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Preference for sons and daughters in developing countries: When does (dis)agreement between spouses come into play?

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Preference for sons and daughters in developing countries: When does (dis)agreement between spouses come into play?

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Abstract

The paper compares the role of men's and women's ideals concerning the sex composition of children for women's desire to stop childbearing and for use of contraception by couples in 45 developing countries. Probabilities of each outcome are considered when the sex composition of children matches the ideals of both the woman and her partner, of the woman or her partner only, and of neither of them. Demographic and Health Survey couples datasets are analyzed. Models with country fixed effects are estimated for two pooled samples, one including couples from Sub-Saharan Africa (SSA) and the other couples from all other regions. The probability of using contraception and (outside the SSA countries) of women's fertility stopping desire is lowest when sex composition ideals of both spouses are not matched. Matched ideals of only men or only women do not differ statistically in their effect upon the probability of both outcomes, except women's desire to stop fertility outside SSA, which is more probable when only women's ideals are matched. In contrast to what might be expected in contexts with low gender equality, women's fertility desires are governed by their own sex composition preferences and play an equally decisive role in family planning.

Keywords: fertility, contraception, sex preferences for children, developing countries, women autonomy

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1. Introduction

Developing countries have experienced great changes in fertility within recent decades. These changes include an expansion of fertility control and a decrease in fertility levels (see Dyson & Murphy 1985, Bongaarts 2003, Feyisetan & Casterline 2000, Lerch 2019, among many others). In most developing countries, fertility is now much more dependent on the conscious decisions of parents than it was 40-50 years ago. In this context, studying the decision-making mechanisms concerning childbearing becomes an important task. It can help us determine the economic, social, cultural, etc., factors that influence these decisions, in turn helping us foresee fertility trends under different scenarios of social change.

Any decision regarding childbearing is normally the result of a negotiation between the woman and her partner. For Western countries, the importance of agreement between spouses in shaping fertility desires and outcomes has been argued for in a large number of studies (Thomson et al. 1990, Thomson 1997, Thomson & Hoem 1998, Jansen & Lifbroer 2006, Stein et al. 2014, among many others). For developing countries, this issue remains largely underexplored. Available studies have mainly focused on the role of both partners in decisions on contraceptive use and much less on decisions concerning the total number of children or transition to a particular parity (Omondi-Odhiambo 1997, Mahmood & Ringheim 1997, Bankole & Singh 1998, Dodoo 1998, Ezhe 1993, Stash 2001, de Roze et al. 2002, de Vanzo et al. 2003, Rasul 2008, Yeatman & Sennott 2014, Doepke & Tertilt 2018; see Section 2 for details). Moreover, these studies have for the most part considered a very limited number of countries.

The present paper attempts to partly fill this gap. It focuses on one type of fertility preference about which spouses can either agree or disagree: preferences concerning the sex composition of children. Sex composition ideals have been shown to be an important factor in shaping fertility decisions, both in developed (Andersson et al. 2006, Cukrowska-Torzewska & Grabowska 2022) and developing countries (Arnold 1997, Becquet et al. 2022, Bongaarts 2013, Filmer et al. 2009, Guilmoto 2015, among many others). However, to date the role of the sex preferences of both spouses – of their agreement or disagreement about whether the achieved sex composition of children is satisfactory – has been virtually unaddressed in the literature (cf. Stash 2001 as a valuable exception). This is true despite the fact that it has been known since at least Mason and Taj (1987) that, in developing countries, sex preferences for children quite often differ between men and women. It is important to know how these disagreements influence couples' reproductive decisions, because sex preferences for children, especially a son preference, have been shown to have an impact on actual fertility, at least in some developing countries (Arnold 1997, Basu & de Jong 2010).

Demographic and Health Surveys (DHS) for the period 2010-2021 for all those developing countries are used for which a separate dataset on couples in the DHS data was provided and therefore data on sex composition ideals of both women and their partners were available. Couples are distinguished in which the ideals of both spouses concerning the proportion of sons and daughters are matched by the actual sex composition of their children, those in which the ideals of the woman only or the man only are not matched and those in which the ideals of both are not matched. These categories of couples are compared on two outcomes reported by women: (a) women's desire to stop fertility; (b) use of any type of contraception during the survey period. Considering each of the outcomes has its own advantages. The advantage of studying woman's desire to stop fertility is that it reflects her personal attitude, which may take the partner's preferences into account, but is not influenced by partner's pressure to have more children or to not use contraception, etc. The advantage of taking contraceptive use into consideration is that it is more related to the couple's actual behavior. In this way, the role of (dis)agreement between spouses is studied both for the woman's internal desire to have one more child and for the couple's behavior, with which the probability of the next birth is closely correlated.

Overall, 45 countries were considered in the study. After a descriptive representation of sex composition ideals reported by men and women in these countries, linear probability models are estimated for women's desire to stop fertility and for contraceptive use, as reported by women. The key independent parameter of the models indicates whether the current sex composition of children matches the sex composition ideal of the woman and her partner. The models use country fixed effects and are run separately for the pooled samples of the SSA and the non-SSA countries (reasons for considering the SSA countries separately are discussed in Section 4). Analyzing the pooled samples allows us to observe general patterns of interplay between spouses' preferences for children across developing countries. This, in turn, allows us to judge whether agreement between spouses on fertility preferences tends to be important in developing countries as well, or whether its importance is mainly restricted to developed countries, where so far it has been studied much more.

2. Literature overview

2.1. Sex preferences for children

Studies on developing countries in different world regions have shown that preferences for the sex composition of children are important for fertility decisions there. For actual fertility, this is manifested either in sex-selective abortions or in different propensities to transition to the next child, depending on the sex composition of children already born. For many countries in Central and East Asia as well as in the Middle East and North Africa (MENA) evidence is available showing that a preference for having at least one son or more sons than daughters is important for parity progressions (Filmer et al. (2009) and Guilmoto (2015) for an overview, Altindag (2015) for Turkey, Asadullah et al. (2021) for Bangladesh, Clark (2000) for India, Brunson (2010) for Nepal, Channon (2017) for Pakistan, Mussino et al. (2019) for migrants from several Asian countries in Sweden, Yount et al. (2000) for Egypt, Kazenin (2021) for Kyrgyzstan, and many others). In those countries in Asia where sex-selective abortions are common, they are often driven by the desire to have a son rather than a daughter (Chung & Das Gupta 2007, Guilmoto 2009, 2015). By contrast, in Latin America and the Caribbean as well as in South-East Asia, fertility behavior indicates a preference for a balanced sex composition of children (Becquet et al. 2022, Filmer et al. 2009). In SSA, the picture is less clear: son preference effects on actual fertility were shown to be absent or low in comparative studies (Basu & de Jong 2010, Rossi & Rouanet 2015), but other studies have reported the presence of such effects in some countries (Milazzo (2014) for Nigeria). Apart from parity transitions, the sex composition of children already born was shown to effect contraceptive use. For instance, in some countries the probability of contraceptive use was shown to positively correlate with the number of sons already born (cf. Yount et al. (2000) for Egypt, Stash (2001) for Nepal, Channon (2017) for Pakistan, among others).

Ideals concerning the sex composition of children reported in surveys have also been shown to differ rather considerably across developing countries. As demonstrated by Fuse (2010), in MENA and Central Asia, the ideal sex composition of children reported by women between 2000 and 2010 regularly comprised more boys than girls, in Latin America and the Caribbean balanced sex composition ideals dominated, whereas in SSA the situation was rather diverse across countries. Other studies have argued that women’s desires or intentions to have one more child may also be related to the sex composition of children already born. This has mainly been shown in contexts with a son preference. Arnold (1997) was probably the first to demonstrate that, in the last decades of the 20th century in several countries of South Asia and

MENA, a woman was more likely to want one more child if she had not had sons before (see also Zaidi & Morgan 2016, Barkat-e-Khuda 2018).

2.2. (Dis)agreement between spouses on sex preferences for children

Regular differences between men and women in their sex preferences for children have been observed for a large number of developing countries, as early as in Mason and Taj (1987). Nevertheless, the vast majority of studies on sex preferences and their role in fertility in developing countries have considered women as the only actors. One exception is Stash (2001), who argued that in some regions of Nepal, a country with a highly pronounced son preference, the probability of transition to the next child is highest when both the woman and her partner have not achieved the number of sons they consider to be the ideal. Dissatisfaction of the man only with the number of sons already born also has a significantly positive, although weaker, effect on transition to the next parity. By contrast, when the woman, but not the man, considers the current number of sons insufficient, this does not significantly affect the probability of the next birth. Stash noted that this difference between the role of women and that of their partners is expected in a patriarchal family structure, where spousal disagreements over the desire for sons are likely to be resolved in favor of the husband’s wishes. At the same time, the strongest effect of agreement between spouses discovered suggests that even in a society where the role of women is strictly subordinate, agreement between partners plays a role in fertility decisions.

