

# How Well Do Desired Fertility Measures for Wives and Husbands Predict Subsequent Fertility? Evidence from Malaysia

*If there is disagreement between spouses,  
the husband's preferences appear to play a stronger role  
in predicting the likelihood of a subsequent birth.*

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Data on fertility preferences are often used to help predict future fertility and the demand for contraception. The quality of fertility preference data is of prime importance when examining how well stated fertility preferences predict

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subsequent births and completed family size, and how well they predict fertility-related behaviour such as contraceptive use. Data on fertility preferences have also been used to construct measures of the unmet need for contraception and of unwanted fertility. The usefulness of these measures, which have been the basis for many studies and some programmatic efforts, depend on the underlying component (stated fertility preferences) being valid and reliable.

This paper examines responses to two fertility preference questions — regarding whether more children are wanted and desired total family size (compared with actual family size) — that were asked as part of the First Malaysian Family Life Survey (MFLS-1) fielded in 1976-1977, and then explores how well those preferences predict subsequent fertility, as reported in the Second Malaysian Family Life Survey (MFLS-2) fielded 12 years later, in 1988-1989. Because the MFLS-1 directly asked husbands as well as wives about their fertility preferences, the consistency between the woman's and her husband's responses could be examined, as well as the relationship of those responses (and the consistency between them) to fertility outcomes that occurred by 1988. The focus is primarily on whether 1977 preferences predict 1977-1988 fertility better when the two types of measures and the spouses' responses are consistent with each other and, if the responses are inconsistent, which of them better predicts subsequent fertility.

A number of studies, based on survey data from the United States of America and Asia, have examined whether a woman's subsequent fertility over a period of time is related to her stated fertility preferences, regarding whether she wants more children and whether her desired family size exceeds the number of children she has, at the beginning of the time period (Becker, 1996; Freedman, Hermalin and Chang, 1975; Coombs and Chang, 1981; Westoff and Ryder, 1977; Hermalin and others, 1979; Foreit and Suh, 1980; Nair and Chow, 1980; Clifford, Lake and Brannon, 1987; Thomson, McDonald and Bumpass, 1990; De Silva, 1991; Tan and Tey, 1994). These studies, which consider a time span of three to seven years, generally find that the wife's subsequent fertility is related to her fertility preferences. Some of these studies also had information on the husband's fertility preferences (Coombs and Chang, 1981; Clifford, Lake and Brannon, 1987; Thomson, McDonald and Bumpass, 1990; De Silva, 1991; Tan and Tey, 1994) and find that they also play a role in predicting subsequent fertility.

Few studies have been able to examine the predictive power of both types of measures (wanting more children and desired family size), for both spouses, over a period of time long enough that, by its end, most women have completed (or believe they have completed) childbearing or at least are likely to be making substantial progress towards that goal. The 12-year period between the First and Second Malaysian Family Life Surveys provides an opportunity to evaluate how well preferences at the beginning of a period, for women alone and in combination with those of their spouses, relate to fertility observed over a longer period of time. In addition, the detailed life histories collected in MFLS-2 allow analysis of how events during the period between the surveys, such as change in marital status, death of a child, and migration to a new area, affect the relationship between fertility preferences and subsequent fertility outcomes.

## Data and methods

### Data: The Malaysian Family Life Surveys (MFLS-1 and MFLS-2)

The First Malaysian Family Life Survey (MFLS-1) was conducted in three rounds in 1976-1977 in households in Peninsular Malaysia that each contained an ever-married woman age 50 or younger.<sup>1</sup> As part of the second round of MFLS-1, fielded between January and April 1977, women and their husbands were asked about their fertility preferences as part of the Female and Male Attitudes and Expectations questionnaires (MF7 and MF8). The MFLS-1 data used in this paper are drawn from the second round of MFLS-1, in which 1,216 households responded.

The Second Malaysian Family Life Survey (MFLS-2) was fielded in 1988.<sup>2</sup> As part of MFLS-2, MFLS-1 respondents were sought and 866 of the 1,216 MFLS-1 Round 2 female respondents were reinterviewed. These reinterviewed (or "Panel") women represent 72 per cent of MFLS-1 Round 2 respondents thought to be still alive and living in Peninsular Malaysia in 1988.<sup>3</sup> Complete pregnancy histories, beginning with their first pregnancy until the time of the MFLS-2 interview, were collected on the Panel women. In this paper, the live births occurring during the period between MFLS-1 and MFLS-2 (1977-1988) are related to the fertility preferences reported in Round 2 of MFLS-1 in 1977.

### Fertility preference measures

The authors consider the two alternative measures of fertility preferences: more children are wanted and desired family size exceeds actual family size.

#### *First measure: Wants more children*

To determine whether the respondent wanted to have any additional children, all MFLS-1 female and male respondents (regardless of current marital status) were asked:

*Would you personally like to have any more children than the number you have now?*

The question was worded and emphasis given to try to capture the respondent's own preferences as opposed to what she/he thought others might want her/him to say. Although there is no reason to believe that responses to the question "Would you like to have any more children" are biased because people systematically under- or over-report, Bongaarts (1990) notes that some error may arise if respondents think the question relates to immediate plans versus ultimate goals (i.e., the woman thinks the question asks if she wants another child in the next year or two or three, as opposed to by the end of her childbearing years).

