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ISSN: 2365-9793

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ABSTRACT

Strategic Responses to Disparities in Spousal Desired Fertility: Experimental Evidence from Rural Tanzania*

In sub-Saharan Africa, the gap in fertility preferences between men and women may influence household fertility outcomes as men usually desire more children and have more intra-household bargaining power. We estimate the effect of an informational family planning program that randomizes the inclusion of husbands on fertility preferences (desired additional children) in rural Tanzania. Surprisingly, husbands who participated in joint family planning consultations increased their desired fertility, and their wives responded by also increasing their desired number of additional children, converging to his larger preferences. In contrast, women in private family planning consultations (without their husbands) reduced their fertility desires, while their husbands' preferences remained unchanged. We provide evidence that the increase in women's fertility preferences as a result of the joint consultations is related to polygamy. Women in polygamous marriages increase their demand for children substantially, likely as a strategic response to hearing their husbands' stated preferences during the joint consultations.

JEL Classification: D13, J13, O15

Keywords: intra-household bargaining, fertility, randomized experiment, fertility preferences

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* We thank Shahadat Hossain and Niranjan Raja for excellent research assistance. We also thank Mary Arends-Kuenning, Amy Damon, Sarah Janzen, Mahesh Karra, Lindsey Novak, Claus Portner and seminar and conference participants at ASSA Meetings, PAA meetings, UIUC IPAD seminar, George Washington University Milkin Institute of Public Health, NWDW, WEAI, LACDEV, and Oregon State University Economics Department for helpful comments and suggestions. This randomized controlled trial was registered through the AEA RCT Registry, number AEARCTR-0001598. This study was approved by the Institutional Review Board at University of Minnesota with the corresponding IRB Code Number 1203P11684, and at Lewis & Clark College with the corresponding IRB code 2025-11.

1 Introduction

The unique and slow demographic transition in sub-Saharan Africa- characterized by high fertility rates despite improvements in child mortality, the availability of contraceptives, and female education- presents a puzzle for researchers (Bongaarts, 2017; Pörtner, 2023). The empirical evidence suggests that much of this high fertility is intentional, and that fertility desires are substantially higher in sub-Saharan Africa than in other low-income regions, particularly among poorer households (Pritchett, 1994; Zipfel, 2022). But, who's fertility desires are these? There is evidence of a substantial gap between men and women's fertility preferences in countries with high fertility, with men desiring more children than their wives and typically having more bargaining power (Ashraf et al., 2014; DeRose and Ezeh, 2010; Doepke and Tertilt, 2018).[1]

Fertility choices are some of the most important decisions that spouses can make together, but with diverging preferences and unbalanced bargaining power, women gaining new information about reproductive health *together with* their husbands may reveal a tenuous decision-making context and inefficient outcomes (Ashraf et al., 2014).Additionally, in these kinds of intra-household environments, barriers to communication (which may be based on gender-inequitable norms) can prevent the flow of information, also leading to inefficient outcomes (Ashraf et al., 2014, 2022; Fehr et al., 2024).[2] Further, under a communication-restricted context, disclosing stated preferences and discussing their stark differences may exacerbate the challenge of spousal communication and decision-making. Although preferences are often assumed to be innate in economic theory, the empirical evidence demonstrates that they can be socially transmitted between husbands and wives (Di Falco and Vieider, 2018). Because of this, the inclusion of men to both receive family planning information and join the discussion of fertility preferences together with their wives may lead to changes in wives' own fertility preferences and excess fertility (as one type of inefficient outcome). Recent research in sub-Saharan Africa has tested different approaches to involve men in family planning programs, finding quite mixed results (Ashraf et al., 2014; D'Exelle et al., 2023; D'Exelle and Ringdal, 2022; Karra et al., 2021; McCarthy, 2019).

In this paper, we investigate the effect of an informational family planning program that randomized the inclusion of husbands on men and women's stated fertility preferences in rural Tanzania. Our context, the Meatu district in rural Tanzania, is an ideal setting for this research question. Fertility rates are high (women in the study already have on average 5 children) and at baseline, 89% of women report wanting to delay or prevent pregnancy, but only 18 percent

[1]There is also evidence of a substantial gap in sex preferences for children among spouses world-wide (Maralani and Pinar, 2024)

[2]Discordance between spouses may lead to further detrimental outcomes, such as inefficient savings (Schaner, 2015) and low investment in children's education (Zou et al., 2020).

of women had ever used modern contraception.[3] Meanwhile, husbands in Meatu reportedly desire nearly twice as many additional children as their wives and 67% of couples have never discussed planning the size of their family. Furthermore, men have more bargaining power than their wives, and one way of observing this is that 35% of women at baseline reported intimate partner violence.

To explore the effect of the family planning program on fertility desires, we leverage the experimental variation of informational consultations, conducted by a trained local family planning worker at each home. These consultations discussed the benefits of birth spacing, the safety of modern contraception, and gave women (or women and men together) the opportunity to discuss the number of children they would like to have in the future. Although joint spousal consultations about family planning may reduce fertility for couples whose spacing or stopping preferences align (if they are simply lacking FP information or unsure of their partners' approval), conversations about desired fertility among spouses may also reveal a large gap in fertility desires. Next, we estimate heterogeneous effects of the informational family planning program by baseline polygamy status, as nearly a third of households in Meatu are polygamous.[4] Regardless of whether couples have concordance or discordance over fertility preferences, polygamy can also affect the intra-household decision-making over fertility (D'Exelle et al., 2023).

As a result of their participation in the joint family planning consultations, we find that both men and women increase their fertility preferences, as measured by the number of additional children they desire and report privately to the enumerator. Our analysis suggests that this results from the opportunity that the joint consultations presented to couples to disclose their fertility goals to each other during the intervention, mostly for the first time. Meanwhile, women who participated in the family planning consultations privately (without their husbands) lowered their own fertility preferences at endline and their husbands' desired fertility did not change. Consistent with women converging to their husbands' influential demand for children, we also find that, after the joint consultations, the proportion of women who overestimate their husbands' fertility preferences (i.e. perceive that he wants more children than he does) is twice as large as the control mean.

Despite the fact that McCarthy (2019) shows the short-run success of the couples program on fertility outcomes (increasing contraceptive use and reducing pregnancies), in this paper,

[3]This number of women's average children in our sample is consistent with the country's national and rural fertility rates in the country. According to the Tanzania Demographic Health Surveys, the total fertility rate (TFR) was 5.2, while in rural areas was even higher at 6.0. In 2022, these numbers slightly decrease to 4.8 and 5.5, respectively.

[4]Additionally, 22% expect to marry an additional wife in the future at baseline.

we demonstrate a "push-back effect," or an unintended consequence of the same program.[5] While it is difficult to disentangle "cheap talk" from true intentions, as stated preferences are non-binding and costless, we present evidence that renders "cheap talk" unlikely to be the explanation for our findings. First, the family planning consultations are conducted separately from the household surveys used to elicit fertility preferences. The latter are private, gender-matched, and conducted two months after the intervention by different staff members, thus reducing bias from the presence of a spouse or someone affiliated with the family planning program. Although we lack data to measure social desirability bias in our surveys, if this bias were present during the elicitation of preferences, women would have understated their true fertility preferences (Valente et al., 2024). Therefore, the observed increase in fertility preferences in the couples group is likely a conservative estimate of the true effect.

Rather, we find evidence that the convergence in spousal fertility preferences in the couples group is likely driven by women's strategic behavior, rather than costless and non-binding mis-reported preferences. Indeed, our heterogeneity analysis indicates that the surprising increase in women's (privately reported) fertility desires after participating in joint consultations is driven by women who were in polygamous marriages at baseline. As children can be a claim on resources that are provided by husbands, we find that women in polygamous marriages are more likely to raise their fertility desires in response to hearing their husbands' (large) fertility desires than their monogamous counterparts. These results are also consistent with our observed larger increase in fertility desires for older women, who have a shorter reproductive horizon,[6] and may feel more pressure to respond and converge to their husbands' fertility preferences.

Furthermore, we investigate whether the increase in women's fertility preferences in the couples group is explained by intra-household bargaining power or conflict at baseline. Specifically, we find that women in the couples group who are more empowered -as measured by an empowerment index- [7] are more likely to increase their fertility preferences. We also find that women who report experiencing domestic violence at baseline are no more likely to increase their fertility preferences than those in the couples group who do not report such experience. Consistent with our main results, regardless of the baseline levels of intra-household bargaining

[5]There is additional evidence on well-intended reproductive health and family planning programs finding an unintended consequence of the program. For example, Friedman (2018) demonstrated that the availability of antiretrovirals programs to deter HIV/AIDS may increase unintended pregnancies and unprotected sex in Kenya. Similarly, Buckles and Hungerman (2018) demonstrated that a condom distribution program increased teenage fertility in the US context. Moreover, Brinkman et al. (2016) showed that the infant simulator program (meant to demonstrate the difficulty of child-rearing) actually increased teenage pregnancies in Australia.

[6]Women who are older than age 30 (sample average age) at baseline

[7]We constructed an empowerment index using principal component analysis on the following five variables: i) whether a woman married young, ii) whether a woman has no say in household financial decisions, iii) spousal age gap, iv) spousal education gap, and v)spousal gap in geographic proximity to natal family.

power and conflict, women in the individual group decrease their fertility preferences, suggesting that the observed convergence in fertility preferences in the couples group is triggered by the joint consultations.

We contribute to the growing literature on intra-household interactions and decision-making in developing countries (Baland and Ziparo, 2018). First, our paper builds off of previous studies documenting that the distribution of intra-household bargaining power plays a role in high fertility, given the gap between husbands' high fertility desires and wives' relatively lower fertility desires, particularly in sub-Saharan Africa (Ashraf et al., 2020; Doepke and Tertilt, 2018; Westoff et al., 2010). This gap is likely due to the low level of communication about family planning goals and information (Ashraf et al., 2020; D'Exelle and Ringdal, 2022; Sharan and Valente, 2002). Our study deliberately opens the lines of that restrained communication about fertility desires, in the presence of a family planning worker who also provides new information about family planning to the couple or individual. When information flows between spouses are constrained, the gender of the information recipient matters greatly (Ashraf et al., 2022), given the non-unitary nature of household decision-making (Chiappori and Mazzocco, 2017).[8] Our study fills a gap in this new strand of literature by revealing that the provision of family planning information to the couple together may result in a social transmission (or convergence) in fertility preferences, from husbands to wives.

Second, in another strand of this literature, several family planning programs have measured the effect of including men in family planning programs, often with the goal of reducing fertility and increasing modern contraception uptake (i.e., Miller et al. (2020)). And while the majority of this research finds higher levels of uptake when men are included (i.e., D'Exelle and Ringdal (2022); El-Khoury et al. (2016); McCarthy (2019)), Ashraf et al. (2014) found that women behave strategically to seek out family planning when their husbands are unaware of the option (avoiding the influence of his preferences). Departing from the positive first-order impact of including men in family planning consultations (McCarthy, 2019),[9] the findings in this paper provide novel evidence that this can occur simultaneously with a "push-back" against the same joint spousal consultations.

More broadly, although there is research- mostly in demography- on the variability and somewhat contradictory nature of fertility preferences (Bongaarts, 2020; Müller et al., 2022), our results provide salient experimental evidence that fertility intentions are not necessarily concordant with reproductive health behavior. This kind of short-term discordance between

[8]Unlike (Ashraf et al., 2022), this experiment does not test household behavior when husbands alone receive the family planning information.

[9]McCarthy (2019) leverages the same experiment and sample estimation of this paper and finds that family planning consultations involving husbands and wives increase modern contraceptive use and reduce pregnancy, our study delves into the effects on fertility preferences.

fertility preferences and fertility behavior in sub-Saharan Africa is common (Cleland et al., 2020); nevertheless, there is a strong correlation between desired fertility and realized fertility in the long run (Gietel-Basten et al., 2024; Pritchett, 1994), rendering fertility preferences critical intermediate fertility outcomes to understand the demographic transition in the region.

Third, we build off an important set of studies exploring the way that polygamy changes intra-household decision-making over fertility.[10] Polygamy may reduce fertility due to the "substitution effect", whereby men divide their desired number of children among multiple wives, resulting in fewer children per woman (i.e., Field et al. (2016); Pebley et al. (1989)). Conversely, polygamy may increase women's fertility due to the "competition effect", whereby co-wives compete for social status by choosing to have more children (Jankowiak et al., 2005).[11] Rossi (2019) and D'Exelle et al. (2023) test the two effects empirically and demonstrate that the the "competition effect" dominates; in other words, polygamy creates an incentive for co-wives to have more children in response to each others' births, as children serve as strategic complements. Without old-age insurance systems, nor the ability to inherit their husbands' land (in Tanzania), women may face a particularly insecure economic future as widows, and this motivates the use of children as investment goods (Donald et al., 2024). Building upon the documented effects on fertility outcomes, we test the potential differential effects of polygamy in changing fertility *preferences* (desired additional children) in response to the provision of family planning information. We find evidence that women who may face more child-bearing pressure are more likely to respond to the treatment by increasing their fertility preferences (or converging to their husbands' stated preferences).

The rest of the paper is organized as follows. Section 2 describes the experiment and household surveys, as well as the role of fertility preferences in the demographic transition in sub-Saharan Africa. Section 3 explains the empirical strategy, and Section 4 discusses the results from our analysis. Finally, section 5 presents the conclusions and policy implications.

2 Context and Data Descriptive Statistics

In this section, we start by describing the unique demographic transition in sub-Saharan Africa to provide context for our results. Next, we describe our experimental design and the data used in the empirical analysis.

[10] Economists have also studied the way that polygamy plays a role in women's saving behavior (Boltz and Chort, 2019), child nutrition (Amare et al., 2021), education (Fenske, 2015), economic development (Tertilt, 2006), and child mortality(Arthi and Fenske, 2018).

[11] While Akresh et al. (2016); Damon and McCarthy (2019) find that polygamous households may be more cooperative than monogamous households (in the context of agricultural production), Barr et al. (2019) finds that polygamous families are actually less cooperative (in a public goods context).

2.1 Demographic Transition and Fertility Preferences in sub-Saharan Africa

The demographic transition in sub-Saharan Africa is unique. Even after controlling for GDP per capita, child mortality rates, median years of education, and the prevalence of modern contraceptives at the country level, the average sub-Saharan African woman still gives birth to 0.8 to 1 more children than women in other developing countries (Bongaarts, 2017; Casterline and Agyei-Mensah, 2017; Zipfel, 2022). In line with the quality-quantity trade-off (Barro and Becker, 1989), higher levels of fertility in this context are associated with lower levels of education. However, the evolutionary pressure and technological advancements that triggered an increase in children's human capital investments and led to the fertility decline in historical trends (Galor and Klemp, 2019) may not yet have occurred in the context of this demographic transition (Büttner et al., 2024). Although the Unified Growth Theory is supported by an abundance of evidence (Galor and Klemp, 2019; Hu, 2025; Okoye and Pongou, 2024; Vogl, 2016), this context may not yet be facing the same evolutionary pressure that complements the growth process and structural transformation.[12] The institutional factors in SSA, including an abundance of land, distinct structural change, and subsistence agriculture, may explain the higher returns and lower costs to children than in other low-income regions (Bongaarts, 2017; Büttner et al., 2024; Lloyd and Blanc, 1996; Pörtner, 2023; Zipfel, 2022).

