The Path to Replacement Fertility in Egypt: Acceptance, Preference, and Achievement

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Abstract

This paper uses data from the 2004 Stalled Fertility Transition survey; a follow-up to the 2003 Egypt Interim DHS, to investigate obstacles to achieving replacement fertility. The analysis adopts a framework with the acronym APA: Acceptance of a two-child ideal, Preference for that ideal, and Achievement of preference, positing a hierarchy among the three and hypothesizing that each depends on a set of factors, including gender stratification, economic expectations, perception of children's costs and benefits, and the costs of fertility regulation. The results indicate that son preference, discriminative gender attitudes, and perceived low cost of childrearing compared to benefit of children are major obstacles to the acceptance of the two-child family. Given acceptance, son preference, optimistic economic expectations, and fear of contraceptive side effects are associated with low preference for two children and with ambivalence. Given a decisive preference, women from better socioeconomic strata, women who perceive themselves to be in control of their reproduction and women with weaker son preference are more likely to achieve the ideal of two children.

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Introduction

A sustained decline in Egyptian fertility started during the first half of the 1960s, almost contemporaneously with public recognition of population increase as a potential threat to developmental efforts. During the 1980s and early 1990s, the decline in fertility picked up speed (Robinson and El-Zanaty 2005). The last decade, however, witnessed a noticeable slowing in the pace of decline (Eltigani 2003), with Total Fertility Rate in excess of three births per woman according to the latest DHS survey in Egypt (El-Zanaty and Way 2006).

The Egyptian story is not unique. Other countries have experienced slow or stalled fertility declines, or even a reversal (e.g. Kenya and Ghana in Africa, and Bangladesh and the Philippines in Asia). The underlying causes of the interrupted transition might differ from one setting to another, though a common factor appears to be a stall in desired fertility (Bongaarts 2005). These cases of slow fertility transitions challenged the prevalent wisdom that once underway, fertility declines continue until reaching replacement – or subreplacement – levels[1]. While the current analysis focuses on Egypt as a case study, it addresses a more general question relevant to a large number of countries for which fertility seems to plateau at above-replacement levels.

Fertility stall *per se* is not the main concern, however. Regardless of the pace of fertility decline and whether or not fertility has plateaued out, the main question faced by a large number of countries now is how – and when – to complete their fertility transition. Many countries, including Egypt, has reached a level of fertility that is, though much lower than the pre-transitional level, is still well above replacement. In spite of the large literature on fertility transition and its precipitating factors, there is a shortage in theoretical frameworks and empirical analyses that specifically focus on the final phase of transition when fertility declines from a moderate level of 2.5 - 4 children to replacement level. This study proposes such framework, with application to the case of Egypt.

The series of Egypt Demographic and Health Surveys [EDHS] from 1992 to 2005 shows that, while unwanted fertility rate has dropped from 1.2 to 0.8 birth per woman during the 1990s and early 2000s, wanted fertility rate has barely declined from 2.7 to 2.3 births per woman. Such slow decline in wanted fertility raises critical questions about the possibility of reaching replacement fertility in Egypt in the near future.[2]

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[1] Although, as noted by Bongaarts (2005), there was some attention to earlier cases of fertility stall, the mainstream fertility research has largely taken for granted the eventuality of a complete and fairly fast fertility transition after the commencement of a sizable decline.

[2] Recent research by Casterline and El-Zeini has shown that DHS estimates for wanted fertility rate in Egypt might be upwardly biased (Casterline and El-Zeini 2005a). Using a new estimator based on prospective fertility desires, they showed that wanted TFR in Egypt during the three year preceding EDHS 2005 is as low as 1.9. However, their series of estimates indicates that wanted fertility rate has been virtually constant at this level since the 1992 EDHS survey such that almost all the decline in total fertility rate is attributable to decline in unwanted fertility (Casterline and El-Zeini 2006, personal communication).

The demographic regime in Egypt is characterized by universal and relatively early marriages[3], and hence replacement fertility is only achievable if a large majority of women actively seek to restrict their number of children to two[4]. In order to investigate the potential and obstacles to achieving this goal, a special survey was carried out in 2004, by the Population Council and the Cairo Demographic Center, within a project on the Stalled Fertility Transition [SFT], supported by USAID. The SFT survey included samples of married women and of young unmarried women and men. The married sample is a subset of the nationally representative sample of women interviewed in the Egypt Interim Demographic and Health Survey [EIDHS] implemented in 2003. The SFT reinterviewed a randomly chosen sample of EIDHS respondents almost one year later. In addition to updating the information collected in the EIDHS, the SFT questionnaire included a large number of innovative questions related to fertility attitudes in general and to the desirability of having two children in particular (Casterline and Roushdy 2004).

A preliminary investigation of SFT data has indicated that, while most women recognize the benefits of having just two children, those who want to restrict their number of children to two are still a minority and, in addition, their attachment to this goal is weak. Hence, other analysts of the SFT data have concluded that a lack of widespread embracement of a two-child family ideal is a main obstacle to achieving replacement fertility in Egypt (Casterline and Roushdy 2004, 2005). At the same time, an analysis of EIDHS data has shown that there is still room for further fertility decline through reducing unwanted fertility, especially through improving family planning use-continuation (Casterline and El-Zeini 2005b). The present study uses data from the SFT survey (3,286 married women) to examine the factors that could accelerate the Egyptian fertility transition. The analysis is guided by a three-stage transition framework.

Determinants of Replacement Fertility: An Analytical Framework

The term ‘replacement fertility’ is used here to refer to having two living children. As such, replacement fertility is a newly emerging concept in Egypt, as either an ideal or a reality. For decades, population control messages have considered three children to be the main divide between ‘small’ and ‘large’ families. In people’s experience, the two-child family has been far from common. Among EIDHS respondents at the end of their reproductive life (aged 45-49 years), less than 8 percent have two children. A very small minority of SFT married respondents grew up in small families. Only one in every ten respondents had two siblings or fewer. The proportion of respondents who grew up in a two-child family is less than 4 percent and less than 1 percent of respondents were sole children.

However, when EIDHS respondents were asked about the number of children they would have had if they had the choice, i.e. their ‘ideal family size’, 37 percent said that they would have had two living children (El-Zanaty and Way 2004). The main question addressed here is what distinguishes women who prefer the two-child family

[3] There has been an evident increase in the age at first marriage in Egypt. However, according to the latest EDHS in 2005, marriage still tends to occur relatively early (median age at marriage for women 25-29 is 21 years) and marriage is relatively universal (only 6% of women 30-34 are never married).

[4] Given the continuing decline in child mortality in Egypt, replacement-level fertility is achievable at a total fertility rate of about 2.1 births per woman.

from those who prefer, say, three or four children. It is also of concern to know, given a preference for two children, what makes some women more capable of achieving this preference.

To this end, we propose a conceptual framework with the acronym **APA**: Acceptance of the two-child ideal, Preference for that ideal, and Achievement of such preference. The framework posits a hierarchical relationship among the three.

It is postulated that the first step in the path to replacement fertility is the acceptance of the notion that it is beneficial to many couples to stop after two children. In the second step, couples move from the mere acceptance of the notion in general, as it relates to others, to preferring it in their own life. Lastly, preference for the two-child family is translated to actual achievement through effective use of family planning. [5] As Figure 1 shows, couples might fail to start or to complete the *APA* path. Some reject the notion of the two-child family; some, though accepting it, prefer to have more than two children or are ambivalent; and some fail to achieve their desires to stop after two.

