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Spacing, Stopping, or Postponing? Fertility Desires in a Sub-Saharan Setting

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Abstract

A growing body of research has argued that the traditional categories of *stopping* and *spacing* are insufficient to understand why individuals want to control fertility. In a series of articles, Timæus, Moultrie, and colleagues defined a third type of fertility motivation— *postponement*—that reflects a desire to avoid childbearing in the short term without clear goals for long-term fertility. Although postponement is fundamentally a description of fertility *desires*, existing quantitative research has primarily studied fertility *behavior* in an effort to find evidence for the model. In this study, we use longitudinal survey data to consider whether postponement can be identified in standard measures of fertility desires among reproductive-age women in rural Mozambique. Findings show strong evidence for a postponement mindset in this population, but postponement coexists with stopping and spacing goals. We reflect on the difference between birth spacing and postponement and consider whether and how postponement is a distinctive sub-Saharan phenomenon.

Keywords

Fertility; Fertility intentions; Fertility transition; Postponement; Sub-Saharan Africa

Introduction

Sub-Saharan Africa has the highest fertility in the world (with an average total fertility rate (TFR) of five births per woman), the highest desired family size, and the lowest contraceptive prevalence (Bongaarts and Casterline 2013; Population Reference Bureau 2018). Although some sub-Saharan countries have experienced fertility decline, and birth rates are approaching replacement in some urban areas, only six countries in the region have TFRs below three, and declines have stalled in several countries (Bongaarts 2006; Population Research Bureau 2018; Shapiro and Gebreselassie 2008). High fertility in the region is typically explained by the continued importance of subsistence agriculture, low levels of education for women, and high rates of infant mortality (Bongaarts 2006; Shapiro and Gebreselassie 2008).

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Beyond these explanations, a long-standing body of research has argued that sub-Saharan fertility change occurs in a qualitatively different way than in other parts of the world. This argument was first presented by Caldwell and colleagues, who proclaimed "a new type of fertility transition" in sub-Saharan Africa—one characterized by falling birth rates at all ages, delayed first births, and increasing birth intervals rather than parity-specific control (Caldwell et al. 1992:212). More recently, qualitative and ethnographic studies have described how patterns of spacing and limiting have been adapted to the economic, political, and social instability of the rapidly changing region (e.g., Agadjanian 2005; Johnson-Hanks 2006). Building on these literatures, Timæus and Moultrie (2008) proposed that this orientation toward childbearing constitutes a distinctive mode of fertility limitation: *postponement*. In a series of articles, Timæus, Moultrie, and colleagues drew on qualitative and ethnographic research to demonstrate the existence of postponement desires as distinct from spacing or stopping desires; developed a theoretical framework linking postponement desires with economic, political, and social uncertainties in the region; and used census and survey data to show that fertility behavior in several sub-Saharan countries is consistent with a postponement model (Moultrie and Timæus 2017; Moultrie et al. 2012; Timæus and Moultrie 2008, 2013).

The qualitative evidence that produced the concept of postponement focused mainly on fertility *desires* and the factors motivating these desires. Yet the census and survey data that have been used to demonstrate the population-level implications of this phenomenon are exclusively related to *behaviors*, with desires inferred from the distribution of birth intervals. To date, no study has measured postponement desires using quantitative, population-representative data. We seek to fill this gap in the development of this line of research by drawing on a longitudinal population-based survey to describe distributions and changes over time in fertility desires. Focusing on the desired timing of next birth, we consider whether survey questions can detect postponement desires as distinct from stopping and spacing desires, and we assess whether changing fertility desires reflect changes in individual and contextual conditions as suggested by the postponement model. Results show considerable support for a postponement orientation toward childbearing that can be measured, albeit indirectly, using standard survey questions about fertility desires.

Stopping, Spacing, and Postponement

The classic demographic model describes fertility transition as occurring when people develop and implement desires for smaller families. How theories conceptualize the causes of changing desires and the importance of desires versus implementation varies substantially, but a focus on the number of children is common across the classic theories of fertility decline. According to these theories, fertility decline is a parity-driven phenomenon, and changes in birth rates occur differentially across parities—and, by extension, across the age span (e.g., Caldwell 1976; Coale 1973; Easterlin 1975; Notestein 1953).

Observers of early sub-Saharan fertility declines noticed patterns that did not fit this model. Even in settings where fertility decline had begun, many people did not express numeric goals for family size, suggesting that changing desired number of children may not have been a major driver for fertility change. And birth rates appeared to be declining across a

wide range of ages and parities, not just at the end of the childbearing career. Caldwell and colleagues proposed that these patterns were an indicator of a distinctive sub-Saharan model, driven by delaying first births, extending birth intervals, and stopping for reasons other than parity-specific control (e.g., age norms, marital instability) (Caldwell et al. 1992).

The concept of *postponement*, first applied to sub-Saharan fertility by Timæus and Moultrie (2008),[1] builds on the suggestion of a distinctive sub-Saharan transition by proposing a new motivation for fertility limitation that is distinct from both *stopping* and *spacing*. *Spacing* implies an effort to maintain a certain interval between births, either explicitly defined relative to the most recently born child (e.g., spacing births so that the youngest child is weaned before the next child is born) or indirectly determined by postpartum practices (e.g., social rules prescribing a fixed period of abstinence after a birth). Drawing on a rich body of qualitative and ethnographic work, Timæus and Moultrie (2008) suggested a third category of motivation to limit fertility—postponement—as distinct from both stopping and spacing: a desire to avoid a birth for the immediate future, without a clear plan for either attempting or preventing conception beyond that point.

Postponement desires are based neither on a specific calendar nor on a clear goal to have no more children; instead, they are shaped by overall assessments of local conditions and personal prospects. When conditions are unfavorable, people are less likely to want to have a child, regardless of the age of their youngest child or the number of children they already have. Relevant determinants may include economic resources, social and political conditions, characteristics of current and potential romantic partnerships, and one's own and one's partner's health, among many other factors (Agadjanian 2005; Bledsoe 2002; Bledsoe et al. 1998, 1994; Johnson-Hanks 2004, 2005, 2006). These conditions may change rapidly, but changes are neither certain nor predictable, and the duration of current conditions is unforeseeable.

