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The Influence of Wives' and Husbands' Fertility Preferences on Progression to Third Parity Births in Nepal, 1997 to 2009

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Abstract

As couples across the globe increasingly exercise conscious control over their reproduction, and as both spouses' preferences have the opportunity to influence fertility, there is a growing need to examine the influence of both husbands' and wives' preferences on fertility outcomes. Using couple-level measures of rural Nepalese spouses' family size preferences—followed by more than a decade of monthly panel data on fertility outcomes—we investigate how both spouses' preferences influence the rate of progression beyond the widely-reported ideal family size of two children to third births. Contrary to expectations based on women's relative disadvantage, we find that wives' preferences drive couples' progression to third births. We further investigate possible mechanisms and find that contraceptive use does not explain the influence of wives' preferences, but that couple communication about family planning moderates this influence: Wives' preferences drive third parity births among couples who had discussed how many children to have.

Keywords

Fertility; Fertility Preferences; Contraceptive Use; Couple Communication; Parity Progression; South Asia

Introduction

As the prevalence of contraceptive use rises across the globe and married couples exert conscious control to limit their fertility, preferences regarding family size become increasingly important predictors of fertility behaviour. The family size preferences of the husband and wife are likely to be particularly relevant: Either the husband or wife, or both, may influence their fertility outcomes (Bankole 1995; Miller and Pasta 1995; Becker 1996; Bawah et al. 1999; DeRose and Ezeh 2005; Gipson and Hindin 2009; DeRose and Ezeh 2010). While husbands and wives often have similar fertility goals because they experience similar cultural influences (Thomson 1990; Miller and Pasta 1995), they do not always agree on the ideal number of children for their family. In fact, past research reveals that, although men and women may have similar preferences at the aggregate level (Mason and Taj 1987;

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Ezeh et al. 1996), there can be considerable discrepancy at the couple-level (Bankole and Singh 1998).

To understand the relationship between fertility preferences and fertility behaviour, therefore, it is important to investigate couple decision-making patterns (Dodoo 1998; Voas 2003). Existing research shows that the influence of each partner varies by setting (Bankole and Singh 1998). The prevailing gender system can affect how much each spouse's fertility preference influences the couple's fertility behaviour (Morgan and Niraula 1995; Mason and Smith 2000; Takyi and Dodoo 2005). Regional fertility levels and contraceptive prevalence may also affect how each spouse's preferences weigh in fertility decision-making. Much of the existing research on this topic has been conducted in sub-Saharan Africa (e.g., Ezeh et al. 1996; Bankole and Singh 1998; Takyi and Dodoo 2005; DeRose and Ezeh 2010), where fertility levels are generally comparatively high (United Nations 2011) and use of long-term non-coital specific contraceptive methods is relatively low (Khan et al. 2007; Hubacher et al. 2008). Because patterns of decision-making are expected to vary by context, it is important to expand the geographic scope of these investigations. This study focuses on spousal decision-making in a rural South Asian setting.

Longitudinal data can offer insight into the influences of wives' and husbands' fertility preferences. Most studies that show associations between fertility preferences and behaviours use cross-sectional data (e.g., Dodoo 1998; Mason and Smith 2000; Maharaj and Cleland 2005). These studies are limited because of the temporal ordering of the attitudinal and behavioural measures. Only a few studies have used longitudinal data to examine the influence of each spouse's fertility preferences, and these studies have somewhat inconsistent findings. A study in southwest Nigeria found that husbands' preferences are more influential for low parity births, but wives' preferences prevail for high parity births (Bankole 1995). In contrast, in rural Bangladesh, Gipson and Hindin (2009) found that wives' preferences dominate childbearing behaviours, although over time wives become more likely to acquiesce to their husbands' desires.

This study focuses on couples' rate of progression to third parity births. In contemporary Nepal, a majority of people state that two children is the ideal family size (Ministry of Health and Population [Nepal], New ERA, and ICF International Inc. 2012), which is a norm that has been promoted by family planning initiatives since the 1960s (Stash 1999; Thornton et al. 2012). Yet, on average, Nepalese women surpass their ideal family size by about one child (Ministry of Health and Population [Nepal], New ERA, and ICF International Inc. 2012). Among the population that we study, in rural Chitwan, Nepal, 60 percent of respondents in 1996 and 73 percent in 2008 reported that they want two children, yet 85 percent of women who had completed their childbearing years by 2008 had three or more children. Couples who have two children are at a crucial juncture, as this is when the disconnect between ideal family size and achieved fertility occurs for many. Moreover, because a two-child family is the ideal, it may not be until after the second child that couples make conscious decisions about whether to have another child (Davidson and Beach 1981). Because most couples have at least two children, the between-couple variance in timing to first and second births is likely to be minimal. This paper focuses on understanding each

spouse's role in deciding whether to progress beyond the widely held ideal of a two-child family in contemporary Nepal.

We used more than a decade of panel data to study the influence of each spouse's preference on subsequent childbearing. Specifically, we employed event history analyses to examine whether each spouse's family size preference has an independent influence on third parity progression. We then investigated possible mechanisms through which their influence operates.

Setting

Our conceptual framework is designed around the setting of Chitwan, Nepal: a mainly agrarian district in the southern region of the country. Arranged marriage, though gradually declining, is prevalent in this setting. Slightly over half of ever married men and women (55 percent as of 2008) did not participate in choosing their spouse. Thus, many marriages are not initiated with an emotional bond, and, instead, are arranged based on ethnic identity and social standing (Bennett 1983). Wives typically are expected to defer to their husbands – an expectation often enforced by co-residing in-laws (Bennett 1983; Link 2010).

The population of Chitwan is largely dependent on subsistence agriculture and children are highly valued for the work they can perform on the farm (Cain 1977). But, with an increase in schooling and an effort among policy-makers to decrease family sizes (Caldwell 1982; Thornton et al. 2012), fertility has drastically declined in the last half century (Yabiku 2005; Dahal et al. 2008). The total fertility rate of the country fell from 6.1 in the early 1950s to 2.6 by 2013 (Thornton et al. 2012; Population Reference Bureau 2013). In this majority Hindu setting, sons are particularly valued for their important role in religious rituals and are depended upon for support in old age, whereas daughters usually care for their husband's parents in old age (Fricke 1986; Bennett 1983). For these reasons, married couples often desire at least one son and continue to have children until their desired number of sons is reached (Stash 1996; Cameron 1998; Dahal et al. 2008). A desire for daughters is also prevalent; couples typically want at least one daughter, potentially pushing their achieved fertility even farther upward (Stash 1996).

Childbearing occurs almost exclusively within marriage in Nepal (Jennings et al. 2012). Moreover, marriage is universal, and couples face social pressure to have children soon after marriage (Yabiku 2005; Jennings et al. 2012). Couples tend not to begin using contraception until they have had at least one child, and many use contraception for stopping rather than for spacing births (Axinn and Barber 2001; Ministry of Health and Population [Nepal], New ERA, and ICF International Inc. 2012). The most common methods of contraception in Nepal are female and male sterilization (Tuladhar 1987; Labrecque et al. 2005; Dahal, et al. 2008; Link 2011), with male sterilization being the most popular among our analytic sample. However, 28 percent of women in Nepal who want to avoid pregnancy are not using any form of contraception (Sedgh and Hussain 2014).