The *APA* framework, though it provides an organizing schema to the steps involved in achieving replacement fertility, does not answer the main question: why some couples go successfully through the *APA* path to the two-child family while others do not start the path or fail to complete it. The literature on fertility transition gives some hints of the answer. By fertility transition, we mean the change from a system in which the total fertility rate [TFR] is high, below the biological maximum due to behavioral factors not consciously determined by a desire to limit childbearing, to a system in which the TFR is at – or below – replacement and in which fertility is kept under check using conscious fertility control measures (Henry 1961). There is a large literature on the factors that drive fertility transition, starting from the classical demographic transition theory (Notestein 1953) and proceeding into the many models and theories proposed to address its failure to give an adequate explanation to historical and contemporary cases of fertility transition (e.g. Coale 1973; Caldwell 1982; Cleland and Wilson 1987; Hirschman 1994; Mason 1997).

A common feature in most theoretical models for the determinants of fertility transition is an underlying assumption that there exist only two systems: one in which very high fertility is optimal, and another in which a TFR of about 2.1 is optimal.[6] Accordingly, existing models do not explicitly address the question about the factors responsible for the change from moderate fertility to replacement-level fertility. Intermediate-level fertility (i.e. TFR between 2.5 and 4) is regarded as merely a temporary transitional phase through which fertility has to pass after the onset of decline, and, hence, does not merit any special focus. This is a serious oversight given the large number of countries with intermediate fertility levels, including some countries – such as India and the Philippines – whose fertility started to decline several decades ago (Casterline and Roushdy 2005).

[5] The recognition that attitudinal changes should precede behavioral ones is hardly novel. In the family planning literature the KAP framework (standing for knowledge, attitude and practice) is too familiar. What is novel in the proposed APA framework is the explicit distinction between attitudes manifested in acceptance of an ideal and the preference that triggers behavioral changes.

[6] The classical fertility transition theory does not explicitly state that assumption. However, the pivotal role of mortality decline, with the pressure it puts on families as well as larger units, hints to the fact that above-replacement fertility is not sustainable.

In a notable exception, Casterline (2001b) has focused on determinants of the *pace* of fertility decline after its onset, adopting the synthesis framework proposed by Easterlin (1975) as an extension of household economics theories of fertility. Easterlin's model postulates that TFR is determined by three forces: demand for children determined by perceived costs and benefits of children; supply of children determined by biological factors of fertility and by child death; and costs of fertility regulation. Applying similar reasoning, Casterline (2001b) suggests that the pace of decline in fertility is determined by the pace of changes in three determinants: socioeconomic development, couples' economic aspirations and expectations, and accessibility as well as acceptability of birth control. These three factors combine economic explanations of fertility transition with theories focusing on institutional and cultural factors.

The theoretical model adopted here is also informed by both economic and cultural theories of fertility transition. The focus, however, is on the forces of a change from intermediate-level to replacement-level fertility, rather than a focus on the onset or pace of the transition from pre-transitional high fertility to replacement-level fertility. Therefore, the outcome variable is not merely fertility level, but rather the dynamic process that carries couples through the *APA* path.

The model, shown schematically in Figure 2, assumes that the achievement of the two-child family is determined by the balance of two factors; one representing the demand side of fertility control – a preference for the two-child family – and the other representing the costs of regulation, broadly defined (Hermalin 1983; Robinson and Cleland 1992). Preference for the two-child family, in turn, is determined by the perceived costs of regulation and by whether one accepts or rejects the notion of having no more than two children. Acceptance of and preference for the two-child family are affected, among other things, by the perception of the costs and benefits of children.

The conceptual framework identifies two main blocks of factors that affect perceived costs and benefits of children as well as costs of regulation. The first includes variables related to economic stress and economic expectations, while the second consists of the constellation of attitudinal and behavioral variables pertaining to gender stratification.

The relationship between economic stress and the likelihood of accepting the two-child ideal is not straightforward, and could be either positive or negative[7]. On the one hand, couples facing economically stressful conditions are more acutely aware of the costs incurred by having many children. On the other hand, economic stress could result in a higher recognition of children as a source of economic strength and security, especially in settings with prevalent child labor. Likewise, fears regarding future economic prospects could highlight the perception of long-term costs and benefits of children, including costs of marriage and prospects for finding a proper job, and the dependence on children as a main source of old-age security.

Economic stress and expectations could also affect actual and perceived costs of fertility regulation. Economic hardship could make a couple resentful of the costs of using contraception, whether the direct monetary cost of family planning methods or

[7] Casterline (2001b) has proposed that those who are more stressed and anxious economically are more likely to favor fewer children. His argument emphasizes the relationship between the economic situation and economic aspirations rather than on economic hardship *per se*.

the indirect costs that could result from potential side effects. The latter set includes losing female labor contribution due to physical weakness, the need for substitutes for breast milk, and the need for expensive medical care to treat negative side effects on women's health or fecundity.

Gender relations and gender value systems have long been conceptualized as major determinants of fertility attitudes, though empirical evidence suggests that this depends partly on other contextual factors (Kravdal 2001; Morgan et al. 2002; Amin and Lloyd 2002). The framework specifies that gender stratification has a direct effect on both the perception of children's costs and benefits and on the costs of regulation. In particular, it is assumed that children are of greater value for their mother's current and future security in settings where women have limited access to other channels of security and self-actualization. Stronger gender stratification may also increase women's perception of the costs of regulation, through putting more weight on obstacles such as opposition from husbands or in-laws and through introducing new costs, due, for example, to restricted mobility.

In addition to influencing the achievement of the two-child family through child costs and benefits and the various costs of regulation, gender systems may directly affect the acceptance of the notion of fertility replacement itself. This latter influence is mediated through preferences for a specific sex composition of children. Sex preference here refers not only to son preference – the most common type of sex preference – but also the desire to have both sons and daughters. In settings with clear gendered division of roles, sons and daughters serve categorically different functions. In such settings, replacement fertility at the individual level means a determination to have one son and one daughter, a goal that when aggregated places upward pressures on fertility levels.

To complete the framework, Figure 2 shows two more layers of influence: socioeconomic status at the individual, family or household level; and the cultural, structural and policy context at the community and regional levels. The analytical model to be used in the analysis incorporates, hence, multiple layers. The last three layers at the bottom – accepting the two-child family, preferring the two-child family, and achieving the two-child family – are the outcomes of interest: the three steps in the *APA* framework. A downstream causal effect is assumed to run through these three outcomes. The explanatory variables are grouped into seven blocks: contextual factors; socioeconomic status; gender stratification; economic stress and expectations; sex preference; costs and benefits of children; costs of regulations.

Before attempting to validate the framework using the SFT data, it is important to discuss some of its possible inadequacies, in particular the possibility of loops and reverse causation.[8]

Intuitively, the three outcome variables are logically consecutive. One has to accept a notion first before preferring it as an ideal, and has to prefer it before attempting to achieve it. However, a feedback mechanism can exist that, in effect, constitutes a reverse causation in which one *appears* not to prefer a specific ideal because of failure to achieve it. In fertility research, post-rationalization is recognized as a main problem with questions concerning ideal family size (Bongaarts 1990; Rosenzweig and Wolpin 1993). This is a measurement rather than a conceptual

[8] The potential caveats mentioned in this section apply chiefly to the conceptual framework. Further problems originating from its operationalization are discussed below.

problem. In addition to this measurement problem, a genuine causal feedback mechanism could occur when the perception of an ideal as achievable increases the likelihood of accepting, and preferring, it (Robinson and Cleland 1992).

