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The Time Dynamics of Individual Fertility Preferences Among Rural Ghanaian Women

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Abstract

Fertility preferences are revised in the light of changing life and reproductive circumstances. Over time, an individual's fertility preferences may fluctuate along a continuum. In this study, we describe typical patterns of change (or stability) in individual fertility preferences over a period of five years using a prospective panel study of women of reproductive age in six communities in southern Ghana. We investigate whether patterns of change are consistent with women's reproductive life circumstances by first comparing responses between successive interviews and then over multiple interviews using latent class analysis. We find that approximately 20 percent of the sample changed their fertility preference from one interview to the next. Women who had attained or exceeded their ideal family size show considerable stability in their desire to stop childbearing over multiple interviews. This desire does not waver even when they experience unwanted pregnancies. The attainment of ideal family size appears to be an important correlate of preference stability.

A number of recent empirical studies point to the importance of fertility preferences in understanding how the fertility transition might unfold in countries that are experiencing transitions (Westoff 1990; Feyisetan and Casterline 2000; Bongaarts 2003; Westoff and Cross 2006). Analytically, fertility preferences indicate the demand for children (latent or manifest), which may have a direct bearing on the demand for contraception—one of the proximate variables that determine fertility. Consequently, in sub-Saharan Africa, much research attention has been focused on understanding the lack of congruence between fertility preferences and the desire for contraception (Westoff and Bankole 2001). Likewise, much research interest has centered on the impact of differences in spousal preferences (in terms of power relations and conflicts) on contraceptive use and fertility (Ezeh 1993; Isiugo-Abanihe 1994; Ngom 1997; Dodoo 1998; Short and Gebre-Egbziabher 2002). Levels and trends in ideal family size and wanted and unwanted fertility at the aggregate level have also been widely studied.

An important but little-researched dimension of the study of fertility preferences in sub-Saharan Africa is the extent to which individual preferences remain stable or change over time. In most sub-Saharan countries, fertility-preference data collected in cross-sectional demographic surveys do not allow us to capture such individual-level fluctuations.

Aggregate-level time-series analyses provide useful insights on preference dynamics within a population but offer little understanding of the intricacies of individual change. Nevertheless, data on fertility preferences are routinely used as input for estimating the prevalence of unmet need for contraception and of unwanted fertility and for evaluation of various aspects of family planning programs (Westoff 2001; Casterline et al. 2003; Casterline and El-Zeini 2007). If fertility preferences are stable over relatively short periods of time, comparisons of cross-sectional estimates would be reasonably accurate. If individual preferences are subject to frequent change, however, the nature of change should be ascertained so that estimates will duly reflect any instability.

Sub-Saharan African societies have long been perceived as having deeply seated pronatalist values. With the fertility transition underway in most societies, the proportion of people indicating in surveys that they desire to delay or stop childbearing has been increasing over time. Recent fertility studies suggest that when people express preferences in surveys, they may not hold these preferences strongly and may leave much room for changing them if their life circumstances change (Bledsoe et al. 1998; Bledsoe 2002; Agadjanian 2005; Johnson-Hanks 2005 and 2007). Johnson-Hanks (2007) argues that because of uncertainties stemming from economic and other hardships characterizing life in most parts of the region, fertility preferences may be influenced to a great extent by a variety of temporary considerations often connected with the quest to survive socioeconomic pressures. The desire to limit births may be a temporary response to economic hardship rather than an internalized aspiration for a smaller family size. Even among some individuals with deeply held desires for achieving particular family sizes, fertility preferences may be revised in light of their changing reproductive and other life circumstances. Over time, individual fertility preferences may be expected to fluctuate along a continuum that reflects either meaningful patterns or random variations in reproductive experiences, depending on how strongly these preferences are held. The fertility preferences of most individuals whose ideal family size is reasonably certain should remain relatively stable over time, however, and therefore should not be subject to constant revision as a consequence of ordinary variations in life circumstances.

A few empirical studies in Africa have examined some aspects of fertility preferences longitudinally (Bankole and Westoff 1998; Westoff and Bankole 1998; Debpuur and Bawah 2000; Casterline et al. 2003). Debpuur and Bawah (2000) examined the stability of different measures of fertility preferences across two rounds of interviews using data from northern Ghana. To our knowledge, no previous study has drawn from as many as eight responses over a period as long as five years to address these questions, as we do in the present study. We summarize typical patterns of change (or stability) in individual fertility preferences over time using data from a prospective panel survey conducted in southern Ghana. We investigate whether the response patterns are meaningfully consistent with other reproductive life-cycle factors. Our principal interests are in describing trends in stated preferences and accounting for individual variation. Women aged 15–50 when the study began were interviewed as many as eight times over a five-year period between 1998 and 2003.

