In order to best capture the experiences of women at risk of pregnancy, the baseline survey was restricted to women ages 18–39 who had ever had vaginal sex with a man, were not currently pregnant, had not had a tubal ligation, and who did not currently have a male sexual partner who had had a vasectomy. Over a three-week period in November and December of 2012, 11,365 women were invited to participate. Of those, 6,658 answered the four screening items, yielding a response rate of 59%; 4,647 of those were eligible to participate (e.g., responded “yes” to each of the four screening items), and 4,634 completed the full survey. Subsequent surveys were conducted six and 12 months later, with response rates of 69% and 75%, respectively; 2,398 women (52% of the original sample) completed all three surveys.

Of the 4,634 women who participated at baseline, slightly more than one-quarter were ages 18–24, 37% were ages 25–29 and 37% were age 30 and over (Appendix Table 1). Just under two-thirds were non-Hispanic white, and one in five were Hispanic. The majority of respondents either had some college (38%) or a college degree (41%); a slight majority (55%) had incomes greater than or equal to 200% of poverty. Nearly half were married (46%), one in five were cohabiting (21%) and 21% were in a dating relationship at baseline. Some groups—including Hispanic and poor women and those with a high school degree or less (at baseline)—had higher rates of attrition than others. Most attrition was due to respondents' failure to fill out the survey, but GfK estimates that approximately 10% of the loss in each survey was due to turnover, or the fact that individuals are dropped out of the KnowledgePanel after a specified amount of time. When turnover is taken into account, our rate of attrition between each survey was comparable to other national longitudinal studies (Vaughan & Scheuren, 2002; Wright, 2003). Nonetheless, loss to follow-up compromises the representativeness of the data.

The 2011–2013 National Survey of Family Growth (NSFG) is a nationally representative survey of women aged 15–44. Relative to the comparable NSFG population (e.g., women aged 18–39, sexually experienced, not sterilized and not currently pregnant), the baseline sample of the CCCU was slightly older (28.3 compared to 27.3 in the NSFG), substantially more educated (41% had college degrees compared to 27% in the NSFG), and also more like

likely to be married or cohabiting (67% compared to 50% in the NSFG) (data not shown). Thus, while the sample is national, it cannot be considered to be nationally representative.

Variables

The dependent variable is based on an item asked on all three surveys “Which of the following best describes your current plans regarding having another baby?” Response categories included: “I am trying to get pregnant now,” “I am not trying to get pregnant now but expect to try in the future,” “I don't want to have any (more) children” and “I'm not sure if I want to have a(nother) baby.” Women who indicated the last response were considered to be uncertain. At the follow up surveys, women were provided with the option of indicating “I am currently pregnant;” these respondents were excluded from relevant analyses.

The analyses include basic demographic characteristics of age, highest educational degree obtained, race and ethnicity and number of prior births (all as measured at baseline). Many women make decisions about childbearing and fertility in the context of their romantic relationships (Dudgeon & Inhorn, 2004; Kraft et al., 2010; Kusunoki & Upchurch, 2011; Sassler & Miller, 2014), and I include several measures intended to capture these dynamics. The measure of relationship status is time-varying and distinguishes between women who were married, cohabiting, in a dating relationship, or single at the time of the survey. Less than 2% of the sample was previously married and not dating at any point in time, and these respondents were categorized as “single.” At each survey all women who were not single were asked “How happy are you in your relationship with [partner]” and “How committed are you to your relationship with [partner].” Both items were answered according to a six-point scale (1-6), and women who answered “5” or “6” were considered to be committed and happy, respectively. Each group was compared to those who indicated 1-4 on each item. These two measures are strongly moderately correlated (.65, $p < .001$) as many individuals who were happy in their relationships were also committed to them, and vice versa. However, each measure of relationship was also assessing a different facet of relationship dynamics and each could have a distinct association with uncertainty about future childbearing. Thus, I examined them as separate measures as opposed to constructing a joint measure.

I also included an item asked at each survey assessing respondents' perceptions of partners' childbearing desire: “My partner wants to have (more) children with me.” Response categories included “strongly agree,” “somewhat agree,” “somewhat disagree,” “strongly disagree,” and “unsure/don't know.” Women who indicated either of the two “agree” responses were compared to women who indicated with either of the two “disagree” responses and to women who indicated “unsure/don't know.”

