

DHS Working Papers
Number 7

Ideal Family Size: A Comparative Study
of Numerical and Non-numerical
Fertility Desires of Women in
Two sub-Saharan African Countries

David O. Olaleye

Macro International Inc.
Calverton, Maryland USA

December 1993

David O. Olaleye, M.Sc., M.A. is a doctoral student in Demography at the Population Studies Center, University of Pennsylvania, Philadelphia, PA and a lecturer in the Department of Demography and Social Statistics at Obafemi Awolowo University, Ile-Ife, Nigeria.

The Demographic and Health Surveys (DHS) Program is designed to collect data on fertility, family planning, and maternal and child health. DHS is funded by the United States Agency for International Development. DHS Working Papers are intended to disseminate early findings of in-depth analysis of DHS data. Comments about this working paper or requests for information about the DHS program should be sent to DHS, Macro International Inc., 11785 Beltsville Drive, Calverton, MD 20705, USA (Tel. (301) 572-0200; Fax (301) 572-0999).

ABSTRACT

Two significant issues raised by non-numeric responses to the ideal family size question are examined in this study. The first is whether women who report non-numeric responses are indeed different from women who give numerical answers in ways that are likely to be related to their fertility and family planning behaviors and, thus, whether omitting them from the analyses biases the results. The second is whether the failure to provide numeric responses is a failure of survey technique, that is, would either better survey questions or in-depth interviewing in fact elicit numeric responses. The first question is examined by analyzing data sets from the Ghana and Ondo State (Nigeria) Demographic and Health Surveys. The second question is examined using quantitative survey data and qualitative data from focus group study among Yoruba women in Nigeria.

Evidence from the DHS data sets show that women who gave "up to God" answers to the ideal family size question do differ from their numerate counterparts in fertility and family planning behaviors. "Up to God" women are more likely to want larger number of children than women who formulate explicit fertility desires and less likely to approve of family planning or adopt behavior that produces small families. Qualitative data shed some light on the meaning of "up to God" responses to the fertility preference question. Women who give such answers are likely to express their fertility goals in numerical terms if the demand for children were to be assessed in terms of costs of childrearing. The study concludes that it may be unrealistic to exclude "up to God" answers from analysis of family size desires. Policies and programs that are based on evidence from studies that exclude information on non-numeric respondents may be misguided.

"The upright man should never be afraid of having too many children, on the contrary, he should think of them as blessing from God and believe what David says: '... , for since God has given them, He will give him in consequence the means of feeding them.' " Flandrin, 1979:176 citing Jean Benedict, 1601

Introduction

Recent findings from sample surveys in some parts of Asia and sub-Saharan African countries indicate that a substantial proportion of women are unable to quantify their desired family size (Lightbourne and MacDonald, 1982; Jensen, 1985; McCarthy and Oni, 1987). Instead some women in this setting answered questions on future fertility goals by responding "up to God," "as many as possible," "husband's wishes," etc.

Non-numeric responses are problematic both for analysts of survey information on fertility preferences and desires, and for policy-makers who wish to use the results of these surveys. Typically, women who give non-numeric responses are excluded from the analysis. Thus, results of the surveys—and policy based upon these results—are based only on the subset of women who give numeric responses. But if the women who give numeric responses are really quite different from those who say "up to God," then the results of the analysis will be biased, and the policy based on those results may be misguided.

The purpose of this study is to examine two significant issues raised by non-numeric responses. The first is whether women who report non-numeric responses are indeed different from those who give numerical answers in ways that are likely to be related to their fertility and family planning behaviors and, thus, whether omitting them from the analyses biases the results. The second is whether the failure to provide numeric responses is a failure of survey technique. That is, would either better survey questions or in-depth interviewing in fact elicit numeric responses? We examine the first question by analyzing data sets from the Ghana and Ondo State (Nigeria) Demographic and Health Surveys. The second objective is examined using qualitative data from focus group study among Yoruba women in Nigeria.

Literature Review

On the first question, the demographic literature provides evidence that those who give non-numeric answers differ from those who do not. In particular, those who give non-numeric responses differ by: (1) their degree of urban exposure and marital status, (2) past child or infant mortality experience at both the individual and/or household level, (3) attitude to and practice of contraception, (4) where influence of kinship predominates, (5) where patriarchal systems are strong, and (6) when economic conditions are premodern (Mason and Taj, 1987; Olaleye and Bankole, 1991).

Fertility Preferences: Conceptual and Interpretation Problems

Different concepts have been used to measure fertility preferences in the demographic literature, including "desired family size," "intended family size," and "ideal or preferred number of children." (Lightbourne and MacDonald, 1982). Some studies have found no distinguishable differences among these concepts with respect to orientation toward the number of children per couple (see Ryder and Westoff, 1969) whereas other studies have criticized their use (Acsadi and Johnson-Acsadi, 1985). Proponents of the latter view argue that they address the opinions, rather than the intentions, of the respondents. Some researchers have debated their rationale, most especially that the concept of family size preference is a meaningless notion that lacks both validity and reliability in the context of non-western societies (Hauser, 1967). For instance, a concept such as desired family size implies realistic desires. It presupposes that respondents intend to have the stated number of children; while formulating this goal, they take account of not only present conditions but also a foreseeable course of future family life that can be expected under normal circumstances (Acsadi and Johnson-Acsadi, 1985).

Some contend that the concept of family size preference may not be comprehensible to some women. Proponents of this view note that due to the respondent's lack of familiarity with the concepts, she may become evasive and reluctant to answer or give answers that may be categorized as "don't know" or "undecided" (Acsadi, 1982). Other studies suggest that the refusal to report or state specific fertility goals may be due to reasons that have cultural significance, such as prestige, continuation of family lineage, fear of barrenness or sterility, etc. (Caldwell and Caldwell, 1985). In some sub-Saharan African countries, there is a tendency for some women to attribute to God the number of children that they want to have. Among the Edos of Nigeria for example, God is referred to as the "bringer of Children" (Mbiti, 1970). The Yorubas of Nigeria regard children as God's gifts or blessings from heaven that cannot be refused (Olusanya, 1971). To this regard, Farooq and Adeokun (1976) note that a non-numerical response to a fertility preference question is a way of avoiding direct confrontation with an issue that is believed to be beyond the respondent's control.

The treatment of non-numerical responses in analysis of fertility desires is also a subject of debate. Because of the desire of demographers for numerical values, non-numerical responses (for instance "up to God" responses) constitute a problematic non-definitive answer. In some instances, women who gave such answers may be grouped with women who want the most children or such cases are omitted from the analysis (see Fapohunda and Todaro, 1988).

The above review suggests that further research efforts are required to examine in-depth the meaning of "up to God" responses to family size preference questions. How do they fit in the sequential models of fertility decision-making? To what extent will a woman, consciously or subconsciously, reveal a preference for a particular family size in a situation (say, reproductive behavior) where she thinks that the number of children that she can have is outside her

domain of control? Is an "up to God" response an expression of fatalism in a situation where the woman has no motivation to practice birth control?

Sources of Data and Method of Analysis

The data utilized for this study include quantitative and qualitative sources.

Quantitative Data Sources

The quantitative data sets come from the Ondo State (Nigeria) Demographic and Health Survey (ODHS) and the Ghana Demographic and Health Survey (GDHS) conducted in 1986/87 and 1988, respectively. The GDHS was a national sample survey of 4488 female respondents and a sub-sample of 943 co-resident husbands of the interviewed women. A total of 4213 eligible women were similarly interviewed for the ODHS. Detailed reports of the sample design and methodology for each country are provided in the First Country Report for each country (MOH and IRD, 1989; GSS and IRD, 1989).

The study population in the ODHS is predominantly made up of the Yorubas (about 86%). The remaining 14% come from other ethnic groups, mostly Ibos, Hausas, and Edos. The total population is predominantly Christian, with Protestants constituting the majority (about 75%). By settlement patterns, about 40% of the Ondo State population reside in urban areas, and the remaining 55% and 5% live in the rural and riverine areas, respectively.

In the area of reproductive behavior, the fertility rate of Ondo State women is high. The reported total fertility rate (TFR) is 6.0 births per woman, and there is no significant difference between the rates for women residing in the rural and urban areas (5.9 vs 6.0). Although the proportion of women that reported knowledge of modern contraceptive methods is 47.1%, the proportion of current users is 9.1% (MOH and IRD, 1989).

For the GDHS sample, the study population is composed of varied ethnic and linguistic groups. The proportion of women who reside in urban areas is about 66% while the remaining 40% live in rural areas. The composition of the study population by religion shows that Christians constitute about 50% while the others are Muslims and adherents of traditional religion. Reported use of modern contraceptive methods is 12.3% and the TFR for Ghanaian women aged 15-49 for the five years preceding the survey is 6.4 (GSS and IRD, 1989).

The two data sets contain, among other things, detailed information on reproductive histories, attitudes toward family planning, and contraceptive behavior of the women interviewed. They also provide information on women who gave numeric and non-numeric answers to questions on ideal family size and on the explanatory variables that could be used to study the determinants of family size desires. Preliminary investigations of these data reveal a

typology of responses that allow us to classify our respondents along some psychosocial dimensions (such as fatalistic, modern, etc.).

For the purpose of this paper, the study population is restricted to currently married women aged 15-49. The analysis is performed on 2832 cases and 3132 cases, respectively, of total eligible respondents interviewed in ODHS and GDHS. Data sets from the Ghana and Nigeria Fertility Surveys (GFS and NFS) conducted in 1979/80 and 1981/82 (Central Bureau of Statistics, 1983; National Population Bureau [Nigeria] and World Fertility Survey, 1984), respectively, have also been used to examine the trends in family size preferences of women across time.

