

THE COMPLEXITY OF MEASURING FERTILITY PREFERENCES: EVIDENCE FROM DHS DATA

Amanda M. Kalamar¹ and Michelle J. Hindin¹, PhD

Background: Fertility preferences and intentions as concepts and measured constructs have no single definition within the literature; debates around the measurement and merits of preferences, intentions, and desires are prevalent.

Data and Methods: Data for women and men from the most recent Demographic and Health Survey in 38 countries are used to explore contradictions in responses to questions regarding a respondent's fertility preferences. The national-level prevalence of contradictory responses is estimated and meta-analytic techniques are used to provide summary measures.

Results: On average across the 38 countries, nearly 15% of women and more than 17% of men across the 38 countries provided contradictory responses to the fertility preferences questions in the DHS. There is significant variation in the prevalence estimates within sex and within type of mismatch classification, ranging from a low of less than 1% of women in Albania to a high of 29.8% of men in Armenia. The prevalence of contradictory responses was generally uniformly higher among men than women.

Conclusions: These results highlight the need for further exploration into the meaning behind contradictory responses to questions that aim to capture and measure fertility preferences in order to be able to tell a more complete story. This challenges researchers to think through and be mindful of the implications of the various measurements of the multiple dimensions of fertility preferences and urges them to investigate what mismatches within their data like those found in this analysis may mean.

¹ Johns Hopkins University Bloomberg School of Public Health Baltimore, MD
Amanda Kalamar is a Doctoral Candidate and Michelle Hindin is a Professor in the Department of Population, Family, and Reproductive Health

Background

Fertility preferences as a concept and measured construct has no single definition within the literature and debates between the measurement of and the merits between preferences, intentions, and desires are prevalent (Casterline & El-Zeini 2007; Yeatman et al 2013; Bankole & Westoff 1998). Often when preferences and intentions are treated as distinct concepts, or at least measured as such, ideal family size and desire for another child are used, respectively. Roy et al (2008) find that while these concepts are related and predictive of future fertility, the two are not identical and might be differentially affected by various factors such as sex ratios, sex composition, economic constraints, and child mortality (Roy et al 2008). Ryder & Westoff (1971) conclude that fertility preferences are the most direct attitudinal measure and thus the most fundamental measure. Yet, they argue, preferences are still subjectively measured and that assessments of constraints to reproduction (biological, social, economic) are often reflected in survey measures, hindering the ability of researchers to capture “true” fertility preferences (Ryder & Westoff 1971).

Since each of these concepts can be conceptualized and measured with reference to number of lifetime children or to more immediate births (e.g. having another child) (Casterline & El-Zeini 2007), it becomes difficult to obtain comparable estimates across time. Much of the existing literature assumes that and treats fertility preferences as constant. Sennott & Yeatman (2012) use longitudinal data from young women in Malawi and find that preferences are not uniformly stable over time but that 75% of the women in the study did have stability in their stated preferences. Moreover, the study finds that preferences are more stable at older ages - older ages in this particular study are women in their mid to late 20s - and the changes in older ages that do occur are more predictable, since a woman’s reproductive future is less uncertain as she ages. Importantly, though, the authors find that fertility preferences start to stabilize, or fluctuate in predictable ways, rather early on in the reproductive lifespan of these women. Thus, fertility preferences remain an important concept to measure and that, because preferences may be somewhat fluid, mismatches between preferences and completed fertility are to be expected (Sennott & Yeatman 2012; Yeatman et al 2013). Roy et al (2008) undertake a similar study using longitudinal data from India and find that responses to fertility preferences questions were largely consistent over time and that sex preference in this context was the biggest influence in

changes over time (Roy et al 2008). Finally, Bankole and Westoff (1998) capitalize upon the Demographic and Healthy Surveys panel survey in Morocco in the 1990s to explore the consistency of answers to the set of fertility preferences contained within the questionnaire. They find that over time reproductive intentions is the most stable measure while ideal number of children was less stable over time, though exhibited greater stability in the aggregate than at an individual level. Further, they conclude that both measures contain varying degrees of measurement error.