Realized fertility reflects both parents' desired optimal number of children and their access to birth control methods; thus, the literature has presented both "demand-side" and "supply-side" factors that explain variation in realized fertility across countries (Zipfel, 2022). On the one hand, limited access to affordable contraception contributes to high fertility in SSA (Bongaarts, 2017; Bongaarts et al., 1990) as many pregnancies are unintended and could be prevented if women had access to reliable birth control. Consequently, if access to modern contraception is constrained, fertility preferences often diverge from realized fertility. On the other hand, preferences for large families are considered a key driver of the distinct fertility transition in SSA (i.e., Gietel-Basten et al., 2024; Pörtner, 2023; Pritchett, 1994). For example, a large-scale study in Burkina Faso found that relaxing supply constraints, by providing free access to modern contraception, did not reduce fertility, likely due to a high desired number of children (Dupas et al., 2025). Recently, Bongaarts (2025) reconciles the debate of supply versus demand by pointing out that fertility rates are driven by changes in both fertility preferences

[12] Historically, high fertility was associated with high income or skill (Schultz, 1981), but a rise in the rate of return on technological progress led to a negative relationship between income and fertility that we observe nearly globally today (Galor and Moav, 2002). The Unified Growth Theory (Galor, 2011) formalized this relationship, demonstrating that preferences that influence fertility choices can change over time due to evolutionary pressure (Galor and Weil, 2000; Vogl, 2016).

(i.e., demand) and access to family planning services (i.e., supply).

Because total fertility rates change slowly over time, research using fertility preferences can provide a timely way for policy-makers and researchers to understand and examine intermediate outcomes. Although imperfect, fertility preferences have predictive power over fertility outcomes. For instance, a systematic review of longitudinal data from 28 low and middle-income countries in Asia and Africa found that although the predictive power varied from country to country, the desire to stop childbearing was strongly correlated with subsequent fertility (Cleland et al., 2020). Interestingly, while fertility preferences evolve over time, most women perceive their preferences as stable (Müller et al., 2022). Fertility desires are often constructed in response to immediate circumstances, rather than stable internal states; this perspective aligns with findings in behavioral economics, which show that individuals consistently underestimate how their preferences might shift in future contexts—exhibiting both projection and retrospection biases (Bachrach and Morgan, 2013; Bhrolcháin and Beaujouan, 2019). We argue that the increase in fertility preferences uncovered by the present study, together with the burgeoning research on fertility preferences, demonstrates that the subject merits rigorous research, even unaccompanied by additional rounds of data on completed fertility.

2.2 Household surveys

We use household data from a randomized control trial that disseminated family planning (FP) information among rural households in the Meautu District of northern Tanzania, a region poorer and more rural than other parts of the country. The experiment consisted of a baseline survey collected in late 2012, the FP program that lasted for 15 months, and an endline survey in late 2014. Next, we describe the most relevant features of the experimental design used to analyze the relationship between fertility desires, polygamy, and strategic behavior.

The data used in this study were drawn from household surveys conducted in Meatu district of northern Tanzania, encompassing 12 distinct villages. Out of the 19 wards within Meatu, nine were chosen through a random selection process to be included in the sample. These selected wards consisted of a total of 48 villages, with 12 of them being randomly designated for participation in the study. Subsequently, each village leader supplied a comprehensive list of households residing in their respective villages. To streamline the process, these household lists were further categorized by sub-villages, with each village containing between 2 to 8 sub-villages. From each village, a random selection of 2 to 5 sub-villages was made, all of which were incorporated into the study. Within these 2-5 selected sub-villages, an equal number of households were randomly selected from the household rosters, thereby constituting the study's sample.[13] To be eligible for participation in the study, households needed to have a married

[13]Approximately 5 percent of the households selected refused to participate in the household survey and they

woman aged between 13 and 40 years of age, and her husband must reside in the dwelling.[14]

The baseline Meatu household survey took place from August to November 2012 and involved a sample of 660 households. This comprehensive survey consisted of separate questionnaires for both men and women, each covering various key topics including socioeconomic status, health and family planning, intra-household decisions, and agriculture. It is important to note that the household survey enumeration took place privately for wives and privately for husbands, with an enumerator of the same gender. On average, 55 households were interviewed in each of the 12 study villages, resulting in a total baseline sample size of 660 households.

Following the intervention, baseline households were re-interviewed between July 2014 and February 2015. However, some households could not be re-interviewed for various reasons, such as refusal to participate, household separation, or migration. This resulted in an attrition rate of approximately 12 percent varying across the sample villages. The final sample size is 515 households at the endline survey. Although attrition did not occur randomly, McCarthy (2019) shows that this attrition rate is not a concern for the validity of the intervention effects on fertility outcomes. For instance, the attrition levels vary slightly by treatment status, but the differences are not statistically significant.[15] The baseline rate of contraceptive use among women who did not attrit is 13 percent, while this rate among women in attritted households is 9 percent; however, once again, this difference is not statistically different. Similarly, households that were not followed up were, on average, slightly more educated; nevertheless, this difference is not statistically significant. Therefore, it is difficult to know *a priori* the direction of how the attrition bias would affect the outcome of interest. The estimate of the impact of the treatment on fertility behavior is unlikely to suffer from such as substantial bias given that it is not significantly correlated with treatment or outcomes. (McCarthy, 2019)

2.3 Family Planning Program

The family planning experiment effectively lowered the cost of fertility control through mediated household consultations about the benefits of birth spacing and the safety of contraceptives. It was a community-led program that began with the district hospital tasking each village executive council in each of the eight treatment villages to select three female community leaders who were literate and had spouses supportive of their employment. These women were trained as "community-based distributors" (CBDs) by family planning educators from the Ministry of

were randomly replaced.

[14] In households with more than one wife, the field staff conducted interviews with the eldest wife under 40 years old, a situation observed in about 10 percent of households. In cases where multiple pairs of spouses were present and eligible for interviews, preference was given to the couple including the head of the household, a scenario encountered in approximately 5 percent of households.

[15] 16 percent attrition in the control group, 16 percent in the individual treatment group and 13 percent in the couples treatment group

Health in February 2013. The two-week training focused on the benefits of birth spacing, the safety of contraceptives (dispelling any myths), understanding different family planning methods, infant health, maternal health, and negotiation skills.The training curriculum originated from a UNICEF handbook on family planning and child health. The teachers at the training were employed by the district hospital as public health educators, specializing in sexual and reproductive health. After the training, the CBDs returned to their own villages, where they began their (paid) work, visiting and consulting with households about family planning and coordinating with the local dispensary.

To investigate the role of asymmetric spousal information on fertility decisions and preferences throughout the fifteen-month family planning program, the treatment villages were divided into two distinct groups. In one treatment group (four villages), the CBDs conducted private consultations with women individually (referred to as the individual treatment group). In the other four villages, the CBDs engaged in private consultations with both husbands and wives together (referred to as the couples treatment group). Meanwhile, households in the four control villages did not receive any consultations.

During these household visits, CBDs followed a protocol that was similar in content in both the individual and couples villages. First, the CBD would greet all family members and indicate that she was there to discuss family planning, and was the woman of the household (or, woman and her husband) available for a private conversation. She would begin the consultation by mentioning that she took a seminar at the district capital on health and family planning and that she would like to share what she learned. Then, the CBD would mention the benefits of birth spacing (at least 2 years) for mothers and children. Next, she would point out that family planning is free and available at local dispensary, discussing the benefits of different short-term and long-term options and dispelling any myths. Then, she would ask the woman (or the couple) about their desired fertility, and how spaced out they would like future children to be.[16] In many cases, this discussion of fertility goals was the first time many couples learned about their spouse's desired fertility (McCarthy, 2019).[17] In this way, the couples consultations serve as both an information session about family planning and an opportunity to share stated preferences. Finally, the CBD would ask if the couple was interested in more information about family planning, and discuss the availability of (free) services at the local dispensary. On her way out, she would indicate that she is working in the village on family planning for the next year, and that she will return in a month or so to check in.

[16]There was not an assigned order in the consultations in terms of whom should state their fertility preferences first (husbands or wives) and unfortunately, we don't know the exact details of how this sharing of preferences took place.

[17]CBDs were not instructed to discuss polygamy; the official topic of conversation was maternal health and family planning.

The family planning program was cluster-randomized at the village level and treatment assignment was stratified along village-level baseline contraceptive use. Since exactly three CBDs were chosen for each village and they were assigned with visiting a minimum of forty households each month, the frequency of CBD visits per household varied depending on the size of the village. In general, smaller villages received more intensive treatment, resulting in a greater number of household visits throughout the fifteen-month intervention.[18] The treatment intensity varies from one household visit once every two weeks (in the smaller villages) to a few visits per year. Seventy-three percent of households who were visited by a CBD participated in four to six visits over the course of the program.[19]

The spatial distribution of households in the individual treatment, couples treatment, and control group is depicted in Figure 1. In this figure, each blue dot represents a household in the individual treatment group, each black dot represents a household in the couples treatment group, and each red dot represents a control household. Many villages have their own dedicated dispensaries, and in some instances, multiple villages share a single dispensary or a clinic that provides pharmacy services.

In certain instances, treatment households chose not to participate. While CBDs were encouraged to visit every household in their designated sub-villages or village, they would cease pursuing consultations with households in the event of conflicts or opposition (whether from the husband, wife or an in-law). Although CBDs reported that 5-20% of households refused participation, household survey data indicated that 31 percent of households who were assigned to the treatment group reported no CBD visits.[20] Compliance was not markedly different between the two treatment arms, with 31 percent of households in the couples treatment group and 30 percent of households in the individual treatment group reporting no visits.

An important point to highlight is that all forms of contraception offered in Tanzanian public dispensaries are provided to women at no cost. Interestingly, during the baseline focus group discussions, a significant number of men and women revealed that they were unaware of the fact that contraceptives were available free of charge.

[18] In most instances, the entire village was included in the treatment, but in the case of three larger villages one to two sub-villages were excluded from the treatment to reduce the workload for the CBDs.

[19] The household survey data do not include information on which CBDs visited each home. And due to the decentralized implementation as planned by the district hospital, each household may have been visited by any one of the three CBDs in each village. Although all CBDs received the same training, it is likely that some consultations were higher quality than others. It is also not possible to know *exactly* what took place during CBD visits as they were private meetings. Thus, in the analysis, it is not possible to disentangle program effects from CBD quality effects. Additionally, it is not possible to control for *which* CBD visited each woman, nor to include a CBD fixed effect (McCarthy, 2019).

[20] These households remain in the assigned-to-treatment group, but they are not categorized as participants.

2.4 Descriptive Statistics

We use the 2012 and 2014 Meatu household surveys collected in the experiment for our analysis. In particular, we leverage questions on fertility preferences included separately in the men's and women's questionnaires. To measure husbands' fertility preferences, we use the following survey question *"How many more children do you expect to have?"* If the respondent has no children, he was asked how many children he would like to have.[21] As polygamy is widespread, the enumerators instructed respondents not to include births from other wives. To measure women's desired fertility, we use the following two questions. First, the survey asked the female respondent *"Would you like to have more children,or would you prefer not to have any more children?"* At baseline, 35 percent of women answered *"It is Up-to-God"* to this question, plausibly suggesting women's uncertainty about their desired fertility (Frye and Bachan, 2017). If women responded that they would like to have more children, they were subsequently asked *"How many more children would you like to have?"*. To distinguish between the numeric preferences and the uncertainty in their answers, we first analyze whether the interventions affect a woman's likelihood of responding *"It is Up-to-God"* and then exclude women who gave this answer when analyzing the program effects on the women's desired number of children.[22] In addition, we have information in the women's questionnaires about a wife's perception of her husband's fertility preferences. Female respondents were asked the following question *"How many additional children do you think your husband would like you to have?"*.

It is worth noting the timing of eliciting fertility preferences and the intervention. Figure 2 illustrates this timeline. While the family planning consultations take place in the presence of a female CBD and are kept confidential, they are either conducted individually (wives alone) or together (husbands and wives together) as per our program design. So, the spouses in the couples intervention may discuss, disagree, agree, or be influenced by each other's fertility preferences as they are shared. On the other hand, the elicitation of fertility preferences at baseline and endline that is used in the empirical models is recorded privately by survey enumerators, and the enumerators are not the same people as the CBDs. The respondents are assured of confidentially and have an enumerator that matches the gender of the respondent. In particular, the endline household interviews took place two months after the end of the consultations. This distinction is important because while the joint consultations seem like a place where women may feel pressure to artificially state a higher fertility preference than their true desires (i.e.,

[21] Approximately 7 percent of our households do not have children at the time of the baseline survey.

[22] It is worth noting that these fertility preferences questions differ from those used in the Demographic Health Surveys in which respondents are asked *"If you could go back in time, how many children would you like to have?"* regardless of the current number of children.This might avoid ex-post rationalization issues on the number of children.

cheap talk) because they are in front of their husbands, the enumeration process mitigates this pressure altogether.

Our analytical sample includes 515 households who were interviewed both at baseline and endline and for whom fertility preferences are available in both periods. Table 1 presents the main socioeconomic characteristics of this sample at baseline. Variable definitions are described in the Online Appendix. At baseline, most families depend on agricultural for their livelihoods; only 12 percent of men (and 5 percent of women) report having off-farm income. These are relatively poor households: 87% have no access to any electricity and 98% have earth flooring.[23] Additionally, women in this sample are relatively dis-empowered, as 35% of them report experiencing intimate partner violence in the last year.

Although husbands are, on average, 37 years old and wives' average age is 30 at baseline, the average number of living children is large: 4.9. On average, women married at the age of 18. Despite the fact that 89% of women report wanting to delay or prevent pregnancy, only 18 percent of women had ever used modern contraception. Polygamy is widespread, 30% of men reported to have more than one wife at baseline. This prevalence is higher than the national level figure: 22 % of the households are polygamous in Tanzania, according to the 2015-26 DHS. Furthermore, in our setting, husbands have higher expectations in increasing the number of wives, 22% of men in our sample expect to marry an additional wife in the future. This expectation is highly correlated with a husband's intention of marrying an additional wife if his current wife stops fertility.[24]

Consistent with the trends in sub-Saharan Africa (Doepke and Tertilt, 2018; Zipfel, 2022), and with the fact that spousal gap in fertility preferences may be more pronounced in rural areas, where agricultural family labor demands are high and gender-inequitable social norms are pervasive, men's fertility preferences are larger than women's: while husbands would like, on average, 4 *additional* children, their wives only would like to have 2.4 *additional* children. It is worth noting that these female numeric fertility preferences exclude 35% of wives in our sample who gave baseline answers of "Up-to-God" for the number of additional children that they would like at baseline, reflecting that women in this context are relatively uncertain or fatalistic about family size. Table 1 also shows that 23% of women in our sample misperceive their husbands' fertility desires at baseline. As we define this misperception variable as the case where a wife thinks his husband's desired number of additional children is larger than his actual desired number of additional children, most women (77%) at baseline incorrectly believe

[23]We constructed a household asset index using a principal component analysis and dwelling variables such as type of floor and wall

[24]We have a question in the husbands' questionnaire that asks"Would you marry an additional wife if your current one stops fertility?". The correlation of this variable with whether a husband desires an additional wife is 0.67.

that their husbands want the same number of children (roughly 2) as them, or fewer.