#### *Second measure: Desired family size exceeds actual family size*

To determine desired total family size, the MFLS-1 asked both male and female respondents:

*Suppose you started your married life all over again and you could decide what children to have. How many children would you want?*  
**PROMPT:** *How many boys? How many girls?*

Desired family size is the sum of the number of boys and girls reported in response to these questions.<sup>4</sup> In the analyses, the total was compared with the respondent's current family size, which is defined as the number of the respondent's own children alive at the time of Round 2 (the first quarter of 1977). Respondents whose desired family size exceeds their current family size are said to "desire more children than they have"; those whose desired family size is the same or less than the current family size are said to "not desire more children than they have".

The quality of this measure as an indicator of fertility preferences depends partly on whether responses about desired family size are exact or whether they instead represent a central tendency in some acceptable range of alternative responses (Freedman and Takeshita, 1969). For example, a woman may feel that three to five children is an acceptable family size, and she may be relatively indifferent as to which number she ultimately has within that range. Which number she reports may be a function of how she feels that day as opposed to it being the most desirable number.

### **Samples and methods used in the analyses**

The sample for the analyses consists of 650 MFLS-1 female respondents who were reinterviewed in 1988 for MFLS-2 and who at the Round 2 MFLS-1 interview in 1977 were currently married and reported that they were able to have children, did not report that they were pregnant<sup>5</sup> and answered the fertility preferences questions. When husbands are considered, the authors further restrict the sample to the 83 per cent of the women whose husbands answered the fertility preference questions in MFLS-1.

Of the 650 women considered by 1988 (i.e., when MFLS-2 was fielded) 269 had completed their childbearing years either through menopause (232) or sterilization (37) and another 289 reported in 1988 they wanted no more children. Thus a large majority of the women (86 per cent) in the sample considered here viewed themselves as finished with childbearing by 1988. This leaves only 92 women who could still bear children and who said they wanted more as of 1988; of those women, only 15 are potentially censored since they wanted more children in 1977 but had not had any additional children by 1988.

Bivariate analyses were first conducted to assess how the two measures "want more children" and "desire more children than have" relate to subsequent fertility at the aggregate level. Next, individual-level data were used to investigate how well our two measures of fertility preferences in 1977, and the consistency between them and between husbands and wives, predict subsequent childbearing over the 12-year period between MFLS-1 and MFLS-2. We also look at survival curves to see how these various measures of preferences are related to the timing of the next birth (if any). Multivariate analyses were then conducted to investigate the

factors that affect whether a woman meets her stated preference for having or not having more children.

### Bivariate analyses

Currently married women and their husbands were first considered separately. This is followed by analyses of the joint responses of husbands and wives regarding preferences for more children.

#### *MFLS-1 currently married women*

##### **Aggregate-level comparisons**

Table 1 shows the percentage of MFLS-1 women with positive responses to each of the fertility preference measures and the percentage who had a subsequent live birth between 1977 and 1988 (i.e., between Round 2 of MFLS-1 and MFLS-2). In the aggregate, the percentage of women who had at least one live birth between 1977 and 1988 (44.5 per cent) is significantly greater than the percentage who in 1977 said that they wanted more children (38.9 per cent). Other studies from Asian countries (Hermalin and others, 1979; De Silva, 1991) using shorter time spans also found the percentage who subsequently have a live birth to be greater than the percentage of women who report wanting more children, while in the United States the reverse was found (Westoff and Ryder, 1977). Note that a lower percentage having a subsequent birth compared with the percentage saying that they want another child, as was found in the United States, is the expected case if women have not had sufficient time to meet their goal of having another child.<sup>6</sup> The present results suggest that, as Bongaarts (1990) noted, women may not have their whole reproductive histories in mind when answering whether they want more children.

Using the “desires more than have” measure, one observes that the percentage of women whose desired family size exceeds the number of children they now have (44.5 per cent) is the same as the percentage having a subsequent birth. However, as seen below, when one looks at which women were having births based on their responses to the “wants more children” and “desires more than have” questions, the former appears to be a better predictor of subsequent fertility.

**Table 1. Percentages of Malaysian women who reported in 1977 that they wanted more children, that they desired more children than they had, and percentage who had a live birth between 1977 and 1988 (N=650)**

Women who wanted more children	38.9
Women who desired more than have	44.5
Women who had a subsequent live birth	44.5

*Note:* Sample comprises reinterviewed MFLS-1 women who were currently married in 1977.

## Individual-level comparisons

Table 2 shows the percentage of women who had a live birth between 1977 and 1988 for each of these fertility preference measures (and their combination).<sup>7</sup> One notes that, contrary to the aggregate results above, the stated fertility preference of “wants more children” is the better predictor of a subsequent live birth than is the “desires more children than has” measure.<sup>8</sup>

**Table 2. Percentage of Malaysian women with a live birth between 1977 and 1988, by each of the woman’s fertility preference measures**

<b>“Desires more than has”</b>			
<b>“Wants more children”</b>	<b>Yes</b>	<b>No</b>	<b>Total</b>
Yes	69.0 (213)	57.5 (40)	67.2 (253)
No	36.8 (76)	28.3 (321)	30.0 (397)
Total	60.5 (289)	31.6 (361)	44.5 (650)

*Note:* Sample sizes for each cell are in parentheses. Sample comprises reinterviewed MFLS-1 women who were currently married in 1977.

Looking first at the marginals, 67.2 per cent of the women who said in 1977 that they wanted at least one more child had a live birth between 1977 and 1988 compared with 60.5 per cent of the women whose stated desired family size exceeded their actual family size in 1977. The “did not want more” group and the “did not desire more than they had” group each had nearly the same incidence of subsequent births — 30 per cent and 31.6 per cent, respectively (difference not statistically significant).<sup>9</sup>

## Consistency between preference measures and subsequent fertility

Looking at the body of table 2, one sees that the group of women who reported both wanting more children and desiring more children than they had had a slightly higher percentage of subsequent births than the overall group who reported wanting more children — 69 per cent vs. 67.2 per cent; this difference is not statistically significant. Likewise, the women with the strongest preferences for no more children (i.e., those who reported neither wanting any more children nor desiring more children than they currently had) had a slightly lower incidence of subsequent births (28.3 per cent) than either all those who “did not want more children” (30.0 per cent) or all those whose desired family size did not exceed the number of children they already had (31.6 per cent).