Van Peer (2002) notes that when conceptualizing or studying fertility it is important to think about three distinct, yet related, dimensions of fertility: ideal family size, desired family size, and achieved family size. Ideal family size is driven by societal normative preferences while desired family size captures individual or personal normative preferences. Each of these dimensions has both similar and different influences and, as Van Peer argues it, for individuals the three are often not equivalent. That's to say that ideal family size is not the same as desired family size and both are not the same as achieved fertility. Inherent in the theory van Peer puts forth is the call for a better understanding as well as measurement of each of these dimensions.

Indeed Van Peer argues for an ordering of these concepts such that ideal family size is greater than desired family size which in turn is greater than achieved family size; thus, realized fertility results in fewer than the ideal number of children. This ordering posited by Van Peer fails to consider situations in which the achieved family size is larger than either of the two other concepts, a scenario that is quite plausible in environments where controlling or limiting one's fertility is challenging, where societal and/or familial pressures exist to have a large family, or where polygamy or divorce is common and men father children with more than one woman. Mott and Mott (1985) postulate that intentions (and to a large degree they intermingle the concepts of intentions and preferences and reference them interchangeably) are normatively bound, formed individually, and not necessarily related to their partner's intentions or preferences. Using this framework and data from Nigeria, they find that the intentions and preferences of women were lower than their husbands' and husbands were able to prospectively rectify this imbalance through polygyny (Mott and Mott 1985).

The research is mixed as to whether there are gender differentials in fertility preferences (Snow et al 2013; Mason & Taj 1987; Bankole 1995; Derose et al 2002) and further mixed even among those who conclude that gender differentials are present between those that find that men nearly uniformly have preferences for larger families and those that find that women have preferences for larger families in settings where women are quite powerless (Eberstadt 1981; Cain et al 1979). Further, much of the focus remains on power dynamics and negotiations within the couple and how any differences are resolved, either through compromise or dominance by one partner (Gipson & Hindin 2007; Snow et al 2013; Isiugo-Abanihe 1994; Derose et al 2002; Voas 2003). Men's preferences are given limited attention; much of the research around fertility preferences has centered on women and when the male perspective is included it is both usually the exception rather than the norm and very often still embedded within women-centered approaches to this kind of research (Doodoo et al 2008). Bankole and Singh (1998) explore fertility preferences and contraceptive decision-making in an article in part titled "Hearing the Man's Voice". However, their main fertility preference outcome is the difference in stated ideal number of children between a man and woman within a couple. It is important to note that when focusing on men solely in relation to their partners, the ability to determine men's true preferences, and how they may achieve these preferences (potentially outside a given partner/relationship), limits our understanding of fertility, particularly in places where polygyny is acceptable.

One of the most ubiquitous and widely accepted measurement tools, the Demographic and Health Surveys (DHS) collects demographic and health information in over 90 countries and includes a specific set of questions in each questionnaire under the heading "Fertility Preferences" (DHS Program). It is these questions that many researchers utilize in an attempt to understand the many dimensions of fertility preferences among both women and men in these countries. However, given the demonstrated complexity of the concept and the many ways it can and has been measured, it remains unclear whether the set of questions included within a country's DHS is capturing 'true' fertility preferences and whether intentions falls under the umbrella of preferences or whether the two are distinct concepts. While an endeavor in qualitative data collection may be a way for researchers to begin to answer these questions, it is also worthwhile to explore the data within already completed DHSs to uncover any

contradictions or mismatches in the measurement of these concepts. Shedding light on these mismatches will help researchers to better understand the data within a DHS and its shortcomings as well as guide future exploration and research to fill this gap in understanding and measurement.