Finally, Table 2 shows our treatment assignment was balanced for our estimation sample across a wide range of socio-economic characteristics such as women's age, whether the wife has ever-used family planning, age at marriage and number of children as well as key fertility preferences related outcomes in 2012. Nevertheless, we observe some differences in households' standardized rainy season farm income across control and treatment arms. As explained in the next section, we control for this covariate in our econometric models.

3 Empirical Strategy

Following McCarthy (2019), our main econometric specification uses a double difference model (DD) and the Local Average Treatment Effect (LATE) estimation to measure the causal impact of the couples and individual family planning programs on the outcomes of interest. While the DD allows us to increase the precision of our treatment effect estimation using both baseline and endline observations, the LATE allows us to measure the treatment effect for those individuals who opted to participate in the family planning program accounting for the variation in treatment compliance across villages.

Although our preferred specification estimates the Local Average Treatment Effect, we first build our econometric model on the following intent-to-treat DD specification:

$$y_{it} = \beta_0 + \beta_1 T_{i1} t + \beta_2 T_{i2} t + \beta_3 T_{i1} + \beta_4 T_{i2} + \beta_5 t + X_i' \beta_6 + \epsilon_{it} \quad (1)$$

where y_{it} represents the outcome of interest for a man (or a woman) i at time t. T_{i1} and T_{i2} are dummy variables for whether a household was assigned to the "couples" or "individuals" interventions, respectively. Although we have balance in most of our covariates and outcomes, as shown in Table 2, we include Xi, a vector of baseline control variables, to improve the precision of our estimates and control for potential factors that affect fertility preferences. X_i includes wife's age and age married to husband, whether she has completed primary school, whether she has ever used family planning, and whether her husband is abusive. We also include in Xi the baseline number of children born per woman, frequency of sex, whether husband has off-farm income, whether the household is polygamous, a standardized rainy season farm income, a household wealth index, distance to the dispensary, and village-level stratification dummy variables.[25] Finally, ϵ_{it} is the error term. We estimate robust standard errors and clustered them at the village level. Given that we have a small number of clusters (12 villages), in the robustness section, we show that our results are robust to bootstrapping the standard errors.

[25]This vector of baseline covariates is the same as the one included in McCarthy (2019) except for the addition of the household wealth index.

Relative to a single difference estimation, the DD estimation method improves precision by accounting for the time-invariant unobservable baseline differences between control and treatment groups (e.g., one group is more motivated to move away from agriculture) and also accounting for any time trends consistent across the groups (e.g. the whole region experiences economic development). Moreover, when the outcome data are not weakly auto-correlated (e.g., auto-correlation is lower than 0.5), the DD model is preferred to the ANCOVA estimation (McKenzie (2012)). In our data, the correlation between baseline and endline fertility preferences outcomes is high (0.54 for men's desired number of additional children). However, there may be additional concerns when using DD models. Although the villages were assigned to control and treatment groups exogenously, it is entirely possible that the parallel trends assumption does not hold in this context. The double difference estimator does not address omitted-variable bias from time-variant characteristics of control and treatment groups. In other words, without the FP program taking place, it is possible that the groups may have had different fertility desires. The parallel trends assumption may be questionable if the treatment and control groups differ with regard to factors that may be associated with the dynamics of the outcome variables (Abadie (2005)). We overcome this potential issue by including in the vector Xi factors associated with fertility preferences dynamics, which also helps to mitigate omitted variable bias. [26]

In equation 1, our coefficients of interest β_1 and β_2 measure the ITT effect of the couples and individual programs, respectively. However, given the differences in treatment compliance, which ranges from 42 to 94 percent at the village level, in a first stage, we instrument participation to the program with the village-level random assignment to treatment groups, and with a measurement of the "dosage" of treatment in that village (i.e., 3 CBDs/village population) to represent the varying level of household visits as a function of village population. The first stage regression has the following functional form:

$$P_i = \beta_0 + \beta_T Z_i + X_i'\beta + u_i \tag{2}$$

where P_i is a dummy variable for whether a household participated in either in the couples or individual treatment, Z_i is the vector of instrumental variables, X_i is the same vector of covariates earlier described, and u_i is the error term. For this analysis to provide a causal and unbiased estimate of the effect of the treatment on the compliers (i.e. LATE), two assumptions must hold. First, the instruments, Z_i, must have relevant explanatory power for P_i ($Cov[Z_i, P_i] \neq 0$) and this is tested by examining the combined significance of the instruments in the first stage

[26]The factors that may affect fertility desires include variables such as wealth asset index, education and number of children born. The inclusion of these factors as control variables helps to mitigate omitted variable bias (Abadie, 2005). Moreover, Table 2 shows that randomization balance is achieved for most control variables.

equation. Table A1 shows that the set of instruments are highly correlated with the treatment participation variables and the F-test is substantially larger than the recommended levels for the different estimation samples. Second, the instruments must be exogenous to the second stage equation ($E[T_i' u_i] = 0$). Using the randomly implemented treatment variable (village treatment assignment) and village population CBD dosage (3 CBDs/ village population at baseline) as instruments for having actually been visited by a CBD is the key to the LATE estimation strategy.

Therefore, combining equations 1 and 2, we instrument treatment participation and interact it with time to estimate our main model DD-LATE specification:

$$y_{it} = \beta_0 + \beta_1 \hat{P}_{i1} t + \beta_2 \hat{P}_{i2} t + \beta_3 \hat{P}_{i1} + \beta_4 \hat{P}_{i2} + \beta_5 t + X_i' \beta + \epsilon_{it} \tag{3}$$

where y_{it} represents the outcome of interest for a man (or a woman) i at time t. P_{i1} and P_{i2} are the instrumented variables for participation in the "individuals" or "couples" intervention, respectively. X_i represents the set of covariates as described above. In equation 3, our coefficients of interest β_1 and β_2 represent the LATE parameter estimate, which measures the average treatment effect specifically for those who chose to comply with the treatment, that is, those for whom the offer of the family planning conversations persuaded them to participate. In this case, this means that the estimated treatment effect pertains specifically to the participants.

Finally, we estimate heterogeneous effects of our main specification (equation 3) by baseline household polygamy status,women's age, and measures of intra-household bargaining and conflict. These estimations allow us to test whether there are differential effects of the family planning interventions on fertility preferences along these factors that may influencehousehold decision-making over fertility in our context.

4 Results

We start our analysis by measuring the effects of the two different treatments on fertility preferences and perceptions for both men and women. We then show the intermediate outcomes of the family planning program. Finally, we explore the role of women's polygamy status, reproductive age, and empowerment at baseline in motivating the increases in reported fertility preferences.

4.1 Husbands' demand for children

Table 3 shows the Local Average Treatment Effects of the couples and individual treatments on husbands' and wives' fertility preferences, as measured by the number of additional desired children. Column (1) of Table 3 shows that husbands who participated in the couples treatment

increase their desired number of additional children. Participating husbands desire an additional 0.77 children at endline, relative to the control group. This increase represents roughly a 18 percent increase over the control mean. In contrast, we observe that fertility preferences of husbands in the individual treatment group remain unchanged, as they did not participate in any joint consultations about family planning. Although the difference between the estimated effects of the "couples" and "individual" treatments is not statistically significant at conventional levels, the magnitude and direction for the coefficients are substantially different from each other, suggesting an important qualitative difference in the way husbands' desire for additional children changes as a result of inclusion in the consultations.[27] The lack of change in husbands' fertility desires in the individual consultations aligns with the recent findings about the dearth (or disbelief) of information transfer from wives to husbands after wives' private consultations (Ashraf et al., 2022).

Furthermore, column 2 of Table 3 shows that husbands in the couples treatment group are 22 percentage points more likely to desire an additional wife in the future, representing an increase of 82 percent with respect to the control mean. We do not observe such an effect for men treated in the individual group. It is worth noting that polygamy was not one of the topics that the CBDs were encouraged to discuss during the consultations, so this increase in the likelihood of desiring an additional wife in the future plausibly suggests that husbands expect to expand their family in the future after participating in the couples group, consistent with the increase in their desired fertility. As mentioned earlier, the large majority of husbands who desire an additional wife expressed that would do so if their current wives stop having children.

4.2 Women's demand for children

Turning to women's fertility preferences, we start by examining whether the two treatments affect women's fatalism about their fertility preferences. Column (3) of Table 3 indicates that women in the couples group are slightly less likely to answer *"Up-to-God"* as a response to being asked how many additional children they would like to have; however, this effect is not statistically significant at conventional levels. Although we found no effect on this outcome among women in the individual treatment group, the coefficients for these women's responses between couples and individual groups are statistically different, suggesting that after receiving the joint consultations, women are less likely to be uncertain about their desired number of children. Column (4) in Table 3 shows that women who participated in the joint consultations

[27] Appendix Table A4 shows that these results are qualitatively similar when estimating the models in the sub-sample of husbands whose wives report a numeric fertility preferences; that is excluding 35% of women whose response is "up-to God" and have missing information for numeric fertility preferences.

in the couples intervention increased their desired fertility substantially.[28] Among this slightly smaller sample of women who were able to provide a numeric response for their desired fertility, column (4) indicates that women in the couples treatment group report desiring an additional 1.6 children at endline. This increase in reported fertility desires represents a 63% increase over the control mean, a substantial and meaningful increase. This surprising increase in women's fertility desires due to the couples family planning consultations (despite reportedly desiring 1.7 fewer children than husbands at baseline) may be a result of women learning of their husbands' significantly larger fertility desires (often for the first time) during the joint consultations and increasing their own reported preferences in response to his. In contrast, the private meetings with the family planning worker that women in the individual group experience have the opposite effect on their fertility preferences, as they are able to avoid the influence of their husbands stated preferences. As shown in column (4) of Table 3, women in the individual group decreased their desired fertility by 2.2 children at endline, relative to the control mean (p-value=0.100); this substantial decrease represents an 81% decline in desired additional children. The contrasting difference in the estimated effects between the two treatment groups for desired fertility is statistically significant- an increase for joint consultations, and a decrease for individual consultations.

Although McCarthy (2019) demonstrated that the couples intervention effectively reduced pregnancy and increased uptake of modern contraception in the short-run,[29] to reconcile the potentially short-term changes in behavior (adopting contraceptives) with the potentially long-term goals of higher fertility desires, we note that although most men and women that newly adopted contraceptives at endline also report a desire for fewer children at endline, a surprisingly high 22% of men and women new adopters actually report that they would like *more* children at endline than they wanted at baseline. This means that 22% of participants who are taking active measures not to become pregnant *at present* are reporting that they would like to have more children than they wanted before they starting contraceptives. This points to the theory that many men and women in this context may not use contraceptives for the purpose of having fewer children, but to space out their (additional) children, which is consistent with empirical evidence from Malawi (Karra et al., 2022).

During the joint family planning consultations in the couples group, it's possible that women may feel pressure to agree with the higher fertility preference in the presence of their husbands, especially after hearing their high fertility preferences for the first or second time. Interestingly,

[28] As a reminder, the joint consultations as part of the intervention take place with the husband and family planning worker (CBD), but the elicitation of men and women's fertility preferences for the data analysis takes place privately with an enumerator of the same sex (i.e. without the other spouse).

[29] We also confirm the original results of McCarthy (2019) in Appendix Table A2 that the couples treatment reduces pregnancy and increases contraception use in our estimation sample.

though, the household survey data used in the analysis for this study is collected well after those consultations have ended (by at least two months), and the enumeration interviews take place privately with a female enumerator (who is able to speak both Kiswahili and Kisukuma, the local languages). This private and comfortable interview setting, without the influence of husbands, significantly reduces the incentive for women to appease their husbands by artificially stating high fertility preferences.

These results suggest a "push-back" effect in reported fertility desires. In addition to being an information session about the benefits of birth spacing and family planning options, the couples consultations are an opportunity for husbands and wives to share their stated fertility desires, and potentially influence each others' preferences. After participating in these conversations bi-monthly throughout the fifteen months, husbands in this group seem to be pushing back slightly on the idea of smaller families, and wives, hearing these higher fertility desires, seem to be converging to his preferences by reporting an increase in their own fertility desires.

Women's (mis)perceptions: This type of converging to husbands' desires can be directly observed in column (5) of Table 3 where we analyze changes in women's misperception of their husbands true fertility desires. Column 5 of Table 3 shows that the couples intervention increases the likelihood of women perceiving that their husbands desire *a larger number of additional desired children* than their husbands actually report, and this misperception increases by 45 percentage points. In other words, the proportion of women overestimating their husbands' fertility preferences is twice as large as the control mean after the joint consultations. This result suggests that the "updating" in wives' perception of their husbands' fertility preferences comes from women in the couples group, who at baseline thought that their husbands desire a *lower* or *equal* number of additional children than themselves. In contrast, the proportion of women overestimating their husbands' desired additional fertility decreases substantially in the individuals' group, indicating that the joint consultations with their husbands drives the overestimation of women's beliefs about their spouses' desired number of additional children.

4.3 Intermediate Outcomes

In this section, we present evidence that the above increase in fertility preferences in the couples group is consistent with changes in spousal communication and men's attitudes due to joint family planning consultations. Table 4 captures the intervention's intermediate outcomes, demonstrating that the couples group consultations do indeed increase spousal communication and improve men's attitudes towards family planning. These intervention outcomes focused on the implementation of the family planning program; thus, this information was only collected at the endline survey, in 2014. Without two rounds of data on these variables, we are unable to utilize a difference-in-differences model, and instead use a single-year Local Average Treatment

Effect (LATE). The first two columns of Table 4 show that husbands who participated in the couples treatment are more likely to believe that it is a good thing to plan the size of one's family and that contraceptives are an acceptable tool for planning the size of one's family and spacing out births (statistically significant at the 1% level). Column 3 demonstrates the effect of the couples intervention on the likelihood that husbands will agree that it is acceptable for *their own wife* to take contraceptives. Even here, we see that husbands who participated in the couples consultations are 29 percentage points more likely to agree with this statement than those in the individual and control group. The results in columns 1-3 are consistent with the observed reduction in pregnancy in the couples group (McCarthy, 2019). In column 4, we show the effect of the couples intervention on increasing the frequency of communication between husbands and wives about family planning. Women who participated in the couples intervention report that they have 0.7 more annual conversations with their spouse about family planning decisions than women in the control and individual group. Together, these results indicate that the couples consultations in the family planning program do encourage communication and open husbands up to the idea of contraceptives as a method to plan the size of one's family.

4.4 The Role of Polygamy

What might motivate women to increase their own fertility goals (reporting this privately to the female enumerator) after hearing that their husbands want more children during the joint consultation with the family planning worker?[30] To explore this question, we examine the heterogeneous effects of the family planning consultations by polygamy status at baseline. We hypothesize that competition between co-wives may be a potential motivator in raising women's fertility desires.