When a disagreement occurs, which happens for 18 per cent of the women,<sup>10</sup> the “wants more” measure appears to take precedence in predicting the incidence of a subsequent live birth. One can observe from table 2 that women who said they did not want any additional children but reported a desired family size greater than their current one were much less likely ( $p = 0.02$ ) to have a subsequent birth (36.8 per cent) than women whose 1977 family size met or exceeded their desired family size but who said they wanted more children (57.5 per cent). Overall, then, women who were inconsistent in their responses to the two measures were less likely to have a subsequent birth than those who were consistent in both wanting more children and desiring more children than they had. However, women with inconsistent responses were still more likely to have a subsequent birth than women who were consistent in not wanting more children and desiring no more children than they currently had. In addition, one does not find any statistically significant differences in the probability of a birth during the 1977-1988 period between those desiring more children than they have and those not desiring more than they have for a given response to “wants more children.” However, the probability of a subsequent birth differs significantly between the two “wants more children” responses, both among those who desired more than they had and among those who did not desire more than they had.

The longitudinal data from Taiwan Province of China used by Hermalin and others (1979) also considered both types of fertility preference measures. They, too, found somewhat better predictive power when using the “wants more children” measure compared with the “desires more than have” measure. The pattern seen in the data from Taiwan Province of China is even stronger than that seen in the Malaysian data; Hermalin and others found no additional effect of the “desires more than have” measure on the percentage with a subsequent birth for women who reported wanting no more children.

#### *Agreement between husbands and wives*

Because of the relatively stronger relationship for both women and men of subsequent fertility outcomes with “wants more children” than with “desires more than has,” the authors use the former measure in the rest of the analyses. Table 3 shows the percentage of couples with a subsequent live birth between 1977 and 1988 for the four combinations of wives’ and husbands’ 1977 responses to whether they wanted more children. From the marginals, one can see that the overall percentages are very similar for wives and husbands: 68 per cent of the women who said in 1977 that they wanted more children had at least one more child by 1988 compared with 69.6 per cent for the women with husbands who wanted more children; this difference is not statistically different.

The predictive power is highest when the husband and wife agreed on whether they want more children. A higher incidence of a subsequent birth is seen for couples where the spouses agreed on wanting more children (71.2 per cent) than when only one of the spouses wanted more children (64.9 per cent when only the husband wanted more and 57.1 per cent when only the wife wanted more) or when only one spouse’s preferences were considered (69.6 per cent for husbands

and 68.0 per cent for wives).<sup>11</sup> Table 3 also shows that when both spouses reported that they did not want any additional children, the incidence of a subsequent live birth is much lower (23.1 per cent) than if only one spouse's answer is considered (30.5 per cent for wives and 28.4 per cent for husbands).

**Table 3. Percentage of Malaysian women with a live birth between 1977 and 1988, by wife's and husband's responses to whether they wanted more children**

Husband wants more children			
"Wants more children"	Yes	No	Total
Yes	71.2 (170)	57.1 (49)	68.0 (219)
No	64.9 (57)	23.1 (268)	30.5 (325)
Total	69.6 (227)	28.4 (317)	45.6 (544)

*Note:* Sample sizes for each cell are in parentheses. Sample comprises MFLS-1 women currently married in 1977 who were reinterviewed in 1988 and whose husbands answered the MFLS-1 questions about whether they wanted more children.

When the spouses' preferences are considered together, it appears that the husband's preferences exert a slightly greater influence. Most notably, among women who said they did not want more children but whose husbands did want more children, 64.9 per cent had a subsequent birth – very nearly the same percentage as among all women who said that they wanted more children. In addition, the percentage with a subsequent birth for couples where both wanted more children (71.2 per cent) is not statistically different from those where only the husband wanted more children (64.9 per cent). Also noteworthy is that if either spouse wanted more children, the couple was likely to have another child; the percentage with another birth is over 50 per cent in all combinations where at least one spouse wanted another child. When either spouse wanted more children, that preference seems to have dominated the other spouse's preference for no more children.<sup>12</sup>

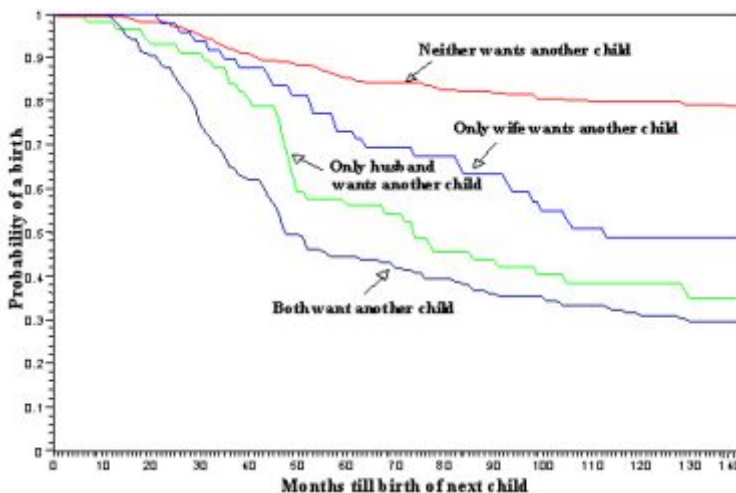
#### *Relationship between preferences and the timing of the next birth*