Another relationship possibly characterized by reverse causation is between economic stress and the achievement of the two-child family. According to the framework, economic stress could hinder achievement of the two-child family because it increases the benefits of children or the costs of birth control[9]. One can argue, however, that failure to achieve the two-child family – having more children than one would have preferred given available economic resources – is an important cause of the apparent economic stress. Hence one has to be cautious in interpreting a significant negative relationship between economic stress and achievement of the two-child family.

It is also imperative to note that the framework, though including sex preference as an attitudinal factor determining acceptance and preference for the two-child family, does not include sex *composition* of children as an explanatory variable. This omission is not meant to imply that sex composition of living children does not directly influence the motivation to limit childbearing; it could indeed be a major factor in strengthening or weakening the motivation to stop after two children, though its impact is conditioned by the strength of sex preference attitudes. The inclusion of the actual sex composition of living children, however, would have added complication to the empirical application without genuine added value. Instead, sex composition of children is bundled with other residual factors that influence the outcome variables extraneous to the posited model. This is permitted because, conditional on the number of living children, sex composition is randomly determined; it is neither a policy-amenable factor nor is it related to other policy-amenable factors, a unique feature of this variable. Hence, there is no need to control for sex composition in order to estimate the impact of other variables. In order to correct for this omission, the impact of sex composition of children is examined using simple bivariate relationships.

Measurement of Model Components

The proposed analytical framework in Figure 2 includes a number of concepts that are not straightforward to measure and hence are rarely available in demographic surveys. The SFT questionnaire, however, includes a multitude of items that can be regarded as indicators of many of these immeasurable, or latent, concepts. These items are classified into the seven explanatory constructs in the model:

1) socioeconomic status;
2) gender stratification, which consists of three subgroups: wife's role in decision-making; wife's restricted mobility; and non-egalitarian gender values;
3) economic stress;
4) economic expectations;
5) costs of children;

[9] As discussed above, this negative relationship between economic stress and the likelihood of achieving the two-child ideal represents only one of the possible effects that might work in both directions.

6) benefits of children; and
7) costs of regulation, which consists of six subgroups: perception of community objection to family planning; perception of lack of control over own childbearing; lack of husband support; fear of the negative effects of family planning on fecundity; on breastfeeding; and on health.

An exploratory factor analysis[10] was performed for each set of items, and problematic items that showed little internal validity are excluded from the set. In most instances, one factor accounting for roughly 40% to 65% of the total variance of the items in each set was extracted and its estimated score used as a measure of the underlying latent construct. The items used to build different measures are listed in the Appendix.

In some instances, six in total, one factor was not enough to account for the common correlation among the items[11]. In such instances, two or more factors were extracted[12]. In four instances, the rotated factors clearly identify different dimensions of the underlying construct. For economic expectations, the two constructed orthogonal factors reflect near-future expectation for self and long-term expectation for children. The two factors extracted from items measuring costs of children distinguish actual costs impacting negatively on the current economic situation of the family from a general perception of children as costly in terms of money, time, and other family resources, a construct that could be understood as a force for a quantity-quality tradeoff (Willis 1973; Becker and Lewis 1973; Montgomery et al. 2000). Items for perceived benefits of children are also summarized by two factors, one representing general economic, social, and psychological benefits, while the other captures solely the value of children for coresidence at old age. Items related to husband's support reflect two orthogonal dimensions: agreement with husband on fertility goals, and inter-spousal communication. In one instance, fear of family planning health side effects, two orthogonal factors are extracted and their sum is used to measure the underlying construct. In only one instance are non-orthogonal factors deemed necessary. Items used to measure gender values suggest the existence of seven inter-correlated latent dimensions. A second-order factor analysis is used to identify the common unique factor across these dimensions (Loehlin 2004).

In addition to the variables constructed using factor analysis, other variables in the model are measured directly using one or more items. Region of residence is used as a proxy for structural and cultural context.[13] Sex preference is measured by a binary variable, with women assigned a strong sex preference if they say that couples who wanted three children and had three daughters (or three sons) should have more children to try for a son (or a daughter). It should be noted that this measure of sex

[10] Optimally, the measurement and structural components of the model are incorporated in one analysis using structural equation modeling with latent variables. However, the large number of experimental items used in SFT necessitates constructing the measurement model in a separate exploratory step.

[11] The number of common factors is determined using the scree test for the eigenvalues of the correlation matrix (Gorsuch 1983).

[12] After extraction, factors are initially rotated using an oblique method. If the inter-factor correlations are found insignificant, then an orthogonal rotation method is used.

[13] Despite the limitation of such restricted operationalization of culture (Hammel 1990; Greenhalgh 1995; Kennedy 2004), it could still provide some policy relevant findings.

preference could be confounded with preference for large families. However, the SFT item on the importance of a specific sex clearly defined it in terms of the fourth – rather than the third – child, and hence it could be argued that the sex preference measure used here is not affected by a desire to have three rather than two children, the major divide in the Egyptian setting.

The three outcome variables in the analysis – the steps in the *APA* path to the two-child family – are also measured using multiple indicators. Acceptance of the two-child family is constructed using exploratory factor analysis, drawing on the following six items.

1. whether respondent states an ideal number of children of two or less for her son or daughter
2. whether respondent considers two or more children as too low for a typical Egyptian couple
3. the number of advantages mentioned spontaneously for having two children
4. the number of disadvantages to two children that respondent disagrees with
5. the number of advantages to having many children that respondent disagrees with
6. the number of disadvantages to having many children that respondent agrees with

Using these six items, the first principal component (explaining 40% of common variance) is extracted. The estimated factor scores are used as a measure of the level of acceptance of the two-child family. Using a visual inspection of the scores' distribution, two unequal groups of respondents were identified: those who *accept the two-child family* and those who *reject the two-child family*.[14]

Preference for the two-child family is inferred from two fertility preference items: ideal family size and preference for further children. Responses to other variables are used to determine the level of attachment to the stated preference. The resulting index divides women into three groups as follows.

1. *women sure of preferring more than two children*: those whose stated ideal number is more than three; those whose ideal number of children is three and would be disappointed if they had only two; those who have at least two children and desire to have at least one more child
2. *women sure of preferring at most two children*: those whose stated ideal number is less than two; those whose ideal is two and would be disappointed if they had three; those who have two living children (or have one living child and are currently pregnant) and are sure about not desiring a third; those who have one living child (including current pregnancy) and want exactly one more child; those who have no children (and are not pregnant) and desire exactly two more children

[14] A normally distributed continuous scale can be constructed through using the exponential of the estimated factor scores. Results similar to those presented below are obtained when that continuous variable is regressed on the set of explanatory variables. These results are not presented here because the findings for the binary outcome are judged as more consistent with the objective of classifying women according to their position along the *APA* path.

3. *indecisive women*: those who do not fall in either of the above two groups, as well as those who fall in both, i.e. women who provide unclear or contradictory signals about their preference.

Achieving the two-child family is measured by comparing actual and ideal numbers of children and by distinguishing users of family planning from nonusers. Two groups of women are identified.

1. *women failing to achieve the two-child family*: those whose ideal number of children is two but have already more than two living children; those with two living children, and not currently amenorrheic, whose ideal number of children is two and are either currently pregnant or not using contraceptives.
2. *women achieving the two-child family*: those with two living children whose ideal number is two and are post-menopausal or are using contraceptives.