Fertility-preference Dynamics

All behavioral models of fertility (except the natural fertility model) posit that individuals exercise the choice to have children or not—that individuals and couples engage in some form of conscious fertility management (Coale 1973; Hagewen and Morgan 2005). At any given time, individuals or couples have preferences regarding the number of children they want and/or the timing of births. These preferences may develop from a combination of factors pertaining to biological dispositions, age-related social expectations, economic and

social aspirations, marital conditions, spousal fertility preferences, and the experience of childbearing itself (McClelland 1983; Elder 1985; Bongaarts 1990; Thomson et al. 1990; Friedman et al. 1994; Miller and Pasta 1995). The factors influencing fertility preferences are potentially wide ranging. Over the years, demographers have sought to explain the critical elements driving change in fertility preferences. Broadly speaking, we can outline two major paradigms in the fertility literature. A predominant view is that individuals or couples formulate desires about family size and limit fertility largely in response to achieving their desired number of children. This paradigm originates from Henry's (1961) characterization of fertility regimes and has since been developed in various concepts of fertility-preference dynamics and fertility behavior (Lee 1980; Bulatao and Lee 1983; Easterlin 1987). According to this paradigm, the central consideration for having additional children revolves around the achievement of desired family size. The other paradigm posits that fertility desires need not always be driven by a targeted family size, but rather that couples make fertility decisions one birth at a time, often being more strongly influenced by their socioeconomic and reproductive circumstances at the time of decisionmaking (Hout 1978; Bulatao 1981; Namboodiri 1983; Udry 1983). The attainment of an ideal family size is not given as much salience as are the immediate effects of life circumstances, expectations, and the differential value associated with having each additional child.

Over the entire reproductive period, the conceptual dividing line between these paradigms may be distinct. The parity-specific decisionmaking approach implies a pattern of preference evolution whereby people maintain a desire for children until they attain their ideal parity. The sequential model implies a more erratic pattern of change over an extended period. A sample observed over an extended period, however, exhibits a combination of change processes. Determining the extent to which the observed pattern is driven by parity-specific decisionmaking or by sequential decisionmaking is difficult, particularly if the periods between observation are variable or are parity dependent, if the interactions of contingent events are not known to be associated with one process or the other, or if the degree of variability in the length of the reproductive life span within the sample or larger population is in doubt.

In sub-Saharan Africa, where the active reproductive lifespan is relatively long, observing women over a five-year period is likely to capture short-term changes— especially in West Africa, where birth intervals are long. Thus, in the short run, we might expect that individuals make an evaluation of the costs and benefits of having additional children in light of the children they already have and in consideration of their current and future socioeconomic prospects. Fertility-preference dynamics could, therefore, be described as a learning process: as individuals gather information (through experience and perception) over the course of their reproductive lives, they are better able to align their predispositions with current realities. Changes in fertility preference may reflect sequential adjustments to two kinds of preference: to stop childbearing altogether or to alter the timing of future births.

The course that a person's fertility preferences take over time generally depends on the stage of the person's reproductive life. Those in their early reproductive years may want to have children soon. Changes in their preferences can be expected to involve revisions in timing (particularly for those who have not achieved their target family size). At about midcycle, the desire to stop, continue, or postpone future births may develop or increase. At the end of reproductive life, reduction in fecundity and the cumulative childbearing experience increase the desire to stop childbearing.

This kind of reproductive life-course progression is unlikely to account for all of the changes in fertility preferences that people experience, especially over a short period. Changes in fertility preferences might also be based on the degree of certainty regarding fertility

preferences, circumstantial changes, or personal disposition. In surveys, some respondents may give answers that are superficial. People with no prior fertility preference may answer survey questions on the subject without consideration. Some may be ambivalent about their childbearing preferences because they do not perceive fertility to be within their personal control (Bongaarts 1990; Luker 1999). Some may forget the considerations on which earlier choices were based and may be more susceptible than those with strongly held preferences to the influence of immediate circumstances. People are more likely to maintain their reproductive preferences if they hold them with a reasonably high degree of certainty (Morgan 1982; Schoen et al. 1999). Even when fertility preferences are strongly held, however, they may change as a consequence of such unexpected situations as marital transitions or employment or health problems. Preferences also may change because anticipated situations did not materialize. Moreover, people differ in their propensity to stick to their preferences in the face of changing circumstances. This disposition is not measured directly in most surveys. Consequently, if unobserved personal dispositions largely account for changes in fertility desires, we may not observe clearly defined response patterns that match well with women's reproductive histories.