Qualitative Data Sources

To complement our quantitative survey data, we conducted two focus group discussions in two small towns in the western part of Nigeria. The focus groups were designed to obtain qualitative information on motivation, attitudes, and behavior patterns of people (Knodel et al., 1984). Such informal group discussion gives the researcher the opportunity to gather insights and gain better perspectives of issues. Also, one can probe findings from surveys that seem puzzling. In our case, the focus group research inquired about the meaning of "up to God" responses to ideal family size question. Previous research using survey data has revealed the characteristics of women who report "up to God" answers. There is little or no information on why women give such answers and what the attitudes of this group are toward the "cultural formation of an ideal family size" (Seccombe, 1990: 170).

To study these issues in the focus group, the participants' views and opinions on the following subject matters were elicited:

- Attitudes towards parenthood/family matters, for example, how do they regard a woman who decides she does not want to have children, etc.;
- Opinions and views on family size, for instance, perception of family size preference concepts, etc.;
- The meaning of "up to God" answers to family size preference questions, the nature of questions range from the role of God in fertility decision-making to whether God will reprove or be angry with a woman who tells God the number of children she wants to have; and
- Perception of fertility regulation and attitudes toward family planning.

Selection of the focus group participants was a two-stage process. The first stage entailed the use of a questionnaire to identify the two target population groups. One group was composed of women who are able to formulate their fertility desires in numerical terms, whereas the other group was made up of respondents who gave "up to God"

related answers to the family size desires question. The purpose of this selection criteria was to facilitate a comparison between these two groups, particularly how each group perceives the question on fertility preferences and also whether they share similar values relating to the issues under investigation.

The second stage was the recruitment of participants for the focus group. Since it is difficult to decide a priori which women would report non-numeric answers, a small-scale survey was conducted to identify them. Two towns, Efon Alaye in Ondo State and Modakeke in Oshun State, were chosen for the survey. Efon Alaye was one of the towns that participated in the ODHS whereas Modakeke is outside the area covered by the ODHS but provides a good comparison for Efon Alaye in terms of socioeconomic characteristics. The two areas are inhabited mostly by the Yorubas. Both areas can be described as semirural because they lack modern amenities such as good drainage, telephones, and good water supply. However they possess some characteristics which give them a modern outlook, such as electricity, primary and secondary schools, etc. The basic economic activity in the two towns is farming.

The survey questionnaire contained questions on different measures of family size preferences such as intended, ideal, and wanted family sizes and also economy-conditioned family size. Other information that was gathered in the questionnaire include data on socioeconomic characteristics, attitudes toward family planning, motivation for fertility control and psychosocial information. To reduce interviewer bias as a result of different interpretations/translations of questions, the questionnaire featured side-by-side English and Yoruba translations. Selection of the eligible respondents in the first stage followed a simple random selection of households followed by a random selection of eligible respondents (currently married and whose age falls between 15-49). At the end of the exercise, a total of 90 women were interviewed (50 in Efon Alaye and 40 in Modakeke). Eight questionnaires were rejected due to inconsistencies in reporting.

Focus Group Research

A simple analysis of the information obtained from the questionnaires was done to set guidelines for selection criteria. Previous studies have shown that women who report non-numerical fertility desires differ from their counterparts who report numerical fertility preferences in characteristics such as age, education, and attitudes toward family planning (McCarthy and Oni, 1987; Olaleye and Bankole, 1991). Taking note of the differences in characteristics, participants were selected to ensure a fair representation of desired composition of respondents in both groups. Because of resource constraints, only one focus group session was carried out in each location.

Informing the chosen respondents that they have been selected to participate in the focus group session was done by the researcher. The researcher's affiliation with a well respected university helped to gain cooperation from would-be participants. No monetary or other inducement was offered at the time of recruitment. Each would-be participant was given a general idea of the matters to be discussed but had no indication of the nature of specific questions to be asked. The withholding of such information at the time of recruitment is important for generating

fruitful discussion during the actual interview. Advance notice might artificially sensitize participants to the subject matter (Stewart and Shamdasani, 1990).

In Modakeke, the session was conducted in a multi-purpose room attached to a primary care health center that provides antenatal and other health care to mothers and children. A big conference room belonging to the local government secretariat was used for the session conducted in Efon-Alaye. Ten participants (composed of equal number of numeric and non-numeric respondents) were selected for each session. Each group brought a different perspective to the issues discussed during the interview. Each discussion was tape recorded to permit full recollection of the matters discussed and further data analysis.

Analytical Strategy

The dependent variable in this study is ideal family size. In the Demographic and Health Survey, ever and currently married women were asked what they consider to be the ideal number of children: "If you could choose exactly the number of children to have in your whole life, how many would that be?" The objective of this question is to find out the number of children a woman would prefer to have at the time of the survey. As mentioned earlier, responses to this question range from numeric answers to answers such as "up to God," "as many as possible," "don't know," etc. In this study, we hypothesize that regression models that combine sample information on both women who report non-numerical fertility desires, such as "up to God," and those who formulate numeric fertility goals yield better and consistent estimates of the determinants of ideal family size than models that analyze data only from women who report their actual fertility preferences.

The data analysis draws from the works of Heckman (1976; 1979), Maddala (1983), and, in particular, Jensen (1985). Usually, analysis of family size desires is restricted to women who express numerical desires. The typical regression equation that results is given by

$$Y_i = X_i\beta + \epsilon_i \tag{1}$$

One consequence of this strategy is that there is a sample selection problem. The Ordinary Least Square (OLS) estimation method may yield biased and inconsistent parameter estimates. Also, the implicit number of additional children desired may be under- (or over-) estimated if family size desires of women who gave non-numerical answers are somewhat different from those of the women who stated their actual family size desires. To consider if such a sample selection problem arises, we assume a censored regression model given by

$$Y_i^* = X_i^*\beta^* + \epsilon_i^* \tag{2}$$

where Y^* represents the reported ideal family size by a woman. The X^* is an observable vector of independent variables, β^* is a vector of unknown parameters, and ϵ^* is the error term. As observed from the survey data, Y_i^* can be a numeric quantity for women reporting numeric answers to questions on family size preferences or non-numeric for women giving different types of non-numeric responses. For the latter group of women, we have no measure of the maximum number of children that they would want at the time of the survey. Therefore, Y^* is

observed when

$$\begin{aligned} Y_i &= Y_i^* && \text{if } I^* \geq 0 \\ Y_i &= ? && \text{if } I^* < 0 \end{aligned} \quad (3)$$

where

$$I_i^* = Z_i\Omega + \mu_i. \quad (4)$$

Equation (4) is set up as a probit model where variable I_i^* equals 1 if a respondent gave a numeric answer (i.e., if $I^* > 0$) and 0 if she gave a non-numeric answer (i.e., if $I^* \leq 0$). Let Z_i represent a vector of covariates that explain variation in I^* , Ω be the associated coefficient vector, and μ be the error term. The Z_i 's are chosen to reflect a set of factors that strongly influence the choice of the number of children a woman wants. The index I^* may be referred to as the propensity to formulate numerical fertility desire. An important theoretical basis for this assumption is that women who maintain strict adherence to tradition or culture may have a non-rational approach to fertility decision-making. Hence they are less likely to want to quantify the number of children they would want to have over their entire reproductive life course. Net of other influences, they accept on faith certain standards of conduct (Freedman and Whelpton, 1952). Therefore the index is likely to be influenced by some unobservable factors¹ that cannot be measured but that affect the reporting of the ideal family size (IFS). A numeric response to the IFS question is assumed to represent the crossing of such unobserved threshold. The level of this threshold (I^*) is assumed to vary from one respondent to another and to be influenced by the respondent's behavioral, attitudinal, and socioeconomic characteristics.

For the derivation of the bias in regression coefficient estimators and how to obtain consistent estimators for the regression coefficients we refer interested readers to Heckman (1979), Olsen (1980), Maddala (1983) and Jensen (1985). When the results of their work are combined with results from Johnson and Kotz (1972: 112-113) yield

$$E(Y_i | X, Z) = X_i\beta + E(\epsilon_i | X, Z, I_i^* \geq 0) \quad (5)$$

and

$$E(\epsilon_i | Z_i\Omega + \mu_i \geq 0) = \sigma E(\mu_i | \mu_i \geq -Z_i\Omega) = \sigma f(Z_i\Omega) / F(Z_i\Omega) = \sigma \tilde{N}_i \quad (6)$$

$$Y_i = X_i\beta + \sigma \tilde{N}_i + \epsilon_i \quad (7)$$

where \tilde{N}_i is the hazard rate for sample inclusion, σ is the covariance between the error term μ and the OLS regression error term ϵ , and $f(\cdot)$ and $F(\cdot)$ are the probability density and cumulative distribution functions, respectively, of a standard normal variable (Heckman, 1979). The variable \tilde{N}_i represents the increase in the probability that a respondent gives a numerical response to the question on ideal family size, given an infinitesimal increase in $Z_i\Omega$ and given that the individual is currently a non-respondent (Jensen, 1985: 447). The presence of selectivity bias in the uncorrected OLS equation (that is, eq. 1) is examined by testing for the significance of σ (the coefficient of \tilde{N}). If a t-test indicates that the effect of \tilde{N} on Y_i is significantly different from zero, one may conclude that the model that omits \tilde{N} is misspecified (Jensen, 1985). Also, the sign of σ in equation (7) indicates

¹ For instance, they may associate future reproductive behavior with God or adhere to traditional ideas that disallow interference with the course of human events (such as using contraception to plan family size).

the direction of the effect of \tilde{N} . A negative effect of \tilde{N} on Y_i suggests that women who provide non-numeric answers to questions on ideal family size desire smaller family size than their numerate counterparts on the average, controlling for the effects of the independent variables, and a positive effect of \tilde{N} indicates a higher demand for children.

Results

First, we examine the bivariate relationship between the ideal family size (dependent variable) and selected socio-demographic characteristics of the respondents. The attempt here is to shed some light on the nature of the relationship when (1) no other variable is taken into account and (2) when one or more of the factors are controlled.