Data and Methods

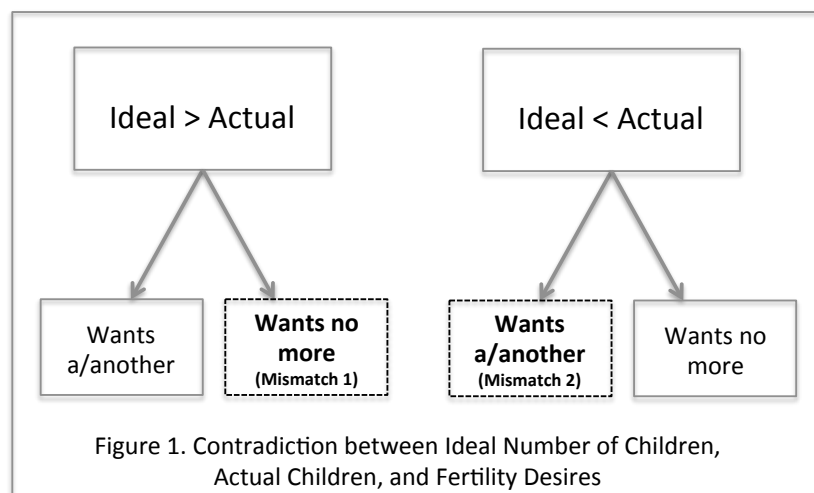
Data come from the most recent Demographic and Health Survey in 38 countries in which 1) a survey was conducted in 2008 or later 2) a woman's questionnaire and a man's questionnaire was administered during that round and 3) all relevant variables were asked of both the women and men. Of the 54 countries that have administered a survey since 2008, three countries were excluded because one or more focal variables were not asked during that round, five countries were excluded because the data was not available for public access and eight countries were excluded because the man's questionnaire was not administered during that round. The remaining 38 countries represent a wide variation of both regions in the world as well as in fertility indicators; total fertility rate (TFR) in these countries ranges from a low of 1.6 (Albania) to a high of 7.6 (Niger) and the modern contraceptive prevalence rate (mCPR) ranges from 4.6% in Guinea to 63.8% in Honduras.

Each DHS questionnaire administered to both women and men contains a "Fertility Preferences" section, with approximately 5-15 questions, depending on the country and sex of the respondent. To assess the concept of ideal family size, the DHS asks "If you could go back to the time 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?" of all women that have living children and "If you could choose exactly the number of children to have in your whole life, how many would that be?" of all women who have no living children. Desire for a/another child is ascertained by asking her if she would like a/another child or if she would prefer to have any (more) children. Lastly, DHS collects information about the total number of living children a woman has. For this analysis, total number of living children includes the current pregnancy for all currently pregnant women.

Data used in this analysis are taken from all women ages 15-49 and all men ages 15-64 (age ranges for men vary across surveys) who were not undecided about their desire, or lack thereof,

for a/another child; in other words, those that provided a definitive answer to wanting or not wanting another child and who provided a numeric answer for ideal number of children.

A mismatch, used neutrally in this analysis to describe a situation that is neither negative nor positive but one that warrants further exploration and investigation, is defined in two ways: (1) a woman who says her ideal number of children is greater than the number of children she currently has but she states that she wants no more children or (2) a woman who says her ideal number of children is fewer than the number of children she currently has but she states that she wants another child. Figure 1 illustrates the two possible contradictions in responses. On the left hand side, a respondent's ideal number of children is greater than his/her actual number of children. Of these respondents who fall into this category, they can then either respond that they want another child, consistent with the notion that a respondent will have children until he or she achieves their stated ideal number of children, or they can indicate that they do not want another child. It is this latter category of responses that will be classified as Mismatch 1 for this analysis. On the right hand side of the figure, a respondent has more children than their stated ideal number of children; some of these respondents then state that they want no more children, consistent with the notion that one would not have more children than they think is ideal to have, while others state that they want another child. It is this latter category of contradictory responses that will be classified as Mismatch 2.