We posit that the time dynamics of fertility preferences are likely to reflect reproductive life-cycle features and that fertility preferences are reasonably strongly held. We expect that fertility preferences will either remain relatively stable over repeated measurements or change in tandem with other reproductive attributes over the period of observation.

What reproductive life-cycle factors may be associated with changes in preferences? Previous research has found a number of factors that are most closely associated with fertility preferences in sub-Saharan Africa, including age, number of surviving children, and attainment of desired family size (Mott and Mott 1985; Mason and Taj 1987; McCarthy and Oni 1987; Bankole 1995; Dodoo 1998; Agadjanian 2005). We expect, therefore, that stability or change in fertility preference is associated with whether one wants a child or wants to stop childbearing and with the stage of the life course in terms of age, parity, and attainment of ideal family size. We expect that women who report that they want to stop childbearing and who hold that preference strongly will have a high likelihood of maintaining that choice (as revealed in subsequent interviews). We expect that women at the end of or approaching the end of their reproductive lives will consistently respond that they want no more children. In contrast, for women who want children, we expect that as a result of the passage of time, changes in preference will be related to their expectations with regard to timing of childbirth. Younger women may want to have a child soon or postpone childbirth, depending on when their last child was born. We believe that the response patterns of women in reproductive midcycle may be influenced by whether or not they have attained their ideal family size.

Methods

We used data from a prospective longitudinal study conducted in six communities in southern Ghana between 1998 and 2003. These mostly rural towns and villages are located in the Central, Western, and Greater Accra regions of Ghana. The communities were purposively selected to reflect diversity in ethnicity, religion, ecology, and socioeconomic conditions (Agyeman and Casterline 2003). Eight rounds of reproductive and household surveys were conducted among women aged 15–50 when they were first surveyed. A total of 1,219 usable interviews were gathered from the first round. In the second round, 209 “refresher” interviews were added to the original sample. These women were asked all the round-one questions that could be asked retrospectively as well as the subsequent-round questions. From round to round, the background characteristics of the sample were relatively similar because the majority of respondents remained in the study. The attrition rate between

the first and last round was about 15 percent. The intervals between the interviews were not uniformly spaced over the five years. The mean intervals in months between consecutive interviews were 6.9, 8.5, 6.8, 5.0, 7.7, 9.6, and 16.5, with standard deviations ranging between three and four weeks.

About 35 percent of the sample had received no formal schooling, 24 percent had attained some elementary education or completed elementary school, and 41 percent had at least some secondary-school education. Sixty-six percent of the sample were of the Akan tribe, 22 percent were of the Ga and Adangbe tribes, and 11 percent were from other tribes. The sample was predominantly Christian (60 percent) and Muslim (21 percent). The majority of respondents were married. Across rounds, the proportion of currently married women remained at around 80 percent. The mean age of respondents was 31 years, and the mean number of children ever born was 3.5 (with a standard deviation of 2.9) at the beginning of the survey and 4.2 by the eighth round. The mean number of living children, which was 2.8 at the onset, rose to 3.5 by the end of the survey.

Variables

At each round, the questionnaire contained the fertility-preference question that is generally regarded as the most predictive of future fertility (Westoff and Ryder 1977; Hermalin et al. 1979): “Would you like to have a (another) child with your husband/partner, or would you prefer not to have any more children with him?” This question is similar to that employed in the Demographic and Health Surveys (GSS and MI 1999; GSS et al. 2004). The responses were “want a (another) child,” “want no more,” “cannot get pregnant,” “undecided,” and “don't know.” Women who wanted more children were also asked when they would like to become pregnant, whether as soon as possible or at a specific time in months or years. Those who reported that they were undecided and those who reported that they did not know their preference were both coded as “undecided.” We constructed three variables from the responses: a five-category version capturing “want a child soon” (this category included women who said that they wanted a child as soon as possible or within two years; the threshold of two years was adopted following conventional practice for most DHS questionnaires), “want later” (after two years), “want no more children,” “infecund,” and “undecided”; a four-category version in which “cannot get pregnant” responses in each round were coded as missing; and a three-category version that excluded “cannot get pregnant” responses and made no distinction concerning when a birth is wanted. The three-category variables were, therefore, “want a child,” “want no more,” and “undecided.” Each variable provides a different layer of detail for this analysis.