Tables 1 and 2 show the trends² in the distribution of parity-specific desires of women and non-numeric answers to the ideal family size question by respondents' socio-demographic characteristics. For women interviewed in the ODHS and the NFS, line 1 of Table 1 indicates that the proportion of women who gave non-numeric answers to fertility preference questions in both surveys increased by 5.2 percentage points. The proportion of women who gave "up to God" responses also increased by 9.7 percentage points. A comparison of the frequency of non-numeric responses given by women in the just concluded Nigeria Demographic and Health Survey (NDHS), about 61%³, with the figures obtained in this study suggests that the proportion of women who are unable to quantify their fertility goals in numeric terms may be increasing over time. Proportions of women who gave non-numeric fertility desires and "up to God" responses increase with respondents' age in the ODHS sample, while a U-shaped curve is discernible in the NFS sample. Women who live in urban areas and women who have heard of or used modern contraceptive methods are less likely to give non-numeric fertility statements, particularly "up to God" responses. Furthermore, higher educational attainments decrease the tendency that a woman will report a non-numeric response to ideal family size question and increase the desirability of smaller family size. Likewise, women who approve of family planning and often discuss family planning issues with their partners have a higher tendency to formulate numerical fertility desires than those who do not.

The patterns of results described above are similar for Ghanaian women (see Table 2). However, the distribution of women's responses to family size preference questions differ greatly in both settings. About one out of nine women interviewed in the GFS and one out of eight women interviewed in the GDHS, respectively, compared to about two out of five women and one out of two women in respective NFS and ODHS samples were unable to quantify their family size desires. The proportions of women reporting non-numerical fertility statements and "up to God" answers across the two surveys increased by about 2 and 5 percentage points, respectively. The proportion

²The trends described pertain mostly to Yoruba women interviewed in both surveys.

³The failure of interviewers employed in the NDHS to probe the respondents who gave "up to God" answers further on the ideal family size question (unlike what happened in the ODHS and GDHS) may have contributed to this unusual figure.

Table 1: Trends in Percent Distribution of Fertility Desires of Currently Married Women by Selected Variables, Nigeria Fertility Survey (NFS) 1981-82 and Ondo State Nigeria Demographic and Health Survey (ODHS) 1986-87

Variable	Desired Family Size (NFS 1981-82)						Ideal Family Size (ODHS 1986-87)					
	No. of Cases	Numeric		Non-numeric			No. of cases	Numeric		Non-numeric		
		1-3	4+	Up to God	Other Answers	Total Non-num.		1-3	4+	Up to God	Other Answers	Total Non-num.
Total	1225	3.7	56.8	30.2	9.3	39.5	2832	1.8	53.4	39.9	4.8	44.7
Current Age												
15-24	251	1.6	57.4	33.1	8.0	41.1	441	1.8	63.3	31.3	3.6	34.9
25-34	489	2.7	58.9	29.2	9.2	38.4	1046	2.2	55.5	37.6	4.7	42.3
35-49	485	5.8	54.4	29.7	10.1	39.8	1345	1.5	48.6	44.6	5.4	50.0
Place of Residence												
Rural	473	3.4	50.3	35.3	11.0	46.3	1688	1.2	46.0	47.3	5.5	52.8
Urban	752	3.9	60.9	27.0	8.2	35.2	1144	2.7	64.3	29.1	3.9	33.0
Knowledge of Contraception												
None	689	5.1	51.7	32.2	11.0	43.2	1384	1.0	43.4	49.0	6.7	55.7
Traditional	107	1.9	57.9	33.6	6.6	40.2	33	9.1	48.5	39.4	3.0	42.4
Modern	429	1.9	64.8	26.1	7.3	33.4	1415	2.4	63.4	31.1	3.1	34.2
Contraceptive Use and Intention												
None	1181	3.8	56.3	30.4	9.5	39.9	1804	0.7	42.9	50.5	5.9	56.4
Intend to Use		-	-	-	-	-	856	2.3	71.3	23.6	2.8	26.4
Traditional	34	-	67.7	26.5	5.8	32.3	64	10.9	76.6	9.4	3.1	12.5
Modern	10	-	80.0	20.0	-	20.0	108	10.2	75.0	11.1	3.7	14.8
Education												
None	752	4.8	53.5	31.5	10.2	41.7	1454	1.2	44.3	48.7	5.8	54.5
Koranic	15	-	40.0	60.0	-	60.0						
Primary	338	0.6	59.5	29.9	10.1	40.0	825	1.3	54.7	39.4	4.6	44.0
Secondary+	120	5.8	72.5	19.2	2.5	21.7	553	4.2	75.6	17.7	2.6	20.3
Religion												
Christians	416	5.5	58.9	26.0	9.6	35.6	2342	2.0	55.0	38.0	4.9	42.9
Muslims	564	2.7	54.6	33.2	9.6	42.6	422	1.2	46.7	48.6	3.5	52.1
Trad/Others	245	2.9	58.4	30.6	8.2	38.8	68	-	39.7	51.5	8.9	60.4
Spousal Family Planning Discussion												
Never							2059	1.1	47.5	45.9	5.4	51.3
Once/Twice							539	3.5	64.4	28.2	3.3	31.5
More Often							234	4.3	80.3	14.5	0.9	15.4
Approval of FP												
Disapprove							1009	0.8	34.3	59.5	5.5	65.0
Approve							1823	2.4	64.0	29.1	4.5	33.6

Note: Total may not add to 100 due to rounding errors. For comparability with the DHS sample, the NFS data set is restricted to currently married Yoruba women only. The trends described pertain mostly to Yoruba women interviewed in both surveys.

Table 2: Trends in Percent Distribution of Fertility Desires of Currently Married Women by Selected Variables, Ghana Fertility Survey (GFS) 1979-80 and Ghana Demographic and Health Survey (GDHS) 1987-88

Variable	Desired Family Size (GFS 1979-80)						Ideal Family Size (GDHS 1987-88)					
	No. of Cases	Numeric		Non-numeric			No. of cases	Numeric		Non-numeric		
		1-3	4+	Up to God	Other Answers	Total Non-num.		1-3	4+	Up to God	Other Answers	Total Non-num.
Total	4429	5.1	83.5	4.5	6.9	11.4	3132	8.1	78.6	9.5	3.8	13.3
Current Age												
15-24	1290	7.8	81.1	4.9	6.2	11.1	758	11.2	78.2	8.1	2.5	10.6
25-34	1649	4.2	85.0	4.3	6.5	10.8	1312	8.5	80.1	6.9	3.7	10.6
35-49	1490	3.6	84.0	4.5	7.9	12.4	1062	5.3	76.0	13.8	5.0	18.8
Place of Residence												
Rural	3006	3.8	83.8	5.3	7.1	12.4	2175	6.7	78.5	10.7	4.1	14.8
Urban	1423	7.7	83.0	3.0	6.4	9.4	957	11.4	78.7	6.7	3.2	9.9
Knowledge of Contraception												
None	1391	3.0	75.4	11.7	10.0	21.7	642	4.4	71.0	18.4	6.2	24.6
Traditional	467	4.4	80.1	3.9	11.6	15.5	94	1.1	60.6	24.5	13.8	38.3
Modern	2631	6.3	88.3	0.9	4.5	5.4	2396	9.4	81.3	6.5	2.8	9.3
Contraceptive Use and Intention												
None	4006	4.9	82.8	5.0	7.4	12.4	1710	6.0	75.3	13.9	4.9	18.8
Intend to Use		-	-	-	-	-	1018	9.8	83.9	4.3	2.0	6.3
Traditional	176	4.5	89.9	1.1	4.5	5.6	243	11.1	79.4	4.5	5.0	9.5
Modern	245	8.6	90.6	-	0.8	0.8	161	14.9	78.9	3.1	3.1	6.2
Education												
None	2680	3.1	79.6	7.4	9.9	17.3	1454	4.6	73.9	15.5	6.0	21.5
Primary	1572	6.7	90.7	0.3	2.4	2.7	1501	9.7	83.5	4.7	2.1	6.8
Secondary +	177	19.8	79.1	-	1.1	1.1	177	23.7	74.6	0.6	1.1	1.7
Religion												
Christians	2623	6.5	89.1	0.5	3.9	4.4	2057	9.4	81.6	6.5	2.5	9.0
Muslims	561	2.3	77.7	9.3	10.3	19.6	347	4.6	73.8	16.4	5.2	21.6
Trad/Others	1245	3.0	74.4	10.9	11.7	22.6	728	6.2	72.4	14.7	6.8	21.5
Spousal Family Planning Discussion												
Never							2012	6.1	76.5	12.6	4.7	17.3
Once/Twice							544	11.4	81.4	5.0	2.2	7.2
More Often							576	12.0	83.0	2.9	2.3	5.2
Approval of FP												
Disapprove							1033	4.9	73.6	17.0	4.5	21.5
Approve							2099	9.7	81.0	5.8	3.5	9.3

Note: Total may not add to 100 due to rounding error.

of women who consider 1-3 children as ideal family size also increased by 3.0 percentage points. Women with knowledge of or who use modern contraceptive methods, women who approve of family planning, and women who discuss family planning issues with husbands were much more likely to formulate numerical fertility desires.

In a separate analysis (not shown), differences in reproductive behavior of numeric and non-numeric respondents were examined by controlling for contraceptive intention. One expects to find that a woman who desires to postpone her next birth would use some means to guard against unwanted pregnancy. It is interesting to find that in both the ODHS and GDHS samples whether a non-numeric respondent wants her next birth within 2 years or later or if she desires to stop childbearing, she is less likely to use any contraceptive method for spacing or stopping purposes compared to her numeric counterpart. In the ODHS sample, 77.2% of non-numeric respondents who want no more children compared to 60.6% of numeric respondents who desire to stop childbearing do not intend to practice contraception.