In Table 5, we estimate a fully interacted model for each of our outcomes of interest. We interact a woman's polygamy status at baseline with each of the covariates that are included in our main specification, controlling for the main effect of polygamy.In column 4, we demonstrate through the interaction of participation in the couples treatment, time, and polygamy that polygamous women increase their fertility desires by 3.2 children at endline (statistically significant at the 1% level). The coefficient on the interaction between participation in the couples treatment and time in column (4) demonstrates that monogamous women do not increase their fertility preferences by a statistically significant amount. These two coefficients

[30]With our short term data (2012-2014), we do not, at this stage, observe evidence that the motivation for the reduction in fertility preferences among women in the individual group is a result of the evolutionary pressure that has been observed supporting the unified growth theory (Galor and Weil, 2000). Institutional factors, including an abundance of land, differing structural transformation, and continued dependence on agriculture in SSA, result in a higher return to children than in other contexts (Pörtner, 2023).

are statistically different from each other at the 1% level.[31] Also in column (4), we observe that polygamous women in the individual treatment group desire 2.7 fewer children at endline (statistically significant at the 10% level), suggesting that polygamous women do indeed reduce their fertility desires, but only when the consultations are private. Interestingly, polygamous women and monogamous women do not respond differently to the individual treatment, both decrease their fertility desires and the difference between these two coefficients is not statistically significant. The p-value testing the difference between the effect of the individual treatment and the couples treatment for polygamous women also demonstrates a statistically significant difference at the 1% level. [32] Overall, the findings in Table 5 suggest that polygamy, by itself, is not necessarily a motivator to increase fertility goals, but polygamous women who participate in a joint conversation with their husbands (and learn his high fertility preferences) respond *strategically* by increasing their own fertility preferences. As children can be a useful claim to resources that are controlled by husbands, women in polygamous marriages may respond to the scarcity of resources by strategically increasing their own fertility desires (Rossi, 2019).It is important to note that the first order effects of the couples family planning program on pregnancies demonstrated the same reduction at endline for both polygamous and monogamous households (Table A3, column 1). However, it does appear that the increase in reported contraceptive use is greater for monogamous women than polygamous (Table A3, column 2). Unfortunately, we lack information on cooperation among wives or ranks of female spouses in polygamous households to explore whether these strategic fertility responses are more salient when there is more conflict among women in polygamous households as shown in D'Exelle et al. (2023).

Interestingly, both monogamous and polygamous women who participated in the couples treatment overestimate their husbands' fertility preferences at endline (column 5 of Table 5). We take this to mean that although the monogamous women also seem to become aware that their husbands want many children after participating in the joint consultations, only the polygamous women respond by increasing their *own* desired fertility.

Finally, regarding husbands' fertility preferences in Table 5, we observe in Column 1 that the increase in husbands' additional number of desired children is actually driven by men in monogamous households,[33] even though in Column 2 husbands in both monogamous and polygamous households have an equal likelihood of desiring an additional wife. Given that the polygamous husbands already have multiple wives to distribute their fertility goals (the substitution effect), and that the enumerator asks specifically about fertility goals with the

[31]The p-value of *CouplesxPolygamy = CouplesxMonogamy is <0.00*
[32]The p-value of *CouplesxPolygamy = IndivxPolygamy is also <0.00*
[33]The p-vale of *Cop*Post*Poly =Cop*Post is <0.026.*

interviewed wife, this finding would suggest that the monogamous husbands may be more motivated to increase fertility with their existing wife than the polygamous husbands.

4.5 The Role of Maternal Age

We also explore heterogeneous effects of the family planning program by a woman's age at baseline. We hypothesize that women who have a shorter reproductive horizon (i.e., who are older than age 30),[34] might feel more pressure to have children than their younger counterparts, and thus, are more likely to increase their fertility preferences as a response to learning of their husbands large fertility desires. Consistent with this hypothesis, column 4 of Table 6 shows that women over age 30 increase their fertility preferences after participating in the couples consultations, while we do not observe any increase among their younger counterparts. This difference is statistically significantly different from zero. In contrast, both older and younger women decreased their fertility preferences after participating in the individual consultations, which is consistent with our main results. These findings are aligned with the husbands' responses in column 1 of Table 6. The increase in male fertility preferences is driven by husbands whose wives are older than 30, while we do not observe any change in the demand for children among husbands in the individual intervention.

These heterogeneous effects by women's age at baseline are consistent with the strategic responses that we uncover in the polygamy effects. Women who might feel more pressure to have children, either because they compete with co-wives for resources, or because they have a shorter reproductive horizon, are more likely to increase their fertility preferences in the couples group. The presence of their husbands in these family planning consultations triggers women to increase their stated demand for children. We observe the opposite behavior (a lowering of fertility preferences) when these women consult privately in the individual group. Ideally, we would have liked to analyze the effects of the family planning program on fertility responses for women who are both older and living in polygamous households; however, our sample size is small to estimate these combined heterogeneous effects.

4.6 Alternative Explanations for Fertility Preference Changes

As much as we would like to, we are unable to empirically answer exactly why men and women in the couples treatment group increased their fertility preferences, and why women in the individual treatment group decreased their fertility preferences. In the above two sections, we explored heterogeneous effects demonstrating that polygamous and older women in the couples group respond strategically to hearing their husbands' fertility desires by increasing their own. With a shorter reproductive time horizon and possible competition with co-wives for resources,

[34]The age cut off of 30 is women's average age at baseline.

these women are likely to feel more reproductive pressure, and this is a potential explanation for their increase in fertility preferences. In addition to this analysis, we also explore two possible alternative explanations for the changes in fertility preferences: intra-household bargaining power and conflict, and demonstrate that these alternative explanations do not hold weight in accounting for our results. First, using the available household survey data at baseline, we examine five individual variables that capture different dimensions of women's intra-household bargaining power: i) whether a woman married young, ii) whether a woman has no say in household financial decisions, iii) spousal age gap, iv) spousal education gap, and v)spousal gap in geographic proximity to natal family. We then construct an index that includes all five of these variables as a proxy women's empowerment.[35]

Similar to the specifications of Tables 5 and 6, we fully interact our main model covariates with each of these women's empowerment variables at baseline to test whether they mediate women's increases in fertility preferences in the couples group. The results are summarized in Table 7. We find that women who are more empowered in the couples group, as measured by this index, are more likely to increase their fertility preferences. This increase in the number of additional desired children is statistically significantly different from that of less empowered women in the couples group. It is worth noting in Table 7, that there is not a consistent pattern across the variables of the index, for instance, women who are less educated than their husbands in this group are also likely to increase their desired additional number of children and there is no statistically significant differences in the couples group across other variables of the index such as married young, spousal age gap and geographic proximity to natal family. Overall, these results allow us to rule out that the less *empowered* women in the couples group are those likely to increase their fertility desires as a way to please their husbands. In addition, as a possible proxy for attempting to smooth intra-household conflict, we also examine the heterogeneous treatment effects by baseline domestic violence. Column 7 of Table 7 shows that women experiencing domestic violence at baseline are not more likely to increase their fertility preferences in the couples group.

Furthermore, we leverage the results of a small sample lab game at the end of the survey. In this game, if women chose to participate and "won" (i.e., picked a red card from a deck of cards),

[35]We define these five binary indicators capturing women's relative dis-empowerment as follows: i)wife married young, equals to 1 if a woman married before 18, ii) wife has no financial decision making, equals to 1 if a woman reports no say in household financial decisions, iii) spousal age gap, equals to 1 if the age difference between husband and wife is more than 7 years (the sample average), iv) spousal education gap, equals to 1 if a husband has more education than his wife, and v) spousal gap in geographic proximity to natal family, equals to 1 if husbands are from the village where they currently reside and their wives are from outside of that village.The empowerment index is calculated using principal components analysis on these five variables. The "Dis-empowered" dummy variable is equal to 1 if the index is above the sample mean index. Table A6 shows the summary statistics of these variables.

they were given the opportunity to choose a gift: a “kanga" or a tin of coffee. The gifts were intentionally gendered. In this region, “kangas" are colorful fabrics worn by women and used for female chores (i.e., swaddling babies), whereas coffee is viewed as a drink for men. Among the 261 women who were eligible to choose a prize, 77% selected the “kanga", while 22% chose the coffee. This suggests that, when given the opportunity, most women prioritize their own preferences over those of their husbands. We find no statistically significant differences in gift choices between women randomly assigned to the couples group and those in other treatment arms.[36] Therefore, this descriptive evidence also suggests that women are not reporting higher fertility preferences to appease their husbands, indicating that these changes in the number of additional desired children likely do not reflect conflict avoidance, but rather a shift in fertility preferences.

In addition, Appendix Table A7 presents the heterogeneous effects of the family planning consultations on men's fertility preferences by the same intra-household bargaining and conflict variables at baseline. We observe no statistically significant differences in these variables among men participating in the couples group (except for financial decision-making), while their fertility preferences remain unchanged in the individual group. These findings suggest that the increase in fertility desires in monogamous husbands compared to their polygamous counterparts in the couples group does not seem to respond to differences in women's empowerment or domestic violence at baseline but rather to a "substitution effect" where men achieve their fertility goals across multiple wives (Rossi, 2019), while monogamous husbands are motivated to increase their fertility preferences with their existing wife. [37]

One additional concern with our results is that social desirability bias may play a role in the increase of fertility preferences in the couples group. Unfortunately, we did not include questions in our surveys to measure social desirability bias, which limits our ability to assess the extent to which this bias affects our results. However, recent research (Valente et al., 2024) shows that women tend to under-report their true fertility desires in private interviews, likely to signal modernity rather than due to social or marital pressure. In our study context, the presence of well-educated female enumerators with fewer children compared to our sample women may have further encouraged respondents to report lower fertility preferences. Therefore, if social desirability bias were present during the the enumeration interviews, it likely operated in a downward direction, suggesting that the observed increase in women's fertility preferences in the couples group may represent a conservative estimate of the true effect.

Although we recognize that we are unable to fully rule out the possibility that the stated

[36]The small sample size limits our ability to conduct heterogeneity analyses by the lab game results.

[37]Tables A8 to A14 present the heterogeneous models by each of the women's empowerment variables for all the fertility outcomes presented in Table 3.

increase in women's fertility preferences reflects a non-binding statement, we have presented several pieces of evidence suggesting that women in the couples group indeed shift their reproductive goals, departing from the cheap talk scenario. First, we show that women who are more empowered in the couples group are actually more likely to increase their fertility desires, indicating that there is not strong evidence that women are attempting to please their husbands. The fact that empowered women are more likely to increase their fertility desires is also consistent with our hypothesis that this is a strategic response for women. Further, we show that domestic violence levels at baseline do not explain a differential increase in fertility preferences. Second, if social desirability bias were affecting the results, the literature suggests that the bias would make our findings an underestimate of the true effect. Third, as we describe in detail in the descriptive section, family planning consultations (which may involve spousal dynamics) are distinct from the household surveys used for measuring fertility preferences. The latter are private, gender-matched, and conducted two months after the intervention by different staff, reducing bias from the presence of spouses or CBD. Finally, in ongoing work, we tracked approximately 20 percent of our sample and conducted phone surveys in 2025 to determine the total number of children in each household. Preliminary results indicate a strong positive correlation between stated fertility preferences at the endline (2014) and the actual number of children in 2025.

4.7 Robustness Checks

We test whether our results are robust to alternate modes of inference. Table A5 shows that our main findings regarding the effects of the family planning intervention on men's and women's fertility preferences are robust to implementing wild-clustered bootstrapped errors at the village level. In addition, Table A5 shows that our main findings are overall robust to conducting a multiple hypothesis testing (MHT) correction across all outcomes presented in Table 3. To implement this robustness check, we follow Romano and Wolf (2005a,b) which corrects for false discovery rates under multiple outcomes and multiple treatments. This method calculates adjusted p-values controlling for the family wise errors across all of our outcomes allowing us to include baseline control variables in our main specification.

Furthermore, one potential concern for our identification strategy is that factors such as social norms or economic conditions — possibly correlated with village population —could affect fertility preferences. To address this concern, we estimate our main models controlling for village fixed effects. Table A15 shows that our main results are robust to adding these fixed effects, suggesting that time-invariant village-level characteristics do not affect the couples and individual treatment effects on men's and women's fertility preferences.

5 Conclusion

In this paper, we analyze the effect of an informational family planning program on fertility preferences in rural Tanzania that randomized the inclusion of husbands in household consultations over a 15-month period. We find that husbands have considerable influence on their wives' fertility preferences. At baseline, men demand nearly two more children than their wives, and although women bear most of the costs of childbearing and childrearing, men have more intra-household bargaining power. After participating in the joint consultations, women respond by increasing their desired additional children by 1.6 children, converging toward their husbands' stated preferences (and husbands' fertility preferences increase by 0.77 children), even though these preferences are solicited privately by an enumerator. Additionally, after women in the joint consultations learn of their husbands' large fertility desires, they then overestimate their (mis)perception of this number at endline. In contrast, women in private consultations decrease their desired fertility by two children at endline, and those of their husbands remain unchanged. Despite the success of the joint consultations in terms of contraceptive adoption and attitudes toward contraceptives (McCarthy, 2019), the findings in this paper demonstrate a "push-back" against the family planning program in the form of a stated preference for larger families as a result of including husbands.

Next, we characterize women in the joint consultations who respond to their husbands by increasing their fertility desires to explore potential motivations for such changes in preferences. Our heterogeneous effects by household baseline polygamy demonstrate that women in polygamous marriages are very responsive to the learning of their husbands' desires, and thus increase their own fertility desires by a large amount. In contrast, in the individual treatment, polygamy does not change women's decrease in fertility preferences. This strategic increase in desired additional children by polygamous wives in the couples treatment is in line with the literature demonstrating the way women may respond to scarce and competitive resources by aiming to have more children (Rossi, 2019). Furthermore, we examine whether the observed increase in women's fertility preferences within the couples group can be explained by a lack of empowerment or smoothing over intra-household conflict. We find no effect of domestic violence on fertility preference increases in the couples group, and actually find that empowered women in the couples group are more likely to increase their fertility preferences. In contrast—and consistent with our main findings—women in the individual consultations group reduce their fertility preferences, regardless of their baseline levels of bargaining power or household conflict.

In the literature, it is not yet entirely clear the specific mechanism through which fertility preferences affect actual fertility *outcomes*. Fertility preferences are malleable, and even with short-term birth spacing, parents may respond to family planning information by pushing

their reported desired fertility upwards. One limitation of this study is that we are unable to directly observe the long-term outcomes of these fertility preferences, in the form of realized or completed fertility by family. A second limitation is that we can not entirely rule out the possibility that these reported fertility preferences are "cheap talk," as they are non-binding and costless. Nevertheless, we present several pieces of evidence indicating that women's increase in their desired number of children in the couples group reflects a true shift in reproductive intentions. In fact, neither women's empowerment, nor the potential for social desirability bias, nor the elicitation of fertility preferences explains our findings. Given the high correlation between stated preferences and fertility outcomes in aggregate data (i.e., Gietel-Basten et al. (2024); Pritchett (1994); Zipfel (2022)), particularly in sub-Saharan Africa, reproductive health policymakers and researchers should consider potential "push-backs" from joint family planning programs and recognize the significant role of husbands in fertility decision-making.

While the literature remains inconclusive about the efficacy of including men in family planning consultations, our findings suggest that further research is needed to explore the different *ways* men may influence fertility outcomes, especially in contexts with unequal gender norms and unbalanced intrahousehold bargaining power. We show that men's sway on fertility preferences is strong and supportive of larger families, but their approval of contraceptives (D'Exelle and Ringdal, 2022) or their willingness to update their beliefs about maternal mortality (Ashraf et al., 2022) demonstrates a more nuanced attitude toward fertility that merits further investigation. Given the strong correlation between fertility desires and fertility outcomes, but the curiously dynamic nature of desires, additional research on fertility desires with tracking of long-term fertility behavior would fill a gap in the literature.

