Exploring the Gap Between Achieved and Desired Fertility in the United States

Nadia Diamond-Smith and Nan Astone

Abstract

Much of the literature on pregnancy intention has focused on unintended pregnancy and less attention has been given to people who underachieve their fertility goals, despite achieved fertility being lower than fertility desires in much of the developed world. Using qualitative interviews with 147 parents in California, we explore three hypotheses for why this gap exists between achieve and desired fertility. Although some parents achieved their desired family size or did not have a "plan", the majority of respondents did not achieve their fertility goals. Delays in union formation, union instability, and infertility were the most common themes brought up by respondents as to why they underachieved their fertility intentions. The impact of experiences childbearing, work family conflict, and financial burden were less important factors. These findings suggest that delays and uncertainty about unions and fertility are driving factors in lower than desired fertility in the US.

Introduction

Fertility levels in the developed world are now at or below replacement level. Although most people in low-fertility countries people say that they want to have two or three children (Bongaarts, 2001), fertility remains below replacement level, indicating that people are unable to reach their desired fertility. While much literature has focused on unwanted fertility (people having more than their stated desired number of children), less attention has been paid to people who have lower than desired fertility.

There have been analyses of how intentions translate into achieved fertility, and what characteristics (race, age, educational status, etc.) differentiate underachievers, those who achieve what they intend, and overachievers (Hayford, 2009; Mogan and Rackin, 2010). These studies have found that underachievers are most often more highly educated, marry at later ages or do not marry, and begin childbearing at later ages. There is little insight, however, into the actual process through which an individual's desires change, or how life course factors inhibit the behaviors that would lead to the realization of fertility goals. Using data from qualitative interviews with parents in a relatively well-educated and high-income part of the United States, we explore how people's fertility intentions change over time, and what influences their decision-making and behaviors.

The first step in understanding the correlation between fertility intentions and outcome is to understand intentions themselves. Bongaarts (2001) developed a model for the relationship between intended and achieved fertility that takes intervening and unpredictable life factors into account. In his model, intended parity is interacted with fecundity impairments, unwanted births, marriage/partnership attainment, and other opportunity costs (to career, life goals, etc.) with the result being final, achieved parity. Clearly, many of these factors would be hard for a young person to predict early in life, thereby making stated fertility intentions a potentially very tenuous measure. For example, few people predict that their marriages will fail or that they will experience infertility, despite the fact that 50% of marriages in the US end in divorce (Stevenson & Wolfers, 2007), and infertility is common in older women (Stephen & Chandra, 2006).

Higher educational attainment has been long associated with lower fertility (Dye 2005), and is thought to act on fertility primarily by increasing the opportunity costs of childbearing and childrearing for women. The mechanism rests on the classic idea of a work-family conflict (women who work in higher level careers are unable to have as many children and balance family and work). Hayford (2010), however, suggested that much of this could be due to postponement of childbearing alone (in the developed world), rather than the impact of education in itself (Hayford, 2010). Hayford's (2010) finding of the small impact of education and work, and importance of martial status on lower than desired fertility, support past findings (Schoen et al. 1999). Non-marriage and delayed marriage both are strongly related to people having fewer than their desired number of children (Hayford, 2010). Morgan and Rackin also highlighted the importance of the timing of marriage and timing of the first birth on realization of fertility desires

(Morgan and Rackin, 2009). Their model showed that divorce was also strongly related to fertility underachievement.

Women in both the developed and developing world are aware of life's uncertainties and the fact that these restrict their ability to accurately predict their future behavior (Zabin, 1999; Johnson-Hanks, 2005). As with other types of prediction (Ariely and Zakay, 2001), women are better predictors of their future fertility in shorter time periods (a few years from now, as compared to 20 years from now). We do not yet understand fully how fertility desires, awareness of life's uncertainty, and lower than desired fertility (as an outcome) intertwine throughout life, and ultimately how women understand and interpret their life experience when their fertility intentions are not realized. The qualitative data presented in this paper explore how (and if) people's fertility desires and plans changed over time, and what factors influenced these changes. By understanding the experience of women and men who underachieve their fertility, we can better understand the fertility decision making process as a whole, and potentially gain insight into what to expect in terms of personal experience as fertility continues to fall around the globe.

This research explores three of the main sets of theories about why achieved fertility is lower than desired fertility in the developed world. The first hypothesis is:

> *People revise their fertility desires after they begin experiencing childbearing*

This hypothesis is based in the sequential model of fertility decision-making (Udry 1983). People have one child and decide that they cannot manage as many more as they previously intended because their intention was based on an underestimate of the resources (financial and other) that children require. Conversely, they may find childrearing more fulfilling than they expected and decide to have more than they intended. Evidence for this hypothesis would include people discussing the difficulties or surprising pleasures of childbearing, unexpected costs or burden, or other unforeseen factors associated with childbearing that impacted their desired family size.

The second hypothesis, which is in some ways a special case of the first, is:

> *People revise their fertility intentions because the conflict between childrearing and maternal work is more difficult than they anticipate*

As women enter the work force (and most women in developed countries today are in the work force), they will have to balance work and family, and desired family size will fall in order for work/career to increase. This can be seen as part of the sequential model, in that women who work may think they can manage to have a larger number of children, and once they begin trying to balance work and childbearing, they realize that they must reduce their desired fertility.