Influence of husbands' and wives' preferences on third parity progression

Previous studies in low-income countries that explored the spousal dynamics of fertility decisions have documented a variety of patterns. Although many find that husbands' preferences drive fertility (Joesoef et al. 1988; Khalifa 1988; Casterline et al. 1997), others find that wives' preferences are influential (Bankole and Singh 1998; Dodoo 1998; Maharaj and Cleland 2005). How a couple's preferences combine to influence fertility likely depends on the gender dynamics and social norms of the context (Voas 2003).

In many settings, men's preferences dominate because they have considerable power within their marriage that can translate into influence over reproductive health behaviours (Casterline et al. 1997; Beegle et al. 2001; Blanc 2001). Furthermore, studies have documented women's disadvantage in decision-making authority regarding reproductive health (Jejeebhoy 2002; Furuta and Salway 2006; Allendorf 2007; DeRose and Ezeh 2010). In this Nepalese setting, too, there are reasons to expect that husbands' preferences may outweigh wives' preferences. Because men tend to hold authority in households and in marriages (Bennett 1983; Link 2010), husbands may have the ultimate decision-making power.

Not only are husbands in Nepal likely to hold the authority in decision-making, they may also have strong motivation to enforce their fertility preferences. In settings with patrilineal family systems, like this one, children are thought of as belonging primarily to the husband and his natal family (Goonesekere 1994). This may lead men to be especially determined to achieve their preferences. Moreover, studies in Nepal have found that husbands are more willing than their wives to pursue the birth of a son at the expense of a larger completed family size (Stash 1996). Thus, husbands' preferences may have an important influence on couples' progression to third parity births.

There are also reasons to expect that wives' preferences will influence couples' fertility. Childbearing and childrearing are primarily the responsibility of women, which may give them decision-making power in this domain and motivation to achieve their preferences (Bennett 1983; Jennings et al. 2012; Testa et al. 2014). In fact, there is some evidence that women have long held discreet power within their marriages. Although wives defer to their husbands when in public or in sight of their in-laws, they may exercise power in private. For example, Bennett (1983) describes how women use their sexuality to sway their husbands to prematurely acquire their inheritance so they can establish their own household. This discreet power may allow wives to implement their own family size preferences. Wives' power may also increase as the marriage endures, and they may become more comfortable discussing their preferences with their husband (Gipson and Hindin 2007). By the time couples have reached parity two, then, wives' preferences may have an important influence on rate of progression to the next birth.

Either spouse may achieve their fertility preferences via a number of mechanisms. One of the most likely mechanisms is contraceptive use. For example, a spouse who wants a large family may refuse to use contraception, and a spouse who wants a small family may demand that the couple use contraception (Casertine et al. 1997; Gipson and Hindin 2007; Gipson et

al. 2010). There are some methods, available to women, that allow them options for using (or not using) contraception without their husband's knowledge (Ashraf et al. 2012). Either spouse may also achieve their preferences by discussing family planning with their spouse and convincing them to adopt his or her preferences (Salway 1994; Lasee and Becker 1997; Kamal 1999; Feyisetan 2000; Bawah 2002; Klomegah 2006; Link 2011).

Data

The Chitwan Valley Family Study (CVFS), conducted in rural Nepal, provides couple-level data on spouses' fertility preferences and subsequent fertility behaviour. The data collection began in 1996 with face-to-face baseline interviews conducted with all household members, aged 15–59 and their spouses (even if outside this age range or living elsewhere), of every household in 151 sampled neighbourhoods sampled with a clustered sampling design. Special care was taken to interview spouses simultaneously in separate locations to enhance the independence of their responses. Beginning within a few months of the baseline interview, in 1997, monthly follow-up interviews were conducted that collected information about a range of demographic events, including childbearing and contraceptive use.

Our analytic sample consists of all women ages 15 to 35 in 1996 who were at risk of having another birth after their second live birth at any time during the period of observation, and whose husbands were also interviewed during the 1996 survey (N=271). We excluded 72 couples in which either the wife or husband reported that they had been sterilized at baseline. We also did not observe women after the age of 35 because only two women had a conception ending in a live birth after age 35. Restricting to ages in which birth rates are highest maximizes our opportunity to examine the influence of spousal preferences on progression to third parity births.

Measures

Dependent

For our analyses of the odds of third parity birth, the dependent variable was a time-varying dichotomous variable indicating whether the respondent had a third parity birth. This variable came from the monthly interviews that began in 1997. It was coded as 0 for every month up to the ninth month prior to the birth, and as 1 in the ninth month prior to birth, after which couples cease to contribute to couples-months of exposure to risk of birth.

In order to investigate the possible mechanisms through which spouses exert their influence on third parity progression, our second set of multivariate analyses treated contraceptive use as the dependent measure. Specifically, four dependent measures indicated the use of (1) female-controlled, nonvisible methods, which includes the use of oral contraceptive pills, Depo Provera, or the IUD, (2) husband's sterilization (vasectomy), (3) either spouses' sterilization (vasectomy or tubal ligation), and (4) any contraceptive method, including the previously mentioned methods as well as condoms, rhythm method, foam, Norplant, or an "other" method reported. These measures were based on wives' monthly reports of method use, except in the case of sterilization, for which we use self-reports. The measures indicate first use of the method beginning from the start of the monthly observations. (Analyses were

also performed in which those couples who had a second birth at the time of the baseline interview were dropped from the sample if they had used contraception after their second birth and before the time of the baseline interview. These analyses yielded similar results [not shown] to results discussed below.) Couples received a code of 0 for every month they are not using the method, and a code of 1 in the first month that they use the method, after which they ceased to contribute to the couple-months of exposure to the risk of contraceptive use.

Independent

We measured family size preference using the Coombs scale (Coombs 1974, 1979). The Coombs scale measure came from the 1996 baseline interview. Having a measure of preferences at only one time point is a conservative approach: Any significant influence of family size preferences as reported in 1996 on couples' fertility behaviours during the subsequent twelve years would be suggestive of a substantial influence. Also, because a single-item measure captures little variation in fertility preferences, this Coombs Scale measure is necessary to differentiate those who want two children *at most* and those who want two children *at least*. Respondents were first asked "If you could have exactly the number of children you want, how many children would you want to have?" Next, respondents were asked how many children they would want to have if they could not have their first choice. Finally, they were asked how many children they would want to have if they could have neither of their first two choices. Respondents who already had children were asked how many children they would want to have if they could start life over. This item was coded on a scale of 1 to 25 (see Figure 1). Husband and wife preferences on the Coombs scale are only moderately correlated, at r=0.22.

We also investigated the extent to which contraceptive use might explain the influence of family size preferences on third parity progression. In those models, contraceptive use measures came from the monthly interviews, and were coded 0 in every month until the month of first use (since the first monthly observation), after which they receive a code of 1 in every month. These measures were lagged by one month.

In our investigation of the role of couple communication on parity progression, we employed a measure reflecting wives' response to the 1996 baseline survey item "How often do you and your (most recent) husband discuss how many children to have? Often, sometimes, or never?" Because only nine percent of wives responded "often", we coded this measure into a dummy so that a code of 1 reflects that spouses had ever discussed how many children to have, and a code of 0 reflects that they had never discussed how many children to have.