Unlike measures of acceptance and preference, the achievement measure is not defined for all women. For a woman to have a valid achievement status she must have at least two living children, state two as her ideal number of children, and not be still amenorrheic after the birth of her second child. Together, these conditions ensure that the woman has already been at risk of having an unwanted third child.

It is worth emphasizing that the methods used to classify women according to their acceptance of the two-child family or their preference for the two-child family depend on other questionnaire items in addition to the ideal family size question. The use of multiple criteria facilitates the fine-tuning of the fertility desires measures, so that women who are sure of their preference to stop at two children are distinguished from women who are indecisive. This fine-tuning was made possible by the inclusion in the SFT questionnaire of items that gauge the strength of commitment to stated fertility desires, such as the item asking how much it matters to the respondent if she has one child more or less than her stated ideal and the item asking whether the respondent considers her decision to stop childbearing as final. Accordingly, the preference step in the *APA* framework classifies women along two dimensions. The first dimension represents women's position with regard to the two-child family: whether they prefer it or not. The other dimension represents women's attachment to this position.

In addition to allowing for the fine-tuning of the desire for two children, use of multiple criteria avoids the exclusive dependence on one item – ideal family size – as is often the case in research on fertility desires using DHS data. This feature is important since there is strong reason to question the reliability of the stated ideal number of children (Thomson and Brandreth 1995; Bankole and Westoff 1998). One indication of low reliability is the inconsistency between the answers to the ideal number of children item between the EIDHS and the SFT interviews (eleven months apart on average). Considering only women who give a numeric answer in both surveys and excluding those who mention a number more than four children in either survey, almost one-half of the sample (44%) give discordant numbers (*kappa* measure of agreement = 0.269). Interestingly, the highest consistency is found among women who report two children as their ideal number of children in the EIDHS, among whom 69 percent also report two as their ideal in the SFT, compared to less than half among women reporting ideal numbers different from two.

The ability of the proposed measures to reflect differences in the distribution of stated ideal number of children is confirmed by the results presented in Table 1. There

are significant differences across the constructed acceptance groups (top panel of Table 1) in both the proportion who do not provide numeric answers and in the mean ideal number of children. This is so despite the fact that the woman's stated ideal number of children is *not* one of the items used to construct the acceptance groups. The preference groups (bottom panel of Table 1), which are determined mainly by the stated ideal number of children, show more clustering in non-numeric answers (more prevalent among the indecisive group) and in the mean ideal number of children. However, the correspondence is not complete, because many women who indicate that two children is their ideal are classified here as indecisive because other responses show their attachment to that stated ideal to be rather weak.

Before presenting the results, some words of caution are in order regarding analyzing the determinants of achievement of the two-child family. Proving that a particular woman has indeed succeeded in achieving her stated ideal of two children is only possible at the end of her reproductive life. The procedure used here to distinguish 'achievers' from 'non-achievers' is based on women's current status at the time of the SFT interview. This is only indicative of the potential success in achieving their reproductive goals. With the high contraceptive discontinuation rate in Egypt (Ali and Cleland 1995; Blanc et al. 2002), current use status is hardly a guarantee of future effective use until the woman is no longer at risk of having a third child. The model for achievement of the two-child family is further handicapped by strong potential for reverse causation through feedback mechanisms. An additional problem with the achievement indicator is that it cannot be estimated using the total sample. Women with less than two children and those who are still post-partum amenorrheic after the birth of their second child must be excluded.

Results

Figure 1 depicts the classification of SFT sample of married women according to the three constructed *APA* variables: acceptance, preference, and achievement[15]. One out of every five respondents rejects the notion of restricting childbearing to two children. Another 21 percent, while accepting the idea of having two children, prefer to have more than two children. Less than one-half of the remaining 59 percent give some indication of a preference for two children but seem to be ambivalent or indecisive. More than one-quarter of respondents are classified as ambivalent. Less than half the remaining 33 percent who indicate a decisive preference for two children are classified as achievers. Less than 15 percent of SFT respondents are classified as potential achievers; i.e. those who would pass successfully through the *APA* path to the two-child family. The characteristics that distinguish the classification of women into the five groups in this schema are investigated using regression analysis.

In accordance with the conceptual model of Figure 2, a set of three nested regression models is fitted to SFT data to investigate the determinants of each of the three outcome variables. Binary logistic regression models are fitted for the acceptance of the two-child family and the achievement of the two-child family. A multinomial logistic regression is fitted to the preference for two children, with sure preference for two children considered as the reference group and contrasted with

[15] Because achievement status is undefined for a group of women, prorating was used to estimate the division by achievement status depicted in the right-most part of Figure 1.

preference for more than two children and indecisiveness[16]. The hierarchy of the three outcome variables dictates restricting each model to women who entered the respective step. While the Acceptance model is fitted to all women, the Preference is restricted to women who do not reject the notion of the two-child family, and the Achievement model is restricted to women who are sure about preferring to have only two children. As explained above, the achievement model is in addition restricted to women who already have had the risk to have more than two children.

The results of the regression analysis are presented in Table 2 for acceptance, Table 3 for preference, and Table 4 for achievement. Main findings are summarized in the following subsections.

Age, context and socioeconomic status

Controlling for other variables in the model, age is not a determinant of accepting the two child family. On the other hand, older women are more likely to prefer having more than two children and to be indecisive in their preference, while younger women are more likely to prefer and to achieve the two-child family. This relationship is not solely a difference between older and younger women, but is largely affected by the fact that older women have spent longer times at risk of having more than two children and hence are more likely to have failed in stopping at two. In the achievement model, in particular, the net age differential is an artifact of the current status approach to inferring achievement. The model for preference is also affected since, as noted above, a failure to achieve can manifest itself in post-rationalization or ambivalence. The fact that the more pure measure of attitudes, the acceptance indicator, is undetermined by age supports this explanation.

Residence in Upper Egypt is strongly associated with a higher probability of rejecting the notion of the two-child family and, when accepting it, to prefer having more than two children or to be indecisive. However, among those who accept the two-child family and have a decisive preference toward it, residence in Upper Egypt is not an obstacle to achieving a two-child family.

Controlling for intervening variables, socioeconomic status is not associated with acceptance of the two-child ideal or preference for it. On the other hand, in the model predicting achievement of the two-child family, the net effect of socioeconomic status is highly significant. Women belonging to the lowest social stratum are less likely to achieve their preference for two children.

Gender stratification and gender role values

The three variables representing gender stratification practices and values do not predict women's ability to achieve a determined preference for the two-child family but they affect attitudes. Woman's role in household decision making is a significant predictor of the likelihood of accepting the ideal of the two-child family. Women whose role in decision making is weak also tend to be more ambivalent even when

[16] Although the categories of the preference variable seem to be ordered, an ordinal logit model was not used because the test of parallel lines did not support the assumption of equality of coefficients across regression categories (Long 1997). Conceptually, one can argue that the three categories are not strictly ordered, in the sense that one does not have to move through the middle category (characterized by weak attachment to preference) to move between the first and the third categories (both characterized by strong attachment, but at different positions).

accepting that ideal. Women expressing more egalitarian gender values are more likely to accept and to decisively prefer a two-child norm.