I included three measures of pregnancy experiences and attitudes (apart from number of births). Exposure to unintended pregnancy was based on an item asked at baseline: “Have you ever gotten pregnant when you were not planning or wanting to be pregnant (please include miscarriages and abortions in addition to births)?” This was included as this experience could influence women's certainty about having another child. Pregnancy attitudes are likely to be related to fertility intentions as both are tapping into different

dimensions of pregnancy desires (Bachrach & Newcomer, 1999). During each survey women were asked “How important is it to you to avoid becoming pregnant now?” and “How would you feel if you found out you were pregnant today?” Both items were answered according to a six-point scale (1-6), and women who answered “5” or “6” are considered to be motivated to avoid pregnancy or happy about a potential pregnancy. Women who were pregnant at either follow up survey were not asked these two items and were excluded from relevant analyses.

Two time-varying health-care related measures were included. At each survey women were asked whether they had been covered by health insurance for all of the last six months. Having a recent gap in health insurance coverage could represent reduced access to health care as well as social instability, both of which could be associated with uncertainty about having children. Additionally, discussions with health care providers about childbearing might reflect women's concerns about fertility and/or influence their future fertility expectations. Respondents who had made a visit for women's health care during the last six months (i.e., made a visit for a pap smear, for contraception or for other women's health care services including pregnancy-related care, STDs and breast or other exams) were asked if, during that visit, a health care provider had spent time talking to them about future plans for having (or not having) children. Respondents were categorized as having (1) made no visit for women's health care during the last six months, (2) made a visit but did not discuss fertility intentions and (3) had made a visit and discussed them.

Analytic strategy

The analyses were limited to the 2,353 women who answered the fertility intention item on all three surveys, providing a maximum of 7,059 observations. I first examined the distribution of baseline and time-varying independent variables. I next examined the extent to which fertility uncertainty (and other fertility intentions) changed over the 12-month time period, as well as the “trajectories” of change over time.

Analyses of time-varying characteristics included as many women as possible. For example, women who were not in a relationship at baseline, and thus not asked the relationship items, were subsequently included if they transitioned to being in a relationship six or 12 months later. I tested significance in fertility intentions over time using Rao-Scott corrected χ^2 tests in order to take into account the clustering of data within individuals (Rao & Scott, 1984).

I estimated two types of multivariate models where uncertainty about future childbearing was the outcome. Random-effects logistic regression models allowed for the examination of the subject-specific effects of the variables on uncertainty. The coefficients in these models are interpreted to show what happens to an individual woman when an independent variable increases or decreases in value while controlling for the fact that our dataset contained repeated measures from the same subjects (Allison, 2012). I also estimated a fixed-effects model using data only from women who transitioned into or out of being unsure about their future childbearing over the 12-month period. This model examined the effects of *changes* in the independent variables on *changes* in attitude. Fixed-effects models account for

unobserved heterogeneity because they control for all stable characteristics of individuals (e.g., age, race and ethnicity) (Allison, 2012).

Because women who were trying to get pregnant during any survey could be seen as distinctly different in their outlooks from other women, I also generated logistic regression models that excluded these individuals.