We present the results of the multivariate analysis that examines the effect of sample selection bias in regression analysis of ideal family size. Table 3 presents the regression results (for Ondo State women) under three different sample selection criteria. Column 2 shows the OLS estimates for women who gave numeric answers to the ideal family size question (herein referred to as SSC-I in Figure 1). Column 3 presents the OLS estimates for all women after adjusting for sample selection bias. In other words, these represent the corrected OLS estimates when we incorporate sample information on all women who gave non-numeric answers into the OLS demand-for-children equations (herein referred to as SSC-II in Figure 1). The probit estimates of the probability that a woman reports a numerical fertility desire relative to reporting a non-numerical response are shown in column 4.

Table 3 also presents the regression results of ideal family size under a different scenario. Here we consider the differences between women who gave "up to God" responses and those who expressed numerical desires. The aim is to examine whether women who gave non-numerical responses differ in their desires by the type of non-numeric answer they gave. This strategy is considered appropriate given that sample selection bias associated with particular type(s) of non-numeric answer may be concealed by the pooling of data for all women who gave non-numeric responses. The corresponding regression results under this scenario (herein referred to as SSC-III in Figure 1) are presented in columns 5 and 6 of Table 3.

The important findings that can be deduced from the regression equations in Table 3 relate to the statistical significance of the coefficient of hazard rate, \tilde{N} (see columns 3 and 5). The t-statistics associated with the coefficients of \tilde{N} (significant at $p < .0001$) in both models I and II suggest the presence of sample selection bias. This is a result of the correlation between error in the regression equation incorporating sample information on non-numeric respondents **model I** (and likewise those incorporating sample information on "up to God" respondents--**model II**), and error in the OLS regression equation based on data that utilize information only on women who formulate fertility desires.

The positive effect of the hazard rate, \tilde{N} , (for instance in model I) holding the effects of other covariates constant, suggests that women who gave non-numerical fertility statements desire larger family size than their counterparts

Table 3: Regression Results of Ideal Family Size on Selected Variables, Ondo State DHS, 1986-87

Variable	OLS Coefficients (ItI) (2)	Model I (All Women)		Model II ("Up to God" Sample)	
		Corrected OLS Coeffs. (ItI) (3)	Probit Coefficients (ItI) (4)	Corrected OLS Coeffs. (ItI) (5)	Probit Coefficients (ItI) (6)
Constant	6.940(25.7)**	4.433(6.43)**	.281(0.70)	4.428(6.40)**	.293(0.70)
Current Age			-.002(0.68) +		-.016(0.60) +
15-24	-.295(1.60)	.046(0.23)		.031(0.15)	
25-34	-.365(2.70)*	-.168(1.19)		-.177(1.26)	
35-49	ref	ref		ref	
Age Squared			.000(0.07)		.000(0.03)
Surviving CEB	.109(6.27)**	.098(6.52)**	-.001(0.47)	.094(6.51)**	-.006(0.66)
Dead CEB	.112(2.70)*	.106(2.69)*		.106(2.71)*	
Education					
None	ref	ref	ref	ref	ref
Primary	-.151(1.16)	-.061(0.48)	.055(0.87)	-.064(0.51)	.050(0.77)
Secondary +	-.505(2.84)*	-.034(0.16)	.472(4.77)**	-.034(0.16)	.477(4.64)**
Contra.Use/Intention					
Modern	-.442(1.83) +	.128(0.43)	.565(3.31)**	.169(0.55)	.627(3.42)**
Traditional	-.512(1.77) +	.135(0.37)	.681(3.07)*	.155(0.42)	.721(3.02)*
Intend to Use	-.185(1.45)	.326(1.77)	.432(6.25)**	.315(1.72) +	.421(5.89)**
Do not Intend	ref	ref	ref	ref	ref
Partner's Education					
None	ref	ref	ref	ref	ref
Primary	-.010(0.76)	.055(0.42)	.081(1.32)	.016(0.13)	.050(0.79)
Secondary	-.391(2.33) +	-.030(0.16)	.277(3.16)*	-.010(0.05)	.318(3.43)*
Higher	-.531(2.66)*	-.294(1.40)	.158(1.47)	-.319(1.52)	.128(1.14)
Spacing Intention					
Within 2 years	.766(4.44)**	.208(0.92)	-.525(5.71)**	.219(0.98)	-.504(5.32)**
After 2 years	.809(5.18)**	.195(0.86)	-.601(6.94)**	.167(0.72)	-.610(6.85)**
Undecided	.513(3.23)*	.135(0.72)	-.374(4.28)**	.147(0.79)	-.352(3.88)**
No more	ref	ref	ref	ref	ref
Religion					
Christian	-.068(0.45)	-.095(0.65)		-.093(0.64)	
Muslim	ref	ref		ref	
Trad/Others	.755(1.87) +	.654(1.79) +		.649(1.80) +	
Place of Residence					
Rural	ref	ref	ref	ref	ref
Urban	-.132(1.30)	.267(1.81) +	.316(5.78)**	.273(1.82) +	.322(5.70)**
Accept FP Messages on Media					
Yes	-.709(3.66)**	-.418(2.25) ++	.234(2.93)*	-.404(2.20) ++	.236(2.89)*
No	ref	ref	ref	ref	ref
Approval of FP					
Yes	-.508(3.39)**	-.032(0.17)	.364(5.43)**	-.010(0.49)	.401(5.80)**
No	ref	ref	ref	ref	ref
FP Discussion					
Never	ref	ref	ref	ref	ref
Once/Twice	-.008(0.06)	.024(0.18)	.003(0.04)	.020(0.15)	.002(0.02)
More Often	-.072(0.43)	.179(0.92)	.297(2.50) +	.128(0.67)	.240(1.98) +
Whether Fatalistic					
No			ref		ref
Yes			.461(3.19)*		.453(3.02)*
Own House/Apartment					
No			ref		ref
Yes			-.184(3.33)*		-.164(2.89)*
Hazard Rate		2.246(3.93)**		2.361(3.92)**	
R-Square	.176	.184		.184	
Chi-Square (d.f)			625.58 (21)		605.02 (21)
Selected N	1564	1564	2832	1564	2695

Note: The absolute values of t-statistics are in parenthesis.

** p < .0001; * p < .01; ++ p < .05; + p < .10

The dependent variable in the probit model-column 4- is coded 1 (numeric response) and 0 (non-numeric response).

Non-numeric category in the probit model consists of all women reporting non-numeric responses.

The dependent variable in the probit model-column 6- is coded 1 (numeric response) and 0 (up to God response).

Non-numeric category in the probit model consists of all women reporting "up to God" responses.

CEB = Children ever born FP = Family Planning ref = Reference category

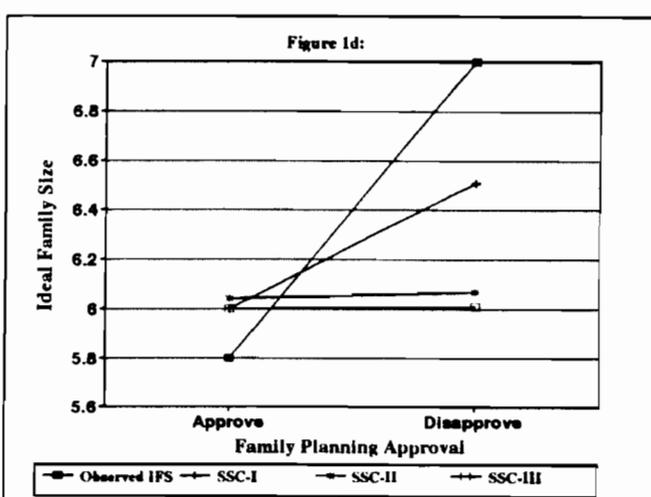
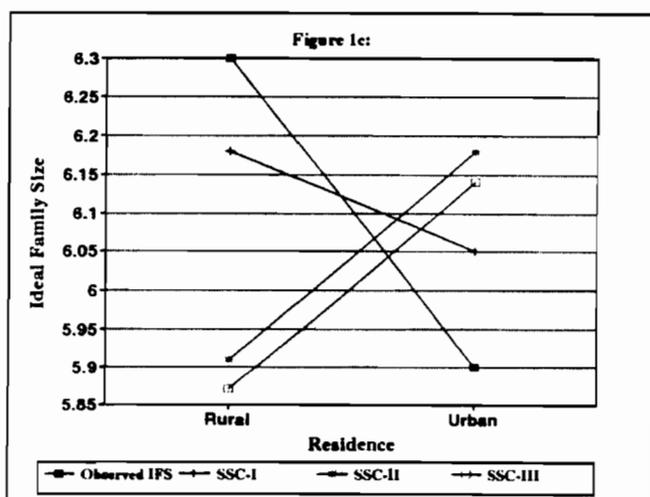
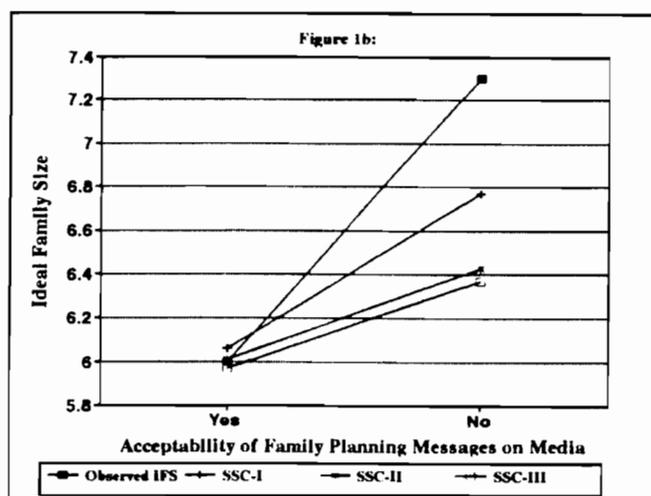
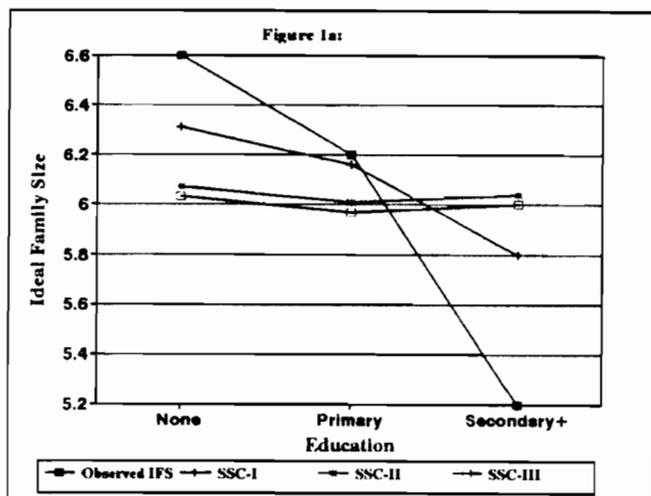
who stated their fertility preferences. A comparison of the estimates in columns 2 and 3 of Table 3 reveals some major differences between the parameter estimates of the OLS regression and those of the model which incorporates sample information on non-numeric respondents. The effects of education, contraceptive use and intention, birth spacing intention, approval of family planning and acceptability of media promotion of family planning messages are significantly reduced with the incorporation of sample information on non-numeric respondents into the OLS demand-for-children equations. In other words, the parameter estimates in column 3 show the impact of these variables on ideal family size that are smaller in size compared to the significant and larger effects of the same variables in column 2. The probit estimates also yield informative results. As observed in the bivariate relationships, women who are using or who intend to use contraception, women with urban exposure, women who favor the airing of family planning messages on media and those who approve of family planning are more likely to report numerical fertility desires- see column 4 of Table 3. The findings are very much the same when we compare the OLS estimates with the corrected OLS estimates in column 5 (estimates obtained after adjusting for sample selection bias due to inclusion of sample information on "up to God" respondents.)