For seven countries (Ethiopia, Kenya, Liberia, Madagascar, Niger, Pakistan, and Uganda), “up to God” or “God’s will” is an explicit response category in response to ideal number of children. In these cases, respondents who provided this response were classified as having an ideal number greater than their actual number and a mismatch was declared when the respondent said they wanted no more children. In all remaining surveys “non-numeric response” is a response option. It is likely that many of those non-numeric responses are “up to God” or some version thereof, however it is impossible to disentangle those responses from any number of other non-numeric responses grouped into this response category. Therefore all “non-numeric” responses were dropped from this analysis.

The country-level prevalence of each type of mismatch was estimated, accounting for the complex survey design, for women and men separately. Meta-analytic techniques were used to provide a summary prevalence estimate for both types of mismatch, stratified by sex. Because of the heterogeneity in prevalence across the 38 countries, a random effects model was used and the predictive interval, rather than a confidence interval, was estimated (Harris et al 2008). The predictive interval, or the interval in which future observations are likely to fall, is the preferred estimate when significant heterogeneity is present as it better accounts for the uncertainty in the mean estimate where variability exists (Smith 2012; Harris et al 2008).

Results

Figure 2 shows the estimated national prevalence of mismatch 1, in which the respondent’s ideal number of children is greater than his/her actual number of children but the respondent does not want another child, for each of the 38 countries, stratified by sex, and a summary prevalence estimate from the meta-analysis. For both women and men, there is a fair amount of variability in the prevalence estimates. On average across all 38 countries, the prevalence of this mismatch is 11.7% of female respondents and 12.1% of male respondents. Among women, Nepal exhibits the least amount of mismatch at 4.75% while the greatest prevalence among women is found in Lesotho where more than 1 in 4 women say they want no more children even though they have fewer children than they respond is ideal. Among men, the prevalence ranges from a low of 2.29% in Niger to 29.75% in Armenia.