The final hypothesis as clarified by Hayford (2010), but previously suggested by Schoen and his colleagues (1999) is:

The work-family conflict is of less importance than the delay of marriage, infertility, or inability to find a partner with which to bear children

Delays in finding the desired partner marriage and/or childbearing pushes women into later ages, where fertility begins to fall, making it harder to achieve desired fertility. Again, the importance of marriage delays can be seen as a piece of the sequential model, as women may initially think they will get married or find a partner early enough to have a larger number of children than they actually can have if they experience a delay in timing to partnership formation.

Through qualitative interviews, this research explores which of these factors play the largest role in the how fertility desires change over the life course, and how desired and achieved fertility differ, and in which direction. It builds upon quantitative models and cross sectional data finding that women in industrialized countries have lower than desired fertility, and seeks to explain the causes of this growing phenomenon.

Methods:

Participants were recruited through two parenting listserves in the San Francisco Bay Area, California. Qualitative interviews have been successful in gathering information about people's fertility decision-making process in pervious studies (Fischer, 2000). Past research has found that qualitative data collected via online surveys yields similar results to face-to-face interviews (Schol1, Mulders & Drent, 2002). The Berkeley Parents Network's has roughly 26,000 members who live in the Bay Area and have children, however, the website is not associated with the University of California, Berkeley. The Stanford Parents Network has about 1,000 members and is associated with Stanford University. Respondents were also asked to pass along the survey to other people they knew with children. Requests for participants were posted once on the Stanford Parents Network, and twice (at a two week interval) on the Berkeley Parents Network. Data was collected from April-May 2010. The only requirement for participation was having children.

The online survey received human subjects approval from the University of California, Berkeley. Respondents gave consent on the online form and the survey was anonymous. It was comprised of ten questions: six open-ended and four basic demographic questions. Three of the open-ended questions asked respondents to describe their decision making process about number of children, spacing between children, and timing of children. Two of the questions specifically asked about how the cost of children or finances in general played into their decision-making, and how much they thought a child cost. The final open-ended question allowed respondents to share any other thoughts about their family decision making process. Data was analyzed using the qualitative data analysis software Atlas Ti version 5.2, and codes focused on teasing out subtleties in decision-making process and how that process changed over time.

Results:

One hundred and forty seven people responded to the online survey. Respondents were primarily between the ages of 30-44 (70%), with no respondents under 25 (Table 1). Roughly half of respondents earned between $50,000-150,000 a year, with almost half earning over $150,000 a year. Only 4% of respondents earned under $50,000. Forty-two percent of respondents had only one child, and 44% had two children. As not all respondents had finished childbearing, this is not reflective of lifetime fertility. Our sample was overwhelmingly female (93%). Two respondents were in same-sex partnerships.

Respondents broadly fell into three groups when it came to the decision about number of children. The "Successful Planners", those who claimed to have made a decision about the number and timing of desired children before beginning childbearing, and had easily achieved this desire. The second group was the "Non-Planners", those who claimed to have not made a decision about the number and timing of desired children at all. And finally (the largest group), the "Unsuccessful Planners", those who made a plan, but found that life turned out differently than expected and they either changed their mind or could not control their family size for some other reason.

1. Successful Planners

Thirty-five respondents claimed that they made a plan about the number of children to have, and that they were able to achieve it without problem. Most of these respondents gave short answers, such as the following response to the question of how many children they planned to have and how this decision changed or did not change over time:

> Two- we planned two and we have two(48)

Some of these respondents had not completed childbearing and therefore had a stated "plan", that they assessed themselves to be on track to complete.

2. Non-Planners

Thirty-two respondents claimed to have not made a conscious, planned decision about the number of children to have.

> I may sound like a broken record. We really did not plan on having a certain number of children and so our experience did not involve much decision-making. (56)
>
> The phrasing of your question implies this is something decided upon in a meeting, in a kind of official way. I don't feel this is how our family works. We are still in fact deciding actively about the size of our family. It is not a decision but a series of decisions. (80)

Therefore, for these respondents, having children was something that was instead allowed to happen in an unplanned way.

> No plan for a specific age… we were not even sure if we were ready, but became more and more lax in preventing it and more and more conversations and daydreaming about one day having kids were taking place and then all of a sudden I was pregnant. (28)

> As the weeks passed and we were not being "careful", I informed him that if he were done [having children] then he would need to take the measures to insure we didn't get pregnant. And if he were unwilling to be proactive in that regard then we would not be having intercourse because I didn't want to end up getting pregnant and have him pissed at me. He looked at me very hurt and said, "How on Earth could I ever be pissed about a baby?" So we continued on in this "not trying but not preventing" way of life. (43)

3. Unsuccessful planners

The majority of respondents (80) fell into the third grouping—those who made a plan, or a tentative plan, but found that life did not work out at all as expected, and that their plan changed. Five main themes of unanticipated factors surfaced revolving around partnership, biological fertility, childbearing/rearing experience, health and finance. The first two themes were most prevalent, and relate most closely to hypothesis 3. The last three themes were less frequently discussed, and relate more to hypotheses 1 and 2.

Partnership

The main themes of uncertainty that emerged around partnership revolved around ability to and timing of finding a partner, difference of opinion about number of kids (which can change over time) and the long-term stability of that partnership.