Economic stress and economic expectations

Economic stress, as measured here, does not significantly affect the probabilities of moving along the *APA* path. Acceptance of the two-child norm is also not affected by economic expectations for self or children. Economic expectations, however, affects the likelihood of moving through the *PA* part of the path. Women who have a positive outlook regarding their economic prospects are less likely to have a decisive preference for two children and women who are optimistic about the future of their children are less likely to succeed in achieving a professed preference to stop at two children. These findings indicate that adherence to the two-child family in Egypt could be, at least to some extent, a result of a pessimistic view of economic prospects. From this one could infer that an improved economic situation might lead to an increase in fertility.

Costs and benefits of children

Consistent with the economic framework of fertility determinants (Enke 1960; Becker and Barro 1988), perception of low costs and high benefits considerably lowers the likelihood of accepting the notion of the two-child family.

In contrast, women who do not consider their actual childrearing costs burdensome are more likely to be sure of their fertility preference and to be able to achieve their professed desire. A possible source of this puzzling finding is a feedback mechanism. All things being equal, mothers of many children are more likely to suffer from high childrearing costs. Having many children is typically consistent with preference for more than two children, whether this is a genuine preference or spurious preference resulting from post-rationalization. On the other hand, experience of high childrearing costs could make women regret having many children and help them recognize the value of low fertility. The balance of these two opposing streams results in an ambivalence regarding the two-child family, and makes women with high actual child costs more likely to be classified as indecisive and as non-achievers. Perceived costs, a measure less affected by such a feedback mechanism, does not show a similar pattern of relationship with the preference for two children or with achievement.

Costs of regulation

Some measures of the costs of regulations are found to be significantly related to the preference for two children. In particular, perception of one's control over childbearing reduces the likelihood of preferring more than two children and of ambivalence. Perception of control also increases the likelihood of achieving the two-child goal. Inter-spousal agreement and communication increases the likelihood of wanting more than two children. This may be taken as an indicator for the influence of husbands in discouraging fertility regulation.

Fear of negative health effects of family planning affects women's attachment to their preference and increases indecisiveness. Women who are less concerned about the side effects of contraceptive methods are significantly more likely to be definite in their preference for the two-child family. However, strong perception of negative health side effects of family planning is not a significant barrier to adoption of family planning among those motivated to limit their childbearing to two children.

Son preference

As speculated, strong sex preference is a major determinant of the propensity to reject the two-child family and, given acceptance of the notion *per se*, to prefer having more than two children and to be ambivalent. In addition, sex preference stands out as a major obstacle to the achievement of the two-child family.

Restricting the sample to non-pregnant women with two living children, the impact of the sex composition of children on the potential for achieving the two-child family is examined in Table 5. Sex composition of children is significantly related to the preference for two children but not to acceptance of the notion of the two-child family nor to the likelihood of achieving a preferred two-child family. Having two sons or two daughters is associated with more indecisiveness about having a third child, indicative of women's preference for a balanced sex composition. Having no sons strengthens women's commitment to have more than two children, an indication of son preference. A similar pattern of relationship between the preference for two children and sex composition of living children is apparent among women with three living children (results not shown).

It seems that attitudes regarding sex composition have more predictive power than actual sex composition. This is due to two factors. First, the impact of actual sex composition on acceptance, preference, and achievement is conditional on sex preference attitudes. Second, women who are against the two-child family, partially due to strong sex preference, are likely to have many children, and hence the chance of their having no sons or no daughters is small. An evidence of the latter point can be detected from the marginal distribution of women in the first panel of Table 5. Women with no sons represent less than 18 percent of all women with two living children. If the likelihood of stopping at the second child does not depend on the sex composition of children, this proportion would have been slightly under 25 percent. The difference between the two proportions is highly significant, implying that women with no sons are strongly motivated to proceed to a third child.

Determinants of achievement: reports from women

After reviewing the evidence on barriers to achievement of the two-child family based on the analytical model, it is informative to review what women themselves perceive as barriers to their achievement of that ideal. The SFT questionnaire asks directly about barriers to achieving stated fertility goals. Women having more living children than the number stated as their ideal and women declaring a desire to have no more children and yet are not using contraceptives are asked to provide an explanation for the apparent inconsistency between their desires and their realities.

Among women whose ideal number of children is two but who have three living children, the main explanation given for the discordance (40%) is that it was a 'mistake' or an unplanned birth. Since the contraceptive failure rate in Egypt is only 3 percent per year (El-Zanaty and Way 2001, 2006), most of these claimed 'mistakes' are due to nonuse – or unwarranted discontinuation – of family planning. One-fifth of the women explain the discrepancy between their ideal and actual number of children by their desire to have a boy or to have a girl.

Fear of side effects of family planning methods is given spontaneously as an explanation by 18 percent of nonusers who have two living children and reported a wish to have no third. Less than 4 percent mention opposition of their husband as the reason. The common explanations given by the majority of women are infrequent sex

(because the husband is frequently away) and perceived low probability of conception (partially due also to infrequent sex). It is not surprising, then, that women who ended up with the third child attribute it to ‘a mistake’, or, in other words, to sex when not expected.

Contrasting the two sets of empirical evidence reinforces as well as clarifies their messages. Both give strong evidence of the influence of sex preference, not only as a barrier to accepting replacement-level fertility but also as a force weakening the motivation to achieve a declared preference for two children. This is a force that is not identified through conventional questions about reasons for nonuse. On the other hand, worry about health side effects – a popular explanation for unmet need for family planning – is readily offered as an explanation by nonusers but seems to be a much less powerful barrier to achieving reproductive goals. This conclusion stems from the fact that concern about negative health side effects is almost as common among contraceptive users as nonusers. Apparently users are simply more motivated to deal with these side effects. However, fear of side effects does weaken women’s motivation to restrict their childbearing.

Direct questioning of women helps in identifying perceived low exposure to pregnancy as a factor accounting for a part of the differential motivation between users and nonusers. This factor may partly explain why age is a potent predictor of achieving replacement. While it is prudent to recognize that low risk does not mean no risk at all, it is important to acknowledge that women differ in their level and pattern of exposure, and hence in the protective systems they require to serve their needs.

Conclusion: Main Barriers to Replacement Fertility in Egypt

The majority of Egyptian women have accepted the idea that having just two children is a desirable goal. There is no common aversion to a two-child family as there is for a one-child family. For this majority, however, a three-child family is also an acceptable outcome, especially to guarantee having a son or a daughter. There seems to be widespread indifference between two and three children. One might speculate that such indifference is attributable in part to the representation for many years in population messages of three children as an acceptable ‘small family’. With consistent adherence to a two-child norm in the mass media and other policy avenues, less indifference might be invoked. In addition, diffusion theories of fertility decline (Bongaarts and Watkins 1996; Casterline 2001a ; van Bavel 2004) postulate that less indifference can be reinforced with the increase in the proportion of achievers.

The results presented above identify three clusters of obstacles to the eventual achievement of replacement-level fertility in Egypt. Women manifesting these three groups of challenges can be termed ‘the missed clients’, ‘the ambivalent’, and ‘the iron guards’.

The first group; the *missed clients*, are those who are willing to stop at two children but do not feel that they have an urgent need to practice family planning. This group includes older women and women engaged in infrequent sex. These women do not contribute much to the national level of fertility, though they constitute a significant portion of women with unmet need and produce a disproportionate share of unwanted fertility. For these women one recommendation is to extend available choices of family planning methods to accommodate their needs. Specifically, family

planning services should go beyond coitus-independent long-term contraceptives[17] that typically pose heavy health burdens on women. Promoting the emergency pill might be considered as an option for these women. If more husband involvement is guaranteed, the condom should also be promoted. At some point, sterilization might be considered as an option, especially for older women. Recent advances in contraceptive technology provide a wider selection of efficient and convenient methods, such as patches and combined injectables (Upadhyay 2005).