Controls

We also accounted for characteristics of the couples that may influence both family size preference and rate of third parity birth. First, we controlled for spouses' marital experiences. We included two indicators of spouse choice: one to account for the extent to which wives participated in the selection of their husbands, and one to account for the extent to which husbands participated in the selection of their wives. These measures were each

coded on a scale ranging from 1–5, from having no choice (1) to having complete choice (5).

Next, we accounted for couples' childbearing experiences and gender preferences that may affect their rate of parity progression. Because couples could have had either zero, one, or two children at the time that their fertility preferences were measured, we controlled for their number of children at baseline. We also included two dummy measures indicating whether the couple's achieved fertility in 1996 consists of either all sons or all daughters. Next, we controlled for wives and husbands' level of sex preference, which is based on a series of questions about preferences regarding the gender composition of their children (these questions can be found in the codebook, at http://perl.psc.isr.umich.edu/). The variable ranges from 1 to 3, with 3 indicating the most extreme sex preference. Additionally, we included a dummy measure to indicate whether the couple had experienced the death of at least one child as of 1996.

We also accounted for the duration of exposure to the risk of a third parity birth with a series of dummy measures indicating the number of months lapsed since the couples' second birth. The original measure was coded as months lapsed since three months after the second parity birth (with a non-zero number for those who had a second parity birth in 1996 or before) to account for the period of postpartum amenorrhea. Couples who had a second birth before the 1996 baseline interview have a value of greater than 0 in the first month of observation. We recoded this measure into four dummy measures, based on how the risk of third birth fluctuates across the duration of exposure. These dummy measures indicate (1) 18 or fewer months since the couples' second birth, (2) 19 to 24 months since the couples' second birth, (3) 25 to 48 since the couples' second birth, and (4) 49 or more months since the couples' second birth. The greatest duration of exposure to risk—49 or more months—was treated as the reference category. We used these dummy measures to allow flexibility in the structure of the hazard of exposure to the risk of having a third parity birth.

Next, we accounted for characteristics of the couple's household and community in 1996 that could affect their speed of parity progression. We included a measure that indicates whether the couple was living with the husband's parents. Next, as an indicator of wealth, we controlled for farmland ownership. This measure received a code of 1 if the couple's household owns any farmland and 0 otherwise. Additionally, we accounted for the number of services—health centre, school, employer, bus stop, and market—that are within a five-minute walk from the couples' neighbourhood of residence, coded on a scale from 0 to 5.

Next, we accounted for husbands' and wives' nonfamily experiences because this kind of exposure has been found to influence family size preferences and fertility behaviours (Barber and Axinn 2004; Ghimire et al. 2006). We included measures indicating both the wife's and the husband's accumulated years of education in 1996. Due to a skew toward fewer years of education (or no education), we coded this measure into three categories: a code of 1 indicates two or fewer years of education, 2 indicates three to eight years of education, and 3 indicates nine or more years of education. We also included a dummy variable to indicate whether the wife ever performed wage labour as of 1996, coded 1 if she had worked a wage labour job, and 0 otherwise.

Lastly, we also controlled for demographic characteristics. We accounted for the wife's age at the time of the first monthly observation, as an indicator of her fecundity. We also controlled for ethnicity. Ethnicity in Nepal is complex, multifaceted, and related to religion. We controlled for five classifications of ethnicity that are likely to be associated with achieved fertility because of their different propensities to have large families: Brahmin/Chettri (high-caste Hindu), Dalit (low-caste Hindu), Newar, Terai Indigenous, and Hill Indigenous. Brahmin/Chettri ethnicity is treated as the reference category.

In the models treating contraceptive use as the dependent variable, we also included a control for whether the couple ever used any method of contraception as of the 1996 baseline interview. This measure was coded as 1 if the couple had ever used oral contraceptive pills, Depo Provera, an IUD, condoms, abstinence, foam, Norplant, female sterilization, husband's sterilization, or an "other" method reported by the respondent, and coded 0 otherwise.

Analytic method

We used event history methods with logistic regression to model the risk of conception ending in a live (third) birth with 144 months of data. The models used couple-months of exposure as the unit of analysis, with standard errors adjusted for clustering within neighborhoods to account for the clustered sampling design of the CVFS. Because the data are precise to the month, we used discrete-time methods to estimate these models, with couple-months of exposure as the unit of analysis.

We considered couples to be at risk of a third parity birth after they have two children. Couples entered the hazard in the first month in which they have two children. This means that couples who had two children in 1996 enter the hazard in the first month of observation, while couples with fewer than two children in 1996 entered the hazard three months after their second live birth. Couples were removed from the risk set during the months that they are not exposed to the risk of the wife becoming pregnant with their third child (i.e., the eight months prior to the live birth). We used the same risk set in our analyses of risk of contraceptive use, with pregnancy resulting in a third live birth treated as a competing risk in those models.

We present the results as odds ratios and their associated t-ratios (calculated by dividing the log-odds coefficient by its standard error). Because so few third parity births occur in each monthly interval, the monthly odds of third parity birth are comparable to the rate of third parity birth. For this reason, we sometimes discuss the rate of a third parity birth as interchangeable with the odds of a third parity birth. We tested our unidirectional hypotheses for the influences of family size preferences using one-tailed tests of significance and we tested the control measures using two-tailed tests of significance.

Results: The influence of husbands' and wives' preferences on third parity progression

Descriptive statistics, presented in Table 1, indicate that both husbands and wives averaged a score just under six on the Coombs scale. To facilitate interpretation we also include the means of spouses' preferences as reported in the single survey item: on average, wives prefer 2.18 children, and husbands prefer 2.34 children. The mean of wives' preferences on the single item measure, but not on the Coombs scale, is significantly different from the mean of husbands' preferences. This single item measure, then, suggests that husbands have significantly larger family size preferences than their wives. Of the 271 couples in our sample, 49 percent (or 134 couples) had a third parity birth during the period in which we observe them.

Odds ratio results from logistic regression analyses are displayed in Table 2. In Model 1, we investigated the influence of wives' preferences on couples' progression to a third parity birth. We find that wives' preferences have a significant influence, net of other important experiences and characteristics of the couple. An odds ratio of 1.11 indicates that, for each unit increase in a wife's preference on the Coombs scale, couples progress to third parity birth eleven percent faster. Given that wives' Coombs scale measure range from 2 to 14, this influence is substantial. To illustrate an example, couples in which the wife wants two children and two is the minimum number she would prefer (Coombs scale score = 7) progress to third parity at a rate 1.37 times faster than couples in which the wife wants two children as the maximum number she would prefer (Coombs scale score = 4). In Model 2, we investigate the expectation that husbands' family size preferences will have an important influence on couples' fertility. Unexpectedly, couples in which husbands prefer larger families do not progress to third parity birth at a significantly faster rate.

In Model 3 we investigate the extent to which wives' family size preferences influence parity progression, net of their husbands' preferences. We find that wives' fertility preferences maintain a strong influence, independent of husbands' preferences. The odds ratio of 1.15 indicates that, couples progress to third parity birth 15 percent faster with each unit increase in wives' preference on the Coombs scale. Model 3 also reveals that, net of wives' preferences, husbands' preferences remain a nonsignificant influence on couples' parity progression.