Many respondents said that they always assumed that they would meet someone at a specific time (mostly before 30) and start having children soon after (either by 30, or around 30). In actuality, many respondents did not find their partner until later in life than planned, which subsequently pushed back when they started to have children, and in many cases limited the total number of children they could have.

> Well, growing up, I ideally thought I would get married around age 25 or so, have a kid by 30. Hah. Got married at 33, had first child ~35, and am pregnant with #2. Moving up the schedule between marriage and pregnancy because of my and my husband's age for the most part. (82)

Respondents who found themselves married at a later age than they had originally "planned", found themselves also having to balance between the need to start trying to have children soon (before they began experiencing infertility issues), and making sure their marriages were solid before beginning a new challenge in childbearing.

> I thought I would have children in my early 30s. But I didn't meet my husband until I was 37, so that window passed me by. My husband and I played the hand we were dealt! We knew we couldn't wait. My husband wanted me to be pregnant coming down the aisle. I really felt we should be married for a year first. I won. But

> in retrospect, given my age, this was risky. (123)
>
> We married late (35) and it took time for my physical health and our marriage to stabilize. However, we did not purposefully delay pregnancy, it just happened to take four years or so. (74)

Another common thread was respondents finding a partner, but their partner not being ready to have kids at the same time that they wanted to, which again, in many cases pushed back the timing of onset of childbearing, thereby reducing the total possible number of kids.

> Also, my spouse played a significant role in when we would have kids. I told him early on in our relationship that I always wanted kids, but he wasn't so sure and it took several years until he agreed that he was willing to be a father as well. (31)
>
> I guess I always thought that I would have children earlier than I did because I've always loved children and cannot remember a time when I didn't think about being a mom. However my husband wasn't ready to have children as soon as I was, so we weren't ready. So I guess I thought I'd have kids by the time I was in my early 30's but didn't actually have my first until I was almost 36. (126)

Many respondents discussed differences of opinion between spouses about number of desired children. These debates between partners can act to push back having children, or having a second or third child, or they can lead to general indecision which results in lack of planning.

> I would want to have more than two, because I love children and I love the idea of a big family, but my husband insists we stop at two. He's an ecologist and he's all about zero population growth, and being aware of our resources. Now I'm older too, having focused on my career in my 20s and 30s, so I may have missed my chance for having more than two anyway. We've had one--he's two years old now--and I secretly hope that for the second pregnancy, I have multiples so I can have more than two children. I wouldn't trick my husband or anything, but it's the only way that we'd get more than two children.(115)

Another main theme in relationships was the unpredictability of union stability over time. Marriages that experienced marital problems often postponed having a child (or a second or third child), or stopped childbearing before desired size was reached.

> Our "decision" changed over time due to tensions in the marriage, some of them related to the pressures and changes of having kids. My husband at some point decided that he didn't want two kids after all (and wasn't, apparently, sure that he wanted to be married either). (18)
>
> We had hoped for 3 but our marriage was in a very weak spot when I was 40 years old (I am the mom) when it was time for the 3rd. Since then, (5 years later) our marriage has regained it's

> strength and we still have 2 healthy children and still feel blessed (23)

Some respondents also felt limited in their family size due to divorces and thereby later age of childbearing union formation. Respondents who had an earlier marriage that ended in divorce found themselves having to start again, to find second partner, form a stable union, and then begin childbearing at later age, which ultimately could limit the final total number of children.

> I intended to have children when I was in my early 30s. However, my first marriage broke up at about that time--in part because I realized I wasn't sure I wanted little duplicates of my first husband; in retrospect I realize that wouldn't have prevented me from loving my kids, which is what I feared, but it did indicate that I wasn't really in a solid marriage, and I was a bit too young and immature to really understand whether we could have worked it out, and I was afraid of having kids while going through a divorce. (18)

Biological Fertility/Infertility

The main themes that emerged around fertility revolved around difficulty conceiving, miscarriage, and infertility. Many respondents reported having trouble becoming pregnant, which they had not anticipated being a problem, and which ultimately changed (delayed or seriously altered) any plans that they had regarding childbearing. All respondents in the study had children, so these findings do not capture people who wanted to have children and were unable to have any.

> We did not have the fortune to "plan" anything but our initial agreement to get pregnant, because it took so long.(53)

For some respondents, difficulty conceiving did not affect the final total number of children, just the timing:

> Our decision was changed by my inability to get pregnant as planned. Our children were four years apart but we still achieved the same goal. (104)

Many respondents discussed their struggles with infertility-- how it regulated the number of children they had, and how surprising the fact that they were faced with infertility was to them.

> We have 1 - this was not an active decision but a result of biology.(110)

Respondents and their partners responded in different ways to struggles with fertility. Some tried to naturally conceive, and if that did not work, let their family size be moderated by that:

> After the birth of our daughter, we had an active sex life and never used birth control, hoping to conceive again. It just never happened. (53)

Others sought out fertility treatments (In-vitro fertilization (IVF), etc.), with the goal to achieve their desired size.