From a policy perspective, our findings, alongside those of (McCarthy, 2019), highlight the reproductive health benefits (reduced unmet need, increased birth spacing) of family planning workers consulting with husbands and wives together on the benefits of family planning, discussing the various contraceptive methods, and sharing information about where they may be accessed for free. However, because the request for numerical additional fertility desires from individuals, at least in this context, reveals spousal stark differences and may have triggered a "push-back" effect on fertility preferences, we do not recommend encouraging the elicitation of additional fertility desires during joint consultations about family planning, even while promoting broader communication and shared decision-making around family planning.

This paper reveals a juxtaposition of changing fertility preferences with and without the influence of husbands. With economic development and aid organizations frequently promoting family planning in sub-Saharan Africa, a greater understanding of the subtleties of effects that result from differential structures of conversations about family planning will give insight into the optimal ways to reduce any unmet need for family planning and improve welfare.

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6 Tables and Figures

Figure 1: Map of study sample households in Meatu (McCarthy, 2019)

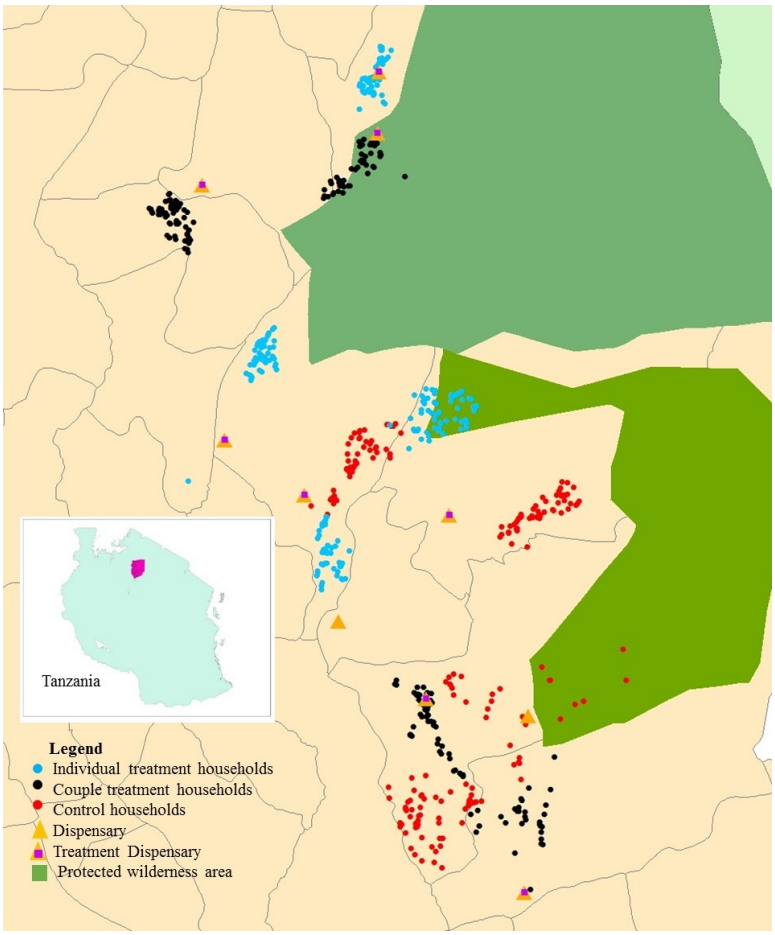

Figure 2: Timeline of Program Implementation and Household Surveys

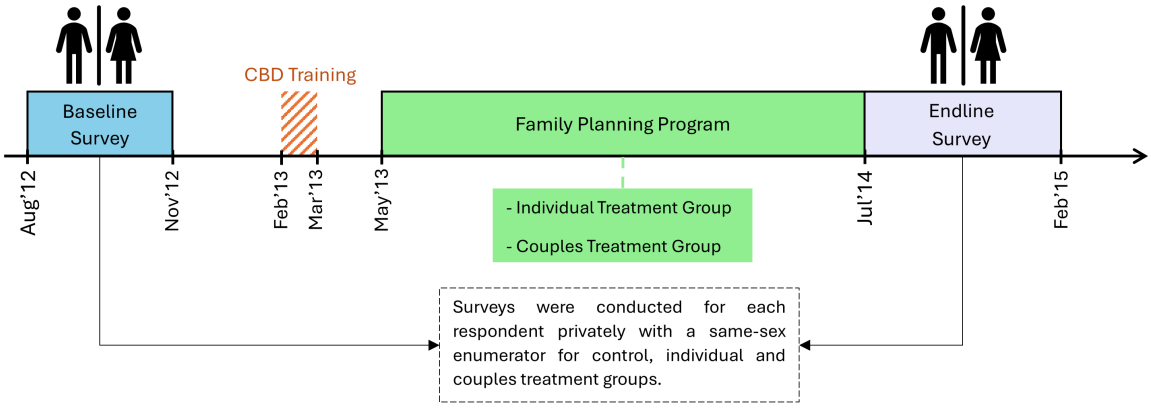

Table 1: Descriptive statistics at baseline, estimation sample

Variable	Mean (1)	Std. Deviation (2)	Observation (3)
Covariates in 2012			
Wife's age	29.769	7.648	515
Wife has completed primary	0.654	0.476	515
Wife ever used family planning	0.181	0.385	515
Marriage age of current husband	17.689	2.612	515
Children born per woman	4.868	3.173	515
Frequency of sex	0.695	0.461	515
Husband has off-farm income	0.120	0.326	515
Husband was polygamous	0.293	0.456	515
Stand. rainy season farm income	-0.012	0.157	515
Distance to dispensary (km)	0.589	0.338	515
Household asset index	0.013	0.983	515
Husband was abusive	0.346	0.476	515
Outcomes in 2012			
Husband's add'l fertility pref.	3.944	3.703	515
Husband wants add'l wives	0.221	0.416	515
Wife's pref. *Up-to-God*	0.351	0.478	515
Wife's add'l fertility pref.	2.380	2.533	334
Wife's misperception	0.229	0.421	515

Notes: Women's fertility preferences exclude women who mentioned 'Up-to-God' as a response to fertility preferences. See the Variables Definition Section in Appendix A.1. for a full description of each variable.

Table 2: Sample Characteristics Balance at Baseline

	Control (C)		Individual (Indiv)		Couple (Coup)		C - Indiv	C - Coup	Indiv - Coup
	N	Mean	N	Mean	N	Mean	p-value	p-value	p-value
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Covariates in 2012									
Wife's age	164	30.043	186	29.457	165	29.848	0.424	0.687	0.495
Wife has completed primary	164	0.640	186	0.634	165	0.691	0.636	0.465	0.525
Wife ever used family planning	164	0.195	186	0.194	165	0.152	0.899	0.576	0.727
Marriage age of current husband	164	17.939	186	17.478	165	17.679	0.202	0.929	0.384
Children born per woman	164	4.939	186	4.806	165	4.867	0.545	0.970	0.758
Frequency of sex	164	0.707	186	0.661	165	0.721	0.485	0.586	0.505
Husband has off-farm income	164	0.110	186	0.145	165	0.103	0.616	0.667	0.616
Husband was polygamous	164	0.287	186	0.269	165	0.327	0.495	0.465	0.354
Stand. rainy season farm income	164	0.014	186	-0.047	165	0.000	0.071	0.444	0.091
Distance to dispensary (km)	164	0.741	186	0.636	165	0.386	0.758	0.131	0.252
Household asset index	164	0.198	186	-0.156	165	0.021	0.242	0.929	0.475
Husband was abusive	164	0.360	186	0.349	165	0.327	0.859	0.485	0.606
Outcomes in 2012									
Husband's add'l fertility pref.	164	4.409	186	3.720	165	3.733	0.596	0.687	0.980
Husband wants add'l wives	164	0.244	186	0.215	165	0.206	0.939	0.717	0.768
Wife's pref. *Up-to-God*	164	0.329	186	0.355	165	0.370	0.960	0.737	0.889
Wife's add'l fertility pref.	110	2.482	120	2.458	104	2.183	0.667	0.273	0.333
Wife's misperception	164	0.238	186	0.231	165	0.218	1.000	0.778	0.889
F-statistics			1.088		6.838				
P-value			0.949		0.576				

Notes: P-values calculated using David Roodman et al. (2019) boottest Stata command, which estimates a bootstrapping adjustment for a small number of clusters. The F-test performs overall balance and assesses the combined significance of control variables in determining treatment assignment. See the Variables Definition Section in Appendix A.1. for a full description of each variable.

Table 3: Intervention Effects on Male and Female Fertility Preferences

	Husband's Preferences		**Wife's Preferences**		
	Add'l Fertility	Add'l Wife	Up-to-God	Add'l Fertility	Wife's Misperception
	(1)	(2)	(3)	(4)	(5)
Part. in Coup. × Post	0.768***	0.222***	-0.290	1.597**	0.447***
	[0.277]	[0.049]	[0.187]	[0.732]	[0.076]
Part. in Indiv. × Post	-0.124	-0.128*	0.116	-2.169	-0.292*
	[0.778]	[0.069]	[0.291]	[1.319]	[0.160]
Observations	1030	1030	1030	717	1029
Endline control mean	4.356	0.269	0.366	2.737	0.218
p-value: Coup. vs Indiv.	0.236	0.000	0.099	0.007	0.000

Notes: $^{*}p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$. Husband's (or wife's) add'l fertility is defined as the number of additional children desired by a husband (or wife). The husband's add'l wife is a dummy variable for whether a husband wants more wives in the future. "Up-to-God" is a dummy variable for women who answered "It's Up-to-God" to whether they would like to have more children. Wife's misperception is a dummy variable for whether a woman perceives that her husband's number of additional children is more than he actually desires. Column 4 excludes women who answered "Up to God". Baseline control variables include the wife's age, a dummy for whether: i) the wife has completed primary school, ii) the wife has ever used family planning, iii) the husband was abusive, iv) the husband had off-farm income, v) the wife reported frequent sex, and vi) the husband was polygamous. Baseline controls also include the wife's age when married to the husband, the number of children born per woman, the households' standardized rainy season farm income, household wealth index, dummy variables for village-level stratification, and the distance to the dispensary (km). Robust standard errors are in parentheses and clustered at the village level.

Table 4: Intermediary Intervention Effects using LATE Model

	Husband's beliefs			**Wife's reporting**
	Good to plan size of family	Contra. are good for planning	OK for my wife to take contra.	No. annual spousal FP decisions
	(1)	(2)	(3)	(4)
Part. in Coup.	0.279***	0.288***	0.290**	0.666***
	[0.089]	[0.089]	[0.137]	[0.215]
Part. in Indiv.	0.050	0.058	-0.183	-0.133
	[0.113]	[0.114]	[0.149]	[0.219]
Observations	515	515	512	514
Endline control mean	0.685	0.667	0.512	0.670
p-value: Coup. vs Indiv.	0.016	0.058	0.000	0.007

Notes: $^{*}p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$. Good to plan the size of the family is a dummy variable defined by whether husbands agree that it is a good thing to plan the size of one's family. Contra. are good for planning is a dummy variable defined by whether husbands agree that contraceptives are a good tool to plan the size of one's family and space out births. Ok for my wife to take contra. is a dummy variable defined by whether husbands agree that they approve of their own wife using contraceptives. No. annual spousal FP discussions is defined as the number of annual discussions about family planning that a husband and wife have (reported by the wife). The sample size here is smaller due to these variables only being collected at endline. Column (2), (3) and (4) had slightly more individuals who opted not to answer the question, which reduced their sample size slightly more. Baseline control variables include the wife's age, a dummy for whether: i) the wife has completed primary school, ii) the wife has ever used family planning, iii) the husband was abusive, iv) the husband had off-farm income, v) the wife reported frequent sex, and vi) the husband was polygamous. Baseline controls also include the wife's age when married to the husband, the number of children born per woman, the households' standardized rainy season farm income, household wealth index, dummy variables for village-level stratification, and the distance to the dispensary (km). Robust standard errors are in parentheses and clustered at the village level.

Table 5: Intervention Effects on Fertility Preferences by Polygamy at Baseline

	Husband's Preferences		**Wife's Preferences**		
	Add'l Fertility	Add'l Wife	Up-to-God	Add'l Fertility	Wife's Misperception
	(1)	(2)	(3)	(4)	(5)
Part. in Coup. × Post	1.051***	0.227***	-0.299	0.387	0.438***
	[0.326]	[0.059]	[0.190]	[0.810]	[0.098]
Part. in Coup. × Post × Polygamy	0.397	0.247***	-0.233	3.207***	0.464***
	[0.332]	[0.058]	[0.185]	[0.682]	[0.078]
Part. in Indiv. × Post	-0.430	-0.202**	0.083	-1.952	-0.255
	[0.702]	[0.084]	[0.314]	[1.323]	[0.208]
Part. in Indiv. × Post × Polygamy	0.180	-0.041	0.147	-2.617*	-0.358***
	[1.207]	[0.059]	[0.258]	[1.447]	[0.113]
Post	-1.419***	-0.106***	-0.109	0.683	0.122**
	[0.234]	[0.037]	[0.151]	[0.530]	[0.052]
Participated in coup. treatment	-0.744**	-0.105**	0.087	-0.686**	-0.148**
	[0.314]	[0.046]	[0.097]	[0.315]	[0.064]
Participated in indiv. treatment	0.259	0.047	-0.051	0.620	0.132
	[0.596]	[0.046]	[0.155]	[0.657]	[0.112]
Husband was polygamous in 2012	6.303***	-0.260	0.225	1.930	-0.190
	[1.666]	[0.265]	[0.213]	[1.323]	[0.238]
Observations	1030	1030	1030	717	1029
Control mean	4.356	0.269	0.366	2.737	0.218
P-values:					
Coup. × Post × Poly. = Coup. × Post	0.031	0.762	0.270	0.000	0.803
Indiv. × Post × Poly. = Indiv. × Post	0.487	0.032	0.572	0.229	0.467
Coup. × Post × Poly. = Indiv. × Post × Poly.	0.852	0.000	0.068	0.000	0.000
Coup. × Post = Indiv. × Post.	0.064	0.000	0.168	0.099	0.004

Notes: $^{*}p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$. Husband's (or wife's) add'l fertility is defined as the number of additional children desired by a husband (or wife). The husband's add'l wife is a dummy variable for whether a husband wants more wives in the future. "Up-to-God" is a dummy variable for women who answered "It's Up-to-God" to whether they would like to have more children. Wife's misperception is a dummy variable for whether a woman perceives that her husband's number of additional children is more than he actually desires. Columns 4 excludes households for which wives answered "Up to God". Baseline control variables include the wife's age, a dummy for whether: i) the wife has completed primary school, ii) the wife has ever used family planning, iii) the husband was abusive, iv) the husband had off-farm income, v) the wife reported frequent sex, and vi) the husband was polygamous. Baseline controls also include the wife's age when married to the husband, the number of children born per woman, the households' standardized rainy season farm income, household wealth index, dummy variables for village-level stratification, and the distance to the dispensary (km). Robust standard errors are in parentheses and clustered at the village level.