We ran a series of sensitivity analyses (not shown). First, we ran the same models for a sample of couples in which wives were no older than 24 at the time of the 1996 baseline (N=168 couples). A smaller proportion of these couples (16%) had already progressed to third parity, thus allowing us to investigate whether results change when we remove much of the concern for left censoring. Results are very similar to those presented in Table 2. Next, we ran models using similar measures of husbands' and wives' relative fertility preferences, but coded from a single-item measure of preferences rather than from the Coombs scale. These models reveal weaker and nonsignificant results, due to the lack of variance on this single-item measure. Lastly, we performed these analyses using the 271 couple observations, with the likelihood of a third parity birth treated as time-invariant and, therefore, excluding controls for duration of exposure to the risk of a third parity birth. In

these models, the value of each of the independent and control measures in 1996 were used to predict third parity birth by the end of the twelve-year observation period. These models reveal similar results to those obtained using hazard models and couple-months of observation. Namely, wives' family size preferences, but not husbands' preferences, are significantly associated with a greater likelihood of a third parity birth before the end of the twelve year period.

Many of the control measures exert significant influences on parity progression. As expected, couples with more children at baseline (Models 2 and 3) and couples that only had daughters at baseline progress to third parity more rapidly. Also as expected, couples that have experienced the death of a child progress at a substantially faster rate than couples who have not experienced a child's death. Relative to 49 or more months of exposure to the risk of a third parity birth, couples for whom 19 to 24 months had lapsed since their second birth experience the fastest rate of progression to third parity, followed by those for whom 25 to 48 months had lapsed and those for whom 18 months or fewer had lapsed. Wives' age at the start of the observation period also slightly suppresses couples' odds of a third birth, which is not surprising given that older wives are likely less fecund. Among the ethnic groups, in Models 2 and 3, the Terai Indigenous people progress to third parity at a significantly faster rate relative to Brahmin/Chettri people, reflecting relatively larger families sizes among this group.

How are wives' preferences influencing parity progression?

We now turn to examining two possible explanations for how wives are exerting this strong influence. The first and most apparent hypothesis is that wives are exerting their influence via the use of contraception. The second is that wives are communicating with their husbands about how many children they want, thereby achieving their fertility goals.

Wives may influence couples' progression to third parity birth through contraceptive use in a variety of ways. They may use female-controlled, nonvisible methods of contraception—such as an IUD, Depo Provera, or oral contraceptive pills—without their husbands' knowledge, as a way to covertly achieve their preferences for smaller families (Gipson and Hindin 2007; Gipson et al. 2010). Similarly, wives who prefer larger families may tell their husbands that they are using a method, when they are not (Gipson and Hindin 2007). We label these methods "female-controlled, nonvisible". It is also possible that wives influence parity progression through more overt contraceptive use. In fact, wives may persuade their husbands to use male-controlled methods, such as condoms or male sterilization, regardless of husbands' own preferences.

A second, related, possibility is that wives discuss their preferences with their husbands in such a way that leads husbands to acquiesce to wives' preferences. Research shows that couple communication about family size and family planning can affect how each spouse's fertility preferences influence fertility behaviours (Salway 1994; Lasee and Becker 1997; Kamal 1999; Feyisetan 2000; Bawah 2002; Klomegah 2006; Link 2011). This kind of communication can increase mutual awareness of fertility preferences, which may enhance agreement between spouses regarding ideal family size. Communication can also allow

wives an opportunity to bargain or persuade their husbands to acquiesce to their preferences. Additionally, communication about family size can allow spouses to feel more comfortable discussing intimate matters, which can facilitate conversations about how to achieve their preferences (Sharan and Valente 2002; Gipson and Hindin 2007).

Contraceptive use and communication are not the only possible mechanisms through which wives' preferences influence parity progression. There is likely more to the story, including the possible influence of spousal power dynamics that are not easily measured. In the following analyses, we investigate these two possible mechanisms, as theory suggests they play an important role in fertility.

Results: How wives' preferences influence third parity progression

In Tables 3 and 4, we investigate the possibility that wives' preferences are influencing parity progression via their influence on contraceptive use. In Table 3, we modelled the hazard of first contraceptive use, beginning from the start of the monthly observations, among the same sample of couples at risk of a third parity birth. Because the cell sizes become smaller for models predicting contraceptive use, and because Newar and Brahmin/Chettri people have statistically non-distinguishable influences on parity progression, we collapse the measures of ethnicity into two groups for these models. In Model 1, we investigate the outcome of wives' use of female-controlled, nonvisible contraceptive methods. Of the 271 wives in our sample, 45 used the pill, 3 used an IUD, and 81 used Depo Provera during the period of observation. A total of 99 women used any one of these methods. The model reveals that wives' family size preferences significantly influence the odds of the couple adopting a female-controlled, nonvisible method of contraception. Specifically, the odds ratio of 0.87 indicates that, which each unit increase in wives' Coombs scale value, couples adopt a female-controlled, nonvisible method 0.87 times as fast (or 13 percent more slowly). Husbands' preferences do not significantly predict the rate of female nonvisible method use.

In Model 2, we investigate how wives' family size preferences predict husbands' sterilization: A method adopted by 53 couples in the sample. In this model, neither wives' nor husbands' preferences significantly influence the rate of husband sterilization. Model 3 investigates the rate of sterilization by either spouse. In 63 of the couples, either the husband or wife got sterilized during the period of observation. The model reveals that wives' family size preferences do not significantly influence the rate of either spouses' sterilization, although husbands' family size preferences do have a significant influence. With every unit increase in husbands' family size preference, either spouse becomes sterilized at a rate 15 percent more slowly.

Finally, in Model 4, we investigate the influence of spouses' preferences on the use of any method of contraception. A total of 158 couples adopted any method of contraception during the period of observation. The model reveals that both husbands' and wives' family size preferences independently and significantly influence the rate of use of any contraceptive method: couples use any of these methods at a rate twelve percent slower with each unit increase in wives' Coombs scale value, and ten percent slower with each unit increase in

husbands' Coombs scale value. Note that the influence of wives' preferences is not statistically different from husband's preferences.

Ever having used any method of contraception as of the time of the baseline survey is positively associated with the odds of couples using a female-controlled, nonvisible method and with couples using any method of contraception (Models 1 and 4). Many of the remaining control measures are significantly associated with contraceptive use, and many of these associations are different from those in Table 2. Of particular interest, couples in which wives had greater spouse choice become sterilized (either via the husband or the wife; Models 2 and 3) at a faster rate. Having a greater number of children at baseline reduces couples' rate of female-controlled, nonvisible method use and rate of any contraceptive use. Husbands become sterilized (Model 2) and couples use any method of contraception (Model 4) at a slower rate as wives' sex preference becomes stronger, while couples use female-controlled, nonvisible methods (Model 1) at a slower rate as husbands' sex preference becomes stronger. Household farmland ownership slows couples' adoption of female-controlled, nonvisible methods (Model 1) and speeds couples' adoption of sterilization by either spouse (Model 3). An increase in wives' educational attainment slows the use of female-controlled, nonvisible methods (Model 1), possibly because wives with more education have greater access and freedom to use non-covert methods of contraception. Wives' experience of ever having worked for wages speeds the rate of adoption of any of these methods (Models 1 through 4).

