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THE FERTILITY BEHAVIOR DIFFERENTIAL

A Methodological Innovation in Fertility Research

by

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A B S T R A C T

The present paper is devoted to presenting a parsimonious, simplified and heuristic method of gathering data concerning concepts of fertility behavior and control. The nature of the instrument is such that it also facilitates cross-cultural comparison and generalization. The method employs the female fecundity period as a standard for data gathering. Its main uses are to gather (a) primary information on actual, expected, intended and ideal fertility behavior practice; and (b) secondary information on knowledge about and attitudes towards methods and practices of fertility control based upon an analyses of the primary information.

The measurement device calls for more active participation by the respondent in the interview situation. The actual measurement device is mounted on a soft board and respondents answer questions by sticking appropriately coded mapping pins into the relevant places on the Fertility Behavior Differential. In this way, information is efficiently gathered on such issues as the outset of menstruation and menopause, the actual parental ages at marriage and at present, the actual birth order of all children up till the present time, differentiating between miscarriages and births of male and female children both living and dead, the expected birth order of further children, the intended birth order of further children if perfect fertility control were possible, the ideal parental ages at marriage and ideal birth order of children assuming that the respondent could go back to square one and start all over again.

The measuring device is not restricted to women in there fecundity period. It may be extended to use responces of males and females of all ages, barring infants. In addition, the measurement method ameliorates problems of jargonistic terminology and the use of "sensitive" words and language.

THE FERTILITY BEHAVIOR DIFFERENTIAL*

by Joseph H. Ascroft**

The present paper is devoted to a method of measuring concepts of fertility behavior in families as well as of individuals of both sexes and all ages, apart from infants. The method, designed as a simplified, parsimonious and heuristic way of gathering data relating to concepts of family planning via fertility control and to facilitate cross-cultural comparability, is based upon the female fecundity period as a standard of measurement. The method is illustrated with data from one idealized case study. To the extent that the present paper is concerned solely with describing the new measurement method and its potential uses, no empirical evidence of its actual research application in a field situation will be presented at this time.***

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*The author is indebted to his colleagues Dr. Mugo Gachuhi, Dr. Niels Röling, Mr. Joseph Kariuki and Mr. Fred Chege for being constant and willing motivators, idea dispensers, and probable users of the Fertility Behavior Differential, to Mr. David Radel of the East West Center for publicizing it beforehand, thereby making it necessary to be written up, to Mr. I. Jiwaji for designing the F.B.D. in its present form, to Professor Everett M. Rogers of Michigan State University for reading and editing the present paper, and to the Republic of Kenya's far-seeing National Population Policy which provided the incentive for inventing the FBD.

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***Pretest data on the Fertility Behavior Differential will be presented in M. Gachuhi and J. Ascroft, "A Design for Fertility Behavior Research in Kenya," which is currently in preparation.

Justification of the New Measure

"Interview surveys," as Campbell* suggests, "have become not only an important but a necessary instrument of fertility research, for much of the information they provide cannot be obtained in any other way." Many attempts at producing comprehensive interview schedules ranging from the Growth of American Families Studies of the fifties through the Knowledge, Attitudes and Practice studies of the sixties, to the national family planning surveys suggested by Bogue in the seventies, have been produced. Yet withall, a few knotty problems attaching to the use of the interview schedule remain.

First, fertility behavior schedules are usually bulky and wordy. Bogue's "A Model Interview for Fertility Research and Family Planning Evaluation" (1970) is 70 pages long and is dependent entirely on the spoken word for information gathering. This dependency upon the aural band of communication only, in turn, produces an interview situation consisting of an interaction between an active, increasingly harried interviewer and a passive, increasingly phlegmatic respondent.

The wordiness of interview schedules produce other problems as well. Problems of cross-cultural generalizability arise especially when interview schedules need translation into different languages. This problem becomes

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*Arthur A. Campbell (1963), "Concepts and Techniques used in Fertility Surveys," in Emerging Techniques in Population Research, published by the Milbank Memorial Fund, 1963.

especially acute when the jargon of fertility behavior research is used, or when sensitive terminology and taboo words are invoked. For instance, translating "Family Planning" into Swahili runs into difficulty because there are 14 different ways of rendering the word "family" in Swahili. Moreover, many African languages lack generally applicable euphemisms for terms referring to the organs and act of sexual intercourse. Discussions involving such terms occur only within age groups, never between them.