Another way of looking at how well preferences relate to subsequent births is to see whether the timing of the next birth is affected. Figure 1 presents the survival curves showing the duration of time from the last live birth before the MFLS-1 interview to the next live birth or the time of the MFLS-2 interview, i.e., both open and closed intervals are included. The curves do indeed vary by fertility preferences. Couples wherein both spouses wanted another child had a subsequent child sooner than couples that disagreed on preferences and they did so much



sooner than when neither spouse wanted another child. Half the couples where both spouses wanted another child had a child within the first 48 months (median time) after their last birth before the 1977 interview, while 76 per cent of the couples where neither spouse wanted another child had not had a subsequent birth by the end of 1988. For spousal disagreements, it is to be noted that the husband's preferences appear to carry more weight in the timing of that next birth. When the husband was the only one who wanted more children, the median time to the next birth is shorter (73.5 months) than when only the wife wanted another child (112.5 months).<sup>13</sup> A formal multivariate analysis of the timing of births would be needed to see if that relationship persists when other factors are controlled; however, this is beyond the scope of the current study.

**Figure 1. Months to next live birth from last live birth before the MFLS-1 Round 2 interview, by whether husband and/or wife wanted more children**



*Note:* Sample comprises MFLS-1 women currently married in 1977 who were reinterviewed in 1988 whose husbands completed the MFLS-1 fertility preference questions. Survival curves were produced by SAS® PROC LIFETEST. For the group where neither spouse wanted another child, 76 per cent of the intervals were open (i.e., censored).

### Multivariate analyses

In this section, the authors examine what affects fertility outcomes, given a stated preference for more children or for no more children. The dependent variable is an indicator for whether the woman had a live birth between 1977 and 1988, and estimation is by logistic regression. The analysis utilizes the entire sample of 650 women who were currently married, able to have children and not pregnant in 1977, and were reinterviewed in 1988. The analysis splits the data into two separate subsamples based on the woman's response regarding whether she

wanted more children. This allows the effects of all of the explanatory variables to differ between women who wanted more children and those who did not.<sup>14</sup>

### **Independent variables for multivariate analysis**

The multivariate analysis controls for various characteristics that may have affected a woman's ability to bear children owing to natural forces or to behaviour. The probability of having a child generally decreases with a woman's age beyond the late teens, owing to growing infecundity and less frequent sexual activity; likewise women married to older men tend to have lower fertility. The number of living children, controlling for the woman's age, may reflect some measure of the woman's fecundity (in that she has a higher probability of conceiving and thus a greater potential for more births in her reproductive period) in addition to preferences for more children or to poor use of contraception. Women with higher education may be better able to control family size because they tend to be more effective users of contraception (Mamlouk, 1982; Rodriguez, 1979). Similarly, the higher the education of the husband, the more receptive he may be to effective contraceptive use. The husband's educational attainment, as a proxy for income, may also reflect the ability to afford more effective contraceptive methods. To control for these factors, the regressions control for woman's age and years of schooling in 1977, her spouse's age and education in 1977 and the number of living children in that year.<sup>15</sup>

In Malaysia, fertility rates vary by ethnicity. During the period of study, 1977 to 1988, Malays had higher fertility rates than Chinese and Indians, and Malay fertility rates did not fall while those for Chinese and Indians did.<sup>16</sup> Because of the small sample of Indians and because both Chinese and Indians have lower fertility than Malays, a single indicator for "Chinese or Indian" was used.

The gender composition of current children affects the likelihood of wanting additional children, and it may affect the strength of intentions (Cleland and others, 1983). If a woman says she wants more children, but has already achieved her desired number of sons and daughters, she may not be as active in trying to have more children. The authors include in the specification an indicator for whether by 1977 the woman had at least the number of sons and the number of daughters she desired.<sup>17</sup>

The authors also consider how life events over the subsequent 12-year period – marital status changes, child deaths, residence changes, early menopause – affect the predictive power of fertility preference measures by changing, perhaps in unexpected ways, the environment in which the fertility intentions were originally formed. Dichotomous indicators were included for whether the woman became divorced or widowed between 1977 and 1988, whether a child living at the time of the 1977 interview had died by the time of the MFLS-2 interview, whether the woman resided in an urban area in both 1977 and 1988, whether the woman resided in a rural area in 1977 but in an urban area by 1988, and whether the woman experienced menopause at or before age 45.<sup>18</sup>

**Table 4. Means of regression variables for women who wanted children in 1977 and for those who wanted no more children**

Variable description	Wanted more children	Did not want more children	Means significantly different
Had a live birth 1977-1988	0.67	0.30	***
<b>Status in 1977 (Round 2 of MFLS-1)</b>			
Woman's age	29.9	37.5	***
Husband's age	35.5	43.5	***
Woman's years of schooling	4.3	2.6	***
Husband's years of schooling	5.7	4.8	***
Chinese or Indian (D)	0.26	0.52	***
Number of living children	2.54	5.60	***
Has desired number of both sons and daughters	0.07	0.63	***
Husband not present (D)	0.02	0.06	***
<b>Changes between 1977 and 1988</b>			
No longer married to 1977 spouse (D)	0.10	0.13	*
Child alive in 1977 later died (D)	0.04	0.08	**
Age at menopause <=45 (D)	0.06	0.08	-
In urban area in 1977 and 1988 (D)	0.23	0.28	-
Moved to an urban area by 1988 (D)	0.10	0.12	-
<b>Fertility preference measures: 1977</b>			
Husband wanted more children (D)	0.78	0.18	***
Husband provided no preference data (D)	0.12	0.13	-
Sample size	253	397	

*Note:* (D) : Dichotomous variable. Significance levels for two-tailed test of difference in means: \*\*\* p<0.01; \*\* p<0.05; \* p<0.10; - difference not significant at 10 per cent level.