Figure 2. Prevalence of Mismatch 1: Ideal > Actual but Wants No More Children

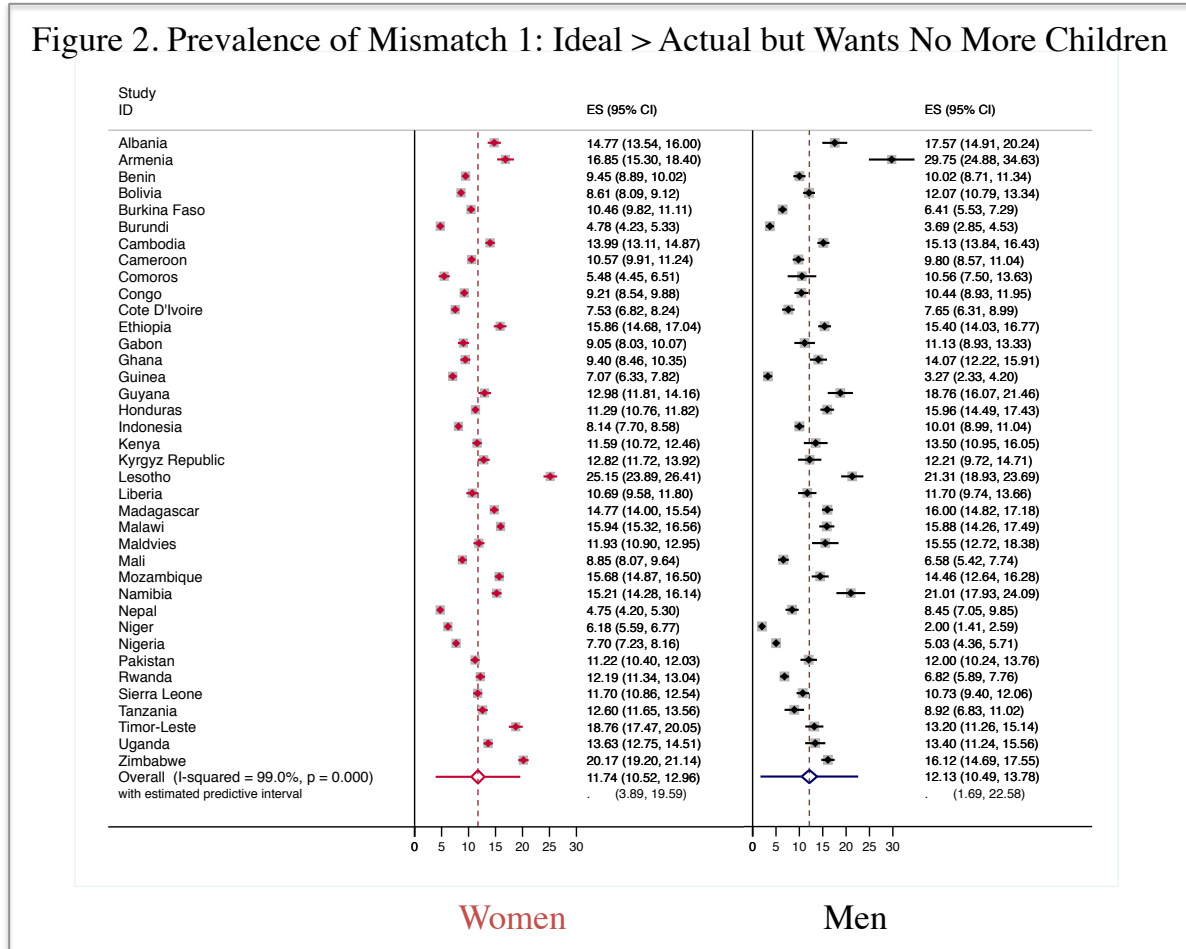


Figure 3 plots the prevalence of mismatch 1 for women and men to examine whether patterns in both types of mismatch are similar by sex. The size of each bubble is proportional to the standard error of the country prevalence estimate. In general, the mismatch tracks similarly for women and men at a national level comparison; as the prevalence of the mismatch increases among women, it increases among men as well. There are a few notable outliers: Lesotho, whose prevalence among women is nearly 4% greater than among men, and Armenia, where the prevalence among men is almost 13% higher than for women.