Because desires change as conditions change, the behavioral outcomes of postponement desires depend on how conditions evolve. If conditions remain unfavorable, desires to postpone a birth persist and may lead to long birth intervals or eventually translate into forgone fertility, even in the absence of a deliberate decision to stop childbearing.[2] In theory, postponement desires could even translate into short birth intervals if conditions become favorable sooner than anticipated. Importantly, although assessments of current conditions are made by individuals, these evaluations are influenced by broader societal factors. Moultrie and Timæus (2017) argued that the limited reach of central governments and the weakness of social and economic institutions in much of sub-Saharan Africa produce persistent unpredictability in both day-to-day life and long-term prospects. These conditions, in turn, make it difficult to form plans for future childbearing and create a context in which a postponement orientation can become the dominant driver of fertility outcomes. The

[1]The qualitative scholarship that Timæus, Moultrie, and colleagues drew on used a range of terms to describe the phenomenon, such as *waiting* (Agadjanian 2005) or *pausing* (Bledsoe et al. 1994). As Timæus and Moultrie (2008) noted, the term *postponement* has been widely used in research on low-fertility contexts to describe decisions to delay a first birth until some unspecified appropriate time (e.g., Berrington 2004; Sobotka 2004).

[2]Timæus and Moultrie articulated a clear conceptual distinction between spacing and postponement but acknowledged that in practice, the differences may not be so clear. Agadjanian (2005) suggested that over time, desires to *space* may evolve into more open-ended goals to *wait* and, eventually, into stopping behavior.

intersection of a postponement mindset with a particular set of external circumstances generates the distinctive fertility behaviors observed in sub-Saharan Africa.

Postponement desires are different from stopping desires. Stopping, according to the classic model, is a decision reached when a couple has achieved a predetermined target number of children, while postponement decisions are not parity-based. Postponement desires are also different from spacing desires. Although spaced births are timed according to a more or less fixed calendar (driven either by desires regarding child spacing *per se* or by goals for breastfeeding or postpartum abstinence), desires to postpone are not associated with a particular preferred birth interval. Postponement desires also elide the number versus timing distinction. The classic demographic model assumes that women (or couples) decide whether they want a(nother) child before considering birth timing. Comparatively, the postponement model concentrates on the decision to avoid childbearing for the time being without specifying whether to eventually have another child. One implication of Timæus and Moultrie's approach is that traditional survey questions on fertility desires, which ask women whether and when they want another child, are ill-suited to capturing postponement desires (Timæus and Moultrie 2008). Depending on how they interpret and respond to survey questions, women who do not want a child now may be categorized either as stoppers or as spacers.

In their original article and in several follow-ups, Moultrie, Timæus, and colleagues demonstrated that the postponement model is consistent with observed patterns of age-specific fertility and birth intervals in sub-Saharan Africa and proposed a method for identifying the impact of changing postponement practices on changes in fertility rates (Moultrie et al. 2012; Timæus and Moultrie 2008, 2013). However, birth history data cannot clearly distinguish between spacing and postponement in individual fertility trajectories in the absence of data on fertility desires and the underlying motivations. Several longitudinal studies of fertility preferences in sub-Saharan Africa can be construed as supportive of the postponement model. For instance, Kodzi et al. (2010) used latent class analysis to examine trajectories of women's fertility preferences over a five-year period and found that the largest group of women is composed of those with a persistent desire to delay the next birth. However, their findings were discussed primarily in terms of implications for unwanted fertility and the implementation of stopping preferences. In previous research, we showed that decisions to stop childbearing are sensitive to fluctuating conditions (Hayford and Agadjanian 2017), a finding consistent with the postponement model in that fertility desires are a product of individual and social circumstances rather than fixed targets; however, we did not consider timing desires. Sennott and Yeatman (2012) showed substantial change over a relatively short period in the desired timing of the next birth among a sample of young women, but they identified few consistent predictors of changes in desired timing. No quantitative analysis has attempted to systematically test whether the postponement model is consistent with reported fertility desires as measured using standard demographic measures of desires.

Setting

The data used here were collected in rural areas of Gaza province in southern Mozambique between 2006 and 2011. Some evidence suggests that fertility transition has begun in Gaza province, but fertility remains high, with an estimated TFR in Gaza of 5.3 children per woman according to the 2011 Demographic and Health Survey (DHS) (Ministry of Health et al. 2011). The TFR changed relatively little from the previous DHS in 2003 (National Institute for Statistics and Ministry of Health 2005). According to the 2011 DHS, virtually all women in Gaza knew at least one modern method of contraception, but only about 18 % of women of reproductive age were using contraception at the time of the survey. About one-half of contraceptive use was among women at low parities who want more children at some point—women who would be classified as *spacers* according to standard definitions. The median birth interval in Gaza was 37 months, the median duration of postpartum abstinence was 11 months, and the median duration of breastfeeding was 20 months (Ministry of Health et al. 2011).

The study area might be considered typical of rural sub-Saharan Africa in the level of instability of social and economic conditions. A former Portuguese colony that gained independence in 1975, Mozambique was battered by a civil war for the first decade and a half of its independent existence. Since the end of the war in 1992 and the deployment of structural adjustment programs in the early 1990s, the country has experienced remarkable macroeconomic growth, yet it remains one of the poorest and least economically developed nations in the world (World Bank 2018). The primary economic activity in rural Gaza is subsistence agriculture. Frequent droughts and floods make agricultural yields unpredictable, and many households supplement resources with remittances from male labor migrants to neighboring South Africa.

Historically, male labor migrants were formally recruited to work in the South African mining industry. This employment was highly regulated and produced predictable returns: in many cases, remittances were sent directly by employers as part of labor contracts. Increasingly, however, Mozambican migrants to South Africa are engaged in informal labor rather than contract work (de Vletter 2007; Mercandilli and Anseeuw 2017). The earnings of migrant workers have thus become more variable and less predictable. Further, there is variation in the share of migrant earnings that men choose to remit to sending households. The returns to labor migration are tied to the strength of the marital bond, and marital stability and economic security are closely linked for wives of migrants (Agadjanian and Hayford 2018a).