> After marrying my husband, we waited about a year and a half and then decided to start trying to have children. After about six months, we had not had any luck and so began speaking with fertility doctors. As we were already a bit older than I had perhaps originally envisioned, we were anxious to begin our family. As it turned out, my children were born just before my 35th birthday. I might have chosen to have them slightly earlier in my life (but not much) - but that wasn't the way things played out. (85)

> None of my doctor's told me how much fertility dropped at 35 and each successive year. By the time we began (36/37) I was already having miscarriages. We went through IVF etc. and ended up with donor egg - sister 10 years younger...Our 20s and 30s were spent putting it off; I definitely wanted kids my husband was unconvinced back then.(63)

Even those who were interested in using fertility treatments to try to have their desired number of children, often found themselves still limited in unpredicted ways by the cost of IVF. One respondent estimated that they spent $100,000 on having their child through IVF.

> We had to rely on IVF to have more children and we had twins. The cost is too substantial to try again so our family is complete for now. We do have hopes of adopting in the future!(103)

Interestingly, although the long term monetary costs of children did not overwhelmingly seem to factor into having kids when the upfront cost of making children were negligible, when couples had to spend money to conceive (fertility treatments), they found themselves making more of a cost-benefit analysis.

> We currently have one child and have experienced five years of secondary infertility. We would still like to have one or two more children but do not know if we will be able to do so biologically. We may consider further fertility treatments or adoption. Both options are expensive, my husband was laid off from his high paying job, and until he gets another one we do not have the financial resources to pursue either option.(13)

Some respondents were able to anticipate the possibility of infertility, and therefore made, or were forced to make, decisions with this in mind.

> We had a little saved up but he was nervous that we didn’t have enough saved. The final discussion went like this:
> Him: We need more money saved. Let wait another year or two.
> Me: If we wait any longer, it will be an IVF fund. (115)

Many respondents also found themselves experiencing miscarriages or other types of pregnancy loss, which either pushed back the childbearing timing, leading to greater risk of infertility later, or which actively made them not want to have more babies.

> We had planned on having three children, a decision and a wish seen by both of us...Our decision changed as I had a tendency not to carry to full term and as our second son was born after six and one half months and was fine, we decided not to test the fates.(104)

> There was a surprise pregnancy (which ended in miscarriage) about two and a half years later. My husband was relieved. I was sad. He was sad, too, but more relieved. A few months passed and I asked again if we could have one more. I am really not sure why, other than he loves kids and having babies, but he agreed. We were pregnant within a month. Sadly, that pregnancy turned out to be ectopic and I needed emergency surgery during which the tube ruptured. This completely freaked my husband out. The fear of losing me was more than he ever wanted to even think about. He again declared he was done.(43)

Parent's Mental and Physical Health

The main themes that emerged around health were postpartum depression, child death and multiple births. Postpartum depression was another unpredictable experience that was brought up by many respondents as a factor is either delaying childbirth, or stopping all together.

> Thought when I was in my 20's that I would have 3-4 kids; after experiencing postpartum depression, the cost of raising kids, and our small house, decided 2 is plenty. (31)

Other unforeseeable health outcomes (of both parents) impacted future childbearing, both by postponing childbearing, or stopping all together.

> The decision changed when we had our first child. I had become pregnant with one long-term health problem (epilepsy, for which I required medication); by the end of my first child's first year of life, I had been diagnosed with a second (diabetes), and I felt the risk of having a child with health problems when I was near forty and was not healthy had increased to an intolerable rate.(8)

Respondents also discussed the various unpredictable outcomes of children themselves. For example, a pregnancy can result in multiple births, which can either alter or solidify any preexisting desires.

> I planned for two children - probably because my husband and I both were one of two children, and ultimately, because I had trouble conceiving and so when I had twins, without re-visiting fertility treatments that's where we naturally ended up.(85)

Child-rearing experience

For some respondents and their partners, childrearing itself brought many unexpected challenges, and was more difficult than expected. The initial shock of having children was so strong for some respondents that they and their partners decided to delay continuing childbearing for more years than originally anticipated.

> It took us a while to recover from the shock of having a kid. Our son was a demanding baby and we also moved countries with him immediately after his birth, so this was a very exhausting time. After we did feel we could handle another child, I miscarried, and so the space between our kids is not the result on any real planning. (80)

For other respondents, their decision to have a certain number of children was based at least partially on how challenging they found childbearing.

> My husband ended up having his vasectomy reversed and we had our first son together 16 months later. When he was a year old we talked about having another. We were in agreement. Eighteen months after that our first daughter was born. I was overwhelmed and felt like I was done. "Why on Earth do people do this?" I remember asking out loud. When she was 8 months old I told my husband I was so done and he needed to have another vasectomy. He did.(43)

In some unions, as exemplified by the quote above, both partners were able to come to the decision to reduce desired family size together, through discussion and mutual decision-making. For others, the process through which the challenges of child rearing influenced final outcome relied less on decision-making and lead to conflict.

> Lack of interest on my husband's part made me less interested in actively pursuing or supporting a pregnancy, and two miscarriages later I found out that he wasn't interested in another kid.(19)

Potential, or realized, conflict with their partner due to the stressed of childbearing, lead some respondents to alter their desired family size.