In Table 4 we investigate whether the use of contraceptive methods is the mechanism through which wives' family size preferences influence third parity progression. Model 1 of Table 4 displays results from the original model in which we tested the independence of wives' and husbands' family size preferences (Model 3 of Table 2). This serves as a reminder that, independent of husbands' preferences, each unit increase in wives' preferences increases couples' rate of parity progression by 15 percent. In Model 2 of Table 4, we account for wives' use of female-controlled, nonvisible methods as a possible mechanism through which wives' preferences are operating. Although the indicator of female-controlled, nonvisible method use is significant and strong—slowing couples' rate of parity progression by 77 percent—wives' preferences maintain an independent influence on parity progression. Female-controlled, nonvisible contraceptive methods are not fully mediating the effect of wives' family size preference on third parity progression.

In Models 3–5, we investigate whether sterilization or use of any contraception serves as a mechanism in the association between wives' family size preferences and third parity progression. Although husband sterilization (Model 3), either spouses' sterilization (Model 4), and use of any form of contraception (Model 5) slow couples' rate of third parity progression, wives' preferences continue to maintain an independent influence. In fact, none of the coefficients for wives' preferences in Models 2 through 5 are statistically significantly different than the coefficient in Model 1.

In Table 5, we investigate the possibility that the influence of wives' preferences is moderated by couple communication. To do this, we interacted a dummy measure indicating whether couples had ever discussed how many children to have at baseline with the measure

of wives' family size preferences. The model also accounts for the possibility that this communication measure interacts with husbands' family size preferences. The table reveals that the interaction between wives' preferences and couples' communication is statistically significant at $p<.05$. Multiplying the odds ratios of the interaction term and the main effect of wife's preference (1.21*1.07) produces an odds ratio of 1.29. This means that, among couples who had ever communicated about how many children to have, the odds of a third parity birth are 1.29 times (or 29 percent) higher with each unit increase in wives' family size preferences. The main effect of wives' preference is not statistically significant, however, suggesting that, among couples who never communicated about how many children to have, wives' preferences do not influence couples' progression to third parity. Moreover, neither the interaction term nor the main effect of husbands' family size preferences are significant, suggesting that the influence of husbands' preferences (or lack thereof) does not vary by whether the couple has discussed how many children to have.

Conclusion

This study has examined the role of wives' and husbands' preferences about ideal family size in couples' fertility behaviour among a rural Nepalese population. We used couple-level data to investigate the influence of spouses' preferences on their rate of progression to third parity births over the subsequent twelve years. Given gender inequalities in this setting, and a tendency for men to hold outward authority in families (Bennett 1983; Chapagain, 2006), we expected that men's family size preferences would have an important influence on couples' progression beyond the two child ideal. There were also reasons to expect that wives' preferences may have an influence. Our results reveal no evidence that husbands' preferences influence progression to third parity births, and strong evidence that wives' preferences drive this progression. We then analysed how women are attaining their family size goals. The analyses show that wives' preferences can influence the odds of couples adopting contraception, but the use of contraception does not explain the strong influence of wives' family size preferences on progression to third parity birth. Instead, we find evidence that wives may have particular ability to implement their preferences in couples that have communicated about how many children to have.

Our findings are an indication that women in marriages in which they and their husband have made the move to discuss their desired family size may have greater influence over fertility decisions than women in marriages where this discussion has not taken place. It could be that wives are using discussions about childbearing to sway their husbands to acquiesce to their preferences. This points toward the importance of encouraging spousal communication around family planning, although this encouragement should be done cautiously. It is important to recognize that spousal communication is likely selective of couples in which wives feel empowered to achieve their fertility preferences. Less empowered wives may not perceive that discussing their preferences with their husbands is an option, and more empowered wives may be both better equipped to communicate with their husbands and to achieve their fertility preferences.

Our analyses reveal no evidence that husbands' family size preferences have an impact on couples' progression to third parity birth, regardless of contraceptive use or spousal

communication. Husbands' family size preferences are predictive of whether either spouse gets sterilized, and whether the couple uses any type of contraception. Yet, couples' fertility behaviour after the second child follows the wives' family size preferences—at least among those couples who have communicated about family size. It is possible that husbands' influence is more important for the timing of the first two births: births that are expected to occur shortly after marriage and are likely subject to strong normative and family pressures (Bankole 1995; Link 2010). Another possibility is that husbands' preferences may have changed more after 1996 than wives' preferences, leading to an underestimation of the effects of husbands' preferences with this time invariant measure.

Even though we find strong evidence that wives' preferences play an important role in parity progression when couples have two children—the widely held ideal family size—this should not be interpreted as demonstration of widespread female empowerment in the region. Only 61 percent of couples ever discussed how many children to have, and we do not find evidence that the other 39 percent of wives in our sample are empowered to achieve their family size preferences. There is room for substantial increases in communication between spouses regarding family planning. Moreover, Dodoo (1998) asserts that empowerment would mean the ability to implement non-normative preferences. In this context, progression from parity two to parity three may contradict a widely-shared injunctive norm (Fishbein and Ajzen 1975; Fishbein and Ajzen 2010) idealizing families with two children, but a substantial portion of families (approximately half in our sample) still do have more than two children. Progression to a third parity birth, therefore, is unlikely to be perceived as deviant behaviour. The fact that women can influence progression to parity three does not mean that their preferences would be equally influential over more contentious decisions, such as stopping after one child or spacing their births in a non-normative way. Moreover, because we focus on this specific behaviour of having a third parity birth—an action that complies with both injunctive and descriptive norms in sub-Saharan African settings, where the average fertility is 5.2 children per woman (Population Reference Bureau 2013)—it is difficult to compare these results to those results from previous studies in Africa. Although evidence from sub-Saharan Africa suggests that husbands have decision-making authority up to the fourth parity birth and that wives' preferences are more influential at later parities (Bankole 1995), it is beyond the scope of this investigation to directly and confidently compare the two types of settings.

Couple communication is sometimes ignored in studies that seek to inform family planning policy, yet it can be crucial in helping spouses to work together to achieve their fertility goals. Of course, before implementing policies regarding couple communication, the possibility of selection effects should be well understood. Random assignment of couples into interventions that encourage communication would help unveil its potential causal effects. The effects may not be purely positive: It is possible that promotion of couple communication may create discord between spouses, rather than creating greater agreement or understanding between them. The results presented here show that communication about family size is related to rural Nepalese wives' ability to influence progression to third parity births. This is an indication that couple communication may be important in decreasing unintended and unwanted pregnancies and increasing maternal and child health and well-being (Gipson et al. 2008).