Marriage, contraceptive-use, pregnancy, and birth histories, as well as other demographic background data, were also collected in the study. We were particularly curious about how the notion of ideal family size may influence changes in fertility preferences over time. In the first round, women were asked: “If you could go back to the time when you did not have any children and could choose exactly the number of children to have in your whole life, how many would that be?” The mean ideal number for the sample was 4.4 children; it was positively correlated with age (0.3) and net parity (0.4) in the first round. For each round, we coded a dummy variable that tracked whether each woman had achieved her ideal number of living children by comparing the number she had given in round one with the number of children she had at each round. Women who gave non-numeric answers to the ideal-family-size question (14 percent) were assigned a zero for the dummy variable across rounds because they may be considered to have the largest ideal family size (Jensen 1985; McCarthy and Oni 1987). More importantly, we preferred to treat non-numeric responses in this way to avoid having missing values for that variable.

Analytical Strategy

We employed two strategies in this empirical description of the time dynamics of fertility preferences. First, we ascertained the nature of transitions between preference categories across successive pairs of rounds and investigated the extent to which changes in preference were consistent with reproductive events, particularly with pregnancies and births occurring between surveys. Cross-tabulating the responses of two consecutive rounds using the five-category preference variable yields 25 possible cells. The seven transition matrices over the eight rounds can be pooled together using woman-rounds as the unit of analysis. This summary two-way transition matrix is useful for providing information about typical types of transitions characterizing the data. We examine some features of major transition types observed in the data by relating them to variables such as age, parity, and achievement of ideal family size. The disadvantage of this "pairwise" approach is that it does not capture the entire sequence of responses in one picture. In fact, to describe change over several rounds simultaneously, the change patterns involved (cross-classification of preferences over the rounds of interviews) would conceivably be too numerous for a meaningful description. Our interest is essentially in mapping responses broadly over multiple rounds to glean typical response patterns and to examine the extent to which these patterns conform to women's reproductive circumstances. To this end, our second strategy involves incorporating the sequence of responses over more than two rounds using latent class analysis (LCA).[1] LCA lends itself readily to the analysis of nominal variables; it can model the joint occurrence of multiple responses at discrete time periods and identify the unobserved heterogeneity within the sample based on the responses.

We designed the analysis such that the first and last rounds would act as pretest and post-test surveys with which to compare features of the latent classes. Excluding the first round from the analysis also helped in incorporating the refresher sample (209 women) who joined the study in the second round. Because the interviews were irregularly timed, we used data from rounds 2, 4, 6, and 7 for the latent class model. These four rounds ensured maximum use of sample size and had uniform between-survey intervals of one year for most women. We consider a period of one year to belong enough to capture meaningful developments in women's reproductive lives. Given the sample size and number of categories, the use of more waves would have led to potential problems with data sparsity. Data sparsity may occur when either the number of variables or the categories of variables are large, leading to estimation problems that result because some cells in the full-contingency table stand empty.

With the four-category preference variable, women in any round who said that they could not become pregnant were coded as missing. Missing values also arose due to attrition and nonresponse to the preference question. We ran the latent class models first with only those women for whom we had complete data and for whom we had obtained the optimum number of classes, and then we reran the analyses with the missing data. The results from the analysis with missing values were substantively similar to the results from the analysis without missing values.[2] For this analysis, we used the Latent GOLD 4.0 software, which uses the modal probability-assignment rule to assign respondents to latent classes and can generate a data file with the classification information. We exported the data with the class categories into STATA software to match the class information with other reproductive and background variables.

[1]Latent class models assume that individuals can be grouped into distinct and mutually exclusive classes or clusters based on their responses to a set of questions. Individuals in the same class are assumed to share the choice pattern typical of that class. The analytical goal is to find the smallest number of classes within the sample that adequately capture associations between responses (McCutcheon 1987; Hagenaars and McCutcheon 2002). The idea of using latent classes to incorporate between-person differences into analyses has been applied to many problems, including growth-curve modeling (Nagin 1999 and 2005), measurement-reliability modeling (Langeheine 1988; Alwin 2007), and in diverse ways in the medical and other fields.

Results

The trend of the aggregate-level distributions of preference responses across rounds gives a first-glance indication of the kind of regularity expected from the data. Specifically, we would expect that the proportion of women wanting to stop childbearing would increase over time because the "no more" response becomes a fixed preference when strongly held. Table 1 shows the expected trend: the proportion of women who wanted no more children increased from 30 percent in the first round to 36 percent by the last round. Similarly, the proportion of women who reported being infecund, although relatively small, increased steadily over time. These within-category aggregate changes, however, do not tell us much about the nature of individual-level changes.