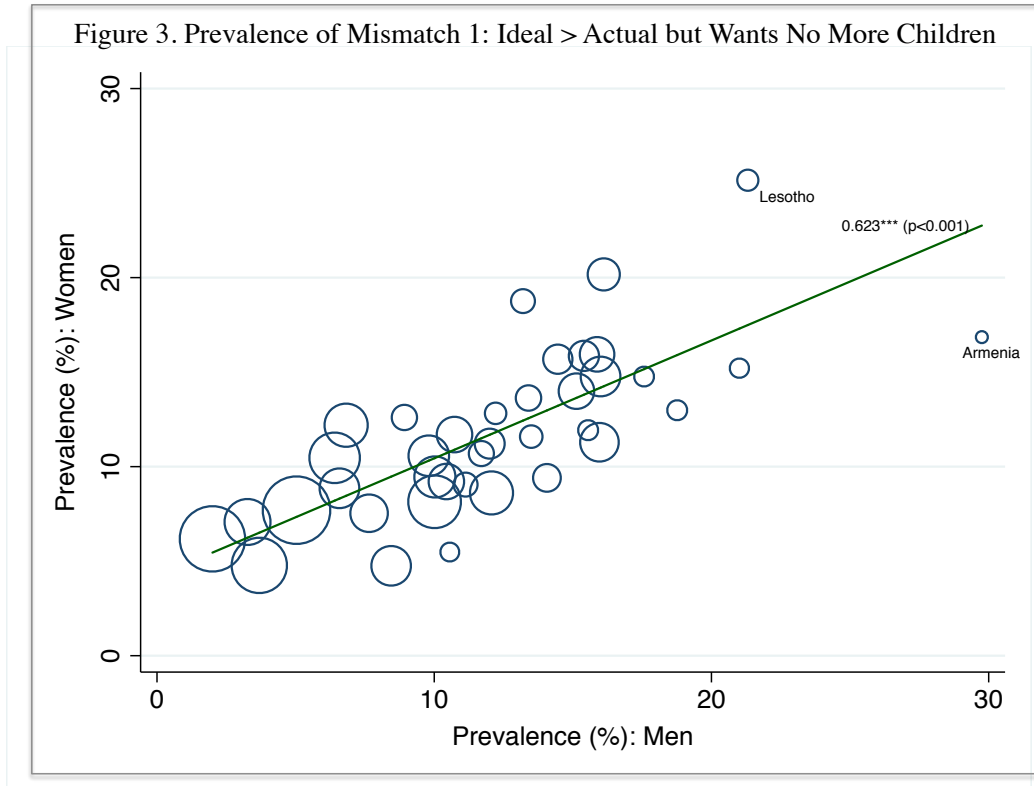


Figure 4 displays the country-level prevalence estimates stratified by sex for mismatch 2, in which respondents' actual family size is greater than their ideal family size but they report wanting another child. Again, there is variation across the 38 countries but the range of prevalence estimates is smaller here than the range seen for mismatch 1. The average prevalence estimate from the meta-analysis is 2.9% for women and 5.0% for men, making this mismatch more common among men than women. The range among women is 0.88% (Albania) to 6.78% (Comoros) while among men the lowest prevalence is found in the Kyrgyz Republic (1.40%) and the highest in Burundi (10.39%).