2.3. (Dis)agreement between partners on number of children and its outcomes

The role of the preferences of both spouses concerning the total number of children or having one more child has also been addressed rather rarely in developing countries, but apparently more often than has the role of sex composition ideals.

Some studies have compared the impact of women’s and men’s desire for the next child on the actual fertility of couples. Gipson and Hindin (2009) demonstrated that, in Bangladesh, couples in which both spouses had reported the desire to stop fertility were least likely to have another child in the future. De Vanzo et al. (2003) drew similar conclusions for Malaysia. Interestingly, the two studies reported different outcomes for disagreement between spouses. According to De Vanzo et al. (2003), in Malaysia couples in which only the husband had expressed a desire to have another child had a higher likelihood of a subsequent birth than did those in which only the wife had expressed this desire, but the opposite situation was found in Bangladesh by Gipson and Hindin (2009). Comparing Ethiopia and Burkina-Faso, Doepke and Tertilt (2018) demonstrated that the two countries differ regarding the relative impacts of the preferences of wives and husbands on decision-making about subsequent childbearing. Jennings and Pierotti (2016) showed that, in Nepal, women's desires concerning the next child had a greater impact on subsequent fertility than did the desires of husbands, even in contexts where the position of women in families was strictly subordinate. All in all, existing studies have not provided a uniform answer to the question of whether the preferences of men or women play a stronger role in couple's stopping or continuing fertility in developing countries, but they have shown that the preferences of both spouses can be important.

Some studies have focused on the relation of contraceptive use to the preferences of both spouses concerning the number of children. For several countries, it has been argued that agreement between both spouses on stopping fertility is a stronger predictor of use of contraception by the couple than is the same desire reported only by the husband or only by the wife (see Bankole & Singh (1998) for more than ten developing countries from different world regions, Dodoo (1998) for Kenya, Takyi & Dodoo (2005) for Ghana). When spouses disagree about stopping or continuing fertility, different outcomes for contraceptive use have been reported. For instance, Mason and Smith (2000) showed that the five Asian countries considered in their study differed considerably in the relative effects of the wife's and the husband's desire to stop fertility on the couple's use of contraception. The great primacy of men's preferences concerning future fertility in decisions about contraceptive use has been shown for some ethnic groups in Nigeria (Feyisetan 2000), for Zimbabwe (Hindin 2000) and for Pakistan (Mahmood 2002).

A small number of studies have considered how the fertility desires/plans of women for the next child are shaped in interaction with their partners. The role of negotiation between spouses regarding the shaping of women's desires has been discussed in Mahmood and Ringheim (1997) for Pakistan and in Yeatman and Sennott (2014) for Malawi. De Rose et al. (2002) argued that when spouses in Ghana have conflicting desires about having one more child, the man's authority normally plays the decisive role. Stash (2001) arrived at similar conclusions for Nepal.

2.4. Women's desires for the next child and fertility outcomes

Women's desires to stop fertility have been shown to correlate rather well with women's subsequent actual fertility in those developing countries where it was possible to check the predictive capacity of these desires by means of longitudinal surveys (see Cleland et al. (2020) for an overview and Bankole & Westoff (1998), de Vanzo et al. (2003), Hayford & Agadjanian

(2012), Machiyama et al. (2019), Gibby & Luke (2019) for country-specific studies). Furthermore, in developing countries where unwanted fertility is still widespread (Bongaarts & Casterline 2018), the role of women's and men's ideals in fertility decisions may be less distorted when observed through fertility desires rather than through actual fertility.

On the other hand, the correlation between women's desire for the next child and their subsequent fertility may be weakened because there is a risk that women's survey answers about fertility will be influenced by social desirability bias in countries where high fertility is treated as a value, meaning that women's answers may not reflect their real preferences (see Kalamar & Hindin 2015, Kazenin & Kozlov 2020). Moreover, despite the acknowledged correlation between women's desires and subsequent fertility, there is still a risk, especially in "patriarchal" contexts, that this correlation will be distorted by the priority given to men in decisions about actual fertility (cf. Ly Phan 2013, Doepke & Tertilt 2018, among many others).

2.5. Couple's contraceptive use and fertility outcomes

Contraceptive use is known to be a robust predictor of a couple's subsequent fertility (Thomson et al. 1993). One drawback of using contraceptive use as a "proxy" for stopping fertility, however, is that use of contraception only shows willingness to avoid childbearing in the immediate future, but not obligatorily to stop fertility forever. This problem is especially serious in countries where decisions to postpone the next birth without the determination to stop fertility are more widespread than decisions to have no children anymore, as has been argued to be the case for SSA (Timaeus, Moultrie 2020).

In addition, use of contraception depends on many factors other than the couple's intentions regarding fertility. These factors include level of contraception supply and knowledge about family planning (Bongaarts & Casterline 2018) as well as acceptability of contraception use according to religious and traditional norms (Morgan & Niraula 1995, Mason & Smith 2000).

This literature overview provides two conclusions relevant to the present study. First, both women's desire for the next child and couples' contraceptive use are related to women's and men's preference for number of children in some developing countries, but the relative "strength" of women's and men's preferences for these outcomes varies from country to country. Second, women's desire for the next child and couples' contraceptive use are relevant determinants of subsequent fertility, even though they have certain weaknesses as predictive parameters.

3. The research question

The research question, considered separately for women's desire to stop fertility and for couples' contraceptive use, is whether the probability of these events changes under the following conditions:

(a) When the sex composition ideals of the woman and her partner are matched by children already born;

(b) When the sex composition ideals of only the woman are matched;

(c) When the sex composition ideals of only the woman's partner are matched;

(d) When the sex composition ideals of neither the woman nor her partner are matched.

Put in this way, the research question does not specify any particular ideals related to sex composition. However, in cases where spouses disagree, either the woman or her partner may have strong reasons to advocate for more children when a particular sex preference is not matched. For example, in countries where patriarchal norms mean that a man's position among his kin is dependent on how many sons he has (cf. Das Gupta et al. 2003), husbands may be especially keen to persuade their wives to have another child if they do not consider the current number of sons sufficient. Women may insist on continuing childbearing when they consider the number of sons insufficient in contexts where women must rely mainly on the support of their sons in old age (Bongaarts 2013). Women may also have a special desire to have another child when they feel they do not have enough daughters, but expect special support from their daughters, viewing a daughter as "a friend at home" (Brunson 2010). Given this, the heterogeneity of women and their partners with respect to particular unmatched ideals needs to be studied. Therefore, after considering the general research question posed above, the (b) and (c) conditions are split into three options each, distinguishing whether the unmatched ideal of the woman or her partner is to have more sons, more daughters, or an equal number of children of both sexes.

4. Data and Method

The study used couples datasets from DHS conducted between 2010 and 2021. These time limits allowed us to consider data on different countries collected during a rather short time period. If more than one DHS was administered in a country during this period, the most recent one was chosen among those for which the couples dataset was available. Couples datasets were provided for countries in which not only women, but also men were interviewed. The countries differed in the proportions of households where men were interviewed, which ranged between one third and a half of all sampled households (see Croft et al. 2018). Couples datasets merged data on women and their partners when both were interviewed in one and the same household. Countries also differed on age limits for respondents. For women they were almost uniformly 15-49 years, but for men the upper age limit could be higher (up to 64 years in some countries) . Table A.1 of the Appendix shows years of DHSs included in the study and the ages of women and men in couples datasets.

Only couples in which both spouses reported at least one living child were included in the analysis. Couples in which the woman reported pregnancy at the time of the survey were excluded. Also excluded were couples in which either of the partners reported him-/herself to be infecund or sterilized. It was assumed that sterilization could have taken place long before the survey and thus could not indicate fertility preferences at the time of the survey. Moreover, the control variables used in the analysis (see below) were defined for the time of the survey, whereas for the time when decisions on sterilization were made these parameters could have different meanings.

The dependent parameter indicating a woman's desire to stop fertility was constructed using women's answers to the question: 'Would you like to have (another) child, or would you prefer not to have any (more) children?' The parameter was 1 for women who gave a negative answer to this question and 0 in all other cases (positive answer, refusal to respond, etc.). In this way, women who articulated their desire to stop fertility were distinguished from all the others , .