Perhaps in part because of the high levels of male migration, Gaza has the highest HIV prevalence of any province in Mozambique, with an estimated adult prevalence of 25 % in 2009 (the midpoint of the period of this study) (Ministry of Health 2010). The study area experienced a dramatic increase in the availability of HIV testing and treatment services during the period of data collection (Agadjanian and Hayford 2009, 2018b; Hayford and Agadjanian 2010; Hayford et al. 2012). Thus, both people's knowledge of their own serostatus and the actual and perceived impacts of HIV on long-term health were changing rapidly during the study span.

Analytic Approach

The primary goal of this study is to assess whether it is possible to identify postponement desires as distinct from stopping or spacing desires using individual-level data from longitudinal surveys conducted in a typical sub-Saharan setting. We focus primarily on desires rather than births or birth intervals because, as described earlier, postponement desires can result in very different behavior depending on individual and contextual conditions. We test three hypotheses generated from the postponement model, contrasting each with an alternative hypothesis based on the classic demographic stopping–spacing distinction. Although these alternative hypotheses are competing, they are not necessarily mutually exclusive. Most populations are made up of a mixture of stoppers, spacers, and postponers (Timæus and Moultrie 2008, 2013), so we would expect the distribution of fertility desires to reflect evidence of all three motivations for fertility control.

Although the postponement framework was developed to explain the prevalence of very long birth intervals, postponement need not always produce this result. Rather, a postponement orientation is identified by motivations in the open interval—specifically, the desire to avoid having a birth based on reasons other than past fertility history. When describing our approach and results, we use the term *delay* to define any desired or actual lengthening of the birth interval beyond the biological minimum, regardless of the motivation for this desire or the actual interval. We use the terms *postponement* and *spacing* to describe the varying motivations behind delay.

We propose two core hypotheses, the first addressing determinants of desires to delay, and the second related to the association between duration and desires to delay.

> *Hypothesis 1:* The desire to delay the next birth is shaped by current conditions (e.g., social, economic, health, and marital partnership status).

Because the postponement model assumes that decisions about birth timing are not driven by schedule concerns, it also implies that unfavorable conditions for childbearing may lead to continued desires to delay even at long intervals. We operationalize *long* durations as those extending far beyond average or normative birth intervals expected for purposes of birth spacing.

> *Hypothesis 2:* A substantial proportion of women want to delay the next birth beyond the normative birth interval.

In contrast to these two hypotheses, the classic demographic model proposes that efforts to avoid a birth are attributable either to parity-based stopping desires or calendar-based spacing desires.

> *Alternative Hypothesis 1A:* Desires to delay the next birth are determined by the age or developmental stage of the youngest child (i.e., normative birth calendar).

> *Alternative Hypothesis 2A:* After the youngest child has reached a certain age or developmental milestone, women want another child right away unless they have decided to stop childbearing. Desired timing may vary across women but will be clustered around a normative interval.

The second component of the postponement model is that the desire to avoid childbearing is not always clearly identifiable as either a quantum or tempo goal. Women may not have a clear idea of whether they want to delay a birth only temporarily or to have no more children; these desires may be mismeasured by survey questions that presuppose a clear distinction between number and timing goals; and women's longer-term plans may change over time in response to changing conditions. These assumptions suggest a third hypothesis contrasted with the classic demographic alternative.

Hypothesis 3: Women might maintain desires to delay over long periods, or they might move back and forth between wanting to delay and wanting to stop childbearing. Changes in conditions predict changes in wanting to delay.

Alternative Hypothesis 3A: Over time, women who want to delay a birth will transition to wanting a child soon.

We test these hypotheses using cross-sectional bivariate tabulations (Hypotheses 1 and 2), cross-sectional multivariate analysis (Hypothesis 1), longitudinal bivariate tabulations (Hypothesis 3), and longitudinal multivariate analysis (Hypothesis 3). Because our data, like most survey data, were not explicitly designed to measure postponement desires (Timæus and Moultrie 2008), we rely on the accumulation of multiple pieces of indirect evidence to provide support for these hypotheses rather than focusing on a single central analysis.

Data and Methods

Data

Data come from three waves of a population-based survey of rural ever-married women of reproductive age conducted in 56 villages of four contiguous districts (with a total area of 5,900 square miles and a population of about 625,000) of Gaza province in southern Mozambique. The survey collected detailed demographic and socioeconomic information, including pregnancy histories, reproductive intentions, husband's migration history, household economic status, and HIV/AIDS awareness and prevention. Questions were largely comparable across waves. The first wave of data collection surveyed 1,678 married women aged 18–40 in June–July 2006. In each district, 14 villages were selected with probability proportional to size, and approximately 30 women were interviewed in each village. Households were randomly selected in each village, with stratified sampling to produce equal numbers of women married to migrants and nonmigrants, and eligible women were randomly sampled within households. Women who self-identified as married were eligible for inclusion regardless of whether the marriage was formal or informal. In June–July 2009, the survey team attempted to relocate and reinterview all women from the original sample. To maximize retention, follow-up data collection efforts were carried out in October 2009 and June–July 2010. In all, 1,407 women from the original sample (84 %) were reinterviewed. A refresher sample was randomly selected to replace women lost to attrition, for a total sample in Wave 2 of 1,868 women.[3] In 2011, all women interviewed in

[3]Some of the original respondents who were replaced from the refresher sample were then located and interviewed in follow-up data collection efforts. Because the original and the refresher sample respondents were both retained, the total sample size increased in each subsequent wave.

either 2006 or 2009 were eligible for the third wave of data collection. As in 2009, the primary data collection took place in June–July, with follow-up data collection efforts a few months later and one year later to seek out women not reached in the main data collection. Including additional sample refreshment, a total of 2,060 women were interviewed in Wave 3. Overall, 1,342 women from the 2006 sample (80 %) were interviewed in the third wave; 1,279 women (76 % of the 2006 sample) were interviewed in all three waves; and 1,876 women were interviewed at least twice.