Figure 4. Prevalence of Mismatch 2: Ideal < Actual but Wants Another Child

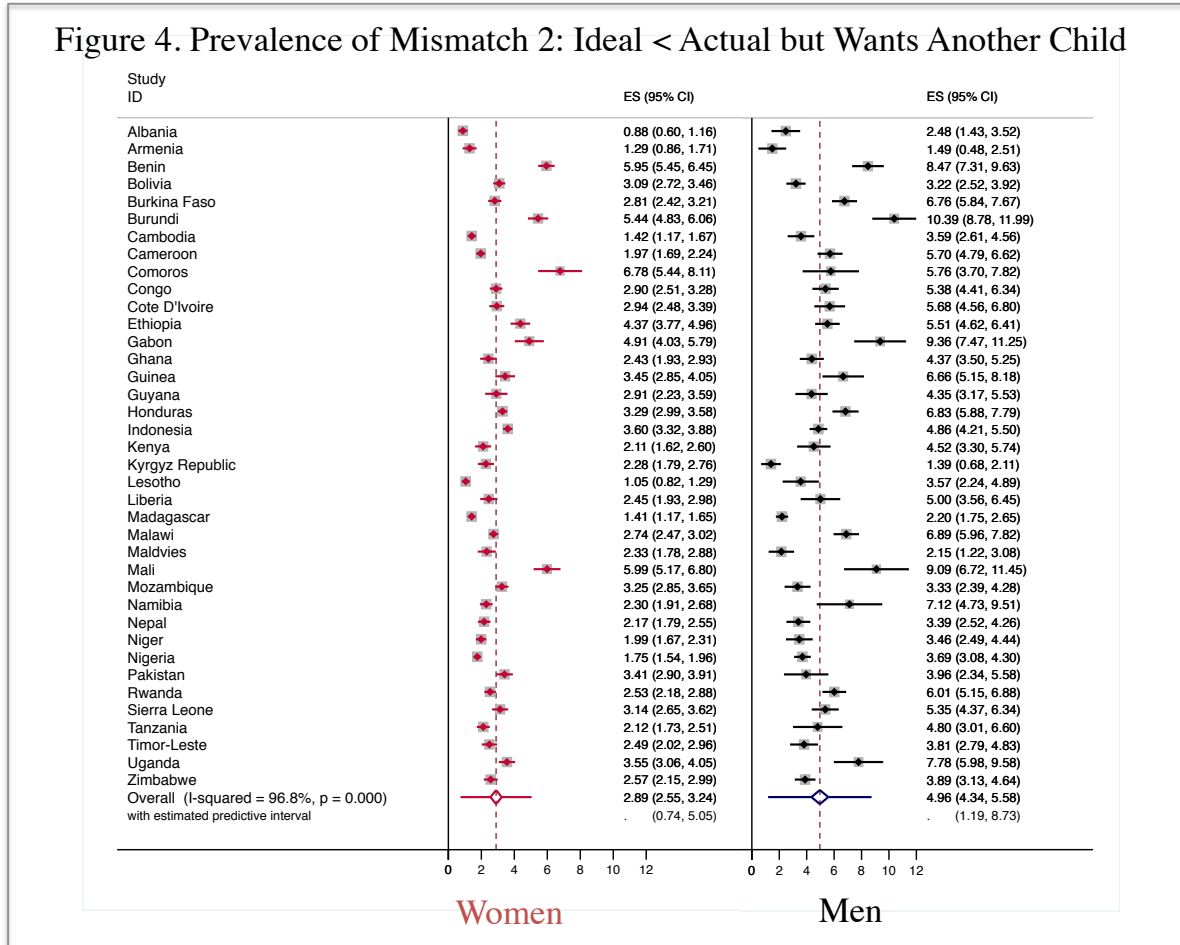
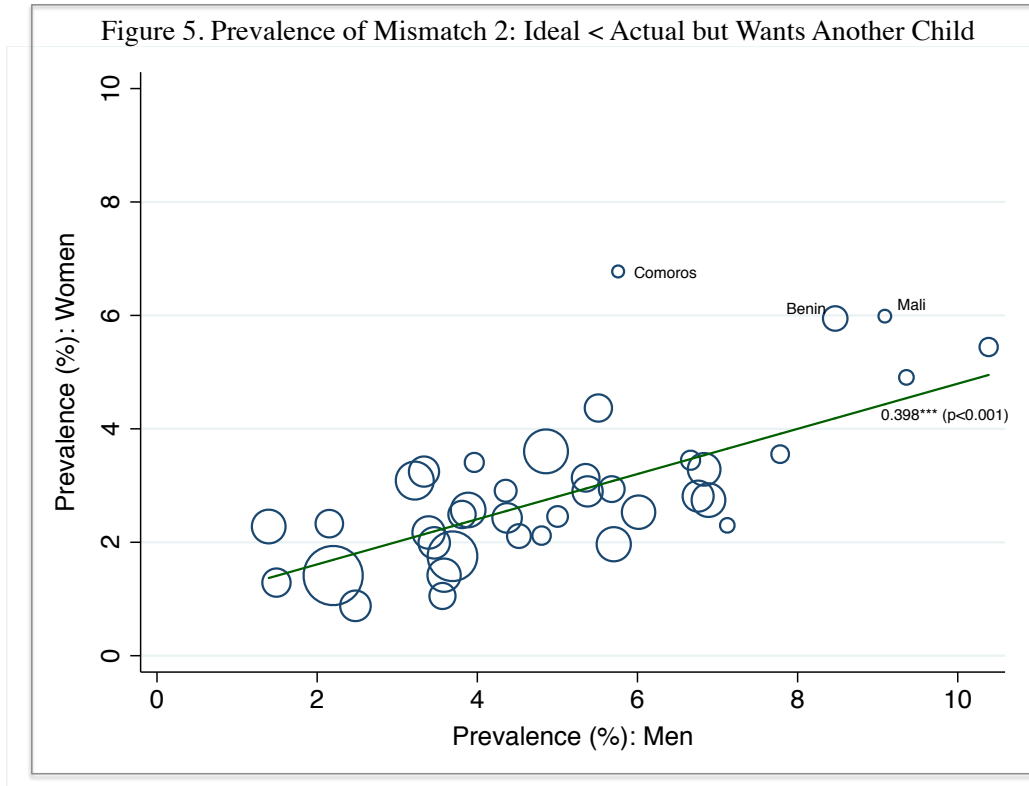