Finally, because traditional interview schedules are dependent almost entirely on the spoken word, they are forced into heavy reliance on connotative rather than denotative meanings. The term "family planning" is used as if it is supposed to connote some specific meaning to the respondent despite the fact that the term is seemingly bi-dimensional, connoting a confusing mixture of spacing childbirths on the one hand, and limiting family size on the other. Rarely, if ever, is the respondent presented with a denotative example of his own spacing and limiting behavior. In the circumstances, the respondent often finds himself having to provide operational definitions for the very concepts that the researcher himself is supposedly measuring. Indeed the respondent is frequently called upon to operationalize concepts alien to him and, so as not to appear stupid, the respondent obliges the researcher. Thus a question such as, "Do you practice family planning?" may produce a determinate response even though the client's knowledge of family planning may be too limited to yield

any but an indeterminate response.

The Fertility Behavior Differential which is described in the following pages is designed to ameliorate these problems of interview bulkiness and wordiness, of respondent passivity, of cross-cultural generalizability of the measurement, and of concept operationalization.

THE FERTILITY BEHAVIOR DIFFERENTIAL

The differential uses the female fecundity period as the standard for evaluating actual, intended, expected or ideal practices of both planned and fortuitious fertility behavior. It also facilitates the assessment of attitudes towards and knowledge about methods of fertility control. The application of the differential, however, is not limited to females within their period of fecundity. Its application extends to individuals of both sexes and all age groups, with the possible exception of infants.

Essentially, the FBD is a parsimonious data gathering and recording device which doubles as a handy visual display during the interview, thereby enabling the respondent to take a more active and interested part in the interaction, and as a heuristic device for generating useful research questions. The operational rendition of the FBD in the actual field situation is displayed in Figure I. The central numbered track represents the fecundity period of the average woman. The three lower tracks are used for recording actual parental ages at present and at marriage (where applicable), and actual, intended and expected fertility

behavior practice. The upper tracks are for recording ideal parental ages at marriage and ideal fertility behavior practice. In practice, data may be recorded on the FBD by way of appropriately coded mapping pins which the respondent may be encouraged to stick in the appropriate spaces in response to questions about actual, intended, expected and ideal fertility behavior practice.

Uses of the FBD

The primary use of the FBD is to gather data directly concerned with the practices of fertility behavior. The secondary use of the FBD is to serve as a springboard whence to launch into questions about knowledge, attitudes and motives concerning past, present and future fertility behavior.

Primary Uses

The FBD may be used primarily to record actual, intended, expected and ideal fertility behavior practices. Invented data drawn from an idealized case study of a nuclear family is used illustratively in Figure I.

The Record of Actual Practice. Actual practice refers to the historical record of fertility behavior of the woman up to the present time. Information which is useful to record in this regard may include:

1. The points along the fecundity period representing onset of menstruation and (if applicable) onset of menopause to establish anchor points.
2. Parental ages at present and at time of marriage.

3. The points along the fecundity period at which termination of each pregnancy occurred, including miscarriages, and male and female children living and dead.

The record of actual practice produces in one parsimonious move evidence (or the lack of it) of child spacing or family size limitation, as well as the exact ages of all children relative to the ages of their parents. The researcher is thus presented with a basis for generating secondary questions directed at establishing whether the actual practice was a chance occurrence or deliberately planned, whether contraception had been used, contemplated, desired or rejected at any time, and so on.

The Record of Expected Practice. Expected practice refers to future fertility behavior which is likely to eventuate, whether it be by design or by accident. That is, expected practice refers to the number and spacing of children the individual thinks will have been borne by the time the family is completed. Useful information to be gathered in this regard may include:

1. The points along the fecundity period at which it is expected that additional prospective children will be borne.
2. In the case of an unmarried respondent, expected ages of the respondent and spouse and the expected number and spacing of children relative to the fecundity period may be recorded.

Information about expected practice yields evidence about the respondents' perceived degree of control over

fertility behavior--the less control perceived, the more fatalistic the respondent is likely to be. Campbell* asserts that the number of children expected and the number of children intended at the time of interview have emerged as most useful measures.

The Record of Intended Practice. Intended practice refers to future fertility behavior which is hoped will eventuate, whether by design or by accident. That is, intended practice deals specifically with the number and spacing of children which the respondent would want to have if the respondent had perfect control. Useful information in this regard may include:

1. Points along the fecundity period at which it is intended that additional children will be born.
2. In the event that the respondent is unmarried, intended ages at marriage of the respondent and prospective spouse, and intended number and spacing of prospective children relative to the fecundity period may be recorded.