Table 6: Intervention Effects on Fertility Preferences by Women's Age at Baseline

	Husband's Preferences		**Wife's Preferences**		
	Add'l Fertility	Add'l Wife	Up-to-God	Add'l Fertility	Wife's Misperception
	(1)	(2)	(3)	(4)	(5)
Part. in Coup. × Post	0.190	0.174**	-0.355**	-0.329	0.309***
	[0.500]	[0.079]	[0.179]	[0.617]	[0.064]
Part. in Coup. × Post × Older wife	1.279***	0.266***	-0.214	2.770***	0.557***
	[0.247]	[0.067]	[0.196]	[0.725]	[0.104]
Part. in Indiv. × Post	-0.459	-0.215**	0.046	-1.888	-0.205*
	[0.868]	[0.084]	[0.314]	[1.335]	[0.121]
Part. in Indiv. × Post × Older wife	0.066	-0.015	0.236	-3.496*	-0.361
	[0.691]	[0.104]	[0.257]	[1.872]	[0.231]
Post	-1.366***	-0.107***	-0.112	0.842	0.123**
	[0.248]	[0.038]	[0.150]	[0.519]	[0.051]
Participated in coup. treatment	-0.651*	-0.105**	0.098	-0.579**	-0.141**
	[0.342]	[0.047]	[0.094]	[0.277]	[0.059]
Participated in indiv. treatment	0.291	0.029	-0.058	0.959	0.129
	[0.646]	[0.045]	[0.148]	[0.789]	[0.106]
Older wife	-1.617	-0.361	0.535***	-3.928	-0.364
	[2.851]	[0.340]	[0.167]	[2.675]	[0.298]
Observations	1030	1030	1030	717	1029
Control mean	4.356	0.269	0.366	2.737	0.218
P-values:					
Coup. × Post × Older wife = Coup. × Post	0.016	0.393	0.031	0.000	0.014
Indiv. × Post × Older wife = Indiv. × Post	0.376	0.064	0.197	0.122	0.358
Coup. × Post × Older wife = Indiv. × Post × Older wife	0.058	0.034	0.044	0.001	0.000
Coup. × Post = Indiv. × Post	0.528	0.000	0.144	0.171	0.000

Notes: $^{*}p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$. Husband's (or wife's) add'l fertility is defined as the number of additional children desired by a husband (or wife). The husband's add'l wife is a dummy variable for whether a husband wants more wives in the future. "Up-to-God" is a dummy variable for women who answered "It's Up-to-God" to whether they would like to have more children. Wife's misperception is a dummy variable for whether a woman perceives that her husband's number of additional children is more than he actually desires. Column 4 excludes households for which wives answered "Up to God". Baseline control variables include the wife's age, a dummy for whether: i) the wife has completed primary school, ii) the wife has ever used family planning, iii) the husband was abusive, iv) the husband had off-farm income, v) the wife reported frequent sex, and vi) the husband was polygamous. Baseline controls also include the wife's age when married to the husband, the number of children born per woman, the households' standardized rainy season farm income, household wealth index, dummy variables for village-level stratification, and the distance to the dispensary (km). Robust standard errors are in parentheses and clustered at the village level.

Table 7: Intervention Effects on Wife's Fertility Preferences by Baseline Covariates

	Baseline covariate (2012)						
	Married Young	No Financial Decision	Spousal Age Gap	Proximate Natal Familygap	Spousal Education Gap	Dis-Empowerment Index Dummy	Domestic Violence
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Part. in Coup. × Post	1.742**	2.326***	1.486**	2.155***	0.902	2.685***	1.314**
	[0.790]	[0.668]	[0.646]	[0.500]	[0.674]	[0.707]	[0.650]
Part. in Coup. × Post × Covariate	1.333**	0.999	1.937**	1.360*	3.255**	0.954	2.448**
	[0.639]	[0.762]	[0.976]	[0.769]	[1.346]	[0.703]	[1.162]
Part. in Indiv. × Post	-3.096***	-2.307*	-2.327*	-2.298*	-1.636	-2.171	-2.128*
	[1.189]	[1.391]	[1.362]	[1.295]	[1.344]	[1.369]	[1.202]
Part. in Indiv. × Post × Covariate	-1.450	-2.258	-1.749	-1.788	-2.473*	-2.154	-2.351
	[1.310]	[1.424]	[1.403]	[1.167]	[1.427]	[1.384]	[1.523]
Post	0.548	0.604	0.569	0.460	0.615	0.518	0.554
	[0.463]	[0.498]	[0.465]	[0.380]	[0.521]	[0.454]	[0.517]
Participated in coup. treatment	-0.769**	-0.871***	-0.936**	-0.999***	-0.740*	-0.924***	-0.880***
	[0.316]	[0.290]	[0.379]	[0.313]	[0.385]	[0.314]	[0.340]
Participated in indiv. treatment	0.691	0.761	0.471	0.577	0.502	0.599	0.655
	[0.650]	[0.723]	[0.701]	[0.694]	[0.677]	[0.738]	[0.667]
Covariate in 2012	-0.083	-0.117	1.066	-3.697**	-4.963**	-1.813	-0.871
	[1.742]	[1.217]	[2.302]	[1.460]	[2.129]	[1.581]	[1.743]
Observations	717	717	714	717	716	717	717
Control mean	2.737	2.737	2.737	2.737	2.737	2.737	2.737
P-values:							
Coup. × Post × Covariate = Coup. × Post	0.296	0.000	0.440	0.212	0.004	0.001	0.135
Indiv. × Post × Covariate = Indiv. × Post	0.014	0.918	0.521	0.284	0.398	0.975	0.735
Coup. × Post × Covariate = Indiv. × Post × Covariate	0.049	0.019	0.028	0.014	0.003	0.023	0.015
Coup. × Post = Indiv. × Post	0.000	0.002	0.006	0.001	0.071	0.002	0.001

Notes: $^{*}p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$. Husband's (or wife's) add'l fertility is defined as the number of additional children desired by a husband (or wife). Columns 1 and 2 exclude households for which wives answered "Up to God". Baseline control variables include the wife's age, a dummy for whether: i) the wife has completed primary school, ii) the wife has ever used family planning, iii) the husband was abusive, iv) the husband had off-farm income, v) the wife reported frequent sex, and vi) the husband was polygamous. Baseline controls also include the wife's age when married to the husband, the number of children born per woman, the households' standardized rainy season farm income, household wealth index, dummy variables for village-level stratification, and the distance to the dispensary (km). Robust standard errors are in parentheses and clustered at the village level.

A Online Appendix Tables

Table A1: First Stage Results for the DD-LATE Model Specification

	Add'l Fertility		**Add'l Wives**		**Up-to-God**		**Add'l Fertility**		**Wife's Misperception**	
	Part. in Coup. × Post	Part. in Indiv. × Post	Part. in Coup. × Post	Part. in Indiv. × Post	Part. in Coup. × Post	Part. in Indiv. × Post	Part. in Coup. × Post	Part. in Indiv. × Post	Part. in Coup. × Post	Part. in Indiv. × Post
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Assigned to couples treat	-0.488***	0.108***	-0.488***	0.108***	-0.488***	0.108***	-0.557***	0.119***	-0.488***	0.109***
	[0.026]	[0.019]	[0.026]	[0.019]	[0.026]	[0.019]	[0.048]	[0.037]	[0.026]	[0.019]
Assign coup.* Post	0.981***	-0.215***	0.981***	-0.215***	0.981***	-0.215***	1.010***	-0.241***	0.981***	-0.215***
	[0.050]	[0.038]	[0.050]	[0.038]	[0.050]	[0.038]	[0.058]	[0.047]	[0.050]	[0.038]
Assigned to indiv. treat	-0.220***	-0.092***	-0.220***	-0.092***	-0.220***	-0.092***	-0.257***	-0.093**	-0.220***	-0.091***
	[0.042]	[0.034]	[0.042]	[0.034]	[0.042]	[0.034]	[0.065]	[0.038]	[0.042]	[0.034]
Assign indiv* Post	0.446***	0.186***	0.446***	0.186***	0.446***	0.186***	0.456***	0.183***	0.447***	0.188***
	[0.084]	[0.068]	[0.084]	[0.068]	[0.084]	[0.068]	[0.107]	[0.070]	[0.084]	[0.068]
Dosage of CBDs in vill.	10.214***	-12.931***	10.214***	-12.931***	10.214***	-12.931***	12.076***	-14.170***	10.252***	-12.872***
	[1.330]	[0.510]	[1.330]	[0.510]	[1.330]	[0.510]	[2.164]	[1.264]	[1.323]	[0.520]
Dosage*Post	-20.533***	25.765***	-20.533***	25.765***	-20.533***	25.765***	-21.725***	26.955***	-20.535***	25.762***
	[2.422]	[1.161]	[2.422]	[1.161]	[2.422]	[1.161]	[3.547]	[2.007]	[2.421]	[1.163]
Observations	1030	1030	1030	1030	1030	1030	717	717	1029	1029
F-stats	90.839	315.640	90.839	315.640	90.839	315.640	97.590	75.743	101.814	302.610

Notes: $^{*}p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$. Husband's (or wife's) add'l fertility is defined as the number of additional children desired by a husband (or wife). The husband's add'l wife is a dummy variable for whether a husband wants more wives in the future. "Up-to-God" is a dummy variable for women who answered "It's Up-to-God" to whether they would like to have more children. Wife's misperception is a dummy variable for whether a woman perceives that her husband's number of additional children is more than he actually desires. Baseline control variables include the wife's age, a dummy for whether: i) the wife has completed primary school, ii) the wife has ever used family planning, iii) the husband was abusive, iv) the husband had off-farm income, v) the wife had frequent sex, and vi) the husband was polygamous. Baseline controls also include the wife's age when married to the husband, the number of children born per woman, the households' standardized rainy season farm income, household wealth index, dummy variables for village-level stratification, and the distance to the dispensary (km). Standard errors are in parentheses and clustered at the village level.

Table A2: Intervention Effects on Pregnancy and Contraception

	Pregnant During Data Collection (1)	Wife Using Contraceptive (2)
Part. in Coup. × Post	-0.140***	0.072
	[0.036]	[0.044]
Part. in Indiv. × Post	-0.071	-0.040
	[0.052]	[0.103]
Observations	1030	1030
Endline control mean	0.264	0.116
p-value: Coup. vs Indiv.	0.204	0.273

Notes: $^{*}p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$. Pregnant during data collection: dummy variable for whether the wife was pregnant during endline data collection. Wife is using contraception: dummy variable for whether the wife as using any contraception during endline data collection. Baseline control variables include the wife's age, a dummy for whether: i) the wife has completed primary school, ii) the wife has ever used family planning, iii) the husband was abusive, iv) the husband had off-farm income, v) the wife had frequent sex, and vi) the husband was polygamous. Baseline controls also include the wife's age when married to the husband, the number of children born per woman, the households' standardized rainy season farm income, household wealth index, dummy variables for village-level stratification, and the distance to the dispensary (km). Robust standard errors are in parentheses and clustered at the village level.

Table A3: Intervention Effects on Pregnancy and Contraception by Polygamy at Baseline

	Pregnant During Data Collection (1)	Wife Using Contraceptive (2)
Part. in Coup. × Post	-0.145**	0.142**
	[0.060]	[0.069]
Part. in Coup. × Post × Polygamy	-0.122**	-0.084
	[0.055]	[0.057]
Part. in Indiv. × Post	-0.037	-0.040
	[0.098]	[0.101]
Part. in Indiv. × Post × Polygamy	-0.129***	-0.004
	[0.049]	[0.157]
Post	-0.036	0.147***
	[0.024]	[0.034]
Participated in coup. treatment	0.123***	-0.007
	[0.031]	[0.024]
Participated in indiv. treatment	0.091*	0.043
	[0.052]	[0.049]
Husband was polygamous in 2012	-0.108	-0.244
	[0.264]	[0.180]
Observations	1030	1030
Control mean	0.264	0.116
P-values:		
Coup. × Post × Poly. = Coup. × Post	0.811	0.023
Indiv. × Post × Poly. = Indiv. × Post	0.504	0.802
Coup. × Post × Poly. = Indiv. × Post × Poly.	0.931	0.642
Coup. × Post = Indiv. × Post.	0.402	0.118

Notes: $^{*}p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$. Pregnant during data collection: dummy variable for whether the wife was pregnant during endline data collection. Wife is using contraception: dummy variable for whether the wife is using any contraception during endline data collection. Baseline control variables include the wife's age, a dummy for whether: i) the wife has completed primary school, ii) the wife has ever used family planning, iii) the husband was abusive, iv) the husband had off-farm income, v) the wife had frequent sex, and vi) the husband was polygamous. Baseline controls also include the wife's age when married to the husband, the number of children born per woman, the households' standardized rainy season farm income, household wealth index, dummy variables for village-level stratification, and the distance to the dispensary (km). Robust standard errors are in parentheses and clustered at the village level.

Table A4: Intervention Effects on Male and Female Fertility Preferences, sub-sample

	Husb. Add'l Fertility (sub-sample) (1)	Wife's Misperception (sub-sample) (2)
Part. in Coup. × Post	0.203	0.378***
	[0.297]	[0.047]
Part. in Indiv. × Post	-0.069	-0.344*
	[0.528]	[0.202]
Observations	717	717
Endline control mean	3.343	0.285
p-value: Coup. vs Indiv.	0.571	0.001

Notes: $^{*}p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$. Husband's (or wife's) add'l fertility is defined as the number of additional children desired by a husband (or wife). Columns 1 and 2 excludes households for which wives answered "Up to God". Baseline control variables include the wife's age, a dummy for whether: i) the wife has completed primary school, ii) the wife has ever used family planning, iii) the husband was abusive, iv) the husband had off-farm income, v) the wife reported frequent sex, and vi) the husband was polygamous. Baseline controls also include the wife's age when married to the husband, the number of children born per woman, the households' standardized rainy season farm income, household wealth index, dummy variables for village-level stratification, and the distance to the dispensary (km). Robust standard errors are in parentheses and clustered at the village level.

Table A5: Robustness Checks, Male and Female Fertility Preferences

	Add'l Fertility (1)	Add'l Wives (2)	Up-to-God (3)	Add'l Fertility (4)	Wife's Misperception (5)
Part. in Coup. * Post	0.768	0.222	-0.290	1.597	0.447
Clustered (p-value)	(0.006)	(0.000)	(0.121)	(0.029)	(0.000)
WC Bootstrap (p-value)	(0.020)	(0.027)	(0.275)	(0.115)	(0.019)
Romano and Wolf (2005a,b) MHT Correction (p-value)	(0.588)	(0.063)	(0.010)	(0.126)	(0.003)
Part. in Indiv. * Post	-0.124	-0.128	0.116	-2.169	-0.292
Clustered (p-value)	(0.873)	(0.065)	(0.690)	(0.100)	(0.068)
WC Bootstrap (p-value)	(0.904)	(0.116)	(0.734)	(0.227)	(0.083)
Romano and Wolf (2005a,b) MHT Correction (p-value)	(0.894)	(0.588)	(0.588)	(0.063)	(0.116)

Notes: p-values are presented in parentheses. *Clustered* represents p-values based on standard errors clustered at the village level. *WC Bootstrap* reports the p-values based on wild-clustered bootstrapped standard errors, obtained from the *boottest* command in Stata. *Romano and Wolf (2005a,b) MHT Correction* presents p-values that are computed using the Romano and Wolf (2005a,b) based *rwolf2* command in Stata with 3,000 bootstrap replications; this correction allows for the inclusion of covariates and village fixed effects in the model specifications. Variable definitions are presented in the Online Appendix.