Ambivalent women represent a stronger challenge to program designers. The results presented above suggest some policy avenues for dealing with ambivalence and strengthening women's attachment to a two-child ideal. Addressing concerns about the side effects of contraceptives is a near-term avenue. In the long term, a key approach is encouraging more egalitarian gender values, which, among other benefits, could lead to a weakening of son preference. Fertility decline, in its turn, can help promote egalitarian gender values (McNay 2005).

In considering the problem of ambivalence, a point to keep in mind is that optimistic economic expectations could result in an increase in desired fertility. In order to mitigate this potential effect, it should be stressed that economic prosperity cannot be sustained without a check on the number of children. Providing women with new channels for self-actualization and economic independence can both weaken son preference and disentangle economic security from reproduction. Institutional changes that promote parenting values that increase child costs and decrease the immediate benefits from child work, such as the importance of children receiving higher education, will also have the impact of strengthening the motivation for restricting childbearing to two (Doepke 2004; Rammohan 2004).

The third and last group consists of women who are positively against the notion of the two-child family – the *iron guards*. Institutional factors that amplify the benefits of children in relation to their costs provide a main explanation for the existence of this pronatalist attitude. In addition, there appears to be a purely cultural aspect to the aversion to the idea of limiting childbearing to two, or even to a number above two. The iron guards identified within the SFT sample tend to believe that couples have no control over their childbearing. Not surprisingly, this hard-core group is mainly found in Upper Egypt where both institutional and cultural forces work against the idea of birth control. Strategies for changing these two, largely interweaved, forces are needed to overcome this last forte of opposition to replacement-level fertility in Egypt.

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[17] Family planning program in Egypt essentially promotes use of IUD and, more recently, injectables.

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Appendix
Items Used in Measuring the Constructs in the Proposed Analytical Model

Socioeconomic Status

1. years of education for respondent
2. years of education for respondent's husband
3. whether respondent is living in an urban area
4. whether respondent's husband is working in a professional or managerial occupation
5. whether respondent's husband is working in agriculture
6. wealth index of respondent's household (quintiles)
7. whether respondent's household eat meat at least once a week

Common variance: 46 percent

Gender Stratification and Gender Values

Participation in Decision Making

1. whether respondent participates in making decisions regarding making large household purchases
2. whether respondent participates in making decisions regarding making purchases for daily needs
3. whether respondent participates in making decisions regarding visiting family, friends or relatives
4. whether respondent participates in making decisions regarding what food to cook each day
5. whether respondent participates in making decisions regarding getting medical treatment or advice for herself
6. whether respondent participates in making decisions regarding buying clothes for herself
7. whether respondent participates in making decisions regarding taking children to doctor
8. whether respondent participates in making decisions regarding sending children to school
9. whether respondent participates in making decisions regarding buying clothes for children

Common variance: 49 percent

Mobility

1. whether respondent needs permission to go on her own to local market to buy things
2. whether respondent needs permission to go on her own to a local health center or doctor
3. whether respondent needs permission to take her children to health center or doctor
4. whether respondent needs permission to go on her own to homes of relatives or friends in the neighborhood
5. whether respondent is allowed to go alone to each of the above mentioned cases

Common variance: 63 percent

Gender Values

1. acceptance of a husband hitting his wife for each of seven reasons
2. whether respondent agrees that a husband should help with children if his wife is working
3. whether respondent agrees that a husband should help with household chores if his wife is working
4. whether respondent thinks that it is a good change if husbands do more domestic chores
5. whether respondent thinks that being an obedient wife and never to discuss her husband's opinion is an important value for her daughter to have
6. whether respondent thinks that being a forceful husband and never discuss his wife's opinion is an important value for her son to have
7. whether respondent agrees with the statement that a woman who has a full-time job cannot be a good mother
8. whether respondent agrees with the statement that having a full-time job always interfere with a woman's ability to keep a good life with her husband
9. whether respondent thinks it is a good change if boys and girls get the same amount of schooling
10. whether respondent thinks it is a good change if boys and girls get the same treatment
11. whether respondent thinks that each of five values is as important to her daughter as to her son (e.g. getting a university degree or to be financially independent at a young age)

Common variance: 55 percent

Economic Stress and Expectations

Economic Stress

1. satisfaction with respondent's husband current work status
2. whether the family income is enough to cover basic needs

3. whether the family income is below the minimum needed as viewed by the respondent
4. whether the family had difficulty during the previous month paying for each of specific needs
5. whether the family is indebted to individuals or professional creditors
6. current economic situation of the family compared to a year ago

Common variance: 38 percent

Economic Expectation for Self and for Children

1. whether respondent is concerned that during the next year her family might not be able to pay for food and household supplies
2. whether respondent is concerned that during the next year her family might not be able to pay for clothing
3. whether respondent is concerned that during the next year her family might not be able to pay for medical expenses
4. whether respondent is concerned that during the next year her family might not be able to pay for child education
5. whether respondent is concerned that during the next year her family might not be able to pay debts
6. whether respondent thinks that living circumstances is worsening with time
7. whether respondent thinks that it will be more difficult for her children to cover life expenses
8. whether respondent thinks that her children will have worse education opportunities than her generation
9. whether respondent thinks that her children will have worse employment opportunities than her generation

Common variance: 60 percent

Costs and Benefits of Children

Costs of Children, Actual and Perceived

1. whether respondent thinks that pregnancy could pose health risks for her
2. whether respondent's family had difficulty last month paying for child health care
3. whether respondent's family had difficulty last month paying for child education
4. whether respondent agrees with the statement that having many children is an obstacle to parents achieving what they would like to achieve
5. whether respondent agrees with the statement that parents cannot raise their children properly if they have many children
6. whether respondent agrees with the statement that having many children increases the financial pressure on the family
7. whether respondent agrees with the statement that if people had more income they could have more children
8. whether respondent agrees with the statement that having many children causes disagreement and problems between husband and wife

Common variance: 48 percent

Benefit of Children, General Benefit and Old Age Coresidence

1. whether respondent agrees with the statement that parents should have many children so that they will not feel lonely when old
2. whether respondent agrees with the statement that having many children increases family income
3. whether respondent agrees with the statement that having many children is good because they provide help in household tasks
4. whether respondent agrees with the statement that parents feel alive after death when they have many children to carry their names
5. whether respondent agrees with the statement that having many children increases the power of the family
6. whether respondent agrees with the statement that having many children increases one's status in the community
7. whether respondent prefers living with children at old age
8. whether respondent expects living with children at old age

Common variance: 58 percent

Cost of Regulation

Inter-Spousal Agreement and Communication

1. whether respondent wants to stop childbearing but believes her husband wants more children
2. whether respondent and her husband ever had different opinions about whether they should have another child

3. whether respondent believes her husband's desired number of children is different from her desired number
4. whether respondent talked with her husband during the previous year about having another child
5. whether respondent talked with her husband about family planning

Common variance: 61 percent

Community Support for Family Planning

1. whether respondent agrees with the statement that most of her friends and relatives approve of family planning
2. whether respondent agrees with the statement that religious leaders believe family planning methods interfered with God's will
3. whether respondent agrees with the statement that in her community religious leaders encourage couples to have many children