Measures

The main outcome in this study is a three-category measure of fertility desires: whether women wanted to stop childbearing, have a child right away (within two years), or delay the next birth (for two or more years). All women were asked, “Would you like to have (more) children in the future, even if not right away?” This question is similar to questions about fertility desires included in the Demographic and Health Surveys (DHS) as well as in surveys in low-fertility settings, such as the National Surveys of Family Growth (NSFG) in the United States. We therefore refer to it as a standard measure of fertility desires. This question, however, includes the nonstandard probe, “even if not right away.” This probe was designed to target women who might be unsure about their long-term fertility goals. Response options for the question were yes, no, and don’t know. Women who responded *yes* were asked how long they would prefer to wait before having a child. Response options were right away, within two years, in more than two years, depends on husband, up to God, and don’t know. *Right away* and *within two years* responses were grouped together, as is standard in demographic analyses, given that both categories imply a desire to get pregnant in the near future. *Don’t know*, *depends on husband*, and *up to God* responses were included with *in more than two years*. Women who responded *don’t know* to the initial question about the desire for more children were also included in the *delay* category (results are substantively similar when these women are treated as a separate response category). For women who were pregnant at the time of the survey, questions about future children refer to children after the birth of the child they were carrying.

In addition to the main measure of fertility desires, we also use responses to a question included in the second wave about the reasons for not wanting to have a child. Women who wanted to stop childbearing or who did not want their next child right away were asked why they did not want a child. (These questions were not asked of women who did not know whether they wanted another child.) Respondents gave open-ended responses to this question that were then classified by interviewers into a set of available categories or a write-in *other* response category. Multiple responses were possible, and it was also possible for respondents to give no answer.

We describe the association of fertility desires with demographic factors (woman’s age, age of youngest child, parity, births, child deaths, and changes in marital status) and individual and household characteristics. Age of the youngest child, parity, births, and child deaths are taken from fertility histories; changes in marital status are taken from marriage history data. The original sampling frame was limited to married women; only separation, and not remarriage, was observed between Waves 1 and 2.[4] Because marriage in the study area is

largely virilocal, women typically move away from their husband's home after a divorce or separation, and these moves often take women out of the study area. Although the survey team was able to track many of these women, women who divorced were disproportionately lost to follow-up, and the study underrepresents the experience of women after marital dissolution.

Individual and household characteristics include cross-sectional measures and changes in household economic status, husband's migration status, self-rated health, and concern about HIV. We chose the measures most consistently associated with outcomes to include in final models; indicators considered but not included in final models are housing construction material, access to electricity, availability of piped water, and sanitation facilities. Economic status measures include an index variable capturing household ownership of durable goods (scaled from 1–4; cross-sectional models only); a dichotomous measure of whether the household owns cattle, a traditional marker of wealth in this context; and a measure of how many days the respondent ate meat, fish, or poultry in the past week. The first two measures represent long-term accumulation of wealth, and the third describes resource availability in the short term. For the measure of cattle ownership, we tested both continuous (number of cattle) and dichotomous (any vs. none) specifications. We found that the dichotomous specification was more strongly associated with fertility desires, likely because it represents larger variation, and we use this specification in final models. In addition to these objective measures, we include a subjective measure of relative economic status. In the second and third survey waves, women were asked, "In your opinion, compared to the living conditions of the majority of households in this community, are the living conditions in your household better, worse, or about the same?" Although focused on the household, these measures may indirectly reflect changes in the broader economic, political, and social environment. We do not directly incorporate economic conditions beyond the household in this analysis.

For husband's migration status, in addition to distinguishing between migrants' and nonmigrants' wives, we subdivide the former based on a subjective measure of how migration affects the household. In previous research in the study site, this measure has been shown to predict demographic and health outcomes (Agadjanian and Hayford 2018a; Agadjanian et al. 2011; Yabiku et al. 2012). In each survey wave, women who reported that their husband was a migrant were asked whether their household was economically better off, worse off, or about the same since their husband had migrated. Husbands whose wives reported that their household was better off were classified as *successful* migrants, and all other migrants were classified as *unsuccessful* migrants. For longitudinal analyses, we create three categories of change in migration status: (1) transition to successful migrant (from unsuccessful migrant or nonmigrant), (2) transition to unsuccessful migrant (from successful migrant or nonmigrant), and (3) cessation of migration.

We use two main measures of health. In all three waves, women were asked how worried they were about contracting HIV. Possible responses were very worried, a little worried, and not at all worried. Because of the distribution of responses, we focus on the *very worried*

[4]In theory, women who experienced marital dissolution after Wave 1 could have married by Wave 2. In practice, no remarriages occurred during this three-year time frame.

category. We create a variable for change in worry about HIV coded as *more worried* for women who shifted into the *very worried* category between waves, and *less worried* for women who shifted out of the *very worried* category. In Waves 2 and 3, women were also asked to provide a subjective rating of overall health (good vs. poor or so-so). We include this measure in analyses using data from these waves.

Methods

Cross-sectional analyses primarily use data from Wave 2 of the survey; this wave was chosen because it included the largest set of measures of fertility intentions. (Where possible, we replicate analyses using data from other waves, and results do not differ substantively from the results for Wave 2. These sensitivity analyses are available on request.) We begin by describing the reasons associated with wanting to delay the next birth. Next, we present multivariate analyses of the determinants of fertility desires, using multinomial logistic regression to analyze our three-category outcome; this approach is adapted from a similar analysis used in Hayford et al. (2012). These analyses test Hypothesis 1. We then proceed to a bivariate description of the association of fertility desires with the age of the youngest living child to test Hypothesis 2.

Longitudinal analyses are used to test Hypothesis 3. We first present descriptive analyses of transitions between categories of fertility desires between Waves 1 and 2 and between Waves 2 and 3. We then analyze changes in fertility desires across waves. We use multinomial logistic regression to model fertility desires at a later wave as a function of desires in the previous wave and between-wave changes in characteristics. These analyses primarily use data from Waves 2 and 3, again because of the availability of a wider set of measures in these waves. We replicate analyses using a smaller set of measures available in all three survey waves; these analyses suggest some differences in associations across waves, which we describe briefly in the text. Full results for these replications, along with descriptive statistics, are provided in section 2 of the online appendix.

Results

Table 1 shows characteristics of the sample. Women interviewed in Wave 1 were about 27 years old and had 2.4 living children, on average. The mean number of living children increased by 1.2 over the three survey waves. (This increase accounts for both births and child deaths during the survey period.) The proportion of women who want to delay childbearing declined slightly over the study period, from 25.4 % in Wave 1 to 19.7 % in Wave 3. The proportion of women who wanted to stop childbearing nearly doubled, increasing from 26.5 % to 48.3 %. These changes are most likely the result of the aging (and increased parity) of the survey sample.