Before concluding, it is valuable to highlight some important limitations to these data and analyses, in addition to those mentioned in the paragraphs above. First, we have largely assumed that births are the result of conscious decision-making. Although we find effects of contraceptive use on parity progression, there remains the possibility that many births do not occur as the result of conscious choice. Second, the measures of family size preferences and couple communication come from a single time point in 1996. These measures are used to predict fertility behaviours over a long period of time (twelve years). Preferences are subject to change (Krosnick and Alwin 1989; Sennott and Yeatman 2012), and spousal communication is more dynamic than what we are able to capture with the measure at one time point. Having measures at only one point in time limits our ability to understand their likely dynamic and changing influences. Given that 1996 family size preferences are revealed to have an important impact over a long period of time, it is likely that time-varying measures of preferences would reveal stronger associations. Moreover, a time-varying measure of preferences measured more closely in time to the behaviour could be affected by inter-spousal influence over time, thus not allowing us to capture influence that operates through persuasion. A third limitation is that we do not account for the family size preferences of other family members or friends, whose preferences are also likely to have important influences on a couple's fertility outcomes (Barber 2000; Jennings and Barber 2013).

The findings in this paper suggest that family planning initiatives are right to address the needs of women, even as they respond to recent policy initiatives to involve men in reproductive health. Focusing on empowering women through greater spousal communication might also be a productive approach, as greater communication about family planning may allow women to more closely achieve their desired family size. As women become more empowered, initiatives to address their family planning needs will be even more effective. It is important to note, too, that although we find no evidence that husbands' preferences were influential on the progression to third parity births during the time period we observe (1997–2009), we don't suggest discounting men's preferences in studying fertility. In fact, many studies have shown that in other contexts husbands are highly influential (Joesoef et al. 1988; Khalifa 1988; Casterline et al. 1997). We must continue to collect data from husbands so that we will be able to track changes over time in the influence of each spouse's preference on fertility behaviour.

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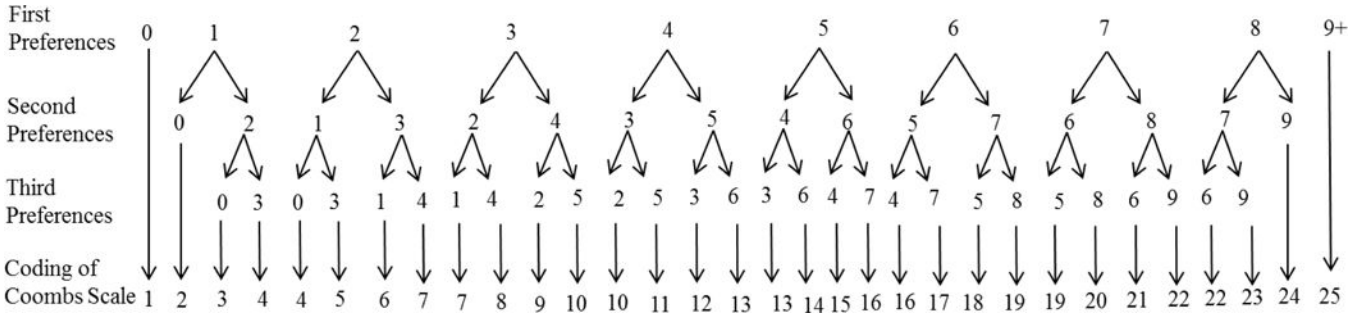

Figure 1.
Coding of the Coombs Scale

Table 1

Descriptive statistics, Chitwan Valley Family Study, Nepal, 1996 to 2009

	Mean	Standard Deviation	Minimum	Maximum
Family size preferences				
Wife's preference (Coombs scale)	5.81	1.69	2.00	14.00
Husbands' preference (Coombs scale)	5.97	2.37	2.00	22.00
Wife's preference (single item)[1]	2.17	0.57	1.00	5.00
Husband's preference (single item)[1]	2.34	0.82	1.00	8.00
Contraceptive use				
Couple ever used any contraceptive method as of 1996	0.28	0.45	0.00	1.00
Wife currently using female-controlled, nonvisible method[2]	0.14	0.35	0.00	1.00
Husband currently sterilized[2]	0.24	0.43	0.00	1.00
Either spouse currently sterilized[2]	0.30	0.46	0.00	1.00
Couple currently using any contraceptive method[2]	0.43	0.50	0.00	1.00
Communication about family planning				
Spouses ever communication about how many children to have	0.61	0.49	0.00	1.00
Marital experiences				
Wife's level of spouse choice (had more choice)	2.27	1.75	1.00	5.00
Husband's level of spouse choice (had more choice)	3.34	1.73	1.00	5.00
Fertility experiences and preferences				
Number of children at baseline	1.16	0.78	0.00	2.00
Couple has only sons	0.28	0.45	0.00	1.00
Couple has only daughters	0.27	0.44	0.00	1.00
Wife's sex composition preference (stronger preference)	1.61	0.64	1.00	3.00
Husband's sex composition preference (stronger preference)	1.46	0.61	1.00	3.00
Couple had at least one child that died	0.05	0.21	0.00	1.00
Months since second parity birth[2]				
18 months or fewer	0.28	0.45	0.00	1.00
19 to 24 months	0.07	0.25	0.00	1.00
25 to 48 months	0.22	0.41	0.00	1.00
49 or more months	0.43	0.50	0.00	1.00
Household and community context				
Couple lives with husband's parents	0.37	0.48	0.00	1.00
Household owns farmland	0.80	0.40	0.00	1.00
Number of services within five-minute walk	2.24	1.69	0.00	5.00
Nonfamily experiences				
Wife's education in 1996 (categorical)	1.87	0.76	1.00	3.00
Husband's education in 1996 (categorical)	2.28	0.73	1.00	3.00
Wife ever worked for wages as of 1996	0.39	0.49	0.00	1.00
Demographics				
Wife's age at first observation	23.90	3.75	17.00	35.00

	Mean	Standard Deviation	Minimum	Maximum
Ethnicity				
Brahmin/Chettri	0.44	0.50	0.00	1.00
Dalit	0.09	0.28	0.00	1.00
Hill Indigenous	0.17	0.38	0.00	1.00
Terai Indigenous	0.24	0.43	0.00	1.00
Newar	0.06	0.23	0.00	1.00
Sample and dependent variables description				
Total couples in sample		271		
Proportion of couples having third parity birth		0.49		
Proportion of couples that adopt female-controlled, nonvisible contraceptive method		0.37		
Proportion of couples in which husbands gets sterilized		0.20		
Proportion of couples in which either spouse gets sterilized		0.23		
Proportion of couples that adopt any contraceptive method		0.58		

[1] One of the 271 respondents are missing information on each of these measures.

[2] Units of measure are couples-months for these time-varying co-variates (N=16,210 observations). The unit for all other variables is couples (N=271).