In Table 2 we present individual-level transition probabilities and the distribution of the types of preference switching characterizing consecutive pairs of rounds. Women who wanted no more children in a previous round had the highest probability (76 percent) of maintaining their preference in the succeeding interview (top panel of Table 2). Preferences remained relatively stable across consecutive rounds of the survey (lower panel of Table 2). Preferences remained stable across 63 percent of the woman-rounds: 27 percent of women wanting no more children held to their preference, 12 percent of those wanting a child soon maintained their preference, as did 18 percent of those who said that they wanted one later, and 3 percent of those who reported being infecund. Transitions into and out of the "infecund" and "undecided" categories occurred relatively infrequently. The greatest number of transitions occurred within the "soon," "later," and "no more" categories.

Table 3, which excludes infecund women, shows the degree of stability from one survey round to the next of the preference for wanting no more children. Eighty-one percent of women who indicated in the previous round that they wanted to stop childbearing maintained that preference in the following round. Women who had previously expressed this preference and had already attained or exceeded their ideal family size were more likely (86 percent) to maintain in the next round their preference to stop having children than were those who had not achieved their ideal number of children (75 percent). Table 3 also shows that women who (a) in the previous round expressed the preference for no more children, (b) had achieved or exceeded their ideal family size, and (c) subsequently experienced an unwanted birth were considerably more likely (88 percent) to maintain their desire to stop childbearing across consecutive rounds compared with those women (67 percent) who wanted to stop child-bearing, subsequently gave birth, but had stated previously that they had not yet attained their ideal family size.

Because we considered "want no more" to be a fixed preference, we also expected that women who indicated this preference at any point in the survey would hold to it in subsequent interviews. We observe, however, that although these women showed high stability between consecutive interviews (typically within six to nine months), they were likely to change their preference from wanting no more children to postponing the next birth (not shown). Over the entire study, only 58 percent of women who said they wanted no more children in any of the first seven rounds said they wanted no more children in the last round (not shown).

[2]In choosing the final model, we used bootstrap p-values and AIC and BIC (Akaike information criteria and Bayesian information criteria). These are statistics used for choosing between nested models with the aim of selecting the simplest model with adequate fit. Models with lower AIC or BIC values are preferred to those with higher values. In deriving these statistics, more complicated models are penalized for additional parameter estimates. The basic difference between AIC and BIC is that BIC imposes a greater penalty for the estimation of additional parameters than AIC. Thus, BIC may be considered a stricter test than AIC. In choosing the best-fitting latent class analysis model, consideration is given not only to these statistical measures, but also to the theoretical or empirical interpretability of the chosen model.

For women who wanted more children, the majority (79 percent, calculated from Table 2) maintained their preference across successive rounds, especially if they had neither achieved their ideal number of children nor had a child before the next survey round. We expected that women would revise their preferences according to whether they had had a (another) child or according to time elapsed. For example, those who wanted to become pregnant soon and had not yet had a child would continue to say that they wanted a child soon, whereas those who wanted to become pregnant later and had not yet done so would change their timing preference according to how much time had elapsed. Concerning revisions in timing preferences, we observed that almost all of the women who reported that they wanted to become pregnant "as soon as possible" or within one year in an earlier round maintained that timing preference in the next round regardless of whether they became pregnant or gave birth before the next interview. The majority of these women did not, in fact, become pregnant before the next interview. We also found that women who wanted to but did not become pregnant within the next two years, although they had attained their ideal family size, were almost as likely to maintain their preference as they were to switch to wanting no more children: 39 percent maintained their preference, whereas 40 percent switched to "want no more" (see Table 4). The majority of women who wanted to become pregnant within the next two years, had not attained their ideal family size, and became pregnant or gave birth before the next interview wanted to postpone the next pregnancy (46 percent) or stop childbearing altogether (29 percent). Nearly two-thirds of those who wanted to become pregnant within two years, had not attained their ideal family size, and did not become pregnant maintained their desire to become pregnant soon. Most of the women (62 percent, not shown) who reported in one round that they wanted to postpone the next pregnancy maintained that desire in the following interview. Women who had attained their ideal number of children were more likely to switch to "want no more" (especially if they became pregnant or gave birth) than were those who had not.