The record of intended practice yields at once information about the family size and child spacing the individual would ultimately want to have. Similar secondary questions as in recording actual practice may also be asked.

The Record of Ideal Practice. Ideal practice refers to hind-sight fertility behavior which the individual, based upon the record of actual practice, now perceives as being the practice he or she would have followed if it were

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*Arthur A. Campbell, op. cit.

possible to start from scratch again. To this end, the following information may be gathered:

1. The respondents' perception of ideal parental age at marriage.
2. Points along the fecundity period at which each child up to the number of children desired ought ideally to be borne.

Information so gathered enables the researcher to determine the degree to which the respondent, based upon past experience, has changed from fortuitious to planned acquisition of children. The respondent may opt for a later age at marriage of either self, spouse or both, or for greater spacing between fewer children. Whichever the case, the research is presented with ample opportunities to determine attitudes, needs, desires, motives--indeed a cornucopia of secondary data yielded by examining the record of ideal practice alone, or by comparing this record with the records of actual, expected and intended practice.

Optional Extra Children. The notion of "optional extras" is reserved for that specific instance when practice, whether actual, expected, intended or ideal, has failed to produce the desired mix of male versus female children. For example, the individual's actual practice may have yielded all boys or all girls and, even though the desired total number of children may already have been achieved, the parents may want the option of an extra child or two to ameliorate the imbalance. Similarly, in the idealized practice, the individual may desire only four children, but in the event that they are all of the same sex, may want to

exercise an option to try once or twice more for a child of the opposite sex.

Secondary Uses of the FBD

The heuristic qualities of the primary information gathered via the FBD becomes evident in the Pandora's box of secondary information that may be also gathered. Of main interest to most researchers of fertility behavior is knowledge about and attitudes towards such issues as child spacing, family size limitation, methods of contraception, and perceptions of population problems.

The FBD facilitates the gathering of such information and achieves this end in a relatively non-threatening, non-leading manner.

Range of Respondents

Whilst the scale is based upon the female fecundity period, the use of the scale is not limited to females within their period of fecundity. Information regarding actual, expected, intended and ideal fertility behavior may be gathered from either the wife or the husband, the husband responding always in terms of his wife's fecundity period. Indeed it would be interesting to compare responses from husbands and wives to determine degrees of correspondence between their respective outlooks. This information may well help us to understand the nature of communication about fertility matters transacted between husbands and wives.

In addition, widows, widowers, divorcees and unmarried mothers may be interviewed with minor modifications

in a way similar to that suggested in the present paper. Even children and unmarried individuals without children may be respondents. The actual practice questions may refer to their parents' actual practice whereas the expected, intended and ideal practice questions may refer to themselves. There is no foreseeable reason why even pre-adolescent children should not express expectations, intentions and ideals regarding their prospective ages at marriage and number and spacing of their prospective children.

Finally, it seems also feasible to vary the unit of response along a continuum from micro to macro. The individual, the family unit, the church, the tribe, the nation state may likely be the unit of measurement, particularly with regard to a generalized form of expected, intended and idealized practice.

A Worked Example of Data Gathering with the FBD

From among several early pretest interviews conducted for the specific purpose of testing not so much the nature of the data illicited but the actual functioning of the FBD, we have constructed one idealized interview which most usefully illustrates most of the functional aspects of the FBD. The composite "interview" was carried out with urbanized male Africans, some of whom were married, and some single. The composite primary data are shown in Figure I.

Recording Actual Practice

The respondent, for we shall henceforth treat him as a single individual, was married at 21 and his current age is 40. His wife's age at marriage was 15 and her present age is 34. To the best of his knowledge she became

capable "of bearing children" (onset of menstruation) at 13. She gave birth to her first child, a male still living at the age of 16, had a miscarriage at 19, and bore further sons still living at the ages of 23, 25, and 28. At 31 she gave birth to twins, a boy and a girl, who both died shortly after birth. She is currently pregnant and it is fervently hoped that this prospective child will be a daughter.

The respondent explained the equal intervals (two years apart) between pregnancies until the present time as representing natural periods of infertility following childbirths. At no time was anything done to impede fertility. He claims to have had inchoate feelings that his family size is approaching unmanageable proportions after the birth of the fourth son but has desisted from giving the problem his active attention because of a belief that his wife has her heart set on getting a daughter.