Table 2

Odds ratios from logistic regression of spouses' family size preferences on third parity births, Chitwan Valley Family Study, Nepal, 1997 to 2009

	Model 1	Model 2	Model 3
Family size preference			
Wife's preference	1.11* (1.93)		1.15** (2.49)
Husband's preference		0.93 (−1.62)	0.90 (−2.18)
Marital experiences			
Wife's level of spouse choice (had more choice)	1.07 (1.25)	1.06 (1.03)	1.07 (1.17)
Husband's level of spouse choice (had more choice)	0.92 (−1.64)	0.92 (−1.49)	0.91 (−1.66)
Fertility experiences and preferences			
Number of children at baseline	1.25 (1.72)	1.33* (2.17)	1.30* (1.98)
Couple has only sons	1.28 (1.05)	1.26 (0.97)	1.28 (1.03)
Couple has only daughters	2.13*** (3.61)	2.19*** (3.73)	2.15*** (3.61)
Wife's sex composition preference (stronger preference)	0.85 (−1.09)	0.84 (−1.16)	0.85 (−1.06)
Husband's sex composition preference (stronger preference)	1.20 (1.20)	1.16 (0.98)	1.19 (1.12)
Couple had at least one child that died	3.02** (2.62)	3.07** (2.65)	2.79* (2.38)
Months since second parity birth (ref: 49 or more months)			
18 months or fewer	3.61*** (4.69)	3.52*** (4.63)	3.54*** (4.57)
19 to 24 months	6.37*** (6.07)	6.37*** (6.10)	6.40*** (6.00)
25 to 48 months	4.67*** (5.58)	4.74*** (5.68)	4.71*** (5.54)
Household and community context			
Couple lives with husband's parents	1.06 (0.34)	1.01 (0.04)	1.04 (0.20)
Household owns farmland	0.87 (−0.52)	0.81 (−0.83)	0.91 (−0.35)
Number of services within five-minute walk from neighborhood	0.89 (−1.35)	0.86 (−1.63)	0.89 (−1.30)
Nonfamily experiences			
Wife's education in 1996 (categorical)	1.00 (−0.03)	0.99 (−0.05)	1.01 (0.05)
Husband's education in 1996 (categorical)	0.84 (−1.09)	0.79 (−1.51)	0.79 (−1.47)
Wife ever worked for wages as of 1996	1.18 (0.86)	1.24 (1.12)	1.21 (0.94)
Demographics			

	Model 1	Model 2	Model 3
Wife's age at first observation	0.92** (−2.72)	0.93** (−2.68)	0.92** (−2.95)
Ethnicity (Brahmin/Chettri is reference group)			
Dalit	1.54 (1.11)	1.67 (1.31)	1.60 (1.18)
Hill indigenous	1.24 (0.6)	1.27 (0.64)	1.45 (1.00)
Terai indigenous	2.02* (2.02)	2.53* (2.56)	2.46** (2.46)
Newar	0.50 (−1.47)	0.51 (−1.42)	0.50 (−1.43)
Couples	271	271	271
Couple months	16210	16210	16210
Births (3rd parity)	134	134	134

Note: Family size preferences were measured in 1996, and data on third parity births were collected over the next twelve years.

Estimates are presented as odds ratios. T-ratios are given in parentheses.

One-tailed tests were used for family size preferences, otherwise two-tailed tests were used,

* p<.05

** p<.01

*** p<.001

Table 3

Odds ratios from logistic regression of spouses' family size preferences on contraceptive use, Chitwan Valley Family Study, Nepal, 1997 to 2009

	Female-controlled, nonvisible method use	Husband sterilized	Either spouse sterilized	Any contraceptive method use
	Model 1	Model 2	Model 3	Model 4
Family size preference				
Wife's preference	0.87* (−1.83)	0.90 (−0.97)	0.91 (−0.95)	0.88* (−1.94)
Husband's preference	1.01 (0.21)	0.98 (−0.22)	0.85** (−2.81)	0.90* (−2.11)
Contraceptive use at baseline				
Couple ever used any contraceptive method as of 1996	2.58*** (3.25)	1.67 (1.25)	1.63 (1.48)	3.06*** (4.60)
Marital experiences				
Wife's level of spouse choice (had more choice)	0.94 (−0.81)	1.44*** (3.48)	1.41*** (3.76)	1.13 (1.74)
Husband's level of spouse choice (had more choice)	1.20* (2.22)	1.00 (−0.05)	1.06 (0.68)	0.95 (−0.81)
Fertility experiences and preferences				
Number of children at baseline	0.42*** (−4.80)	1.09 (0.35)	0.89 (−0.60)	0.56*** (−3.91)
Couple has only sons	0.74 (−0.96)	3.01** (3.12)	1.89* (2.00)	1.11 (0.43)
Couple has only daughters	0.81 (−0.62)	0.70 (−0.93)	0.55 (−1.61)	0.61 (−1.84)
Wife's sex composition preference (stronger preference)	0.78 (−1.18)	0.52* (−2.23)	0.62 (−1.95)	0.64* (−2.44)
Husband's sex composition preference (stronger preference)	0.62* (−2.12)	0.97 (−0.13)	1.11 (0.43)	0.94 (−0.33)
Couple had at least one child that died	0.85 (−0.21)	0.77 (−0.22)	0.88 (−0.13)	1.35 (0.49)
Months since second parity birth (ref: 49 or more months)				
18 months or fewer	7.82*** (5.24)	0.52* (−2.18)	0.51* (−2.41)	1.88 (1.52)
19 to 24 months	1.52 (0.63)	0.58 (−1.34)	0.74 (−0.88)	0.82 (−0.36)
25 to 48 months	3.01** (2.46)	0.81 (−0.73)	0.82 (−0.73)	1.35 (0.69)
Household and community context				
Couple lives with husband's parents	0.70 (−1.36)	0.65 (−1.33)	0.61 (−1.65)	0.89 (−0.53)
Household owns farmland	0.27*** (−3.45)	2.11 (1.42)	3.41** (2.58)	0.55 (−1.76)
Number of services within five-minute walk from neighborhood	0.96 (−0.29)	1.43 (1.87)	1.23 (1.23)	0.98 (−0.18)

	Female-controlled, nonvisible method use	Husband sterilized	Either spouse sterilized	Any contraceptive method use
	Model 1	**Model 2**	**Model 3**	**Model 4**
Nonfamily experiences				
Wife's education in 1996 (categorical)	0.51** (−2.84)	1.15 (0.46)	1.10 (0.36)	0.97 (−0.16)
Husband's education in 1996 (categorical)	1.12 (0.54)	0.58 (−1.64)	1.08 (0.28)	1.27 (1.28)
Wife ever worked for wages as of 1996	1.64* (1.77)	2.21* (2.32)	2.74*** (3.34)	2.37*** (3.55)
Demographics				
Wife's age at first observation	1.04 (1.07)	0.98 (−0.42)	0.93 (−1.66)	0.98 (−0.70)
Ethnicity: Brahmin, Chettri, and Newar	1.43 (1.01)	2.15 (1.48)	0.66 (−0.97)	1.24 (0.70)
Couples	271	271	271	271
Couple months	9736	12320	11468	5102
Number adopting method	99	53	63	158

Note: Family size preferences were measured in 1996, and data on contraceptive use were collected over the next twelve years.

Estimates are presented as odds ratios. T-ratios are given in parentheses.