> I had miserable post partum depression and my husband experienced those first 9-12 months as hellish, so he doesn’t want to do that again. Incidentally, when asked what made it miserable, the key factors in order of importance were (1) no sex, (2) wife was bitchy, (3) kid was colicy and required more attention than he was expecting.(139)

Finances

Two main themes about how the cost of children influenced decision-making were brought up by respondents. The first revolved around how unexpectedly expensive children were, and respondents only realized this after having one or two children.

> We didn't make an initial calculation...but now that we have one child (and we're frugal-- we bought many things used, didn't go crazy) we're thinking very hard about whether another is feasible. Right now, it isn't. (135)

> We never thought about the expense for the first child since we had saved money and innocently thought that a child would be just an added expense in the budget. We had no idea what raising a child really meant financially. It was definitely another reason that we stopped at 2 kids. The biggest understanding that changes over time is that children never stop being part of the family budget no matter how old they become. (54)

Other respondents discussed finances changing over time, for example because of losing a job, or the economic downturn. Such changes are unpredictable, and can change in any direction at any time, thereby making planning around such changes difficult. For some, financial uncertainties lead to postponement of childbearing, although for others it lead to stopping earlier than initially planned.

> Financial concerns are the overriding consideration for both when and how many children we (will) have. We had our first child when our financial situation was much better than it is today. However, as a grad student with the promise of a well paying career at completion, we feel confident that we will be able to afford another child soon. However, it did postpone the spacing of the planned siblings.(39)

The recent economic downturn has affected some respondents lifestyle, or made decision-making about number of children to have more complicated, however, it does not seem to have led any respondents to reduced desired number of children.

> Yes. I wanted to make sure that we could afford to give our children what they needed as well and be able to financially provide them with such things as College funds, summer vacations in fun places and to be able to live instead of just existing from paycheck to paycheck. Now unfortunately I have learned that no amount of planning can stop an economic downturn. I have also learned that my kids don't expect to go on expensive places and are just as happy going to the park or camping. We are still working but just for less money.(26)

> I wanted to get to a certain point in my career. I job-hopped a lot early in my career to help me figure out how the world worked. I'd been at my current job, a start up, for 3 years, the market was tanking, company's future uncertain, but we decided to go forward anyway.(145)

Changes in current employment, or difficulties finding employment also affected childbearing. As with the economic downturn, these unexpected difficulties in career stability do not seem to be leading to people stopping childbearing altogether, but rather are leading to delays in timing or spacing of children.

> We planned our first child, and are planning our second one… We have had to put off our second child, however, do to my husbands reduced employment and with me still being in the midst of graduate school. (39)

> I've been home with him (first child) for the last year, and have been looking for a job. If I don't get a job soon, I will have to delay a second child - we can't afford another one on just my husband's salary. Also, depending on the job I get, I may need to wait a while before getting pregnant so I can be in a good place when I go on leave - wouldn't want to get pregnant immediately...So it is pretty complicated at the moment. When we had our first we (my husband and I) assumed I would get a job fairly easily when he was 3-6 months old. He is almost 1 year, and I am still looking for a job, which is making things a little stressful. We are stretched thin. So we definitely can't afford another one until I get a job, gain some experience, and save up some money. (130)

Influences on decision-making:

As described above, many of the factors that ended up influencing decision-making were not anticipated. When asked what did influence their initial decision-making about number of children, about half of respondents (68) stated that this decision was based on, or strongly influenced by, the number of siblings that they or their partners (or both) had while growing up. Many of the quotes above illustrate the importance of personal sibling experience. The next most commonly cited influence in decision-making was concern over the environment, replacement level fertility, or larger social responsibility in general (42 respondents). A general aversion or concern about having only children, or belief in the importance of siblings, was the third most commonly cited factor influencing decision-making (22 respondents).

> My sister and my husband's brother both have one child, and we are seeing how spoiled they are turning out - a major issue with single-child families I think.(130)

> I'm from a family of two kids and I didn't think it would bother me, the idea of my child not having a sibling. But it does. I like knowing my sister is out there in the world, that there's someone who experienced all the same things I did...We were both shocked at how much we loved being parents and didn't anticipate being sad about maybe only having one child.(135)

Discussion:

The Planners were limited in number, and did not for the most part discuss in great detail their decision making process. Of greater interest are the second two groups— the Non-Planners, who looked at life's variability and decided not to make a plan, and the Unsuccessful Planners, who attempted to make a plan, and then found this plan altered in unforeseen ways.

The Non-Planners, though not as large a group as the Unsuccessful Planners, are important to understand. Morgan (1982) explored the meaning of uncertainty or lack of planning about childbearing desires. He argued that uncertainty in desired total number of children was a reflection of delayed childbearing and the possibility in people's minds that the delay could lead to "childbearing forgone." He found that uncertainty in desired

final total number of children however occurred most commonly after people had at least one child (or the acceptable number of children in their setting). With this in mind, we could interpret the uncertainty voiced by some respondents as their awareness of the possibility that by delaying childbirth they have entered a more unpredictable world, and therefore, they are coping with that possibility. In other words, these respondents were somehow more aware of the variables that the third group of respondents found so surprising, and dealt with this unpredictability by not making a decision at all. Unlike Morgan's sample, many of the respondents in this study became uncertain before their acceptable desired family size was reached, and in some cases, even before any children were born. What is lacking from Morgan's analysis is an understanding of what causes people to anticipate the uncertainties, other than large-scale socio-economic factors (such as changing social norms and economic climate).