A better picture of the effect of sample selection bias can be attained by using Figures 1a-1d, which show the plot of ideal family size by selected characteristics of the respondent under the three sample selection criteria. [We have also plotted the observed ideal family size (as reported by the respondents) for comparison purposes.] It is evident from the graphs that women with unobserved family size preferences are much more likely to differ from women who formulate fertility desires at least with respect to factors that can predict the differences in their family size preferences.

Examination of the regression results of ideal family size using the Ghana data set also shows clear evidence of sample selection bias in models that predict the determinants of family size desires using only information from those women who report numerical fertility desires (Table 4). Figures 2a-2d show the differences in ideal family size of women who reported numerical desires and those who did not. The coefficients of the hazard rate, \tilde{N} , (Table 4, columns 3 and 5) are positive and significant. They also suggest that women with an unobserved measure of ideal family size may desire a larger family size than women who stated their ideal family size.

The above findings show that larger desired family size is associated with the likelihood of a woman giving a non-numeric response. Examination of the association between the type of response to the ideal family size question and current family size also yield an interesting finding. As Figures 3 and 4 show, and with respect to individual factors such as education and urban residence, "up to God" women have higher numbers of children ever born and higher mortality experience than women who formulate numerical fertility desires. The reason for this difference is not clear cut. However, previous analyses do show that this may not be unexpected given the differences in the attitudes of the two groups of women toward family planning. Also for women who gave "up to God" responses, adopting the attitude of "as God giveth, so He taketh" (Caldwell, 1979) may seem to be a rational behavior if they believe that they have little or no control over their reproductive behavior.

Figure 1: Observed and Predicted Ideal Family Size Under Different Sample Selection Criterion by Selected Characteristics, Ondo State, Nigeria Demographic and Health Survey, 1986-87



SSC = Sample Selection Criterion IFS = Ideal Family Size

SSC-I: Predicted values of IFS for a sample consisting of numeric respondents only.

SSC-II: Predicted values of IFS for a combined sample consisting of women who gave numeric responses and "non-numeric" responses.

SSC-III: Predicted values of IFS for a combined sample consisting of women who gave numeric responses and "up to God" responses.

Note: Predicted values of IFS for SSC-I, SSC-II, and SSC-III are computed from the regression results in columns 2, 3 and 5 of Table 3, respectively.

Table 4: Regression Results of Ideal Family Size on Selected Variables, Ghana DHS, 1988

Variable	Model I (All Women)			Model II ("Up to God" Sample)	
	OLS Coefficients (ItI) (2)	Corrected OLS Coeffs. (ItI) (3)	Probit Coefficients (ItI) (4)	Corrected OLS Coeffs. (ItI) (5)	Probit Coefficients (ItI) (6)
Constant	6.021(17.2)**	3.744(5.08)**	.952(2.06)++	4.510(7.57)**	.955(1.85)++
Current Age			-.028(0.96)		-.016(0.50)
15-24	.281(1.24)	.328(1.02)		.258(0.92)	
25-34	.186(1.13)	.186(0.80)		.165(0.81)	
35-49	ref	ref		ref	
Age Squared	.001(3.14)*	.001(2.31)++	.000(0.97)	.001(2.29)++	.000(0.45)
Surviving CEB	.170(6.43)**	.060(1.29)	-.065(3.39)++	.099(2.29)*	-.061(2.86)
Dead CEB	.191(4.46)*	.185(3.14)*		.187(3.63)*	
Education					
None	ref	ref	ref	ref	ref
Primary	-.411(4.27)**	.147(0.76)	.358(4.88)**	-.086(0.58)	.313(3.80)**
Secondary+	-.757(3.88)**	.052(0.15)	.867(3.27)*	-.226(0.75)	1.092(2.76)*
Contra.Use/Intention					
Modern	.161(0.86)	.488(1.67)++	.232(1.30)	.428(1.66)++	.335(1.49)
Traditional	.332(2.11)++	.600(2.49)++	.194(1.43)	.603(2.74)*	.329(1.92)++
Intend to Use	-.081(0.80)	.408(2.13)++	.372(4.31)**	.204(1.34)	.320(3.28)*
Do not Intend	ref	ref	ref	ref	ref
Partner's Education					
None	ref	ref	ref	ref	ref
Primary	-.335(3.34)*	.128(0.71)	.252(3.50)*	.087(0.51)	.347(4.30)**
Secondary	-.476(3.37)**	-.059(0.26)	.262(2.17)++	-.169(0.86)	.238(1.78)++
Higher	-.477(2.25)++	-.154(0.47)	.107(0.52)	-.191(0.66)	.144(0.59)
Spacing Intention					
Within 2 years	1.072(8.11)**	1.014(5.39)**		1.025(6.22)**	
After 2 years	.892(7.78)**	.816(4.89)**		.830(5.67)**	
Undecided	.429(2.69)*	.412(1.82)++		.405(2.05)++	
No more	ref	ref		ref	
Religion					
Christian	-.592(3.99)	-.547(2.68)*		-.572(3.19)*	
Muslim	ref	ref		ref	
Trad/Others	.040(0.26)	.013(0.06)		.013(0.07)	
Place of Residence					
Rural	ref	ref	ref	ref	ref
Urban	-.416(4.64)**	-.415(3.16)*	.017(0.24)	-.402(3.50)*	.004(0.05)
Accept FP Messages on Media					
Yes	-.459(4.14)**	-.140(0.83)	.128(1.66)++	-.268(1.88)++	.088(1.03)
No	ref	ref	ref	ref	ref
Approval of FP					
Yes	-.580(5.22)**	-.447(2.84)*	.051(0.63)	-.316(2.10)++	.188(2.08)++
No	ref	ref	ref	ref	ref
FP Discussion					
Never	ref	ref	ref	ref	ref
Once/Twice	.030(0.26)	.235(1.31)	.148(1.40)	.127(0.83)	.096(0.80)
More Often	-.026(0.22)	.201(1.04)	.202(1.69)++	.122(0.73)	.227(1.58)
Partner's FP Approval					
No	ref	ref	ref	ref	ref
Yes	-.194(1.88)++	.105(0.93)	.228(2.63)*	0.002(0.02)	.232(2.32)++
Ethnicity					
Twi	-.833(7.73)**	-.722(4.52)**		-.765(5.53)**	
Fante/Akan	-.823(6.45)**	-.722(3.89)**		-.766(4.75)**	
Ewe	-1.13(8.87)**	-1.02(5.51)**		-1.06(6.57)**	
Others	ref	ref		ref	
Use of Interpreter					
No			ref		ref
Yes			.190(2.35)++		.129(1.43)
Hazard Rate		5.205(4.23)**		4.324(3.72)**	
R-Square	.308	.316		.313	
Chi-Square (d.f)			320.09 (18)		279.50 (18)
Selected N	2715	2715	3132	2715	3012

Note: The absolute values of t-statistics are in parenthesis.

** p < .0001; * p < .01; ++ p < .05; + p < .10;

The dependent variable in the probit model-column 4- is coded 1 (numeric response) and 0 (non-numeric response).