Common variance: 57 percent

Perception of Control over Childbearing

1. whether respondent thinks that a couple can take action to influence the number of children to have
2. whether respondent agrees with the statement that birth control is an interference in God's affair
3. whether respondent agrees with the statement that one does not have enough choice over the number of children one wants to have because of pressure from family and friends

Common variance: 40 percent

Fear of Family Planning Effect on Fecundity

1. whether respondent mentions making infertile as a side effect of IUD, pill or injectables
2. whether respondent mentions delaying pregnancy as a side effect of IUD, pill or injectables
3. whether respondent reports she believes that after using IUD, pill or injectables, it is more difficult for a woman to get pregnant later on when she wants

Common variance: 46 percent

Fear of Family Planning Effect on Breastfeeding

1. whether respondent reports she believes that when a mother is breastfeeding, using a method like pill or injectables can affect the breastfeeding
2. whether respondent mentions drying mother milk as a side effect of IUD, pill or injectables

Common variance: 59 percent

Fear of Family Planning Health Side Effects

1. whether respondent mentions making woman weaker as a side effect of IUD, pill or injectables
2. whether respondent have heard about someone in her community who recently experienced any side effects or health problems from using IUD, pill or injectables
3. whether respondent mentions excessive bleeding as a side effect of IUD, pill or injectables
4. whether respondent mentions weight loss as a side effect of IUD, pill or injectables
5. whether respondent mentions back pain as a side effect of IUD, pill or injectables

Common variance: 53 percent

Accepting the Two-Child Family

1. whether respondent states an ideal number for her son or daughter of two or less
2. whether respondent considers two or more children as too few for a typical Egyptian couple
3. number of advantages mentioned spontaneously by respondent for having two children
4. number of disadvantages the respondents disagrees to for having two children
5. number of advantages respondent disagrees to for having many children
6. number of disadvantages respondent agrees to for having many children

Common variance: 40 percent

Figure 1: The APA framework: the path to achieving the two-child family (percentages in parentheses are estimated from SFT, Egypt 2004 – details explained in section 3 on measurement, see also footnote 15)

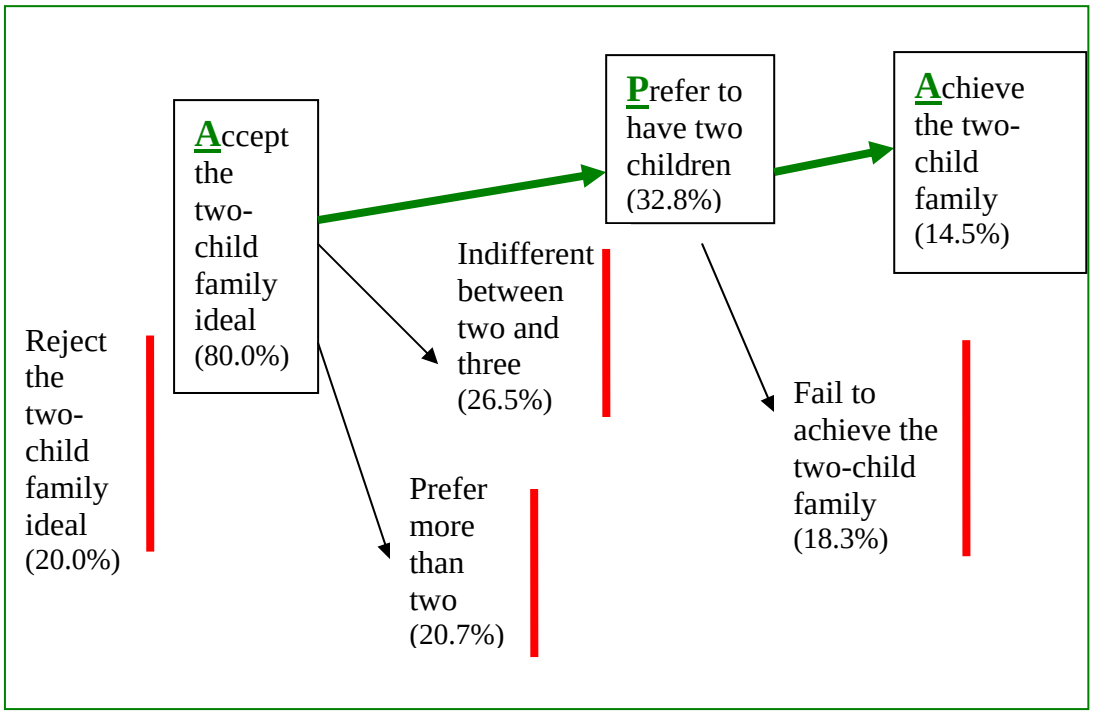

Figure 2: A conceptual model for the determinants of achieving the two-child family

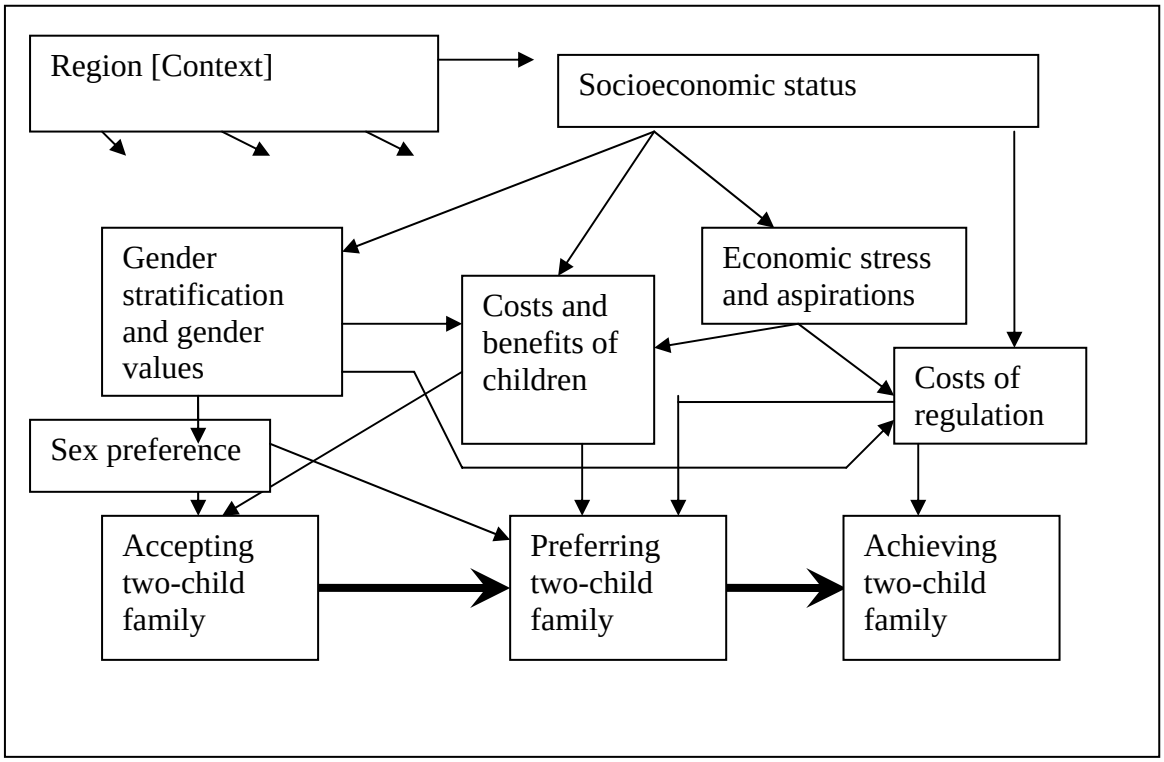

Table 1. Ideal number of children by acceptance groups and by preference groups, Egypt SFT 2004