Determinants of the Desire to Delay Birth

Table 2 tests Hypothesis 1, that the desire to delay the next birth is determined by current conditions and not only the time elapsed since the last birth. This table (based on Wave 2 data) shows reported reasons for not wanting a child now among women who said that they wanted another birth but wanted to wait at least two years. For comparison, reasons given by

women who wanted to stop childbearing are also listed. We show all reasons reported by at least 5 % of women. Recall that women could provide more than one reason or no reason for wanting to limit fertility; about 38 % of women gave no reason for wanting to delay a birth. The most common reason given for wanting to delay was a woman's own physical capacity for childbearing (too old to give birth, or poor health). About one in four delayers cited this motivation. The next two most common reasons, mentioned by about 15 % of women each, were poor economic conditions and child spacing reasons (waiting to wean the youngest child, waiting until the youngest child could walk, and so on). This distribution shows some support for a classic spacing model (as specified by Hypothesis 1A) but also substantial evidence that other conditions besides the time since the last birth are common motivators for wanting to delay.

Among women who wanted to stop childbearing, having enough children was the most commonly provided reason (almost 60 % of women), but about one-third of women gave reasons related to their own health or physical capacity, and about one-third of women said poor economic conditions were a reason to stop childbearing. Thus, stopping desires appear to be motivated by individual characteristics and household conditions as well as targets for desired family size. The association between current conditions and stopping desires is more consistent with the approach to fertility decision-making described by the postponement model than with a strict target model of fertility. In fact, these responses suggest that some of the women who report stopping desires on the standard question might be more accurately classified as postponers.

To further assess the determinants of the desire to delay the next birth, we estimate multinomial logit models predicting delay versus wanting to have a child soon or wanting to stop childbearing (Table 3). We present results from Wave 2 only, but other waves show substantively similar patterns. Distributions for the independent variables in Table 3 are provided in section 1 of the online appendix (Table A1.1). Consistent with Hypothesis 1, several current conditions are associated with the desire to delay the next birth versus having a child soon or stopping childbearing, even when we control for the age of the youngest living child. Marital status is the condition most strongly associated with the desire to delay. Given the strong normative links between marriage and childbearing in this setting, unmarried women are more likely to want to delay the next birth relative to wanting to have it soon ($b = 0.76$) and less likely to want to delay the next birth versus wanting to stop childbearing ($b = –0.81$). Furthermore, women married to unsuccessful migrants—men whose migration has not improved household economic conditions—are also more likely to want to wait at least two years before having another child versus having a child soon ($b = 0.36$). This association is not driven by the husband's absence: women married to successful migrants are *less* likely to want to delay a birth ($b = –0.38$). Husband's migration is also not associated with stopping versus delaying desires. Rather, the combined economic and relationship uncertainty implied by unsuccessful migration appears to be associated with desires regarding fertility in the immediate future, consistent with the postponement model.

Contrary to Hypothesis 1, household economic conditions (represented by the asset index) are not associated with wanting to delay the next birth versus wanting a child soon. However, women living in households that own cattle are more likely to want to delay versus

have no more children, suggesting that household wealth reduces the desire to stop. In contrast, women with lower food security are less likely to want to delay versus stop. Good self-rated health is positively associated with desires to delay versus stop, but not with timing desires. Other findings from Table 3 are consistent with a stopping/spacing model. Most notably, the age of the youngest living child is a strong predictor of the desire to delay a birth, supporting Hypothesis 1A. The number of living children is a strong predictor of the desire to stop childbearing, consistent with a stopping/spacing model, but also of the desire to delay versus have a child soon. This latter association is more consistent with the postponement approach, which suggests porous boundaries between stopping and delaying desires.

Distribution of Desires to Delay the Next Birth

Figure 1 addresses Hypothesis 2, which posits that a substantial proportion of women would desire to postpone childbearing beyond the normative birth interval. It shows the proportion of women who report wanting to delay the next birth (i.e., to have a child but wait at least two years) according to the age of the youngest living child. The figure is based on data from the second survey wave; other waves show similar patterns (available on request). Figure 1 shows a decline in the desire to delay with time since last birth, particularly over the first three years of the birth interval, which is consistent with a spacing model. However, substantial proportions of women want to delay even at quite long intervals. For instance, among women whose youngest living child is 5–9 years old, approximately 21 % want another birth in two or more years. Of course, there is individual variation in the desired birth interval, even among women motivated by spacing concerns. Still, it is difficult to reconcile the high prevalence of the desire to delay among women well beyond the median birth interval with the classic definition of spacing. Figure 1 thus supports the existence of a postponement desire distinct from the desire to space childbearing.

We see a discontinuity in Fig. 1 between ages 3 and 4, around the length of the median birth interval. (There is a corresponding increase in wanting a child soon at this interval but no discontinuity in the proportion of women who want to stop childbearing; data not shown.) This discontinuity may reflect selection processes shaping the sample of women observed at longer intervals. The subgroup of women most driven by calendar-based timing desires may be likely to have a birth within the first three years; thus, the population of women observed at longer birth intervals is selective of women motivated by other concerns besides calendar time (i.e., postponers), or, potentially, of women most able to carry out desires to postpone childbearing. This discontinuity in the figure, as well as the overall decline in desires to delay at longer intervals, constitutes some support for Hypothesis 2A.

After Delaying: Wanting to Stop, Wanting to Have a Child Soon, or Delaying Further?

Hypothesis 3 asserts that women may persist over time in their desire to delay childbearing or transition between wanting to delay and wanting to stop, rather than moving from wanting to delay to wanting a child soon as would be expected under a spacing model.

To test this hypothesis, we examine changes in fertility desires among women who do not have a child between waves (Table 4). The top panel of Table 4 describes transitions between

Waves 1 and 2 (three years apart), and the bottom panel describes transitions between Waves 2 and 3 (two years apart). In both panels, the numbers shown are row percentages representing the Time 2 distribution of women according to their Time 1 desires. The row percentages are highly similar across the two between-wave periods; we focus discussion on the bottom panel (W2–W3).

About one-half of women who said at Wave 2 that they want to delay the next birth have transitioned by Wave 3 to wanting a child soon, as would be expected under a spacing model. However, nearly one-third of women (31.6 %) transition to saying that they want to stop childbearing, and a substantial minority (19.0 %) persist in their desire to delay childbearing. Among women who say they want to stop childbearing at Wave 2, more than three-quarters (75.7 %) persist in this desire by Wave 3; a relatively small proportion (11.0 %) change to wanting to delay the next birth. The findings in Table 4 are therefore consistent with both a postponement model and a spacing/stopping model, and both Hypothesis 3 and Hypothesis 3A find some support.