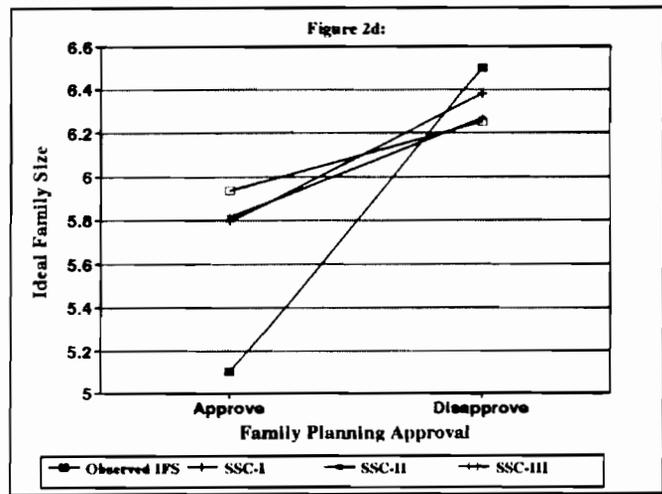
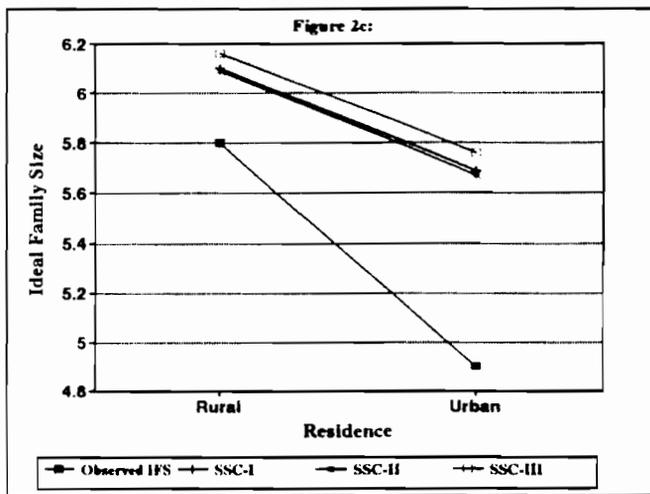
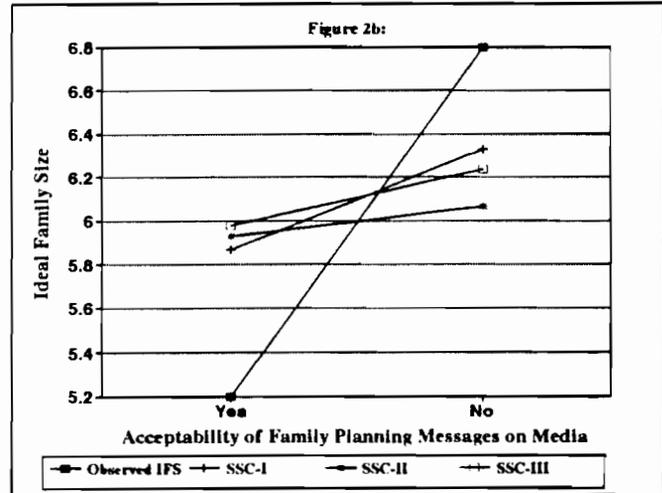
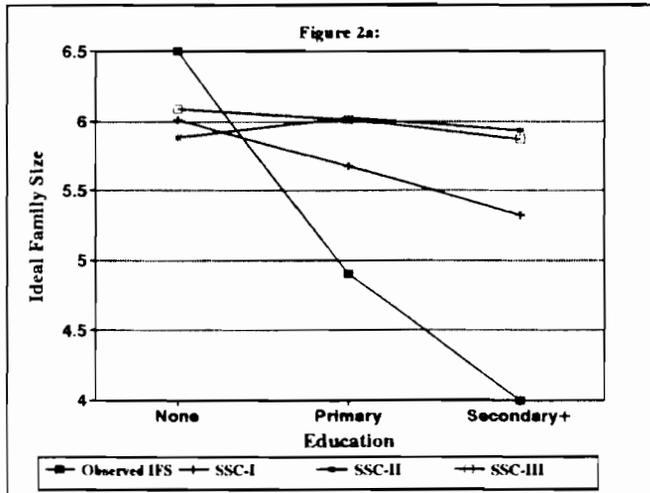
Non-numeric category in the probit model consists of all women reporting non-numeric responses.

The dependent variable in the probit model-column 6- is coded 1 (numeric response) and 0 (up to God response).

Non-numeric category in the probit model consists of all women reporting "up to God" responses.

CEB = Children ever born FP = Family Planning ref = Reference category

Figure 2: Observed and Predicted Ideal Family Size under Different Sample Selection Criterion by Selected Characteristics, Ghana Demographic and Health Survey, 1988



SSC=Sample Selection Criterion IFS=Ideal Family Size

SSC-I: Predicted values of IFS for a sample consisting of numeric respondents only.

SSC-II: Predicted values of IFS for a combined sample consisting of women who gave numeric responses and "non-numeric" responses.

SSC-III: Predicted values of IFS for a combined sample consisting of women who gave numeric responses and "up to God" responses.

Note: Predicted values of IFS for SSC-I, SSC-II, and SSC-III are computed from the regression results in columns 2, 3 and 5 of Table 4, respectively.

Figure 3: Mean Number of Children Ever Born (CEB) and Dead Children by Education (3a) and Residence (3b) according to Type of Response to Ideal Family Size Question, Ondo State DHS, 1986-87

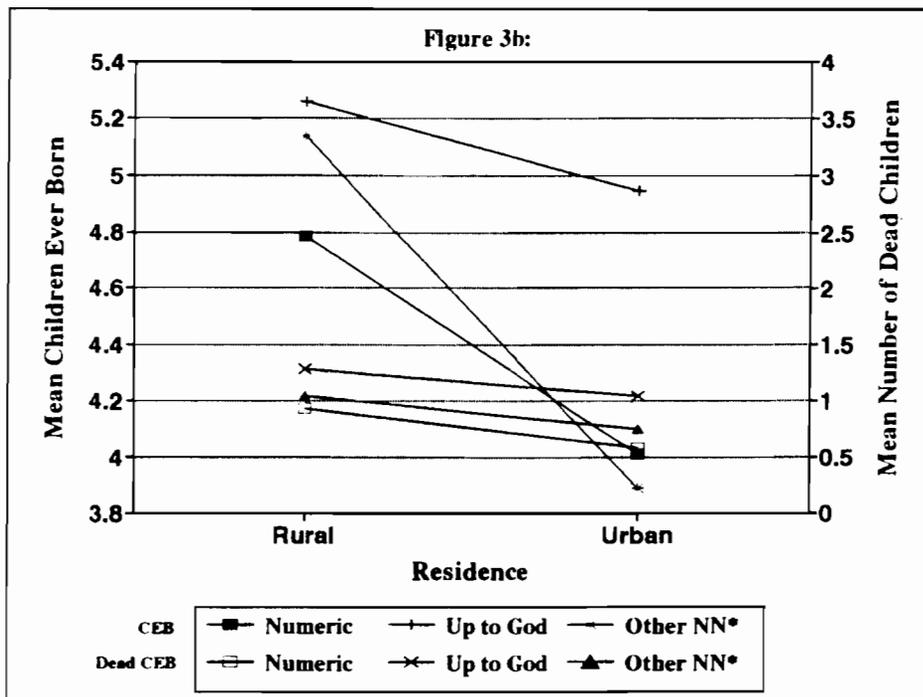
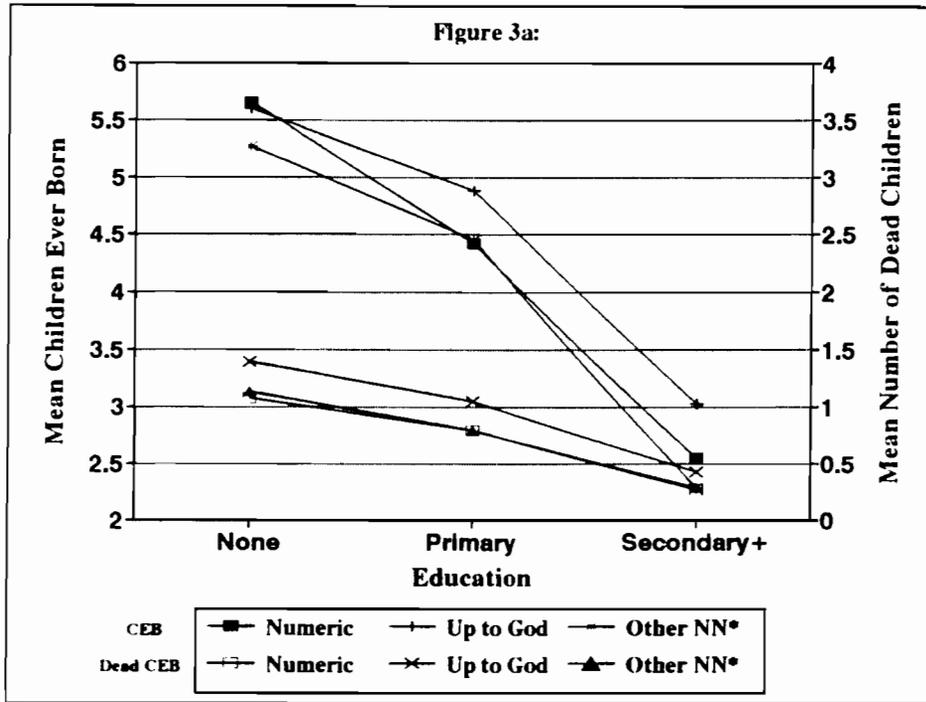
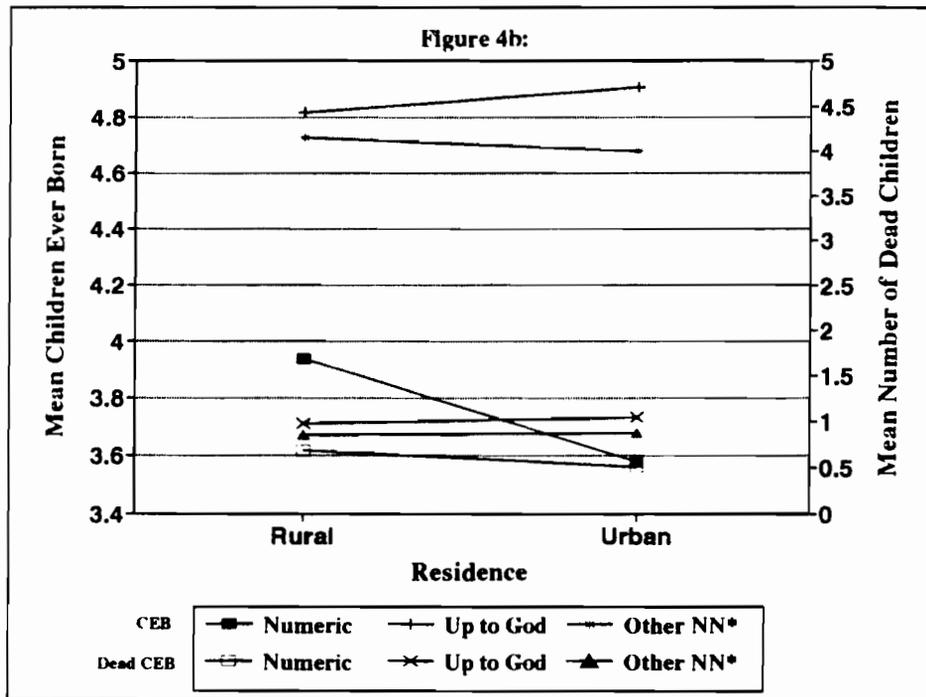
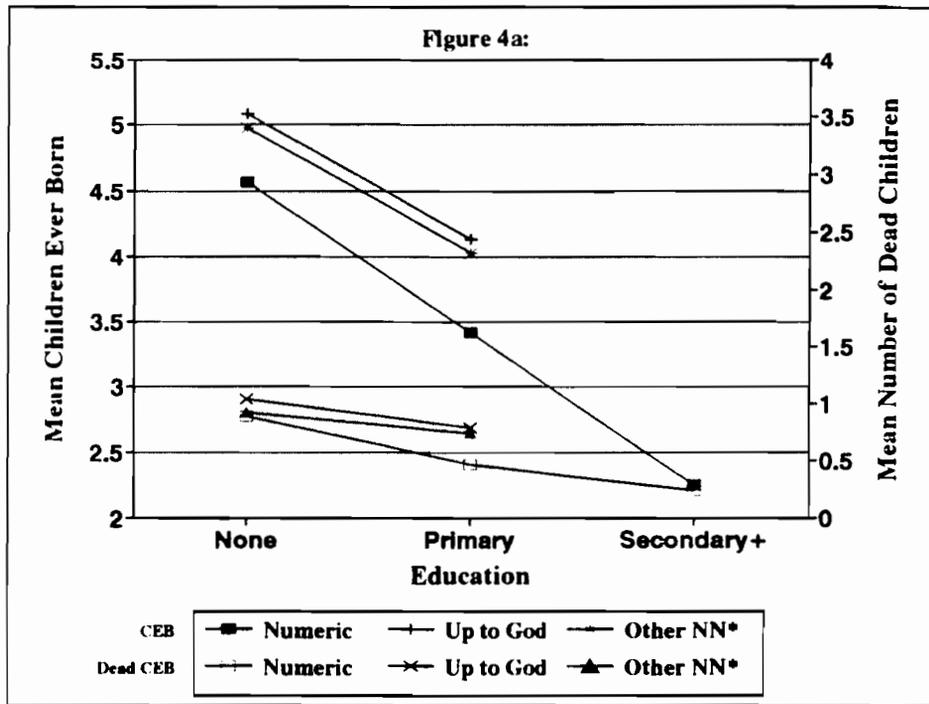