	Acceptance Groups		
	Rejection	**Acceptance**	**Total**
% with non-numeric answers	12.4	4.3	5.9
Mean ideal number of children	3.60	2.62	2.80
95% confidence interval for the mean ideal number of children			
Upper bound	3.47	2.58	2.76
Lower bound	3.72	2.65	2.84
Number of women (unweighted)	768	2518	3286

	Preference Groups			
	Sure no	**Indecisive**	**Sure yes**	**Total**
% with non-numeric answers	3.0	14.0	1.1	5.9
Mean ideal number of children	3.89	2.61	1.98	2.80
95% confidence interval for the mean Ideal number of children				
Upper bound	3.81	2.58	1.96	2.76
Lower bound	3.97	2.65	1.99	2.84
Number of women (unweighted)	1195	1036	1055	3286

Table 2: Results of stepwise binomial logistic regression analysis for acceptance of the two-child family, Egypt SFT 2004

Explanatory Variables	Reference category	Odds ratios
Age (at EIDHS)		n.s
Region	**Upper Egypt**	
Urban governorates		1.563 *
Lower Egypt		2.828 ***
Socioeconomic status		n.s.
Gender stratification and gender values		
Weak participation in decision making		0.853 *
Restricted mobility		n.s.
Discriminative gender values		0.846 *
Economic stress and expectation		
Economic stress		n.s.
Economic expectation for self		n.s.
Economic expectation for children		n.s.
Sex preference	**Strong**	
Weak		2.890 ***
Cost and benefit of children		
Actual cost		n.s.
Perceived cost		2.328 ***
Perception of benefit		0.240 ***
Old age coresidence with children	**Prefers & expects**	
Neither prefers nor expects		1.635 **
Either prefers of expects		1.638 *

n.s. not significant * p value < 0.05 ** p value < 0.005 *** p value < 0.0005

Reference category: acceptance of the two-child family

Number of cases (unweighted) = 3286

Pseudo R square = 0.615

Percent correct classification: 63.1 among rejecters, 96.2 among accepters, and 89.6 overall

Table 3: Results of multinomial logistic regression analysis for preference for the two-child family, Egypt SFT 2004

Explanatory Variables	Reference category	Odds ratios	
		Sure no	Indecisive
Age (at EIDHS)		1.060 ***	1.067 ***
Region	**Upper Egypt**		
Urban governorates		0.450 ***	0.591 ***
Lower Egypt		0.380 ***	0.582 ***
Socioeconomic status		n.s.	n.s.
Gender stratification and gender values			
Weak participation in decision making		n.s.	2.715 **
Restricted mobility		n.s.	0.594 **
Discriminative gender values		1.181 *	1.163 *
Economic stress and expectation			
Economic stress		n.s.	n.s.
Pessimistic economic expectation for self		n.s.	0.763 ***
Pessimistic economic expectation for children		n.s.	n.s.
Sex preference	**Strong**		
Weak		0.469 ***	0.600 ***
Cost and benefit of children			
Actual cost		n.s.	1.260 *
Perceived cost		n.s.	n.s.
Perception of benefit		n.s.	n.s.
Old age coresidence with children	**Prefers & expects**		
Neither prefers nor expects		0.795 *	n.s.
Either prefers of expects		0.686 *	n.s.
Cost of regulation			
Weak community support for family planning		0.884 *	n.s.
Perception of no control over childbearing		1.151 *	1.222 ***
Disagreement with husband		0.787 ***	n.s.
No communication with husband		0.884 ***	n.s.
Fear of negative effect on fecundity		n.s.	n.s.
Fear of negative effect on breastfeeding		n.s.	n.s.
Fear of negative side effects		n.s.	1.132 ***

n.s. not significant * p value < 0.05 ** p value < 0.005 *** p value < 0.0005

Reference category: sure to prefer two children

Pseudo $R^2 = 0.160$

n = 2518 (excluding women classified as rejecting the two-child family)

Percent correct classification: 24.6 among those who are sure no, 70.9 among who are sure yes, 43.6 among those who are not sure, and 49.9 overall

Table 4: Results of binomial logistic regression analysis for achievement of the two-child family, Egypt SFT 2004

Explanatory Variables	Reference category	Odds ratios
Age (at EIDHS)		0.862 ***
Region	**Upper Egypt**	
Urban governorates		n.s.
Lower Egypt		n.s.
Socioeconomic status		1.780 ***
Gender stratification and gender values		
Weak participation in decision making		n.s.
Restricted mobility		n.s.
Discriminative gender values		n.s.
Economic stress and expectation		
Economic stress		n.s.
Pessimistic economic expectation for self		n.s.
Pessimistic economic expectation for children		1.365 **
Sex preference	**Strong**	
Weak		4.600 ***
Cost and benefit of children		
Actual cost		0.787 *
Perceived cost		n.s.
Perception of benefit		n.s.
Old age coresidence with children	**Prefers & expects**	
Neither prefers nor expects		n.s.
Either prefers of expects		n.s.
Cost of regulation		
Weak community support for family planning		n.s.
Perception of no control over childbearing		0.751 *
Disagreement with husband		n.s.
No communication with husband		n.s.
Fear of negative effect on fecundity		n.s.
Fear of negative effect on breastfeeding		n.s.
Fear of negative side effects		n.s.

n.s. not significant * p value < 0.05 ** p value < 0.005 *** p value < 0.0005

Reference category: failing to achieve the two-child family

Pseudo $R^2 = 0.366$

n = 522 (excluding women not accepting 2 children, women who prefer more than 2 children, women who are not sure of their preference, and women with less than 2 children)

Percent correct classification: 79.2 among non-achievers, 68.5 among achievers, and 74.3 overall

Table 5. Distribution of non-pregnant women with two living children according to acceptance, preference, and achievement of the two-child family, by sex composition of living children, Egypt SFT 2004

Sex Composition	Acceptance Groups			
	Reject	Accept	Total	No. of women
Two sons	12.6	87.4	100	183
One son and one daughter	12.7	87.3	100	347
Two daughters	16.5	83.5	100	115
Total	9.4	90.6	100	645
Sex Composition	**Preference Groups [a]**				
	Sure no	Indecisive	Sure yes	Total	No. of women
Two sons	23.8	16.1	60.1	100	160
One son and one daughter	28.7	8.1	63.2	100	303
Two daughters	37.4	14.1	60.1	100	96
Total	28.8	11.3	60.0	100	559
Sex Composition	**Achievement Groups [b]**			
	Achieving	Failing to achieve	Total	No. of women
Two sons	86.5	13.5	100	70
One son and one daughter	89.0	11.0	100	154
Two daughters	88.6	11.4	100	34
Total	88.3	11.7	100	258

[a] Restricted to women classified as accepting the two-child family

[b] Restricted women classified as accepting the two-child family and sure about preferring two children.

Chi-square for acceptance = 1.233, p-value = 0.540.

Chi-square for preference = 13.964, p-value = 0.007.

Chi-square for achievement = 0.333, p-value = 0.847.