The husband's desires for more children may also affect the woman's ability to follow through with her fertility preferences. An indicator for whether the husband reported wanting more children is thus included, as well as an indicator for cases where the husband did not complete the fertility preference questions.

Table 4 presents the means for the regression variables separately for women who in 1977 reported they wanted more children and for those who did not want more children. The last column in the table indicates whether these differences in the means between the two samples are statistically significant. The differences between the two samples illustrate the selected nature of each sample. Relative to women who said in MFLS-1 that they wanted more children, women who said in MFLS-1 that they did not want additional children were, on average, older, less educated (largely owing to their being older and hence having grown up when educational opportunities were very limited for Malaysian women), and were more likely to be Chinese or Indian. Further, they had older and less educated husbands who were much less likely to want more children and they were less

likely to be still married to their 1977 husband. Compared with those who said that they wanted more children, women who said in 1977 that they did not want more children had more than twice as many children by 1977, were far more likely to have achieved their desired numbers of sons and daughters by 1977, and also were more likely to have experienced a child death between 1977 and 1988 (probably because they had more children). All of the differences just mentioned are statistically significant at the 0.10 level or better. There are no significant differences between the two samples in early menopause and urban residence.

### **Results of the multivariate analysis**

Table 5 presents the results of the logistic regressions run separately on the “wanted more” and “didn’t want more” subsamples of women. The final column of the table shows the results of t-tests for whether the coefficient for a given variable differs significantly between the two subsamples.<sup>19</sup> The overall explanatory power is greater and more variables are significant in explaining who had a live birth between 1977 and 1988 for the sample of women who said in 1977 that they did not want any more children. Among women who wanted more children, it appears that very few of the factors considered here affect their likelihood of having another child. For both samples, the likelihood of having a live birth between 1977 and 1988 is largely affected by those characteristics that naturally limit childbearing, such as the increasing age of the woman and her husband, or the existence of a non-present spouse. As expected, older women and women with older husbands were less likely to have another birth, and these effects are statistically significant for both subsamples. The age effects do not differ significantly between the two samples.

Among women not wanting more children, more educated women have a lower likelihood of a subsequent birth and thus have less unwanted fertility; this effect is statistically significant and is significantly different from that in the “wanted more” subsample. This strong negative effect may reflect greater and more effective contraceptive use by educated women. It may also reflect the higher value of the time of educated women, which in turn raises the opportunity cost of an additional child (and the “costs” of an unintended child). A significant negative effect for woman’s education among women wanting no more children was also found by Westoff and Ryder (1977) for the United States and by Hermalin and others (1979) for Taiwan Province of China. A significant effect of husbands’ education for the group that did not want more children was not found in this study.

Among women who stated a preference for more children, it is to be noted that women’s education has no significant effect on the likelihood of a subsequent birth, but a significant negative effect of husband’s education level has been estimated for this subsample. It could be that educated men are more likely to change their minds about wanting more children in response to the increasing costs associated with having children as a result of economic development (e.g., they increase the level of schooling that they would like their children to receive) and that they are better able to achieve those new preferences through contraceptive

use. It is puzzling, however, that this is not seen for women as well, even when the husband's education is omitted from the specification.

**Table 5. Logistic regressions explaining whether a live birth occurred between 1977 and 1988, separately for women who wanted and who did not want another child in 1977**

Variable	Wanted more children	Did not want more children	Coefficient significantly different
<b>Status in 1977 (Round 2 of MFLS-1)</b>			
Woman's age	-0.219 ***	-0.259 ***	-
Husband's age	-0.078 **	-0.105 ***	-
Woman's years of schooling	0.087	-0.159 **	**
Husband's years of schooling	-0.132 **	-0.057	-
Number of living children	0.396 ***	0.230 ***	-
Has desired number of both sons and daughters	-1.165 *	-0.442	-
Chinese or Indian	-0.148	-1.360 ***	*
Husband not present	-4.445 ***	-3.913 ***	**
<b>Changes between 1977 and 1988</b>			
No longer married to 1977 spouse	-1.058 *	0.967	-
Child alive in 1977 later died	-0.955	1.458 ***	**
Age at menopause <=45	-1.139	0.382	-
Stayed in an urban area	-0.244	-0.641 *	-
Moved into an urban area	-0.287	-1.095 **	-
<b>Husband's preference in 1977</b>			
Husband wanted more children	-0.050	1.17 ***	**
<b>Intercept</b>	10.20 ***	12.98 ***	-
2 Log likelihood	131.5 ***	211.3 ***	
Sample size	253	397	

Note: Significance levels for two-tailed test: \*\*\* p<0.01; \*\* p<0.05; \* p<0.10; - not significantly different at 10 per cent level.

In both subsamples, women with a greater number of living children in 1977 were more likely to have a subsequent birth, suggesting that a large number of children (when the woman's age is controlled) may be an indicator of greater fecundity or a tendency to use little or no contraception. The coefficients estimated for number of children do not differ significantly between the two subsamples. Among women who wanted no more children, De Silva (1991) and Foreit and Suh (1980) also found positive effects of family size on the likelihood of a subsequent birth in data from Sri Lanka and the Republic of Korea, respectively. Other studies not using multivariate techniques have tended to find

that the percentage of women having a subsequent birth fell with parity, but the authors believe those results were largely picking up the effect of the woman's age – women who have had more children tend to be older – which is controlled in this study.