The results of multivariate models of between-wave transitions accounting for births between waves as well as changes in demographic and economic conditions are presented in Table 5. Descriptive statistics for independent variables in these models are included in the online appendix (Table A1.2). These models examine transitions between Waves 2 and 3. Results from supplementary models using a smaller set of variables available at all three waves are in the online appendix (Table A2.1 for Waves 1–2 and Table A2.2 for Waves 2–3). For the most part, results are similar for changes between the first two waves and changes between the second and third waves; we note in the text where results differ for the earlier period.

Controlling for between-wave changes, wanting to delay the next birth at Wave 2 is positively and significantly associated with wanting to delay the next birth versus wanting to have a child soon at Wave 3 ($b = 0.41$). A spacing model of fertility timing desires would imply that women who want to wait for the next child at one time point should transition to wanting a child soon some two years later; the positive association found here is more supportive of a postponement model, which proposes that the desire to delay can be persistent.

Women who experience marital dissolution between waves are more likely to want to delay versus have a child soon at the next wave ($b = 1.43$), consistent with the cross-sectional results (Table 3) as well as with postponement model predictions. For married women, those whose husband transitions to successful migration between waves are less likely to want to delay at Wave 3, as would be expected based on the cross-sectional findings. (In supplementary models, this association is not statistically significant for transitions between Waves 1 and 2, although it is in the predicted direction.) Women living in households that lose cattle ownership between waves—a measure of declining economic stability—are more likely to want to delay versus have a child soon at Wave 3 ($b = 0.76$). (The coefficient for loss of cattle ownership is not statistically different from 0 for transitions between Waves 1 and 2.) Parity, age, and worsening health are associated with reduced likelihood of wanting to delay versus wanting to stop at Wave 3 (i.e., increased likelihood of wanting to have no

more children), which is consistent with the reasons for stopping reported in Table 2. Other between-wave transitions, however, are not associated with wanting to delay at Wave 3. Overall, then, results from Table 5 are only weakly supportive of Hypothesis 3.

Discussion and Conclusion

In this study, we propose three hypotheses based on the postponement model defined by Timæus and Moultrie (2008). *Postponement* describes an orientation toward childbearing where the primary decision is whether to have a child in the near future rather than how many children or at what interval. Our results show strong support for Hypothesis 1 on the reasons for the desire to delay a birth and Hypothesis 2 on the distribution of desires to delay a birth by time since the last birth. We find weaker support for Hypothesis 3, regarding the determinants of changes in timing desires, but these tests are limited by imperfect measurement of the conditions relevant to fertility decision-making. We demonstrate that some women who want to delay a birth persist in this desire, rather than transition to wanting a child soon as would be predicted by the classic definition of spacing. Overall, our findings confirm that the postponement model is a reasonable representation of individual outlooks: some women who express the desire to delay a birth are motivated by goals other than a fixed desired interval length, and the boundaries between desires to delay and desires to stop are fluid. More generally, this work adds to the growing body of evidence on the dynamic nature of fertility preferences (e.g., Hayford and Agadjanian 2017; Iacovou and Tavares 2011; Rackin and Bachrach 2016; Sennott and Yeatman 2012; Trinitapoli and Yeatman 2018; Yeatman et al. 2013) These analyses show that the patterns associated with a postponement orientation can be identified using standard demographic survey questions on fertility desires, although the identification is easier when these questions are supplemented by additional questions about motivations or administered longitudinally.

A key challenge in our effort to identify postponement desires using survey data is that standard measures are designed for stopping and spacing, not postponement (Timæus and Moultrie 2008). We infer the presence of postponement desires largely by noting inconsistencies between standard categories and the models that are assumed to generate them. One implication of these inconsistencies is that both the *stopping* category and the *spacing* category as defined by standard survey questions likely include some women who are really *postponers*. The proportion of women wanting to postpone in each category is difficult to determine and doubtless varies across contexts and over time.

A natural next step in developing the postponement model might be to try to refine survey measurement in order to identify postponement desires more directly. Current demographic surveys ask respondents whether they ever want to have a child. A postponement orientation implies that the primary question should instead be whether they want a child *now*.[5] Adjusting the standard survey measure of fertility desires to focus on present desires, with a possible add-on about longer-term potential options, would be straightforward, although of course any improvement in survey design comes at a cost of comparability with past

[5]Ryder (1973:502) took this suggestion to its logical extreme by noting that the only decision couples have to make about fertility is "whether to permit the next ovulation to come to fruition."

measures. In this case, because multinational surveys, such as the World Fertility Surveys and DHSs, have collected data on fertility desires over multiple decades, this cost could be substantial.

Alternatively, it may be possible to distinguish more clearly among stoppers, spacers, and postponers within the framework of standard survey questions. Our question asking about reasons for avoiding childbearing is an effort in that direction. Other surveys have asked women about the conditions under which they might change their current fertility desires (Trinitapoli and Yeatman 2018) or about their level of certainty regarding their fertility plans (Machiyama et al. 2017). These approaches may be fruitful in understanding the contingent nature of preferences, although the challenge of incorporating sufficient specificity to capture individual and contextual conditions may make it difficult to develop survey measures that are comparable across contexts.

Our analysis focuses on identifying postponement *desires*. The *outcomes* of a postponement orientation depend on the dynamics of desires over time. Because desires evolve based on changing conditions, a fuller understanding of fertility behavior under a postponement regime would require further refinement of the conceptualization and measurement of relevant conditions in multiple domains. These efforts toward refinement are underway. Most notably, there are widespread attempts to improve measurement of economic conditions and subjective perceptions of these conditions, although there is as yet little consensus in the use of improved measures. There have been fewer attempts to develop systematic measures of perceived stability of romantic relationships, perceived future outcomes for children, or other conditions relevant to fertility desires. In particular, very few studies have attempted to define and measure relevant conditions beyond the individual or very local level.