Further examination of features of the round-by-round transition types (not shown) reveal that women who maintained their desire to have a child soon in two consecutive rounds of interviewing already had one child, on average, and were in their early thirties. Those who said that they wanted to postpone births in two consecutive surveys were young (with a mean age of 26) and already had about two children, on average. Women who maintained their desire to stop childbearing across any two rounds were older (with a mean age of 39) and had more than five living children. Two-thirds of these women had achieved or exceeded their ideal family size. Those who maintained an "infecund" status in two consecutive rounds were in their mid-forties (with a mean age of 46). Women who reported that they were undecided in successive rounds were in their late twenties (with a mean age of 27) and had had nearly two children on average. Women who oscillated between having a child soon or later in two successive rounds had similar characteristics to those who reported being undecided: they were in their late twenties and had a mean of about 1.5 living children. Likewise, those who moved between "want to have a child later" and "want no more" shared similar characteristics.

As noted above, the full picture regarding fertility-preference transitions is not made clear by examining the results of rounds in pairs. For example, a woman who wanted to have a child "later" in one round but changed her response to "want no more" in the following round may have maintained the last response throughout the rest of the study, she may have been switching back and forth between these preferences, or she may have changed to "soon" or "undecided" at some point. The possibilities among changes are potentially as numerous as the number of respondents. Therefore, we use LCA to identify and describe a smaller set of patterns of change or stability and to determine how these patterns are related to reproductive life-cycle factors in the first and last rounds.

We present summaries of the latent class model fit statistics in Table 5. As shown by the goodness-of-fit statistics, the one-class, two-class, three-class, and four-class models do not fit the data well. The p-values of the likelihood ratio chi-square statistics for one-, two-, and three-class models are less than 0.05. The goodness-of-fit statistics for the models with missing values also show that either the four-class or five-class solution would be adequate.[3] We chose between these two models using the bootstrap p-values and the Akaike information criteria value, which pointed to the five-class model as providing the best fit to the data. Furthermore, the conditional probabilities of the five-class model were easier to interpret than the four-class model. We chose the five-class model as the final model.

The findings (not shown) concerning the five latent classes are as follows: Latent Class 1 was the largest (31 percent) and was comprised of women who had a high probability of wanting to have a child after two years at any point in the study. Class 2, the next largest (29 percent), was characterized by respondents with a high probability of wanting no more children. Class 3 (16 percent) incorporated many women who started out as postponers but changed their preference to wanting no more children over time. In Class 4, some women consistently wanted to have a child soon. Class 5 included women who were predominantly undecided.

We examined additional demographic features of each class using data mostly from the first and last rounds. Chi-square tests indicate that significant differences exist among classes for background variables ($p < 0.001$). The additional background information showed that in Class 1, most of the women were young, married, and in their early reproductive years. Their mean age at the beginning of the study was 24. About 50 percent of women in this class had had their first child within three years of the first survey round. In round two, the majority (75 percent) wanted to delay their next birth. Subsequently, about two-thirds of the women in this class were postponing births. The rest wanted to have a child soon or were undecided. By the last round, however, women in this group had had one more child, on average. Class 2 was comprised of older women (with a mean age of 39) at the end of their reproductive lives who maintained a stable preference for having no more children. The majority of women in this class had also achieved or exceeded their ideal family size. Class 3 women were in the middle of their reproductive careers (with a mean age of 31). The majority (76 percent) had had their third child within three years of the first survey round. Therefore, most of these women began the survey rounds either as postponers or limiters. Over time, most of them wanted to stop childbearing. On average, however, they had one more child over the course of the study. In contrast to Class 3, Class 4 was comprised of low-parity women who were approaching the middle of their reproductive lives and who stated consistently that they wanted to have a child soon. The majority of these women had no children in the course of the study. Class 5 includes young women in their mid-twenties of relatively higher parity (two children, on average), compared with the women in Class 1. These young women were less likely than women in the other classes to be married, and they displayed greater ambivalence about their fertility preferences over the course of the study.

Conclusion

This study describes the dynamics of fertility preferences within a sample of rural Ghanaian women over a period of five years by comparing their responses to a series of eight surveys.

[3]The chi-square and likelihood-ratio tests compare an n class model to an n–1 class model, where n is the number of latent classes. The null hypothesis is that the n–1 class model fits the data adequately. If the p-value is less than 0.05, the n class model is better, implying that the model-fitting process must be continued with successive numbers of classes until the p-values of these statistics are greater than 0.05. At that point, the null model is the best model capturing the heterogeneity of the data.