Johnson-Hanks (2005) found that women in Cameroon believed that life's events were random and unpredictable, and therefore outcomes such as family size could not be planned. Her work suggested that Cameroonian women felt that they had more control and therefore could plan better about the timing of the first child than about the final number of children, because that action (birth of first child) was more immediate than the final life course of total family size (Johnson-Hanks, 2005). Our findings support her thesis that individuals who understand life's variability are more likely to not try to plan family size. We found respondents experiencing a lack of control over all pregnancies, including the first, which influenced their final family size. Given the later age at childbearing onset, it is likely that US women would have more trouble conceiving and therefore less control over the first birth. In another paper discussing her research in Cameroon, Johnson-Hanks (2004) examines the causes of uncertainty about final child outcome, and argues that having multiple life goals, which are irreconcilable (for example, wanting an education and children) and the fact that the means to their goals are not always available (are unpredictable) leads to the uncertainty. This could help explain the uncertainty in our respondents, who were for the most part living in a career-oriented, highly educated slice of American society.

The Unsuccessful Planners found their "plans" impacted by unpredictable and variable factors. First, union formation occurred for many respondents at a later age than planned. Then, either as a result of later age of union formation, or because of other life choices about education, career, or wanting to have a specific amount of time in a union before childbearing, there is a trend of later age of onset of childbearing. Perhaps partly due to the later age of beginning childbearing, respondents appear to be experiencing more difficulties in childbearing (becoming pregnant and keeping pregnancies) than expected. The chain of unexpected outcomes described above revolves primarily around issues in timing (delay). This relates more directly to hypothesis 3, and was by far the most frequently discussed issue by respondents.

Another set of themes emerged around respondents not predicting the challenges (or costs—both emotional and financial) of child rearing, and how this would affect their unions, health, and life in general. Respondents were surprised by how challenging having children was, and this made them want to have fewer children than originally

planned, or delay having the next child (which could ultimately end up limiting final number of children). Respondents found their relationships struggling because of the stress of childrearing, or found their personal health (mental and physical) affected by childrearing. These unforeseen challenges caused some respondents to postpone or limit number of children. Respondents were also surprised by the financial cost of children, and decided to delay childbearing because of the higher than expected cost. Unpredicted changes in the economy, job loss, or difficulties finding jobs also affected childbearing intentions. These themes relate more closely to hypotheses 1 and 2.

The first hypothesis that this study explores is whether people make fertility decisions in a sequential fashion, with people being influenced by intervening factors, or as a one-step process (make a decision and stick with it) (Udry, 1983). Our study supports the theory that for most people, fertility decision-making is made in a step-wise fashion, and is influenced by a myriad of variables and changing preferences. Past research does not explore in depth either what these intervening factors are, or the nature of the changing decision making process.

In order to make a plan about desired number of children, people must predict their future situation, at least twenty years out. As discussed above, past research has suggested that people are poor predictors of their future behaviors and preferences, and therefore do not make decisions with these changes in mind (Lowenstien et al., 2003). The majority of respondents in this study were unsuccessful planners, who failed to accurately understand all the variables that could affect this decision and therefore made an unfeasible plan. Respondents found themselves surprised by their changing preferences and life's unpredictability.

Hypotheses 2 and 3 (the work-family conflict hypothesis and the delayed relationship hypothesis), are each potential explanations for hypothesis 1 (fertility decision making being a sequential process). This study found little evidence for the work-family conflict hypothesis, as very few respondents discussed difficulties balancing career and number of children as important factors in their decision-making process. It is possible that because the study sample was overwhelmingly well-off they could better afford childcare (and therefore there was less conflict with women working), however, the fact that the surprising cost of children was also frequently cited as a reason for reducing their desired family size, suggests that this may not be a good explanation.

The importance of delays in finding a partner or getting married were very frequently mentioned by respondents as important factors in why their initial plans did not match their ultimate achieved fertility, supporting Hypothesis 3. In this setting, most respondents seemed to want to be married (or in a long-term committed relationship with a life partner) before beginning childbearing, therefore, difficulty in finding that partner and then having enough time to build a strong relationship that lead to marriage, delayed childbearing and caused a mismatch between desired and achieved fertility.

Perhaps as a result of the complexity of decision making, respondents appear to favor explanations for their fertility decision making which are relatively simple, and do not

change over time (specifically, number of siblings they themselves had and environmental/social impact). The reliance on simplistic, easy to understand, or "rule of thumb" thinking in complex decision-making has been previously documented in other types of decision-making (Gilovich, Griffin & Khaneman, 2002). Especially when choices are complex or unfamiliar, people seek simple variables on which to base their decision-making (Kahneman & Tveryky, 1979). The variables respondents claimed to base decision-making on were static, and therefore especially easy to measure (the number of children in your family while you were growing up cannot change).

Limitations:

This sample is comprised of self-selected individuals who chose to take the time to complete this online survey. It is possible that individuals who would be interested in taking this survey might have experienced more regret or unexpected changes in their life which made them interested in sharing their feelings about their decision making process. Similarly, people who have the time to complete such a study could have different characteristics than the average person, for example, might be less likely to work outside the home. The recruitment of respondents through listserves also limited the sample to those who were self-selected to be a member of one of these listserves. It is possible that people who decide to join these listserves had more than usually difficult childbearing experiences that led them to join such networks.