Figure 4: Mean Number of Children Ever Born and Dead Children by Education (4a) and Residence (4b) according to Type of Response to Ideal Family Size Question, Ghana DHS, 1988



Findings from Focus Group Interviews

The discussion of the findings from the focus group interviews is centered on issues that allow a better understanding of the meaning of "up to God" responses to the question on family size preference. These include respondent's perception of family size preference concepts (i.e., Is the concept meaningful or not to the respondent?) and under what circumstances (socioeconomic or otherwise) would an individual, for example, a non-numerate respondent, consciously or subconsciously reveal a preference for a particular family size in an area (say, reproductive behavior) she believes is outside her domain of control? To illustrate our findings, direct quotations from the participants themselves are occasionally used.

Perception of Concepts of Family Size Preference

Information garnered from the focus group participants and the survey interview support the view that with adequate probing, meaningful numerical responses can be elicited from women who give "up to God" answers. Table 5 shows the association between the responses of women to two different concepts of family size preference—wanted family size and economy-conditioned family size. Women who gave "up to God" responses to the wanted family question are likely to state their fertility preference in numerical terms if they were to assess their demand for children in terms of the costs and benefits of childrearing, e.g., the cost of providing education (Easterlin, 1978).

Table 5: Percent Distribution of Women by Responses to Two Different Concepts of Family Size Preference

Wanted Family Size ¹	Economy-conditioned Family Size ²				Total(N)
	0-3	4+	Up to God	DK	
0-3					100(2)
4+	6.8	92.2	-	-	100(44)
Up to God	15.6	56.3	18.8	9.4	100(32)
DK/Undecided					100(4)

Note: Total may not add to 100 due to rounding.

¹ Question: "Think back to the time that you were not married and you did not have any children and you were also not pregnant, how many children would you have wanted to have?"

² Question: "Suppose you could well provide for and educate all the children that you might have. How many children would you want to have?"

DK=Don't know

Evidence from the focus group interview also reveals a typology of responses given by women who respond "up to God" to the fertility preference question. Such responses allow us to classify the women into three groups. Though all groups share the view that family size is determined by God, each group is willing to quantify its position on the role of God as it relates to fertility decisionmaking.

According to Caldwell this "up to God" response is

"...neither an evasive nor a superstitious reply and such respondents are perfectly happy to discuss what they mean, which is really that these are matters over which they have little control and to attempt more control would probably achieve little while bordering on the impious" (1982: 32).

For the first group of "up to God" respondents, the concept of ideal family size may seem salient. However, such women would express numerical fertility preference if such demand were to be quantified in economic numerical terms.

"As for me, I would like to give birth to 16 children. However, since I do not have enough money to cater for many children, I will stop at the number that I know I can adequately cater for." ("up to God" middle aged woman, Efon Alaye)

"If God gives me 4 children and they all turn out to be good, this is better than having six children." ("up to God" younger woman, Efon Alaye)

"God can help to take care of children. If I have 6 children and I tell God that I want 3 of them to have university education, God will surely help." (younger woman Modakeke)

The second group of "up to God" women share the view that it is possible to tell God the number of children they want from Him.

"It is true that God gives children to people. If one can pray to God then it is possible to tell God that this is the number of children that you want." ("up to God" woman, Efon Alaye)

"Those who give birth to many children do not know how to tell God about their circumstances. Nowadays, it costs more to take care of one child than it was before. Therefore it is not right to just continue to have children." (another "up to God" woman, Efon Alaye)

Further information revealed during the discussion indicate that some women are inhibited from revealing the numeric quantity of children they want because of unanticipated or unexpected death of children; uncontrollable circumstances, such as the fear of premature sterility or the fear that a woman's husband may marry other women if he wants more children and knows that his wife does not want to bear children anymore; and extreme circumstances, such as an act of fate or fear of witchcraft. The third group of "up to God" women fall into this category.

"If I say that I want 4 children and then stop, what if act of fate causes the children to die. What do I do?" (a respondent from Modakeke)

"...God forbids that one should live with people of evil character [witches]. If I say that I want to have 'x' number of children in their presence, they may not allow me to give birth to children that is up to that number." (middle aged woman, Modakeke)

The concept of family size preference may seem ambiguous to some women but certainly not to all women who give "up to God"-type answers to the question of ideal family size. Such answers are meaningful in themselves. On

the one hand, they may not look meaningful to analysts of survey information on fertility preferences who do not know how to interpret such responses, but on the other hand, they may reveal the shortcomings of the family size preference concepts, especially for some women who cannot deal with abstract questions. Evidence from the focus group interviews indicate that if family size desires questions are phrased in ways that are comprehensible to women, a significant proportion would state their preferences in numerical terms.

There is also a good reason to suggest that the reason why some women do not give numerical answers to the fertility preference questions spontaneously (until they are probed for numerical answers) may not necessarily be related to their ability to count. Rather it may be due to some underlying factors characteristic of these groups which account for the different responses to the ideal family size question. One instance is the frequency of reference to God in discussions relating to childbearing and pregnancy decisions. Most of the focus group participants shared the view that it has to be the will of God before a woman can conceive regardless of her sexual practices.

"... no matter how many times that a woman sleeps with her husband, if it is God's will for her not to get pregnant, she would just be sleeping for fun." (younger woman, Efon Alaye)

"... concerning pregnancy, a woman will always try to get pregnant but the [final decision] is with God." (middle aged woman, Modakeke)

"Even if a woman is pregnant, it is God that can help the woman to carry the pregnancy to term. It is only God that can take care of children, the doctors are only trying." (older woman, Modakeke)

The women's responses reflect only those aspects of reproductive decisions that are within the domain of their personal control. However, the final determination of specific outcomes, such as having a child, getting pregnant, etc. is considered to be a chance factor. For most non-numeric respondents, depending on their degree of belief, such chance outcomes are better determined by God.

Synthesis and Conclusion

Our findings show that women who gave non-numeric answers, such as "up to God" to the ideal family size question, in comparison with women who explicitly stated their family size goals, are less likely to approve of family planning or adopt behavior that produces smaller family size. We also found that such women may have preference for larger family size relative to their numerical counterparts, at least with respect to factors that can predict the differences in their family size preferences. Other findings show that women who gave "up to God" or other non-numeric answers have a higher mean number of children ever born and a higher reported number of dead children. However, there is not enough evidence to suggest that women who report non-numeric fertility desires are predisposed to give such answers as a result of factors such as child mortality experience, etc., or whether their preference for large family size is influenced by their current family size since they may not want to give the impression that any of their children are unwanted. Information obtained from the focus group participants seem

to give some weight to the first factor. For instance, some "up to God" respondents state unanticipated death of siblings as the reason for their refusal to formulate explicit numerical preferences. But the evidence is not conclusive.