The dependent parameter indicating contraceptive use by a couple was based on women's answer to the question: "Are you or your partner currently doing something or using any method to delay or avoid getting pregnant?" Those who answered this question positively were further asked about the method they were using. Because the study considered a large number of countries that differed on access to particular contraceptive methods, the analysis did not distinguish methods, keeping only the binary distinction between users and non-users of any form of contraception. Only women's answers to this question were used in constructing the variable indicating contraceptive use. In 18% of all couples included in the analysis, men denied current contraceptive use when women reported it. Women's report on contraceptive use was considered more reliable in such cases, as it is generally less likely that a woman, compared to a man, will be unaware of use of contraception by her partner.

The main independent variable was based on the following questions, which were posed to both men and women:

If you could go back to the time when you did not have any children and could choose exactly the number of children to have in your whole life, how many would that be?

How many of these children would you like to be boys, how many would you like to be girls and for how many would it not matter if it's a boy or a girl?

Some men and women gave non-numeric answers about ideal number of children ("as God wills," "don't know," etc.). Couples in which at least one of the spouses gave a non-numeric answer were excluded from the analysis. This solution assumed that, in the case of non-numeric ideals, it was impossible to determine whether the actual sex composition of children matched the ideals of both partners. Couples were also excluded if a woman or her partner reported zero as the ideal for the total number of children. The reason for excluding them was that, in such couples, disagreement between partners, if it existed, concerned the total number of children rather than sex preferences.

Exclusion of couples in which at least one of the spouses expressed a non-numeric or zero ideal resulted in 8,228 excluded couples in the non-SSA countries and 10,196 in the SSA countries. Appendix B considers selectivity issues related to both exclusions. Another 269 couples outside SSA and 329 couples in SSA were excluded when both spouses gave a numeric ideal for both children, but at least one of the spouses did not numerically specify the desired number of children for each category in the second question. Finally, 641 couples outside SSA and 111 couples in SSA were excluded because either the parameter of women's desire for the next child or one of the control parameters (see more on them below) was missing. Apart from this, couples in which the woman was pregnant or one of the spouses reported being sterilized or infecund were excluded. Sterilization or infecundity in one of the spouses resulted in 29,437 excluded couples outside SSA (out of which 21,095 couples were excluded in India and 4,947 in Colombia) and in 4,517 excluded couples in the SSA countries. All these exclusions resulted in final sample sizes of 55,527 couples for the non-SSA countries and 65,222 couples for the SSA countries.

Following Fuse (2010), four “generalized” ideal sex compositions of children were distinguished:

- Boys > girls; ascribed to all individuals who reported a higher ideal number of boys compared to ideal number of girls, irrespective of the ideal number of those children whose sex was not important;
- Boys < girls; ascribed in the case opposite to the above;
- Boys = girls; the “equal” ideal was ascribed to those who reported equal non-zero desired numbers of boys and girls;
- Neutral; this ideal was attributed to those who reported a numeric non-zero ideal total number of children, but zero ideal numbers of boys and girls.

Based on the parameter of the ideal sex composition of children, a dummy parameter was constructed showing whether the sex composition of an individual’s living offspring matched his/her ideals. The neutral ideal was considered as matched with any actual sex composition of children.

In the next step, a parameter characterizing couples was calculated (henceforth termed “the Matching parameter”), which was central to the study. It had four categorical meanings:

- Sex composition ideals of both spouses are matched by the sex composition of their living children;
- Only the sex composition ideal of the woman is matched;
- Only the sex composition ideal of the man is matched;
- Neither the sex composition ideal of the woman nor of the man is matched.

The Matching parameter was assigned only to couples in which each partner reported having at least one living child. The sex composition ideals of both spouses not being matched by the actual sex composition of children was its reference meaning. Apart from the Matching parameter with its four meanings, parameters were constructed that specified, either for the woman or for the man, which exact sex preference for children was not matched. In one of these parameters, the meaning “only the sex composition ideal of the woman is matched” was split into three meanings, which specified whether it was the man's ideal to have more sons, to have more daughters or to have an equal number of sons and daughters that was not matched. The meaning "only the sex composition ideal of the man is matched" was split into three meanings that specified the unmatched ideal of the woman.

Linear probability models were estimated for the woman's desire to have another child and for contraceptive use. The Matching parameter in one of its three forms was the key independent parameter in all models. The models were run separately for the pooled sample of SSA and non-SSA countries, with country fixed effects and robust standard errors. The main reason for treating the two groups of countries separately is that, for SSA countries, fertility decisions have been shown to follow patterns somewhat different from those found in other world regions. Specifically, as already mentioned, among SSA women the decision to stop fertility is often replaced by the decision to postpone pregnancy "for the time being" (Timæus & Moultrie 2020). Given this, the desire to stop fertility may require special conditions in SSA, and considering SSA and non-SSA women with this desire in one sample could create unobserved heterogeneity.

In the analysis, the total number of living children differed between the woman and her partner in 29.6% of the couples. It is assumed in the present study that men and women mainly compare their ideals concerning the sex composition of children to the total sex composition of their own children already born, at least some of whom may have been born outside the present partnership . Therefore, in constructing the Matching parameter, the ideals of each spouse were compared to the sex composition of all his/her living children, and couples were included in the analysis independent of whether all living children of the two partners were their common children. However, a separate additional analysis was conducted only for couples in which both partners reported that their current union was their first one and the number of living boys and girls reported by both partners was identical . The results of this analysis (available upon request) did not differ considerably from the results presented below.

The proportion of couples in which the woman's partner reported being in more than one union at the time of the survey ranged between 0% and about 35% across countries; the frequency of polygyny was typically higher in the SSA countries. If a woman's partner is polygynous, he can achieve his reproductive ideals outside the couple included in the analysis. Therefore, he may be less insistent on non-use of contraception even if his sex composition ideals are not satisfied. Moreover, he may be less active in attempting to shape the woman's desires concerning the next child, such that the role of the partner's ideals in shaping the woman's desires may be weaker in the context of polygyny. On the other hand, if a woman has a polygynous partner, she may be more motivated to have additional children to strengthen her union with the partner. She may also view her partner's sex composition ideals as pivotal to her fertility decisions for the same reason. In addition, it has been shown that, in several SSA countries, the level of disagreement between partners about fertility ideals in couples with a polygynous partner is on average higher (Gebreselassie 2008, Spezier & Yates 1998). Concerning contraceptive use, the fact that it varied depending on polygyny regimes was shown in, for instance, Ezeh (1997). Given this, polygyny was controlled for in the analysis for the pooled SSA sample. The dummy parameter of polygyny was constructed based on men's answers to the question on the number of wives/partners they had at the time of the survey. This approach was chosen because women are expected to underreport partners' polygyny. In the models for the non-SSA countries, the polygyny parameter was not included owing to the negligible proportions of polygynous couples there (less than 3% in all countries except Mauritania and Haiti, where the proportion was less than 10%).

Other control parameters included in the models involved the woman's current age, number of living children, months passed since the previous birth, urban/rural residence, and educational level (primary, secondary, higher educational levels were distinguished).

5. Descriptive results

The distribution of sex composition ideals used in calculating the Matching parameter across countries is shown in Table 1 for women and Table 2 for men in the couples included in the analysis. Despite considerable cross-country differences, it can be seen that, in most countries, a son preference is more frequent among men than among women. In several countries in Central and South Asia, MENA and SSA, a son preference even outranks the preference for balanced sex composition of children among men, which in all other cases is the most frequent preference for both men and women. A preference for daughters is less frequent, among both men and women, in Central and South Asia and MENA compared to all the other regions.