To our knowledge, this is the first panel study conducted with data from sub-Saharan Africa that examines the dynamics of fertility preferences with eight rounds of panel data and uses statistical techniques that identify patterns that describe how women's reproductive preferences evolve over time. The results provide insights regarding important issues. First, they demonstrate that considerable regularity and stability exist in stated fertility preferences over time, a finding that is consistent with the results of Debpuur and Bawah's (2000) study in northern Ghana. We find that approximately one in five women changes her mind about whether to have an additional child within the next several months. These data suggest that most women's preferences are reasonably strongly held and are not likely to be driven by everyday circumstantial factors. Women about 40 years old and older who had had five or more children or had borne their ideal number of children and wanted to stop childbearing showed the most stable preferences over the multiple rounds of interviews. Their desire to stop childbearing did not change even in the event of an unwanted pregnancy or birth. Second, a woman's attainment of her ideal family size appears to be an important correlate of the stability of her fertility preference. Last, we observe that the desire to continue or cease having children is largely stable over relatively short periods of time and that most inconsistencies appear to be in the area of pregnancy- or birth-timing revisions.

As mentioned above, changes in fertility preference may be the result of many factors. Although this study did not explore many of the reasons directly related to seemingly inconsistent fertility behavior, it explored some of these reasons. For example, although women who had attained their ideal parity generally held to their preference to cease childbearing, a substantial proportion of these women continued to bear children. Obviously, these pregnancies were unwanted at the time of conception and might have been prevented. Such inconsistencies are partly explained by women's limited autonomy in reproductive matters (Ezeh 1993; Bankole 1995; Dodoo 1998). We found that women who wanted no more children at any point in time were not likely to report that their partners also wanted to stop (Kodzi and Johnson 2009). Therefore, attributing the occurrence of unwanted births (in the woman's view) to factors related to the discrepancy in spousal family-size preference is reasonable. Furthermore, perceived spousal disagreement concerning family size is a major contributory factor to women's aversion to the adoption of modern contraception when they want to stop childbearing. Therefore, empowering women to exercise control over their fertility is clearly central to the achievement of their fertility preferences. This connection has long been recognized (as demonstrated by resolutions enunciated at the 1994 International Conference on Population and Development, at the 1995 World Conference on Women, and in the development of the fifth Millennium Development Goal). In order to improve women's status, policies aimed at promoting family planning use have traditionally focused on women's education, employment, and spousal interaction. In sub-Saharan Africa, much progress remains to be made in these three areas.

In sub-Saharan Africa, where desired family size is relatively high overall, problems such as unwanted fertility should be reduced among women who have borne their desired number of children and who hold to their desire to cease childbearing. Evidence of the prevalence of multiple barriers to the adoption and consistent use of family planning suggests that excess fertility will continue to plague the region in the future unless specific and effective measures are taken (Casterline and Sinding 2000). Population policies that emphasize improvements in structural determinants such as women's formal education but that neglect the importance of improving access to contraceptives may discourage social development by maintaining high rates of preventable pregnancies (both unwanted and mistimed), slowing prospects for rapid fertility decline. Because individual fertility preferences are relatively stable over time, family planning policies should include interventions that target specific segments of the population (for example, women who have attained their desired family size) and promote contraceptive methods suitable to their familial and social contexts.

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Table 1

Percentage distribution of respondents' reported fertility preferences, by survey round, southern Ghana, 1998–2003

	Response						
Round	Want soon	Want later	Want no more	Infecund	Undecided	Total	(N)
1	27.7	33.5	30.1	1.5	7.3	100.0	(1,219)
2	22.6	34.8	34.4	2.9	5.4	100.0	(1,364)
3	20.9	29.3	36.9	3.4	9.5	100.0	(1,310)
4	22.0	26.4	34.8	4.3	12.7	100.0	(1,294)
5	20.9	29.0	35.5	5.3	9.4	100.0	(1,276)
6	20.5	26.7	36.4	6.1	10.3	100.0	(1,241)
7	21.0	25.2	36.0	8.2	9.5	100.0	(1,218)
8	21.5	22.2	36.2	9.4	10.7	100.0	(1,205)

Table 2

Percentage distribution of next-round fertility-preference responses, and those responses as a percentage of all subsequent-round responses, by responses in the previous round, southern Ghana, 1998–2003