Women who said in 1977 that they wanted more children but had already achieved their desired numbers of both sons and daughters by then were less likely to have another child than those who had not yet achieved their desired gender composition. The gender-composition variable has no significant effect for the sample that did not want more children.

Among women who in 1977 expressed a preference for no more children, Chinese and Indian women were much less likely to have a subsequent birth; the ethnic difference is much larger in the “wants no more” subsample and is significantly different from that in the “wants more” subsample, which shows no significant ethnic difference. This is consistent with the continued higher level of fertility among Malay women as mentioned previously. It may reflect the greater response of Malay women to the New Population Policy (NPP) instituted in the period 1982-1984. As part of a programme to increase the size of the Malaysian population towards the goal of 70 million by the year 2100, NPP provides economic incentives to increase family size. Although the incentives apply regardless of ethnic origin, Malays have shown the greatest response to them (Govindasamy and DaVanzo, 1992). It appears from the present results that the policy may have led some Malays who said in 1977 that they did not want more children to change their minds.

Of women who wanted more children, those who were no longer married to the MFLS-1 husband were less likely ( $p < 0.10$ ) to have another child. This variable does not have a significant effect for women who did not want more children.<sup>20</sup> If the woman's 1977 spouse was not present in the household in 1977, the likelihood of an additional birth by 1988 is strongly reduced, although the effect is slightly smaller in absolute value in the “did not want more” subsample than in the “wants more” subsample (and the difference is statistically significant).<sup>21</sup>

The death of a child greatly increases the likelihood of another birth among women who said in 1977 that they did not want more children. The coefficient for this variable is significantly different from that in the “wanted more children” sample, where this variable does not have a significant effect. Whether this is truly child replacement cannot be determined here since the current specification does not restrict the timing of the child's death to the period before the next birth. Early menopause has no significant influence on the likelihood of a subsequent live birth for either sample.

Staying in or moving to an urban area by 1988 reduced the likelihood of a birth between 1977 and 1988 for both subsamples, but only significantly so for those who did not want more children. The coefficients do not differ significantly between the two subsamples. The lower likelihood of a subsequent birth for those in urban areas in 1988 may reflect the potentially higher cost of children in urban areas, which may reduce the number of children desired, and also the better access to contraceptive services in urban compared with rural areas.

Women who said in 1977 that they did not want more children were significantly more likely to have a birth by 1988 if in 1977 their husbands said they wanted more children. This is consistent with what was observed previously, in table 3, where women who did not want more children but whose husbands did want more were much more likely to have a subsequent live birth. Alternatively stated, couples where neither the husband nor the wife said they wanted another child were very unlikely to have another child. Among women who said they wanted more children, their husbands' preferences did not have a significant effect on the likelihood of a subsequent birth. The first row of table 3 suggested that husbands' preferences affect the fertility outcomes of women who wanted more children; indeed, when only the husband's "wants more" preference measure is included in the regression, the effect is positive and significant (at the  $p < 0.05$  level of significance). However, once the other covariates are added, husbands' preferences no longer play a significant role.

### Summary and conclusions

In comparing the two fertility preference measures – wants more children and desired family size exceeds current family size – one finds that, at the individual level, for both women and men, the "wants more" fertility preference measure is more strongly related to the incidence of a subsequent birth than the "desires more than has" measure, though, at the aggregate level, the latter is closer to the percentage of women who had a birth. For both measures, predictive power at the individual level is stronger for husbands than for wives. In addition, as found by Hermalin and others (1979), this study finds that individuals with consistent preferences (i.e., the person's "wants more" and "desires more than has" responses agree) are more likely to realize those preferences than those with inconsistent responses to those two preference measures. These results accord with Westoff and Ryder's (1977) finding that women who were more "certain" about their fertility intentions were more likely to fulfil those intentions.

The weaker performance of the "desires more than have" preference measure relative to the "wants more children" measure may reflect the fact that: (a) hypothetical questions may be more prone to respondent confusion and (b) reported desired family size may be drawn from a range of equally-valued family sizes. Education and culture may affect how well an individual processes a hypothetical question such as "if you could start over again, what would you do?" Indeed, women with more education had less disagreement between the two measures of fertility preferences (Peterson and Reichman, 1997). In the case of desired family size, if the woman has a range of family sizes over which she is indifferent that overlaps her current number of living children, then the resulting "desires more than have" indicator created by comparing current to desired family size may over- or understate the respondent's fertility preference depending on the degree of overlap.

The use of joint responses of wives and husbands to the “wants more” measure provides more information than when only the woman’s preferences are considered, and somewhat more information than when only the husband’s preferences are considered. Wives and husbands who are consistent with each other on the “wants more” measure (either both “yes” or both “no”) are more likely to achieve their preferences, more so than when each individual spouse’s preferences are considered in isolation. When couples disagree, it appears that the husbands’ preferences better predict subsequent fertility than the women’s preferences. It is important to note, however, that with regard to having more or not having more children, the majority of couples agree on their fertility goals: 80.5 per cent for the “wants more” measure and 82.1 per cent for the “desire more than has” measure (Peterson and Reichman, 1997).

Using multivariate analysis, it was found that the observed relationship between preferences and outcomes is not completely due to those wanting more children having characteristics that tend to lead to more births or to those not wanting more children having characteristics that lead to fewer births. The relationship between preferences and subsequent fertility remains when other variables are controlled.