Table 1. Women's sex composition ideals across countries, %

country	Boys = girls	Boys>girls	Boys<girls	Neutral	N
Balkans, the Caucasus, MENA					
Albania	58.91	21.16	17.33	2.6	2,037
Armenia	66.78	18.61	12.19	2.42	1,198
Jordan	63.05	22.75	6.08	8.12	1,613
Mauritania	45.1	37.31	12.25	5.35	898
Central and South Asia					
Afghanistan	44.92	46.29	4.12	4.67	4,176
India	66.96	18.88	4.4	9.76	23,501
Kyrgyzstan	66.83	16.93	11.42	4.82	1,016
Nepal	60.18	20.78	1.81	17.23	1,439
Pakistan	53.37	34.4	3.66	8.57	1,750
South-East Asia					
Cambodia	53.26	12.28	31.75	2.71	2,362
Indonesia	63.75	10.01	11.69	14.56	5,936
Myanmar	38.25	26.38	24.54	10.83	1,634
Latin America and the Caribbean					
Colombia	46.7	14.22	20.14	18.93	5,535
Haiti	62.05	5.55	22	10.4	2,432
SSA					
Angola	63.67	15.28	13.85	7.2	1,459
Benin	49	16.47	13.55	20.98	2,502
Burkina-Faso	38.43	33.57	10.13	17.87	3,643
Burundi	38.82	31.28	15.76	14.14	2,602
Cameroon	38.04	22.77	23.58	15.61	1,493
CDR	36.66	21.35	22.83	19.16	2,703
Chad	39.66	28.63	14.9	16.8	1,369
Congo	38.06	19.69	27.34	14.92	1,595
Cote d'Ivoire	46.27	21.51	19.07	13.15	1,232
Ethiopia	62.78	24.68	10.38	2.16	3,286
Gabon	52.51	12.88	24.75	9.87	1,196
Gambia	40.3	38.48	9.95	11.27	985
Ghana	45.94	21.67	17.32	15.07	1,380
Guinea	38.64	39.88	16.42	5.06	1,206
Kenya	45.74	16.85	13.5	23.91	4,023
Lesotho	57.47	19.22	16.9	6.41	562
Liberia	51.93	14.68	25.49	7.9	1,063
Madagascar	62.17	17.1	11.62	9.11	3,426
Malavi	58.65	15.22	19.64	6.5	2,648
Mali	40.65	34.24	15.48	9.62	1,466

Mozambique	60.4	17.23	18.81	3.57	1,457
Namibia	47.97	17.07	23.09	11.87	615
Niger	29.03	21.26	10.43	39.29	1,736
Nigeria	46.86	22.36	12.07	18.71	5,350
Rwanda	43.88	28.58	9.46	18.08	2,400
Sierra-Leone	56.71	16.4	22.54	4.35	2,458
Tanzania	40.57	15.03	16.6	27.8	1,018
Togo	54.38	12.06	15.47	18.09	1,642
Uganda	63.77	11.08	15.24	9.91	1,706
Zambia	54.85	15.24	22.28	7.63	4,246
Zimbabwe	53.03	18.69	18.26	10.02	2,755
TOTAL	**53.93**	**20.59**	**13.38**	**12.1**	**120,749**

Table 2. Men’s sex composition ideals across countries, %

country	Boys = girls	Boys>girls	Boys<girls	Neutral	N
Balkans, the Caucasus, MENA					
Albania	48.8	35.94	13.06	2.21	2,037
Armenia	58.93	35.06	4.51	1.5	1,198
Jordan	45.57	43.4	5.27	5.77	1,613
Mauritania	30.96	59.47	6.68	2.9	898
Central and South Asia					
Afghanistan	33.07	55	4.36	7.57	4,176
India	65.4	20.27	4.9	9.44	23,501
Kyrgyzstan	54.63	29.13	10.73	5.51	1,016
Nepal	52.74	24.46	1.6	21.2	1,439
Pakistan	44.17	42.8	7.2	5.83	1,750
South-East Asia					
Cambodia	50.89	22.14	23.24	3.73	2,362
Indonesia	61.37	17.13	8.79	12.7	5,936
Myanmar	33.17	38.49	15.73	12.61	1,634
Latin America and the Caribbean					
Colombia	47.03	20.78	12.32	19.87	5,535
Haiti	53.17	23.81	9.95	13.08	2,432
SSA					
Angola	57.16	29.4	11.65	1.78	1,459
Benin	36.41	45.28	6.79	11.51	2,502
Burkina-Faso	24.7	51.28	5.85	18.17	3,643
Burundi	38.97	37.82	10.84	12.38	2,602
Cameroon	31.55	45.14	14.2	9.11	1,493
CDR	30.11	45.14	11.36	13.39	2,703
Chad	25.13	59.53	7.96	7.38	1,369
Congo	30.34	43.2	15.55	10.91	1,595
Cote d'Ivoire	30.11	47.24	12.66	9.98	1,232
Ethiopia	50.64	40.6	5.96	2.8	3,286

Gabon	43.39	35.87	12.12	8.61	1,196
Gambia	17.77	65.38	5.18	11.68	985
Ghana	37.54	39.93	9.28	13.26	1,380
Guinea	25.54	64.26	8.96	1.24	1,206
Kenya	36.59	22.62	9.92	30.87	4,023
Lesotho	48.04	37.54	8.01	6.41	562
Liberia	44.59	37.35	11.76	6.3	1,063
Madagascar	56.16	27.52	7.88	8.44	3,426
Malavi	50.98	30.36	13.48	5.17	2,648
Mali	22.58	67.46	6.21	3.75	1,466
Mozambique	44.13	40.01	11.46	4.39	1,457
Namibia	43.41	34.47	11.06	11.06	615
Niger	17.86	56.74	2.88	22.52	1,736
Nigeria	33.81	45.83	6.17	14.19	5,350
Rwanda	38.25	30.29	5.92	25.54	2,400
Sierra-Leone	44.22	41.42	13.59	0.77	2,458
Tanzania	32.12	34.28	8.64	24.95	1,018
Togo	40.07	28.38	12.24	19.31	1,642
Uganda	44.37	31.95	15.3	8.38	1,706
Zambia	46.49	26.85	15.26	11.4	4,246
Zimbabwe	44.54	35.35	13.61	6.5	2,755
TOTAL	**46.34**	**33.6**	**8.91**	**11.15**	**120,749**

Table 3 shows the proportions by country of women included in the analysis who expressed the desire to stop fertility and who reported contraceptive use. The proportions wanting to stop fertility and using contraception are generally lower in higher fertility countries. For instance, the non-SSA “outliers” with the lowest proportions of both groups, Afghanistan and Mauritania, are countries with the highest fertility in the non-SSA sample. The proportion wanting to stop fertility is generally lower in SSA. In about two thirds of the countries, the proportion of couples using contraception is higher than the proportion of women wanting to stop fertility. Contraceptive use was generally less frequent in the SSA countries compared to the other groups, which can be partly explained by the high unmet need for contraception there (Bongaarts, Casterline 2018), but as couples using traditional methods are also included in the count, it may partly be due to lower demand for family planning.

Table 3. Proportions of women who have reported the desire to stop fertility and of women who have reported current use of contraception, by country (N=women included in the analysis)

	wants to stop	uses contraception	N
Balkans, the Caucasus, MENA			
Albania	72.66	46.34	2,037
Armenia	58.18	74.62	1,198
Jordan	57.22	68.07	1,613
Mauritania	19.60	22.83	898
Central and South Asia			
Afghanistan	27.00	34.34	4,176
India	63.68	67.01	23,501
Kyrgyzstan	26.67	50.39	1,016
Nepal	75.54	73.04	1,439
Pakistan	41.77	44.91	1,750
South-East Asia			
Cambodia	55.84	70.49	2,362
Indonesia	53.03	73.70	5,936
Myanmar	58.57	62.06	1,634
Latin America and the Caribbean			
Colombia	53.19	82.48	5,535
Haiti	68.79	43.83	2,432
SSA			
Angola	29.20	14.12	1,459
Benin	26.98	19.42	2,502
Burkina-Faso	23.33	21.30	3,643
Burundi	45.62	35.17	2,602
Cameroon	30.68	27.26	1,493
CDR	22.90	23.01	2,703
Chad	11.25	7.89	1,369
Congo	18.43	57.81	1,595
Côte d'Ivoire	22.73	24.03	1,232
Ethiopia	32.32	45.95	3,286
Gabon	27.09	35.03	1,196
Gambia	17.26	30.15	985
Ghana	36.30	31.52	1,380
Guinea	21.23	15.59	1,206
Kenya	48.12	65.95	4,023
Lesotho	62.46	71.00	562
Liberia	34.81	33.87	1,063
Madagascar	37.57	59.31	3,426
Malavi	41.92	71.98	2,648
Mali	18.21	24.42	1,466
Mozambique	34.11	19.42	1,457

Namibia	48.29	64.55	615
Niger	8.41	24.25	1,736
Nigeria	25.06	24.56	5,35
Rwanda	52.88	77.92	2,400
Sierra-Leone	26.77	23.72	2,458
Tanzania	24.66	46.76	1,018
Togo	32.40	26.13	1,642
Uganda	34.76	50.59	1,706
Zambia	37.94	60.53	4,246
Zimbabwe	41.81	82.03	2,755
TOTAL	43.46	51.44	120,749

Figure 1 shows the distribution of the Matching parameter among women included in the analysis. It can be seen that the sex composition ideals of both spouses being mismatched is the most frequent situation.