Based on the focus group study and quantitative survey, we believe that non-numeric responses to fertility preference questions are meaningful in themselves. Non-numeric respondents mean what they said. To understand what "up to God" responses mean may warrant an understanding of the whole structure of family authority, their ways of life, and the associated belief system. One must be apprised of the fact that people act upon different premises, perceive reality differently, and represent it in peculiar ways that reflect their own circumstances.

Concerning numeracy in children, does it mean that women who express "up to God" answers lack the ability to count? Van de Walle (1992) presents qualitative evidence that throws light on the motivations of some women in Mali. His data show that apart from weak motivation to control fertility, the frame of mind and the clear numerical standard that would allow them to make sense of small families and the means to obtain them are absent (p.496). Opinions and views of Yoruba women in our focus group study regarding the ability to express numerical preference for the number of children they want suggest that the problem is not numeracy. It is certain that, if probed, women who give "up to God" answers to the question on desired or ideal family size do have an idea of the number of children they want. Their responses are made more explicit if the demand for children would be accessed in terms of costs of childrearing, such as providing education.⁴ It would not be correct to conclude that such women lack the ability or willingness to formulate numerical preferences.

Also, our preference to work with figures should not force us to discard the meaning of "up to God" answers to family size preference questions. Perhaps they may suggest ways with which we can improve upon the conventional survey questions on fertility preferences, at least for women in diverse cultural settings quite different from those in European or western cultures and for those women who lack the ability to deal with the abstract concept of ideal family size. This is more important when we have to interpret the beliefs (and likewise responses to family size preference questions) of others from the standpoint of the standards of western culture.

Conventional approaches treat "up to God" responses as fatalistic or lacking in meaning since they cannot be quantified. However, as with "don't know" and "uncertain" responses, some studies have shown that these responses have meaning and should be treated with caution (see Morgan, 1982). But what should the analyst do with these responses? At what end of the family size preference scale should we assign women who gave non-numerical

⁴Evidence from other studies also indicate that women who give "up to God" responses are able to provide numerical responses to questions on their desired length of birth interval or for periods of postpartum abstinence and breastfeeding (Oni, 1985; McCarthy and Oni, 1987; Olaleye and Bankole, 1991).

answers? One feasible strategy⁵ is the one that we have adopted in this study. Given that the family size preferences of women who give non-numerical answers are likely to be different from those of the women with numerical choices, one can adjust for the bias in ideal (or desired) family size using the sample selection model strategy.

We also show that higher educational attainments, approval of family planning, and the use of efficient methods of contraception decrease the tendency to give a non-numeric response to the ideal family size question. From the focus group participants' viewpoint, the rising cost of living and the increased need for and cost of education for children appear to be salient factors that motivate some women to formulate numerical fertility preference, as well as to create pressure (among women who formulate explicit desires) for fewer children. These findings have some programmatic implications for family planning. Since the formulation of explicit numerical fertility desires is influenced by factors such as education and contraceptive attitudes among others, family planning education may be necessary to enlighten those women with non-numerical fertility choices about the concepts of family planning and make them more aware of their control over their reproductive behavior. For this group of women, the pattern of responses is anticipated to gradually change toward numeric answers as fertility decisions become a personal (couple) rather than a social act.

It is also important to highlight the need for refinement of our survey instrument designs on fertility preference questions in future surveys. Our analysis suggests that some hypothetical questions about fertility preferences may be incomprehensible to some certain groups of women. However, if such questions are rephrased in ways that they could understand (such as "How many children would you want to have, taking into consideration your current family size, age, and fecundity status?" or "How many children would you want if you could provide for and educate all the children that you might have?"), a significant proportion of the women would be more likely to give numerical answers.

⁵These strategies may not totally account for the differences in family size preferences of non-numeric respondents. Other ways of measuring desired family size are not void of bias (see Bongaarts, 1990).

References

- Acsadi, G. T. 1982. *Comparative Demographic Analysis: A Manual*. United Nations Working Group on Comparative Analysis of World Fertility Survey Data, 5th meeting. UN/UNFPA/WFS. V/16 Geneva.
- Acsadi, G. and G. Johnson-Acsadi. 1985. Demand for Children and for Childspacing in sub-Saharan Africa. PHN Technical Note 85-6. Washington, D.C.: World Bank, Population, Health and Nutrition Department.
- Bongaarts J. 1990. The Measurement of Wanted Fertility. *The Population Council Working Papers*, 10. New York: The Population Council.
- Caldwell, J.C. 1979. Education as a Factor in Mortality Decline: An Evaluation of Nigerian Data. *Population Studies* 33(3):395-413.
- _____. 1982. *Theory of Fertility Decline*. London: Academic Press.
- Caldwell, J.C. and P. Caldwell. 1985. Cultural Forces Tending to Sustain High Fertility in Tropical Africa. *PHN Technical Note*, 85-16. Washington, D.C.: World Bank, Population, Health and Nutrition Department.
- _____. 1987. The Limitation of Family Size in Ibadan City, Nigeria: An Explanation of its Comparative Rarity Derived from Indepth Interviews. In *The Cultural Roots of African Fertility Regimes: Proceedings of the Ife Conference*, van de Walle, E. (ed.). February 25 - March 1, 1987, Department of Demography and Social Statistics, Obafemi Awolowo University, Ile-Ife, Nigeria, and Population Studies Center, University of Pennsylvania.
- Central Bureau of Statistics. 1983. *Ghana Fertility Survey 1979/80, First Report*. Accra, Ghana.
- Easterlin, R.A. 1978. The Economics and Sociology of Fertility: A Synthesis. In *Historical Studies of Changing Fertility*, Tilly, C. ed., Princeton: Princeton University Press.
- Fapohunda, E.R. and M.P. Todaro. 1988. Family Structure, Implicit Contracts, and the Demand for Children in Southern Nigeria. *Population and Development Review* 14(4):571-594.
- Farooq, G.M. and L.A. Adeokun. 1976. Impact of a Rural Family Planning Program in Ishan, Nigeria, 1969-1972. *Studies in Family Planning* 7(6):158-69.
- Flandrin, J-L. 1979. *Families in Former Times: Kinship, Household and Sexuality in Early Modern France*. Cambridge: Cambridge University Press.
- Freedman, R. and K. Whelpton. 1952. Social and Psychological Factors Affecting Fertility. *Milbank Memorial Fund Quarterly* 30(1):61-90.
- Ghana Statistical Service and Institute for Resource Development/Macro Systems, Inc. 1989. *Ghana Demographic and Health Survey, 1988*. Columbia, Maryland: GSS and IRD.
- Hauser, P. 1967. Family Planning and Population Programs: A Book Review Article. *Demography* 4: 397-414.
- Heckman, J.J. 1976. The Common Structure of Statistical Models of Truncation, Sample Selection and Limited Dependent Variables and a Sample Estimator for Such Models. *Annals of Economic and Social Measurement* 5:475-492.
- _____. 1979. Sample Selection Bias as a Specification Error. *Econometrica* 47: 153-161.
- Jensen, E. 1985. Desired Fertility, the "Up to God" Response, and Sample Selection Bias. *Demography* 22: 445-454.

- Johnson, N.L. and S. Kotz. 1972. *Distributions in Statistics: Continuous Multivariate Distribution*. New York: Wiley.
- Knodel, J., N. Havanon, and A. Pramualratana. 1984. Fertility Transition in Thailand: A Qualitative Analysis. *Population and Development Review* 10(2).
- Lightbourne, R.E. and A.L. MacDonald. 1982. Family Size Preferences. *World Fertility Survey Comparative Studies*. Cross Nation Summaries, No. 10.
- Maddala, G.S. 1983. *Limited-dependent and Qualitative Variables in Econometrics*. New York: Cambridge University Press.
- Mason, K.O. and A.M. Taj. 1987. Differences between Women's and Men's Reproductive Goals in developing countries. *Population and Development Review* 13, 611-638.
- Mbiti, J.S. 1970. *Concepts of God in Africa*. New York: Praeger.
- McCarthy, J. and G.A. Oni. 1987. Desired Family Size and its Determinants among Urban Nigeria Women. A Two-stage Analysis. *Demography* 24:279-290.
- Ministry of Health (Ondo State, Nigeria) and Institute for Resource Development/Macro Systems, Inc. 1988. *Ondo State, Nigeria Demographic and Health Survey, 1986*. Columbia, Maryland: MOH and IRD.
- Morgan, S.P. 1982. Parity-specific Fertility Intentions and Uncertainty: The United States, 1970-1976. *Demography* 19:315-334.
- National Population Bureau [Nigeria] and World Fertility Survey. 1984. *The Nigeria Fertility Survey 1981/82: Principal Report*. Vol 1: Methodology and Findings. Lagos, Nigeria: National Population Bureau.
- Olaleye, O.D. and S.A. Bankole. 1991. *Wanted Family Size: A Comparative Study of Fertility Desires of Women in Two Sub-Saharan African Countries*. Presented at the 1991 Southern Demographic Association Meeting, Jacksonville, Florida.
- Olsen, R.J. 1980. A Least Squares Correction for Selectivity Bias. *Econometrica* 48:1815-1820.
- Olusanya, P.O. 1971. Status Differential in Fertility Attitudes of Married Women in two Communities in Western Nigeria. *Economic Development and Cultural Change* 19. p. 641.
- Oni, G.A. 1985. Effect of Women's Education on Postpartum Practices and Fertility in Urban Nigeria. *Studies in Family Planning* 16:321-331.
- Ryder, B.N. and C.F. Westoff. 1969. Relationship among Intended, Expected, Desired, and Ideal Family Size: United States, 1965. *Population Research*. Center for Population Research, Princeton.
- Secombe, W. 1990. Starting to Stop: Working-class Fertility Decline in Britain. *Past and Present* 126:151-188.
- Stewart, D.W. and P.N. Shamdasani. 1990. *Focus Group: Theory and Practice*. Sage Publications in Applied Social Research Methods Series vol. 20.
- van de Walle, E. 1992. Fertility Transition, Conscious Choice and Numeracy. *Demography* 29:487-502.