Among women who say that they do not want to have another child, the characteristics that lead to a higher likelihood of “failure” (i.e., having another child despite the stated preference for not doing so) are similar to those that distinguish women with an unmet need for contraceptive services. Westoff and Pebley (1981), using aggregate-level World Fertility Survey (WFS) data, found the prevalence of unmet need was highest among women in their thirties, those who already have several children, those living in rural areas, and those who were illiterate or poorly educated. The Westoff-Pebley study included the 1974 Malaysia WFS data, and the above relationships were quite evident in those data even in their bivariate analysis. The present results suggest that along with these measures information on the husband’s preferences may help to improve estimates of the extent of unmet need and help to identify couples who may need additional counselling on contraceptive methods.

Although some have questioned their value, fertility preference data provide useful information that helps to predict whether a couple has more children, especially if collected for both husbands and wives.<sup>22</sup> At the individual level, information on whether the respondents want more children appears to be more useful than information on desired family size. Such data can help programmes to identify the couples most in need of contraceptive services to achieve, but not exceed, their family size desires.



## Endnotes

1. For a description of the MFLS-1 survey and its contents, see Butz and others (1978).
2. For a description of the MFLS-2 survey and response rates, see Haaga and others (1993), DaVanzo and others (1993), and Haaga and others (1994). The MFLS-2 also interviewed a sample of the adult children of the MFLS-1 respondents, a new sample of women of reproductive age and a sample of older Malaysians. The analyses in this paper only consider the reinterviewed MFLS-1, or Panel, respondents.
3. Attrition between the MFLS-1 and MFLS-2 surveys was not random. (See Haaga and others, 1994, for a more detailed discussion of sample attrition between MFLS-1 and MLFS-2.) However, it appears that attrition is not correlated with fertility preferences. The authors found the percentage wanting more children and the percentage who had a desired family size that was greater than their number of children in 1977 for women not reinterviewed in MFLS-2 to be identical to those for the women who were reinterviewed, and the degree of agreement between the two fertility preference measures was very similar for the two samples.
4. Respondents gave the number of boys and the number of girls; the interviewer then added them to get the total number. A few respondents did not have a gender preference and gave only the total number desired. Only a few of respondents could not give a number at all. Thus the MFLS-1 data do not face the problem of substantial non-response that has been experienced in other developing country surveys that asked women to give their desired number of children.
5. Women who were pregnant at the 1977 Round 2 interview were dropped because it was not clear from the wording of the intentions questions whether such women were to include or exclude the child with whom they were pregnant.
6. Studies using shorter time spans found less discrepancy between the proportions who want more children and those having a birth during the time span. See DaVanzo and others (2003) for details.
7. Among women who had a subsequent birth, more than half had more than one subsequent birth. See DaVanzo and others (2003) for details.
8. A similar pattern emerges when looking at the husband's fertility preferences in relation to the incidence of subsequent births: the "wants more children" measure predicts better than the "desires more than have" measure. See DaVanzo and others (2003).
9. Other studies using shorter time-spans have found similar patterns. See DaVanzo and others (2003) for details.
10. For an analysis of the internal consistency between the "wants more children than have" and the "desires more children than have" preference measures and between husbands' and wives' preferences, see Peterson and Reichman (1997).
11. Tan and Tey (1994), using data from the 1984 Malaysian Population and Family Survey (MPFS) matched with 1985-1987 birth records, also found that subsequent fertility, in their case over a three-year period, was better explained by considering both the woman's and husband's intentions regarding a child in the next three years than by the woman's intention alone, although it was not as strong an effect as observed from the present data for a longer period. The 1984 MPFS, however, did not ask husbands directly about their fertility preferences, as had been done in MFLS-1; women were asked to report their husbands' preferences, which may explain the smaller additional explanatory

power of the husbands' preferences if the women tended to project their own preferences when reporting their husbands' preferences.

12. Coombs and Chang (1981) found similar effects of spousal agreement on the number of births among couples from Taiwan Province of China during their four-year study period, 1970-1974. See DaVanzo and others (2003) for additional information.

13. The patterns exhibited in figure 1 are similar to those seen by Thomson, McDonald and Bumpass (1990), who looked at the effect of spousal agreement regarding fertility preferences on the timing of the third birth in the United States.

14. When one pools the two subsamples but does not allow the effects of explanatory variables to differ, one finds that fertility preferences at the beginning of the period continue to exhibit a significant effect on the likelihood of a subsequent birth even when key factors such as ethnicity, age and education of the husband and wife, number of children, and presence of spouse at the beginning of the interval are controlled. These results can be seen in Peterson and Reichman (1997).

15. To handle information on missing spouses and missing data, the authors created two indicator variables: one for the 29 husbands not residing in the household in 1977 and one for the 84 husbands who did not complete the fertility preference questions. For the non-resident spouses, spouse characteristics and fertility preferences were set to zero; for the resident husbands who did not answer the fertility preference questions, their preference measures were set to zero.

16. TFR for Malays was 4.6 in 1975 and 4.7 in 1986; for Chinese women, TFR fell from 3.6 in 1975 to 2.4 in 1986; and among Indian women it fell from 3.9 to 3.0 between 1975 and 1986 (Department of Statistics Malaysia, 1986).

17. Other specifications were tried but none of them had significant explanatory power. For an analysis of the effects of gender composition of children on fertility using these data, see Pong (1994).

18. For a discussion on the underlying theoretical rationale for the effects of these variables on fertility, see DaVanzo and others (2003).

19. To test for differences in coefficients between the two subsamples, the authors ran the regression specification on the pooled sample of women (those who wanted more children and those who did not) and included interactions of all explanatory variables with the indicator for "wants more children." The t-statistic on a given interaction tells whether the coefficient of that variable differs significantly between the two subsamples.