Figure 1. Distribution of the Matching parameter across couples

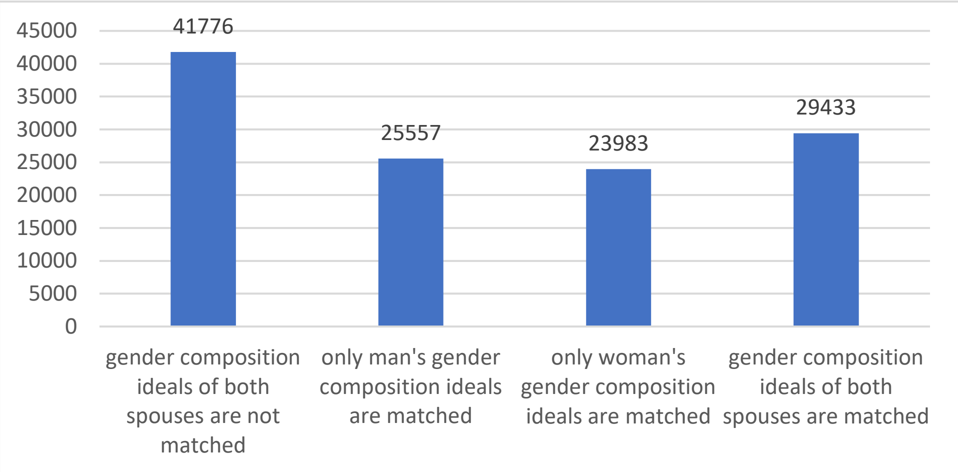


Table 4 cross-tabs the Matching parameter with woman's desire to stop fertility and with contraceptive use. Both in and outside SSA, the desire to stop is least frequent when the sex composition ideals of both spouses are not matched, and most frequent when they are matched. Moreover, in both groups of countries, the desire to have no children is more frequent when only the woman's ideal is matched than when only the man's ideal is not matched. By contrast, contraceptive use is most frequent when the ideals of both spouses are matched and least frequent when they are not matched in both groups of countries. In the non-SSA countries, contraceptive use is more frequent when only the woman's ideals are matched compared to when only the man's ideals are matched, whereas in the SSA countries the difference between the two frequencies is negligible (40.49% vs. 41.21%). Generally, in the SSA countries, the frequencies both of the desire to stop fertility and of contraceptive use vary much less across the meanings of the Matching parameter than they do in the non-SSA countries.

Table 4. Frequencies of women's desire to stop fertility and of contraceptive use across couples with different meanings of the Matching parameter, %

	Desire to stop		Contraceptive use	
	Non-SSA	SSA	Non-SSA	SSA
Sex composition ideals of both spouses are not matched	46.08	30.41	60.98	39.92
Only man's sex composition ideals are matched	52.57	31.57	61.95	41.21
Only woman's sex composition ideals are matched	60.64	33.2	64.05	40.49
Sex composition ideals of both spouses are matched	71.76	34.32	68.33	42.98
Total	**56.73**	**32.16**	**63.67**	**41.03**

Table 5. Linear probability models for women's desire to stop fertility

	(1)	(2)	(3)	(4)	(5)	(6)
	Non-SSA	Non-SSA	Non-SSA	SSA	SSA	SSA
Spouses whose sex composition ideals are matched (ref: none)						
only husband	0.0405***		0.0406***	0.00308		0.00307
	(0.00595)		(0.00599)	(0.00492)		(0.00492)
only husband, wife's ideal: equal		0.0418***			0.00264	
		(0.00716)			(0.00576)	
only husband, wife's ideal: more sons		0.0285**			-0.00546	
		(0.00968)			(0.00955)	
only husband, wife's ideal: more daughters		0.0486**			0.0127*	
		(0.0193)			(0.00656)	
only wife	0.123***	0.123***		0.0189**	0.0189**	
	(0.0197)	(0.0197)		(0.00523)	(0.00523)	
only wife, husband's ideal: equal			0.111***			0.0211***
			(0.0194)			(0.00530)
only wife, husband's ideal: more sons			0.153***			0.0136*
			(0.0226)			(0.00682)
only wife, husband's ideal: more daughters			0.120**			0.0297**
			(0.0287)			(0.0115)
husband and wife	0.198***	0.198***	0.198***	0.0227***	0.0228***	0.0228***
	(0.0409)	(0.0409)	(0.0409)	(0.00533)	(0.00532)	(0.00533)
Controls	+	+	+	+	+	+
Constant	-0.0318	-0.0315	-0.0316	-0.251***	-0.251***	-0.251***
	(0.0448)	(0.0447)	(0.0449)	(0.0229)	(0.0229)	(0.0228)
Observations	55,527	55,527	55,527	65,222	65,222	65,222
R^2 (within)	0.375	0.375	0.375	0.355	0.355	0.355
R^2 (between)	0.917	0.916	0.917	0.651	0.652	0.652
R^2 (overall)	0.396	0.396	0.397	0.369	0.369	0.369

*p<0.1, **p<0.05, ***p<0.001; standard errors in parentheses

Table 6. Linear probability models for contraceptive use by couples, as reported by women

	(7)	(8)	(9)	(10)	(11)	(12)
	Non-SSA	Non-SSA	Non-SSA	SSA	SSA	SSA
Spouses whose sex composition ideals are matched (ref: none)						
only husband	0.0138**		0.0138**	0.0105**		0.0105**
	(0.0044)		(0.00438)	(0.0033)		(0.00326)
only husband, wife's ideal: equal		0.0124**			0.0135**	
		(0.00526)			(0.00367)	
only husband, wife's ideal: more sons		0.00678			-0.00529	
		(0.00929)			(0.00896)	
only husband, wife's ideal: more daughters		0.0346**			0.0128	
		(0.0108)			(0.00968)	
only wife	0.0236***	0.0237***		0.0124**	0.0124**	
	(0.0042)	(0.0043)		(0.0043)	(0.00428)	
only wife, husband's ideal: equal			0.0193**			0.0177**
			(0.00565)			(0.00596)
only wife, husband's ideal: more sons			0.0376**			0.00536
			(0.0129)			(0.00550)
only wife, husband's ideal: more daughters			0.0108			0.0118
			(0.0179)			(0.0127)
husband and wife	0.0653***	0.0653***	0.0652***	0.0223**	0.0223**	0.0223**
	(0.0073)	(0.0073)	(0.0073)	(0.0058)	(0.0058)	(0.00579)
Controls	+	+	+	+	+	+
Constant	0.756***	0.756***	0.756***	0.564***	0.564***	0.564***
	(0.0447)	(0.0447)	(0.0448)	(0.0274)	(0.0275)	(0.0275)
Observations	55,527	55,527	55,527	65,222	65,222	65,222
R^2 (within)	0.023	0.023	0.023	0.049	0.049	0.049
R^2 (between)	0.731	0.733	0.730	0.499	0.498	0.499
R^2 (overall)	0.059	0.060	0.060	0.093	0.094	0.094

**p<0.05, ***p<0.001; standard errors in parentheses

6. The Analysis

Table 5 puts together the linear probability models for the desire to stop fertility, and Table 6 the models for contraceptive use. For women from the non-SSA and those from the SSA countries, the models that do not distinguish between types of unmatched ideals are provided first, then models that distinguish between types of women's unmatched ideals, followed by models that distinguish between types of men's unmatched ideals.

Let us consider first the models that do not distinguish between types of ideals. For women's desire to stop fertility in the non-SSA countries (Table 5, Model 1), the probability is significantly lower in couples in which the sex composition of children does not satisfy the ideals of both spouses compared to all the other categories of couples. As the coefficient sizes show, the probability of the desire to stop increases by about 4% when only the ideals of men are matched, by about 12% when only the ideals of women are matched, and by about 20% when the ideals of both spouses are matched.

In the SSA countries (Table 6, Model 4), there is no statistically significant difference in the probability of women's desire to stop fertility between couples in which the sex composition ideals of both spouses are not matched and couples in which only the ideals of men are matched. The probability of this desire, however, is significantly higher when only the ideals of women are matched and when the ideals of both spouses are match. In both cases, the probability of the desire to have no children increases by about 2%.

For contraceptive use reported by women, both in the non-SSA (Table 6, Model 7) and the SSA (Table 6, Model 10) countries, the probability is significantly lower in couples in which the ideals of both spouses are not matched compared to all the other couples. Matched sex composition ideals of men only increased the probability of contraceptive use by about 1.5% outside SSA and by about 1% in SSA. For matched sex composition ideals of women only, the increase in the probability of contraceptive use was about 2.5% and 1%, respectively, and for matched ideals of both spouses it was about 6.5% and 2%, respectively.

In the models for both the desire to have no children and contraceptive use, the coefficient sizes were small in the SSA compared to the non-SSA countries. This points to weaker effects of men's and women's (dis)satisfaction with sex composition of children in the former countries compared to the latter.