The outcomes of postponement desires also vary with patterns of contraceptive use among postponers. If women who want to postpone the next birth have less stable or less fixed desires—or if they understand their own goals as less stable—they may be less likely to use highly effective, long-acting methods of contraception than women who want to stop or space, and thus may be at greater risk of having an unintended birth. Identifying distinctive approaches to contraception among postponers could help to optimize the provision of family planning services or prevention of unintended fertility.

The conceptual model of postponement (in its most recent iteration) was developed in order to explain the distinctive nature of sub-Saharan fertility transitions. However, it has always been clear that postponement is not a uniquely African phenomenon. Timæus and Moultrie (2008), in their original formulation, drew on literature from low-fertility contexts to develop the concept of postponement, and the concept has since been further developed in writing on the impact of the Great Recession on fertility in Europe and the United States (e.g., Cherlin et al. 2013; Schneider 2015; Sobotka et al. 2011). Scholarship on war and political conflict points to the consequences of uncertainty for fertility delay in various parts of the world (e.g., Agadjanian and Prata 2002; Clifford et al. 2010; Lindstrom and Berhanu 1999; Ryder 1980), and recent evidence from Brazil shows that the Zika outbreak prompted short-term fertility decline (Rangel et al. 2018). Recent research has found that fertility transition was

accompanied by long and lengthening birth intervals in Latin America and the Caribbean, South and Southeast Asia, and West Asia and North Africa as well as in sub-Saharan Africa, although birth intervals are longer at early stages of the transition in the sub-Sahara than in other world regions (Casterline and Odden 2016). Thus, delaying births as a component of fertility transition appears to be universal.

If the postponement mindset is widespread across world regions, the next question is why the fertility regime that results from this mindset is different in sub-Saharan Africa than in the rest of the world. Postponement is the product of uncertain or unpredictable conditions stemming from macro-level phenomena—such as economic recession, political upheaval, and climate change—or micro-level conditions—such as unstable marital relationships and poor health. Moultrie and Timæus (2017) argued that both the level and the nature of uncertainty in sub-Saharan Africa are qualitatively different than in other world regions, and thus that postponement orientations in the region have unique consequences. Sub-Saharan Africa may also differ from other world regions in the way that its residents are confronted with different types of uncertainty and consider fertility regulation as a strategy for responding to them. In fact, in some situations, uncertainty appears to be associated with accelerated fertility: for instance, people who are uncertain about their HIV status are more likely to want a birth soon (Hayford et al. 2012; Trinitapoli and Yeatman 2011). Fertility responses to uncertainty also vary depending on the availability of material resources (Garver 2018). It is unclear whether postponement as a response to uncertainty is a new family building strategy in sub-Saharan Africa or is instead an adaptation of long-standing strategies to new conditions. Regardless of its nature, the ubiquity of postponement in contemporary fertility regimes calls for further development of the construct as a distinctive fertility mindset.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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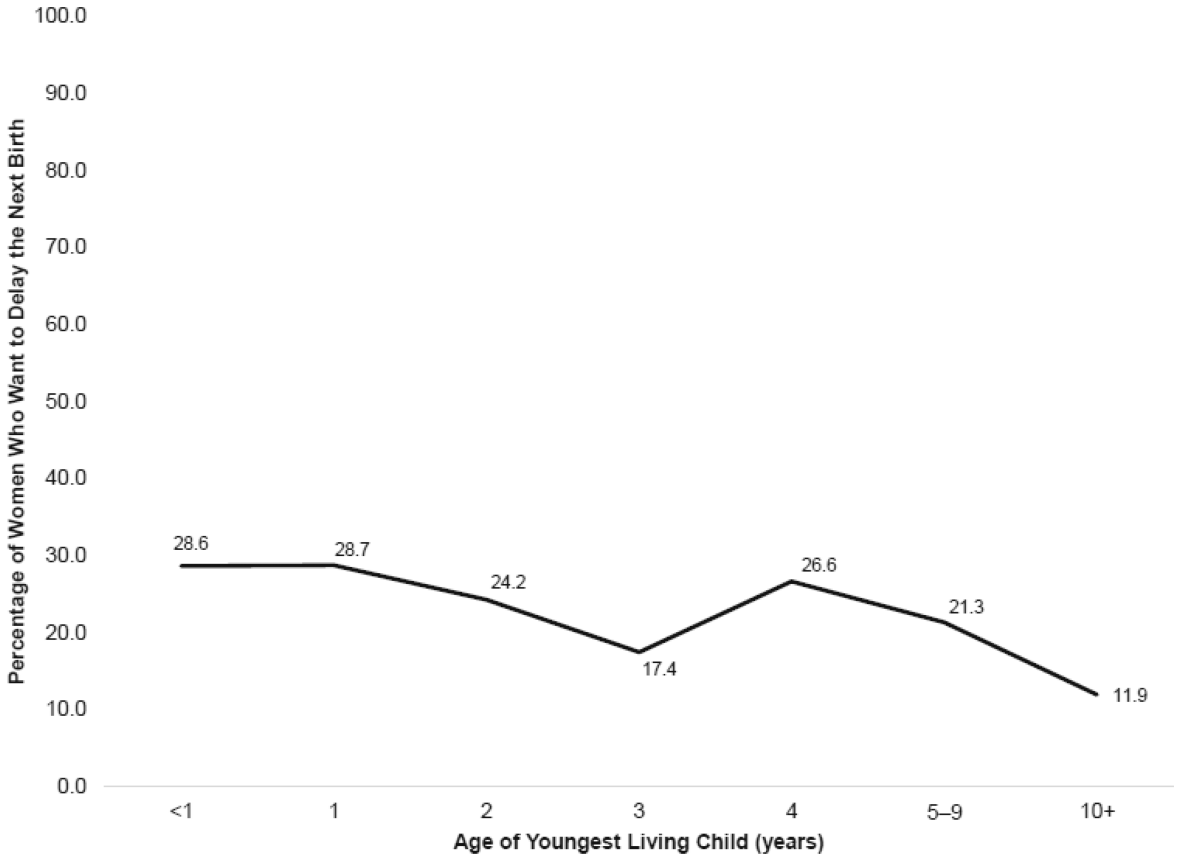

Fig. 1.

Women who want to delay childbearing, by age of youngest living child. *N* = 1,773 women interviewed at Wave 2 with nonmissing data on fertility desires.