References

- Allison, PD. Longitudinal data analysis using Stata. Ardmore, PA: Statistical Horizons; 2012.
- Bachrach CA, Newcomer S. Intended pregnancies and unintended pregnancies: distinct categories or opposite ends of a continuum? *Family Planning Perspectives*. 1999; 31:252–253. [PubMed: 10723655]
- Bellanca HK, Hunter MS. One Key Question: Preventive reproductive health is part of high quality primary care. *Contraception*. 2013; 88:3–6. [PubMed: 23773527]
- Bhrolchain M, Beaujouan E. How real are reproductive goals? Uncertainty and the construction of fertility preferences. ESRC Centre for Population Change Working Paper. 2015; 73 [Accessed 28.09.16] http://eprints.soton.ac.uk/385269/1/2015_WP73_How_real_are_reproductive_goals.docx.pdf.
- Committee on Health Care for Underserved Women. Reproductive Life Planning to Reduce Unintended Pregnancy. Washington, DC: American College of Obstetricians and Gynecologists; 2016. Rep. No. ACOG Committee Opinion Number 654
- Dudgeon M, Inhorn M. Men's influences on women's reproductive health: medical anthropological perspectives. *Social Science and Medicine*. 2004; 59:1379–1395. [PubMed: 15246168]
- Finer LB, Philbin J. Trends in ages at key reproductive transitions in the United States, 1951–2010. *Women's Health Issues*. 2014; 24
- Foster DG, Biggs MA, Ralph LJ, Arons A, Brindis CD. Family planning and life planning reproductive intentions among individuals seeking reproductive health care. *Womens Health Issues*. 2008; 18:351–359. [PubMed: 18485738]
- Frost JJ, Darroch JE. Factors associated with contraceptive choice and inconsistent method use, United States, 2004. *Perspectives on Sexual and Reproductive Health*. 2008; 40:94–104. [PubMed: 18577142]
- Higgins JA, Popkin RA, Santelli JS. Pregnancy ambivalence and contraceptive use among young adults in the United States. *Perspectives on Sexual and Reproductive Health*. 2012; 44:236–243. [PubMed: 23231331]
- Jones RK, Lindberg LD, Higgins JA. Pull and pray or extra protection? Contraceptive strategies involving withdrawal among US adult women. *Contraception*. 2014; 90:416–420. [PubMed: 24909635]
- Jones RK, Tapales A, Lindberg LD, Frost J. Using longitudinal data to understand changes in consistent contraceptive use. *Perspectives on Sexual and Reproductive Health*. 2015; 47:131–139. [PubMed: 26287965]
- Kavanaugh ML, Schwarz EB. Prospective assessment of pregnancy intentions using a single- versus a multi-item measure. *Perspectives on Sexual and Reproductive Health*. 2009; 41:238–243. [PubMed: 20444179]
- Kempf AM, Remington PL. New challenges for telephone survey research in the twenty-first century. *Annual Review of Public Health*. 2007; 28:113–126.
- Kraft JM, Harvey SM, Hatfield-Timajchy K, Beckman L, Farr SL, Jamieson DJ, et al. Pregnancy motivations and contraceptive use: hers, his, or theirs? *Womens Health Issues*. 2010; 20:234–241. [PubMed: 20620912]
- Kusunoki Y, Upchurch DM. Contraceptive method choice among youth in the United States: the importance of relationship context. *Demography*. 2011; 48:1451–1472. [PubMed: 21887582]

- McQuillan J, Greil AL, Shreffler KM. Pregnancy intentions among women who do not try: focusing on women who are okay either way. *Maternal and Child Health Journal*. 2011; 15:178–187. [PubMed: 20449643]
- Miller WB, Barber JS, Gatny HH. The effects of ambivalent fertility desires on pregnancy risk in young women in the USA. *Population Studies*. 2013; 67:25–38. [PubMed: 23234316]
- Moreau C, Hall K, Trussell J, Barber JS. Effect of prospectively measured pregnancy intentions on the consistency of contraceptive use among young women in Michigan. *Human Reproduction*. 2013; 28:642–650. [PubMed: 23241838]
- Morgan SP. Parity-specific fertility intentions and uncertainty: the United States, 1970 to 1976. *Demography*. 1982; 19:315–334. [PubMed: 7117630]
- Patel PR, Laz TH, Berenson AB. Patient characteristics associated with pregnancy ambivalence. *Journal of Women's Health*. 2015; 24:37–41.
- Rao JNK, Scott AJ. On chi-squared tests for multiway contingent tables with cell proportions estimated from survey data. *The Annals of Statistics*. 1984; 12:46–60.
- Sassler S, Miller AJ. “We’re very careful...”: the fertility desires and contraceptive behaviors of cohabiting couples. *Family Relations*. 2014; 63:538–553.
- Shreffler KM, Greil AL, Mitchell KS, McQuillan J. Variation in pregnancy intendedness across US women's pregnancies. *Maternal and Child Health Journal*. 2015; 19:932–938. [PubMed: 25260541]
- Vaughan, D., Scheuren, F. Longitudinal Attrition in Survey of Income and Program Participation (SIPP) and Survey of Program Dynamics (SPD). Washington, DC: U. S. Department of Commerce Bureau Of The Census; 2002. Rep. No. 242
- Wright, D. National Survey of Families and Households (P9238) Wave 3 Field Report. Madison, WI: University of Wisconsin; 2003.
- Yoo SH, Guzzo KB, Hayford SR. Understanding the complexity of ambivalence toward pregnancy: Does it predict inconsistent use of contraception? *Biodemography and Social Biology*. 2014; 60:49–66. [PubMed: 24784987]
- Zabin LS. Ambivalent feelings about parenthood may lead to inconsistent contraceptive use—and pregnancy. *Family Planning Perspectives*. 1999; 31:250–251. [PubMed: 10723653]