To study differences in the effects of all the meanings of the Matching parameter between each other, 83% CIs of the coefficients for dummies from the models without distinction between types of ideals are plotted in Figure 4a-d (see Payton et al. (2003), who argued that for the effects of two variables to be distinguished at the 95% level, CIs of their coefficients should not overlap at the 83-84% level). In the non-SSA countries, the positive effect of only men's ideals being matched on the probability of the desire to stop is significantly weaker than the effect of only women's ideals being matched and the effect of ideals of both spouses being matched; the latter two effects, however, do not differ from each other significantly (Figure 4a). In the SSA countries, where, as seen in Table 5, only effects of women's ideals being matched and of ideals of both spouses been matched significantly increase the probability of women's desire to stop fertility, the difference between these two effects is not statistically significant (Figure 4b). For contraceptive use, effects of matches with only women's and only men's ideals do not differ significantly in the non-SSA countries, whereas the effect of the ideals of both spouses being matched is significantly stronger there (Figure 4c). Finally, for contraceptive use in the SSA countries, the statistically significant opposition is only dichotomous: the positive significant effects of matched ideals of any one of the spouses or of both spouses do not differ significantly from one another (Figure 4d).

To conclude, the analysis that did not distinguish between types of unmatched sex composition ideals has shown that, in both the SSA and the non-SSA countries, the probabilities of the desire to stop fertility and of contraceptive use are sensitive to spouses' sex composition ideals. However, the role of (dis)agreement between spouses in whether the actual sex composition is satisfactory is different in the two groups of countries. For the desire to stop fertility, in the non-SSA countries a stepwise significant increase in probability is observed, from couples in which both spouses are not satisfied to couples in which only men are satisfied, then to couples in which only women are satisfied, and finally to couples in which both spouses are satisfied. For the desire to stop in the SSA countries, the only significant distinction is between couples in which women are not satisfied and couples in which they are, irrespective of men's (dis)satisfaction. For contraceptive use, agreement between spouses is relevant in both the non-SSA and the SSA countries, but not in the same way. For the non-SSA countries, the significant distinction is three-fold: the probability is lowest when both spouses are not satisfied, higher when either men only or women only are not satisfied, and still higher when both are not satisfied. For the SSA countries, dissatisfaction on the part of both spouses is associated with lower probability of contraceptive use compared to couples in which at least one of the spouses is satisfied; there are no significant differences between all the other categories of couples.

As robustness checks, Model 1, 4, 7 and 10 were run with exclusion of each of the countries one by one (results available from the author). None of the exclusions changed the results concerning the signs of coefficients and statistical significance of the observed differences, although coefficient sizes varied with the exclusions.

Figure 4a. Coefficients for the Matching parameter in the model for women's desire to stop fertility, the non-SSA countries, 83% CIs

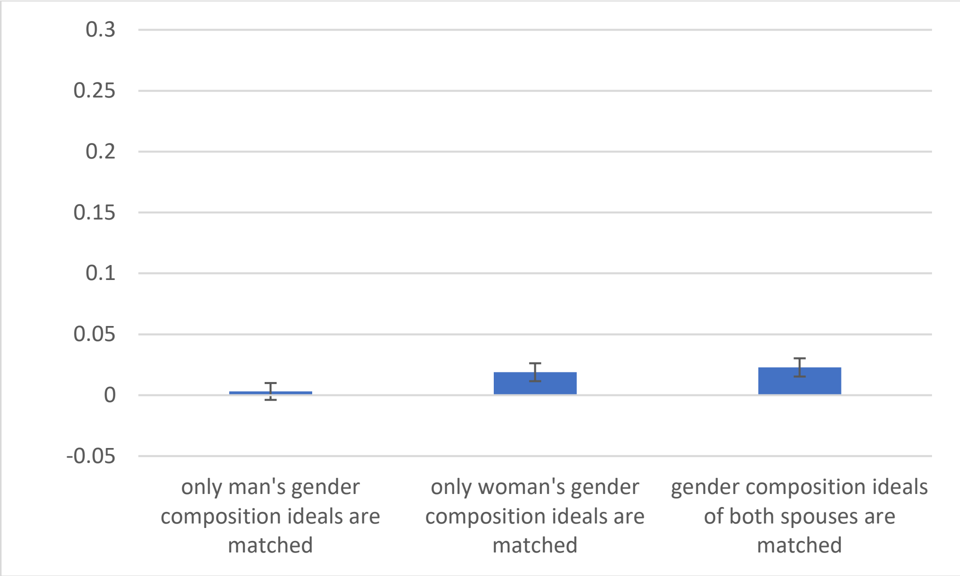


Figure 4b. Coefficients for the Matching parameter in the model for women's desire to stop fertility, the SSA countries, 83% CIs

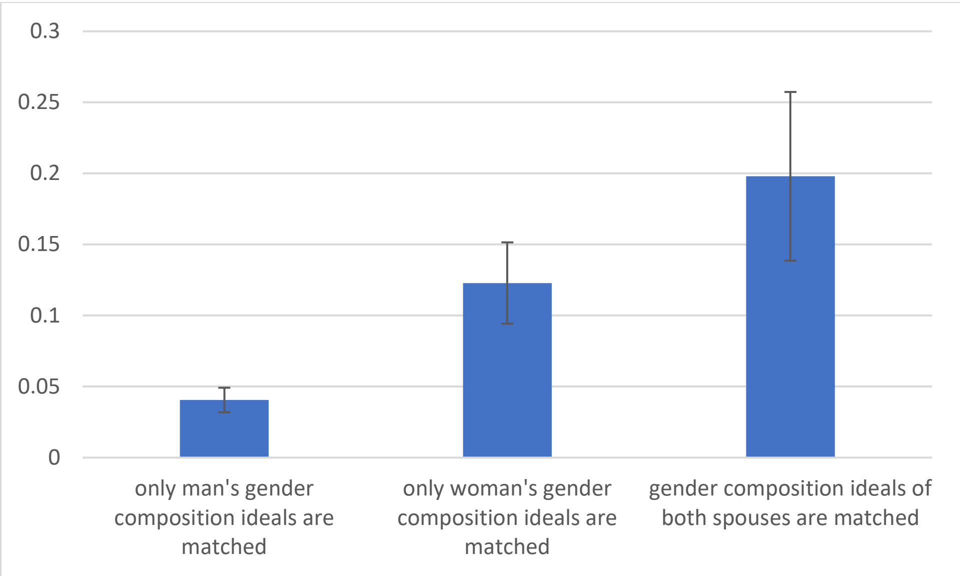


Figure 4c. Coefficients for the Matching parameter in the model for contraceptive use, the non-SSA countries, 83% CIs

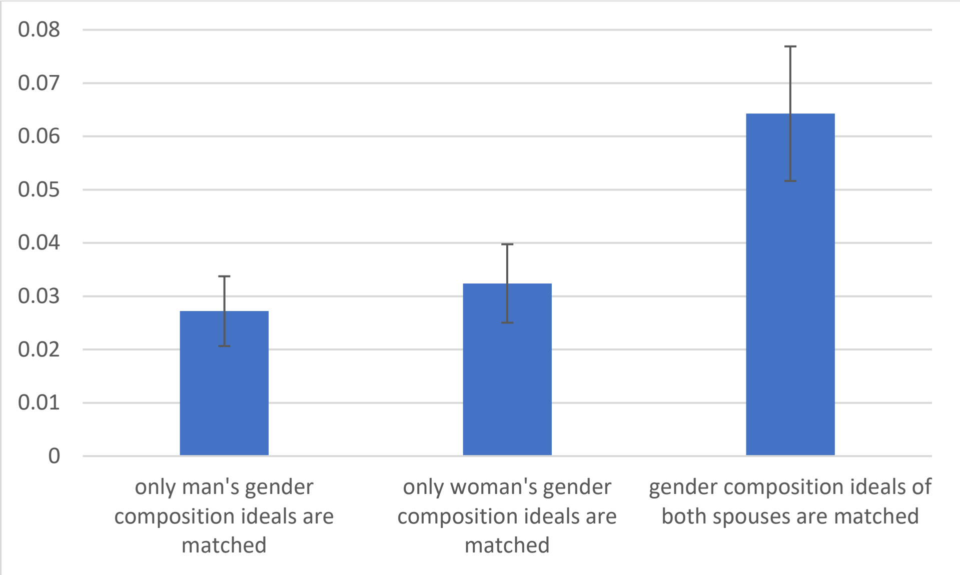
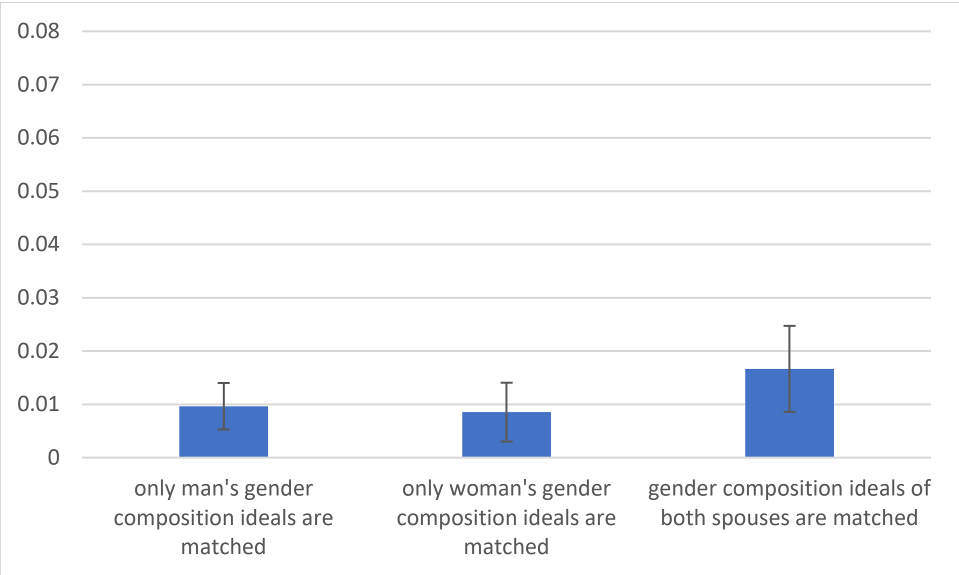