Figure 5 looks at the relationship of the mismatch between women and men to see whether the relationship follows a similar pattern between the two sexes. There is a positive relationship between men and women; that is, as the prevalence of the mismatch increases among men it also increases among women. While statistically significant, this positive relationship between men and women is weaker than the positive association seen in mismatch 1. Comoros, Benin, and Mali stand out as outliers from the general trend, with the mismatch among women higher than the mismatch among men in each.



Discussion and Conclusions

Both types of mismatches taken together, on average nearly 15% of women and more than 17% of men across the 38 countries provided answers that warrant further exploration as to the meaning and measurement of fertility preferences. It is important to note that, while for the majority of respondents in each of these surveys we do not find contradictory responses, the cross-sectional nature of these surveys provides only a snapshot in time of intentions (wanting another child) and that some of these respondents may classify as mismatched at another point in time. Thus, while the need to further explore the meaning and refine the measurement of fertility preferences is highlighted by the prevalence of these mismatches in DHS data, the need to do so is by no means exclusive to the subset of women and men classified as mismatched in this analysis.

For both women and men, mismatch 1, that is women or men whose ideal number of children is greater than their actual number of children but who want no more children, is more prevalent than the mismatch in which a respondent's ideal number of children is less than their actual

number but who want more children. The first type of mismatch may not be problematic and it may be that women decide that it is not possible to have their ideal number of children within their economic and/or social constraints. The DHS, however, does not follow up with questions to ascertain reasons for not wanting another child; rather these questions are asked in the context of contraceptive use. Thus it is unclear whether some of the mismatch results from measurement error or, importantly, what information “ideal family size” is conveying or how the respondent is internalizing the question. Mismatch 2, in which women or men are stating that they would like more children than they think is ideal, points quite directly to a need for understanding and further refinement of both the ideal family size concept as a dimension of fertility preferences as well as desire for another child as a measurement of intentions, and particularly the two together in capturing and reflecting an umbrella concept of fertility preferences.

The same general pattern for both types of mismatches exist for both women and men but several outliers suggest that further exploration of the contradictions in responses may reveal both commonalities and differences in ways that men and women form, internalize, and externalize their own fertility preferences. The higher prevalence of both types of mismatches found among men may also be indicative of sex differentials in the formation, expression, and measurement of fertility preferences.

Previous literature and research has demonstrated the complexity of fertility preferences as a concept and measured construct. Given this complexity, it is likely that the way in which we are measure the multiple dimensions of fertility preferences may not be capturing ‘true’ fertility preferences and may lead to contradictions within the data. Indeed within the most recent DHS in 38 countries exists varying degrees of contradictions or mismatches within the data, with more than 1 in 4 women in Lesotho and nearly 1 in 3 men in Armenia providing answers that warrant further exploration into the meaning behind the mismatch in order to be able to tell a more complete story about fertility preferences. This challenges researchers to think through and be mindful of the implications of combining measurements of the multiple dimensions of fertility preferences to tell a story and to urge them to investigate what mismatches within their data like those found in this analysis may mean. Additionally, these findings highlight the continued need

for further exploration, both quantitative and qualitative, into what the fertility preference concept means in a given setting and among both women and men, as well as how best to capture and measure it. Delving further into the kinds of contradictory responses within the questions contained in the DHS found during this analysis, a next step is to explore what factors, either at an individual level or a national level, are associated with the mismatch to provide further quantitative insight into some of the underlying motivators driving these contradictions in responses.

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