Table 1
Distribution of independent variables at each survey and frequency of each at any and all surveys

	Survey period			
	Baseline	6 Months	12 Months	All 3 Surveys
Number of respondents	2,353	2,353	2,353	
Demographic characteristics (baseline)				
Age group				
18-24	25.9	na	na	na
25-29	34.6	na	na	na
30-34	21.6	na	na	na
35-39	18.0	na	na	na
Education				
< High school	4.3	na	na	na
High School	12.6	na	na	na
Some college	35.5	na	na	na
College graduate	47.6	na	na	na
Race/ethnicity				
White	67.7	na	na	na
Black	8.3	na	na	na
Other	8.6	na	na	na
Hispanic	15.3	na	na	na
Number births				
0	54.2	na	na	na
1	19.9	na	na	na
2	16.2	na	na	na
3+	9.7	na	na	na
Relationship dynamics (time-varying)				
Union status				
Married	47.3	47.9	49.9	51.6
Cohabiting	19.4	19.0	17.8	25.5
Dating	21.4	19.8	19.3	31.2
				45.4
				12.2
				10.2

Jones

	Survey period				Any Survey	All 3 Surveys
	Baseline	6 Months	12 Months	13.1		
Not in a relationship	11.9	13.3	13.1	19.6	6.4	
Committed to relationship						
Yes	79.2	77.5	78.2	87.3	67.7	
No	20.8	22.5	21.8	16.6	1.7	
Happy with relationship						
Yes	70.2	68.6	69.6	82.4	55.1	
No	29.8	31.4	30.4	30.0	6.2	
Perceives partner wants kids with her						
Agree	56.1	47.9	46.0	66.6	31.8	
Disagree	22.5	23.9	24.4	36.1	12.7	
Unsure	9.4	9.9	10.2	21.6	1.2	
Not asked (preg or no partner)	12.1	18.4	19.4	29.5	6.4	
Pregnancy experiences and attitudes (time-varying unless otherwise indicated)						
Ever had unintended pregnancy (baseline)						
Yes	29.1	na	na	na	na	
No	70.9	na	na	na	na	

Table 2
Fertility intentions among women aged 18-39 (baseline) over a 12-month period

	Baseline	6 Months	12 Months	p	Any Survey	All 3 Surveys
Unsure	26.0	21.6	22.1	***	39.4	9.1
Expect to try in the future	49.2	44.5	41.2	***	60.0	30.3
Not want (more) children	17.0	21.0	22.7	***	29.1	12.0
Trying to become pregnant	7.8	7.8	7.7		14.6	2.9
Currently pregnant	0.0	5.1	6.2	***	10.2	0.0
N	2,353	2,353	2,353		2,353	2,353

* p<.05;

** p<.01;

*** p<.001

Table 3

Fertility intention at baseline compared to 6 and 12 months later

		6 months				12 months				6 & 12 months				Different Response at each survey				
		Expect to try in the future		Not want (more) children		Trying		Pregnant		Expect to try in the future		Not want (more) children			Trying		Pregnant at 6 or 12 months	
Number respondents		Uncertain		Uncertain		Uncertain		Uncertain		Uncertain		Uncertain			Uncertain		Uncertain	
Baseline																		
Uncertain		612	54.7	19.3	22.9	1.0	2.1	49.7	17.8	26.8	2.5	3.3	35.0	8.8	14.9	0.2	4.7	21.7
Expect to try in the future		1157	9.0	76.8	2.5	6.1	5.5	11.0	69.8	3.4	7.4	8.6	3.9	61.6	0.6	1.9	10.8	15.6
Not want (more) children		400	14.8	4.0	80.3	0.8	0.3	15.0	2.3	80.3	0.8	1.8	6.5	0.8	70.5	0.0	2.0	13.0
Trying to become pregnant		184	6.0	12.5	2.2	56.0	23.4	15.8	23.9	5.4	42.9	12.0	2.7	4.3	1.6	36.4	26.6	31.4

Random-effects logistic regression models examining characteristics associated with uncertain fertility intentions over a 12-month period