Figure 4d. Coefficients for different meanings of the Matching parameter in the model for contraceptive use, the non-SSA countries, 83% CIs



Now let us turn to the models where different preferences for sex composition of children of one of the spouses are distinguished. Whenever the matched preference of only one of the spouses makes the probability of women's desire to stop fertility significantly stronger, its effect remains statistically significant with each particular unmatched preference of the other spouse: this pattern is evident in the effects of only men's matched preference in Models 1 vs. 2 and the effects of only women's matched preferences in Models 1 vs. 3, 4 vs. 6. Nevertheless, as the coefficient sizes show, the strength of the effect of matched preference of only one spouse upon women's desire to stop fertility varies depending upon what exactly preference of the other spouse is not matched. In non-SSA countries, when only preference of men is matched, women are more likely to wish to have another child when their preference is to have more daughters or an equal number of sons and daughters compared to when they prefer to have more sons (Model 2). When only their own preference is matched, non-SSA women are more likely to want to have another child if men's unmatched preference is to have more sons (Model 3). In the same case in SSA countries, by contrast, men's unmatched preference for sons has weaker effect on women's desire for the next child than men's other preferences (Model 6).

By contrast, for the probability of contraceptive use the effect of matched preference of only one spouse may be either statistically significant or not depending upon which particular preference of the other spouse is mismatched. The effect is regularly significant if the other spouse, whose preference is not matched, wants to have equal number of boys and girls (Models 8, 9, 11, 12). However, the positive effect of matched preference of one of the spouses is not always significant when the other spouse prefers to have more children of a particular sex. Specifically, women's matched preference does not have a significant effect when women prefer to have more sons both in SSA and non-SSA countries (Models 8 and 11) and when women prefer to have more daughters in SSA countries (Model 11). Women's matched preference does not have a significant effect when men prefer to have more daughters both in and outside SSA (Models 9 and 12) and when men prefer to have more sons in SSA countries (Model 12).

7. Limitations

One important limitation of the analysis is that it does not consider couples' actual transitions to subsequent children depending on the matched or mismatched sex composition ideals of spouses. To accomplish this, longitudinal surveys would be needed that follow up couples' actual fertility after the men and women have reported their ideals. Such surveys, however, are still quite rare for developing countries (see Cleland et al. (2020) for their overview) and do not allow a broad cross-country comparison. For this reason, the present study had to consider some "proxies" of future fertility instead of actual births to couples; such proxies have been shown to be relevant, but not unproblematic predictors of actual fertility (see Section 2).

Another limitation derives from the sample of countries. Interviews with men were held by far not in all countries where DHS were administered, and some regions, especially Latin America and the Caribbean, were greatly underrepresented among the countries with couples samples. Conclusions from the present study cannot be automatically generalized to countries outside the 45 analyzed here.

8.Discussion

Earlier studies on sex preferences for children in developing countries have largely focused on the role of women's preferences in determining subsequent fertility. The present paper has added men's preferences in a cross-country perspective and shown how the sex preferences of both spouses come into play.

The first finding concerns the role of agreement between spouses in whether the current sex composition of children is satisfactory. The analysis has shown that in couples where both spouses report sex composition ideals not matching the proportions of sons and daughters they actually have, the probability of using contraception and (outside the SSA countries) of women wanting to have no children any more is significantly lower than in couples where sex composition ideals of at least one spouse are matched. At the same time, both probabilities are highest in couples where the ideals of both spouses are matched (although in the case the difference from couples where ideals of at least one spouse are not matched is statistically significant only for contraceptive use in non-SSA countries). Previously, the role of agreement between spouses had been demonstrated almost only in relation to the total number of children in separate developing countries (see Section 2). The present comparative study, based on pooled data on 45 developing countries, has shown that, at least for sex preferences, the importance of agreement between spouses was the prevailing general tendency in these countries in the 2010s and the early 2020s. This means that, during the period under study, developing countries did not differ systematically in this respect from countries of Europe and North America, for which the role of agreement between spouses in fertility decisions has been demonstrated (Thomson 1997, Thomson et al. 1990).

The lack of effects of agreement between spouses for women's desire to stop fertility in the SSA countries can partly be explained by the high degree of marital instability there, demonstrated by several studies revealing the high percentage of divorces and remarriages (Takyi & Broughton 2006, Clark & Brauner-Otto 2015, John & Nitsche 2022). It seems reasonable to speculate that if a woman finds her current union unstable, the preferences of her spouse concerning off-spring will be less important in shaping her desire to have one more child. In this connection, the statistically significant effect of unmatched ideals of both spouses observed for contraceptive use in the SSA countries does not come as a surprise, because in most cases contraceptive use presupposes more negotiations between current spouses than the formation of women's desire for the next child.

The second finding is that, in the event of potential conflict, i.e., when the preferences of only one of the spouses are satisfied, men's preferences are never stronger. For women's desire to have one more child, her own dissatisfaction with the current sex composition of children always plays a more important role. The result for contraceptive use does not show differences between effects of unmatched sex preferences of men and women, which can, once again, be explained by higher involvement of both spouses in shaping decisions on contraceptive use compared to formation of women's desire for the next child. Still, again, no primacy of men's preferences over women's preference has been discovered for contraceptive use. In Section 2, we have seen that studies on separate countries in Africa and Asia, mainly undertaken before our observation period, have shown that both women's fertility plans and couples' contraceptive use were for most shaped by men's intentions concerning future children. The present analysis has shown that, at least between 2010 and 2021, this was not the dominant tendency in the developing countries of the world regions we have considered.

There may be at least two reasons for the weaker effect of (dis)satisfaction of either men or women with the current sex composition of children in the SSA compared to the non-SSA countries. The first possible reason is higher total fertility in most of the countries in the SSA sample at the time of the surveys. For some Asian countries, it has been shown that, when fertility decreases, effects of sex preference become observable for the transition to lower parities (Das Gupta et al. 2003, Channon 2016). Taking these findings into consideration, one can expect that, in the SSA countries, the sex composition of children starts to be significant at transitions to higher parities than in the non-SSA countries (although no studies directly comparing the role of sex preferences at transitions to different parities in SSA were found). If this is the case, parents at low parities present in the SSA sample make the total effects of sex composition in the sample smaller. Another reason, relevant only to the desire to stop fertility, may be related to the fact that deciding to stop fertility is not typical of women in SSA countries, where postponement decisions are much more common (Timæus & Moultrie (2020); cf. also the contrast between the SSA and non-SSA countries in the proportion of women who wish to stop fertility in Table 4). It is reasonable to suggest that women who report not wanting more children in the future undergo some special selectivity in the SSA countries, making them less “sensitive” to the sex composition of children already born.

The study also has shown that when preference of only one spouse is satisfied, it might be important exactly which preference of the other spouse is mismatched. This was especially clear for contraceptive use, where the effect of matched preference of only men or only women could be either significant or not depending upon the particular mismatched preference of the other spouse. Since developing countries differ in what sex preferences for children are stronger in them (see section 2), these results emphasize the need for in-depth country specific studies of the role of (dis)agreement of spouses about sex composition of children.