Biologically we are faced with tradeoffs between quality and quantity in many realms, including childbearing. Recruitment through parenting listserves resulted in respondents who were focused on higher quality children, and our results do not reflect the views of parents focused on quantity. However, in most of the developed world, parents have relatively low fertility, suggesting that they are focused more on higher quality compared to quantity offspring. Respondents were overwhelmingly female, and therefore the experience of men in decision-making was underrepresented. It is possible that men might have placed more emphasis on financial considerations in childbearing, or that they might have had a different experience with the changing decision-making process.

Given the retrospective nature of this study, it is possible that people inaccurately recall their past desires. It is also possible that, looking back, people use events that happen to explain current outcome, when in fact the relationship may not be causal. In this case, however, perception of influence is the key variable, as desires are based on perception and emotion, rather than a calculated fact-based chain of events. As in much research, experimental designs are the gold standard, however, in the case of fertility decision making, it is challenging to randomly assign experience (divorce, job loss, child death) and see how that influences preferences and decision-making. Longitudinal research that interviewed people many times over the course of their lives, looking at their changing desires over time and life events, could control for the above mentioned problems.

This study population was primarily comprised of higher socio-economic status participants because we hypothesized that this population would be most likely to make a rational, cost-benefit analysis. It could be argued that although population is better

equipped to make a cost benefit analysis, their socio-economic position gives them more choice in more of the areas of uncertainty (such as educational and career opportunities), thereby causing their decision-making process to be more complex, and subsequently making them less able to make a rational decision. Johnson-Hanks work in Cameroon, however, suggests that people who have relatively few opportunities and options still find fertility decision making complex (2004, 2005).

Conclusions:

The experiences of respondents in this study reflect the deeply unpredictable nature of life, multiplied by numerous variables and affected by two people in a union. If we just consider one variable—for example finding a stable relationship—we can immediately see the complexity of not only understanding the factors that go into that one variable, but also of predicting how they will change of time. Any young person not in a union today would find it almost impossible to predict when they would find their life partner. Although they might have a "plan" (for example, to meet their partner at 25 and be married at 30), this "plan" is largely out of their control. Then, ask a young couple to predict how their relationship will fare over time (say, how strong their relationship will be in 10 years), and again, most would find it difficult to predict this accurately. Add into this two different people having ideas about timing and number of children, biological factors, career and educational goals, and the larger economic climate and you have a quite complex system. This could be seen as a three dimensional matrix, with categories of uncertainty on one axis, time on another, and the final axis being the experiences of each of the two members in a union. If we assume ten different factors, each of which change over time (measured, say, in 5 year increments over 20 years of childbearing), and multiplied by two people, we would have 80 cells in the three dimensional matrix. Each of these cells must be understood, weighed, and factored into decision-making. To illustrate the level of possible complexity, if each cell was a binary variable, there would be 2^{80} possible scenarios. Given this extremely complex system and the unpredictable way the system will shift over time, it is unreasonable to expect that people can take all of these variables into account and make a plan and decision based on these factors.

Findings from this study suggest that people struggle with predicting the future, and their own behavior and desires in that different future. This has been described in other types of decision-making (Lowenstien et al., 2003), but not applied to the fertility/family decision-making process. Our findings suggest that some people attempt to make a family plan, but this is inevitably disrupted by unforeseeable events in life. Therefore, their fertility decision-making process is constantly evolving as they get more information about life over time. One of the most striking reasons for lack of unity between desired and achieved fertility was difficulty in finding a partner and delays in childbearing pushing childbearing into periods of low-fertility. Other respondents appear to simply give up, and not attempt to make a plan about family size at all.

It was notable that many respondents seemed surprised, or even angry, that life did not turn out the way they planned. Given that most of these respondents likely had a high education level (which we can assume given the geographic area in which this study was

conducted, Berkeley and Stanford, California, and the high income and relatively higher age of respondents), it is probable that they are familiar with life's uncertainties. For example, it is generally known that just under 50% of marriages in the US end in divorce (Stevenson & Wolfers, 2007), and infertility is common in older women (Stephen & Chandra, 2006). Most respondents, however, seemed surprised to experience infertility, difficulties in partnerships, as well as other variables. Future research should look into whether people are actually unaware of these facts, if they are not able to apply population level statistics to their own future, or if, as we argue in this paper, the uncertainty of these outcomes is so complicated that people choose to not think about these factors and instead either make "plans" that will inevitably change, or decide not to make a plan at all. There does seem to be less easily accessible information on how people feel about children after having them and how challenging it is to find a life partner, which were two of the main unpredicted factors respondents experienced. Therefore it is quite possible that respondents were genuinely unaware that these factors that might influence their fertility plan.

The decision to have children is an important, life-altering decision. Not only this, but it is something that most societies and communities around the world place a high value on. Yet, evidence from this study suggest that people (wealthy, well educated Americans) do not think about (or like to think about) all of the possible factors which could influence the outcome of the number of children they have and find themselves disappointed. Decision-making is generally assumed to be a rational process, involving weighing pros and cons, and costs and benefits. Perhaps because of the complexity of this decision, people instead lean on influence from simple and unchangeable things, such as number of siblings they grew up with, or beliefs about larger social responsibility. In reality, however, these factors are not the main ones that have the most impact on the outcome of the decision made.