Table 4

	Basic Model				Full Model			
	Full sample		“Trying” excluded ¹		Full sample		“Trying” excluded ¹	
	Odds ratios	p	Odds ratios	p	Odds ratios	p	Odds ratios	p
Age group								
18-24	1.00		1.00		1.00		1.00	
25-29	1.59	*	1.65	**	1.74	**	1.76	*
30-34	3.37	***	4.03	***	4.37	***	5.18	***
35-39	3.40	***	3.80	***	3.81	***	4.29	***
Education								
< High school	1.00		1.00		1.00		1.00	
High school graduate	1.51		1.45		2.07		2.15	
Some college	1.86		1.67		2.26	*	2.26	
College graduate	1.71		1.47		2.26		2.20	
Race/ethnicity								
White	1.00		1.00		1.00		1.00	
Black	0.77		0.83		0.67		0.70	
Other	0.63		0.61	*	0.47	**	0.46	**
Hispanic	0.84		0.87		0.79		0.80	
Number births								
0	1.00		1.00		1.00		1.00	
1	2.15	***	2.14	***	2.45	***	2.35	***
2	3.26	***	2.65	***	3.30	***	2.79	***
3+	2.15	**	1.65	**	2.07	*	1.64	
Union status (time varying)								
Married	1.00		1.00		1.00		1.00	
Cohabiting	1.67	**	1.47	*	1.13		1.05	
Dating	2.41	***	1.93	***	1.05		0.95	
Not in a relationship	2.93	***	2.23	***	na		na	

	Basic Model			Full Model		
	Full sample	“Trying” excluded ¹		Full sample	“Trying” excluded ¹	
	Odds ratios	p	Odds ratios	Odds ratios	p	Odds ratios
Relationship dynamics						
Neutral or not happy with relationship	--		--	1.00		1.00
Happy with relationship	--		--	0.67	***	0.67 *
Neutral or not committed to relationship	--		--	1.00		1.00
Committed to relationship	--		--	0.76		0.72
Respondent perceived partner wants kids with her						
Agree	--		--	1.00		1.00
Disagree	--		--	1.12		0.98
Unsure	--		--	5.27	***	5.05 ***
Pregnancy experiences and attitudes						
Never had unplanned pregnancy	--		--	1.00		1.00
Ever had unplanned pregnancy	--		--	1.42		1.50 *
Neutral or not important to avoid pregnancy	--		--	1.00		1.00
Important to avoid pregnancy right now	--		--	1.67	***	1.36 *
Neutral or unhappy to be pregnant right now	--		--	1.00		1.00
Happy if pregnant right now	--		--	0.41	***	0.55 ***
Health care issues						
No gap in health insurance in last 6 months	--		--	1.00		1.00
Gap in health insurance in last 6 months	--		--	1.15		1.17
Discussed pregnancy intentions with health care professional in last 6 months						
No visits for women's health care	--		--	1.00		1.00
Visit but no discussion	--		--	0.94		0.91
Discussed intentions	--		--	0.65	**	0.69 **
Wave						
1	1.00		1.00	1.00		1.00
2	0.65	***	0.62	0.65	***	0.62 ***
3	0.69	***	0.65	0.72	**	0.68 **

Table 5
Fixed-effects logistic regression models examining associations with changes in uncertain fertility intentions

	Full analytic sample		“Trying” excluded ^I	
	odds ratios	p	odds ratios	p
Neutral or not happy with relationship	1.00		1.00	
Happy with relationship	0.80	**	0.81	**
Agrees or disagrees partner wants kids with her	1.00		1.00	
Unsure if partner wants to have kids with her	3.30	***	3.42	***
Neutral or not important to avoid pregnancy	1.00		1.00	
Important to avoid pregnancy right now	1.81	**	1.62	*
Neutral or unhappy to be pregnant right now	1.00		1.00	
Happy if pregnant right now	0.48	***	0.54	**
Did not talk to provider about pregnancy intentions	1.00		1.00	
Talked to provider about pregnancy intentions	0.68	**	0.73	*
Wave				
1				
2	0.63	***	0.58	***
3	0.67	***	0.61	***
Number of observations	1,542		1,425	
Number of respondents	544		407	

*
p<.05;

**
p<.01;

p<.001

^I
Women who were trying to get pregnant are excluded