20. The change variables in this analysis only signify that a change occurred by 1988 and are not specifically related to the timing of births. The lack of significance for many of the change variables may reflect the fact that most next births occurred shortly after 1977 (see figure 1), giving little time for these types of changes to occur and affect fertility decisions.

21. In all but two of the cases where the husband was not present in 1977, the woman was still married to that husband in 1988. The large coefficient is due to the small number of cases where husbands were absent in 1977.

22. A recent study for Bangladesh has shown that fertility preference data also help to explain abortion behaviour (Rahman, DaVanzo and Razzaque, 2001).

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## References

- Becker, S. (1996). "Couples and reproductive health: A review of couple studies", *Studies in Family Planning*, vol. 27, No. 6, pp. 291-306.
- Bongaarts, J. (1990). "The measurement of wanted fertility", *Population and Development Review*, vol. 16, No. 3, pp. 487-506.
- Butz, W. and others (1978). *The Malaysian Family Life Survey: Appendix A, Questionnaires and Interviewer Instructions*, R-2351/1-AID, RAND.
- Cleland, J., J. Verrall and M. Vaessen (1983). "Preferences for the sex of children and their influence on reproductive behaviour", *Comparative Studies*, No. 27, World Fertility Survey, London.
- Clifford, W. B., J. L. Lake and Y. S. Brannon (1987). "Spousal agreement on the value of children and fertility behaviour", *Population and Environment*, vol. 9, No. 3, pp. 48-159.
- Coombs, L.C. and M. C. Chang (1981). "Do husbands and wives agree? Fertility attitudes and later behaviour", *Population and Environment*, vol. 4, No. 2, pp.109-127.
- DaVanzo, J. and others (1993). *The Second Malaysian Family Life Survey: Survey Instruments*, MR-107-NICHD/NIA, RAND.
- DaVanzo, J., C. E. Peterson and N. R. Jones (2003). "How well do desired fertility measures for wives and husbands predict subsequent fertility?: Evidence from Malaysia", DRU-3013-NICHD (Labor and Population Program Working Paper Series 03-16), RAND.
- De Silva, W. I. (1991). "Consistency between reproductive preferences and behaviour: The Sri Lankan experience", *Studies in Family Planning*, vol. 22, No. 3, pp. 188-197.
- Department of Statistics, Malaysia (1986). *Vital Statistics*, Peninsular Malaysia.
- Foreit, K.G. and M. H. Suh (1980). "The effect of reproductive intentions on subsequent fertility among low-parity Korean women, 1971-1976", *Studies in Family Planning*, vol. 11, No. 3, pp. 91-104.
- Freedman, R. and J. Y. Takeshita (1969). *Family Planning in Taiwan: An Experiment in Social Change* (Princeton, N. J.: Princeton University Press).

- Freedman, R., A. I. Hermalin and M. C. Chang (1975). "Do statements about desired family size predict fertility? The case of Taiwan, 1967-1970", *Demography*, vol. 12, No. 3, pp. 407-416.
- Govindasamy, P. and J. DaVanzo (1992). "Ethnicity and fertility differentials in Peninsular Malaysia: Do policies matter?" *Population and Development Review*, vol. 18, No. 2, pp. 243-267.
- Haaga, J. and others (1993). *The Second Malaysian Family Life Survey: Overview and Technical Report*, MR-106-NICHD/NIA, RAND.
- Haaga, J. and others (1994). "Twelve-year follow-up of respondents in a sample survey in Peninsular Malaysia," *Asia-Pacific Population Journal*, vol. 9, No. 2, pp. 61-72.
- Hermalin, A. I. and others (1979). "Do intentions predict fertility? The experience in Taiwan, 1967-74", *Studies in Family Planning*, vol.10, No. 3, pp. 75-95.
- Mamlouk, M. (1982). *Knowledge and Use of Contraception in Twenty Developing Countries*, Reports of the World Fertility Survey, Population Reference Bureau, Inc.
- Nair, N. K. and L. P. Chow (1980). "Fertility intentions and behavior: Some findings from Taiwan", *Studies in Family Planning*, vol. 11, No. 7/8, pp. 255-263.
- Peterson, C. and C. Reichman (1997). *How Well Do Desired Fertility Measures for Wives and Husbands Predict Subsequent Fertility?* DRU-1118-NICHD (Labor and Population Program Working Paper 97-08), RAND.
- Pong, S.-L. (1994). "Sex preference and fertility in Peninsular Malaysia", *Studies in Family Planning*, vol. 25, No. 3, pp.137-148.
- Rahman, M., J. DaVanzo and A. Razzaque (2001). "Do better family planning services reduce abortion in Bangladesh?" *The Lancet*, vol. 358, No. 9287, pp. 1051-1056.
- Rodriguez, G. (1979). "Family planning availability and contraceptive practice", *Family Planning Perspectives*, vol. 11, No. 1, pp. 51-56,58-63,67-70.
- Tan, P. C. and Tey N. P. (1994). "Do fertility intentions predict subsequent behavior? Evidence from Peninsular Malaysia", *Studies in Family Planning*, vol. 25, No. 4, pp. 222-231.
- Thomson, E., E. McDonald and L. L. Bumpass (1990). "Fertility desires and fertility: hers, his and theirs", *Demography*, vol. 27, No. 4, pp. 579-588.
- Westoff, C. F. and N. B. Ryder (1977). "The predictive validity of reproductive intentions", *Demography*, vol. 14, No. 4, pp. 431-453.
- Westoff, C. F. and A. R. Pebley (1981). "Alternative measures of unmet need for family planning in developing countries", *International Family Planning Perspectives*, vol. 7, No. 4, pp. 126-136.