Much of our understanding of fertility transitions comes from asking about fertility preferences at a set point in time. In the developing world, where fertility preferences are often lower than actual fertility, much research has looked into the unmet need for family planning as a major factor in this differential. In the developed world, people desire more children than they actually have, and less research has looked into this inequity. Understanding how meaningful statements of initial "desired" fertility are given life's unpredictability, and how people make decisions in an unpredictable world may add important insight.

This paper provides insight into the uncertainties that people face, how unpredictable these factors are, and how people adjust and behave when faced with the unexpected. This study argues for thinking about this decision-making process in light of people's inability to make plans about a future which involves numerous unforeseeable variables which will continually change over time and which must be balanced between two people. These findings suggest that perhaps we should reconsider the standard notion of fertility desires and decisions as rational and static. It is essential for a broad array of disciplines, from economics to psychology to reproductive health, to look more deeply into how

fertility desires change over time and what influences these preferences and resulting behaviors.

References:

Ariely, D. & Lowenstein, G. (2006) The heat of the Moment: The effect of Sexual Arousal on Sexual Decision Making. *Journal of Behavioral Decision Making,19,* 87-98.

Ariely, D. & Zakay, D. (2001) A timely account of the role of duration in decision making. *Acta Psychologica 108,* 187-207

Bongaarts, J. (2001). Fertility and Reproductive Preferences in Post-Transitional Societies. *Population and Development Review*, *27*, Supplement, 260-281

Brewster, K. & Rindfuss, R. (2000) Fertility and Women's Employment in Industrialized Nations. *Annual Review of Sociology* 26: 271-96

Dye, J. Lawler. (2005). Fertility of American Women: June 2004. *Current Population Reports* P20- 5555. Washington, DC: U.S. Census Bureau.

Fischer, K. (2000). Uncertain Aims and tacit Negotiations: Birth Control Practices in Britain, 1925-50. *Population and Development Review,* 26(2), 295-317

Gilovich, T., Griffin, D.W. & Khaneman, D. (2002) Heuristics and Biases: The Psychology of Intuitive Judgment. Cambridge Univ. Press, New York 2002

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

Johnson-Hanks, J. (2005) When the Future Decides: Uncertainty and Intentional Action in Contemporary Cameroon. *Current Anthropology*, *46:3*

Johnson-Hanks, J. (2003) Uncertainty and the Second Space: Modern Birth Timing and the Dilemma of Education. *European Journal of Population. 20,* 351–373

Kahneman, D. & Tversky A. , (1979) Prospect theory: An Analysis of decisions under risk. *Econometrica*, *47*, 313-327.

Liberman, N., & Trope, Y. (1998) The role of feasibility and desirability considerations in near and distant future decisions: a test of temporal construal theory. *Journal of Personality and Social Psychology. 75*, 5-18.

Loewenstein, G., O'Donoghue, T & Rabin, M. (2003) Projection Bias in Predicting Future Utility. *The Quarterly Journal of Economics, 118:4*, 1209-1248

Morgan, S.P. (1982) Parity-Specific Fertility Intentions and Uncertainty: The United States, 1970 to 1976. *Demography, 19:3*, 315-334

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

O'Donoghue, T. & Rabin, M. (2000) The Economics of Immediate Gratification. *Journal of Behavioral Decision Making, 13,* 233-250

Schneider, L. & Lysgaard, S. (1953) The deferred gratification pattern: A preliminary study. *American Sociological Review, 18,* 142-149.

Schoen, R., Astone, N.M., Kim, Y.J. Nathanson, C.A. & Fields, J.M. (1999) Do fertility intentions affect fertility behavior? *Journal of Marriage and the Family 61*, 790–99.

Scholl, N., Mulders, S. & Drent, R. (2002) Online qualitative market research: interviewing the world at a fingertip. *Qualitative Market Research, 5:3*, 210-23.

Stephen, E. H. & Chandra A. (2006) Declining estimates of infertility in the United States: 1982-2005. *Fertility and Sterility*, *86:3*.

Stevenson, B. & Wolfers ,J. (2007) Marriage and Divorce: Changes and their driving forces. *The Journal of Economic Perspectives, 21:2*, 27-52

Udry, J.R. (1983) Do Couples make Fertility Plans One Birth at a Time? *Demography, 20:2,* 117-128

Zabin, L.S. (1999) Ambivalent Feelings about parenthood may lead to Inconsistent Contraceptive Use and Pregnancy. *Family Planning Perspectives*, 31: 250-51

Table 1: Background characteristics of respondents (N=147)

	Number	Percentage
Age		
Under 25	0	0%
25-29	6	4%
30-34	34	23%
35-39	36	24%
40-44	34	23%
45-49	16	11%
50-54	5	3%
55-59	7	5%
Over 60	9	6%
Income		
Under 50,000	6	4%
50,000-100,000	38	26%
100,000-150,000	39	27%
150,000-200,000	25	17%
More than 200,000	36	24%
Other	3	2%
Number of children		
1	62	42%
2	65	44%
3	14	10%
4	3	2%
5	2	1%
No children, currently pregnant	1	<1%
Average	1.75	
Gender		
Female	136	93%