One tailed tests used for family size preferences, otherwise two-tailed tests were used,

* p<.05

** p<.01

*** p<.001

Table 4

Odds ratios of spouses' family size preferences on third parity birth, accounting for contraceptive use as possible mechanism, Chitwan Valley Family Study, Nepal, 1997 to 2009

	Model 1	Model 2	Model 3	Model 4	Model 5
Family size preference					
Wife's preference	1.15** (2.49)	1.13* (2.13)	1.16** (2.44)	1.14* (2.17)	1.14* (2.26)
Husband's preference	0.90 (−2.18)	0.90 (−2.05)	0.90 (−2.02)	0.90 (−2.15)	0.90 (−2.03)
Contraceptive use					
Wife currently using female-controlled, nonvisible method		0.23*** (−3.75)			
Husband currently sterilized			0.20*** (−3.55)		
Either spouse currently sterilized				0.14*** (−4.63)	
Couple currently using any contraceptive method					0.27*** (−4.97)
Couple ever used any contraceptive method as of 1996		1.34 (1.23)	1.19 (0.75)	1.19 (0.74)	1.43 (1.48)
Marital experiences					
Wife's level of spouse choice (had more choice)	1.07 (1.17)	1.06 (1.02)	1.08 (1.33)	1.10 (1.58)	1.08 (1.28)
Husband's level of spouse choice (had more choice)	0.91 (−1.66)	0.91 (−1.67)	0.91 (−1.65)	0.91 (−1.69)	0.90 (−1.76)
Fertility experiences and preferences					
Number of children at baseline	1.30 (1.98)	1.18 (1.20)	1.18 (1.19)	1.19 (1.29)	1.15 (1.00)
Couple has only sons	1.28 (1.03)	1.26 (0.94)	1.41 (1.36)	1.45 (1.48)	1.38 (1.27)
Couple has only daughters	2.15*** (3.61)	2.17*** (3.50)	2.11*** (3.34)	2.08*** (3.35)	2.02** (3.16)
Wife's sex composition preference (stronger preference)	0.85 (−1.06)	0.86 (−0.97)	0.80 (−1.38)	0.77 (−1.66)	0.80 (−1.42)
Husband's sex composition preference (stronger preference)	1.19 (1.12)	1.16 (0.92)	1.22 (1.24)	1.24 (1.39)	1.19 (1.11)

	Model 1	Model 2	Model 3	Model 4	Model 5
Couple had at least one child that died	2.79* (2.38)	2.86* (2.39)	2.87* (2.45)	2.89* (2.50)	2.81* (2.40)
Months since second parity birth (ref: 49 or more months)					
18 months or fewer	3.54*** (4.57)	4.09*** (4.81)	3.12*** (3.70)	2.53** (3.09)	3.26*** (3.90)
19 to 24 months	6.40*** (6.00)	7.39*** (6.08)	5.55*** (4.99)	4.67*** (4.60)	6.05*** (5.30)
25 to 48 months	4.71*** (5.54)	5.34*** (5.65)	4.27*** (4.69)	3.82*** (4.46)	4.66*** (5.03)
Household and community context					
Couple lives with husband's parents	1.04 (0.20)	1.02 (0.09)	0.98 (−0.13)	0.97 (−0.13)	1.01 (0.06)
Household owns farmland	0.91 (−0.35)	0.85 (−0.59)	0.97 (−0.10)	1.00 (0.01)	0.93 (−0.85)
Number of services within five-minute walk from neighborhood (up to 5)	0.89 (−1.30)	0.90 (−1.12)	0.93 (−0.82)	0.92 (−0.93)	0.94 (−0.38)
Nonfamily experiences					
Wife's education in 1996 (categorical)	1.01 (0.05)	0.96 (−0.22)	0.93 (−0.42)	0.94 (−0.36)	0.94 (−0.38)
Husband's education in 1996 (categorical)	0.79 (−1.47)	0.77 (−1.60)	0.77 (−1.55)	0.78 (−1.50)	0.76 (−1.67)
Wife ever worked for wages as of 1996	1.21 (0.94)	1.20 (0.87)	1.17 (0.75)	1.19 (0.87)	1.21 (0.93)
Demographics					
Wife's age at first observation	0.92** (−2.95)	0.92** (−2.60)	0.91** (−2.95)	0.90*** (−3.32)	0.92** (−2.74)
Ethnicity (Brahmin/Chettri is reference group)					
Dalit	1.60 (1.18)	1.47 (0.97)	1.23 (0.52)	1.33 (0.72)	1.16 (0.37)
Hill indigenous	1.45 (1.00)	1.33 (0.74)	1.33 (0.77)	1.49 (1.08)	1.22 (0.54)
Terai indigenous	2.46** (2.46)	2.17* (2.11)	2.05* (2.03)	2.37* (2.44)	1.82 (1.70)
Newar	0.50 (−1.43)	0.56 (−1.18)	0.53 (−1.28)	0.55 (−1.21)	0.54 (−1.23)
Couples	271	271	271	271	271
Couple months	16210	16210	16210	16210	16210

	Model 1	Model 2	Model 3	Model 4	Model 5
Births (3rd parity)	134	134	134	134	134

Note: Family size preferences were measured in 1996, and data on third parity births were collected over the next twelve years.

Estimates are presented as odds ratios. T-ratios are given in parentheses.

One tailed tests used for family size preferences and contraceptive measures, otherwise two-tailed tests were used,

* p<.05

** p<.01

*** p<.001

Table 5

Odds ratios of spouses' family size preferences on third parity birth, investigating the possible moderating influence of spousal communication, Chitwan Valley Family Study, Nepal, 1997 to 2009

	Model 1
Family size preference and attitude about who should make decisions in household	
Wife's preference	1.07 (0.96)
Husband's preference	0.97 (−0.39)
Wife family size preference * spouses communicate about family size	1.21* (1.88)
Husband family size preference * spouses communicate about family size	0.86 (−1.61)
Spouses communicate about family size	0.83 (−0.25)
Marital experiences	
Wife's level of spouse choice (had more choice)	1.08 (1.35)
Husband's level of spouse choice (had more choice)	0.90 (−1.85)
Fertility experiences and preferences	
Number of children at baseline	1.30 (1.94)
Couple has only sons	1.25 (0.89)
Couple has only daughters	2.21*** (3.68)
Couple had at least one child that died	2.98* (2.52)
Wife's sex composition preference (stronger preference)	0.86 (−0.95)
Husband's sex composition preference (stronger preference)	1.24 (1.37)
Months since second parity birth (ref: 49 or more months)	
18 months or fewer	3.37*** (4.43)
19 to 24 months	6.32*** (6.03)
25 to 48 months	4.68*** (5.59)
Household and community context	
Couple lives with husband's parents	1.00 (−0.01)
Household owns farmland	0.88 (−0.48)
Number of services within five-minute walk from neighborhood	0.88 (−1.33)
Nonfamily experiences	
Wife's education in 1996 (categorical)	1.02 (0.10)

	Model 1
Husband's education in 1996 (categorical)	0.81 (−1.34)
Wife ever worked for wages as of 1996	1.23 (1.03)
Demographics	
Wife's age at first observation	0.92** (−2.58)
Ethnicity (Brahmin/Chettri is reference group)	
Dalit	1.86 (1.56)
Hill indigenous	1.58 (1.20)
Terai indigenous	2.63** (2.58)
Newar	0.47 (−1.51)
Couples	271
Couple months	16210
Births (3rd parity)	134

Note: Family size preferences and husbands' attitude about decision-making were measured in 1996, and data on third parity births were collected over the next twelve years.

Estimates are presented as odds ratios. T-ratios are given in parentheses.

One tailed tests used for family size preferences and interaction terms, otherwise two-tailed tests were used,

* p<.05

** p<.01

*** p<.001