Recording Expected Practice

As of the time of the interview, the respondent had no clearly developed plans to take any voluntary action whatsoever in the foreseeable future to limit the size of his family or to space prospective children differently from the spacing of his record of actual practice. Indeed, he expects that his wife will continue to bear children according to the past pattern until she ceases "to be capable of child-bearing" which he expects to occur in her forty first year (prospective onset of menopause). Thus prospective children are expected when his wife is 37 and

again when she is 40.

His expectations are based upon his perceptions that he has little control over his wife's fertility, saying that "it's up to her" whether she intends to do something about curtailing her fertility or not. He does not at present intend to take the initiative in this regard.

Recording Intended Practice

Although his expectations envisage continued childbearing in the pattern of his actual practice, the respondent nevertheless wishes that his wife's present pregnancy results in a girl and that no further children would follow. However, given that the present pregnancy would result in a boy, then he would want to try once more for a girl (an optional extra) whereupon he would like to quit, whether or not a girl was borne. Furthermore, he would want to get it over with as quickly as possible, hence the short interval between the present pregnancy and the intended birth of the optional extra child.

The respondent vaguely believes that a "clinic" can both induce his wife to become pregnant sooner than has been her wont after childbirth, as well as terminate her fertility if his wife desires it. He thinks that pills are prescribed in either case but is unable to furnish details about the number and frequency of pill-taking required. There is nothing the "clinic" can do for or to him to control his wife's fertility except maybe to tell him to quit having intercourse altogether. He is not prepared to quit.

Recording Ideal Practice

If he had it to do all over again, the respondent claims that he would marry a girl of 23 rather than one of 15. This way she would not get as many children. Indeed, she would have borne at least two children less, judging by her record of actual practice. He himself would ideally have liked to get married at 28 after he had had both sufficient time to sample a wider variety of women and to have made headway in his career, unhampered by the exigencies of a growing family responsibility. He would ideally have liked his first child to have been borne at least one year after marriage, i.e., when his wife was 24, to give him time to settle down in marriage before bearing children. Subsequent children ought ideally to be borne when his wife was 27, 31 and 35, whereupon he would cease bearing further children. However, if it transpires that all four children are of the same sex, or one of them dies, then he would like to reserve the option to try again, whereupon he would definitely quit, regardless of the outcome.

The respondent again feels that pills from the "clinic" administered to his wife would achieve the actual spacing which would be his ideal. He elaborated his theory of the pill, asserting that there are two kinds of pills: one for inducing pregnancy, and another for terminating pregnancy. He did not think there was a pill or anything the woman could do, short of witchcraft, to prevent pregnancy. The only artificial method of preventing pregnancy he knew

about was the condom which is sold in stores, not acquired from clinics. Condoms, however, were intended expressly for unmarried men who wanted to have frequent intercourse with a particular unmarried woman. If he intends to have intercourse only once or twice with her then there is no need for a condom as it takes very many meetings with a woman to make her pregnant. Married men should never use condoms as that practice is mainly reserved for cheap women. Whilst not admitting explicitly to extra-marital relationships, he claims he would have no objections to using a condom with women other than his wife. On the questions of "operations" to terminate his or his wife's fertility, the respondent was adamant in his disapproval of them. Operations entail "cutting out the whole business" and apart from the undesirability of that, there was the added great risk that one would fail to recover from the operation.

Finally, while the FBD was not administered to the respondent's wife, the respondent himself believed that if his wife was interviewed, her record of ideal practice would show very little difference from her record of actual practice, and that her record of intended practice would not deviate from her record of expected practice. Women generally look forward to having the next child and do not feel fulfilled unless they are satisfying their procreative function to the best of their abilities.

The foregoing worked example illustrates in broad outline the eclecticism of the FBD, its parsimony in gathering primary data and its heurism in eliciting secondary

knowledge and attitudinal qualitative information. To put it another way, we have tried to show via one idealized example, how the primary information recorded on the FBD serves as a useful springboard to launch into a wide variety of low-keyed questions relevant to fertility behavior and control, questions which, to a large extent, can avoid the direct use of alien or sensitive terminology by emphasizing the denotative characteristics of the FBD and minimizing the connotative characteristics of verbal language.

On the reverse side of Figure I, a blank FBD has been reproduced. This FBD is intended for the reader who might wish to perform a trial of his own--perhaps by recording his own actual, expected, intended and ideal fertility behavior practice.