All in all, the analysis of pooled data on developing countries allows us to conclude that, at least regarding sex preferences for children, the general tendency for the 45 countries was the importance of agreement between spouses and the lack of primacy of men’s preferences in shaping women’s desire to stop fertility and couples’ contraceptive use. This general tendency did not correspond to the strict sex asymmetries between spouses and the lower autonomy of women, which are commonly expected for developing countries. Studies on demographic changes in developing countries have stressed that women’s autonomy in making fertility decisions is a precondition for a sustainable fertility decrease. Compare this to Caldwell’s (1983) remark: "all fertility transitions are generated by two factors: the primary one of the decreasing economic advantage (or increasing disadvantage) of having children, and the secondary one of women's increased ability to determine their own fertility" (p. 470). Similarly, Mason and Taj (1987) stated that the growth of contraceptive use may be limited as long as husbands have more power than wives do to control the reproductive process. In light of this, the present findings – which show that the stronger role of men in fertility issues in developing countries does not seem to persist – are important.

One question for future research is whether this result is due to a recent shift toward greater sex egalitarianism in many developing countries, or whether the same general tendencies prevailed in these countries during the earlier periods, despite the greater role of men in reproductive plans and outcomes reported in some country-specific studies. The other important question is whether the results are specific to fertility preferences concerning the sex composition of children or whether they reflect a more general tendency valid for other types of preferences (such as preferences for total number of children) on which spouses may (dis)agree.

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Appendix A.

Table A1. Years of DHS, age of women and men included

Country	Year of DHS	Age of women	Age of men
Balkans, the Caucasus, MENA			
Albania	2017-1C	15-49	19-59
Armenia	2015-16	17-49	21-49
Jordan	2017-18	15-49	18-59
Mauritania	2019-21	15-49	19-59
Central and South Asia			
Afghanistan	2015	15-49	15-49
India	2019-21	15-49	15-54
Kyrgyzstan	2012	16-49	19-49
Nepal	2016	15-49	17-49
Pakistan	2017-18	15-49	15-49
South-East Asia			
Cambodia	2014	15-49	17-49
Indonesia	2017	15-49	16-54
Myanmar	2015-16	15-49	16-49
Latin America and the Caribbean			
Colombia	2015	13-49	15-59
Haiti	2017-18	15-49	18-64
SSA			
Angola	2015-16	15-49	16-54
Benin	2017-18	15-49	17-64
Burkina-Faso	2010	15-49	18-59
Burundi	2016-17	16-49	18-59
Cameroon	2018	15-64	16-64
CDR	2013-14	15-49	16-59
Chad	2014-15	15-49	17-59
Congo	2011-12	15-49	17-59
Côte d'Ivoire	2011-12	15-49	18-59
Ethiopia	2016	15-49	16-59
Gabon	2012	15-49	17-59
Gambia	2019-20	15-49	19-59
Ghana	2014	15-49	19-59
Guinea	2018	15-49	17-59
Kenya	2014	15-49	17-54
Lesotho	2014	15-49	17-59
Liberia	2019-20	15-49	18-59
Madagascar	2021	15-49	16-59
Malawi	2015-16	15-49	17-54
Mali	2018	15-49	18-59
Mozambique	2011	15-49	15-64
Namibia	2013	15-64	18-64
Niger	2012	15-49	16-59
Nigeria	2018	15-49	19-59
Rwanda	2019-20	16-49	18-59
Sierra-Leone	2019	15-49	17-59
Tanzania	2015-16	15-49	17-49

Togo	2013-14	15-49	16-59
Uganda	2016	15-49	18-54
Zambia	2018	15-49	17-59
Zimbabwe	2015	15-49	16-54

Appendix B. Selectivity of couples with numerical ideals

As mentioned in Section 4, a total of 8,228 couples in the non-SSA countries and 10,196 couples in the SSA countries were excluded from the analysis because at least one of the spouses reported a non-numeric or zero ideal number of children. Among women who satisfied all the other conditions for inclusion in the analysis, the proportions of those who reported a non-numeric ideal varied between 0.32% and 23.76% across countries, and proportions of those who reported a zero ideal varied between 0% and 6.00%. Among men, the cross-country variation in frequency of reporting a non-numeric ideal was between 0.08% and 26.03%, and the frequency of reporting a zero ideal varied between 0.03% and 16.31%.

Comparative (Frye & Bachan 2017) and country-specific (Hayford & Agadjanian 2011, Sandberg 2005) studies have shown that non-numeric answers to questions concerning the desired number of children (either total or of a particular sex) tend to correlate with certain socio-demographic characteristics. Specifically, non-numeric answers are more likely among respondents with lower education and less knowledge about fertility control, as well as among those living in communities where child mortality remains relatively high. Studies among international migrants have shown that non-numeric ideals are associated with women's low education, absence from the labor market, and are also more expected among women who do not support sex equity (Mussino & Ortensi (2018) for migrants to Italy). Many studies carried out in different parts of the world have shown that, among respondents with such characteristics, especially in developing countries, a tendency toward higher fertility is also expected (Mason 1987, Balk 1994, Malhotra et al. 1995, Morgan & Niruala 1995, Abadian 1996, Hindin 2000, Mason & Smith 2000). Therefore, the desire to stop childbearing may be less likely among these groups, which, in turn, may result in a selectivity bias if couples with non-numeric preferences are excluded from the analysis. At the same time, exclusion of couples in which at least one of the spouses reported a zero total ideal for children can produce the opposite selectivity bias, as the ideal of childlessness held either by a woman herself or by her partner may naturally decrease the woman's desire to have another child.

To determine whether the selectivity of both kinds actually took place, linear probability models with country fixed effects for women's desire to stop fertility and for contraceptive use have been estimated, where the main independent parameter indicated type of fertility ideals, among which "numeric non-zero," "non-numeric" and "zero" types were distinguished. These parameters for women and men were included separately in the models. As shown in Table B1, women's and their partners' non-numeric ideals have a significant negative effect on the probability of women's desire to stop fertility and of contraceptive use. Effects of the zero ideal are less consistent, but somewhere also significant. These results show that the selectivity problem is real.

To determine whether the selectivity of couples in which both spouses reported numeric ideals biased the results of the analysis, models with an alternative variant of the Matching parameter were estimated (Table B2). The new parameter was recalculated with the assumption that if a person has a non-numeric ideal, his/her ideal is matched by any actual sex composition of children. In this way, couples in which at least one of the spouses had a non-numeric (but not a zero) ideal were included in the analysis. In the models for the non-SSA countries, effects were similar to those in the models with exclusion of couples with non-numeric ideals on the part of at least one spouse (cf. Model 1 of Table B2 vs. Model 1 of Table 5; Model 3 of Table B2 vs. Model 7 of Table 6). For the SSA countries, in the model for the desire to stop fertility, the effects were also similar to the model for couples with only numeric ideals (cf. Model 2 of Table B2 vs. Model 4 of Table 5). For contraceptive use in the SSA countries, however, recalculation of the Matching parameter made the effects of that parameter insignificant (cf. Model 4 of Table B2 vs. Model 10 of Table 6). The latter result needs a separate interpretation, but with its exception Table B2 shows that the recalculation of the Matching parameter does not bring results which contradict the analysis in the main part of the paper.

Table B1. Linear probability models for woman's desire to stop childbearing, with country fixed effects and the independent parameter of type of woman's or her partner's ideals

	Women's desire to stop fertility				Contraceptive use			
	Non-SSA		SSA		Non-SSA		SSA	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Woman's fertility ideal (ref.: numeric non-zero)								
non-numeric	-0.133**		-0.0699***		-0.148***		-0.0757***	
	(0.0352)		(0.0124)		(0.0350)		(0.0148)	
zero	0.0592		0.0667**		-0.113*		-0.0770**	
	(0.0519)		(0.0293)		(0.0545)		(0.0212)	
Man's fertility ideal (ref.: numeric non-zero)								
non-numeric		-0.0580*		-0.0317**		-0.0723**		-0.0664***
		(0.0269)		(0.0116)		(0.0258)		(0.0137)
zero		-0.0240		0.0183		-0.0694**		-0.0608**
		(0.0177)		(0.0253)		(0.0286)		(0.0286)
Controls	+	+	+	+	+	+	+	+
Constant	-0.213**	-0.214**	-0.479***	-0.479***	0.657***	0.653***	0.405***	0.405***
	(0.0622)	(0.0619)	(0.0290)	(0.0291)	(0.0433)	(0.0441)	(0.0255)	(0.0252)
Observations	63894	63894	75734	75734	63894	63894	75734	75734
R^2 within	0.279	0.277	0.298	0.297	0.014	0.010	0.033	0.033

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.001$

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