Table 1

Characteristics of women in sample

	Wave 1	Wave 2	Wave 3
Age in Years (mean)	27.1	30.3	32.3
Number of Living Children (mean)	2.4	3.2	3.6
Want to Delay Childbearing (%)	25.4	23.5	19.7
Want to Stop Childbearing (%)	26.5	41.6	48.3
N	1,668	1,865	2,051

Note: Women interviewed in each survey wave with nonmissing data on fertility desires.

Table 2

Reasons provided for not wanting a child now

	% of Women Wanting to Delay Childbearing Who Cited Reason	% of Women Wanting to Stop Childbearing Who Cited Reason
Tired of Giving Birth, Too Old, Poor Health	27.4	33.0
Poor Economic Conditions	15.0	34.5
Wait Until Youngest Child Is Weaned/Walking/Old Enough	14.5	0.13
Enough Children	1.8	59.9
No Reason Given	37.8	0.52
N	339	775

Notes: Women interviewed at Wave 2 who reported wanting to delay childbearing or stop childbearing. The table includes all reasons given by at least 5 % of women in at least one of the two categories. Women who did not know whether they wanted another child were not asked about reasons for not wanting and are not included in this table.

Table 3

Multinomial logistic regression models predicting the desire to delay the next birth versus want a child soon or want to stop childbearing based on individual and household characteristics

	Later vs. Soon		Later vs. Stop	
	b	**SE**	***b***	**SE**
Intercept	−0.17	0.32	1.68***	0.33
Number of Living Children	0.32***	0.07	−0.59***	0.07
Age of Youngest Living Child (years)				
<2 (ref.)				
2–4	−0.74***	0.16	−0.10	0.15
5–9	−0.98***	0.23	0.17	0.24
10+/no living children	−1.64***	0.33	−0.49	0.38
Age (years)				
<24 (ref.)				
25–29	0.01	0.19	−0.10	0.21
30–34	−0.19	0.22	−0.24	0.24
35–39	−0.17	0.29	−0.41	0.29
40 and over	0.25	0.41	−0.89*	0.38
Marital Status				
Not married	0.76*	0.30	−0.81**	0.26
Married to nonmigrant (ref.)				
Married to successful migrant	−0.38*	0.17	0.04	0.18
Married to unsuccessful migrant	0.36†	0.19	−0.02	0.19
Education and Economic Resources				
No formal schooling (ref.)				
1–4 years of schooling	−0.11	0.17	−0.22	0.16
5 or more years of schooling	0.06	0.18	−0.11	0.18
Household wealth index (1–4)	−0.05	0.07	0.01	0.07
Household owns cattle	0.20	0.15	0.34*	0.15
Days in past week ate meat, chicken, or fish	−0.05	0.04	−0.09*	0.04
Health				
Very worried about HIV	−0.10	0.14	0.03	0.14
Good self-rated health	−0.21	0.16	0.28†	0.16
−2 Log Likelihood	3,083			

Note: N = 1,785 women interviewed in the second wave with nonmissing data on dependent and independent variables.

† $p < .10$;

* $p < .05$;

** $p < .01$;

*** $p < .001$

Table 4

Changes in fertility desires between waves for women who did not have a child between waves

	Desires at Wave 2 (%)		
	Soon	**Delay**	**Stop**
Wave 1 Desires (*N* = 406)			
Want a child soon	74.0	12.4	13.6
Want to delay	55.7	16.5	27.9
Want to stop	22.0	12.7	65.3
	Desires at Wave 3 (%)		
	Soon	**Delay**	**Stop**
Wave 2 Desires (*N* = 824)			
Want a child soon	75.4	11.9	12.7
Want to delay	49.4	19.0	31.6
Want to stop	13.4	11.0	75.7

Notes: Women interviewed in two consecutive survey waves with no birth between waves and not pregnant at the second wave. Row percentages may not add to 100 because of rounding.

Table 5

Multinomial logistic regression predicting desires at Wave 3 from desires at Wave 2 and between-wave changes in individual and household characteristics

	Later vs. Soon		Later vs. Stop	
	b	**SE**	***b***	**SE**
Intercept	−2.41***	0.31	1.92***	0.33
Characteristics in Previous Wave				
Number of living children	0.24***	0.07	−0.43***	0.07
Age 25 and under (ref.)				
Age 26–30	0.07	0.20	−0.47*	0.20
Age 31 and older	−0.29	0.23	−0.98***	0.23
Education				
No formal schooling (ref.)				
1–4 years of schooling	0.23	0.20	−0.28	0.19
5 or more years of schooling	0.51*	0.22	−0.34	0.21
Desires in Previous Wave				
Want to have a child soon (ref.)				
Want to delay	0.41*	0.19	−0.32†	0.20
Want to stop	0.75***	0.22	−1.07***	0.20
Demographic Change				
Birth between waves/pregnant at interview	1.64***	0.18	−0.06	0.17
Child death	−0.66†	0.37	0.60	0.40
Marital dissolution	1.43***	0.36	−0.05	0.29
New marriage	−0.09	0.69	0.12	0.71
Change in Husband's Migration Status				
To successful migrant	−0.50	0.27†	−0.04	0.28
To unsuccessful migrant	−0.11	0.25	0.23	0.25
Returned migrant	−0.12	0.22	−0.17	0.20
Change in Health				
More worried about HIV	0.00	0.22	0.22	0.22
Less worried about HIV	0.25	0.18	0.18	0.17
Better self-rated health	−0.19	0.23	−0.13	0.22
Worse self-rated health	0.09	0.24	−0.42†	0.22
Change in Economic Conditions				
Subjective relative improvement	0.02	0.22	0.01	0.21
Subjective relative worsening	−0.09	0.24	−0.07	0.23
New cattle ownership	−0.01	0.29	0.13	0.28
Loss of cattle ownership	0.76*	0.34	0.29	0.30
Change in days ate meat, chicken, or fish	0.00	0.04	−0.04	0.03

	Later vs. Soon		Later vs. Stop	
	b	**SE**	***b***	**SE**
−2 Log Likelihood	2,731			

Notes: Women interviewed at Waves 2 and 3 with nonmissing data on all measures. $N = 1{,}519$. For measures of between-wave changes, the reference category is no change.

$^{\dagger}p < .10$;

$^{*}p < .05$;

$^{***}p < .001$