Level of Measurement of the FBD

The FBD is a ratio scale because it has a natural origin (age at birth), an order of magnitude (the female fecundity period), and a known distance between magnitudes (calibrations in years). While the working portion of the scale is limited to the female fecundity period, it must nevertheless be held in mind that it originates at zero and continues beyond 45. However, some researchers may feel that a scale with over 30 calibrations upon it might tend to be somewhat unwieldy to administer in the actual field situations. In this event the scale may be divided into smaller sub-scales. The FBD in Figure I has been sub-divided, by way of example, into four sub-periods; namely,

puberty, early fecundity, late fecundity and menopause. In the operational model of the scale, these periods are clearly demarcated as a means of aiding respondents in relating one part of the scale to another. Alternatively, the scale may be collapsed to grosser magnitudes such as five year intervals, or any other groupings which the researcher desires.

Cross-Cultural Applicability

The FBD suggests itself as a useful way of gathering data in a standardized manner across cultures. Primary information relating to actual, expected, intended and ideal fertility behavior is especially more readily and directly comparable across cultures since they are all measured with the same scale. It may also be expected that the simplicity and parsimony of design of the FBD would serve as an encouragement to students of international development to adopt its use, thereby further underlining its propensities for facilitating cross-cultural generalization.

IMPLICATIONS FOR FUTURE RESEARCH

The Fertility Behavior Differential is offered with the express intention of generating standardized research to facilitate evaluation and to increase cross-cultural and cross-disciplinary exchanges of research findings, thus providing the conditions under which successful social technology for population control can diffuse across peoples and nations. The current emphasis throughout the world on

family planning and population control, counterpart to the concommitant emphasis on agricultural productivity and rural development, has led to a flurry of research for planning purposes, or evaluative information for measuring the success for development programs and campaigns. National family planning policies and campaigns depend for their viability upon a steady and rapid flow of reliable information about knowledge, attitudes and practices (KAP Studies) of fertility behavior. The FBD may serve as a simple and economical way of making this information available.

However, it is more important that we learn how to affect fertility behavior in desired ways via field experimentation than merely to harvest post hoc knowledge via one-shot surveys. To this end, the author, in collaboration with colleagues at the Institute for Development Studies, intends, after pretesting the FBD, to use it in a field experiment now being planned to take place in a small rural community of Kenya.

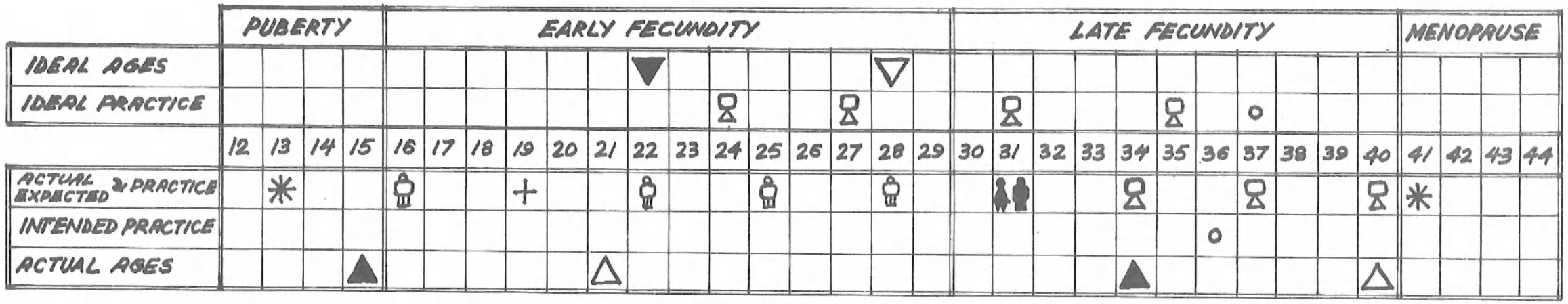

FIGURE I : THE FERTILITY BEHAVIOUR DIFFERENTIAL

THE FERTILITY BEHAVIOUR DIFFERENTIAL

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	PUBERTY				EARLY FECUNDITY														LATE FECUNDITY											MENOPAUSE			
IDEAL AGES																																
IDEAL PRACTICE																																
	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
ACTUAL EXPECTED & PRACTICE																																
INTENDED PRACTICE																																
ACTUAL AGES																																

△ MALE AGES AT MARRIAGE/ AT PRESENT

▲ FEMALE AGES AT MARRIAGE/ AT PRESENT

MALE CHILD LIVING

FEMALE CHILD LIVING

MALE CHILD DEAD

FEMALE CHILD DEAD

PROSPECTIVE CHILD

OPTIONAL EXTRA

\+ MISCARRIAGE

* ONSET OF MENSTRUATION OR MENOPAUSE