Table A6: Sample Characteristics Balance at Baseline for Additional Variables

	Control (C)		Individual (Indiv)		Couple (Coup)		C - Indiv	C - Coup	Indiv - Coup
	N	Mean	N	Mean	N	Mean	p-value	p-value	p-value
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Empowerment Index Variables in 2012									
Wife married before 18	164	0.494	186	0.495	165	0.491	0.980	0.950	0.950
Wife has no financial decision	164	0.573	186	0.435	165	0.588	0.020	0.152	0.040
Large spousal age gap	163	0.411	185	0.357	165	0.309	0.929	0.162	0.384
Large proximate natal familygap	164	0.463	186	0.441	165	0.552	0.333	0.273	0.172
Large spousal education gap	164	0.274	185	0.232	165	0.236	0.566	0.788	0.889
Dis-empowerment index dummy	164	0.506	186	0.462	165	0.606	0.293	0.111	0.020

Notes: P-values calculated using David Roodman et al. (2019) boot test Stata command, which estimates a bootstrapping adjustment for a small number of clusters. The F-test performs overall balance and assesses the combined significance of control variables in determining treatment assignment. See the Variables Definition Section in Appendix A.1. for a full description of each variable.

Table A7: Intervention Effects on Husband's Fertility Preferences by Baseline Covariates

	Baseline covariate (2012)						
	Married Young	No Financial Decision	Spousal Age Gap	Proximate Natal Familygap	Spousal Education Gap	Empowerment Dummy	Domestic Violence
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Part. in Coup. × Post	0.761*	0.991***	0.766***	0.903*	0.519	0.953**	0.740**
	[0.431]	[0.360]	[0.271]	[0.490]	[0.326]	[0.426]	[0.306]
Part. in Coup. × Post × Covariate	0.800***	0.590*	1.053***	0.765**	1.691***	0.777**	0.681
	[0.310]	[0.334]	[0.333]	[0.339]	[0.653]	[0.344]	[0.501]
Part. in Indiv. × Post	-0.031	1.121	-0.077	0.262	-0.303	1.167*	-0.834
	[0.983]	[0.744]	[0.885]	[0.724]	[0.884]	[0.698]	[0.849]
Part. in Indiv. × Post × Covariate	-0.513	-1.386	0.284	-0.692	0.394	-1.395	0.778
	[0.890]	[1.196]	[0.672]	[1.026]	[0.901]	[1.205]	[0.901]
Post	-1.310***	-1.434***	-1.496***	-1.432***	-1.410***	-1.465***	-1.364***
	[0.277]	[0.246]	[0.219]	[0.237]	[0.235]	[0.235]	[0.255]
Participated in coup. treatment	-0.790***	-0.720***	-0.833**	-0.754**	-0.784***	-0.829**	-0.750**
	[0.289]	[0.276]	[0.350]	[0.318]	[0.304]	[0.330]	[0.372]
Participated in indiv. treatment	0.282	0.221	0.082	0.249	0.182	0.123	0.265
	[0.615]	[0.593]	[0.611]	[0.612]	[0.629]	[0.601]	[0.580]
Covariate in 2012	2.794	0.275	0.318	-1.801	-1.646	-0.023	-0.409
	[1.991]	[2.099]	[1.496]	[1.418]	[1.616]	[2.145]	[1.650]
Observations	1030	1030	1026	1030	1028	1030	1030
Control mean	4.356	4.356	4.356	4.356	4.356	4.356	4.356
P-values:							
Coup. × Post × Covariate = Coup. × Post	0.926	0.285	0.396	0.818	0.104	0.712	0.895
Indiv. × Post × Covariate = Indiv. × Post	0.496	0.022	0.618	0.155	0.459	0.015	0.002
Coup. × Post × Covariate = Indiv. × Post × Covariate	0.181	0.114	0.264	0.218	0.241	0.088	0.902
Coup. × Post = Indiv. × Post	0.432	0.856	0.335	0.384	0.367	0.770	0.083

Notes: $^{*}p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$. Husband's (or wife's) add'l fertility is defined as the number of additional children desired by a husband (or wife). Columns 1 and 2 exclude households for which wives answered "Up to God". Baseline control variables include the wife's age, a dummy for whether: i) the wife has completed primary school, ii) the wife has ever used family planning, iii) the husband was abusive, iv) the husband had off-farm income, v) the wife reported frequent sex, and vi) the husband was polygamous. Baseline controls also include the wife's age when married to the husband, the number of children born per woman, the households' standardized rainy season farm income, household wealth index, dummy variables for village-level stratification, and the distance to the dispensary (km). Robust standard errors are in parentheses and clustered at the village level.

Table A8: Heterogeneous Treatment Effects by Married Young

	Husband's Preferences		**Wife's Preferences**		
	Add'l Fertility	Add'l Wife	Up-to-God	Add'l Fertility	Wife's Misperception
	(1)	(2)	(3)	(4)	(5)
Part. in Coup. × Post	0.761*	0.211***	-0.317*	1.742**	0.384***
	[0.431]	[0.051]	[0.171]	[0.790]	[0.117]
Part. in Coup. × Post × Married young	0.800***	0.259***	-0.226	1.333**	0.523***
	[0.310]	[0.091]	[0.194]	[0.639]	[0.076]
Part. in Indiv. × Post	-0.031	-0.058	0.200	-3.096***	-0.284*
	[0.983]	[0.089]	[0.301]	[1.189]	[0.166]
Part. in Indiv. × Post × Married young	-0.513	-0.261***	0.097	-1.450	-0.316*
	[0.890]	[0.065]	[0.288]	[1.310]	[0.163]
Post	-1.310***	-0.099***	-0.155	0.548	0.125**
	[0.277]	[0.039]	[0.146]	[0.463]	[0.053]
Participated in coup. treatment	-0.790***	-0.108**	0.095	-0.769**	-0.151**
	[0.289]	[0.049]	[0.095]	[0.316]	[0.061]
Participated in indiv. treatment	0.282	0.051	-0.070	0.691	0.141
	[0.615]	[0.048]	[0.147]	[0.650]	[0.101]
Married young	2.794	0.202	-1.200***	-0.083	0.097
	[1.991]	[0.286]	[0.336]	[1.742]	[0.232]
Observations	1030	1030	1030	717	1029
Control mean	4.356	0.269	0.366	2.737	0.218
P-values:					
Coup. × Post × Married young = Coup. × Post	0.926	0.635	0.192	0.296	0.235
Indiv. × Post × Married young = Indiv. × Post	0.496	0.030	0.469	0.014	0.748
Coup. × Post × Married young = Indiv. × Post × Married young	0.181	0.000	0.213	0.049	0.000
Coup. × Post = Indiv. × Post	0.432	0.001	0.038	0.000	0.001

Notes: $^{*}p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$. Husband's (or wife's) add'l fertility is defined as the number of additional children desired by a husband (or wife). Columns 1 and 2 exclude households for which wives answered "Up to God". Baseline control variables include the wife's age, a dummy for whether: i) the wife has completed primary school, ii) the wife has ever used family planning, iii) the husband was abusive, iv) the husband had off-farm income, v) the wife reported frequent sex, and vi) the husband was polygamous. Baseline controls also include the wife's age when married to the husband, the number of children born per woman, the households' standardized rainy season farm income, household wealth index, dummy variables for village-level stratification, and the distance to the dispensary (km). Robust standard errors are in parentheses and clustered at the village level.

Table A9: Heterogeneous Treatment Effects by No Financial Decision

	Husband's Preferences		**Wife's Preferences**		
	Add'l Fertility	Add'l Wife	Up-to-God	Add'l Fertility	Wife's Misperception
	(1)	(2)	(3)	(4)	(5)
Part. in Coup. × Post	0.991***	0.262***	-0.397**	2.326***	0.619***
	[0.360]	[0.079]	[0.175]	[0.668]	[0.100]
Part. in Coup. × Post × No Fin. decision	0.590*	0.200***	-0.213	0.999	0.332***
	[0.334]	[0.061]	[0.197]	[0.762]	[0.096]
Part. in Indiv. × Post	1.121	-0.066	0.053	-2.307*	-0.266
	[0.744]	[0.090]	[0.313]	[1.391]	[0.197]
Part. in Indiv. × Post × No Fin. decision	-1.386	-0.200**	0.259	-2.258	-0.359***
	[1.196]	[0.083]	[0.242]	[1.424]	[0.129]
Post	-1.434***	-0.110***	-0.111	0.604	0.119**
	[0.246]	[0.037]	[0.152]	[0.498]	[0.053]
Participated in coup. treatment	-0.720***	-0.102**	0.103	-0.871***	-0.155**
	[0.276]	[0.049]	[0.098]	[0.290]	[0.066]
Participated in indiv. treatment	0.221	0.039	-0.081	0.761	0.152
	[0.593]	[0.046]	[0.143]	[0.723]	[0.104]
No Fin. decision	0.275	0.085	-0.014	-0.117	0.397
	[2.099]	[0.216]	[0.185]	[1.217]	[0.302]
Observations	1030	1030	1030	717	1029
Control mean	4.356	0.269	0.366	2.737	0.218
P-values:					
Coup. × Post × No Fin. decision = Coup. × Post	0.285	0.541	0.001	0.000	0.017
Indiv. × Post × No Fin. decision = Indiv. × Post	0.022	0.254	0.146	0.918	0.333
Coup. × Post × No Fin. decision = Indiv. × Post × No Fin. decision	0.114	0.000	0.011	0.019	0.000
Coup. × Post = Indiv. × Post	0.856	0.005	0.084	0.002	0.000

Notes: $^{*}p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$. Husband's (or wife's) add'l fertility is defined as the number of additional children desired by a husband (or wife). Columns 1 and 2 exclude households for which wives answered "Up to God". Baseline control variables include the wife's age, a dummy for whether: i) the wife has completed primary school, ii) the wife has ever used family planning, iii) the husband was abusive, iv) the husband had off-farm income, v) the wife reported frequent sex, and vi) the husband was polygamous. Baseline controls also include the wife's age when married to the husband, the number of children born per woman, the households' standardized rainy season farm income, household wealth index, dummy variables for village-level stratification, and the distance to the dispensary (km). Robust standard errors are in parentheses and clustered at the village level.

Table A10: Heterogeneous Treatment Effects by Spousal Age Gap

	Husband's Preferences		**Wife's Preferences**		
	Add'l Fertility	Add'l Wife	Up-to-God	Add'l Fertility	Wife's Misperception
	(1)	(2)	(3)	(4)	(5)
Part. in Coup. × Post	0.766***	0.224***	-0.309*	1.486**	0.431***
	[0.271]	[0.046]	[0.184]	[0.646]	[0.083]
Part. in Coup. × Post × Large age-gap	1.053***	0.216***	-0.216	1.937**	0.439***
	[0.333]	[0.077]	[0.185]	[0.976]	[0.092]
Part. in Indiv. × Post	-0.077	-0.156**	0.156	-2.327*	-0.325**
	[0.885]	[0.074]	[0.285]	[1.362]	[0.148]
Part. in Indiv. × Post × Large age-gap	0.284	-0.045	0.077	-1.749	-0.240
	[0.672]	[0.105]	[0.305]	[1.403]	[0.186]
Post	-1.496***	-0.112***	-0.113	0.569	0.129**
	[0.219]	[0.038]	[0.152]	[0.465]	[0.053]
Participated in coup. treatment	-0.833**	-0.103*	0.090	-0.936**	-0.151**
	[0.350]	[0.053]	[0.093]	[0.379]	[0.070]
Participated in indiv. treatment	0.082	0.024	-0.069	0.471	0.128
	[0.611]	[0.048]	[0.147]	[0.701]	[0.098]
Large age-gap	0.318	-0.098	0.198	1.066	-0.302
	[1.496]	[0.135]	[0.185]	[2.302]	[0.208]
Observations	1026	1026	1026	714	1025
Control mean	4.356	0.269	0.366	2.737	0.218
P-values:					
Coup. × Post × Large age-gap = Coup. × Post	0.396	0.901	0.044	0.440	0.923
Indiv. × Post × Large age-gap = Indiv. × Post	0.618	0.285	0.374	0.521	0.480
Coup. × Post × Large age-gap = Indiv. × Post × Large age-gap	0.264	0.033	0.238	0.028	0.000
Coup. × Post = Indiv. × Post	0.335	0.000	0.049	0.006	0.000

Notes: $^{*}p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$. Husband's (or wife's) add'l fertility is defined as the number of additional children desired by a husband (or wife). Columns 1 and 2 exclude households for which wives answered "Up to God". Baseline control variables include the wife's age, a dummy for whether: i) the wife has completed primary school, ii) the wife has ever used family planning, iii) the husband was abusive, iv) the husband had off-farm income, v) the wife reported frequent sex, and vi) the husband was polygamous. Baseline controls also include the wife's age when married to the husband, the number of children born per woman, the households' standardized rainy season farm income, household wealth index, dummy variables for village-level stratification, and the distance to the dispensary (km). Robust standard errors are in parentheses and clustered at the village level.

Table A11: Heterogeneous Treatment Effects by Proximate Natal Family Gap

	Husband's Preferences		**Wife's Preferences**		
	Add'l Fertility	Add'l Wife	Up-to-God	Add'l Fertility	Wife's Misperception
	(1)	(2)	(3)	(4)	(5)
Part. in Coup. × Post	0.903*	0.221***	-0.257	2.155***	0.421***
	[0.490]	[0.066]	[0.165]	[0.500]	[0.096]
Part. in Coup. × Post × Natal family-gap	0.765**	0.239***	-0.277	1.360*	0.447***
	[0.339]	[0.034]	[0.218]	[0.769]	[0.093]
Part. in Indiv. × Post	0.262	-0.049	0.289	-2.298*	-0.328**
	[0.724]	[0.085]	[0.282]	[1.295]	[0.128]
Part. in Indiv. × Post × Natal family-gap	-0.692	-0.247***	-0.090	-1.788	-0.250
	[1.026]	[0.083]	[0.312]	[1.167]	[0.227]
Post	-1.432***	-0.109***	-0.114	0.460	0.129**
	[0.237]	[0.038]	[0.151]	[0.380]	[0.051]
Participated in coup. treatment	-0.754**	-0.110**	0.081	-0.999***	-0.146**
	[0.318]	[0.050]	[0.097]	[0.313]	[0.062]
Participated in indiv. treatment	0.249	0.035	-0.064	0.577	0.135
	[0.612]	[0.051]	[0.149]	[0.694]	[0.103]
Natal family-gap	-1.801	-0.143	0.272	-3.697**	-0.309
	[1.418]	[0.231]	[0.205]	[1.460]	[0.222]
Observations	1030	1030	1030	717	1029
Control mean	4.356	0.269	0.366	2.737	0.218
P-values:					
Coup. × Post × Natal family-gap = Coup. × Post	0.818	0.692	0.822	0.212	0.813
Indiv. × Post × Natal family-gap = Indiv. × Post	0.155	0.035	0.004	0.284	0.606
Coup. × Post × Natal family-gap = Indiv. × Post × Natal family-gap	0.218	0.000	0.557	0.014	0.006
Coup. × Post = Indiv. × Post	0.384	0.001	0.010	0.001	0.000

Notes: $^{*}p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$. Husband's (or wife's) add'l fertility is defined as the number of additional children desired by a husband (or wife). Columns 1 and 2 exclude households for which wives answered "Up to God". Baseline control variables include the wife's age, a dummy for whether: i) the wife has completed primary school, ii) the wife has ever used family planning, iii) the husband was abusive, iv) the husband had off-farm income, v) the wife reported frequent sex, and vi) the husband was polygamous. Baseline controls also include the wife's age when married to the husband, the number of children born per woman, the households' standardized rainy season farm income, household wealth index, dummy variables for village-level stratification, and the distance to the dispensary (km). Robust standard errors are in parentheses and clustered at the village level.