		Next-round response				
Previous-round response	**Woman-rounds (n)**	**Want soon**	**Want later**	**Want no more**	**Infecund**	**Undecided**
Wanted soon	(1,913)	**54.7**	20.8	13.1	2.7	8.7
Wanted later	(2,527)	18.7	**61.6**	11.7	0.1	7.9
Wanted no more	(3,037)	4.6	8.0	**76.2**	5.7	5.5
Infecund	(394)	3.3	6.8	27.9	**65.2**	2.8
Undecided	(781)	20.9	20.6	19.6	0.8	**37.9**
		Next-round response as a percent age of all subsequent-round responses				
Previous-round response		**Want soon**	**Want later**	**Want no more**	**Infecund**	**Undecided**
Wanted soon		**12.1**	4.6	2.9	0.6	1.9
Wanted later		5.5	**18.0**	3.4	0.0	2.3
Wanted no more		1.6	2.8	**26.8**	2.0	1.9
Infecund		0.2	0.0	1.3	**3.0**	0.1
Undecided		1.9	1.9	1.8	0.1	**3.4**

Notes: N = 8,652. Values in the upper panel sum to 100 percent along the row. All values in the lower panel of the table sum to 100 percent.

Table 3

Among respondents who reported in the previous round that they wanted no more children, percentage distribution of fertility preferences in the subsequent round, by whether they had attained their ideal family size in the previous round and whether they gave birth between rounds, southern Ghana, 1998–2003

Previous-round characteristic	Woman-rounds (n)	Want more	Want no more	Undecided	Total
Wanted no more children	(2,863)	13.3	80.9	5.8	100.0
Attained ideal family size	(1,675)	8.7	85.7	5.6	100.0
Subsequent birth					
Yes	(113)	7.1	87.6	5.3	100.0
No	(1,562)	9.2	85.7	5.1	100.0
Did not attain ideal family size	(1,153)	18.6	74.7	6.8	100.0
Subsequent birth					
Yes	(129)	20.9	66.7	12.4	100.0
No	(1,024)	18.0	76.0	6.1	100.0

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Table 4

Among respondents who reported in the previous round that they wanted more children, percentage distribution of fertility preference in the subsequent round, by whether they had attained their ideal family size in the previous round and whether they became pregnant or gave birth between rounds, according to their preferred timing of pregnancy, southern Ghana, 1998–2003

		Next-round response of those attaining ideal family size in previous round						Next -round response of those not attaining ideal family size in previous round				
Previous- round characteristic	**Woman-rounds (n)**	**Want pregnancy within two years**	**Want pregnancy after two years**	**Want no more**	**Undecided**	**Total**	**Woman-rounds (n)**	**Want pregnancy within two years**	**Want pregnancy after two years**	**Want no more**	**Undecided**	**Total**
Wanted to become pregnant within next two years												
Subsequent pregnancy/birth												
Yes[a]							(147)	10.9	46.3	28.6	14.3	100.0
No	(167)	38.9	15.6	40.1	5.4	100.0	(1,078)	64.4	15.1	12.6	8.0	100.0
Wanted to become pregnant after two years												
Subsequent pregnancy/birth												
Yes	(43)	9.3	32.6	46.5	11.6	100.0	(216)	9.7	46.8	27.9	15.7	100.0
No	(272)	13.2	53.3	26.1	7.4	100.0	(1,225)	20.8	63.0	10.9	5.3	100.0

[a]The 12 woman-rounds were contributed by only four women for the left-panel response category, so the percentages are omitted.

Table 5

Sequential comparison of goodness-of-fit statistics of latent class models with missing values, southern Ghana, 1998–2003

Statistic	One-class	Two-class	Three-class	Four-class	Five-class
Log-likelihood	−6241.4	−5335.4	−5155.0	−5081.3	−5062.6
Likelihood ratio test					
L-square	2842.2	1030.2	669.5	521.9	484.6
Degrees of freedom	594	581	568	555	542
p-value	0.001	0.001	0.0021	0.840	0.960
Bootstrap p-value	0.000	0.000	0.000	0.060[a]	0.490[b]
Pearson chi-square					
Pearson chi-square	6669.9	1831.7	965.5	602.5	550.3
Degrees of freedom	594	581	568	555	542
p-value	0.000	0.000	0.000	0.080	0.390
Parameters (n)	(12)	(25)	(38)	(51)	(64)
Information criteria					
Akaike information criteria	12506.9	10720.8	10386.1	10264.6	10253.2
Bayesian information criteria	12570.0	10852.4	10586.1	10533.0	10590.3

[a]Standard error = 0.0106.

[b]Standard error = 0.0224. N = 1,354.