Table A12: Heterogeneous Treatment Effects by Spousal Education Gap

	Husband's Preferences		**Wife's Preferences**		
	Add'l Fertility	Add'l Wife	Up-to-God	Add'l Fertility	Wife's Misperception
	(1)	(2)	(3)	(4)	(5)
Part. in Coup. × Post	0.519	0.218***	-0.297*	0.902	0.373***
	[0.326]	[0.045]	[0.179]	[0.674]	[0.093]
Part. in Coup. × Post × Education gap	1.691***	0.296***	-0.360*	3.255**	0.611***
	[0.653]	[0.091]	[0.199]	[1.346]	[0.073]
Part. in Indiv. × Post	-0.303	-0.140*	0.213	-1.636	-0.314**
	[0.884]	[0.074]	[0.280]	[1.344]	[0.143]
Part. in Indiv. × Post × Education gap	0.394	-0.158	-0.120	-2.473*	-0.170
	[0.901]	[0.102]	[0.314]	[1.427]	[0.224]
Post	-1.410***	-0.109***	-0.106	0.615	0.129**
	[0.235]	[0.038]	[0.150]	[0.521]	[0.052]
Participated in coup. treatment	-0.784***	-0.108**	0.093	-0.740*	-0.148**
	[0.304]	[0.048]	[0.098]	[0.385]	[0.064]
Participated in indiv. treatment	0.182	0.044	-0.078	0.502	0.117
	[0.629]	[0.051]	[0.145]	[0.677]	[0.100]
Education gap	-1.646	0.031	0.039	-4.963**	-0.250
	[1.616]	[0.131]	[0.329]	[2.129]	[0.293]
Observations	1028	1028	1028	716	1027
Control mean	4.356	0.269	0.366	2.737	0.218
P-values:					
Coup. × Post × Education gap = Coup. × Post	0.104	0.336	0.138	0.004	0.005
Indiv. × Post × Education gap = Indiv. × Post	0.459	0.858	0.007	0.398	0.302
Coup. × Post × Education gap = Indiv. × Post × Education gap	0.241	0.000	0.355	0.003	0.001
Coup. × Post = Indiv. × Post	0.367	0.000	0.034	0.071	0.000

Notes: $^{*}p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$. Husband's (or wife's) add'l fertility is defined as the number of additional children desired by a husband (or wife). Columns 1 and 2 exclude households for which wives answered "Up to God". Baseline control variables include the wife's age, a dummy for whether: i) the wife has completed primary school, ii) the wife has ever used family planning, iii) the husband was abusive, iv) the husband had off-farm income, v) the wife reported frequent sex, and vi) the husband was polygamous. Baseline controls also include the wife's age when married to the husband, the number of children born per woman, the households' standardized rainy season farm income, household wealth index, dummy variables for village-level stratification, and the distance to the dispensary (km). Robust standard errors are in parentheses and clustered at the village level.

Table A13: Heterogeneous Treatment Effects by Dis-empowerment Dummy

	Husband's Preferences		Wife's Preferences		
	Add'l Fertility	Add'l Wife	Up-to-God	Add'l Fertility	Wife's Misperception
	(1)	(2)	(3)	(4)	(5)
Part. in Coup. × Post	0.953**	0.212***	-0.343**	2.685***	0.507***
	[0.426]	[0.071]	[0.166]	[0.707]	[0.078]
Part. in Coup. × Post × Comp. dis-empowerment	0.777**	0.247***	-0.249	0.954	0.408***
	[0.344]	[0.049]	[0.205]	[0.703]	[0.089]
Part. in Indiv. × Post	1.167*	-0.007	0.064	-2.171	-0.221
	[0.698]	[0.083]	[0.327]	[1.369]	[0.170]
Part. in Indiv. × Post × Comp. dis-empowerment	-1.395	-0.272***	0.201	-2.154	-0.366**
	[1.205]	[0.074]	[0.240]	[1.384]	[0.164]
Post	-1.465***	-0.110***	-0.109	0.518	0.119**
	[0.235]	[0.038]	[0.152]	[0.454]	[0.051]
Participated in coup. treatment	-0.829**	-0.109**	0.096	-0.924***	-0.158**
	[0.330]	[0.048]	[0.098]	[0.314]	[0.064]
Participated in indiv. treatment	0.123	0.046	-0.081	0.599	0.129
	[0.601]	[0.046]	[0.146]	[0.738]	[0.105]
Comp. dis-empowerment	-0.023	0.143	-0.073	-1.813	-0.148
	[2.145]	[0.207]	[0.158]	[1.581]	[0.193]
Observations	1030	1030	1030	717	1029
Control mean	4.356	0.269	0.366	2.737	0.218
P-values:					
Coup. × Post × Comp. dis-empowerment = Coup. × Post	0.712	0.618	0.105	0.001	0.253
Indiv. × Post × Comp. dis-empowerment = Indiv. × Post	0.015	0.007	0.253	0.975	0.149
Coup. × Post × Comp. dis-empowerment = Indiv. × Post × Comp. dis-empowerment	0.088	0.000	0.021	0.023	0.000
Coup. × Post = Indiv. × Post	0.770	0.024	0.133	0.002	0.000

Notes: $^{*}p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$. Husband's (or wife's) add'l fertility is defined as the number of additional children desired by a husband (or wife). Columns 1 and 2 exclude households for which wives answered "Up to God". Baseline control variables include the wife's age, a dummy for whether: i) the wife has completed primary school, ii) the wife has ever used family planning, iii) the husband was abusive, iv) the husband had off-farm income, v) the wife reported frequent sex, and vi) the husband was polygamous. Baseline controls also include the wife's age when married to the husband, the number of children born per woman, the households' standardized rainy season farm income, household wealth index, dummy variables for village-level stratification, and the distance to the dispensary (km). Robust standard errors are in parentheses and clustered at the village level.

Table A14: Heterogeneous Treatment Effects by Domestic Violence

	Husband's Preferences		Wife's Preferences		
	Add'l Fertility	Add'l Wife	Up-to-God	Add'l Fertility	Wife's Misperception
	(1)	(2)	(3)	(4)	(5)
Part. in Coup. × Post	0.740**	0.246***	-0.292	1.314**	0.407***
	[0.306]	[0.044]	[0.185]	[0.650]	[0.090]
Part. in Coup. × Post × Abusive husb	0.681	0.154**	-0.279	2.448**	0.542***
	[0.501]	[0.075]	[0.203]	[1.162]	[0.091]
Part. in Indiv. × Post	-0.834	-0.265***	0.171	-2.128*	-0.264
	[0.849]	[0.102]	[0.275]	[1.202]	[0.162]
Part. in Indiv. × Post × Abusive husb	0.778	0.039	0.074	-2.351	-0.296*
	[0.901]	[0.078]	[0.307]	[1.523]	[0.172]
Post	-1.364***	-0.100***	-0.112	0.554	0.118**
	[0.255]	[0.037]	[0.152]	[0.517]	[0.052]
Participated in coup. treatment	-0.750**	-0.110**	0.097	-0.880***	-0.158***
	[0.372]	[0.046]	[0.095]	[0.340]	[0.060]
Participated in indiv. treatment	0.265	0.051	-0.064	0.655	0.127
	[0.580]	[0.050]	[0.141]	[0.667]	[0.103]
Abusive husb	-0.409	-0.168	-0.273	-0.871	0.011
	[1.650]	[0.245]	[0.257]	[1.743]	[0.172]
Observations	1030	1030	1030	717	1029
Control mean	4.356	0.269	0.366	2.737	0.218
P-values:					
Coup. × Post × Abusive husb = Coup. × Post	0.895	0.113	0.876	0.135	0.192
Indiv. × Post × Abusive husb = Indiv. × Post	0.002	0.012	0.504	0.735	0.749
Coup. × Post × Abusive husb = Indiv. × Post × Abusive husb	0.902	0.181	0.197	0.015	0.000
Coup. × Post = Indiv. × Post	0.083	0.000	0.035	0.001	0.000

Notes: $^{*}p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$. Husband's (or wife's) add'l fertility is defined as the number of additional children desired by a husband (or wife). Columns 1 and 2 exclude households for which wives answered "Up to God". Baseline control variables include the wife's age, a dummy for whether: i) the wife has completed primary school, ii) the wife has ever used family planning, iii) the husband was abusive, iv) the husband had off-farm income, v) the wife reported frequent sex, and vi) the husband was polygamous. Baseline controls also include the wife's age when married to the husband, the number of children born per woman, the households' standardized rainy season farm income, household wealth index, dummy variables for village-level stratification, and the distance to the dispensary (km). Robust standard errors are in parentheses and clustered at the village level.

Table A15: Intervention Effects on Male and Female Fertility Preferences, Village FE

	Husband's Preferences		**Wife's Preferences**		
	Add'l Fertility	Add'l Wife	Up-to-God	Add'l Fertility	Wife's Misperception
	(1)	(2)	(3)	(4)	(5)
Part. in Coup. × Post	0.574**	0.231***	-0.330*	1.032	0.463***
	[0.255]	[0.046]	[0.188]	[0.834]	[0.083]
Part. in Coup. × Post × Used FP	1.391***	0.124	0.003	3.358**	0.441***
	[0.351]	[0.125]	[0.160]	[1.330]	[0.052]
Part. in Indiv. × Post	-0.043	-0.131	0.051	-2.052	-0.250*
	[0.693]	[0.090]	[0.295]	[1.386]	[0.136]
Part. in Indiv. × Post × Used FP	-0.323	0.051	0.350	-2.940	-0.541***
	[0.898]	[0.155]	[0.297]	[1.950]	[0.204]
Post	-1.413***	-0.110***	-0.114	0.575	0.120**
	[0.232]	[0.036]	[0.152]	[0.515]	[0.052]
Participated in coup. treatment	-0.689**	-0.100**	0.090	-0.742*	-0.162***
	[0.329]	[0.049]	[0.092]	[0.412]	[0.060]
Participated in indiv. treatment	0.194	0.015	-0.051	0.773	0.138
	[0.575]	[0.044]	[0.143]	[0.772]	[0.102]
Used FP	-1.242	-0.170	-0.594**	-0.753	0.594**
	[1.645]	[0.281]	[0.279]	[1.729]	[0.302]
Observations	1030	1030	1030	717	1029
Control mean	4.356	0.269	0.366	2.737	0.218
P-values:					
Coup. × Post × Used FP = Coup. × Post	0.007	0.389	0.000	0.063	0.751
Indiv. × Post × Used FP = Indiv. × Post	0.616	0.340	0.232	0.571	0.016
Coup. × Post × Used FP = Indiv. × Post × Used FP	0.031	0.762	0.141	0.021	0.000
Coup. × Post = Indiv. × Post	0.362	0.000	0.121	0.048	0.000

Notes: $^{*}p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$. Husband's (or wife's) add'l fertility is defined as the number of additional children desired by a husband (or wife). The husband's add'l wife is a dummy variable for whether a husband wants more wives in the future. "Up-to-God" is a dummy variable for women who answered "It's Up-to-God" to whether they would like to have more children. Wife's misperception is a dummy variable for whether a woman perceives that her husband's number of additional children is more than he actually desires. Column 4 excludes women who answered "Up to God". Baseline control variables include the wife's age, a dummy for whether: i) the wife has completed primary school, ii) the wife has ever used family planning, iii) the husband was abusive, iv) the husband had off-farm income, v) the wife reported frequent sex, and vi) the husband was polygamous. Baseline controls also include the wife's age when married to the husband, the number of children born per woman, the households' standardized rainy season farm income, household wealth index, and the distance to the dispensary (km). Robust standard errors are in parentheses and clustered at the village level.

A.1 Variables Definition

- Wife's age in 2012: Complete age of the female respondents in years at baseline (2012).
- Wife has completed primary in 2012: A binary indicator of whether a wife has at least completed primary education at baseline.
- Wife ever used family planning in 2012: A binary indicator of whether the wife in the household has ever used any family planning methods (emergency contraception, condoms, female sheaths, pills, intrauterine devices, implants, injections, and sterilization)
- Husband was abusive in 2012: A binary indicator variable for whether the husband ever physically hurt the respondent (the wife) at baseline.
- Wife's age married to husband in 2012: The complete age of the wife in years when she married her current husband.
- Children born per woman in 2012: Number of children who were given birth by a wife before the baseline survey and who were alive.
- Frequency of sex in 2012: A binary indicator that takes 1 if the wife reported to have had sex at least twice a week at baseline.
- Husband had off-farm income in 2012: A binary indicator for whether the husband was engaged in any labor activities generating income in 2012 that were not farming on his land.
- Husband was polygamous in 2012: A binary indicator that takes 1 if the husband has more than one wife at baseline.
- Stand. rainy season farm income in 2012: Standardized household's agricultural income during the rainy season (March-May 2012).
- Distance to the dispensary (km): Distance to the nearest dispensary from a household in kilometers.
- Household Wealth Index in 2012: Household's baseline wealth index, calculated using Principal Component Analysis with a variety of household assets.
- Husband's fertility preferences: A continuous variable that captures a husband's desired number of additional children.
- Up-to-God: A binary indicator that takes 1 if a wife answered fatalistically ("It's Up-to-God") in response to whether she would like to have more children and 0 otherwise.
- Wife's fertility preferences: A continuous variable that captures a wife's desired number of additional children. This variable excludes women who responded "It's Up-to-God" as their fertility preferences.
- Husband wants more wives: A binary indicator for the husband that takes 1 if he reports that he desires additional wives in the future and 0 otherwise.

- Wife's misperception: A dummy variable for whether a woman perceives that her husbands' number of additional children is more than he actually desires.
- Good to plan the size of the family: is a dummy variable defined by whether husbands agree that it is a good thing to plan the size of one's family.
- Contra. are good for planning: is a dummy variable defined by whether husbands agree that contraceptives are a good tool to plan the size of one's family and space out births.
- Ok for *my* wife to take contra.: is a dummy variable defined by whether husbands agree that they approve of their own wife using contraceptives.
- No. annual spousal FP discussions: is defined as the number of annual discussions about family planning that a husband and wife have (reported by the wife).
- Wife married young: A dummy variable for whether a woman married before the age of 18 at baseline.
- Wife has no financial decision: A dummy variable for whether a woman reports that she is not involved in any household financial decisions at baseline.
- Spousal age gap: A dummy variable equals to 1 if the baseline age difference between husband and wife is over 7 years (the sample average) and 0 otherwise.
- Spousal gap in geographic proximity to natal family: A dummy variable equals to 1 if husbands are from the village where they currently reside and their wives are from outside that village.
- Spousal education gap: A dummy variable equals to 1 if the husband has completed more education than their wives, including the case where he attended some primary school and she never attended school.
- Dis-empowerment dummy: A binary indicator equals to 1 if the standardized empowerment index is larger than the sample mean. The empowerment index is calculated using principal component analysis on the following variables: i) wife married young, ii) wife has no financial decision-making, iii) spousal age gap, iv) spousal education gap, and v) spousal gap in geographic proximity to natal family.